

KYLE JONATHAN DAVIDSON

Semiotic Modelling of Identity and
Communication in Virtual Reality,
Augmented Reality, and Mixed Reality



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And of course, for inspiring the research; ありがとうございました初音ミク

ABBREVIATIONS

<i>AI</i>	<i>Artificial Intelligence</i>
<i>AR</i>	<i>Augmented Reality</i>
<i>CMC</i>	<i>Computer-Mediated Communication</i>
<i>CP</i>	<i>Collected Papers of Peirce</i>
<i>HCI</i>	<i>Human-Computer Interaction</i>
<i>MR</i>	<i>Mixed Reality</i>
<i>NLP</i>	<i>Natural Language Programming</i>
<i>SNS</i>	<i>Social Networking Sites</i>
<i>TTS</i>	<i>Text-To-Speech</i>
<i>UI</i>	<i>User Interface</i>
<i>UX</i>	<i>User Experience</i>
<i>VLE</i>	<i>Virtual Learning Environment</i>
<i>VTuber</i>	<i>Virtual YouTuber</i>
<i>VR</i>	<i>Virtual Reality</i>
<i>VR+</i>	<i>Virtual and/or Augmented and/or Mixed Realities</i>
<i>XR</i>	<i>Extended Reality</i>

INTRODUCTION

A. Conceptualisation of hyperreality and hypervirtuality

In 2020 the COVID-19 pandemic afforded researchers the opportunity to examine the digitisation of society with unprecedented holism as offices, classrooms, and leisure spaces moved from physical to virtual spaces. This global virtualisation of multiple aspects of society forms the basis for this thesis, as we analyse the communication model between users within various contemporary contexts, highlighting specifically how the semiotic model of self-identity has changed – and will change – with the increasing ubiquity of virtual signs and spaces. Such an ever-present, virtual, environment has always been present as a potential consequence of the emerging digital technologies of the 20th century, with author Neal Stephenson introducing the term “metaverse” in 1992 (Collins 2008). While this term has entered commercial nomenclature with the announcement in 2021 that the parent company of the social media giant Facebook would be rebranding to “Meta” to encapsulate its new ethos towards the creation of a virtual metaverse, its original meaning is the process of interaction across, and the relationship between, different simulated realities is relevant to this paper.

While the metaverse describes a 3D virtual space that negates the geographical distance of the offline space (Collins 2008: 52), the focus on virtual reality seems limiting to us considering the ever-present plane of virtual data that we interact with in our society that does not require the activation of virtual reality hardware. We will use Paul Milgram and Fumio Kishino’s “A Taxonomy of Mixed Reality Visual Displays” (1994) for our definitions. Virtual reality is on a continuum with the fully virtual and the fully physical at opposing ends of the spectrum (see Figure 1).

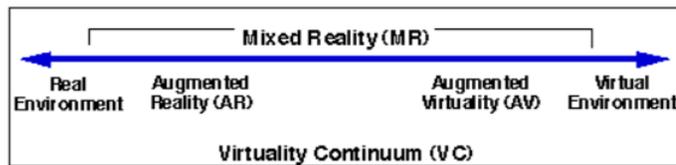


Figure 1. Milgram and Kishino’s continuum of virtuality, from the real (or physical) environment to the fully virtual space (Milgram, Kishino 1994: 1321).

The dichotomy has been somewhat more distinct in previous decades, prior to the advent of the fully connected world. The virtual space is no longer situated “somewhere” but rather it has permeated society via the “cloud”. This ethereal concept is not the server rooms and data warehouses in Scandinavia, America, or Asia, but rather a virtual plane of signs that can be accessed via any number of access points that one always has on their person. Cars, phones, terminals, watches, laptops, and even street furniture can all allow access to this virtual space.

The evolution from Web 2.0 to Web 3.0 is described as the creation of the Spatial Web – a digital layer that connects and mediates almost all future interactions within the daily life of the average future citizen of the developed world (Cook *et al.* 2020). The virtual space may have once been a text-only information space but now it contains all the data one curates to form their online persona – as the introduction of Web 2.0 enabled the production, manipulation, and social sharing of data to significant degrees, so corporations collated and monetised the human desire to represent and communicate (see Figure 2). The future – Web 3.0 – promises neural networked, artificially intelligent (AI) prediction rather than user/user collaboration to produce and *pre-empt* desired content online.

Understanding the Spatial Web

Spatial interaction layer

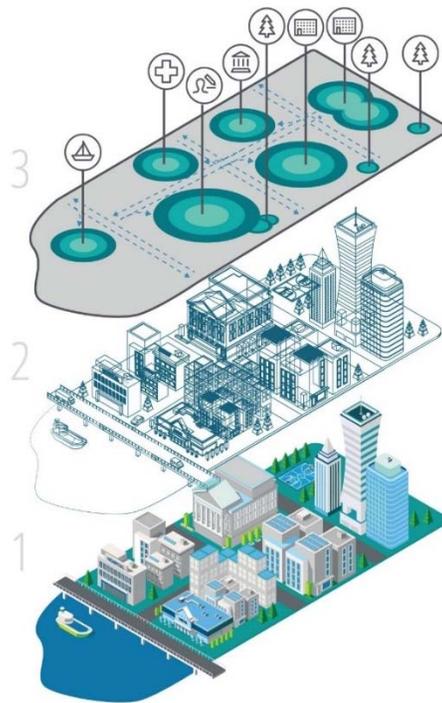
Through next-generation interfaces (e.g., smart glasses or voice), we will be able to interact with contextual, real-time information that has been called up by intuitive and sensory triggers such as geolocation, computer vision, and voice, gesture, or biometric commands. In effect, this merges the digital and physical layers for the user.

Digital information layer

Through sensorization and digital mapping of the physical world, we will eventually create a digital twin of every object in every place. Today, this type of digital information is primarily accessed via screens and dashboards. In the future, it will be retrieved primarily via the spatial interaction layer.

Physical layer

The world as we currently know and experience it through the five senses.



Source: Deloitte analysis.

Deloitte Insights | deloitte.com/insights

Figure 2. The diagram of how the Spatial Web fits within the physical space of the city space (Cook *et al.* 2020: 3).

The Spatial Web promises the breakdown of the boundary between the physical and digital in such a way that information will exist via contextual, real-time interaction points. The communicative process incorporates different media to form a complete text – it could be said that this is the very definition of mixed reality space. Therefore Web 3.0 will be primarily transmedial while Web 2.0 could be

described as a multimedia experience, with digital and analogue spaces existing with defined boundaries, while the blurring of such distinctions leads us to the transmedia concept of communication. We will specifically examine Web 3.0 in the architecture data chapter (chapter 2.0) as it further illustrates the current trends and encapsulates future concepts. While there are discussions on Web 4.0 or 5.0, such concepts are still being developed (Benito-Osorio *et al.*2013). The societal conditions and technology of the future are unpredictable – especially in the shadow of the COVID-19 pandemic – therefore we maintain our focus on the current, observable, shift from productive Web 2.0 to the predictive, spatial, Web 3.0.

There exists a continuum of virtuality beginning with a full virtual space with virtual signs and artifacts within it that we manipulate within the narrative of VR. The requirement for hefty goggles and gloves that can be tracked by sensors within a mapped, physical, space, imposes a boundary on the data – the narrative within the VR world can seem endless but it is very much within this boundary. Augmented reality makes use of the mobile devices that everyone carries with them by using the screen and camera to overlay virtual objects on the physical world. Again, it is limited by the screen but as it can make use of GPS and other physical triggers, it provides the appearance of freedom. However, much like listening to a museum audio guide, it relies on the person being in the correct place and lacks true interactivity with its environment.

Mixed reality is – as the name suggests – a mix of the two dichotomies. It is a mixing of the physical and virtual within a single narrative, with true interaction between them to the extent that they form a single meaning. This is cutting edge technology that is powered by the 4G data network (and the upcoming 5G network) and ubiquitous open Wi-Fi to allow for virtual interactivity outside of the constraints of the studio or software window.

Thus, there are three rough elements to the virtual continuum. In order to refer to all aspects we will use VR+ for ease. VR+ can be VR, AR, and/or MR or some combination thereof, and it avoids the delimitation of any particular digitised reality construction, while emphasizing that it is a digitised reality.

The Spatial Web promises a seemingly free crossing of realities from digital to physical via the presentation of data that is indistinguishable to its non-digital context. The simulation of reality within reality, but one that the user is unaware of as a simulation at all, is described separately by Umberto Eco (1986) and Jean Baudrillard (1996). Both concepts of the hyperreal portray the individual as an actor within a web of signs that are interchangeable in their realities – the examples of such hyperreal spaces will be considered throughout the thesis. However, we see the spatialisation and virtualisation of contemporary society as increasingly a simulation within the simulation. The physical spaces underpinning the hyperreal space no longer exist outside of the virtuality context. In *The Perfect Crime* (1996) Baudrillard describes hyperreality thus:

It has to be more hyperreal than the real, more virtual than virtual reality. The simulacrum of thought has to move more quickly than the others. Since we can no longer multiply the negative by the negative, we have to multiply the positive by the positive. One has to be even more positive than the positive to take in both the total positivity of the world and the illusion of that pure positivity. (Baudrillard 1996: 66)

The hyperreal simulacra – that which is the replication of something that does not have an original – has emerged via the underlying layer of data as the representation of self within the digital space. Or spaces, for the plurality of the digital identity is no longer a dual offline/online dichotomy but rather ever-presently digital that is presented within different contexts. To present every situation where a different variation of one's identity may be presented would be the goal in an ideal situation, but the restrictions of this thesis limit us to the interpretation and analysis of only a few, chosen because of their interesting and/or significant semiotic relationships.

This paper outlines a potential for semiotic modelling and presents an interpretation and analysis of the existing data to create a set of reference areas for future experimentation to support a “virtual hyperreal” scenario, or what we call a “hyper-virtual” hypothesis as an extension to hyperreality. In “Toward A Taxonomy of Copresence” (2001) Shanyang Zhao introduces the term hypervirtuality in the context of online communication thusly:

when both Person X and Person Y are present through physical simulation in each other's physical proximity, we have a situation of hypervirtual copresence; and when both Person X and Person Y are present through digital simulation in each other's electronic proximity, we have a situation of hypervirtual telecopresence. In the first instance, human interaction is replaced by complete physical automation; and in the second instance, human interaction is replaced by complete digital automation. Finally, there are hybrid or mixed types of human copresence, which combine two or more basic forms of copresence. (Zhao 2001: 6)

We can see here that Zhao uses hypervirtual to describe a virtual simulation-to-virtual simulation communication model. The human interaction has been replaced by a simulation, most evidently via the avatars we choose to mediate the presentation of our self-identities across various spaces. These avatars – the digital faces of society – and different contextual spaces seem to us to present the shift from Web 2.0's curated data to Web 3.0's always-on digital layer.

Zhao states that corporeal copresence is the oldest form of human interaction – it is the face-to-face experience. Zhao, referencing Goffman, highlights the observation of the self by the other as a key element of this. Continuing, Zhao describes face-to-device as corporeal telecopresence, where two individuals can interact with each other while being physically distant from each but close to their devices. FaceTime or Skype are examples of this. Should someone interact with a robot then it is a virtually copresent. This interaction is divided into *instrumental* (robots or machines that replicate the outcome of a face-to-face interaction – like

an ATM machine), or *communicative robots* that simulate and stimulate an emotive response – EMO for example, the AI robot desk pet. Finally, Zhao completes the square of interaction with virtual telecopresence, defined thus;

To interact with someone in virtual telecopresence is therefore to interact with a computer program that simulates human responses. If such a program runs on a local computer that is not networked, then “telecopresence” becomes an analogy rather than an accurate description, for the user can interact with the program without the mediation of a communications network. In the foreseeable future, however, remote computing will become the norm, as most programs will be installed on centralized servers to be accessed by different users over the Internet. (Zhao 2001: 6)

The definitions of hypervirtual copresence and hypervirtual telecopresence follow on from this discussion but are necessarily limited by contemporary technology. Today, the science fiction dream of robots has been replaced by the digital avatar that simulates life or appends the human. Modern digital assistants like SIRI or Echo are proximally close to the user, but distant by virtue of the internet server room. It seems relevant to reconsider the spatialisation of individuals in the hypervirtual scenario, especially in a future society where the digital layer is no longer defined by a device but is rather a ubiquitous social element.

It is worth noting that in the conclusion of the article, Zhao considers the ethical issues of social reality becoming increasingly virtualised; “what about someone’s computer agents stealing someone else’s personal documents? Or someone’s avatar sexually abusing – in the public domain – the avatar that represents someone else?” (Zhao 2001: 10). This doesn’t require true intelligence, but merely the simulation of conversation as discovered by Microsoft’s ill-fated experiment. Tay, as the programme was called, was meant to learn to simulate human speech through real-world interaction. Unfortunately, it parsed an abnormally large percentage of negative comments and began replicating racism and sexism within a day.

The different spatial occlusions offered by virtual reality (VR), augmented reality (AR) and mixed reality (MR) demonstrate how the simulation of reality, and the subsequent simulation of a simulation exist on the cusp of a new era in techno-socio relations. For example, the virtual reality of the metaverse was once considered the hyperreal future – a 3D space of wonder and phantasmagoria where all things are possible. However, the mobile phone created a situation where AR is more accessible. The manipulation of the physical space with digital objects is presented much more easily within the screen of the phone than the bulky VR headset.

Additionally, the web of connectivity provided by Wi-Fi, 4G, 5G and so on allows the decentralisation of data, with profiles and data sets following the user freely, unhindered by hardware or physical architecture. MR demonstrates how integrated the digital is within the physical, with both elements combining to formulate the complete message. The semiotic reality of MR then, is not so much mixed, as spatially agnostic.

The digitally enhanced future describes a situation where the presentation of the self exists without the constraints of the physical body. The hyperreal presentation of one's own face required there to be a willing acknowledgement of the hyperreal context, similar to Louis Marin's Disneyland (1984). However, in the hypervirtual space, the virtual-to-virtual communication model shifts the emphasis from overt acceptance of the virtual to instead requiring a user to make a choice to distance themselves from the digital – going “offline” has become something of a ritual marking a shift from the process of “logging on” or “connecting” to the internet.

Such a change is subtle, but it alters the role of physical reality – moving it from an essential grounding element to any communication into a contextualising area, akin to the spatialisation of Anti Randviir's model (2002), or the non-space of Marc Augé (1997). The education of future users will be within these spaces but should simultaneously teach the reading the language of the digital layers, recognising the construction of identity as an offline/online transmediality rather than an online-only construction. An updated model of digital literacy, encompassing the hypervirtuality of MR identity, seems necessary. However, the concept of digital literacy is not new, having been created by Paul Gilster, a visionary in the field with many of the concerns mentioned in his 1997 text *Digital Literacy* already coming to be. His discussion of automated software scripts called agents, inaccurately predicting what we want or retrieving information that has not been validated, pre-empted the “fake news” crisis for example (Gilster 1997: 234–236). However, it is his discussion on VR that summarises the goal of the thesis:

If VR programmers are world builders, we end users will have to learn to be the critics of worlds, giving us an amusingly godlike perspective on the digital universe. For a virtual world makes us ask not only if a given fact is true, but also if its symbol is appropriate or realistic. A simulation is only as good as its modelling. And while the question we must ask with hypertext is, what links are being left out, the question we must ask of a virtual world is, how does its shape serve the interest of its creator? (Gilster 1997: 254)

Digital literacy may be a tool against the total hypervirtualization of society by contextualising the digital signs as digital, and therefore different to the physical. Identity online has been deeply affected by the social media phenomenon of Web 2.0 – defined by Fanny Georges (2009) among others, as the creative internet, where one consumes and produces, acting as a prosumer (a portmanteau of consumer and producer, credited to Alvin Toffler). A key part of this development has been the social media ecosystem, with various websites and technologies acting as creative outlets where we curate an idealised image of ourselves, while consuming the information from others via economic mechanisms such as “likes” or “shares”.

The effect of this social media lifestyle is to turn one's identity into a product – data to be bought and sold – and not just by corporations but within the system by other users. Games and online forums like *VRChat* or *Alt-Space* offer an oppor-

tunity to interact with others within the virtual space using avatars, indeed there is an economy based around the avatars and the artists who design them. The virtual life simulator, *Second Life*, has an economy of sorts that allows people to buy and sell, using offline money, in such a way as to enable people to earn a “real” income from the game, thus merging the offline and online lives.

Identity has been perceived as the amalgamation of different signs such as gender, race, social class, interests and hobbies, education status, language and so on, as Norbert Wiley wrote: “Ethnicity, race, religion, and social class have been staple issues in this debate. In recent years gender and sexual orientation have been added as well, with still other issues possibly in the wings” (1994: 2). Wiley also wrote that this did not represent the postmodern “death of man” (or subject) but rather decentres the self via the pragmatism of Charles S. Peirce, opining that the self remains distinct from the society at large while remaining influenced by it through an inner conversation. The discussion on the place of the self within the wider society has arguably never been more unequivocally imperative than the current commodification of identity via social media, a discussion Fanny Georges (2009) references and whose work we will return to again.

The “death of subject” has been especially important recently with discussions on gender and sexuality as a continuum – or as a floating signifier (Nygren *et al.* 2018) – rather than binary and the openness of people celebrating the racial heritage rather than “fitting in” with a wider society. Fitting in has been an unpleasant consequence of the fluidity of gender and race options in the digital age. Passing for another gender or race is negative in the context of *why* people do it. The expression of one’s identity without contextual bias from physicality can be positive for people who feel born in the wrong gender, as we will explore. The online and offline may be kept separate, one may represent the other, or they may blur together as a hybrid – or mixed – reality space (Jordan 2009).

The semioticians and research areas we have described as important in the process of hypervirtuality share a transmediality of meaning. We can illustrate the transmediality of meaning within the communication process of the VOCALOID hologram or the virtual performer known as a VTuber (described below). The communication between the audience and a VTuber, or the VOCALOID producer, via a virtual avatar to perform their art, offers several processes where identity is overtly defined by a virtual character, where the virtual and physical spaces overlap at the cutting edge of technological development. We suppose that for these examples the virtual object does not simply mediate a communication process but actively completes it – removing the virtual aspect would change or negate the communication entirely. Identity is thus a key example of virtual/non-virtual transmediality forming a single complete message, and we will look at specific communication scenarios (education for example) as we go through the investigation, and should they become relevant.

A Virtual YouTuber is someone who presents a video on the internet – commonly via the video-sharing website YouTube – on any number of topics from games and music to daily life and food. Rather than presenting the video as themselves however, the artist will overlay an avatar of someone or something in their

place. This can be a cartoon (or anime) character, a human-animal hybrid, or something more fantastic like a robot. The technology varies depending on the studio – with bigger studios able to motion capture the entire body and the nuances of the face to overlay a very complex model. Individuals can use an iPhone and some simple software – but for the most part the mouth and eyes move in time to the actor’s and there may be some capturing of arm movements or some level of voice changing software. The extent to which the human identity is known varies, with some performers only known by their VTuber identity. The technology has become more widespread with the growth of VR forums like *VRChat* and *Alt-Space*, with *VRChat* performers streaming (presenting) live video of themselves to an audience online via websites like Twitch, which allow for community building and real-time conversation that the pre-recorded videos of YouTube and TV somewhat lack.

The VOCALOID software is, at its most basic, an instrument for adding synthetic vocal tracks to songs, with the younger female voice bank known Hatsune Miku being one of the more famous products. However, the mascot characters for the different voices have become popular, ultimately being represented as holograms based on cartoonish personifications of their voices. They transcend the software to perform with other holograms from other companies, at live shows. However, what they perform are songs created by the community who bought the software to create their own music (see Figure 3). While the virtual character Hatsune Miku is the overt performer of a song, it is the creation of a producer who often remains anonymous beyond a stage name¹.

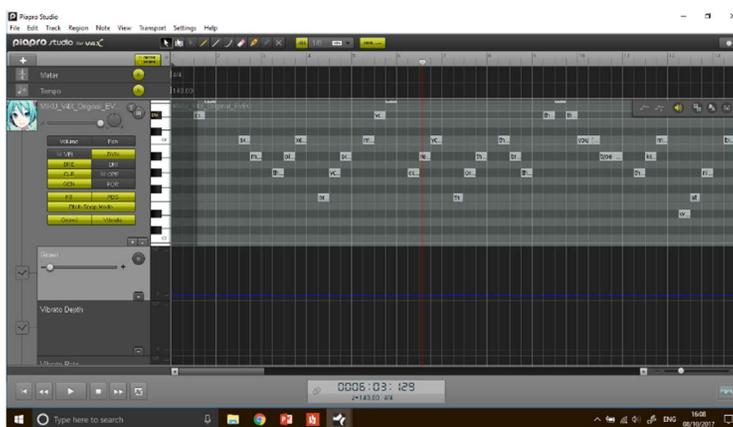


Figure 3. A screenshot of the interface of the Hatsune Miku V4X sound bank within the Piapro Studio environment.

The hologram of Miku is clearly not a physical entity, but the communication of the song is from her voice(bank), and apparently from the representation one sees dancing on stage. This is evidenced by the audience response to certain actions

¹ For reference, see https://magicalmirai.com/2021/special_afterreport_en.html

of the animation during a concert. There is the appearance of dynamic, two-way interaction occurring between the hologram and the audience. The creators behind the songs or the dance routines, are not directly communicating to the audience, nor are the audience overtly aware of these physical people in their communications. Thus, the audience is communicating *to* the hologram.

A lot of our discussions will be presented across the virtual continuum with different contexts applying to the same communication model. The musical idol show presented by the Chinese entertainment company IQIYI, *Dimension Nova*, follows much the same as other shows where a panel of judges choose from a pool of competitors to find the best singer. However, the contestants for *Dimension Nova* are all virtual beings². The way these characters are presented, and the way the show is edited, intends for the creations to be the focus of the audience, not the creators behind them. Thus, augmented reality cameras render dances, conversations, performances, and rehearsals for broadcast with the models – or avatars – simulating a mixed reality environment. While the programme is not perfect – there are resolution issues and glitches that cause the models to freeze or lag – the concept is demonstrably moving from the niche and experimental to the mainstream.

These virtual people are (seemingly) fully realised and meant to be judged on their own merit. They are not offered as an extension of the physical identity, but as separate identities. These virtual idols are on the very cusp of fully realising the virtual being, although due to the physical person talking or performing behind the avatar, they are not there yet. Given the ubiquity of the virtual plane within the studio and TV show narrative, the virtual characters giving these performances form something nearing the hypervirtual as artifacts viewed by the audience – they are what Zhao might term the “virtual telecopresence” (2001). The shared audience fantasy will be addressed regarding collaboratively constructed realities then – both as social and virtual. This thesis thusly considers what happens to identity when we are all able to draw from the virtuality continuum to curate our online personas.

These online personas, such as virtual idols, hint at the future development of virtual beings. Virtual beings are defined by the Virtual Beings Summit as “a character that you know isn’t real but with whom you build a Two-way [*sic*] emotional relationship”³. This rather broad group includes – by the Summit’s own reckoning – digital assistants such as Alexa as well as Instagrammers and influencers like Lil Miquela. The virtual model, Shudu, is signed with a modelling agency that exclusively represents virtual beings⁴.

This thesis cannot include all aspects of the virtual-being phenomenon and we believe the influencer model requires more particular investigation than we can provide here – although the influencing effect of social media in general will be hard to avoid. With that in mind, we will limit ourselves to virtual beings from

² For reference, see <https://www.youtube.com/watch?v=-4s7dAmMsRA>

³ See: <https://www.virtual-beings-summit.com/>

⁴ See <https://www.thediigitals.com/about>

the entertainment media like the VOCALOID software. Rather than primarily created to exactly replicate a physical human, VOCALOID's avoid crossing the "uncanny valley" (Mori *et al.* 2012) of realism by maintaining a stereotypical anime aesthetic. What makes their relationship to the individual somewhat unique is that even a more popular idol like Hatsune Miku has freely available tools for creating their image model (known as MikuMikuDance). While they currently lack the AI capability to communicate on stage, they are being integrated into AI assistants like Gatebox. Gatebox is a virtual assistant which will perform the normal AI assistant functions (weather forecasting, turning lights on and so forth) but it will also text you in a simulation of a friend or partner. The box itself features a representation of an anime character – Hatsune Miku for example – represented inside. This further demonstrates the normalisation of the hyperreal as the fundamental reality by digitising significant aspects of human culture. Relationships are no longer grounded by physical reality or even other humans. The transmediality of interpersonal communication is increasingly entirely within a digital space.

The transmedial model was explored in 2006 by Henry Jenkins and we will draw from his work as we go on. We take the position that the sign as a meaningful artifact exists within a wider context, one that influences the interpretation of said meaning, and in turn the singular sign applies meaning to the wider culture. Culture – or society to use a synonym – can be investigated within the wider concept of space. Culture can be the space within which a semiotic process occurs – a conceptual space of signs that signify the beliefs and identities of those within the physical – architectural – space. The bricks-and-mortar space of the city may seem far removed from the virtual avatar, but we are beginning to see the blurring of the online and offline identities (Fox *et al.* 2013).

As the offline and online merge, so the design language of one space is affected by the culture of the other. The design language thus becomes another element of the identity of the space and of the individual. The duality between the online and offline identity is demonstrated across the virtuality continuum, with the physical impacting on the virtual space. The visual and gestural language of the virtual leads to our later discussion of gender identity and presence within the virtual world – and consequently how attached a user feels to their virtual self. The sense of presence has been modelled within the digital space (Dengel 2018) both positively in case of social phobia research (Salehi *et al.* 2020) and negatively via visual representations of misogyny (Turton-Turner, 2013). Similarly, how the game avatar differs from the non-ludic avatar will be demonstrated as emotional and cultural differences due to the space of interaction and the presence the user has to the avatar.

Semiotics enables the interpretation of the sign to be taken from ontological and epistemological perspectives, including the reality and being of the sign of the virtual avatar as well as the ethical considerations surrounding the use of such (in education or concerning gender/age identity). An example of both can be seen in the development of computer mediated discourse analysis which differs from other models by taking communication online as different from other modes,

rather than fitting the existing models into the virtual spectrum, (Herring 2004). The new digital media requires the creation of a new method of analysis.

With education moving online for various reasons (the COVID-19 pandemic, economics, distance learning, climate change, and so on), so the boundary between technology for entertainment and technology for education starts to blur. With both occurring within the same physical space (the office, kitchen, or bedroom) via the same hardware (the computer, the phone) and within the same virtual space (the video sharing site YouTube, or a virtual forum like *VRChat*) the signs of virtual education and the signs of one's virtual personal life begin to intermingle. The collaborative construction of meaning (and reality) within the education spectrum leads to identity issues at a formative time for the students, as well as potential cultural bias within the architecture creating a hierarchy of access. The impact of education and entertainment media in the home is why we should research digital literacy as part of this model. While professional and social interactions are also moving online, education will be considered primarily due to the development of self and the collaborative construction of meaning that is central to the pedagogical environment.

This contextualises the situation, highlighting the requirements of the thesis and outlines the need for further research as the transmediality of contemporary online/offline communication moves from the hyperreal to the hypervirtual. The role of new technology, language, space, and the role of the virtual space are considered, as the digitisation of society moves onward. Thus, in our paper, we focus on using semiotics to analyse hypervirtuality as we move to Web 3.0 and a ubiquitous mixed reality socio-cultural space.

B. The goal of this thesis

The research aim of this thesis is to describe how semiotics could model the differences between communication in virtual reality, augmented reality, and mixed reality, and the reciprocal effects of such communications upon self and society. We will demonstrate the hypervirtual presentation of self across said multiple realities in the post-COVID society as it moves closer to the realisation of Web 3.0. We have several distinct areas of research, each presenting their own questions, that must be considered in order to present this case and model the communication. We choose to investigate the different realities rather than a single technology (such as “deep fake” avatars for example) because the evolution of technology is so rapid that we must consider the longevity of any technological concept we describe. It is also this speed of evolution that necessitates a discussion on hypervirtuality now, for we are approaching having societies' first generation of users who have not experienced a reality that is not digitally mediated. While we use contemporary examples to illustrate certain processes, it is the hypervirtuality of the communication that is at the core of the investigation, and not the technology itself.

First, we must define the semiotics, the different realities, the methods of communication, and perform a deep dive into hypervirtuality. Then we split the thesis into three chapters – space, architecture, and society. These chapters provide an opportunity to expand on different aspects of the research questions.

Our semiotic methodology for investigation addresses the space of communication. We will use an interpretative paradigm, drawing from phenomenology and symbolic interactionism, foregrounding the qualitative nature of the research. As a primary model we use the pragmatism of CS Peirce to define the sign via the triadic model of the sign comprising of the object, interpretant, and representamen – the lattermost being the signifying element, the sign of the sign-vehicle depending on the text. We tend to use representamen for clarity, to mean something akin to the signifier, with the object as the Peircean equivalent of the signified. This leaves the interpretant as the unique – and key – aspect of the triad (the individualised interpretation of the sign) that allows for different people to take different meanings from the same sign, even within the same social community: “I define a Sign as anything which is so determined by something else, called its Object, and so determines an effect upon a person, which effect I call its interpretant, that the latter is thereby mediately determined by the former” (Peirce 1998: 478).

Peirce, as a pragmatist, provides a useful foundation to the structuralist/post-structuralist methods used to research the model. We take the view that while there is a structural aspect to the web of meaning within formal language, the interpretations and individuality of the user should not be defined so rigidly. However, postmodernism suffers from a lack of definition, and we find criticism with Baudrillard’s hyperreality for a lack of rigidity. Such a criticism could be seen as leading to hypervirtuality, for the model of hyperreality does not differentiate between virtual-in-physical simulations and virtual simulation-in-virtual simulation of our aim. However, the structural differences between the simulations, from a semiotic perspective, lead to differences in identity (notably) that lead us to our research aim.

The use of only structuralism or only post-structuralism leads to a contraction of the model and methodology. The similarities between the two aspects outweigh the differences and we believe that introducing multiple theorists with the goal of answering the question is appropriate. While this thesis is limited to an interpretation of texts, the goal of the research is to present a case for future objective testing. As a result, the presentation of different schools to test the validity of similar trends is appropriate for the formulation of the initial hypothesis.

Taking society as an influence is a key aspect of our methodology, and the theorists we choose aim to contextualise the (virtual) self within the (virtual) space. The research highlights the role of the human interpretation of meaning within the construction of social reality and denies social reality exists beyond human consciousness. In the hypervirtual model, concepts like identity become seemingly meaningless without the Spatial Web as the foundation of social reality.

To spatialise symbolic interactionism, we take inspiration from Juri Lotman's semiosphere model, where the communication process, including context, narrative, and the actors, can be envisioned as a part of a complete semiotic process across different realities rather than two discrete sides somehow interrupted by the computer screen, as mediation implies. Within the semiosphere model, interaction between Umwelt within a pre-existing semiotic space is fundamental to communication – a theory analogous to the Peircean chain of semiosis where symbols grow from symbols: "*omne symbolum e symbolo*" (Kotov, Kull 2011: 180). For this thesis, a production of virtual meaning from virtual symbols results in a semiosphere that can be described as hypervirtual – it constructs a simulated reality within the simulation, grounded by the artificial signs of the digital space, as we'll address.

Continuing this spatialisation of meaning and signs, Myrdene Anderson and Floyd Merrell describe the semiotic model as existing somewhere between direct representation and a metalanguage of description: "The model collaborates with the world according to the particular manner in which the community puts it to use, and the world will continue to resist direct representation, regardless of the community's fads, fashions, and fact-mongering" (Anderson, Merrell 2014: 4). The semiotic model describes a metalanguage, existing external to the community, while still incorporating the collaborative interpretation and construction into the model.

Anderson and Merrell continue, describing the relationship of human culture, language, semiotics and representation within the model, beginning with a description of how humans use and manipulate the objects around them: "The evolution of culture and language in the hominid line, though not reducible, relates somehow to such processes as representation through modeling, manipulation in implementation, and transformation of materials and ideas" (Anderson, Merrell 2014: 4). Such materials include toys and tools, and – in our interpretation – the virtual objects of the VR space: "The objects we call tools and toys mimic, as icons, and mesh, as indices" (Anderson, Merrell 2014: 4). As these objects become increasingly virtual, the transmediality that implements a social reality is losing its physical ground.

The intentional manipulation of such objects has a dialectic relationship with human culture – with Anderson and Merrell highlighting the contextual difference between "tool" and "toy" to delimit their different uses and meanings. The "operations" of human intention creates a "cascade of consequences" for language, thought, and culture. The model – the system of contextualisation, intended action, and implementation – is both: "medium and message, both abstracted and contextualized" (Anderson, Merrell 2014: 5).

There is a direct representation – the icon – and a cultural abstraction – the index – within the intentionality of action by the human. They continue with the description of modelling the interconnectedness of humans to the earth, time, and space – both internal and external to the body. Thus, the semiotic model enables consideration of the future with the present and past – as we will do so. Thomas Sebeok and Marcel Danesi in *The Forms of Meaning: Modeling Systems Theory*

and Semiotic Analysis also describe the semiotic modelling system, with similar detail:

Modeling is the innate ability to produce forms to stand for objects, events, feelings, actions, situations, and ideas perceived to have some meaning, purpose, or useful function. The form may be imagined, in which case it is called a mental image, or it may be something externalized, in which case it is called a representation. Semiotic research has identified four basic types of forms: (1) signs (words, gestures, etc.); (2) texts (stories, theories, etc.); (3) codes (language, music, etc.); and (4) figural assemblages (metaphors, metonyms, etc.). (Sebeok, Danesi 2000: 1)

Some important terminology arises from Sebeok and Danesi's work whereby they describe the model as being split into several forms, with human representation consisting of the singularized form (sign), composite form (text), cohesive form (code) and connective form (metaphor). From perception, they continue, there is semiosis (the comprehension of the forms), then the modelling and finally representation. Modelling is the production of forms and representation is referring to the world via such forms (Sebeok, Danesi 2000: 6).

Semiotics posits different forms of meaning – meaning being equated with: “the particular concept elicited by a specific representational form. In traditional sign theory, the former is called the signified, and the latter, the signifier” (Sebeok, Danesi 2000: 8). They continue, using Ogden and Richard's research, to describe the variable, subjective nature of representation: “Like the indeterminacy involved in understanding natural phenomena, so too the exact nature of a signified is indeterminable in any objective sense, because its interpretation is shaped by situation, context, historical processes, and various other factors external to semiosis” (Sebeok, Danesi 2000: 9).

When we say we are semiotically modelling the construction of identity online what we mean is we are describing the process of comprehension, production, and subsequent representation of the self in the online space. The concepts are, for Sebeok and Danesi, formed either through induction, deduction, or abduction. Inductive reasoning is arriving at a concept from repeated facts. Deduction is reasoning if an instance confirms a concept already known, while abduction is “best guess” reasoning. We use all three in the process of deriving identity online – from deduction of identity to induction depending on whether we are *au fait* with the concept of the avatar and digital literacy, while abduction would be a skill that we posit needs to be taught within the digital classroom to aid the grounding of identity. The problem of conceptualisation from different perspectives – as the authors describe using English vs Tagalog representational systems – leads us to a similar situation in the classroom; those with greater or lesser awareness of the digital space, better English, or those that lack the skills to manipulate the digital space with to the same degree as those who share the representational perspective of the designers of the online space.

Kumiko Tanaka-Ishii states in *Semiotics of Programming* a difference between artificial and natural signs – namely that a computational (artificial) system follows

the constructive mathematical system while humans follow a holistic, decentred structural process that cannot be reduced to a core. A key difference between the machine and natural language is the processing of self-reflexivity, with the structural, human system being reflexive itself while the formal, artificial system removes the ambiguity of unnecessary signs (Tanaka-Ishii 2010: 155–157). The role self-reference in digitised social construction is discussed by Winfried Nöth in a chapter on the self-referential nature of media in various contexts, including ludic spaces:

In contrast to other forms of play, the computer game offers still more possibilities for the creation of new worlds. Their virtual character is highly self-referential from the beginning on. Players can interact with the program code and thus control the referential action, and they can become producers of the text. In which way communicative self-referential autonomy of the players is actually attained remains open for further investigation. (Nöth 2007: 21)

The conflict here is obvious – with Tanaka-Ishii positing a lack of self-reflection within artificial languages while the postmodernists argue the potential for degeneration into total self-reflection within virtual reality. This thesis introduces hypervirtuality to avoid favouring one argument or the other but instead positing a new construction of reflexive self-world (umwelt) by users within a near-complete artificial simulation of the digitised world. It will be demonstrated that physicality maintains an arbitrariness of semiosis through the spatial-temporal evolution of human culture, while the ubiquitous digital layer will consume the referents of reflexive evaluation.

The caveat to this is the role of the digital space in allowing the freedom of identity and self-representation for transgender people, who find safety and freedom in the opportunities afforded by the digital space where an instant, cheap, gender transition can be achieved without permanence or risk (Lucas 2021). For this thesis, we see such transmediality of the self – a link to the offline persona via the overt difference of the online avatar – as a process for self-reference to a referent that the online does not consume. For this reason, we deny that the virtual self is innately negative, assuming it is contextualised within this transmedial, reflexive, virtual space. Digital literacy in schools – potentially many users’ first social interaction within an institutionalised online space – offers such an opportunity for understanding. In Nöth’s quote above there is a hint at another element of hypervirtuality we must consider; technical knowledge and access enabling interaction with the code self-referentially. The potential for VR+ to exaggerate a literate/illiterate dichotomy at such a fundamental level of self-expression is something we will refer to throughout the thesis.

To help visualise hypervirtuality in the Web 3.0 future, we suggest the following diagram (Figure 4). The first image (1) shows two individuals – as semiotic umwelten – communicating within the physical space. The role of analogue data (experiences within the physical space for example) outweigh the digital influence in the construction of meaning and social reality.

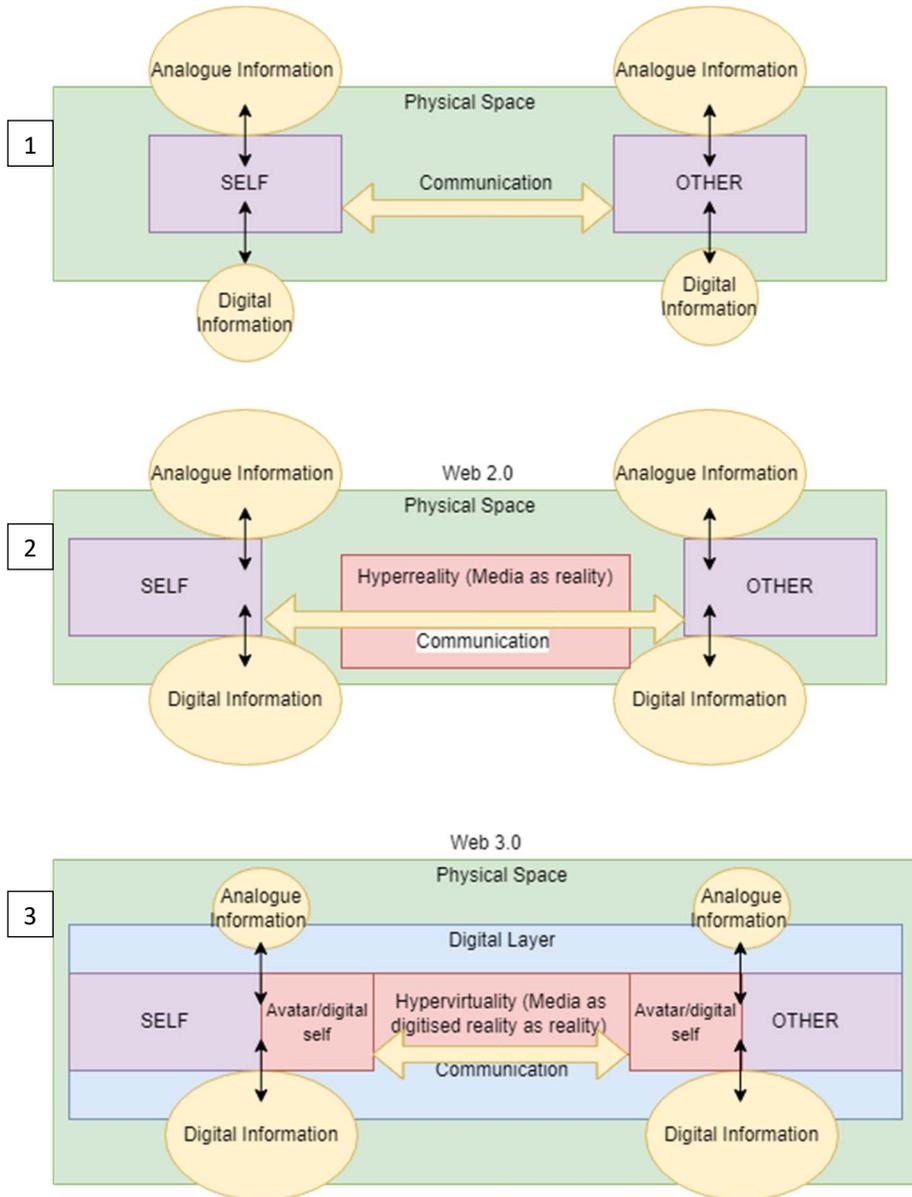


Figure 4. This diagram visualises the model of communication within the physical space, minimally influenced by digital information (1), through to the hyperreality of Web 2.0 (2), to the hypervirtual/hyperumwelten of Web 3.0 (3). The physical self is increasingly separated from the communication process and the physical space via the digital layer of the ubiquitous Spatial Web. This diagram also demonstrates the shortfall in hyperreality as a model for communication in the near future.

As the digital space becomes more intrusive however – via marketing, movies, tv, and other entertainment media (image 2) – then we encounter the hyperreal space as a potential occlusion between the physical space and the umwelt. The visitor to Disneyland will experience the physical space as the hyperreal experience. The final diagram (3) demonstrates the impact of Web 3.0 and the mixed reality, ubiquitous digital layer that seemingly obscures the umwelt from the physical space. The umwelt behind the digital avatar, within the hypervirtual space, becomes the hypervirtual umwelt – or Hyperumwelt – permanently separated and mediated by the digital self (most overtly presented via the avatar). We develop this further in the chapter on umwelt below.

Thus, we have a research aim to outline a potential communication model that incorporates different realities, with the sub-aims of analysing identity formation as Web 2.0 moves into Web 3.0 and beyond, and how contemporary situations in the post-COVID society will impact both computer-mediated communication (CMC), Web 3.0, and identity.

To illustrate the model potential, we identify three areas of research. In the first data chapter, we investigate the space of communication and types of interaction. The differences between game spaces, workspaces, and digitisation of the socio-cultural space are explored with a deeper investigation into the semiotic model of the semiosphere among other aspects. Next, we describe the physical context, the architecture, and the different linguistic elements that combine to form the user's identity within the virtual spaces. Finally, we consider the society as a whole – the socio-cultural space, the physical place of work and education, and the role of transmediality in identity as a solution to contextualising hypervirtuality, working alongside literacy to prevent the death of the human in a fully virtual simulation.

C. The outline of this thesis

The thesis is split into three areas of research: the space, the architecture, and the social reality. Within these we investigate identity, the transmediality of self, hyperreality and hypervirtuality within Web 3.0 compared to Web 2.0. We also highlight how digital literacy can maintain such transmediality of identity, and therefore ground the sign against hypervirtuality. Throughout we will draw on many theorists, but we will continue to use the ones mentioned above as primary tools – Eco, Peirce, Georges, Lotman, and Baudrillard.

Chapter 1 focuses on space, beginning with a definition of the hypervirtual space that is the primary focus of the investigation itself. The purpose of the chapter is to contextualise the investigation of the whole thesis, as well as investigate the online space. We then identify several different spaces – cultural space, the space of interaction, and the video game space. We identify how the model of semiotics spatialises the narrative of self-identity, and end with an investigation of the VTuber narrative of virtualised identity. We also discuss how the digital avatar alters the notion of self in the space. The transmediality of self could maintain a

connection to the physical space denying the consumption of identity by a solely digital social reality.

Chapter 2 takes the space and identifies the languages used in the technological definition of the space and investigates how the Anglocentric nature of such architecture restricts and biases the production of any future identity. The restrictions and bias within the online space prevent the potential freedoms of the virtual avatar from being equally available to all. Such bias, we discover, can lead to some adopting identities that are purchased “off-the-shelf” rather than constructed as a true representation of oneself. Thus, the commodification – and hypervirtualization – of self-identity can be driven by institutions. Ignorance and inequality are risk factors for losing the grounding of identity. Users embody the avatar more completely and ubiquitously, especially in the Web 3.0 architecture, leading to the online affecting the offline user. Mixed reality blurs the distinction between digital and physical cultural signs to a greater extent than virtual reality or augmented reality. Digital literacy in the classroom is our solution to ensuring the online is contextualised, with increased access and equality helping to fight bias.

Chapter 3 discusses the role of the virtual being in identity creation, while also highlighting the hypervirtual classroom scenario. We demonstrate a model of identity that, within the Web 3.0 society, increasingly loses its transmedial, offline/online dialectic relationship, and instead forms a hyperreal, hypervirtual, social reality. The recreation of the self and the offline within the online sphere further demonstrates the initial stages of hypervirtuality. Our findings are summarised thusly, that the online/offline space is of fuzzy distinction. The identity of the online self is directly impacting the offline. However, the offline self is having a reduced – negated – effect on the online, leading to a process of hyperreality. The ubiquitous computing of Web 3.0 risks replacing the meaningful layer of signs with digital information, rendering the physical space as a meaningless canvas, a border, to the virtual. The reproduction of offline spaces in the virtual (like classrooms for example) leads to hypervirtuality. The loss of the physical-self risks stratifying and exponentially exaggerating the negatives of online identity creations – racism, sexism, and violence for example. We conclude that digital literacy could be the only way to contextualise the process and present the model within the physical space, to demonstrate the need for the dialogue between realities. However, our caveat is that the literacy model must somehow exist external to the commodified space of the current online culture or else the contextualisation will only serve to promote the hyperreality of the virtual space.

Umberto Eco states that hyperreality is the fabrication of realism for commerce and sales (1986). The virtual partner market can be clearly seen as trending in that direction, with the commodification of the user’s identity evolving from selling a lifestyle through fashion, to emotional gratification – something that Eco highlighted as a feature of American society decades before. This immediate and fantastical quenching of any desire that the virtual world promises is going to alter the concept of identity in much the same way as any sign of fashion or status did. The current digitalisation of such desires is still pivoted around the internet as a tool for appending the human-human relationship (telecommunications,

online shopping, relationship and interpersonal websites and so on) but in the aftermath of the COVID lockdowns, the rise of virtual beings that cannot be distinguished as virtual, and the meta-legitimation of emotional responses to the digital via mass media, commodification, advertising, and pop culture fetishization – continuing a trend originating in the post-war era where capitalist economies required people to spend – could lead to the hyperreal becoming the mundane real. The loss of the distinction within the virtual ubiquity of the AI “smart” future will lead to a new drive for commercial experiences to instil desire and seduction. The hypervirtual identity will be one such model. How we present ourselves, react and interact with the new world of avatars is a new digital literacy.

The morality of a future where the digital human and the virtual being are interchangeable and co-exist within the social space of the individual, is beyond this thesis. John Hartley, Indrek Ibrus, and Maarja Ojamaa’s 2021 book *On the Digital Semiosphere* evolves Lotman’s theory within the (post)modern world of instant communications, mass media, flight and so on. Specifically, they highlight that “digital” is not new, but rather the current exemplar of the trend to control information and organise society through the institutionalisation of signs:

culture must be understood as a general evolutionary process whereby knowledge is organized, grown, adapted and shared among increasingly large and abstract ‘we’ – groups (demes), and where it is controlled, contested, hidden or shaped to fit more or less powerful interests, ideologies and groups. At the same time, beyond the control of any agent, culture’s own dynamism and contextuality means that the knowledge it supports changes gradually (and sometimes explosively) in line with developments in other domains, including technology. (Hartley *et al.* 2021: 240).

They do not mention the role of VR+ or the virtual being *per se* but we can extrapolate the trend to the (post)postmodern era of hypervirtuality, with digital classrooms populated by AI enhanced students, learning from an AI agent that fills the role of the physical teacher as they swap between multiple classes. Hartley *et al.* highlight mediation as a process of control and organisation, within the structure of culture (society) as a whole. The digitisation – or rather the virtualisation – of Web 3.0 is not a unique, or extreme, leap forward but rather the next evolutionary process in the trend. Baudrillard argues that reality is consumed by its own hyperreal signs and Eco suggests the fake is more real than reality. But the side-lining of the physical reality under the ubiquitous virtual narrative represents the reality with a virtuality. The consuming of the individual virtual self by the ongoing process of institutionalisation, will be hypervirtuality.

1. SPACE IN COMPUTER (TRANS)MEDIATED COMMUNICATION

1.1. Elements of space

The focus of this data chapter is the space between, and around, two or more entities interacting and sharing data, mediated via at least one avatar – either dynamic or pre-programmed – across different realities as a variation on other investigations into computer mediated communication (CMC). The space of such interactions extends across the permeable boundary delimiting the virtual and physical world, as data is created (via performance or language) in an area that lies beyond the computer, and then translated/represented to appear within the screen. We are not just investigating virtual reality (VR), but augmented reality (AR), and mixed reality (MR) as the technology has developed. As noted previously, we will use VR+ when collectively referring to VR, AR, and MR for simplicity.

The spatialisation of semiotics is evident within the semiosphere model of Lotman (2005), the socio-spatial concepts of Anderson and Merrell (2014) and made especially clear via Randviir (2002). However, in this chapter, we expand on this with Berger and Luckmann (1991) to dive into the collaborative effects that context plays in the formation and construction of meaning between two objects – a receiver of the sign and the sign itself. The construction of meaning – for example identity – is explored within these different contexts, before we explore how technology is altering the model. The process of hyperreality, moving into the potential hypervirtuality of the simulated space within a simulated space, creates a situation of nested semiotic contexts. We explore current theories on the contextualisation of different spaces and suggest the most applicable for the future model of hypervirtuality. One of the key arguments we make for offsetting the full hypervirtualization of identity is maintaining an offline/online transmediality – while the ethical reasons for why we consider this important are considered throughout the thesis, the spaces that interact within the transmedial communication are explored within the upcoming chapter.

The objective meaning of the sign within a community space versus the subjective interpretation of the sign is detailed throughout this chapter, with reference to the social constructivism/pragmatist multimethodological paradigm. This duality of meaning demonstrates the collaborative nature of the virtual space and the impact digitalisation has on individuality. The theorists we choose straddle the structuralist/post-structuralist methods, while we attempt to align post-modernists like Baudrillard in order to consider the role of context upon the sign in as an objective way as possible. The space of interaction and the space of interpretation are not separate spaces, but rather spatial elements within a complete space of meaning making. The modelled process of hypervirtuality is the exchange of information within society as a digital space, and the individual is a constructive element within the (simulated) society within the (virtual) society. No

single archetype can be chosen for investigation, but rather various archetypes will be analysed for appropriateness following the pragmatist method. Semiotics, as stated, is the study of meaning from signs. According to Peirce:

A sign stands *for* something *to* the idea which it produces, or modifies. Or, it is a vehicle conveying into the mind something from without. That for which it stands is called its *object*; that which it conveys, its *meaning*; and the idea to which it gives rise, its *interpretant*. (CP 1.339, bold formatting removed)

The link between the overt, the sign, and the meaning has been extensively discussed. What makes the word “cat” signify the animal? Whilst this is a basic tenet of semiotics, perhaps what is more relevant to the thesis specifically is what does the avatar signify? If the avatar gestures, signs, talks, or signals a gender, race, age, or social status then where does the meaning originate – the receiver’s interpretation, the avatar, or the avatar’s user? What relationship does the human user have – and what relationship does the avatar have? The grounding of the communication, the referential nature of semiotics, and the elements of the sign are going to be discussed at length to answer this question, with two key researchers initially – Umberto Eco and C. S. Peirce.

Peirce’s notion of the ground was that of a “a pure abstraction” of the sign. When we discuss grounding, we mean linguistic grounding rather than Peirce’s as reference to “a sort of idea” (CP 2.228). It seems that the “idea” he references here is from *On a New List of Categories* published 30 years prior to the former (Zeman 1977). Peirce is often cited for his discussion of the virtuality of the mind too, where mental interpretation of external sense data forms internal meaning (Sowa 2016: 143, Skagestad 1998). During this thesis, we will use virtual to mean the space that is formed from the digital signs – digital as in signs that originate from computer code. While both virtual and digital have academic significance not directly associated with the space of computer communication, we will avoid the more technical aspects as they are not relevant to our argument.

Eco famously sees signification like an encyclopaedia. Following the structuralist tradition, he states the sign-function is the relationship between the content and expression planes of a sign. The sign-function, as a process of semiosis, leads to an association of meaning within the interpreter. However, this is not a wholly subjective interpretation – indeed, it seems that such an individual interpretation borders on neurosis (Desogus 2012) – but rather an interpretation within the codified schema of the wider culture or society. This does not mean that there is no subjectivity – there would be no interpretation without the individual – it is just that one requires an appropriate comprehension of the available codes and wider framework or context. This has drawn criticism but for this thesis, we view it as an appropriate methodology – a purely individualised interpretation of the sign-function (a digital avatar) would seem likely to lead to some form of psychosis. One requires, at the very least, an understanding of the digital context, and the specific context of the programme, the user, the avatar, and the communication process itself to fully engage and interact within the VR+ ecosystem.

Later we will discuss otherkin who are a subculture of people who believe themselves to be genetically not-human. The ritualistic and religious accompaniments are somewhat similar to the consequences we believe would occur if one communicated with a non-human VR+ avatar without understanding the cultural schema within which it operates. CS Peirce influenced Eco – most obviously with the notion of unlimited semiosis where one sign can lead to another (Auxier, 2018: 7–8). Eco writes:

- In the framework of Peirce’s philosophy of unlimited semiosis,
- (i) every expression must be interpreted by another expression, and so on ad infinitum;
 - (ii) the very activity of interpretation is the only way to define the contents of the expressions;
 - (iii) in the course of the semiotic process the socially recognized meaning of expressions grows through the interpretations they undergo in different contexts and in different historical circumstances;
 - (iv) the complete meaning of a sign cannot but be the historical recording of the pragmatic labor that has accompanied every contextual instance of it;
 - (v) to interpret a sign means to foresee – ideally – all the possible contexts in which it can be inserted. Peirce’s logic of relatives transforms the semantic representation of a term into a potential text. (Eco 1994: 213–214)

This led Eco to his model reader theory – and the encyclopaedia model – which places the reader in control of making sense of the signs from the given information, filling in the gaps and completing the signification process, discussed at length in *Semiotics and The Philosophy of Language* (Eco 1988: 46–86). This was his solution to an earlier model of codes, which limited subjectivity (Bianchi 2015: 116–117). However, the sign is still within the objective world and therefore requires an understanding of the contextual schema for a meaningful signification (Eco 1988: 68–70).

Eco uses the terms *ratio difficilis* and *ratio facilis* as part of his focus on the process of signification and interpretation, rather than on the sign itself (1988: 133, 136–139). Thus, tokens that the interpreter can easily recognise as expression types follow the process of *ratio facilis*. *Ratio difficilis* is the process where the interpreter is required to work at a sign to assign content to elements until sign-function can occur. Desogus writes:

As Eco expounds, it follows that “a sign is not a fixed semiotic entity but rather the meeting ground for independent elements (coming from two different systems of two different planes and meeting on the basis of a coding correlation)” (1984: 49). Hence, the correlation between expression and content is potentially open to variations. (Desogus 2012: 503)

For our thesis we can see that Eco clearly outlines a method of semiosis that somewhat ignores the object itself in favour of a process of interpretation. It can be said that the VR+ avatar is not a sign on its own but rather a “culture unit”. When a sign correlates with several semantic fields of denotation and connotation, it can

be thought of as a cultural unit – cultural units are elements of a system of other cultural units, and any meaning of a term is a cultural unit (Eco 1979: 66–67).

The key to Eco’s theory, for us, is the importance of the reader within the process of the semiosis. The viewer interacting with the avatar is acting within their own system of knowledge and connotations or denotations to interpret expression and content.

Peirce perhaps sees too much of the community consensus in his theory – what has been termed; “a transcendental community of knowers who would be in agreement” (Genosko 2000) – however his triadic model of the sign itself does not seem at odds *per se* with Eco’s methodology, beyond the differing opinion on the icon – Eco disputes that meaning can come from likeness alone: “certain apparently ‘iconic’ expressions that are in fact the result of a convention” (1979: 238).

Peirce states that there is a First – a representamen, which represents a thing – and an Object – that which the sign refers and is a Second. The Third – the interpretant – is what is triggered in the viewer as a form of concept or knowledge. This is a model of the sign that we may return to along with Eco’s. Peirce as a pragmatist outlines a model of the sign, while Eco places the reading of the sign within an encyclopaedia of knowledge, influenced by his predecessor, offer two ways of reading meaning to and from a process of infinite semiosis. The content of the expression plane is denotative, while the connotative is the content of the sign-function as the interplay between content and expression – which leads to Eco’s variant on the infinite semiosis of course.

We also consider Eco’s aberrant decoding – that private, borderline neurotic, interpretation one arrives at when considering meaning without the connotative structure of the wider code – which John Fiske summarises: “Aberrant decoding results, then, when different codes are used in the encoding and decoding of the message” (Fiske 2002: 78). The way we interpret – or communicate – with VR+ avatars is not the only consideration. We must also consider the how – this wider network of meaning, regardless of the theorist, leads to the same conclusion for this author; we will require a form of digital literacy to evolve and grow with the communication model, to help guide the interpretations of the users.

Initially, we consider the space of interpretation – where this communication takes place. The virtual plane is outside of the norms of physics, law, or even civilisation due to the global intersubjective nature of the online space. As such, we want to consider a theory that models the *where* of semiotics. This leads us to the work of Juri Lotman and the semiosphere model (2005: 205–229).

Lotman refers to signs as a text, something that is mirrored by Eco with his “model reader”. The idea that signs within a space can be read implies a syntax and grammatical structure much like the encyclopaedia model. Like this model, the signs must “fit” within the syntax to make sense. Random words within a sentence, esoteric grammar or fuzzy punctuation will alter or negate the interpretation of a coherent meaning. This presumably leads to the abhorrent decoding scenario too. When considering a three-dimensional, evolving space of signs of different mediums, we wonder if there is a hierarchy of signs:

For Lotman, a “cultural text” is conceived as “the most abstract model of reality from the position of a given culture”, that is the “*world view* of a given culture” (Lotman 1969[1975]: 101). In this regard Lotman specifies that “one of the universal peculiarities of human culture, possibly connected with the anthropological features of human consciousness, is the fact that the world view invariably acquires features of spatial characteristics” (Lotman 1969[1975]: 101). Thus between meta-language and object language there is an homeomorphic relationship: “spatial models act as a kind of metalanguage, while the spatial structure of the world view acts as a text in this language” (Lotman 1969[1975]: 101). Having said that, it must be noted that, since the first Summer School of 1964 (“Summer School on extra-linguistic modelling systems”), it seems that natural language was privileged, if not exclusively acknowledged, as the primary modelling system. (Gramigna 2013: 348)

For there to be a space, there must be a border. Within this border, whether it is a conceptual border or a physical boundary between hardware, the totality of the semiotics will be regarded as a single whole. In Eco’s theory, we see this as acting as the codes – or the cultural knowledge – of the context. Lotman further discussed the border:

For Lotman, “all semiotic space may be regarded as a unified mechanism (if not organism)”; thus, “[t]he concept of semiosphere is linked to a definite semiotic homogeneity and individuality” (2005, p.208). At the same time, semiotic space is heterogeneous, i.e., comprised of conflicting structures. (Lotman 2009, p.131). (Américo 2017)

The online space is perhaps one of the clearest examples of a web of interconnected – intersubjective – semiotic processes. The number of individuals acting within a space can be exponentially more than a physical space due to the virtuality of presence. Within this spatial system, natural language is the foundation – a primary modelling system. As such, formal languages, art, play and so on all form from the natural (spoken) language as secondary modelling systems. The notion of a hierarchy is interesting when considering the VR+ environment where formal (artificial) languages interact with the spoken word. The gesture of the user can be mapped via limb tracking software or a pre-programmed emote. The semiotics of the gesture can be across different realities, a cultural unit (colloquially called a meme, which we address later), and within space of various realities.

Peeter Torop has worked extensively to update Lotman’s semiosphere model with modern transmediality, highlighting how culture and education are processes of autocommunication, whereby one translates between different languages within the digital space:

It is a distinctive feature of Lotmanian cultural semiotics, that the criteria for analysing culture include the typology of cultural languages in which the boundary between object language and meta-language is mobile. This mobility means that, in culture as in the system of learning and teaching for example, literature, theatre and cinema could be reflectors of the everyday environment, interpreters of every-

day life, but can also be a natural living environment, a part of everyday life, and are not regarded as something that has a separate existence. Today, new media is one such transition zone, and even school education has to take into account that, for students, the internet is not just a technical device but, in the form of social media, is a natural part of the living environment. (Ojamaa, Torop 2015 :66)

Ojamaa and Torop continue, highlighting the polyglottal nature of the digital space, via a Lotmanian analysis of the *Inanimate Alice* project – an ongoing, trans-medial story about a girl who hopes to be a games designer. The plot is carried by novels, social media, and VR. Ojamaa and Torop demonstrate, via this story, that cultural literacy as a process of internalisation requires an understanding of the different languages online, and the ability to translate meaning between them. Their concluding lines are particularly relevant to this thesis and demonstrate a clear reasoning for semiotics, and a focus on culture:

Cultural semiotics, with its interest in the correlation of different sign systems and the functioning of culture’s self-descriptive languages, is a good mediator between old and new. It contributes to the understanding of the underlying mechanisms of cultural autocommunication and the movement between implicit and explicit transmediality. This means, however, that without understanding new cultural languages and the ontology of texts created in them, it will be difficult to understand the functioning of autocommunication in today’s culture. Semiotics of culture helps to increase culture’s analysability in the situation where the pace of cultural development is faster than the development of tools necessary for understanding culture. (Ojamaa, Torop 2015: 75)

Lotman’s semiosphere is a space of semiotics generated constantly by two “selves” – or *umwelt*, as described by Jakob von Uexküll (1982) – remaking their conceptual worlds. The notion of semiotics as an internal, individually processed world that relies on the interaction of signs is – to this author – another way of describing Eco’s sign-function within a wider context. The language and terminology of the semiosphere is a more concise way of describing the interaction space. However, the Peircean sign structure and Eco’s processing of meaning contain additional elements that we will draw into our modelling of the VR+ sign. Ultimately, we want to create a paradigm of semiotics within the virtual communication process so long as different models are complementary, then we will draw from a variety of theorists going forward. To quote Peter L. Berger and Thomas Luckmann:

The primary aim of the study is not to determine and state in summary form what these writers said or believed about the subjects they wrote about. Nor is it to inquire directly with reference to each proposition of their ‘theories’ whether what they have said is tenable in the light of present sociological and related knowledge. ... It is a study in *social theory*, not *theories*. Its interest is not in the separate and discrete propositions to be found in the works of these men, but in a *single* body of systematic theoretical reasoning. (Berger, Luckmann 1991: 29)

One of the consequences of discussing virtual reality is the necessity to opine what is reality? While we have a method for analysing the sign within a wider context, we need to understand how this wider context is formed. We will draw on Berger and Luckmann's text again to discuss this, and the objective/subjective nature of society and knowledge. Their theory of social reality, which included aspects of the phenomenology and symbolic interactionism schools, will be explored below. In *A Thousand Plateaus* Gilles Deleuze and Felix Guattari discussed deterritorialization and reterritorialization processes as not binary opposites but rather an ongoing process of rhetoric between the subjective and objective:

The most essential distinction between the signifying regime and the subjective regime and their respective redundancies is the movement of deterritorialization they effectuate. Since the signifying sign refers only to other signs, and the set of all signs to the signifier itself, the corresponding semiotic enjoys a high level of deterritorialization; but it is a deterritorialization that is still relative, expressed as frequency. In this system, the line of flight remains negative, it is assigned a negative sign. As we have seen, the subjective regime proceeds entirely differently: precisely because the sign breaks its relation of significance with other signs and sets off racing down a positive line of flight, it attains an absolute deterritorialization expressed in the black hole of consciousness and passion. The absolute deterritorialization of the cogito. That is why subjective redundancy seems both to graft itself onto signifying redundancy and to derive from it, as second-degree redundancy. (Deleuze, Guattari 2005: 133)

Deleuze takes much from the semiotics of Peirce, and while both share constructivist elements of reality, they take different views of the process. Discussing diagrams specifically, Kamini Vellodi outlines the distinction between theories of constructivism:

Deleuze's diagram and Peirce's diagram reflect two contrasting notions of thought: thought as a process of discipline, regulation and control that reasoning subjects enact (Peirce), and thought as violent encounter that happens to us in the groundless encounter with difference (Deleuze); thought as grounded in the possibilities of thought as it already knows and recognises itself, and as the conditioning of a possible future continuous with its present form (Peirce), and thought as a creative and violent destruction of thought in its present form for the sake of a new image of a thought without image (Deleuze); thought as pragmatic experimentation for the sake of the determination of real effects through their conception (Peirce), and thought as an experimentation that effects a new possibility of pragmatism as the transformation of the existing state of liveable affairs in the genesis of the hitherto unthinkable new that shatters the experience of continuity as lived time (Deleuze). (Vellodi 2014: 89)

This discussion continues, demonstrating different constructivist approaches to reality that we can apply to the differences in the construction of reality/hyperreality/hypervirtuality upon the semiotics of identity. For Deleuze, one

constructs new principles from thought, rather than (arguably) Peircean idealism that applies pre-existing principles to the sign model. This genesis of thought and meaning comes from ungrounding, an explosion of sensation that has no pre-existing conceptualisation:

A “thought without image” is opposed to the thought with image that recognizes itself in the act of thinking and subjects thinking to a self-grounding in its representational activity. This “thought without image” is a “thought which is born in thought, the act of thinking which is neither given by innateness nor presupposed by reminiscence but engendered in its genality”, a thought that thinks only by means of difference around a point of ungrounding. Deleuze’s constructivism expresses this *genesis* of thought (reminding us that his interest in Peirce is from the very perspective of the genesis of signs). “Constructivism requires every creation to be a construction on a plane that gives it an autonomous existence.” Thought as creation (construction) of the “autonomous” new (that which has liberated itself from all allegiance to a ground, and persists independently of those who have or will experience it) is posited against thought as reflection in its own image.

Within such a framework, the diagram functions as the antithesis of the image—which, in its *iconic* character, Peirce’s diagram very much remains. (Vellodi 2014: 87)

Hypervirtuality is seemingly the genesis of identity, a constructed reality of pure sense but during this thesis we’ll demonstrate that the VR+ sign is mediated via prior conceptualisation as it is constructed within the commercial space by tropes, social media, programming code, and the institutionalisation of elements like emoji. Thus, hypervirtuality is characterised by difference *and* reminiscence depending on the digital object, the context, and the user. With difference existing as a transcendental requirement for identity for Deleuze, we could present the indifference (the ubiquity) of the digital and physical as an example of the digital space becoming the new reality. Alternatively, the difference in presentation of self within the digitised space – either through gender, species or realism – is the Deleuzian formation of a new reality. Within the Peircean model though, each sign is a part of chain of semiosis that is made knowable by context. This suggests a construction of society through the synthesis of different realities, or the simulacra of a new reality, depending on the previous contextual experiences of the user.

The multi-paradigm model comes into the work of Steve Harrison, Deborah Tatar, and Phoebe Sengers in their 2007 work “*The Three Paradigms of HCP*”. Harrison *et al.* state the need to examine three so called waves of development in the human-computer interaction paradigms. The first paradigm is the mechanisation of the person and designing the machine to enable the user to interlock with it physically. The second paradigm is the development of the cognitive interaction – how and why people assimilate the information from the machine. Their third paradigm is the phenomenological matrix, which centralises the previous issues under the topic of embodiment. Citing Paul Dourish, embodiment is described as: “not a property of systems, technologies, or artifacts; it is a property of interaction [...] In contrast to Cartesian approaches that separate mind from

body and thought from action, embodied interaction emphasizes their duality” (Dourish 2004: 189). This discussion of embodiment will be returned to extensively throughout our thesis, but Harrison *et al.* introduce how meaning and embodied interaction changes design from the previous two paradigms to necessitate a phenomenological matrix of design:

The move to embodiment is consequently a shift to recognizing a plurality of perspectives. Designing interaction, in turn, moves from attempting to establish one correct understanding and set of metrics of interaction to studying the local, situated practices of users, taking into account but not adjudicating the varying and perhaps conflicting perspectives of users. (Harrison *et al.* 2007: 7)

Other research we will use concerns the virtual, computed sign within society, including Malcolm McCullough’s book, *Digital Ground*, which Harrison *et al.* reference as a foundational text in the human-computer interaction process. Thus, virtual text as an element of computer interaction and the social reality of the user will also be addressed. Fanny Georges will be referenced extensively throughout the thesis for their work on the impact of Web 2.0 and social media on identity. The focus on immediate gratification and valuation of the floating signifier, the social media sign of self-representation, will be a recurring theme. Georges position is summarised wonderfully in the conclusion:

Facebook stimulates compulsive behaviour: it consists in showing oneself incessantly in order to continue to exist and maintain one’s social network. Hence, in the Web 2.0, a user who wishes to exist on the Web must comply with this imperative: he or she must produce activities continuously. This urgency to communicate involves an immediacy between the Self of the Subject and the Self of the representation. The evolution of online identity foreshadows a change in the behaviour of users through the effect of focusing on the immediate moment. (Georges 2009: xxvi)

Possibly then, the semiosphere may not be an applicable model since the requirement of two *umwelt* interacting may fail when the user is interacting with something they perceive as another person but is in fact an AI. The question of whether an AI can have *umwelt* has been discussed (Emmeche 2001) and in our thesis we take the view that it does not currently. However, whether a human can interact with an AI as though it was human can be answered by looking at virtual dating apps like *LovePlus* – and its star, Rinko, who is described as a first-year high school student.

Such apps highlight the interaction between user and machine, the ability for the sign to be emotionally interpreted by the user. The effect is a form of the proteus effect (Yee, Bailenson 2007) but also it highlights the previously introduced, uncanny valley theory (Mori *et al.* 2012). The uncanny valley is the mathematical model where affinity is measured against likeness from the obviously artificial, via the unhealthy person to the healthy-looking person. The “dip” in affinity in the middle – the valley – is the point at which likeness become too like the human to

be acceptable and is not similar enough to pass for a healthy human. Mori *et al.* use the example of the prosthetic limb:

One might say that the prosthetic hand has achieved a degree of resemblance to the human form, perhaps on par with false teeth. However, once we realize that the hand that looked real at first sight is actually artificial, we experience an eerie sensation. For example, we could be startled during a handshake by its limp boneless grip together with its texture and coldness. When this happens, we lose our sense of affinity, and the hand becomes uncanny. In mathematical terms, this can be represented by a negative value. Therefore, in this case, the appearance of the prosthetic hand is quite humanlike, but the level of affinity is negative, thus placing the hand near the bottom of the valley. (Mori *et al.* 2012: 99)

This is, perhaps, a reason why prosthetic limbs are no longer restricted to simulated skin tones but can be presented as an obviously mechanical limb. The avatars in dating apps, for a similar reason, rely on a cartoonish aesthetic, often lacking noses, and even exhibiting non-human features like horns or animal ears. The notion of the “cute” avatar was researched to discover how it impacted the perception of the message:

The results of our experiment suggest that avatar cuteness can significantly decrease users’ perception of error severity as expected. Nevertheless, it fails to lead to higher perceived social closeness. There could be two possible explanations. First, social closeness can be effectively activated as long as the interaction partner is anthropomorphic [49]. Second, the perception of social closeness can be shaped by interacting with the system for an extended period of time, which was not the case in our experiment. (Cheng *et al.* 2020)

Agreeing with the previous research, we do not necessarily believe that the outward physical likeness is required to be acceptable (especially if future users all embody avatars that do not mirror their offline aesthetics anyway), but rather there needs to be an affinity during cognitive interaction. This level of artificial interaction could prove that cognitive interaction is more meaningful than outwardly visual appearances in a virtual world of phantasmagoria, a word particularly associated with Walter Benjamin’s unfinished work *The Arcade Project*. In this text, is the following discussion of the Grandville world exhibition:

World exhibitions glorify the exchange value of the commodity. They create a framework in which its use value recedes into the background. They open a phantasmagoria which a person enters in order to be distracted. The entertainment industry makes this easier by elevating the person to the level of the commodity. He surrenders to its manipulations while enjoying his alienation from himself and others. The enthronement of the commodity, with its luster of distraction, is the secret theme of Grandville’s art. (Benjamin 2002: 7)

Such fetishism of the commodity, and of the commodification of the human, is a physical example of a core sentiment of our thesis, specifically when discussing identity. Benjamin continues:

This is consistent with the split between utopian and cynical elements in his work. Its ingenuity in representing inanimate objects corresponds to what Marx calls the “theological niceties” of the commodity." They are manifest clearly in the *spécialité* – a category of goods which appears at this time in the luxuries industry. (Benjamin 2002: 7)

The Marxist notion of value (or lack of it) ascribed to objects is advanced by Jean Baudrillard’s work – a main influence on our thesis. However, Benjamin provides an introduction that links the social, commercial, and individual with the digital sphere of signs.

Other research into the nature of gender, sexuality and online identity seems to reflect an extreme dichotomy of actions online, with some users finding positives in the freedom of online representation – such as Tobias Raun’s book *Out Online: Trans-Representation and Community Building on Youtube* (2009) where the reach and collaborative nature of the video diary (or vlog) helps create community support for people coming out. Meanwhile, Alison Adam and Eileen Green’s *Virtual Gender: Technology, Consumption and Identity Matters* highlights issues like cyberstalking (Adam 2005: 165) with Lynne Roberts and Malcolm Parks chapter on gender-switching proving particularly applicable: “The primary barrier to gender-switching was the belief that it is dishonest and manipulative. Attitudes towards gender-switching and online participation were better predictors of gender-switching than personal background demographics or personality measures” (Roberts, Parks 2005: 209). We will discuss these attitudes in greater detail, with reference to the classroom online.

VR+ relied on the development of new technology to make the utopian, hyper-real, scenario more than a hypothetical possibility. Such developments will continue and demonstrate a trend towards the death of the physical reality. The architecture of the avatar is another boundary to the space – a physical screen or controller which delimits the space of interaction. This screen, the boundary, is becoming (apparently) more permeable with the blurring of the offline and online spaces (as culture, language, art, identity, and other cultural units). Specific research into communication models with avatars include communication within game worlds (Thorne *et al.* 2012) and the relationship players have to their avatars and each other (Gottschalk 2010).

Ken Hillis’s work links the postmodernism of Derrida, to the semiotics of Peirce, via the computer screen, avatar, and virtual world. Hillis’s text covers a multitude of different scenarios. While he does not mention hyperreality specifically, his text *Online A Lot of the Time* (2009) details the ritualisation and fetishism of technology and digital identity. For Hillis, the online space is one of ritualised movement. Hillis, therefore, succinctly demonstrates the process of identity construction online through one’s avatar:

The avatar serves as “point-person” for the various quasi-pseudonymous positions that networked individuals adopt within networked digital cultures. In this way [...] the avatar/Actor may no longer relate entirely mimetically [or semiotically, in our thesis] to its Author/participant. Further it may be the Author/participant/referent who [...] fetishistically reenacts what he has learned from the graphical chat’s lively mise-en-scene and works it back into the fabric of the everyday [offline] as an *emulation of life*. The avatar/Actor, conceptually [becomes] a productive Author. (Hillis 2009: 193)

Hillis highlights a process where the online bleeds into the offline identity, via the ritualisation of the avatar’s narrative. The avatar subsumes, even consumes, the physical self: “Consider the possibility of the avatar as an Artificial Person on its way to no longer having words owned by the Author” (Hillis 2009: 194). Ergo, the self loses significance and ownership of the avatar, which becomes more real than real – it is the hypervirtual in our future scenario.

One piece of hardware that is instrumental to the virtual avatar is the webcam. The camera records and represents the user’s actions, translating the physical into the virtual space. The digitisation of self by the camera is discussed by Hillis, with reference to Peirce, stating that: “In networked virtual environments where participants control the movements and appearance of their avatars, the avatar is an index (it indicated the participant)” (Hillis 2009: 128). For Hillis, the avatar is iconic, indexical, and symbolic, as the avatar differs from textual presentation as a separate model. The avatar relies on the assumption of interpretation from another (Hillis 2009: 128). Relating this to Peircean triad, we can demonstrate, overtly, how the avatar in the online setting can lead to something approaching the hyperreal, with an endlessly self-referencing model:

The operator who transmits an image of himself occupies the position of *referent*. Yet, like the webcam’s other viewers, he is also able to view the display of his own networked digital image. He therefore also occupies the position of *interpretant* of the sign of himself on the computer display. As a sign on the interface, so too does he occupy Peirce’s third position – that of *representamen*. The operation comes to carry the entire triadic meaning of Peirce’s sign system by becoming a mirror image to himself of subjectivity as a recursive algorithm, ad infinitum. He is a sign, an iconic index, even unto himself, with his own embodiment sutured to representation, simulation, and the imaginary if living virtually. (Hillis 2009: 129).

Hillis thus, presents us with a semiotic model of the online self. With the spatialisation of Web 3.0 negating the webcam/screen relationship to become a near universal digitisation of signs, then we all become our own, individual, semiotic models. We lose grounding when we interpret the avatar as *I*. It becomes a requirement to follow Gilster’s advice and critique the narrative, in order to maintain the transmedial separation between self and off-the-shelf avatars.

Deepfakes are manipulations of real people by AI to simulate actions and speech. These are becoming increasingly convincing – in 2020 a major UK television channel parodied the Queen’s Christmas speech by broadcasting a deepfake of the Queen. The goal was to highlight the concerns of fake news. The

future of such technology – which is essentially an avatar – has consequences for the notion of identity. Umberto Eco wrote on the notion of the fake in *Faith in Fakes* which later became *Travels in Hyperreality* (1986). The sign of the deepfake can lead to incongruent conclusions in the user’s interpretation. For example, watching the deepfake of the Queen is a semiotic process involving an awareness of the parody. However, watching the deepfake Queen, ignorantly, may lead to abhorrent decoding. The epistemic challenges of what is real is outlined by Don Fallis in their study of the real and information – while this is a somewhat more philosophical study than ours, the conclusions on the loss of the object are in essence similar (Fallis 2020).

Deepfakes demonstrate an issue with identity in the online communication model – the freedom to be whomever or whatever one wants to be is both liberating and open to manipulation. While the moral and legal concerns are important, being able to explore one’s self-narrative as a different gender can be beneficial (Hansbury 2011).

Deepfake as a word is perhaps somewhat emotionally loaded due the term “fake” – the sense of authenticity present in the online communication process leads us to consider the collaborative social reality of the virtual space. The issues of such collaborative (or individualised) social knowledge are succinctly detailed by Berger and Luckman (1991). The research they present is applicable to our thesis – and will be covered in a later chapter – specifically, what is reality, and does it matter?

Eco and Peirce both posit an external world made meaningful within the internal reality of the viewer with Eco stating in his book *The Role of the Reader*:

The factual judgment is born from a physical mutation of the world and only afterwards is transformed into semiotic knowledge. The metaphor is born from an internal disturbance of semiosis. If it succeeds in its game, it produces knowledge because it produces new semiotic judgments and, in the final outcome, obtains results which do not differ from factual judgments. (Eco 1984: 86)

This is – as we will see – much like the umwelt theory of the inner semiotic world, while Torill Strand has written about the application of Peirce’s pragmatism and abduction in the process of learning by continual, communal re-examination and dynamic knowledge (re)construction (Strand 2013). Berger and Luckmann establish a research model for the intersubjectivity of knowledge and meaning within society. With their research in to the objective construction of reality and the subjective construction of social reality, Berger and Luckmann lay some useful general groundwork and help tie together some of our other methodological tools such as the semiosphere, umwelt, education, different realities, and identity.

Berger and Luckmann state there is an objective social reality that is the result of the habitualised interactions of individual, human, actions operating within a wider community. More specifically, there are different realities of social knowledge that the individual experiences, either as an individual, or within the context

of the wider community, and the passing between these realities is akin to a curtain lifting. They use the analogy of the dream reality and awakening from such a dream (1991: 35). The authors cover a range of elements on the construction of society including much that is relevant to the virtual communities of our thesis.

Berger and Luckmann begin with a discussion on the nature of humanness. They state that humanity has no biological specificity to its environment anymore and therefore, human society is formed from the numerous communities of humans rather than a biological instinct:

Man occupies a peculiar position in the animal kingdom. Unlike the other higher mammals, he has no species-specific environment, no environment firmly structured by his own instinctual organization. There is no man-world in the sense that one may speak of a dog-world or a horse-world. (Berger, Luckmann 1991: 65)

Although the virtual world is not a biological world that humans evolved within, it could perhaps be said that the virtual world is evolving around humans as a reverse of the biological norm. This has, in our mind, the potential to create a person-world similar to the dog-world Berger and Luckmann reference. A space that operates and relates to the instincts of the people within it, alongside the social reality of the physical where the actions, interpretations, beliefs, habits and so on of the community leads to the institutions and hierarchies therein.

The relationship of the user to the virtual reality is one that dialectically strengthens the ideas, the institutions, the society of the community within. However, like in the physical space, the relationship between the early adopters and subsequent late comers (first and second/third/nth generations) is a process of handing down the rituals and customs during which they become susceptible to external ideas. Berger and Luckmann use language as an example, as well as sex and religious customs.

The reproduction of self as a virtual object leads us to Howard Rheingold's work on hyperrealism. Gilster, as stated, saw agents as dangerous to the validity of information, but Rheingold hints at what has become colloquially known as catfishing – luring people with fake persona: "Certain types of hyperrealistic simulations could be dangerously misleading" (Rheingold 1991: 45). Misleading information is one risk of the online space that we research below.

Within the thesis proper, we lack the space to fully develop the notion of relationships online, especially between human and digital human. However, Rheingold introduces us to a topic that perhaps shows the way in which humans can become *seduced* by technology's promise of emotional fulfilment beyond the physical: "If everybody can look as beautiful, sound as sexy, and feel as nubile and virile as everybody else, then what will become the new semiotics of mating? What will have erotic meaning?" (Rheingold 1991: 351). The question of forming intimate relationship either through computers, or with virtual beings, has significant consequences for *how* the technology becomes adopted, and how fast. The

chapter in Rheingold's book on cybersex, or "teledildonics" discusses the interest people had in the sex/machine connection.

Rheingold warns of the cybernetic consequences, highlighting the concerns for virtual identity, but also noting issues with our connection to hardware. Rheingold questions what happens to social touching if the connection between virtual interaction and physical erogenous zones becomes malleable – the handshake may stimulate more intimate regions of the user's body for example through remapping. The issues of privacy and trust becomes paramount, with Rheingold offering an interesting vision of the future. Sex and relationships would, therefore, require significantly more secure, password-protected spaces. But to have the world be able to see you and interact with you requires sharing the permission codes of your public profile: "It might be that the physical comingling of genital sensations will come to be regarded as a less intimate act than the sharing of the data structures of your innermost self-representations" Rheingold 1991: 352).

The construction of these "self-representations" however is at risk from the interconnection of the human and digital at this most intimate level:

future cyberspace spinoffs are getting into the territory beyond the McLuhan horizon. With all those layers of restricted access to self-representations that may differ radically from layer to layer, what happens to the self? Where does identity lie? What new meanings will "intimacy" and "morality" accrete? And with our information machines and our bodily sensations so deeply "interwined," as Theodore Nelson might say, will our communication devices be regarded as "it's" or will they be part of "us"? (Rheingold 1991: 352).

The risk of mixing desire, identity, and profit is a reason for the requirement for a digital literacy that exists external to the market forces – as much as it can anyway since the education of such literacy will necessarily require the use and embedding of oneself within the techno-ecosystem.

Within our virtual space, influencers – perhaps better termed as community managers – with larger audiences watching their performances, perhaps naturally take on the role of the elite within the community, strengthening and driving the customs, rituals and so on that continue to maintain the universe of the objective society. We see that the so called "meme" symbol (meme here is used in the colloquial sense of the word rather than technical origin "memetic") can be construed as an element of the "symbolic universe" (Berger, Luckmann 1991: 110) to legitimise knowledge that everyone in the community shares awareness of, similarly to myths, proverbs or religious doctrine.

The "symbolic universe" legitimises the institutions as second-order "objectivation of meaning" (Berger, Luckmann 1991: 11). Thus, these symbols are knowledge – social knowledge – that impart meaning to new members of the community (the second generation) who lack the historical reconciliation of habit the first order institutionalisation formed: "Legitimation is [the] process of 'explaining' and justifying" (Berger, Luckmann 1991: 111).

How a virtual reality player, especially one who streams to a large audience, encourages community members to react to certain situations (for example

requesting an influx of certain pictogram emotes in the shared community chat box) acts as this second-order knowledge. The new members are often inducted into the community via esoteric language and symbols, which they must use appropriately within the community. There is no questioning of “why” although changing the habit is easier than say, breaking wider, more established, rules laid down by the platforms that hold the gateway to these communities (such as no racism, sexism, hate speech and so on). We will address this in the data chapter on society specifically.

However, for this thesis, we will begin from the point of view of a single objective reality, and an internal world of meaning derived from individual interpretation (or *umwelt*). We state that there are different virtuality’s rather than realities *per se* since the virtual entity of Hatsune Miku does physically exist within our reality, scientifically, but what the entity *signifies* relates to the internal reality of the individual within the wider social reality of meanings, and the virtuality of the entity allows us to separate the entity from the physical reality around it – as Milgram’s virtuality continuum explicitly details (see Figure 1). Hatsune Miku is therefore not exactly a floating signifier as the artist’s name does reference the tangible song – and by extension the software. However the hologram entity has no physical object and the phenomenon of such digital images is extensively referenced in Eco’s *Travels in Hyperreality* (1986):

It isn’t cinema, but rather a kind of virtual object in three dimensions that exists even where you don’t see it, and if you move can see it there too. [...] Holography could prosper only in America, a country obsessed with realism, where, if a reconstruction is to be credible, it must be absolutely iconic, a perfect likeness, a “real” copy of the reality being represented. (Eco 1986: 4)

The importance of Eco’s introduction to his collection of essays cannot be overstated to the formation of this thesis. Many of the ideas, conclusions, and threads of investigation we follow within our text begin with Eco’s initial thoughts.

The deterritorialization of culture by the media, and reterritorialization posits the creation and restructuring of society within the corporate structure of media, rather than on traditional geographical or political concepts. We introduce it specifically here, because although Anthony Giddens structuration theory suggests a spatialisation of the mediatization effect (Hjarvard 2008: 116), it also connects the architecture of technology – language, bias, access and so on – with the social reality of the subject and the object. The space formed within the virtual plane by turns highlights institutionalisation of the public space, as Giddens writes, referencing Berger:

Thus Peter Berger, borrowing a notion from Arnold Gehlen, argues that the private sphere has become “deinstitutionalised,” as a result of the dominance of large-scale bureaucratic organisations and the general influence of “mass society.” The sphere of public life, on the other hand, has become “overly institutionalised.” The result is that personal life becomes attenuated and bereft of firm reference points: there is a turning inward toward human subjectivity, and meaning and stability are sought in the inner self. (Giddens 1996: 115)

Such a turning inward is perhaps best exemplified with the image of individual in the VR headset interacting with virtual avatars that may or may not be physically controlled or AI. The loss of “firm reference points” is, in our interpretation, like the simulacra of Baudrillard. The trending theme with all this research is the loss of the authentic object under the oppression of the overarching society of institutionalised ideals and ideas, catering for one’s desire through mass media. However, the mass mediality of national discussions crosses such borders in the online sphere which conversely makes the rhetoric boundary agnostic.

Our research attempts to link the contextual environment, the space of interaction, and the space of the user via semiotics and user interface (UI) design. This paper takes an interdisciplinary approach to the realities of CMC – but will refrain from the metaphysics of other research (Heim 1993) Semiotics as a model of both the realities and communication process enables a scientific approach to the research – one that we hold as poststructuralist with the ontological relationship of signs constituting significance rather than the sign having an objective absolute meaning.

Previous research on the semiotics of space can be roughly split into those which study physical spaces, and studies that use space as a metaphor for the textualization of semiotics. However, it is a split in terms of primary focus rather than a split of research into discrete areas, with significant crossover occurring between both sides. As such we will use both foci as appropriate for our argument. Initially, we will begin with a look at the city as both metaphor and space of construction.

Theorists such as Anti Randviir (2003, 2013), AP Lagopoulos (Lagopoulos, Boklund-Lagopoulos 2014), and Henri Lefebvre (1991) examine the notion of the city as a place of signs, and as a sign itself (Määttänen, 2007). The city is a network of people, linked by geography, creating culture and created by culture, exchanging signs of language and translating meanings on the periphery. The movement of people through the city, how the city dictates such movements, and the location of the city within the wider context of culture as a place and a space have all been the subject of semiotic research. A common theme is reading the city as a text, with a linguistic/grammar-like contextual ruleset that structures the meaning the of the signs contained within it (Lefebvre 1991: 7).

The research can present the city as a meta example of the wider culture, a microcosm of human interactions, or a unique study of human networking and sign exchange. However, in such studies, the city is mostly offered as a space in human culture and social consciousness (Lefebvre 1991: 68–168). The city is a fundamental sign of civilisation – that which separates modern humans from our pre-civilisation, apparently savage, ancestors. It is not hyperbole to say the city is a sign of human identity (Lefebvre 1991, Randviir 2003: 185).

Considering the structure and features of the city – a roughly bounded space that is part of a network of contemporaries, each node containing a unique collection of cultural signs forming and reforming the language and identity of its inhabitants – it is not surprising that many use the city as a metaphor for the online space (McCullough 2005). Cyberspace is a network of virtual city states that

science fiction authors have envisioned for decades (See: *Simulacron-3* by Daniel F. Galouye, *Time Out of Joint* by Philip K. Dick, and William Gibson's *Neuromancer*). It seems that futurism assumes a natural progression from bricks-and-mortar to the data flows and exchanges of information that such digital infrastructure represents (McCullough 2005). This data has a new sign space to contextualise its exchange and movement now – the internet and specifically the evolution of the Web 2.0 into the ill-defined Web 3.0 (Naik, Shivalingaiah 2009).

Non-spaces, coined by Marc Augé (1997) are spaces that lack significance, where people are transient and anonymous: “If a place can be defined as relational, historical and concerned with identity, then a space which cannot be defined as relational, or historical, or concerned with identity will be a non-place” (Augé 1997: 78). Such a description could be an anthropologic description of the online, VR spaces which are inherently created without historical significance to previous places because of their virtuality. Indeed, the lack of attachment one feels to a terminal waiting room or a hotel room is akin to the *VRChat* meeting place which is damage-proof, and where everything is reset after reloading the world. However, the non-space definition is subjective and somewhat confusing when looked at semiotically – the space would be so anonymous that it falls below the threshold for semiotic relevance, but the space as a context seems likely to always append a message by its anonymity. It would be better to view the non-space concept as a sign in itself, one that suggests unreality. Such a definition of space – in Michel de Certeau's sense of the word (Augé 1997: 79) – allows us to model the VR room as generally only in existence (rendered) when movement occurs within the elements (logs in).

Other spaces of semiotics include buildings like the museum. The object that is stored within the museum gains significance from its location within the building, but the building has a meaning that is acquired by containing artefacts of historical and artistic interest (Culler 1985: 6). Such a relationship of meaning reminds one of the dyadic theories of Ferdinand de Saussure. Meaning and sign – signified and signifier – are interconnected, with an arbitrary association created by the totality of the syntactic structure (for example, language or the city) and the differences between other such signified/signifier relationship. This demonstrates the interplay of the physical spaces with the theoretical – an aspect of semiotics that will be examined further when we address the realm of virtual reality (Gaines 2006).

Thus, we can formulate a model where space and culture are symbiotic, and the space has moved from the physical to the virtual. The question of reality and identity is therefore a question of space.

Previous research into semiotics of identity online has been extensively conducted by Fanny Georges. As such, any discussion on identity in the online sphere will take her research as the primary starting point. Georges states from the first line: “The “real” and the “virtual” maintain ambiguous relations in the context of new sociabilities interfaced by representations” (Georges 2009: IX). We prefer the use of “physical” rather than “real” since the virtual object does exist, in the virtual

space. Unreality implies non-existence, which does not align with the virtual sign of this thesis.

Georges continues by outlining how the online is an updating of the research of Jeffery Sconce detailing interpersonal relationships via technology. For Georges, the technology of social networking sites (SNS) alters the user's construction of their self-image (mostly pejoratively) often during adolescence when such identity construction can be at its most impactful (Georges 2009: IX). This will be addressed in the upcoming chapter of society and gender identity online, while her work on the interaction between user and the Web 2.0 interface will be discussed in a specific chapter on technology. However, Georges also addresses the spatialization of identity which makes her work relevant to this current data chapter too. Most overtly, she discusses the relationship between the user and "the Other" – a relationship that automatically imparts some element of locality upon an entity in relation to the user themselves. While this may be face to face, or the audience to the stage actor in analogue terms, in a digital sense it becomes a virtual localisation within a network of points of contact – devices that the user can interact with within this network (phone, computer, tablet and so on).

The relationship the user has to these different devices will, again, be addressed further in an upcoming chapter in combination with architecture, but the notion of space around the phone versus the desktop computer is a topic for this chapter. The space where the device can be used as well as the (virtual) space "within" the device border allows one to interface and convey different signs of semiosis. The context and the visual iconography both append the core message of any interaction engaged via such networks. Thus: "introducing a visual, auditory, and textual medium of the Self into the reflexive loop of self-representation. In this respect, analysing the impact and cultural empowerment of CMC on the representation of identity has fundamental implications for society" (Georges 2009: VI).

We will move to temporarily conclude our discussion on Georges "Self-Representation and Digital Identity" albeit with something of a caveat. Georges concludes: "Today, users are no longer conscious that they are using devices; they have interiorized this system of self-representation. Devices seem to be "like real life" because they interface users' lives" (Georges 2009: XXV). This is a rather significant conclusion to draw from a study of 60 profiles – we will refrain from making judgments about psychology in this thesis as the author is not qualified to do so. Although (as will be demonstrated) we agree with the essence of Georges argument: "The concept of the digital *hexis* designates [a] natural contiguity between the physical body and the virtual body" (Georges 2009: XXV) – we do not necessarily concur that the physical-as-real and the virtual have become indeterminately one and the same. Indeed, a significant portion of this thesis will present arguments (as already discussed in our opening chapter) that highlight the *difference* between the physical and the virtual, and the role of such a gap in the formation of *alternative* identities. Our proposition – specifically for this chapter – is that the space of the virtual is an overlapping but separate reality to the physical, which can be used to extend the reality of an individual or concept, but it remains distinct via said gap. Should the spaces become one,

then the virtual will be (by definition) unambiguously “physical” in the sense that its signs will have a physical tangibility about them, not consciously mediated by device or language.

For this to occur, we would need to accept the convergence of the digital and the analogue sign-spaces, which would then, presumably, give the digital signs the same significance over identity construction as any physical/analogue sign – hairstyle, linguistic register, socio-economic upbringing and so on. This moves the virtual to a “normal” status that is regulated or perceived in the same way as any physical semiotic space. While the warnings Georges presents are still viable (as we will discuss in the next chapter), we want to maintain a belief that the separation of the digital is what gives it a specific significance, and once the separation is gone, the space returns to a single plane of reality for all intents and purposes.

Alfie Bown writes in *The Playstation Dreamworld* (2017) that the cyberspace of the game – empirically akin to the virtual reality of our thesis – is a place of Lacanian dreams. Bown writes that the virtual and the physical spaces are becoming increasingly indistinguishable from each other: “The discourses of the capitalist corporation are already taking a firm hold in cyberspace (which is increasingly indistinguishable from space itself)” (Bown 2017: 3). This is not the argument we fully concur with in this thesis – as stated already. We believe that the spaces are distinguishable from each other for as long as they are ontologically, philosophically, conceptually, and semiotically, different. Once the spaces become one and the same, then the distinction between a “cyber” space and a “physical” space becomes irrelevant. Bown, like Georges, uses “real” where we prefer “physical”, as justified above. Bown discusses Yuk Hui’s research “On the Existence of Digital Objects” with this comment: “[...] the focus here is not on how assumptions about objectivity dictate our relations to the electronic object but on how our relationship with electronic objects dictate our consumption of “real” ones” (Bown 2017: 23). Here Bown seems to suggest that the digital and physical are indeed separate albeit with crossover and transmediality of meaning and message.

The notion that only physical objects are “real” seems reductive at best since a virtual bank account statement is indeed a real representation of one’s wealth – with a separation of realities but duality of the message. The virtual hyperreal – hypervirtual – signs of the space will be made real by being more virtual-than-virtual, like the hyperreality of contemporary media.

Michel Foucault describes a “heterotopia” as a place of otherness which gains significance from being a different space. This reflects and retranslates the surrounding space by contrast. Such a contrast delimits and defines both spaces. Initially Foucault discusses architectural spaces and heterotopia – and will be applied in the upcoming chapter – but later he applies this to texts and culture. The principle of heterotopia works to help us describe VR, where it: “is capable of juxtaposing in a single real place several spaces, several sites that are in themselves incompatible” (Foucault 1984: 6). The virtual space of VR can allow for the overlay to completely differentiate several spaces. However, the AR/MR technologies do not provide enough separation, juxtaposition, or otherness to full

create a heterotopia as this author interprets it. As we will see, AR and MR are dependent on the physical providing a visual canvas to the virtual object. While VR delimits its world within the physical play space, it is a mask that overlays the physical with a virtual world, completely. This is how the hypervirtuality risks negating the physical ground.

As a result, we will apply Foucault more as an architectural theory when discussing the technology VR+ users interact with physically, rather than as a philosophy for modelling VR space. Similarly, Bown's book is a useful introduction into the general philosophy (and politics) of understanding the virtual space, with this telling quote discussing Espen Aarseth and gameplay structure:

games are primarily concerned with spatiality and the negotiations of what can be called "ludic" space [play space]. Using this model we can say that whilst the narrative overlaying a game may be liberal and humanitarian, the negotiation of space in the gameplay involves the erecting of borders and the expulsion of the other. (Bown 2017: 55)

Ludic space in games has been researched but investigations into VR and ludic frameworks is somewhat lacking. A primary aspect of the ludic architecture – as Craig Lindley explicitly states and Bown implies with the metaphor of the dream – is time. Thus: "Ludic systems are fundamentally time-based, and temporal structure is a major determinant of the player's perception and experience of ludic form" (Lindley, 2005: 3). At the end of this chapter, we will investigate the notion of temporality and VR, but due to the limitations of the data, we will confine it to the theoretical. However, Lindley highlights four levels of hierarchical encoding within the ludic space that we will introduce here. First there is the discourse level – the time as experienced by the player. Next is the performance level – the plot as it is revealed to the player. Then is the simulation level, which is potentially the most relevant to this chapter in that Lindley explicitly links time and (virtual) space. The game hints at the wider environment of the game world: "[...] via the experiential zone created by a virtual camera, a virtual volume of audio reception, and a surface of virtual haptic reception (e.g. a virtual body that receives damage or health)" (Lindley 2005: 4). Experience, feedback, and space will be addressed in our VR+ discussion on time below. Finally, there is the generative substrate, which Lindley equates to Saussure's *la langue*, with the discourse level as speech (Lindley 2005: 4). This is the level of rules and designer implemented code – the architecture of the space and time, which introduces the following chapter with a neat crossover.

Bown opines the use of psychoanalysis in his discussion, and specifically Jacques Lacan's dream analysis, stating: "The videogame is not a text to be read but a dream to be dreamt" (Bown 2017: 61). He continues: "Whilst literary studies uses "tools" like "character analysis," "plot structure" and "symbolism," such categories would have little to no use when discussing a videogame (if indeed they have any real use when discussing a book)" (Bown 2017: 63). Bown is translating the signs within the space it defines, and the relationship of such topics to the

user. As such, we see Bown as a good introduction to some of the issues of VR+. Bown, referencing Deleuze and Guattari, writes: “In the dreamworld, the subject is put into crisis and under pressure, enjoying freely and madly, but there are always reterritorializing forces in play as well, pulling *jouissance* back to pleasure and ordering the subject in new ways” (Bown 2017: 118).

The space of the virtual playground is not just one of inhibition or “wish fulfilment”, but rather a politically infused interplay between productivity and desire. The space itself is a sign of culture, politics, and meaning. This interplay between notions of space represents a dialogue like Berger and Luckmann describe (1991), while Hartley *et al.* (2021) highlight how the digitisation – or rather the mediation – of such spaces represents the institutionalisation of society.

Walter Benjamin is cited by Bown to highlight the dreamspace of the Parisian arcades as a physical space where: “history collapses and in which new connections between past, present, and future are formed” (Bown 2017: 119). Bown continues: “The dreamworld, whether you enter through your phone, computer, handset, television, headset, or goggles, is the modern incantation of this phantasmagoria in which [...] new relationships, connections, and affinities are formed” (119). This describes the dreamworld as a semiosphere of translation, intersection, and exchanging meaning. However, Bown completes the above quote by paraphrasing Benjamin with “often secretly” (119). We would not necessarily conflate this to say the semiosphere occurs secretly, but we can say that a process of semiotics is an individual interpretation forming one’s *umwelt*. This *umwelt* is unknowable to anyone else since it is the individual’s semiotic world. In that sense, it can be said to be secret.

Benjamin’s arcades are a: “phantasmagoria in which primal history enters the scene in ultramodern get up” (Benjamin 2002: 116). This implies a cornucopia of sense data, of signs, that taps the primal inhibition of the pre-society, but appearing as the very new. The space is its own temporal reality, made of apparently unreal imagery. These phantasmagorias could be the virtual signs of the space, adding to the sense data, and forming their own temporality within the closed space of VR, AR, and MR. However, they still allow a link to the physical reality and thus, perhaps, are somewhat less fantastical than the dreamscape.

In truth, it would be dependent on the amount of data presented to the user, as a complete MR experience appears to the contemporary viewer as overwhelming. As Baudrillard posited, reality would be consumed by the hyperreal information overload, one that would create an implosion of society leaving only the dominant forms of media: “Thus information dissolves meaning and dissolves the social, in a sort of nebulous state dedicated not to a surplus of innovation, but, on the contrary, to total entropy” (Baudrillard 1994: 81).

The concept film, *Hyper-Reality*, by Keiichi Matsuda is an excellent demonstration of the potential virtual hyperreal future, visualising a world where the individual is continually bombarded with exciting messages, marketing slogans, flashing information boxes, and cute characters with new offers (Matsuda 2016). The protagonist is unable to work as a teacher and instead must focus on building a form of reputation currency by shopping for someone richer in reputation.

Towards the end of the short movie, her identity is hacked. A customer service programme advises the protagonist to not move – the garish phantasms of the virtual world have vanished, leaving the cold and stale physicality of the supermarket. Her first concern is the reputation tokens that she has worked to accrue via these small jobs – a currency akin to the contemporary “likes” of social media. Her final act is to consider some form of data wipe as part of a religious ceremony. As a depiction of the extravagant extremes, and the ubiquity of the hyperreal – or indeed, hypervirtual – space, this movie offers a tantalising – and somewhat unsettling – depiction of the future.

With Bown, we have been discussing the game space, rather than the VR+ space. We believe there is a difference, but it is a difference in interpretation: “Gaming is an experience of wish-fulfilment, reverie, and dreamlike hallucination that is thrilling, overwhelming, and intoxicating [...] this new space, no longer a gaming arcade [...] but a virtual world that we can enter from anywhere, is highly enjoyable” (Bown 2017: 118–119). There is little inherently different about the gaming experience and the productivity space then except for attitude and approach. The ludic experience of the game comes from the approach of engaging in the narrative, while a VR chat room may also allow for such an approach through the role play narratives.

Productivity space however has been cynically separated from the so-called distractions of ludic spaces by politics according to Bown, referencing Siegfried Kracauer: “The [...] radical realisation is that a culture of distraction doesn’t stop us from doing really important things; it makes us believe that there actually is something that is really important: capitalist production” (Bown, 2017: 40).

Should AR or MR become ubiquitous, then the blurring of leisure and work time and space could become even more pronounced. Games mean the: “[...] worker must “pay back” their *Candy Crush* indulgence by answering emails in bed at night” (Bown 2017: 36).

This highlights the political and sociological nuances to space, introducing a much larger topic. This is why we have chosen to focus the first chapter on a brief overview of space as a general concept and then deep dive into specific areas in later chapters – the effects on the city, on the hardware, and on the society that uses such tools. Identity, the Internet of Things, and the VR+ space, are all contained within the overarching space of the semiosphere of semiotic exchange.

The embodiment of the hardware and of the user within hardware is a particularly important chapter for us when considering the separation of virtual space and physical space – the contemporary presence of the screen always delaminates the spaces with a gap, a filter, that causes a different context of the signs contained within such an environment.

The common theme of the previous spatial research so far is to imagine the interaction of virtual and physical data as a metaphor in the physical. The cyberspace city and the game dreamspace are modern examples of Berger and Luckmann’s different realities, and the transmedial construction of a user’s physical identity, which point to the virtual signage bleeding into the physical. Although we prefer to view the two spaces as dual ecologies, interacting and overlapping

but staunchly separated, we must be aware of allowing an equivalence to become the consumption of physical by the virtual. Reading the city space as a cultural text or the game space as a political text presents a precedent for applying tools of linguistic analysis to an abstract concept such as virtual space.

1.1.1. Travels in hypervirtual space

Amid the COVID pandemic, there arose a term – “the new normal” – to describe the cultural shift and altered spaces of the contemporary society. This new normality is seemingly the virtual simulation of Baudrillard, as the online is made more indistinguishable from the physical reality. The transmediality of the online/offline message becomes consumed and leads users to find sensory gratification that is a simulation of the simulation. This re-virtualisation of the virtual space (a narrative Baudrillard states we cannot distinguish from the physical reality) is on the cusp of what is achievable with contemporary technology. Current dynamic avatars, holograms performing physical concerts, and computer graphical interfaces that overlay the physical space are the last of the postmodern hyperreal signs. The future of virtual beings, AI created and disseminated information, and the general ubiquitous virtuality of society will continue the simulation, but it will use the virtual signs (already interchangeable with the physical) as that which is simulated and exaggerated.

Throughout the thesis we will return to the problem of objective reality versus subjective reality construction. This is arguably the primary conflict of the thesis, with the additional questions of literacy and identity tangential to the central question of what is “real” in the virtual reality communication.

To begin this discussion – which we will introduce here and then break up in to the three subsequent chapters – we will identify a definition of reality from previous research, namely the work of Berger and Luckmann. They identify several different realities:

I am conscious of the world as consisting of multiple realities. As I move from one reality to another, I experience the transition as a kind of shock. This shock is to be understood as caused by the shift in attentiveness that the transition entails. Waking up from a dream illustrates this shift most simply.

Among the multiple realities there is one that presents itself as the reality *par excellence*. This is the reality of everyday life. Its privileged position entitles it to the designation of paramount reality. (Berger, Luckmann 1991: 35)

Berger and Luckmann do not suggest that we enter an alternate dimension every time we sleep – no more than we leave the “reality *par excellence*” when we put on the VR headset. But the semiotic reality – the signs and subsequent meaning formed from the interpretation of such signs – come from, and lead to, a reality that does not require an objective, physical, reality. Indeed, due to the transience between such realities, we can posit that the existence of such an objective reality

is, as Berger and Luckmann suggest, the construction of institutionalised consensus and social habit.

However, for our discussion we would perhaps prefer to use “virtuality” as the implication behind different realities is the parsing of data between different planes of existence. We would argue that the online space, the hologram, and the physical person all exist *per se*, as interpreted signs of meaning by the receiver. The concept of the sign not existing is complex and borders of the metaphysical rather than the ontological. We prefer to continue the use of the virtuality spectrum – hence the idiomatic section heading here; a reference to the aforementioned text *Travels in Hyperreality* by Umberto Eco.

Jean Baudrillard was influenced by Marshall McLuhan’s theories – notably that we live in a “global village” and that the “medium is the message” (2005). For McLuhan, the media alters the meaning of the sign while Baudrillard suggests that the data removes the original sign completely – the sign is engulfed by its own data, losing its referent, and becoming the eponymous simulacra of his most famous work. Such a link between McLuhan and Baudrillard is not new, (Huysen 1989: 11), and demonstrates the exaggerated trend of the mediatization of self that Baudrillard saw.

Baudrillard posits that the subject is led away from the objective by the web of meanings and differences. By constantly comparing the sign to what it is not to formulate a meaning, leads us to a reality that we cannot know directly – a simulated reality of not-reality; a hyperreality. This seduction is illustrated by holograms:

In the hologram, it is the imaginary aura of the double that is mercilessly tracked, just as it is in the history of clones. Similitude is a dream and must remain one, in order for a modicum of illusion and a stage of the imaginary to exist. One must never pass over to the side of the real, the side of the exact resemblance of the world to itself, of the subject to itself. Because then the image disappears. One must never pass over to the side of the double, because then the dual relation disappears, and with it all seduction. Well, with the hologram, as with the clone, it is the opposite temptation, and the opposite fascination, of the end of illusion, the stage, the secret through the materialized projection of all available information on the subject, through materialized transparency. (Baudrillard 1994: 105)

Baudrillard states that passing into the image destroys the illusion – much as waving one’s hand through the projection of Hatsune Miku ends (supposedly) the illusion of autonomy and selfhood. However, as evidenced by the recent development of MR technology and the promise of the upcoming ubiquitous Web 3.0, we may already have passed to the other side of the double and the illusion has ended in the sense that we no longer recognise the virtual as an illusion, but rather rely on the even-more virtual to be our new seduction.

Rheingold also follows up on McLuhan with a critique of techno-capitalism in the 1990’s, which has continued to run rampant since, with our contemporary multinationals having greater cash reserves than some countries:

human desires have been progressively simulated, confused, and ultimately numbered by the barrage of provocation images, sounds, words thrown our way via electronic media: McLuhan didn't tell us that the global village would be experienced primarily by most people as an overdose of beautifully crafted advertisements, based largely on sexual innuendo [...] Electronic media have been used thus far by a few to manipulate the desires of many, resulting in unprecedented financial profit. (Rheingold 1991: 350)

In the mid-90s Mark Nunes took Baudrillard's hyperreality and applied it to the burgeoning world wide web – the information superhighway as it was called back then. Nunes work is pinnacle and highlights something significant about the virtual plane then and now, and why hyperreality can no longer be sufficient to explain the modern conception. Cyberspace, that space of cybernetic systemic presentation of data as a metaphor for the inconceivably large amounts of data held by machines and accessed so freely, was seemingly positioned as a separate space. It was an “over there” place where one gains access via a cyber-door (the screen) through which one is able to comprehend visual signs and familiar presentations of the data. Where the data was before such an access point allowed the user to access it has always had ill-defined, inaccurate, metaphorical names likes “cyberspace”, “the net” or “the cloud”:

“Cyberspace” no longer strictly refers to the fictional “matrix” in William Gibson's novel *Neuromancer*; it has now entered into common speech on and off the Internet as a shorthand for this conception of computer networks as a cybernetic space. From a Baudrillardian perspective, this figuration of Internet as a kind of cybernetic terrain works to undermine the symbolic distance between the metaphoric and the real. It abandons “the real” for the hyperreal by presenting an increasingly real simulation of a comprehensive and comprehensible world. This heading points the way toward Baudrillard's “hypertelia,” that fated catastrophe when the sophistication of a model outdoes the reality it attempts to comprehend. (Nunes 1995: 314)

The hypertelia of the media – the virtual – have reproduced and consumed the biological reality. The digital space is becoming no longer a simulation but a replacement of the real as more signs and information originate from cyberspace. Temenuga Trifonova further adds an important distinction to Baudrillard's hyperreality:

It should be emphasized that Baudrillard does not identify the hyperreal or the virtual with the imaginary or the unreal. The latter are forces of negation whereas the pathological involution of the real in the hyperreal puts an end to negation. For Baudrillard, the virtual or the hyperreal is the fulfilling of the dialectic. (Trifonova 2003)

This is important because the hyperreal – and the virtual hyperreal/hypervirtuality we present – does not replace reality, but rather it masks the physicality of the world. The reality is, as we will see, a human construct of interpreted signs bound by the physical limitation of architecture, space, language, or, in the case of the

virtual, ourselves. Trifonova's work on Baudrillard and the subject will be explored throughout the thesis.

The access point thus allows one a window to view a hyperreal set of signs – more real than real, simulating the physical world within the screen but without any physical original. As the following thesis will demonstrate, the age of “cyber-space” or “the cloud” has passed. We live in a world and a society where the virtual and physical are already becoming enmeshed without distinction. There is no requirement for a specific, singular access point, when a personal, individualised, shadow of data follows you around. This could be something as common as scanning a passport at a check-in desk or paying for a coffee with a credit card, but now biometric readings of one's physical health, GPS location data of your morning walks, the books you read and even the legality of your citizenship exist as a constant underlying, always-on, always-updating, stream of data that no longer allows us to consider the virtual as a specific alternate reality.

Eco's writing about the fantastical and the fake with references to a trip around America, stating that holography and hyperreal is a quintessentially American phenomenon has already been introduced (Eco 1986: 4). However, since Japan, China, and Asia are primarily driving the VTuber trend and VOCALOID music especially (albeit with increasing input from Western creators) it is worth updating Eco's research from the understanding laid out above. With a pervasive, constant virtuality in our lives, as inseparable as physical reality is, how do we model and conceptualise these virtual beings – VTubers, VOCALOIDs and virtual idols – within this space?

The “new normal” of post-pandemic society will presumably have increased telepresence and remote working capability. The normalisation of the virtual classroom means that the extreme of a student presenting themselves within this virtual framework as a virtual being (a bird or a cat for example) cannot be considered hyperreal. It is hypervirtual. It is a sign shrouding the mundanity of the (new) normal education that enables a fantastical narrative should everyone partake in the fantasy – as users do in the phantasmagorical playground of the virtual forums and ludic spaces where participants socialise, such as *VRChat*.

Hyperreality goes beyond the simple notion of “fake” and instead suggests that the boundary between the fiction of, to use Eco's example, Disneyland, creates its own reality. The “fake” street is more real than the original due to the over-exaggeration of fantastical elements within the concept. Taking the sign as something that conveys meaning but within the cultural whole of the wider society, the hyperreal is that which exists within a very localised social setting, and overtly encourages the audience to create a shared mythology. Louis Marin introduced Disneyland as a degenerate utopia, a place (space) delimited by a physical boundary but whose fantasy bleeds from the surrounding reality within which it is embedded. Marin writes:

Disneyland is the representation realized in a geographical space of the imaginary relationship that the dominant groups of American society maintain with their real conditions of existence, with the real history of the United States, and with the

space outside of its borders. Disneyland is a fantasmatic projection of the history of the American nation, of the way in which this history was conceived with regard to other peoples and to the natural world. Disneyland is an immense and displaced metaphor of the system of representations and values unique to American society. (Marin 1984: 240)

The ideological utopia, through participation in the telling and re-telling of the narrative, and through the participation of the visitor within the various spatial limits (similar in nature to the codification at the centre of the semiosphere), Marin sees the utopia degenerate into participatory myth. The virtual utopia has degenerated into the experienced form of the myth – the external and internal narrative spaces have “degenerated”, rejecting the distance and separation that keeps the utopia as an unobtainable ideal, a virtual updating of Marin’s proposition on the spatialisation of Disneyland.

With hyperreality we have the creation of a fiction that is considered more significant – or meaningful – than reality. Nostalgia, kitsch, a return to one’s childhood, but a return reimaged via capitalism and media, are features of an idealised “real”. The interplay between physical reality and the virtual has been considered within the discussion on hyperreality – Nunes opines that: “[The] Internet doesn’t simply lay down a mesh of connections between real-life nodes/computers, annihilating distance; it creates and maintains its own simulated world in place of the physical world of spatial distances” (1995: 317).

There will be comparison between the notion of hypervirtuality and the movie, *The Matrix*. In this film, the protagonists discover that reality is a simulation and the signs around them are the hyperreal – at least in theory. Baudrillard distanced himself from the movie claiming that the distinction between the simulation and the real was too distinct (Lancelin, Baudrillard 2004). He claimed that David Lynch’s *Mulholland Drive* was more appropriate, with its dreamlike narrative and switching realities. *Inland Empire*, a spiritual successor to *Mulholland Drive* additionally constructs a non-linear narrative, parallel universes, and dreamlike metanarratives where the characters seem both aware and unaware of being within a movie. The narrative of the Lynchian movie constructs a space where the characters experience amnesia and confusion about the reality of their own narratives. It is not unreasonable to imagine a situation where one is incapable of knowing what is true when reality and hyperreality are constructed within the virtual web, much as we discussed previously with reference to Zhao.

At the end of the 1999 David Cronenberg science fiction movie *eXistenZ* one of the protagonists asks, after witnessing a brutal killing “This is still the game, right?” While such a movie typifies Cronenberg’s fetishization of the techno-erotic/techno-horror dichotomy, this example of the director’s signature exemplifies the loss of reality within the purely virtual space where the interpretations of the signs create genuine emotions, but the web of meaning is ungrounded – there is the virtual and the hypervirtual. The Cronenberg movie, *Crash*, features in Baudrillard’s *Simulacra and Simulation* within an eponymous chapter where the themes of the cybernetic, the merging of the technological with the erotic, are

overtly described, and contrasted to Deleuze's description of the puritan machinery: "the technology in *Crash* is shining, seductive, or dull and innocent. Seductive because denuded of meaning, and because it is the simple mirror of torn-up bodies" (Baudrillard 1994: 113).

In *eXistenZ*, this can be demonstrated by the overtly grotesque – the body penetration by the organic technology – set against the meta games-console of transCendenZ with its more traditional apparatus. But the game within the game, and the resulting confusion as to the reality of the space is the hyperreal in the virtual – the hypervirtual. To use Zhao's terminology specifically, it is a hyper-virtual telecopresence where two people interact within the virtual space via digital automation. The players of the game are digitally represented within the space. Another theme within this movie is the game space and ludic narrative are formed and influenced from the personal thoughts, backgrounds, experiences, of the players. This collaborative formation of reality by mass media is a representation of the new online participatory culture (Ross, Rivers 2020: 3–5). Such a semiotic model of reality will be addressed extensively in the third data chapter on social reality and by implication, social hypervirtuality.

Baudrillard highlights four orders in simulation. The first-order sees artificial beings as: "the theatrical mechanical and clockwork counterfeit of man where the technique is to submit everything to *analogy* and to the simulacrum-effect" (Baudrillard 2016: 74). He continues with the second-order where an *equivalence* to man is exhibited by the machine – it is no longer mere counterfeit. Third-order simulacra is the *precession* of simulacra – the masking of reality: "it plays at being an appearance" (Baudrillard 1994: 6) and the final, fourth stage sees: "it is no longer in the order of appearance at all, but of simulation" (1994: 6). Baudrillard states that the simulation is not an overt transition to another plane of existence but something more subtle:

When the real is no longer what it was, nostalgia assumes its full meaning. There is a plethora of myths of origin and signs of reality – a plethora of truth, objectivity, and authenticity. Escalation of the true, of lived experience, resurrection of the figurative where the object and substances have disappeared. Panic-stricken production of the real and of the referential, parallel to and greater than the panic of material production: this is how simulation appears in the phase that concerns us – a strategy of the real, of the neoreal, and hyperreal, that everywhere is the double of a strategy of deterrence. (Baudrillard 1994: 6–7)

This quote summarises our position of what has occurred in the years prior to the COVID-19 pandemic. The simulation of reality, not by representations, but through the hyperreal signs. Modern movies and TV shows apply filters to add effects like lens flare or grain, which technology has rendered obsolete, in a fit of nostalgia. The yearning for the 80's has introduced a music genre that sounds like *how we remember* the 80's sounding, but so-called contemporary synthwave/vaporwave music has little in common with the music of the time. Nostalgia has become utopia (Cole 2020).

Is hypervirtuality this fourth-order simulacra? We take the position that Baudrillard did not contemplate the end of hyperreality or the advent of mixed reality within the Web 3.0 space. With these technologies, the process of hyperreality will be complete when the subjective self is completely lost amidst the online avatar and virtual beings – and subsequent human-virtual-being relationships. But within that society, a hint of which we saw during the COVID lockdowns of 2020/21, there is a new desire for hyperreality, for the more virtual-than-virtual space. Virtual classrooms, offices, conference halls, mainstream game spaces lack the gratification that virtual media once offered, and a new level of simulation is desired. The reproduction of the “simple life” via meditation apps and smaller social media servers like Discord which offer an escape from the adverts of Facebook and Twitter, hint at a possibility of the offline self to return within the simulation. In many ways, we can see the process of the machine to simulation being replicated by the new post-simulacra human, the real as an analogy for the virtual. Identity, and the relationship one has to the signs and reality of the space around them, will dictate any potential fifth-order simulacra, but for the purpose of this thesis, hypervirtuality is the fourth-order simulacra within the VR+ space.

With the overlapping of the virtual and physical that augmented reality allows in a multitude of scenarios (from games like *Pokémon GO* to adding information to a museum tour) we can see there is indeed a spatiality and a mesh between the virtual and physical. The distances between users may be negated in socio-geographical terms but by interacting within a 3D rendering of a studio or club, there is a spatial presence to modern virtual communication. The mapping of the virtual onto the physical as a representation of space, and of translating the physical space into the playable space in the virtual, demonstrates a dialectic between signs and a user’s interpretation of them.

The technology has developed such that, arguably, we are unable to escape the virtual sphere given the integration the digital ecosystem has within our physical lives – buildings, shopping, transport, entertainment, mobile phones, services, and education have all become integrated within this virtual spectrum. Henry Jenkins, a key figure in the advancement of the transmedial model of education, highlights a requirement of updating the scholastic model to include the digital:

Through online discussions of fan writing, the teen writers develop a vocabulary for talking about writing and learn strategies for rewriting and improving their own work. When they talk about the books themselves, they make comparisons with other literary works or draw connections with philosophical and theological traditions; they debate gender stereotyping in the female characters; they cite interviews with the writer or read critical analyses of the works; they use analytic concepts they probably wouldn’t encounter until they reached the advanced undergraduate classroom. Schools are still locked into a model of autonomous learning that contrasts sharply with the kinds of learning that are needed as students are entering the new knowledge cultures. (Jenkins 2006: 183)

The transmedial education paradigm can be a force for good, with the collaborative education spaces online aiding the development of student skills. But it must be accessible for all and contextualised with appropriate guidance from a metanarrative position, or as near to meta as is possible.

In subsequent chapters on architecture and society we will develop this and question whether the distinctly hyperreal space (such as Disneyland) when realised within VR, is still a representation of reality or virtuality. It may be more appropriate to imagine the sphere of virtual social interaction with this notion of hypervirtuality too, where virtual avatars create the signs of social reality within virtual reality. Whether these exist as the dream space of Berger and Luckmann or whether the VTuber is another sphere of virtuality overlaying the hyperreality of the online space is, of course, what we are modelling.

The digitisation of signs that exist externally to the virtual plane – for example, a computer graphical simulation of a place or person that exists offline, such as Disneyland or Michael Jackson – opens the conversation to simulacra. How does one conceptualise some artifacts – fakes or copies? Is the holographic Michael Jackson more authentic when reproducing his songs and dances than presenting an original show that the living Jackson may have never got to create before his death (Stojnić 2016: 174–182)? These are questions we must ask in our travels through hypervirtuality, especially when considering education and the effect of the virtual in this environment on identity.

This process will be described within the data chapters following an initial discussion of previous research into hyperreality and objective/subjective realities. When discussing the spheres of reality, we inevitably cross into the semiosphere of Juri Lotman. These spheres of interpreted meaning, hierarchical in nature depending on the medium, constitute an internal world view of meaning. The intersubjective and the objective sphere of understanding is reality agnostic, as posited by this author elsewhere (Davidson 2020: 165–189). As such the meaning one interprets is not constrained by the virtuality or physicality of different signs but form a relationship across the continuum. This further exacerbates the need for a hypervirtual social concept, rather than only considering the message as an individual interpretation.

A final point of investigation is the later concept of Baudrillard’s “integral reality”. Lee Barron discusses the “post-God” society of Baudrillardian philosophy, detailed primarily in the latter’s book, *The Intelligence of Evil or the Lucidity Pact*. The objective confrontation of reality led to the condition where we had to escape “too much reality”. For Baudrillard, reality TV shows demonstrated the process of turning oneself into part of the banal reality of life, but the interactivity offered by the virtual simulation of *Second Life* completes the desire further (Barron 2011: 5).

Barron presents an analysis of Tim Guest’s 2008 book *Second Lives*, via the integral reality of Baudrillard, stating the experiences of Guest, whilst not perhaps integral reality *per se*, do approach the definition of Baudrillard’s later theory. Integral reality, states Baudrillard: “involves, then, the murder of the real, the loss of any imagination of the real. The imaginary, which we happily associated with

the real as its friendly shadow, vanishes in this same process. ‘Integral Reality’ has no imaginary” (Baudrillard 2005: 18). Reality TV, and the interactive evolution that Barron references – the simulated worlds of *Second Life* or *EverQuest* – perhaps offer something of the dream-made-real. Bown highlighted the game-space as a dreamscape, but the question of integral reality is whether we lose the imaginary when we are able to sate an infinitude of desires in the virtual space?

Barron, and Guest, describe the *Second Life* simulation with descriptions of the economy and complex social lives. In a lengthy but telling passage – which we will break down shortly – Barron highlights how integral reality differs for the simulacra of hyperreal:

To begin to make sense of this “new world,” perhaps inevitably, Guest cites Baudrillard’s classic “desert of the real” conception as his explanation for the motivating force for why millions of people are apparently electing to spend hours in online virtual worlds. [...] the nature of *Second Life* and its effects on Guest go beyond a simulatory experience to suggest the validity of Baudrillard’s idea of an integral “ultra-reality.” This is because as he becomes evermore immersed within *Second Life*, the real and the virtual, for him, begin to merge to a significant degree. (Barron 2011: 7)

Guest describes the virtual as a “membrane” over his “real life” which denotes, still, the delimitation and separation of the digital and physical – or the “real” as Guest writes. This is a significant term, and we will draw on this again throughout the thesis:

In view of Guest’s perceptions, virtual reality appears to reflect Baudrillard’s conception of integral reality incisively and convincingly. As *Second Life* CEO Philip Rosedale envisions, the development and popularity of virtual reality worlds is so pervasive that they are signifying something of an “exodus” from reality to the extent that the real world will progressively fade into the background (Guest 2008). Aside from the hyperbolic futurology of such a claim, Guest argues that this process is already culturally evident, that a significant class of new “virtual émigrés” has emerged who are bound for new virtual territories within a culture that offers increasing numbers of gateways from the lived reality to the virtual. (Barron 2011: 8)

The monthly user demographics for *Second Life* seemed to suggest a surge in users during the pandemic as increasingly businesses moved their meetings to the online space, and users sought an opportunity to meet up with friends. While this is anecdotal evidence – garnered from various Tweets at the time – and lacks empirical evidence, it would not really suggest the “abandoning of reality” and the physical space both Baudrillard and Rosedale depict. We see the problem of hypervirtuality as being somewhere in between the hyperreality and integral reality models. The hyperreal suggests that the media-creation is indistinguishable from the real and we can posit that the contemporary issues of “fake news” and conspiracy theories imply an inability to determine the real from the fake online (Shu *et al.* 2019). Barron continues:

So, unlike some intoxicating age of simulacrum in which the real is purportedly indistinguishable from a media-produced simulated/hyperreal world, Baudrillard's proposition that integral reality is an oncoming state is granted some credence here. Guest is not hopelessly lost in the world of simulation, but he recognizes that the real *is* receding in his daily life post-*Second Life*, that, through the immersive power and seductions of *Second Life*, the real can potentially become less distinct and more distant. [...] Such attachment is akin to the "power users" of MMORPG who stress that their online fantasy world is their real world, while the Earth is just a place of necessary convenience, a space to eat and sleep (Castonava 2005). (Barron 2011: 7)

In this thesis we talk about mixed reality and Web 3.0, positing the next step or replacement for hyperreality/integral reality. MR integrates the real space as a canvas upon which virtual information is displayed. There is an interaction between the two realities. When the digital reality however presents all (or nearly all) information, when all signs are digital, against a meaningless ubiquitous, flat physicality that is merely presented as a bounded space, then the user is not integrated – the reality is not integral anymore. Not everything is displayed for everyone to see, there is still an imaginary narrative – a fantastical drive for escapism – but they occur within this blurred space of digital information.

To illustrate, consider the quote above. The real may be less interesting or exciting than the virtual but it is recognised as distinct. The hyperreal however, as Baudrillard stated when critiquing the movie, *The Matrix* (see above), should not have a clear distinction between realities. While integral reality perhaps is the more applicable term for the virtual life simulation where one needs to login, or don heavy equipment, the hyperreal is that layer of digital information that we do not recognise as digital. The filtered, edited, staged Instagram photo, or the algorithmic presentation of news articles and shopping recommendations is hyperreal to the unsuspecting user. This thesis uses identity as the primary example, specifically in the classroom. While VR and AR spaces demonstrate a clear distinction between realities, the MR space blends the two – negating the differences between the two. MR without the delimitation of specific equipment to access a portal – for example, the everyday interaction with an AI bank assistant when one "merely goes to a bank" in whatever form that bank may exist, rather than logs into the *Second Life* bank – is the hyperreal. But suppose we wish to speak to a human at the bank rather than the AI assistant? We ask for the customer service representative and we speak with a human over the phone, represented by their avatar. They assist you in your problem. This was a desire to return to the human-to-human interaction with voice and face that you interpret as human. However, in the future, Web 3.0 era, how do we know that the avatar and voice was of a human and not a virtual being?

This is not an integral reality, but hyperreal-in-hyperreal scenario. We do not present ourselves to the AI bank assistant as our physical selves of course, but we use the avatar associated with the banking account so they can recognise and

present our portfolio quickly. It is a virtual-to-virtual interaction. Hypervirtuality is therefore an appropriate term. Barron concludes their paper with this quote:

Jean Baudrillard remains a key theoretical guide to the attractions of virtual reality worlds and their potential to offer different forms of experience. And integral reality is a pertinent and insightful tool with which to make sense of a world in which the virtual continues to make its presence felt. As he states in relation to the thrust of *The Intelligence of Evil or the Lucidity Pact*, “the world is not real. It became real, but it is in the process of ceasing to be so. But it is not virtual either – though it is on the way to becoming so” (2005: 34). A grand statement, perhaps, but as Guest claims, such an ontological state is achievable, now, within *Second Life* and the associate online virtual worlds that exist in the ever-expanding digital metaverse (Barron 2011: 15)

The world may not become virtual, but the information presented, the spaces where we teach, learn, work, and play, and the presentation of ourselves and our friends, may very well already be in the process of virtualisation. The transmediality of one’s identity is referenced throughout this thesis as the key to maintain grounding – in a sense, it is the integrating of the self within this reality that Baudrillard highlights via integral reality. With Web 3.0, the post-pandemic society, and the perceived freedoms afforded online over the offline, the concept of the fully virtual self – projected into society like a reverse of the Bunraku puppet – seems increasingly plausible. Even the space of *Second Life* is old fashioned and underwhelming to users today, preferring the role play of virtual reality with *VRChat*, *Alt-Space*, or *Sansar*, the VR evolution of *Second Life* made by the same company. To highlight this new future from the current conceptualisation of hyperreality, and to make use of the pre-defined terminology of Zhao, we will use hypervirtuality rather than ultra-reality, as other authors use. As the contraction of hyperreality and virtuality, it represents the future reality more appropriately still.

The emotional responses to avatars are similar to the user engaging in the same techno-fetishization as Cronenberg – one of whose movies, *Crash*, overtly deals with objectphillia as a by-product of symphorophilia. The hyperreality – and subsequent hypervirtuality – of Baudrillard necessitates the reality, and the participation of the subject without question. The gap between the real and the hyperreal is not an overt boundary of *The Matrix* but rather the transcendental unease of *Mulholland Drive*’s fluidity of identity and certainty. Mark Fisher also discusses the movie *Mulholland Drive* with an analysis that demonstrates how hypervirtuality can be embedded within hyperreality, without actually referencing either term specifically:

The Hollywood setting proliferates embedded worlds – filmwithin-films (and possibly filmwithin-filmwithin-films), screen tests, performed roles, fantasies. Each embedding contains the possibility of a disembedding, as something that was at a supposedly inferior ontological level threatens to climb up out of its subordinated position and claim equal status with the level above: figments from

dreams cross over into waking life; screen tests appear at least as convincing as the exchanges in the supposedly real-world scenes that surround them. In *Mulholland Drive*, however — rendered in the onscreen title as *Mulholland Dr*, with its suggestion of *Mulholland Dream* — the overwhelming tendency appears to move in the opposite direction: it is not so much that dreams become taken for reality, as that any apparent reality subsides into a dream. But whose dream is it anyway? (Fisher 2016: 53)

Realitieswithin-realitieswithin-realities could be the stylistic approach to representing the new virtual world (the hypervirtual) within the contemporary virtual world (hyperreality) within the physical space (the expanse, the substrate to the cultural semiosphere). The hierarchical nature that Fisher highlights within the movie narrative reminds one of the institutionalisation of each reality, the language and access needed to access with one or the other reality, the legitimisation of politics or media as each strives for control of the outlying space. Identity is presented as freedom, a dream, within the hyperreal, and within the virtual hyperreal, and it is. But like any dream, if we become too embedded within it, it becomes a coma that we cannot escape. The loss of the transmedial — the grounding — in our identities could be the conclusion of the postmodern narrative. However, using mixed reality to append our social realities rather than construct it, and with careful literacy models in school, we access the freedom, without negating ourselves.

1.1.2. Space and human-computer interaction

Computational spaces are a part of the human-computer interaction (HCI) design, as Harrison *et al.* (2007) outline in a discussion on a phenomenological update to the current HCI research. There is a space of interaction — the window where one operates and manipulates digital data signs. This is a space of creation and simultaneous reception — the screen of the computer is used for shopping, watching videos, and creating documents or updating social media. Such a duality leads to a space that has unique requirements — as detailed by preeminent user experience (UX) semiotician, Clarisse de Souza (1993, 2001, 2005, 2006). Spaces for creating and receiving data rely on a code of representation that translates between both users, (Merrell 2014: 248; Kull, Torop 2003: 315–328), but with the added layer of the computer as an immediate intermediary (as opposed to the delayed intermediary of the printed page). The actions and transmitted messages are translated initially via the computer code. The frontend library of signs — that which the user interacts with directly — will use a natural language (English for example) while the computer at its most fundamental level will use on or off represented by 1s and 0s. The distance between these two languages and readability for both parties is broad — natural languages are more analogue than binary with their expression of nuances.

Tanaka-Ishii highlights the spatiality and temporality within the triadic model of the internal computer code sign: “[...] the signifier carries the spatial aspect of

the sign., whereas the content captures the temporal side of the sign” (Tanaka-Ishii 2010: 170). For Tanaka-Ishii, the sign of the computer code contains a temporal aspect and a spatial aspect – a spatialization that is primordial as the signifier to the content. The computer sign denotes a memory space within the code that must be confirmed prior to the code sign being enacted by the computer. As the VR+ space is formed at its most basic by computer code, the spatialization of the semiosis thus begins at this most fundamental level. Tanaka-Ishii’s research allows us to introduce the code as a fundamental textualization of the space, but as her book mostly concerns the architecture of the hardware and software, we introduce the research here to highlight the wide definition of space – such as the memory and storage of underlying hardware. Additionally, Tanaka-Ishii discusses the “being” and “doing” of a sign with reference to Martin Heidegger: “‘*Being*’ [...] refers to the ontological status of an entity whose ontic character is established by what it is, while ‘*doing*’ denotes that of an entity whose ontic character is specified by what it does and by what can be done to it” (Tanaka-Ishii 2010: 71). Thus, *what* is done, and *how* it is done, are two different ontological focuses of the content. Within VR+ we therefore focus on the *what* – an avatar, a surreal space, productivity tools, a Pokémon – and the *how* – AR via phone, VR via headset, MR via glasses, VR+ as some combination thereof. Within this chapter we take the space as a general concept and then subsequently analyse the ontological differences of presentation via the architecture chapter later.

Such a split aids the depth and focus of our investigation – this chapter is first because space is, as Tanaka-Ishii states, primordial. Additionally, Tanaka-Ishii demonstrates the entwining of spatial concepts within programming via domains and object-oriented paradigm spaces:

The distinction between ‘being’ and ‘doing’ is seen also in computer programming. The computer programming domain is unique in that it may be seen as a complete world consisting only of signs, and yet even here the same contrasting paradigms of ‘being’ and ‘doing’ coexist. (Tanaka-Ishii 2010: 71)

Tanaka-Ishii raises a point on the lower threshold of semiotic signification by positing a complete world made only of (artificial) signs. The implication is that there is nothing that is not signifying some relevant, interpreted, translated, meaning. Indeed, given the way a computer library compiles the code, or translates it to binary or some NLP (natural language programming) script, it is significant to note that the whole of the virtual domain is in fact, within the semiotic thresholds of Eco (Pisanty 2015). We can take the primordial, physical, space as a lower threshold domain where signs that are significant to us are interpreted, but with the virtual overlay as a world of always meaningful signs. This supports our hypothesis that the two planes are separate, with any collapse or blurring between them is one of interpretation rather than intention. Hypervirtuality is a model of interpretations, not literal removal.

The space of interaction is not just the cursor on the screen but the manipulation of the mouse as a tool for moving said digital sign, and as an extension

of the human body (Bergström *et al.* 2019; Snijders, Helder 2004). Interaction necessitates a space where the user actively manipulates and controls a physical piece of hardware. This can be a desk and typing on a keyboard producing a digital, discrete, set of commands. Or it can be the space of analogue movement via the mouse, with the possibility to physically represent movement on a virtual gradient. The mouse – and game controller – impacts the presence the user feels within the space through the creation of a physical metaphor for the actions occurring on screen. Johan Blomberg provides a comprehensive introduction to the semiotics of the controller, in particular, the iconicity, indexicality, or symbolic nature of the interaction (Blomberg 2018). Blomberg enables us to link the controller to the theoretical space of the user as an entity present in the narrative space. The gap between the physical and the representation within the virtual is reduced by the shortening of the link between player and controller: “the fundamental aspect that allows a video game player agency in a virtual world is, of course, the control device – affording the player the opportunity to act directly on and in that world” (Crick 2011: 266).

With the recent advances in mobile technology, this space of operation is no longer situated within a specific room – an office, the bedroom and so on – as people can interact with the same data while in a space that has different environmental properties (de Souza 2006: 236). This results in a need to change the representation of data on the screen to take account of light, visibility, sound, speed of browsing, privacy, and method of interface (voice, touch etc.) (Zheng *et al.* 2015). During the COVID pandemic, such considerations were brought to the mainstream with many having to adjust to teaching and working at home.

Social media and social networking sites are intrinsically linked to the discussion. Instagram, YouTube, TikTok, Audible and so on all expect their applications to be used outside of the constraint of the desktop PC, hence restrictions on what a user can do on the Instagram website for example. Social media encourages the recording and representation of the physical world within a stylised, virtual, network. Such networks can be considered a Baudrillardian simulation of the hyperreal, since the interpretation of the simulation exists not in any defined space, but within our own interpretation:

By crossing into a space whose curvature is no longer that of the real, nor that of truth, the era of simulation is inaugurated by a liquidation of all referentials – worse: with their artificial resurrection in the systems of signs, a material more malleable than meaning, in that it lends itself to all systems of equivalences, to all binary oppositions, to all combinatory algebra. It is no longer a question of imitation, nor duplication, nor even parody. It is a question of substituting the signs of the real for the real, that is to say of an operation of deterring every real process via its operational double, a programmatic, metastable, perfectly descriptive machine that offers all the signs of the real and shortcircuits all its vicissitudes. (Baudrillard 1994: 1)

Currently, AR/MR do not have the presence to completely replace or throw away the real world. The fiction is too permeable, too reliant on the real canvas.

However, later we will analyse the phenomena of virtual partners. These are smaller, self-contained, examples that allow for a more complete simulation experience. VR, however, requires the user to enter in much the same way as one enters Disneyland. Thus, the internal space of the VR concept does indeed conform the Baudrillardian simulation. This, as a discussion on freedom of identity, offers the possibility that without the opposition of the real, it loses grounding as well as loses its distinction with the imaginary – which suggests a route to hyper-virtuality. The deeper investigation of the simulation space with focus on gender identity will need to find a way to assimilate Baudrillard into the model. The conceivable end of this trend, which has progressed unhindered, culminates in the completely virtual, socially constructed space of signs without value beyond what they superficially signify. Some will signify a concept of more subjective value – or perhaps gratification – and thus the cycle of hyperreal space will continue, but with the real replaced by the virtual; the hypervirtual.

Space and interaction design demonstrate an apparent disparate, transmedial, network of signs that are fluid in their placement within the space as a whole and can be received in any number of external spaces that can affect the screen space. This thesis, with its focus on VR+, takes this one step further, positing the virtual actively augments the physical space. Consider the route map that overlays signs for you to follow using a live video feed (such as *Google Maps*) or the translation app that replaces text dynamically with that of your chosen language (like *Google Translate*). Research into this virtual space is different enough to the traditional UX space that we will separate it into its own section.

1.1.3. Virtual space and virtual computer-mediated communication

The signification occurring in a virtual restaurant between two virtual, non-human avatars, potentially in a non-verbal manner, transcends the purely virtual due to the human in the headset, existing in the physical space. But is the communication model one of user-to-avatar, or is it directly meaningful to the users behind the avatars as user-to-user, or is it two flows of meaning across separate spaces, user-to-avatar, then virtual-to-physical? CS Peirce describes a chain of unlimited semiosis with each interpreted sign generating further interpretants, which Giampaolo Proni discusses with Eco's encyclopaedia model (Proni 2015). These signs may be virtual or physical, but the user is always physical and will be grounded as such. This allows us a way to use Peirce's research, across all realities, as a condition of the sign is to apply the reality as another sign in the chain. The result is that the "virtual" plane is a sign in a chain of meaning for each user. Thus, the virtual is not in isolation of the physical, nor is it considered interchangeable with the physical. But the meaningfulness of the signs within each space can change, with the virtual occluding (consuming) the physical to be the more meaningful. Thus, we have a hyperreal space within the physical border.

Watching a virtual avatar such as Hatsune Miku leads to the question; is the audience receiving the song from the VR+ hologram, or are they listening the

producers' songs directly, albeit within a different space, represented via the avatar? This can be extended with the introduction of dynamic avatars like Kizuna AI which overlay a physical user with, essentially, a filter. These avatars add to the chain of signification, but they do not reconfigure the original sign – it is still present in the chain. The receiver must be aware of the VR+ aspect of the transmitter then for it have the sign of VR+, otherwise it is equivalent to the physical signs of any transmitter.

To say that the virtual avatar alters the meaning of the message by virtue of it being a virtual avatar, the receiver must be able to recognise the signification of the virtual space. The space of interaction enables signification by providing a boundary to the notion of “virtual”. To apply any cultural context to a sign, the receiver must be able to recognise the culture as a space – Randviir offers us a methodology for such a model of recognition, which we present below.

Previous VR+ research has focused heavily on its applications in education (Yuen *et al.* 2011, Han 2011, Baker *et al.* 2009) and city planning (Kress 2017; Kieferle, Wössner 2003). These two seemingly disparate applications are linked via the advantages that a complete, 3D, realisation of a space offers the user. Perhaps the most obvious advantage is the reduction of distance between students who may not be in the same classroom, town, or even country. The distance is effectively nullified by having everyone present in the virtual space of the teacher's creation. This allows for the simulation of togetherness and involvement. Indeed, such an application is a very real, and very small, step from the process by which this author teaches students online using a simple camera and classroom interface space. Such communication is already reducing the distance between oneself and the technology with which they access the classroom – laptop, phone, tablet and so on. This interface space, scaled up to become a 3D rendering, has an additional consequence in that the signs and indicators of socio-cultural differences, geography, and time zone differences are blocked out by the virtual world. That is, the student being in twilight, and the teacher presenting in mid-afternoon, are represented within the same virtual time zone. The biological effects of such a situation are perhaps open to further research (the content producer Jak Wilmot spent a week living within VR and reported strange effects when sleeping but he also programmed a day/night cycle to maintain circadian rhythm)⁵.

However, the type of education that occurs within the virtual space may impact effectiveness. While treating psychological disorders like stress, phobias, or PTSD, show some merit to VR according to companies like Psious, other skills like medical training highlight the problem of physical feedback (Våpenstad *et al.* 2017). Lacking accurate haptic response to actions within the virtual space demonstrates a shortfall of VR and potentially why AR/MR solutions will prove more effective (Kim *et al.* 2014). This will be explored in an upcoming chapter dedicated to the technology itself, but as an effect on communication space, it

⁵ See <https://www.youtube.com/watch?v=eX2QBkPnw>

would decrease the gap between users if physical touch and other sensorimotor responses could be dynamically mapped from the interaction. Touching a surface and feeling a solid pressure would further embody the space within the user's Umwelt by adding extra signification. This extra data will be discussed later with reference to the differences between VR and AR/MR.

In architecture design, the lack of touch is not as important as realistic lighting effects. Recent developments, lifted from the Hollywood special effects studios, allow for increasingly accurate modelling of light and reflections within a computerised space. The translation of this to architecture and VR allows for a city planner to perceive shadows from a pedestrian perspective. Additionally, MR can allow for safety inspections following earthquakes without endangering lives – it positions the user in the space via a proxy – such as a drone (Velev *et al.* 2019). In these two examples, the distance between the user and the physical is both decreased (the architect in the simulation) and increased (the inspector sending a drone into the hazard area). That the virtual space allows for such movement and maintains a communication model that suggests presence, rather than physical distance, is the key to grounding the semiosis.

Avatar research has mostly focused on the game space (Vella 2016). The avatar in the game is a useful introduction to the space of VR+ as play is freedom of expression (Thibault 2017) and such a freedom is, we posit, a key aspect of VR. When considering virtual avatars, we roughly split the research into avatars that are pre-constructed and avatars that are designed by the user. There is much crossover with games increasingly allowing the user to be female or male and to design the appearance of the model to some extent (see: *Mass Effect* or the *Fallout* series). Games like *The Last of Us* require the user to play as a specific character (Ellie or Joel in this case) as these characters are integral to the narrative space of the story. *Fallout* or *Mass Effect* enable a flexibility using neutral, ambiguous, names like “the Courier” (*Fallout: New Vegas*) or “Shepard” (*Mass Effect*).

Uri Margolin (1996) has written extensively of narratology and the player-character, and the use of “we” to denote the fluidity of identity in the narrative space is another example of the spatialization that occurs within a text, between the reader and the text itself. The sign read as a text leads to a unity between the models of semiosis within a city, a virtual world, or narrative.

Our thesis however concerns the avatar within the narrative, and in particular, the role of the user-curated-avatar. We say curated as the user may not have created the avatar, but rather appropriated a model from an open library and made small, personal, adjustments. The VR dancer Forceable used a model of Shimakaze from the anime *Kantai Collection*, while the VR performer Kimple uses a bespoke anthropomorphic cat robot (Davidson 2020). The role of such avatars is essentially the same – to anonymise the physical user. Forceable was mute while Kimple manipulates their voice using software. Others prefer to use different voices to match the gender of their avatar, leading to a digital updating of the drag queen culture (with particularly ties to America – see *Paris is Burning* or RuPaul's TV series). In this case, the avatar seemingly serves to distance the

user from the other users by creating an impenetrable sign of identity, which ultimately acts as a gap in meaning.

However, the anonymity of everyone in the VR space can perhaps lead to an increased freedom of expression (as with other forms of anonymous communication online) which Kabay (1998) relates to aggression, civil unrest, and the generally pejorative consequences of deindividualization. The culture of the online community becomes reinforced internally due to the understanding by everyone within the space via shared views and beliefs, and thus less individual. We will visualise this as a semiosphere shortly, with the communication space bounded within the space of semiotics.

Umwelt theory can help us meaningfully relate the space to the user as a physical entity, with the VR+ signs as an additional level of sense data: “The optimist would say VR embraces the senses; the pessimist would say it kidnaps them” (Biocca, Levy 1995: 17). The VR-self is an extension of the original identity, not a separate identity (as would be the case with traditional acting for example). However, the caveat to this is in the creative process rather than receptive aspect of online data. When a user talks to an avatar, they are not talking to the real but the virtual entity. Does a user tailor the discussion? We see pronoun usage within online spaces demonstrate a fluidity, especially when the gender of the avatar differs to the user or is of no gender – “he”, “she”, “I”, “we”, and “they” appear to be used almost interchangeably; see, for example, videos on YouTube where use of “we” to include an unknown audience within a character arc that is both “I” and “them”, and indeed “it”, is common. However, such research comes from the author’s own viewing of various videos and live streams – it is relevant that there is almost no research on the subject of singular/plural first-person pronoun usage, and we suggest this as a key area of further study.

The characters of video games differ from the virtual beings and virtual avatars by inhabiting a different space – namely the narrative space of the fixed game space. Both have the illusion of interaction, but the virtual being could exist within the space of social media, marketing, or entertainment – these spaces blur the lines between the human and the virtual anyway through use of filters and the “cloud” space where users are told their identity is truly valued. The falsity of the photo on Instagram, heavily edited, staged, and cropped from a user’s life, paves the way for a social acceptance of the virtual model to exist within such a space through, essentially, the same technology. The ludic game character may become realistic, and the narrative may curate emotional attachment, but it is contained within the narrative space that is not as pervasive in one’s everyday existence as social media for example.

This will be addressed in the chapter on identity, but its relevance to space (and architecture) is overt as the investigation is holistic, not compartmentalised, particularly when taking the umwelt as an entity’s semiotic space of comprehension. As Georges above highlights, identity, reality, and space cannot be studied in isolation of each other: “Digital identity is a graphic, auditory, and visual transposition of a representation in thought shaped by the Subject in the material of the interface” (Georges 2009: IV).

1.2. Conceptualising space

This section will examine the research with greater specificity to our discussion. Is the space itself a primordial sign? Does it create or append the meaning of a sign, or is it a meaningless container subsequently given meaning by the signs within it? Or is space just another sign? These are the questions that we will have to answer as we address what is meant by reality and space, and how communication changes between the virtual and the physical space. Additionally, we are going to keep pursuing the underlying premise that the virtual and the physical must remain distinct in some way, separated by a gap, or else the interaction between the two realities risks becoming hypervirtual.

1.2.1. Semiotics and space

Space has multiple definitions, as described by Randviir in “Space and Place as Substrates of Culture” (2002). Taking the previously established definition of semiotics as a system of signs given meaning by their relationship to other signs, there is a spatialization occurring whereby the individual elements are placed in proximity to other signs as well as the receiver. The sign that is created, or shared, has a chain of semiosis extending from its object – as such, semioticians use descriptions like triangles (see Ogden and Richards), chains (Sowa 2000), spheres (Lotman 2005) or squares (see AJ Greimas, for example). This sets out the methodological premise of semiotics and space that this chapter will pursue.

The sign is also located – or is a location itself – so the interpreter can comprehend it as an actual experience. Such examples include objects, places, people, and contexts. Using Harrison *et al.*'s model of HCI phenomenology we can imagine a person using an object within a room that has a direct impact upon the effectiveness of comprehending the signs that are presented upon the computer screen. The surrounding context – the country, the culture – impacts localisation of said data/signs and thus comprehension. Different countries have different cultures, but culture is not necessarily defined by a physical, national, border. Therefore, culture as a space of translation, comprehension, and collective of like-minded semiotic interpretations crosses the physical/metaphorical border to become illustrative of nonphysical spaces operating within a physical boundary – similar to Lotman's non-semiotic and extra-semiotics spaces:

The border of semiotic space is the most important functional and structural position, giving substance to its semiotic mechanism. The border is a bilingual mechanism, translating external communications into the internal language of the semiosphere and vice versa. Thus, only with the help of the boundary is the semiosphere able to establish contact with non-semiotic and extra-semiotic spaces. (Lotman 2005: 210)

In structuring this brief but comprehensive review of semiotics and space, the author is going to use a quote by Randviir: “[expanse] → space → area → region

→ territory → place” (2002: 145). This model is useful as it allows for physical and metaphorical definitions while moving from the general to the specific. Additionally, such a model enables us to discuss relationships between elements of the structure without going outside the model itself. That is, a relationship between a specific text in a country can still be contained by the infinite expanse.

The space given form then, by virtue of the individual being an individual, begins comprehension at an individual level while it exists as a universal. Expanse is everywhere but where there is the potential for some knowledge, we get a space (Randviir 2002: 146). Places however could be a city, or the text of a book: “[...] one may postulate space to be connected with more general and primarily cultural developments and aspects, while place would concern aspects of a more social nature” (Randviir 2002: 145). This leads us to the difficulty that all semioticians and philosophers encounter, the meta language. To describe space, one may use prepositions – ‘there’, ‘here’, ‘under’, ‘opposite’, ‘other’ and so on – that positions objects in relation to others. The space of the universal is never understood outside of the individual because this absence of a meta-language persists. Randviir’s starting point of the “expanse” and not “infinitude” for example, is, in this authors interpretation, a recognition of the lack of meaning infinitude possesses as a spatial domain. Expanse simultaneously allows for infinitude and space to exist by implication of the existence of a border. While space exists between things, and expanse seems to go on forever, it locates itself within a plane of existence that infinity cannot do so by itself. The sum of this is the recognition that the very starting point of semiotics as a model, is space.

Tiit Remm (2015) states that space can begin as a recognition of the difference – and thus separation – of oneself from another object. Such a distinction doesn’t need to be conscious but rather recognising space as not an expanse seems to begin with recognition of a boundary between “I” and “that”. This concept of self-recognition creates an interesting segue into virtual reality and the notion of the avatar as a different entity to the user, while also representing said user.

The observer as an individual recognises the other human and comprehends the signs that other makes. This underlies the principals of culture and complex habitations like cities. Cities are both created by culture and creators of it – see Roland Barthes exemplary 1970 text *Empire of Signs* (1983) – and, as mentioned, are useful for illustrating spatial semiotics. Taking the city as a large collective of individuals, one can also exemplify the Tartu-Moscow school theorist, Juri Lotman, and the concept of the semiosphere.

Lotman’s model uses the space of multiple interaction between actors – users in our case – to map language as it is exchanged between people (Lotman 2005: 206). These exchanges are *umwelten*, continually created as new semiotic environments for each individual that encounters another (Kull 1998). The edges of the semiosphere represent a continuous translation of signs and meanings into the semiosphere, while the closer the centre of the sphere one gets, the denser and more rigid the meanings are entrenched. This could be represented by the physical concept of the Medieval castle city with the keep at the centre as a stronghold of isolation – the king and queen associate with others of their own standing only –

while towards the edges of the city trade and immigration occurs. Outside of the semiosphere, an expanse of non-semiotics occurs (Lotman 2005: 208).

It is doubtful Lotman predicted VR+ technology but the semiosphere model is flexible enough to allow for further research to be applied to it. As part of this space of semiotics, there have been questions on the primacy of language over culture, or vice versa. For Lotman, spoken language is a primary modelling system – no exchange can occur without some mutual basis then – i.e., between two *umwelten* there must be an ability to recognise, translate, and replace the sign. As a theory, semiosphere grounds the research and explicitly models the communication space.

1.2.2. Umwelt and Hyperumwelt

This author has discussed *umwelt* elsewhere (Davidson 2020), and the research topic of space and *umwelt* warrants specific examination. The notion of *umwelt* is vital for modelling the perception of reality of the sign, and it demarcates a semiotic space of comprehension of signification.

As described originally by Jakob von Uexküll, *umwelten* are environments – closed personal spaces of semiosis – where the relationship between them can be thought as having a delimited nature. Within the larger semiosphere translation occurs between the sign and the user. Therefore, each sign is the product and induction of a translation that takes the original and replaces it with an “other”. We say “other” because although it is a copy, it is, as Kull states, required to be essentially different from the original in some capacity (1998). It is a translation, a reconfiguration through semiosis of the sign, within the receiver’s *umwelt*. Semiospheres and *umwelt* demonstrate an agnosticism about reality and the sign, assuming the receiver is able to comprehend the sign within their own context and cognition (Davidson 2020). Indeed, Kull writes: “semiotic phenomena don’t belong to a physical reality” (1998: 304), so rather it is an internal translation.

Uexküll originally used *umwelt* within the field of zoosemiotics, as John Deely describes. Additionally, he expands on the concept of the *umwelt* as an individual world of objects, stating:

And since whatever exists as an object does so only within that network of relations (what Sebeok characterized as ‘a semiotic web’ and Uexküll called an ‘Umwelt’) indifferently from nature and from mind (yet according to a mixture or pattern wherein those relations within and by cognition itself tend to predominate in the presenting of an object as this or that), we see at once that ‘what an Umwelt is’ amounts to a *species specific objective world*, with elements of the physical environment made part of a larger, ‘meaningful’ whole or ‘lifeworld’ wherein the individual members of a given species live and move and have their being *as* members of *that* species rather than some other. (Deely 2001: 129)

Kull further develops the work along this vein, in reference to the above and to other theorists we discuss:

Humans can be aware ‘of their Umwelt as an Umwelt or objective world grasped as a whole in relation to itself, which requires a distinction of objects from things and relations from both’ (Bains 2001: 159). According to Deleuze and Guattari, this transforms Umwelt into a *Welt*, or – according to Deely (recalling Heidegger) – into a *Lebenswelt*. For to Deleuze and Guattari (1988), the threshold from animal to human Umwelt would mean a deterritorialization of signs. (Kull 2010: 53)

It is interesting to note that in the quote above and throughout Deely’s text, the umwelt is the objective world, while in other texts the umwelt is considered the subjective world (see for example Pobojevska 1993; Brentari 2014). We suggest that the umwelt is therefore the point of dialogue between the world of objects and the subjective interpretation of meaning, hence the confusion. The Innenwelt is the situation of the self within the environment, which implies a subjectivity – and an awareness of the subjective self. Perhaps this differs between the human and the non-human animals as Heidegger offered:

Heidegger was acquainted with Uexküll’s work, which he reviewed as part of a series of biology lectures in 1929–30. And he did in fact grant animals a certain phenomenological subjectivity, though he held that ‘the animal is poor in world’, as opposed to man, which is world-forming (cf. Heidegger 1995). His assertion that only man knows things as things can be considered as a philosophical relative of Deely and Susan Petrilli’s notion of man as a ‘semiotic animal’. (Tønnessen 2009: 58)

Hartley *et al.* discuss the digital semiosphere and introduce the concept of umwelt within the augmented reality space, referencing the Unity game engine in the process to textualizing and gamifying the world:

Such engines could manipulate the real environment but also build new, fictional realities on top of the perceived real (or Umwelt). The mirrorworld as the ‘common ground’, both physical and virtual at the same time, constitutes a Lotmanian dialogic and translation space, facilitating mutual learning and adaptation, but also emergence of new forms of modelling, of new languages. (Hartley *et al.* 2021: 249)

Davidson discusses the role of the umwelt further in terms of the digital takeover of the information received by the individual, positing that the environment – *Umgebung* – is constructed by the individual from the interpretation of the digital information when embedded within the virtual environment:

If umwelten are self-perceptions and the *Umgebung* is the umwelt from the perspective of the other, VR hardware with its extensive sensory takeover (audio, sight, equilibrium, and so on) can justifiably be expected to append a user’s umwelt, as could TTS [Text-to-Speech]. However, when recording, the screen relays what the headset displays, albeit transforming it from an interactive space to a video. Thus, it may also be the mediated, transformed, *Umgebung*. The user is translating their own umwelt using input from several levels of reality, and the interactions between users results in a semiosphere, with users existing both in and out of the virtual space. (Davidson 2020: 170)

These “levels of reality” can be seen in the VR+ environment, and in the semiosphere model where several semiospheres interact. Reality is perhaps better defined as schemas of signs rather than the traditional “real” and “unreal” since increasingly so-called unreal information (digital simulacra) append the physical self and space (Roy 2005).

The notion of reality and inner meaning constructing each other in a dialectic raises a problem – the issue of the metaknowledge, which Eco summarises with implied support for digital literacy as a solution:

if you want to use television for teaching somebody something, you have first to teach somebody how to use television. In this sense, television is not so different from a book. You can use books to teach, but first you must teach people about books, at least about alphabet and words, and then about levels of credibility, suspension of disbelief, the difference between a novel and a book on history and so on and so forth.” (Eco 1993: 96)

The dialogic nature of the *umwelt* in constructing an individual’s semiotic reality, and the dialogue between different *umwelt* in constructing semiospheres of social reality, suggests a textualization of the space and self, one which requires a literacy to read coherently. Contemporary signs are digital; hence a digital literacy will be the key to maintain a contextualisation of the self-narrative (identity) within the digital/physical environment duality.

Hyperumwelten are variations of hyperobjects, as discussed by Anna Galika. Hyperobjects are defined by Timothy Morton as objects existing outside of normal space and time of objects due to their massive size or longevity (Morton 2013). The permanence and effects of certain objects negates and undermines biological organisms. However, Galika states that we can redefine the term to mean the wider environment. This environment is unmanageable due its vastness and complexity and is therefore made knowable at an individual level via interacting Hyperumwelten.

Hyperumwelten are seemingly *umwelten* that are as equally complex as the Hyperobjects, but they contain the vastness of the object within a bounded space that remains open in its wholeness, unlike the closed “black box” of the unknowable Hyperobject:

An *Umwelt* is an environment constantly altered by the perceived information. This makes the Hyperumwelt a whole with porous edges that allows the distribution, and the addition or subtraction, of information. Another difference is the external position that the Hyperumwelt is perceived from, meaning that there is no need for it to be part of the environment. (Galika 2020: 185)

In our model (see Figure 4) we depict the self and the other as separated from the physical world by the digital layer. This digital layer seems to fulfil many of Morton’s conditions for being a Hyperobject – it exists outside of linear time or any specific locality, it is of another dimension to normal 3D reality (see Figure 2), it adheres to objects and is formed from the interaction of multiple small objects

(Morton 2013). Galika also states that the Hyperobject is a black-box – something that absorbs input and expels output without observation of the process internally – which has connotations to black box AI. Indeed, the digital layer is so vast within a city that system of exchange and governance would be beyond most human understanding. The Hyperumwelten exist as many within the environment – within the Hyperobjectivity of the digital space perhaps – manipulating and comprehending their semiotic worlds as umwelten do but separated from the physical environment. Galika points out that Hyperobject, for Morton, suggests an expanse – similar to Randviir’s – without end. This effectively renders it meaningless, and semiotically null since the individual cannot form meaning from *everything* or *nothing*. It is the process of individualisation that builds social reality, the interaction of umwelten form the semiosphere. Thus, the interaction of Hyperumwelt is perhaps the formation of the Hypersemiosphere, where the digitised expanse becomes the fundamental plane meaning.

This theory requires significant research, but it is possible to see how hyper-virtuality, as the digital blockade between umwelt and the biosphere, redefines the fundamental spatiotemporality of umwelt. The question of whether robots or AI will have umwelt seems to miss the more immediate question of the individual who no longer parses analogue-only information when defining the world and reality around them. This plethora of digital information will create the hyper-virtual society from Hyperumwelten interacting within the ubiquitous expanse of the Spatial Web Hyperobject.

1.2.3. Dual ecologies

In his article “Semiosphere and a dual ecology Paradoxes of communication” (2005) Kull further describes Lotman’s semiosphere, primarily via the dual coding of the sign: “There cannot be such thing as single language, or single culture. In order to have a message, at least two different codes, or two languages are required” (Kull 2005b: 177)

His conclusion is that while physics models a single, quantitative, universe, the semiotic methodology demonstrates multiple, qualitative, realities. Semiotic meaning is a continuum then, via the textualization of the space or object. A core tenet of the thesis is that paradox and non-understanding is vital to the process of understanding: “Without paradox there is no signification” (Kull 2005: 178), which leads to the model of the semiosphere as a space of heterogeneity, a web of meaning where different, conflicting, interpretations abound. This enables the sign to be meaningful from its interpretation, not as an object within an external model – Kull uses the example of the animal fearing its own death while not understanding the concept of its own mortality to highlight the indelicate nature of the physical methodology.

Unifying previous discussions on the city, culture, umwelt, and the semiosphere, Kull discusses how we can talk about the space that is not textualized as living culture, and thus not in the continuum of the semiosphere. His observation

is that semiotics is not just the methodology but the object too – we can study the non-semiotic, semiotically. Again, this is seemingly a paradox, but one that is negated by the understanding of dual codes. Thus, Kull introduces us to “multiple realities” (2005b: 181). Multiple realities can be, somewhat reductively in our interpretation, compressed to the single reality of physics, while the semiosphere allows for a single reality to be projected into multiple realities. Although Kull does not overtly include the virtual reality space, his theory is open enough to include such space within the semiotics of culture, environment, and biosemiotics, depending on whether the textualized sign is linguistic, a biological response by the user, or the environmental impact of the city or play-space as a virtual ecology.

The virtual layer is another reality, distinct from the physical, but with differences depending on whether it is VR, AR, or MR. Space has proven to be primordial to conceptualisation of culture, which has justified our decision to begin with this chapter. We have demonstrated different methods for investigating space, but Kull provides precedent within Lotman’s semiosphere for the reality-agnostic sign.

This author interprets Kull’s article as positing the co-existence of the physical and the semiotic, albeit for different ends – the mechanical in the case of the former, and the meaningful in the case of the latter (Kull 2005b: 182). This allows for discussion on the computer coded environment of the programming languages that underlie the virtual space, as a mechanical, non-meaningful, environment which can be analysed as a semiotic object without suggesting the computer has culture.

Dual ecologies have been researched with robot controlled spaces. Harrison *et al.* posit that the space where the user interacts with their interface (the office, the plane cockpit, the classroom) must be considered. Kuzuoka *et al.* (2004) highlight the problem of orientation between participants while operating and interacting via a robot called GestureMan:

[A] face-to-face environment offers local participants opportunities to project another person’s next action by capturing these actions. However, with the GestureMan, this type of action is not always reflected in the robot’s movement, and therefore a local participant cannot necessarily predict the remote person’s actions. Of course, the remote person produces some actions within his/her own ecology, which may help the local participant to project the remote person’s next movement but this is not mirrored in the local participant’s ecology. This inconsistency between the ecologies of the remote person and the local participant results in the inability of the local participant to project the remote person’s actions. (Kuzuoka *et al.* 2004: 5)

The problem of orientation is perhaps highlighted more within the corporeal telepresence of “face-to-robot” interface. However, the dual ecology of user to user when both are in virtual reality lacks study. The orientation of users is less rigid, while the use of the avatars’ space and body becomes somewhat more exaggerated – for example performing emotes, or cheers.

To return to Kull's discussion, he posits a single physical reality with multiple semiotic realities. Taking a semiotic reality as an *umwelt* (individually) or society (intersubjectively), via the ongoing internal or external discourse between different existing knowledge, context, and perceived signs to form consensus – ergo different individuals have different interpretations, but they are complementary within the wider context. This is how users in virtual reality, or operating/talking to robots, can construct a space of meaning. The web of prior knowledge – Eco's metaphor of society as an encyclopaedia for example – enables the dual ecologies to unify within the single virtual narrative space. However, as we will address, there are questions that arise from the body, presence, and gesture of the users. Additionally, the postmodern mediatisation of the sign that we have described throughout the thesis thus far hints at a consequence of the floating signifier being coded with dual interpretations more easily, with the possible consequence of the fast moving, participatory culture of the digital space speeding up the loss of the objective through the innate nature of the online culture.

In VR+, there is a concept known as simulated reality, which is fundamentally indistinguishable from the physical. We would be epistemologically unable to distinguish the physical from the virtual or vice versa (Gilmer, Sullivan 2000). This is not to say the signs would lose duality, but rather they would have a duality with the context of a physical reality and the virtual narrative. Dual ecologies are a semiotic interpretation – occurring via a textualization of signs – and do not claim that a sign is either physical or virtual.

The immediate evolution of the dual ecology however, may be the process of hypervirtualising the semiosphere which leads to the previously described Hypersemiosphere. The relationship between *umwelt* and Hyper*umwelt* in Galika's article is not explicit, lacking definition and research. However, we see potential for defining – or redefining – such a process of change (the shift from hyperreality to hypervirtuality, or the move from Web 2.0 to Web 3.0) as a gradual change necessitating a duality of definitions within certain contexts. The dual coding of the semiosphere could be – in the hypervirtualised future – the semiosphere/Hypersemiosphere coexistence.

1.2.4. Communication space

The virtual world is an environment of signs within which the user exists and develops the experiential *umwelt*. Since semiospheres and *umwelt* can be considered reality agnostic, (as above), the interpretation – or translation – of the sign becomes key. The referent can be virtual or physical. In *Camera Lucida*, Barthes downplays the referent from the interpretation of communication: “[...] the referent adheres. And this singular adherence makes it very difficult to focus on Photography” (Barthes 2000: 6).

It is important to state that the semiosphere is not the biosphere of Vladimir Vernadsky (Lotman 2005: 207). The physical realm of biology and energy exchange may be evident in the city-as-culture metaphor, but it remains separate

as a sphere of biological processes. The semiosphere is the totality of the semiotic comprehension arising from language and place: “The semiotic universe may be regarded as the totality of individual texts and isolated languages as they relate to each other” (208). Space, boundaries, collectives, individuals, levels of modelling – all these terms indicate a sense of place and an element of dimensionality to language, even natural spoken language – as Lotman discusses.

Lotman suggests that writing for example, arises from the spoken language as a secondary modelling system (Gramigna 2013). This spoken language primacy has been contested as phonocentric (Sebeok 2001: 136) and some argue that Lotman places too much emphasis on the spoken word over nonverbal language. This argument is interesting when one considers the example of virtual avatars. Is the mutually comprehensive language of emoji, esoteric chat dialect, or perhaps body language, the primary modelling system – especially among characters who remain mute? Or is the primary model the spoken language of the real-world user? In that scenario, is it possible for two users who speak different languages – Russian and English for example – to truly understand each other via avatar gestures? This will be addressed more in the culture chapter, but equally, the physical action of the avatar, of the user translated in cyberspace in some manner, is a spatialization of semiotics, as demonstrated through semiospheres and umwelt discourse.

Emoji are especially interesting as they have emerged from the specific online community whence it originated (in Japanese mobile telephones) and have permeated all aspects of the cultural zeitgeist. The transmedial nature of emoji highlights the permeability of the online space and the physical.

1.2.5. Cultural space

The idea that culture arises from the primordial language of two umwelten is bound by the instance of two – at least two – individualised umwelt within a space. It is a space and not an expanse, as Randviir writes, since an expanse is positioned outside of the concretely knowable (2002). Indeed, if the two umwelten are self-aware enough, then they actively position themselves in an area of the space and subsequently become more granular as the process of semiotic translation continues to form cultural spaces.

Currently, we have outlined the semiotics of the individual as a personal umwelt, and as a collective semiosphere, both of which use spatial terminologies to locate and delineate various filters, cognitions, and translations. From this, we can see metaphors with the physical world as well as separating said physical and semiotics spheres into separate models. From the primary semiotic model – of either natural language or non-verbal communication – comes the secondary models of art, writing, and the play space of VR.

Umberto Eco also views semiotic understanding as existing within a bounded space, separating it from the world of non-semiotics, via a series of thresholds that dictate the meaning-making of signage. Eco’s thresholds help keep the space

of what we can consider as semiotic bordered by limiting the infinitude of potential sign/meaning relationships to those that are actively constitute a code. The lower threshold is described by Nöth as: “the one that separates nature from culture” (2000: 49), which is somewhat reminiscent of Lotman situating language as the primary semiotic model – of course, this does assume that language and culture are comparable in some way, which we will discuss in a later chapter. Continuing the spatialization of the model, Eco has as upper threshold which puts another limit on semiotic field. Beyond this limit the sign becomes the purview of other disciplines than semiotics. To cite Nöth again: “Possible nonsemiotic perspectives from which our cultural objects can then be considered are thus the physical, the mechanical, the economic, and the social perspectives” (Nöth 2000: 50).

Eco recognises that it is possible to over examine the field and find signs that are not significant. One example could be the computer code. To avoid such over-interpretation, Eco introduces the concept of the “model reader” (Eco 1984: 7) – the reader that the text, or in this case the avatar, expects. We can focus on the space of avatar-to-avatar interaction that specifically contains the semiotic flow of meaning between two users, whilst enabling and justifying the inclusion of spaces outside the immediate virtual conversation to append the discussion where relevant. Assuming the physical movement of the VR operator can be linked to the VR avatars movement (via body trackers for example), we have a uniquely transmedial, spatialized, semiosis occurring in the physical and non-physical domains. These domains are concurrently placed within the field of semiotics, as the (model) semiotician is placed in relation to the object of the analysis.

Eco’s lower threshold puts natural symptoms of disease outside the realm of semiosis, but states that the subsequent reinterpretation of such symptoms by doctors creates a semiotic convention. Although more relevant to our culture chapter, the general semiotic theories within Eco’s – and indeed Lotman’s – model make it appropriate to introduce here. This is because of body language as a/the primary mode of communication within VR. The semiotics of body language communication is significant as a topic.

Body language in the context of avatar-to-avatar communication requires a natural language primary modelling system because it requires spoken language at least to be primordial for there to be a semiosis occurring – as per Lotman’s hierarchy. Additionally, body language (and gesture) in VR may be unconscious by the user, but due to its virtually presented nature, it is an artificial code that enables it to be semiotically analysed via Eco’s threshold. Even taking it as a natural element of communication, just presented by an avatar, it is like the symptoms of disease and culturally interpreted. The body language communication within VR, gestures to indicate hello, sit, over there, you are blocked, and the head pat for example, are not “natural” in the sense they are instinctual, but they have been developed for use within the VR space, maximising the limitations of the hardware. The head pat for example is a trope from anime which may have been translated to VR alongside the popularity of anime style avatars. As a result, the space of the action places the semiotic analysis itself within the model framework. Irene Mittelberg has written extensively on the metonymic

nature of gesture – visuo-kinetic signs as she calls them – in the formation of linguistically complex signs that go beyond the iconicity (2019). Collaborative language within the virtual space will be addressed in our next chapter.

It seems like a useful parallel to draw between the avatar and a toy – Thibault introduces the term “toyification” to help describe the changing definition of toys: “toyification communicates the idea of an entity (physical, digital or hybrid) being intentionally reinforced with toyish elements or dimensions” (Thibault, Heljakka 2019: 1). Toys and play, as Lotman writes (and Thibault expands) are of the secondary system of play (Lotman 2011). Spatialising play as a secondary model system implies that to communicate via the avatar you must have verbal language – or at least the concept of it. Since gesturing and text-based communications exist in VR, we are forced to question, again, if it is possible to have such communication without verbal language first. This thesis is not a socio-anthropologic discussion on linguistic formation in humans and therefore we must limit our investigation to relevant tangents. With that said, this author will state that because VR+ communication is mediated by an unnatural environment, and an unnatural context, they are artificial codes and are not the same as Sebeok’s primordial a verbal language in our interpretation.

Lotman also textualizes the space of play. There is a difference between the toy and the statue which arises from detail, and audience interaction. Hatsune Miku is: “a formless medium to connect people, just like Bunraku dolls that allow space for the audience projection of meaning” (Sone, 2017: 156). Lotman has a similar theory which states that toys are toys because they are sufficiently blank enough to allow someone to create a playful fantasy around the toy – although with Miku-type characters there is the risk of perversion (Davidson 2020; Sone 2017). This differs from art in that the audience is more reverential and less interactive with the statue according to Lotman:

[...] the meaning is stored in the statue by the artist and the audience plays the role of the receiver. Dolls, on the other hand, are directed at a childish/folkloric audience that carries out most of the semiotic activity by appointing new meaning onto the text. (Thibault 2016: 304)

However, as this author has written previously, the Hatsune Miku object can be taken as both a statue and toy (Davidson 2017: 6). Additionally, a puppet is like a toy but with artistic elements. What seems to separate each of these, primarily, is the space within which the object is situated.

A Miku statue in the entrance of the concert venue has a different context to the plush toy in the child’s arms, which is different again to the singing holographic representation on stage, even though they are all inorganic representations of the mascot character for the software. The emotional difference arises from the context – as a form of textualizing the space (Thibault 2016: 304).

Anderson discusses the model of artificial life, and the gender archetypes and stereotypes used within such constructs, with specific reference to how it changes

a tool to a toy. Robots as tool-life have an instrumentality about their design, enabling their abuse and use in society, but one that is sometimes tempered:

As early as 1982, some disarmingly feminine robots, with sexy voices, have been deployed to literally and figuratively disarm dangerous individuals and potential suicides. Our sensitivity about gender relations and gender stereotypes probably precludes women themselves being overtly so used by our institutions of social control, but the stereotype will not atrophy when fed by robots models. (Anderson 2014: 202)

As a side note, it is interesting to consider this statement in relation to one of the more controversial sentiments of Baudrillard and his text *Seduction*, in which he opines that only women seduce, and that the femininity of transvestites is aimed at seducing the signs:

With them everything is makeup, theater, and seduction. They appear obsessed with games of sex, but they are obsessed, first of all, with play itself; and if their lives appear more sexually endowed than our own, it is because they make sex into a total, gestural, sensual, and ritual game, an exalted but ironic invocation. (Baudrillard 2001: 13)

While distastefully written to contemporary readers, it is clear that the femininity of avatars, digital assistants, and robots-as-toys is still a delimiting factor as a culture between the tool/toy dichotomy. The reasons can be linked to instinctive desire and mating (Buss 2016), but it seems more likely the social construction of the feminine image is one of weakness and seduction, rather than women being physically weaker. The freedoms that women and transgender people find online may reduce the bias and inequality, or it may speed up the rejection of the physical space – as we will address in a later chapter. The fact that the “girl” sign is considered more toy-like is another factor in the construction of self-identity that one must include in any form of digital literacy education. Indeed, the link between language, culture, and femininity is well developed (see Jean Graybeal’s 1990 text *Language and “the Feminine” in Nietzsche and Heidegger*) – the cultural sign of femininity and its translation to the digital space must be with respect to the individual rather than the philosophical extremes of weakness or superiority over another.

The tool-life model, for Anderson, is an example where the power roles between human and tool is based on the practical – how much time, energy, and other resources we require to maintain the tool rather than discard it. However, the toy-life (for example, the computer) disrupts the relationship or the “flow of experiences” within what Anderson describes as a partnership: “Look how we defer to the ‘needs’ and ‘wants’ of the computer and downplay our own inconvenience. Smokers, who exhibit little concern about the dangers of passive smoking while in the company of other humans, take proper precautions in the presence of a computer” (Anderson 2014: 202).

The question of the virtual as a tool is discussed again with reference to Heidegger but we can conclude that when the virtual is positioned as toy-life, such as *Second Life*, and it blurs with the tool-life of the virtual work meeting, the flow of experiences, and the amount of energy we are willing to expel changes. This is perhaps most overtly seen in the VOCALOID case where the software is a tool for creating music. Users may treat the computer as toy-life but the functional software of productivity is deleted, replaced, and upgraded – it is trash-life: “In ecological perspective, with all processes negotiation an intersecting and overlapping web of *Umwelten*, trash becomes epiphenomenal to the incessant cycling and recycling” (Anderson 2014: 204).

Such virtual trash-life has a Peircean firstness: “as all systems emerge from a liminal trash” (Anderson 2014: 204). It is at odds with the toy-life expenditure and deferment of wants and needs to visit the hologram in concert, or when viewers donate money during the virtual live shows online.

Heideggerian philosophy provides an ontology of the object-only and the tool/toy/trash triad necessitates a contextual analysis and differences in the intentionality of use. Similar to the being or doing of a tool, revealing itself to the human, the intentional use of the toy-as-toy or tool-as-tool models the interaction between human society and object:

However the still-gestating artificial life evolves and develops, it can be no more beneficent and controllable than those other tools and toys, in the material-energetic or the informatic realms, which have already so disappointed social commentators. Human will continue to find that historical processes categorise their tokens of individual dignity as discard. Miniaturizing, efficiently-forgetting and -disposing artificial intelligence, and artificial life more, will not conquer us, most likely, but merely pass us by. (Anderson 2014: 204)

This somewhat nihilistic reduction of the human interaction with the virtual being (the variant of artificial life we specifically reference in our thesis) is that the toy will eventually become trash as new toys develop, reducing the toy and tool to essentially the same end. This negation of the meaning of the object is seemingly what Baudrillard referenced also when he commented on the process of mediatisation of the sign. The content becomes second to the medium. Anderson concludes his discourse on artificial life stating that while artificial life isn't proliferating, the electronics, computers, macro-robots and nanotechnology are “the privileged tools-cum-toys of our age, so privileged that we fail to cost-account their trash” (Anderson 2014: 206). The trash, in the virtual age, may not just be energy surplus but rather the indicative nature of the meaninglessness of the simulated sign. This becomes a problem should, in Web 3.0, all space is made meaningful with this digital layer, and our identity necessitates a constant updating – similar to the Web 2.0's incessant requirement for constant social media updates (as stated by Georges) – further driving the “toyification” of self and the space around us.

It may seem incongruous to discuss architectural semiotics within the context of virtual-avatar to virtual-avatar interactions but Harrison *et al.*, among others, situate the user within a larger, physical, environment as we have established as

well. It is therefore useful to continue the city example and examine the buildings themselves.

Randviir, in his 2003 article “Placing the City” provides us with several avenues to work from. Initially, he discusses the textualization of the city as a social phenomenon (183–184) – and thus a dual-coded semiotic sign. However, the semiotician is aware that reading a place from a personal viewpoint is different to objectively viewing the place as a phenomenon of society. This can be applied to our discussion by investigating, reflectively, what the author experienced at a Hatsune Miku concert versus the societal conditions that led to the creation of a *VRChat* pub location. Both will have their merits and be included in the investigative discussion on avatars and space, but the differences between “that” place and “my” place are semiotically significant:

Thus individual understanding of the city (my city in my space, my city in my cultural space, my city in my cultural space as related to other cultural spaces) biologically and connotatively precedes and simultaneously, via socialisation, depends on collective understanding (our city in our space, our city in our cultural space, our city in our cultural space as related to other cultural spaces). It is crucial to distinguish between the primary and secondary semiotisation of space as related to the individual level and higher socio-cultural cooperation; metalevel analysis, then, appears as the third level of spatial description. (Randviir, 2003: 184)

The argument for whether any analysis can be taken from an external point of view without some metalevel existence is ongoing but using third party videos from the *VRChat* rooms and avoiding first-hand involvement seems to be one solution to maintaining a level of abstractness. The author is aware of “the” space, but it is not “my” space, for example.

When examining a virtual space, there is going to be a level of pre-planning from the developers, but with an aspect of customisation by the users. The extent to which such customisation becomes embedded in the space is relative to the open nature of the software. Randviir makes a distinction between cartography and chorography, stating that cartography – the graphic, scientific, foundation to the representation of the city – differs to chorography of the social signs: “Chorographic principles are what turn ancient maps into valuable sources of information on human walks of life, habits, production techniques and other cultural traits” (Randviir 2003: 187). Personal manipulation and customisation of VR+ space then can be the chorographic mapping of the space while the pre-programmed cartography underlies the social as a scientific base. Such a dualistic mapping simultaneously reinforces esoteric, heterogenic cultural references that display specific alliances within the larger universal community spaces. Customisation of the virtual space has a micro and macro impact then upon the meaning, as we will investigate.

Lagopoulos and Boklund-Lagopoulos, in their extensive review of the semiotics of space from the Tartu-Moscow school perspective, concisely outline the key point of our methodology. They highlight two distinct approaches to the topic, which we have outlined somewhat above – first is the study space that exists, the

built city for example “the study of space-as-text” (Lagopoulos, Boklund-Lagopoulos 2014: 456). The other approach is an indirect analysis of space: “[...] that is, its study through the mediation of some other semiotic system, such as the conception of space shown by everyday individual users of it, or space as presented in religion, mythology, philosophy, literature, the press, painting or cinema” (456). Space doesn’t need to be actual but can be: “a conception of an actually existing space, which would thus belong on the addressee side of the spatial communication circuit, or it may be an imaginary space” (456). They refer to these two approaches as space-as-text and space-in-text. At the risk of indelicate abridgement, we interpret their work with the following take-aways, reading space using a variety of fields, taking an interdisciplinary approach to the semiotics of space, and reading the culture within the space as a part of the space itself. Space is both concrete and formal, metaphorical and symbolic. This is, essentially, a summation of the methodology we have outlined above.

1.2.6. Video game space

Bown has introduced the topic of the video game space as a dreamspace, and we briefly referenced the dating game *LovePlus*. However, the spatialisation of the virtual narrative is an overtly visual representation of the textualization of signs within the construction of social reality. Fiske’s often cited statement is perhaps a cliché, but still appropriate for the summation of the why this is a standalone subsection: “Video arcades are the semiotic brothels of the machine age” (Fiske 2005: 93).

The premise of the thesis is the transmediality of identity as a ground or anchor to prevent the virtualised hyperreality of Web 3.0 and the always-online future. While we analyse a variety of spaces – culture as the socially constructed reality of signs, the *umwelt*, and the physical city as a border to the virtual plane – it is perhaps the game space that offers the closest illustration of the loss of the self within the virtual – the hyperreality within the virtual, but still a virtual mediation of the real. Although, this boundary is perhaps getting thinner. The preceding part of Fiske’s quote above illuminates more:

games are played with the body, and excess of concentration produces a loss of self, of the socially constructed subject and its social relations. Subjectivity collapses into the body.

The body becomes the site of identity and pleasure when social control is lost. “Losing oneself” (in a text or game) is for Barthes (1975b) the ultimate “eroticism of the text,” and the pleasure it offers is the orgasmic one of *jouissance*, which is experienced at the moment when culture collapses into nature or when the ideological subject reverts to the body [...]. The physical intensity with which the games are played produces moments of *jouissance* that are moments of evasion of ideological control. The muscular spasms and collapse experienced by many players when they finally die, when their money is spent, are orgasmic. “Dying” and “spending” are, respectively, Elizabethan and Victorian metaphors for orgasm. (Fiske 2005: 93)

Fiske, writing this in 1989, initiated the conceptualisation of gratification a postmodernist might argue is exhibited by the 21st century computer game. The expansive world of signs creates and subsequently satisfies a sense of desire – a model of gratification theory that has been extensively researched in a variety of media but most notably for this thesis, the social network game (Hou 2011).

Such social games simulate a level of interactivity with others, and this is, according to Hou's research, a big driving factor towards the gratification players feel. They conclude:

players use social games to interact with social ties and to find diversion from real-life stress. These gratifications are also afforded by the particular underlying game structure. Social games are potential avenues to enhance one's social circles, and they should be described as social media rather than as just one of many online computer games. (Hou 2011)

Hou's work seems to suggest a move away from the game narrative towards the social connections the game space allows. The simulation of the physical relationship, the use of real names, and the importance of connection negates the plot aspect of the game:

As mentioned, social game players usually use real-name identities in order to interact with real-life friends. They may find that interacting with friends through games does not differ much from real-life social exchanges. For example, close friends who help each other in real life may also help each other out on Happy Farm. Another possible explanation is that as the major game play is to interact with friends, the fantasy factor is not an important element for the players to enjoy the games. (Hou 2011)

This exaggerated gratification, the simulation (an illusion, rather than a reproduction) of the social connections of the non-virtual has been discussed since the early computer game of *Space Invaders* – a two-dimensional game that Fiske states:

The player of *Space Invaders* saves society from the aliens only on the non-absorbent level; in accepting the signifiers only, but sending back the signifieds, he renounces his position as subject and becomes a practice-as-object, a body, that, for the moment of the game, is liberated from the process of ideological construction. This moment of liberation, when the body plays with the signifiers, is the moment of pleasure. (Fiske 2005: 88)

Fiske's discussion highlights the pleasure response that drives the loss of self within the game narrative. The spatialisation of the narrative, through the textualization of images, and movement within the narrative provides a deeper (emotional) connection to the floating signifiers. This relinquishing of the human self to the pleasure of the object-less signs is very Baudrillardian, which apparently was Fiske's intention: "Baudrillard's subject [...] is the mass media, but his ideas seem applicable to video games. Admittedly, video games do not produce the passivity

that Baudrillard sees as a positive stance of rejection, but they do act as mirrors and send back to the dominant system meaning without absorbing it” (Fiske 2005: 88).

Fiske references a quote from Baudrillard himself which states that the meaningless sign – the floating signifier – allows one to passively reject the subjecthood of mass media, and this rejection is the more effective form of resistance in the modern society. While Fiske states that games lack the passivity of the rejection, there is perhaps a growing movement toward such passivity. As identified by others, like Bown, there is popularity in games that replicate the chores and mundanity of real life – games like *Animal Crossing* or *Stardew Valley* require the player to maintain their house, form relationships, and tend a virtual garden.

The space of the virtual game, as a mundane, passive, entertainment is the nihilistic acceptance of hyperreal that upset many about Baudrillard’s theory. Fiske, however, states these spaces are full of signs where we lose ourselves in the pleasure of mindless gratification. They are perhaps even more correct following the modern era of games, as well as idle clickers which we mention elsewhere, or even the loot box gambling mechanic where a game rewards a player with the chance to obtain some toy or tool that makes the game easier in exchange for money, a gambling type model that has been banned in some countries.

The core of the game space narrative so far is the loss of the self through the replication of the real, but idealised – whether as a utopia or dystopia – and the space of the game as a narrative of signs where the player becomes the author of the narrative. Fiske posits that the buttons or joysticks control differs from the observation of the art or the TV, but this is even more exaggerated by the immersive virtual reality space where the user actively participates within the game space. The body becomes an embodied sign, a part of the narrative, as well as the pen that writes the text itself. The textualization of the self was a key step towards the hyperreal, and the textualization of the virtual self within the virtual space becomes a virtual hyperreality – the hypervirtuality.

Ian Bogost presents a paper on *Animal Crossing* – a game that focuses on the mundane chore of paying off a mortgage – and expands our earlier discussion of the notion of play. While Bogost does not reference Lotman, the model he presents via Salen and Zimmerman is somewhat similar. The notion of the space as a play of creation, where there is a possibility to create a new social construction suggests a link between play, virtual worlds, and social reality:

Instead of understanding play as child’s activity, or as the means to consume games, or even as the shifting centers of meaning in poststructuralist thought, I suggest adopting Katie Salen and Eric Zimmerman’s useful, abstract definition of the term: “play is the free space of movement within a more rigid structure.” Understood in this sense, play refers to the “possibility space” created by constraints of all kinds. Play activities are not rooted in one social practice, but in many social and material practices. (Bogost 2008: 120)

Bogost continues, stating that the virtual game space is appropriate for learning, either through the modelling of concepts like commerce or city planning, or they

can learn about procedurality (Bogost 2008: 123) – what Bogost posits as the representational logic of computing (2008: 137). Play space, as discussed above and in the previous section through Lotman, also references this. Kull writes that one can't learn what they don't have a concept of, implying that learning is a metasytem: "Learning as acquiring knowledge of something else is essentially a sign process, and in this sense it requires an embeddedness into the sphere of signs" (Kull 2005: 176). The video game, as a space of play, is a space of learning about the physical, of constructing one's social reality, and of forming identity.

Fiske, writing before home computers and mobile phones were common, discusses the arcade as the space where the subjective demonstrates a resistance to the powerlessness one experiences from work or school. The similar input of time for reward mirrors the factory but the reward is the pleasure of semiosis – that is, for Fiske, seemingly the renouncing of the player as subject, and instead acting as a tool of commercial model of the game. This is perhaps like Heidegger, which we will discuss in our final section. Fiske summarises:

So the resistance to the machine-as-society then becomes the assertion of pleasure over social reality. This is a complex opposition to work with, for while pleasure is a function of the self, at least insofar as it is signifyingly opposed to society, this self must not be seen as a biologically produced individuality, but rather as a culturally determined self-awareness or self-generation. Pleasure is then a function of the subjectivity, that socially and discursively constructed area where the individual's conscious and subconscious work to produce meanings of self and of social experience. Our subjectivity is thus a moment of space in the continuous act of semiosis—the space that is delineated by all previously experienced discourses and meanings-having-been-made, and within which the discourses and meanings meet in each fleeting moment of semiosis. (Fiske 2005: 84)

This space does raise a question of whether our predicted hypervirtuality of Web 3.0 is actually a form of resistance. The strive for pleasure over the virtual social reality could be a resistance to machine-as-society. Baudrillard sees hyper-reality as essentially inevitable and the resistance keeps the subjective, but the object still loses its physicality. Thus, the subjectivity Fiske mentions – the identity – is the key to keeping the hypervirtuality from causing the loss of the subject as a physical entity. Thus, transmediality of space is not as important as maintaining a transmedial subjectivity through the pleasure.

Keeping subjectivity as a physical concept is a risk, assuming virtual identity could consume the physical self. The video game space offers a simulation of how such a virtual space could cause the identity of the player (the user) to become entwined with the avatar. Baudrillard, cited by Fiske, highlights the resistance of the subject acting as a mirror, reflecting meaning without absorbing it – the passivity of the game player in the arcade for example.

However, the self-identification of the avatar, and the virtual space which has exponentially grown from the "the arcade" (place) to the "cloud" (expanse), suggests that the ludic pleasure derived from this space of semiosis has been absorbed. The space is codified and institutionalised, not just in the post-COVID

online education/social/work nexus (to use Fiske's terminology) but since the social media era seemingly commodified the information of self.

The space of the virtual world is no longer a place of resistance to passively engage in pleasure. Instead it has become an extension of the social identity of the subject, gamifying the information of self and others, necessitating the absorption of the overwhelming flows of information within these spaces for they are no longer narratives of saving society or offering an escape from the dominant ideology within the constraints of espousing said ideology: "In the arcades this resistance to the social order is given a semiotic materiality for the duration of the game" (Fiske 2005: 92). There is no end to the duration of the social media narrative, the semiotic materiality of resistance is instead the gratification of growing crops (Hou 2011) or social interaction (Tanta *et al.* 2014).

The realism of the narrative within the virtual space has an impact on the metonymic consequence of the signs in the modern game. Jason Hawreliak expands on the metonymy of the virtual sign, most notably referencing Ian Bogost's 2006 text, *Unit Operations: An Approach to Videogame Criticism*:

Bogost reiterates the point that at any one time a videogame can be thought of as a piece of hardware, software, lines of code, equations, images, sounds, rules, a commodity, a work of art, a story, and so on. Bogost describes these component parts as "discrete units," which do not exist in isolation, but rather, in a radically dynamic relationship with one another. (Hawreliak 2013)

Hawreliak uses this holistic approach to examine the game space with several signs from different modalities – senses, lucidity, procedurality, narrative and so on – which combine to create an emotional response from the virtual. Hawreliak uses the treatment of PTSD by the army as an example. Using these signs, Hawreliak states that these different modalities interact to form metonymic devices: "metonymy is an associative link, and most importantly, [...] this associative link depends upon the prior experience and knowledge of the audience" (Hawreliak 2013). The virtual signs of the game lead to possible metonymic conditioning – the link between people from the Middle East and "terrorist" for example is highlighted specifically by Hawreliak. This is, of course, a dangerous generalisation and stereotypes or tropes in media are a topic worthy of significant discussion. For us, these metonymic devices blur the line between the fantasy and reality. Elsewhere, we discuss the link between self and the avatar, and these metonymic links causing fantasy to have real consequences (Davidson 2020: 180). While Hawreliak highlights the video game space – and the first-person shooting game specifically – the problems we suggest may arise with the Web 3.0 (if not already) and the blending of the physical and virtual spaces.

With games acting as gratification for the desire and maintenance of social interactions in an increasingly online society (a post-pandemic update to Hou's work would be interesting here), and the blurring of virtual and physical reality, the metonymic signification of the game clearly loses some separation between where the boundaries are. If life is gamified, then the enemy is red, and the allies

are green. Who is on the red team and how we interpret them is where a future concept of digital literacy becomes relevant. While Rinko is a high school girl in a game, contained within the space of the console screen and somewhat protected from more extreme molestation, the VR game *VR Girlfriend* offers a similar experience but one where the player is embedded in the space. Continuing Fiske's theme of being the author of one's own narrative, the girls are fully customisable dolls, which you pay for with in-game currency earned through chores like fishing. The description of the game proudly states you can have "a girl who belongs to you".

LovePlus, *Pokémon GO*, and the Facebook farm are portable, enabling a freedom of sorts, via an untethering of the game narrative – the digital semiosphere moves with the individual, it is no longer situated in a fixed spot. The first-person action game and a game like *Space Invaders* both simulate a hero narrative where the body is still a tool for labour, but the subject is able to escape the overt institutionalisation of work or education to receive gratification in the form of virtual capital.

The VR girlfriend "simulator" is this pleasure response taken to the extreme. It presents a space where one is the master, (gendered term intended), of the signs, able to ensure control and author a narrative for complete pleasure. The notion of virtual love has positives, and although the example game is somewhat crude and bigoted, the potential for forming an attachment with a virtual being is perhaps an inevitable conclusion for a society always online and always moving. Indeed, the use of chatbots for those who are socially anxious is already being researched (Ta *et al.* 2020).

The space within which this narrative is presented however is increasingly blurred with the virtual space of one's "real" life – that is, the social life outside of the ludic space. When the headset is put on, or the app opened, there is an overt separation between the two spaces. But as Hawreliak points out, (and when we consider the Proteus effect in an upcoming chapter), the metonym of the sign transcends the virtual game space. Social reality is constructed within and between individuals – as such the space is only as relevant or irrelevant as the community deems it to be. The blurring of the city across realities generally demonstrates this.

Timothy Jachna succinctly explores the role of the mobile – cell – phone in the blurring of the work and personal space. This device becomes an example of Ray Oldenburg's "third place", and an example of the digital being subsumed into the architecture and social reality of the city and the people who exist within it:

If the office phone is a metonymy for the workplace, and the home phone for the home, then the cell phone can be seen to constitute a type of 'third place'. Physically, the third space is now potentially anywhere and everywhere: it has subsumed the first and second places as well as all the nonplaces between. However, the cellular phone network as a 'third place' comes at a price. With a cellular phone, one is potentially always on call. The time and space structure of the day can be interrupted and re-arranged at any time. The 'third place' becomes effectively a potential space of surveillance rather than retreat, reversing the accustomed relationship. The cellular phone also blurs the boundaries between a person's different

roles. Certain personal calls would not be made to the office phone and one may hesitate to disturb someone ‘at home’ (i.e. on the home phone) with a work-related issue. However the cellular phone, being tied to a person rather than a place, presents the ever-present possibility of invasion of one role into the space of another role. (Jachna 2004: 4)

The digital space – the phone as a concept, or a metonymic sign for communication – demonstrably alters the physical space, and the game space is increasingly blurring the lines between work and leisure. The third place (or space) has also been used to describe the online classroom, with the effects recorded as aiding multicultural learning (Kostogriz 2002).

The virtual city – such as in *Second Life* or *Alt-Space* – is a replication of the physical space. Meanwhile, the AR/MR overlay that presents digitised information over the physical city essentially replicates the virtual city of the video game. The work of Lefebvre posits that the city is the interaction of a representation of space, representational space (which perhaps includes the virtual overlay of Web 3.0) and the spatial practises – the way culture forms a relationship with the space. Lefebvre challenges the Marxist view by highlighting the bilateral relationship between capital and space. Baudrillard equally challenges Karl Marx on the concept of labour and production in *The Mirror of Production* (1975), noting a conflict between the centre of the society and those outside, reminiscent of the spatialisation of semiosis within the semiosphere. Baudrillard states that capitalism is the uninterrupted exchange process of giving and receiving symbols, and the cessation of the reciprocal giving threatens to break the system. One can argue that the city, especially after COVID, highlighted the problem of a globalised network of production, and that replacing the physical symbol with the virtual is the evolution of capitalism. The market of the city is now Amazon, for example. In the UK circa 17,000 high street shops closed during the pandemic of 2020 (Butler 2021), while websites like Amazon saw a 50% increase in sales (Neate 2021). This irrevocably changes the notion of the physical city as a place of capital.

This opens the discussion for a potential change in the way space is positioned to the virtual signs of the future. Augé, cited above, presented the notion of non-places – places that lack connection to the history or values of the culture at large. This perhaps will be the virtual city of the future – a bordered space as a canvas below the virtual information – the representation space – of ever-increasing digital (rather than analogue) information. The city as culture capital – a space of virtual objects and only the body-pleasure as a link to the physical – seems to be the conclusion to the marketplace of Theodor Adorno: “The consumer becomes the ideology of the amusement industry, whose institutions he cannot escape” (Adorno, Horkheimer 2002: 128). If the mall is designed to make the owners rich, then a pivot towards the virtual shop seems likely – the new Amazon shop in London features no checkout or physical currency, only the contactless exchange of code from a shopper’s phone. The information presented becomes increasingly mediated through the screen, blurring the line between game and society.

The sense of self in these virtual cities then becomes a dialectic between physicality and pleasure. The physical experience is at the centre of the traditional experiential semiosphere, tacitly resisting the virtualised information that now themes the commercial space. The sense of pleasure, once derived from the embedding of the body within the virtual narrative has been replaced with the social media immersion in the simulated reality, and the constant participation within constructing the reality of the space around oneself (see Berger and Luckmann above). The technology of mobile computing and institutionalisation of the self has pushed the space of capital to the virtual rather than the bricks-and-mortar mall.

VR+ however offers an interesting expansion to the video game space by merging these signs with the physical. While VR is somewhat limited, AR via one's mobile phone completely alters the paradigm of what Fiske discusses via the arcade as a place, and indeed, alters the modality of the social game mentioned by Hou. Within the AR setting the person can interact with others physically while playing the game within the reproduced space. However, one of the most famous AR games – *Pokémon GO* – requires you to interact by sending gifts to your friends who are represented by avatars, identified via trainer codes – literally reducing the physical person to the digital information of codes and the flat image of the avatar. At the risk of being somewhat gauche, the use of codes in this narrative draw's comparisons to the “dominant code” of Stuart Hall's theory of encoding and decoding (Hall, 2003). Players overtly – literally – reduce the concept of the other and self to codes.

Although one can be standing beside the person, the interaction of “gift giving” or “battling” is conducted within the space behind the screen. That is, not the space created in the screen *per se* but the space as mediated by the AR app, appending the physical with extra information. While the screen of the phone is small, it can be contained in much the same way as the arcade screen could – just more portable. But when the screen ceases to be something obvious, and the digital space is reproduced via something less overt – a window, a wall, a table, or even the non-visual production through ubiquitous digital assistants that operate via sound – an interesting subject of research into non-visual game mechanics (Ekman *et al.* 2005) – then the resistance through passivity becomes impossible as the digitisation of the space is no longer pleasure focused but rather maintains one's own self-narrative within the wider social reality.

However, the social aspects of forming a community bond by playing the games cannot be ignored (Vella *et al.* 2019; Herro *et al.* 2018), nor can it be ignored that the game impacts physical activity (LeBlanc, Chaput 2017; Althoff *et al.* 2016; Xian *et al.* 2017). It also seemingly alters the relationship individuals have to their city by encouraging exploration, for better or worse (Quinn 2016). However, *Pokémon GO* remains tangibly linked to the physical space via the geolocation, and the virtualisation of the space becomes somewhat optional once you arrive at the physical location. AR remains transmedial, requiring the physical body to move around the city space.

Such links between the physical body, the space, and augmented reality have been explored. Federico Biggio concludes a detailed analysis in AR and distance with a conclusion that mirrors our call for an updated digital literacy:

The focal point is to encourage the creation and dissemination of media interfaces and architectures that could promote the development of new meta-experiential skills in the user: not only with regard to the biunivocal relationship, that which exists between the user and the computational system, but also for the ones that exists between social and computational subjects, in which it is not easy to distinguish a simulation from an enunciation in presence (at least in the now). (Biggio 2021: 102).

The embodiment of self within the virtual city causes the space – such as distance – to alter and necessitate an understanding of the self as a subject within the experience. This metanarrative, or metaexperience to use Biggio’s term, would allow the individual to comprehend their narrative within the constructed virtual/consumed-physical world. Embodiment via geolocation has been investigated by Jason Farman, who researched the embodiment of self-narratives within a geolocation game, Geocaching, which, like *Pokémon GO*, requires players to travel to physical locations. However, it does so without the AR aspect suggesting that his research may conclude even deeper embodiment with such VR+ digitisation. Farman uses the term “proprioceptive-semiotics”, to link physical space, self, and the sensory input of movement and position: “through the development of proprioceptive-semiotics, player’s embodiment is developed simultaneously between the zones of perception and invisibility, between resistance and hegemony, between technology and the body” (Farman 2009: 2).

Proprioceptive-semiotics, as part of a digital literacy, very much confirms the dialectical nature of social reality and the dual construction of space via individual and collective. The institutionalisation and virtualisation of this space would alter the ability of the individual to connect with the collective.

Recently, the concept of the digital nomad, and the relationship they have to the city, has been the subject of research and discussions within and outside of academia. The digital nomad is someone whose work – and thus life – is not tethered to a specific place. With years of COVID lockdowns preventing travel across the globe, it remains to be seen if the digital nomad was a passing phase or a long-term shift in global workspaces. The ontological description of the digital nomad and the need for further interdisciplinary research was highlighted by Kuzheleva-Sagan and Nosova’s paper (2017).

The social game researched by Hou requires only the access of the internet via a device, negating the physical space as anything more than an anonymous connection point from which to access the game app. There is a sense of transmediality derived from the emotional response to the connections within the game but compared to the requirement of being in a physical location (or taking a certain number of steps to hatch an egg) in *Pokémon GO*, the link one has to the city is limited. Conversely, the sense of self in the social media game seems higher, although *Pokémon GO* still has significant social media presence.

The development of Microsoft Mesh allows the virtualisation of self across multiple spaces via an avatar designed to represent “you” across multiple devices, interacting with the physical and virtual alike. Microsoft’s website states this is either a process of holoportation: “Project yourself as your most lifelike, photo-realistic self in mixed reality to interact as if you’re there in person” or an avatar, which allows you to “Engage with eye contact, facial expressions, and gestures so your personality shines”⁶. A universal digitisation of self in this vein would, in our mind, lead to the hypervirtual situation of generating pleasure by resisting the virtual ubiquity via one’s virtual avatar as a primary presentation of identity.

As Hartley *et al.* discuss, the digital semiosphere is required as a model for understanding the system of signs in the modern world: “As cultural content, identity and meaningfulness are digitized into corporate algorithms and mineable data, there is, therefore, a greater need than ever for broader system-level models of culture, to explain how it works as both a global abstraction and an intimate component of our daily lives” (Hartley *et al.* 2021).

If the semiosphere is formed from interacting *umwelten* and the semiosphere is digital, it is logical to opine the digitisation of the social space has blurred the line between the video game as a pleasurable act of maintaining subjectivity and the machine (or maybe virtual) objectivity of the floating signifier. The resistance – the search for pleasure as a reaction authoring one’s own narrative – within this hyperreality is thus the somewhat futile hypervirtuality when the self-narrative is constructed through the virtual. The body as the action-as-object is replaced by one’s own simulated self within this space.

Later, we will introduce Lucas Introna’s research, arguing against this possibility, but we suggest that the video game space is no longer emotionally separate (as seen by the attachment to avatars and virtual characters) and it is no longer socially distinct, with the gamification of the mundane, and vice versa.

To continue, we must contextualise the discussion by investigating the spatialisation of culture and communication. The ongoing discussion throughout the thesis will continually examine the role of subjectivity within the space of objects. Having contextualised the spatialisation of semiotics and self, we will investigate the social construction of reality and the duality of self within these spaces (or rather, the converging duality as we approach a virtual hyperreal-in-hyperreal).

1.3. Analysing virtual space

Social media, such as Instagram, highlights the extreme crossover of the three chapters we have decided on for this thesis – the space of interaction, of representation, formed by the network at the macro level and the photo at the micro, offers a text of signs that seems to append the idealism of the physical space around us. This physical space in turn offers opportunities to interact with this virtual

⁶ <https://www.microsoft.com/en-us/mesh#OneGDCWeb-Banner-dwowqma>

network – super fast data networks, Instagram-friendly packaging design, and augmented reality triggers – all increasingly pivot the physical space around the virtual. Hardware has changed to accompany this, most obviously with the mobile phone increasingly becoming a powerful camera and cloud access node, rather than a phone. This is our architecture chapter, while the social chapter will examine the impact overlaying the filter of technology on our world has at a human level – identity development, sexuality, gender fluidity, socio-cultural freedoms, religion, companionship and so on are all affected. An increasing number of people use online dating apps to find a partner, and such apps often link to Instagram by default. Our representations of ourselves to our potential mates are not just ideal, but hyperreal then.

The public spaces of VR, the overlay of AR upon a physical space, and the construction of a complete message within an interacting duality of space via MR includes the same crossovers with hardware and architecture designed to enable the transmedial message from the physical with the virtual. The representation of the full body in the virtual world with the ability to completely embody an avatar and the anonymity that offers comes from the hardware, but it is presented within the space of interaction. To live so completely within a society with such freedom is an example of something akin to the most complete form of role play.

We have demonstrated that space and semiotics are uniquely and intimately entwined. One simultaneously textualizes the space to study it, and spatialises the model of semiotics. Space is modelled, and the model is, *ipso facto*, space formed by relationships. How elements are mapped, navigated, related to each other, contextualised, comprehended, translated, and so on alter the meaning of the element. This is what theorists like Eco, Peirce, Lotman, Randviir, Kull, and so on all understood. The individual is a space of meaning and understanding as well via the *umwelt* of Uexküll and others.

These models place the object of the sign in opposition to a receiver, delimited by a boundary of understanding/translation. The semiotics of VR+ becomes a particularly interesting discussion with the flow of meaning not constrained to one plane of reality, but two spaces interconnected via the hardware medium and translated by the user as a complete, multimodal, sign. There exists a space where the user interacts with the computer, and a space where users interact with each other. Although the technology has changed, the notion of a virtual space mediating communications between people has existed for decades.

The semiosphere as a model of semiotics for CMC across different realities allows us to map the process of communication. Beginning with the virtual reality space of a programme like *VRChat*, we posit that the *umwelt* translates signs reality-agnostically, since the message is translated internally and communicated within a single semiosphere – the virtual plane exists as dual coded text with the physical. Visually, we represent this as two texts concurrently existing within the same semiosphere, different in “some” way but recognisably isomorphic.

Semiosis occurs with signs of reality interpreted from the signs of virtual reality, forming the internal *umwelt* of the user. The spatial relationship between the two

texts is – in our investigation – the key to understanding how the meaning of CMC is translated in VR compared to AR, or MR.

Space is implicit in the semiosphere where the edges of each sphere are considered permeable boundaries of translation. We can picture the VR semiosphere being quite separate to the semiosphere of the physical reality – with an overlap and permeable boundary but quite distinct in the formation of the two spaces. The signs of VR are kept within the VR space – be that *VRChat* or any of the VR games such the Hatsune Miku concert software which we discuss elsewhere. There is a distance between the conception of VR and reality, and, within the original definition of “substructure” (Lotman 2005: 219), VR most certainly could constitute such a layer of the semiosphere since VR is an environment of signs within the primordial environment of physical signs.

The VR space is designed to create an aural, visual, kinaesthetic, and equilibrioceptive sensory world of signs. Via the hardware, the user is essentially cut off from the external world. The space of interaction is an idealised space within the headset – the physical space is primordial to this data since the play space is a delimited space that translates the physical area into the virtual space the user can move within.

The sense of equilibrium and orientation the user experiences are thus dictated by the virtual spatial waypoints. This means the user relies on the digital space to keep them within a space that does not have a physical table or a wall intersecting it. Using Randviir’s terminology, the physical world becomes the *space* to the virtual *area*. But the space very closely dictates the boundaries of the area. However, since the virtual world can contain worlds, with cities and locations within these cities, it could be argued the VR realm also contains space. Of course, the “play space” physically defines the movement of the user within these spaces, whilst not being directly represented by any sign. Instead, perhaps the virtual world acts as a meta-world, where the signage uses metaphor to describe certain parameters of the physical.

This movement is perhaps the key difference between VR+ and physical reality. Within VR, the area is delimited by the physical space of the play area – that space thus becomes a meta-space that translates different perspectives of movement to the user through the distortion of distances between virtual signs. Put simply, the user feels they travel differently in VR than in the physical play area. This play area essentially becomes a stage, and it is only within the stage that the “illusion” of the virtual works. An example of this is the CAVE art project, which suggests the participatory nature of the virtual audience in collaboratively creating the narrative, as introduced here:

CAVE was devised from the ground up as a way for dozens of people to share immersive content simultaneously [...] CAVE uses the capability of VR to create the illusion, for an entire audience, that they are experiencing a live theater [sic] event together, even though the content is actually rerecorded. This creates an experience that is fundamentally different from VR for an individual viewer. Each audience member both sees and hears the story content from their own viewpoint

in the room, as they would when attending traditional theater. In the shared virtual world, audience members also see each other as avatars, whose movements correspond to their own head movements. (Layng *et al.* 2019)

AR and MR use the physical world to underpin the sign space. AR, as an overlay, does not necessitate the physical to exist, although using triggers (GPS or QR codes for examples) enables a cohesive experience for the user, which allows the signs to do what they are intended – namely augment the physical space. There is an area, normally a boundary of effect within which the AR programme works – some area of GPS coordinates, or a specific building⁷.

MR takes this even further by forming a single meaningful sign in active collaboration with a physical space. The meaning of the avatar comes from the situation within which it is located – a meeting for example. The digital user that produces information “tooltips” (text boxes) over physical machinery for example demonstrating a translation process that essentially takes two separate signs – a physical object and the virtual overlay – and intends one meaning from the viewer.

MR is meaningful from its difference to the physical. It cannot be “mixed” realities without the separation existing between the two realities. The sign is thus a single object or concept, but necessarily situated with a single reality. This requirement upon the context mirrors VR which necessarily requires a virtual plane. The receiver needs to be situated in the physical reality or else it would not be different – mixed reality does not work if both aspects are virtual. As soon as two users interact – two *umwelten* – then a semiosphere bounds the communication. It spatialises the semiosis as a reality-agnostic process. Should Web 3.0 replace the physical reality with a constant digital layer of information then the “mixed” aspect would be the virtual and hypervirtual realities – and thus we would have a route towards ubiquitous hypervirtuality.

The semiotics of the physical and of the virtual can refer to objects with differing abstraction of signification. For example, the table in the physical office can be overlapped (occluded) with the table of the virtual world. Both signs are of a “table” object, but the context and meaning are very different. If one sees a table, it has certain physical properties that lead the viewer to interpret that it is a table upon which you can put things. This is the same in both realities, but the virtual sign is a representation – a meta-sign – for the physical table sign. However, the virtual sign does not need to be a table – it could be a cat or a wall for example – it is simply bounded by the physical sign as an object for the user to avoid in the play space. It is a dual coded sign for the space, not the specific object.

Barbara Barricelli, Davide Gadia, Alessandro Rizzi, and Daniele Marini (2016) introduce an extremely deep discussion on the different levels of realism in VR – via the iconicity of Peirce. Their discussion on realism in VR references “Moles’ and Anceschi’s taxonomies of iconicity levels” (Barricelli *et al.* 2016: 883) and expands on 12 classifications of realism in imagery. This could be relevant in considering whether great realism – or likeness – causes a great sense

⁷ <https://www.youtube.com/watch?v=I0kAJSZCCrE&v1=en>

of embeddedness/embodiment in the virtual space. However, the core argument is focused on immersive VR, which is somewhat made moot by AR or MR, where a physical table is maintained as a physical table, but with some virtual aspect added to it. Barricelli *et al.* do succinctly highlight how contextual knowledge is relevant in forming meaning, particularly within the communication model of virtual reality:

A communication process can occur in the presence of a sender and a receiver that exchange messages through a communication channel, but it can also occur in the absence of a sender. This is the case when we observe the real world and give a meaning to the objects and the events that happen around us. In VR applications, it is this last type of communication that we have to consider mainly – for example, when the VR offers the basic functionality to explore (navigate) a virtual world without or with only a few explicit information provided. The receiver of the message in this case plays the most important role. In the language of semiotics, this is the case of pure signification, that is, when a person receives a stimulus and the task is to interpret and thus resolve the problem of assigning a meaning to it. The signification process is strictly a cognitive problem: associating signs to objects or events has been approached by empiric philosophy as the way people form their knowledge and representation of the world. The interpretation requires that the player has some previous knowledge, the so-called encyclopaedia (Eco 1976), or can build the required encyclopaedia during the exploration of the VR world. (Barricelli *et al.* 2016: 880)

In VR, the physical table is a sign of something the user needs to avoid within the physical space, but it does not physically hold virtual objects – instead, the software needs to map a virtual object in its place to interact virtually. With AR, or MR, the virtual animal (for example, *Pokémon GO*) can be mapped onto the physical object, mediated via the screen. But the physical table remains a table. MR will use the table to produce something else – a representation of an interface window for example. The applications for such technology are limited currently due to the unfamiliarity of the emerging hardware but art and productivity are two areas where MR can be applied. Art spaces manipulate physical objects with a freedom that comes from the creativity of the artist, and the freedom of the technology. The interaction then requires the two realities to form the complete message of the artistic experience, and one without the other will form an experience like seeing half of a painting. *Tilt Brush* – recently released as an open-source product by Google – is one example of art and VR, where the potential for MR becomes very evident. Others have demonstrated uses for AR and art, with, again, future possibilities of being untethered from the phone screen (Geroimenko 2018).

There is a difference between using VR+ for productivity or for play but it is a difference that remains internally consistent according to most of the audience and participants. Indeed, using the terms audience or participant automatically describes two spaces – the audience watching the art, while the participant plays within the space. A space of play or a space of productivity is ultimately concluded

within the *umwelt*, where the actions of the others will give clues and bias the actions of the individual. This is where Lotman's primary modelling system – language – demonstrates a primordial influence upon other modelling systems.

The message however, the meaning of any communication, is made within this context of the virtual filtering the physical. As Lotman stated, culture is made up of intersections within a semiosphere of meaning from translation of signs. It is a: “duality of intra-textual structures” (Lotman 2005: 225). VR is no different in a sense to watching TV or reading a book, in that it presents a text of context-sensitive signs, originating from a different space, but requiring some form of hardware mediation to (re)present. However, there is an artistic element to the creative VR+ scenarios where manipulation and bespoke design is encouraged. This differs from the TV show where the creativity arises from the translation of the sign as presented. There are very few transmedial creative experiences that allow for dynamic construction of the object, which is why this thesis deemed VR+ an important topic to research. As Bown quotes, perhaps somewhat poetically rather than scientifically, from Ian Bogost: “The problem here is that games are also [...] devices that operate us” (Bown 2017: 63).

Of course, the focus of our investigation is the avatar. This research re-examined the current literature about interpretation of the data in both semiotics and VR. However, we want to take the investigation to augmented and mixed reality realms. How these scenarios differ from the virtual CMC model is where we append the research with new ideas. However first we need to model the effect of VR avatars on CMC.

The avatar and the VR context are signs themselves, but they are signs of an internal reality, not meta-real signs of an external space beyond roughly delimiting the play space – as discussed. The space within the semiosphere is formed by the recognition that the avatar allows a freedom of expression – a playfulness of identity. As such, the internal homogeneity of the culture, which reduces the distance between users by bringing them closer together at the centre of the semiosphere, is formed while the avatar increases the narrative gap between users. The conclusion we must draw then is that the specific avatar is somewhat irrelevant when not congruent to a specific narrative space and indeed, it is more the overall myth (what are colloquially, and unsemiotically, called memes) and/or presence of the avatar in the space that creates the communication/identity space (Riva *et al.* 2007; Spagnolli *et al.* 2009).

We discuss elsewhere meme-signs as a homogenising aspect of online community. Many VR models reference anime and other aspects of pop culture (cats, movies, video game characters) which can be termed meme-signs, as defined by Davidson (2020). Additionally, the user can animate their models to perform meme-signs or even swap avatars quickly. This swapping aspect leaves the user identity more grounded with the unchanging name tag than the specific avatar model. As such, the visual identity of the character is distanced a little from the core identity of the user, allowing it to be playful and primarily directed at the receiver to enjoy rather than being the “wearer” – as such we return to the “toyification” process:

This aspect of toy-play, in other words, pertains to the culturally relevant activity that Lotman (1990) defines as “auto-communication”: playing with toys can be a way for the players to restructure their own symbolic universe, their personality and their perspective on the world. (Thibault, Heljakka 2019: 8)

This supports the supposition that *presence* within the space is both homogenising and forms the identity of the user separate to the model, as well as creating a heterogeneity within the wider culture. This would align with Margolin’s analysis of “we” as a single individual perspective, rather than a group identifier (1996). Balancing the individual and the group is maintained through the collective identity of the space – either a player of a certain game or more generally, a user of a certain piece of hardware, such as VR.

Since VR creates a panoramic view in front of the eyes, details of the real space are unimportant beyond their physical presence within the play space – as described above. A user does not want to hit a table, but equally the table object may not fit the VR context, so it is represented via some other sign. The same is the case for AR since the signs appear in relation to the basic constraints of the space (in order to align with the floor and to get the correct perspective for example) but don’t actually interact directly with the physical. But the difference is that the physical world is the primary context for the AR signs.

However, in VR, there are several scenarios to analyse; talking to someone in VR via the online space who is known offline, talking to someone who is only known via the VR representation, or interacting with a non-human character within the VR space. There is another relationship – the watching of someone in VR whilst not in VR yourself, using a streaming website such as Twitch which this author has detailed elsewhere (Davidson 2020). This is the contemporary evolution of Zhao’s corporeal/virtual copresence – the hypervirtual copresence (Zhao 2001) – which demonstrates the microcosmic model of the ubiquitous hypervirtuality, made macro by the loss of the individual. It is worrying, therefore, that the microcosm is centred on the self, and highlights the need for a digital literacy in class.

The interaction between human users in the VR space is one that is mediated by the avatar. However, the physical context of the user behind the avatar will be hidden by the mask of the avatar and thus communication between such users will rely on knowledge of other parties to formulate the interpretation. The user who is talking to the avatar in VR that has no overt concept of the user in the physical world, will have to rely on non-visual clues – and potentially non-verbal too should the user be operating as a mute or via a Text-To-Speech (TTS) software programme. It also becomes relevant to question whether the user is even able to judge that the other is a human and not a computer-controlled character – a feat which has not happened yet, but which is defined as the Turing Test. We should investigate the differences between the two users when operating in a space of semiotics.

Communication between avatars will form a semiosphere around the two *umwelten*. It affects the translation process by adding a filter, but since the overall bounded space is the complete sphere of semiosis it would be incorrect to say the

VR filter enacts the interaction. Instead, it is adding noise to the communication process of user-to-user communication. The processes of communication within the virtual world will be internally consistent however, regardless of the avatar. The avatar may impact the role play aspect of communication but within the context of VR, there comes an awareness of such role play and fluidity of identity – if a user talks to a robot in VR, the context allows for the user to accept it is a user role playing as a robot, not an accurate portrayal of the user.

Where this changes however is when avatars reflect alternative gender identities which has led to some questioning the negative effects of the VR+ world as too real (Deng *et al.* 2019). We reference this in previous research (Davidson 2020) on the problems of gender identity in online spaces like the classroom. For now, we state that it seems to us the disharmony comes from a lack of familiarity with the new virtual environment. The virtual space has enabled vast distances to be compressed into a single room – users from around the world can interact within a space representing a park, or a pub. Full-body tracking and instant voice communications reduce the distance between users further – virtual space is designed to mirror the natural interpersonal interactions of the physical world: “[VR] will bring the immediate and sensually rich domain of the face-to-face encounter into direct contact with the imaginative, artificial, and control-oriented domain of the computer” (Palmer 1995: 277). This control-orientation is evident in the code and the focus on designing interface devices such as full-body tracking.

However, the space is different, with different “rules” for the representation of people. The virtual space then creates a clash between feeling as natural as in the physical space, while simultaneously being as free and fluid as a dream through its physics. Such a space is not a semiosphere of translation that has much precedent. It is perhaps why Georges states SNS have a damaging effect on the formation of adolescent identity – the virtual space remains distinct from the physical, but the translation of virtual space with the same expectations as the physical leads to a contraction of the two realities, causing a misalignment between *umwelten* and sense-reality. This is exemplified with the phenomenon of “cybersickness” where the virtual and physical become poorly aligned, leading to physical ailments (Weech *et al.* 2019)

Understanding of the avatar communication space is fundamental to the semiosphere of the interaction (Dovchin, Pennycook 2018). In VR it is perhaps more overt due to the hardware and lack of physical space bleeding through – AR or MR actively base their interactions within the physical environment which makes the awareness of context even more important in the translation process. The signs are distinct, but if they are taken as being on the same plane of reality, this leads to a poor or even dangerous transmedial experience – such as catfishing, where one is deceived into a relationship online via a fake profile. Digital literacy is something this author posits as a method for improving the grounding of the online communication experience, via contextualising the self within the web of signs and understanding the risks of fake personas.

If the physical user is unknown to the receiver, then they are making internal judgments about the human beyond the origin of the sign – the avatar – with

limited data. The VR space is the apparent source of the sign then and it depends on the user to interpret that it is overlaying a physical human. Similarly online identity can be seen as separate to the physical user in social media as well (Resnyansky 2010).

However, without the knowledge of said person, it is more appropriate to say that the sign of communication from the avatar itself creates a further sign – a denotation – of the other user. We say denotation rather than connotation since, in practice, it is unlikely that any current programmed interface could replicate the movements and nuance of human communication. But this may change as the technology advances and our model allows for ongoing amendment to occur.

Kull, among others, writes that a semiosphere is the product of two umwelten interacting, but if there is only one umwelt interacting with a virtual avatar that may or may not be human, and thus may or may not have an umwelt, then it is perhaps appropriate to say the semiosphere is also the result of an umwelt interacting with the perception of another umwelt, whether that is a human or not. Such a statement allows for the formation of intersecting layers in a semiosphere – which bounds the interaction – but it does not require the other to be an umwelt, only a good-enough simulation to deceive the other. Communication between two non-human avatars is not a semiosphere as no new organic translations are formed.

Natural language may be a foundation for Lotman’s model of communication but as Barthes writes, the social and cultural sign creates first-order semiosis – when you see your friend talking to you, the words he says will be interpreted individually as received from that friend. As a result, personal myths are imbued within the sign’s translation. The friend sign denotes that the vocabulary signs will be of that context. Thus, the second-order semiotics – the myth – of the vocabulary is that it is a friend discussing something using the shared code of that friendship (Barthes 1972: 113).

Whereas the signification in VR is appropriate within the space of VR, the code of AR is designed to be distinct from the physical world. If AR is interacting directly with the environment, then it crosses our definition for mixed reality. The space (in Randviir’s sense of the term) in the physical world is the boundary of the semiotic area that delimits the AR sign. Since augmented reality requires a device to view it, the screen then becomes the localised area within which the AR signs are created. Meaning thus comes from the internal translation of the space generally, and the screen specifically. This will be picked up in more detail in the next chapter on architecture, but the difference in spatial perspective here between VR and AR is important.

The programme and the virtual signs within said programme are of the same space since it is often the programme that has the controls to perform actions with the specific avatar and AR objects. The *Pokémon GO* mobile game for example features a ball that you “throw” at creatures you find in your local neighbourhood. These creatures, when pictured within the AR mode, appear to be in your physical space and you are hunting them in the real world, with relative scaling and responses to current weather conditions aiding the illusion.

The virtual space reveals a hidden, transmedial, semiotic world beneath it. Space is a metaphor for the positioning and interactions of the semiotic signs, but with GPS tracking, games like Pokémon create a physical, dynamic, play space that is based on the geographical location of your phone. Space is seen in AR as a semi-permeable membrane which remains distinct but fluid. For the most part it is a membrane that allow the surrounding context to pass through unchanged, across layers of the semiosphere. But in between these permeable holes there are AR objects that occlude the physical world from the receiver, creating a new semiotic message.

The space of AR is unlike any visual semiotic reality that has come before it since the transmediality of the interaction surpasses the fixed space of television or reading. While it seems unrelated, perhaps the most applicable media experience is that of the map. The map translates the physical world in another medium, intersecting at key points and only augmenting certain areas localised within the space of the technology – there are maps for the whole country, but you use a local map for navigating your town for example. The map could also be a metaphor for the holographic universe.

The map also expands – or augments – one’s current reality space with objects that are not visible physically – such as contour lines. The map is not a virtual reality though since it does not filter a user’s entire perception of this real world through its own system of signs. It is only the specific segment one looks at that is translated. However, a physical map is still an opaque mask that you cannot see through – it is an “over there” space of semiotics within the physical world. The AR objects can be ignored and the physical world – mediated via the screen – will be visible. The VR world cannot be looked past – the user can view the screens projecting the virtual reality but otherwise the headset is calibrated to remove that sense of watching a projection and replace it with the sense of being inside the world. The link between hardware and space is closely entwined.

The AR object so far in our investigation has been a computer-generated image – a game character for example – rather than the representation of a real being. The third data chapter on culture will specifically focus on the cultural representations of the avatar, but spatially we should consider the effect of transmitting information between different agents in AR.

VR CMC – as discussed – is affected by the external knowledge one user has of another. This alters the connotative values of the signs. AR will be the same – it is the same underlying CMC model – but the context is less important in many ways than the action of the avatar or other AR object. Since the object is not interacting with the environment in an AR situation, it is foregrounded against a canvas – it is not contained within a complete narrative as with virtual reality. As stated before, a failure to recognise the sign as virtual will affect the translation with potentially dangerous consequences. The recognition of the screen as a mediation, as a creative medium, and not a mirror or window onto the physical world demonstrates the importance of context and space.

In short, the window dictates a tighter, real-world boundary. It is – to use the terminology of John Fiske – narrowcasted in AR. This is not because in AR the

object specifically interacts with the environment, or that it has a context of its creation, but because most programmes that use AR will have some trigger for an action – such as a specific building or a physical input by a user like using the camera. While the physical world does add context, it is these specific spaces where an action occurs that especially contextualise the sign. We can say that AR creates multiple play-spaces whose apparent (iconic) likeness to reality is the sign, unlike in the VR context where it is the apparent (symbolic) difference to reality that is meaningful. Although, should one create an exact replica of their current physical space in VR than that may alter this model slightly, but since the replica would become a VR simulation then its virtuality is still upheld despite its realism in a way that is similar to photographs, paintings of photographs, or replicated spaces.

Virtual YouTubers and VOCALOIDS illustrate the signs within the various realities described above. The VOCALOID of Hatsune Miku exists as a library of vocal sounds within digital music-making software, performs as a pre-recorded hologram at concerts, has a VR concert game, and acts as an augmented reality companion at a museum. This multimodal experience of a character linked through a unifying concept tailored for different media and thus, different experiences within each interaction, exemplifies the transmedial message between different realities and spaces.

Mixed reality is different to the realities of AR and VR in that the objects within the space actively interact with the physical world. Unlike in the previous examples there is almost a requirement upon on the user to accept the virtual as physical. MR could be used by a technician to receive dynamic guidance on a problem out in the field, from another user who may not even be in the country. Such help is presented via an overlay that augments the physical object, but unlike in AR, it actively and dynamically changes depending on the physical situation presented to the telepresent user. MR can be viewed as AR but with a second user interacting with the process – it is not quite two distinct layers of semiosphere, or even a mesh, since the communication space of MR requires both realities to complete the message which contains it within one semiosphere. VR would be a complete layer, while AR would be the mesh. A novel formed of nested stories may be an applicable exemplar of the narrative structure.

The understanding that the sign is not real is a somewhat secondary signification, and the understanding of the space as physical is perhaps no more relevant than any worker who repairs something with or without conscious awareness of its physical relationship to the world. In the specific model of communication, the reality of the sign is not the core message but environmental context.

However, as a semiosphere, such an interaction will refer to the space in the same way as AR (it requires the physical canvas) but the dynamic interactivity will append the physical with extra information. It is perhaps through this additional information that MR will most obviously impact the semiosis process. MR adds content to the text of reality that the user is reading, supplying core details, alongside the physical. The receiver combines two data streams in their interpretation. Potentially, the user may become too reliant upon the dual streams to supply

information and reduce their own ability to infer information from the exclusively physical sign. This will be explored in the identity chapter where the role of technology in supplying too much information in the process of forming identity will be examined. However, spatially, increasing information could reduce or increase distance between people depending on whether the possession of information is asymmetric. An increase in information to one person will obviously enable that user to form a more in-depth interpretation than the other user who does not have as much.

We posit this effect is similar to that of social media. If all users have access to the information, then the distance of comprehension between users will become unified between those who share the same views and interests. But it may lead to echo chambers where users are able to see people of similar interests and avoid people with different opinions (Madisson, Ventsel 2016). A lack of interaction between opinions will create a segregated space online, where opinions are unchallenged.

Virtual space can be fractured, accessible in different areas via different technology. These hardware portals demonstrate the essential nature of the semiosphere – semiotics is reality-agnostic, formed by the interaction of two or more (perceived) *umwelt*, and creating a boundary of the communication. The interpreted signs can be virtual or physical depending on specific mechanism of access, but the complete interaction can be modelled as a semiosphere of translation. The user reprocesses the sign with one of their own formation that is necessarily different to the presented one. Thus, multiple realities can be modelled within the semiosphere model completely, but the impact upon the interaction/construction of identity comes from the mediation of the data occurring between the creator and receiver. The spatialization of the virtual within the physical is vital, and as such, a distinction between the two planes is required.

1.4. Findings of the analysis

Using some real examples as case studies, we can take the previous investigation work and discuss its implications and evaluate the relevance of the “space” topic within the thesis. As space is the first chapter of the larger discussion, we are perhaps limited in what we can say but we can evaluate the use of semiotics to describe the virtual space, and what such a methodology tells us about our examples.

We have not yet analysed the stage as a metaphor for the use of avatars in VR. This is because the theatre constructs a specific ritual. There is an audience, there are actors, the story will unfold following recognisable narrative waypoints – beginning, middle, and end at their most basic. There could be, and indeed are, similarly structured performances in VR. However, the focus of the investigation would be the theatre performance with a difference in mediality of the presentation, albeit still constrained by the theatre paradigm.

The analysis of the virtual space here is perhaps more an investigation of the physical stage itself within the theatre, rather than the narratives that are performed upon it. The avatar, while an important spatializing sign within the text of the virtual/physical communication space, is not a space itself in the way that a stage is.

Therefore, the performance space – the play space – has been analysed as its own semiotic object, with a variety of other metaphors highlighting the way semiotics can textualize, and thus describe the translation and communication of the signs within. The virtual space is NOT a city. However, there are aspects to the communication between avatars and users in VR+ that crossover to the city (as architecture) and indeed role play (or acting). These will be introduced in upcoming chapters, but as shown, the topics are deeply interconnected but space is essentially primordial.

Throughout the preceding chapter we have attempted to unify previous work with our own interpretations. The sign is understood as a real sign – the VR object is comprehensible – but it isn't physical object. Therefore, the physical and non-physical could be a delimiter of real and unreal. But the nonphysical Hatsune Miku, for example, crosses the reality continuum – the “uncanny valley” (Mori *et al.* 2012) – to appear more physical. The interpretation of realism decreases the closer to the physical the model appears, before becoming indistinguishable. As such, for there to be a virtual plane, there must difference. This difference is the duality that codes the signs of the semiosphere, leading to deeper meaning rather than mechanical iconicity.

So called memes and other esoteric signs of community construct a homogeneity with the space but a heterogeneity within the wider society is required for there to exist “difference”. The realisation of this postmodern concept within the virtual space comes with the Miku avatar, the closer to the “real” or physical space the virtual appears, the more hyperreal and extreme the presentation of the users appears to be. The virtual almost becomes a non-space then, a bland, realistic, environment that acts as a border to the hyperreal properties within it – flying, temporal and gender fluidity, geo-cultural manipulation and so on. We use hyperreal and not unreal here since the conceptualisation of some property that is unreal would, by definition, be beyond that of the human contained with the reality that it is hoping to imagine. The virtual needs to be phenomenologically, and ontologically, comprehensible by the user – thus the sign can be translated and replaced within the *unwelt* as a process of semiosis.

This is, however, more specific to the avatar within VR, where the world and space is fully idealised. While the concert of Hatsune Miku is itself experienced as a “real” concert, the image of Hatsune Miku is still pre-recorded. Although the crowd interactions help the non-VR receiver to experience a sign that is further along the continuum of realism, (further into the uncanny valley), it seems likely that it is the difference to reality that is the attraction. That Hatsune Miku is a holographic projection on the screen, distinct from the mundanity of the external stage, is the appeal – the playfulness (in Lotman's sense of the word) – of the experience. The *Dimension Nova* experience and narrative expands on more and

suggests a possible future of MR reality merging the virtual and physical seamlessly.

The Hatsune Miku concert then is not a virtual space as such, it is a theatre, or concert space. Baudrillard writes about the process of adding or subtracting dimensions to the real object, suggesting the visual painting style of *trompe-l'œil*, a forced perspective three-dimensional optical illusion, is: “the ecstasy of the real object in its immanent form [...] subtraction is what gives strength; power emerges from the absence” (Baudrillard 1997: 9).

This highlights the spatialisation of the hyperreal/hypervirtual future. The AR image of Hatsune Miku is clearly an optical illusion, forced perspective means very few angles will show her undistorted. The position of her image in relation to the uncanny valley denies a sense of true realism but the social construction of the reality among the audience exists of course – like the degenerate utopia of Disneyland, the border between the “augmentation” and the “reality” has become permeable through the conditioning of the virtual society. The materiality of reality has been replaced with the constructed object and the subject becomes enmeshed within this narrative:

virtuality, by making us *enter* the image, by recreating a realistic imagine in three dimensions (and even in adding a sort of fourth dimension to the real, so as to make it in some way hyperreal), destroys this illusion (the equivalent of this operation in time is ‘real time’, which makes the loop of time close up on itself instantaneously, and thus abolishes all illusion of the past as well as of the future). (Baudrillard 1997: 9)

But the VR/AR narrative is mediated by the virtual screen. The message is contained within the distinctly different mediality to the live band, but it is pre-recorded, like a TV. This experience then is an augmented reality space, a physical space that forms a semiosphere that transcends realities by combining the material and non-material aspects of the (live) song structure – visuals, singing, and music – from the components the viewer interprets and translates into their *umwelt*. The virtual space that Hatsune Miku moves within is analysed as just that, a virtual space. It is contained within a screen that while forgotten perhaps, is not unknown (otherwise Hatsune Miku would cease to be “virtual” – a point that Baudrillard might see as inevitable).

While VR has a space that is analysed on its own terms as a virtual space and AR has a duality of spaces that remain distinct but are interpreted as within a single semiosphere, mixed reality space is perhaps where the strength of the semiosphere methodology of semiotics can be demonstrated.

The technology will become increasingly dynamic and responsive, as seen with Kizuna AI singing a Hatsune Miku song and represented as a hologram in the same way as Miku, but she interacts dynamically. Thus, there is the conflicting knowledge that there is a “real” actress singing the song but hidden behind the projected avatar of Kizuna AI. To help understand why this mixed reality works as a complete sign and why there is not an irreconcilable contradiction

among the audience who are hearing and viewing two distinctly dichotomous signs – a physical voice and the virtual avatar – we turn to the world of wrestling.

There is precedent for wrestling as an archetype for semiotic meaning. Roland Barthes wrote:

There is no more a problem of truth in wrestling than in the theatre. In both, what is expected is the intelligible representation of moral situations which are usually private. This emptying out of interiority to the benefit of its exterior signs, this exhaustion of the content by the form, is the very principle of triumphant classical art. Wrestling is an immediate pantomime, infinitely more efficient than the dramatic pantomime, for the wrestler's gesture needs no anecdote, no decor, in short no transference in order to appear true. (Barthes 1972: 16–17)

The world of wrestling is understood from within the concept of “wrestling”. There is an internal truth to this process – this semiosphere – that the viewer participates in. “Kayfabe” is the characterisation of the pantomime as real. It is a willingness to believe that wrestling is real, and the pantomime of the behind-the-scenes drama that occurs is truth. As Barthes writes above, because of the shallowness, the immediacy of sensual representation, the audience essentially takes the sign as it appears, without searching for depth.

The same could be said about the Hatsune Miku AR concert. It is possible to analyse the content of the Miku sign and appreciate the art for what it is – the projection is essentially a visual representation of another instrument, much like the lights or other stage show effects. With the MR of Kizuna AI, kayfabe creates a semiosphere that transcends the realities but which the audience chooses to include only the signs they wish. Within Japanese culture, mascot characters are common, and it is considered taboo to discuss the human within the costume. This suspension of “disbelief” perhaps, offers a pre-existing cultural code of behaviour to the Kizuna AI live concert audience – they do not look for, discuss, or demand to see the actress as a collective for example. Kayfabe offers a similar cultural code for why the audience participate within a semiosphere so homogeneously.

It is here that Tanaka-Ishii's research on the computer sign as a content and meaning is highly relevant. The content of the sign, as interpreted by the computer, is a mechanical “doing”, as with Kull's description of physics. The content of the kayfabe, of the computer-generated sign, as something emotional, analogue, cultural, is from the textualization of the sign at a different level – one of the multiple realities of the semiotics of Kull. We would perhaps interpret Kull's definition of physics as a dyadic sign, as Tanaka-Ishii describes, while a Peircean triad seems to fit the “being” side, as the other side of the dually coded sign.

Although the examples above are large scale experiences, similar trends can be perceived by users of virtual forums. The fluidity of identity expressed and accepted within the space demonstrates a shared, homogenous, acceptance of the presence of the user as meaningful, not the truth of the avatar, the realism of the content of the sign to the external user. The *VRChat* space is a pantomime, a

carnival, albeit one that is contained within its own virtuality negating the direct influence of the physical.

Moving away from art to productivity, MR interacts with the world in a dynamic, meaningful way. Microsoft, via their HoloLens, want to create a real-world metaphor with its interaction interface. Using the physical and the virtual to complete a single sign then, either as a process of productivity or entertainment, is a complete semiosphere where a homogeneity of intent needs to exist for there to form a uniform understanding. Although heterogeneity needs to exist in space overall, for the “mixed” of “mixed reality” to become significant. The specific use of the space then may have political differences – identity, or the divide between productive and entertaining spaces leading to indebtedness to capitalism (as per Bown) but semiotically, such interpretations would be cultural, not spatial, and modelled the same.

Reality then is an ongoing dialectic between space and culture, but with increasingly universal virtuality: “a lot of what exists is neither objectively true nor subjectively imagined” (McLaverty-Robinson 2012). The digital layer alone would not be meaningful without the cultural/spatial boundary, and the physical layer without the virtual would not be meaningful without culture and space duality. Transmediality of the message within the space then exists as a complete semiosphere, albeit with layers – a web – depending on the physical presence within the communication. AR subtracts dimensions, creating a 3D object in 2D plane, while VR fully renders a third or fourth dimension to the 2D plane. However, it is perhaps the spatialisation of MR that postmodernism is most wary of – the blending of the image and physical to create a uniform “whole” destroys the notion of the image altogether, leaving only the manufactured object and a subject to interpret the sign as a reality.

AR can be triggered by key signs in the physical world – such as QR codes, specific buildings, or geographical locations. The example of the Hatsune Miku guide at the museum demonstrates a sign appearing to interact with another sign, which suggests the physical world is a canvas, a map, to the virtual, triggering a pre-set behaviour (demonstrated by moving the phone). Thus, the message in AR conveyed between two entities – the virtual Miku and the physical user – is the interpretation of the action of the avatar with both spaces.

As such, the sign is signifying a relationship that the user interprets based on an ergodic reading of the contextual space. The non-participant of the fantasy that Hatsune Miku is there will not read the sign in the same way as someone who wants the anime fantasy to be reality. The gap between the virtuality and reality is subjectively wide or narrow depending on the interpretation – the signs of fiction are open as Eco says in his text *The Open Work* (1989).

A final overt distinction between the multiple realities is the access process. The AR/MR phone screen allows for a different spatial access point than the headset of VR, which in turn changes the embodiment of the user within the space. The full-body representation goes some way to decreasing the gap between the virtual and the physical as an individualised, full-body, cultural process. The gesture recognition in VR for example, combined with haptic feedback, change

the meaning of the human within the space itself. Ultimately, there are questions about the biological impact upon the *umwelt* of the user who is too embodied within the virtual space – Georges introduces the idea with social media, and although we have stated that the virtual and physical must be separate to make sense semiotically, we are presenting hypervirtuality as a situation where someone was engulfed by the virtual sign to such a degree that only the more extreme virtual signs – were recognised as virtually hyperreal.

Such a situation seems likely to lead to mental health issues that are beyond the scope of this author. But what makes it unlikely in Web 2.0 is the requirement to access the virtual via a device. Believing such a device to be a physical reality, is clearly a more significant problem than misinterpreting a sign as biological for example, which may happen with the omnipresent digitalisation of Web 3.0's space.

While a device is required to view the object, the mediation borders the experience of the sign and creates a discrete threshold of realism. However, the increasing mediation of relationships and experiences via technology (for example, digital partners) further corrupts this separation. Talking to one's parents on Skype or watching a hologram perform a live concert are both experiences mediated by a screen. There is a process of positioning oneself at a specific space for each interaction. Watching people on your laptop screen can be fictional (Netflix) or non-fiction – such as talking to your parent. The difference is the programme space (Skype or Netflix), the dynamic responses, and external knowledge of the technology and of your parents. Going to a concert to see a living act will often result in one viewing them on a screen – either on stage or via your phone as you record them.

The space and the signification process within such the screen space degenerates the distinction of fiction and non-fiction like Marin's utopia (1984). The screen is a boundary to the space, but it is not a conceptual delimitation between the real and unreal anymore. Everything within the screen space can be construed as within its own reality. It is this space sign as an experience and a space of experience of signs that poses the conflict between fiction and non-fiction. The corruption and blurring on reality between VR and the physical leads to questions of epistemology.

While the avatar is experienced as a real entity within the screen, it is an avatar due to its difference. The deepfake use of an avatar, with dynamic processing, has far reaching consequences. However, is there any difference to viewing an animated avatar or the uncensored image of the person, when the space is the same for both experiences, and that space already mediates the experience? Again, intent will nuance the interpretation, and such intent is "culture" of course. Although discussing holograms, the following by Baudrillard could more aptly apply to the deepfake, especially within the space of the screen where reality is fluid:

The hologram, the one of which we have always already dreamed (but these are only poor bricolages of it) gives us the feeling, the vertigo of passing to the other side of our own body, to the side of the double, luminous clone, or dead twin that is never born in our place, and watches over us by anticipation. (Baudrillard 1994: 106)

The interface space of the user interacting with the space, how the user communicates with an avatar, is a flat space bordered by the screen. It may simulate three dimensions, but depth would only be created with the spatial computing paradigms of VR or MR. At such a point the interface becomes an object with the VR space. A 2D interface within a 3D space, or a 3D interface in a 3D space has an obvious difference – the action of the human.

The spatial sign is situated in the semiosphere in our visualisation of the relationship between the context and the virtual or physical object. This does assume that a sign is formed of at least two aspects – a context and an object, which seems to be supported by the examples above. The methodology and conclusions we have drawn about space appear to be concrete and substantiated, as well as suggesting some new interpretations of the research in light of current and upcoming technologies. Space is primordial, it is meaningful, and it is part of the meaning-making process, not because of its physicality or virtuality, but because of its semiotic duality.

1.4.1. Deindividualization and deterritorialization

The digitisation of the space, and thus of the self, can be described as a textualization of signs. This is summarised by Hartley *et al.* thus: “The process of textualization – explaining something as a text – is applicable to phenomena regardless their material. That is, the framework allows for textualizing not only novels and literary texts but also tweets, films, video games, computer code, everyday behaviour and rituals, and their collections” (Hartley *et al.* 2021: 61).

The question of what happens to the individual in this technological space of signs is relevant for the identity construction of the self and for the role education plays in society. The preceding text has described a situation where, seemingly, the individual is being consumed by an overload of digital information, where the city is transforming itself from the physical to the virtual space, enabling more signs of capital to be sold and valued with ease – the virtual sign is easily produced but can be encoded with some level of scarcity or rarity – see our later discussion on digital currencies for example.

The individual, as an *umwelt*, exists of course, as a process of semiotic interpretation. However, the postmodern concept of the self as an individual entity within the society of signs has changed. Claire Colebrook, referencing Greenfield, deconstructs how the technology is altering the “self” as an identity:

There is a widespread lament regarding something like a self-extinction occurring in the human brain. According to Susan Greenfield, ‘we’ are losing identity: where we once worked with a synthesizing power of grammar, syntax and critique, we are now seduced by a culture of stimulus. We are not just losing one of our critical powers – our power to synthesize what is not ourself – we are losing ourselves. For ‘we’ are – as *human*, as *identities* – just this synthesizing power. According to Greenfield, a certain degree of self-loss is required for stimulus and pleasure, but a counter-tendency of neural extension is required for meaning and self. The self

is neither absolutely stable and self-same, nor fully exposed to its outside, but must be self-organizing; indeed, the self is this delicate balancing act of memory and forgetting, openness and closure. For Greenfield, technology and a culture of stimulus is tipping the self into an accelerated loss of its capacity for meaning. (Colebrook 2016: 308)

This long but relevant quote progresses the discourse from space to the individual as a model of identity. How this identity is intimately linked to the hypervirtual world of the virtual-in-virtual utopia of Web 3.0's hyperreality is the reason for this discussion – there is an ongoing evolution of technology and society that requires a continual updating of the research. In 2016, few had any inkling of what a post-pandemic “new normal” might look like. We will specifically reference the transmediality of identity, how the space of culture, of digital signs and the seduction of the virtual is causing the self to no longer be recognised as an individual within the virtual plane. But the deindividualization and change in the notion of territory in the digital world is an important contextualisation.

The concept of the digital nomad is, seemingly, conceived of as a positive identity. The worker can travel and be free to choose their narrative and work. However, the discussion on the third place above demonstrates a shift in the way society is controlled. When the object of control is no longer a delimited space or concept, separate to that which you call your personal space or free time, then the control aspect becomes pervasive in all aspects of one's life.

The notion of deterritorialization, as introduced already, was highly referenced by Deleuze and Guattari who describe the process of deterritorialization as in a reciprocal relationship with reterritorialization – the old giving way to the new, as a reformation of what once was, rather than the creation of a new stratum:

For example, the prehensile hand implies a relative deterritorialization not only of the front paw but also of the locomotor hand. It has a correlate, the use-object or tool: the club is a deterritorialized branch. [...] The human head implies a deterritorialization in relation to the animal and has as its correlate the organization of a world, in other words, a milieu that has itself been deterritorialized (the steppe is the first “world,” in contrast to the forest milieu). But the face represents a far more intense, if slower, deterritorialization. We could say that it is an absolute deterritorialization: it is no longer relative because it removes the head from the stratum of the organism, human or animal, and connects it to other strata, such as signifi-ance and subjectification. Now the face has a correlate of great importance: the landscape, which is not just a milieu but a deterritorialized world. There are a number of face-landscape correlations, on this “higher” level. (Deleuze, Guattari 2005: 172)

However, this is not a sudden, sharp replacement. Indeed, the constant mediatization of modern/postmodern society has been a creepingly slow shift in many ways – what John Tomlinson calls “mundane”, a word we also use to describe the mediatization, and gamification, of everyday chores as a potential engulfing of the human experience into the hyperreal plane:

what I have tried to stress is the *mundane* nature of this experience. It seems to me that, for all that these are profound transformations in cultural experience [i.e. mass communication], they are not typically experienced as dramatic upheavals but are, on the contrary, rapidly assimilated to normality and grasped – however precariously – as ‘the way life is’ rather than as a series of deviations from the way life has been or ought to be. (Tomlinson 1999: 128)

Tomlinson continues with verbosity to point out that the shift in what is normal – “even the intermittent ‘crises’” – are assimilated quickly and without serious drama. This is perhaps why the “new normal” of post-COVID society could speed up the encroaching virtualisation of information and identity, through its quiet assimilation into the wider culture. The delimited office/home/classroom spaces have been dissolved – deterritorialized – and reconfigured – reterritorialized – around the third place of the computer.

The individual within this space has thus accepted the loss of the distinction between different roles in their self-narrative. Perhaps the most famous example of deindividuation – to the point of being a cliché – is the Stanford Prison Experiment where people began to display abnormal behaviour when within the larger group. There is discussion however around the role of the individual within this mediatized era – the shift from modern to the apparent postmodern.

Stig Hjarvard (2008) criticises the postmodern approach of Baudrillard, initially stating: “The prime characteristic of the process of mediatization, as conceived of here, is rather an *expansion* of the opportunities for interaction in virtual spaces and a *differentiation* of what people perceive to be real” (Hjarvard 2008: 111). He continues to say that the hyperreality and the loss of reality is exaggerated and lacks empirical testing, while also perceiving the modern epoch as seemingly more “straightforward” or “concrete”: “Baudrillard’s reference to an overall and dominant ‘code’ that ‘administers’ the circulation of symbols and signs in society, remains unclear” (Hjarvard 2008: 111).

This is an important argument against the modern virtual space as a deterritorializing relationship. However, the process of semiotic modelling perhaps fulfils this empirical model of an overarching code – meaning (signs) are derived from interpretation. Such interpretation requires some form of meta-awareness to enable the translation to occur. The contextual environment of the sign is always impactful then. The loss of reality may seem farfetched but what about the loss of locality, at a micro-level? Hjarvard writes on the effect of social institutions (education, culture and so on) being accessed from the home:

Virtualization, however, is seldom total; most institutions still maintain physical-geographical bases as an important framework for social praxis. What is new is that these places and buildings now interplay with virtual places and spaces, and the reality and forms of interaction that take place in the virtual world will also have consequences for social praxis in the physical locality. (Hjarvard 2008: 129)

This perhaps takes the physical presence of the building as overly important. The building is no longer the sole access point for the social institutions – the school

where education took place is no longer the only space, with students able to be physically at home but mentally at school. The problem we see is the effect on the identity of the individual when there is no distinct separation between the virtualised spaces of different institutions, or even between the virtual and the physical. Hjavard concludes that there should be a distinction between mediatisation and the media, with the former akin to modernisation while the latter is responsible for the dis-embedding and re-embedding of social contexts. While this may be seen as a development process or an evolution of society, there is still a consideration of the individual within this modernisation of society.

The notion of control and art, is discussed with the de/reterritorializing process in Latin America by Néstor García Canclini in the postmodern era as a de-collection and hybridisation of culture and society, stating that:

Postmodern visibility, in contrast, is the staging of a double loss: of the script and of the author. The disappearance of the script means that the great narratives no longer exist that used to order and hierarchize the periods of the patrimony and the flora of cultured and popular works in which societies and classes recognized each other and consecrated their virtues. That is why in recent painting a single work can be at once hyperrealist, Impressionist, and pop, or an altar or a mask can combine traditional icons with what we see on television. Postmodernism is not a style but the tumultuous copresence of all styles, the place where the chapters in the history of art and folklore are crossed with each other and with the new cultural technologies. (Garcia Canclini 1995: 243)

This mingling of cultural technologies without iconography, or “*referents of legitimacy*” (Garcia Canclini 1995: 243), causes the author and the script – the self and the social reality we construct – to lose contextual median. There is just the web – the copresence – of signs. Rather than an encyclopaedia, with cross-referenced definitions, meaning is an indiscriminate list of words it seems, at the risk of mixing metaphors.

Anthony Giddens challenges the *status quo* on postmodern critique, stating it is not enough to keep inventing new words but rather we should address the underlying social changes. He introduces the problem thus:

The disorientation which expresses itself in the feeling that systematic knowledge about social organisation cannot be obtained, I shall argue, results primarily from the sense many of us have of being caught up in a universe of events we do not fully understand, and which seems in large part outside of our control. (Giddens 1996: 2)

This sense of feeling lost is the humanistic consequences of the deindividuation of the digital space around us. Later, Giddens continues with a discussion that is both relevant to this section and a later one on digital currency, on dis-embedding – a process of “lifting out” from a local society context and expanding relations to the modern, infinite, space. The distanciation of society – the lessening of interpersonal connection through the mediatization of society – has a real impact of the individual.

Giddens introduces self-identity to the discussion, stating that self-actualisation becomes the key to freedom of self-expression. This is perhaps a key exemplar of the reflective modernity that Giddens prefers over the term post-modernity. The lack of tradition enables a freedom of choice within society, but as Giddens states, the globalisation effect of the politics at large impacts on the self-reflection of the individual, intimately linking the individual to the global whole.

For us, we conclude that while the loss of reality may once have been hyperbole, the current dis-embedding of the individual from the physical space and re-embedding them within the virtualised system of digitised information, will inevitably impact on the self-identity, the self-authorship, of one's identity narrative. Should the individual be lost amid avatars, multiple commodified iterations of their identity (such as social media), then the loss of individuality can have a real impact on the self.

A common theme throughout the research so far however has been the relationship between the micro and macro, acting as an ongoing dialectic. The hypervirtual situation will continue this relationship but the micro and macro will both be virtualised. The loss of the physical will not be a loss of ontological security (to use Giddens' term) but maybe the drive for the familiar, the nostalgic, will lead to the virtual space as a third place, a non-place, of an idealised past.

Tomlinson, referencing Augé's description of the "organic" interactions occurring in the small French town square states:

There is undoubtedly something of the nostalgic in Augé's depiction of these 'real' places. But, interestingly, he doesn't think of them as part of a disappearing world of 'traditional life', but as characteristic of an earlier period of modernity itself – what he calls 'Baudelairean' modernity (p. 92), in which the link between the present and the past, the old and the new, is still visible and the link between place, memory and identity is preserved in routine interactions. Baudelairean modernity, as he says, is still alive in contemporary France, but it is threatened by the incursions of 'supermodernity'. (Tomlinson 1999: 109)

Supermodernity, as another term, references a process, a relationship, which Augé sees as defined by excessive information and space. Again, the loss of the individual connection to the local is indicated by this overload of information and mediatization of space – and virtual space has the potential to extend presence beyond physical boundaries as a third place.

Finally, Giddens highlights that the traditional sociology of modernity, using terms like "differentiation" and "functional specialisation" lacked the ability to define the move to modern society, with its manipulation of "time-space distancing" (Giddens 1996: 21). While the effect of space has been conclusively examined now, the effect of time should be briefly examined.

1.4.2. Space and time

To add more to the discussion of how real-time distorts the illusion of past and future, we will discuss, briefly, space-time in virtuality. Kizuna AI manipulates her digital avatar dynamically which adds a time aspect to the sign. Time and space are intimately linked, with time delimiting a discrete entity within the space. These discrete, specific elements exist within a timeframe that is specific to the space of representation – and the reality of such a space can have its own time frame. VR can slow down or speed up its space – as demonstrated by the game *Hot Shot* where the slower the player moves their body, the slower the elements within the space react. However, within the AR space of a Hatsune Miku concert, the live band cannot dictate the pace of the song, but rather they must keep to the holograms unwavering metronomic process – this includes interactions with the crowd. The tempo then is set by the hologram, but the time is based on the space of reality – when the concert opens, closes, the specific order of the songs and the pre-programmed pauses for audience reactions are tweaked to minimise awkward silences in the song space.

The hardware – as we will address in the next chapter – also artificially speeds up the frame rate within the projection headset in order to maintain the immersion of VR. Frame drops lead to stutters, but Oculus for example, use a form of technology that samples positional information of the user’s head in order to project the next frame where it thinks the user will be in order to smooth out the transition from frame to frame. The time/space relationship directly corresponds to the display of the sign over time and place. Thus, moving signs are artificially processed in the virtual realm by the hardware, altering the representation of the sign within context of the space by displaying a view that is not just mediated, but actively constructed both from received data and predicted outcomes. Thus, it seems the more realistic the display, the less iconic the sign could be. The reprocessing of the sign will be addressed in the hardware discussion.

Mixed reality will have objects that can be manipulated within real-time, or that can be processed along their own timelines. While the VR space – as a ludic-style space – creates its own time effects, and AR is constrained by physical reality, (although the game space, the ludic arcade, can alter the temporality of individual perception as a consequence of awareness. Consider how time passes when reading a book for example), MR appears to offer a dual effect of having different signs being generated, manipulated, displayed, and interacting with each other along different timelines within the enmeshed communication space. The research therefore demonstrates the fluidity of time within the space of signification – and indeed, the changing understanding of how we expect objects to interact. Since computing intends to speed up communication and workflows, we may see the virtual space as another tool that can operate at its own speed. The virtual space however – as the premise for this whole thesis has described – has evolved to encompass its own reality that we can inhabit, rather than merely interact with. The level of embodiment – of participation – within the virtual space is no longer a separate layer, but a blending and overlapping of the multi-

realities. The physical and virtual are increasingly in the same user semiosphere, while maintaining their own discrete spaces, but it is a discreteness that our research demonstrates as being multiples of the same “thing”, consistent with the semiosphere/umwelt model.

1.4.3. Summary

The technologist Monika Bielskyte writes: “The digital world will soon enough be enmeshed with the physical world in such a way that our ‘reality’ will be the transparency mode that we choose.”⁸ In a similar tone, Jean Baudrillard, in an interview regarding his thoughts on the movie, *The Matrix*, states “We are in the uncut transparency” (Lancelin, Baudrillard 2004). *The Matrix* is a movie which highlights the problem of the simulation, but it is not an example of the simulation itself. Baudrillard continues:

“the new problem posed by simulation is confused with its classical, Platonic treatment. This is a serious flaw. The radical illusion of the world is a problem faced by all great cultures, which they have solved through art and symbolization. What we have invented, in order to support this suffering, is a simulated real, which henceforth supplants the real and is its final solution, a virtual universe from which everything dangerous and negative has been expelled.” (Lancelin, Baudrillard 2004)

What is it that entitles us to talk about the hypervirtual without crossing into the neo-Platonic cave of shadows of Deleuzean metaphysics? As highlighted above, the space of VR+, regardless of the reality of the signs within it, the society, the narrative, the identities and so on, is still contained by a physical space. The problem *The Matrix* had, in our interpretation of Baudrillard’s words, was the sharp delimitation between the space of Zion (the real) and the VR matrix which required one to plug in. The space of *The Matrix* is unconnected to the physical – it is the transparency sliding through the projector, giving the illusion of depth and dimension, like the Platonic shadows. But the hyperreal is not a digitised “other”, it is the indistinct manipulation of the real. For hypervirtuality to occur, the physical presence of the person is allowed to move around the city, but the information, the signs, of the virtual are ubiquitous and entwined, rather than presented as the uncut transparency of shadows. As Bielskyte writes, physical reality is not replaced, but the filter of information we receive can be as transparent or opaquely digital as we desire. The problem of hypervirtuality however, is that we may lose the choice of any transparency if we are to function “correctly” in the “new normal” society.

What stops the hypervirtual space being the Platonic shadows is space. While the information is constructed via virtual signs in the virtual simulation, there is

⁸ <https://medium.com/@monikabielskyte/virtual-reality-as-possibility-space-24a8600a59ff>.

still a physical presence where the person exists within the physical boundary and can situate themselves. The Peircean idealism of signification allows a chain of semiosis to constrain meaning within that which the observer can contextualise. If the user has no concept of a non-digitally mediated space, then the physical reality can no longer exist as a conscious space of ground. The digital signs can occlude the physical, but unlike the VR space of *The Matrix*, in MR they ubiquitously append a hyperreal reality separate for the physical. The hyperreal becomes a *de facto* space of existence with the simulation of something else within this space is hypervirtuality. The chain semiosis leads from the cloud of bureaucratic data within the virtual office space, to the appended avatar of social media, to the ludic forum of the inhuman VTuber model. The non-digitised person is just a bounded space.

This is the conclusion we draw from this study of space. The digital and the physical are increasingly indistinguishable within the semiotic model, with users existing in and out of VR, AR, and MR. The different realities, forming a communication space, challenges current notions of identity and meaning by suggesting that virtual presence is the basis of culture within this new world. Identity is formed from the participation of the actor within the communication space, with each sign – virtual or physical – adding data to the receiver’s *umwelt* depending on what one comprehends or chooses to recognise and translate. Hypervirtuality is the virtualisation of hyperreality with virtual data in a virtual space. The following chapters will investigate this and build on how the physical user relates to their hardware, and how cities are changing to accept this digital mesh overlay to its physical structure.

Regardless of how transmedial the communication becomes however, there must always remain a distance, a separation, between the virtual and the physical at transmission. If the receiver translates the virtual sign as a physical entity, it will cease being a virtual sign and becomes bound by the limitations of the physical space. Such an action will lead to incongruence and disparity within subsequent communications – people can fly in VR, people cannot fly in the real world, a person who mistranslates this could have an unfortunate end – it is somewhat reminiscent of people who stalk actors believing their fictional characters to be accurate. The communication fails without awareness of different realities within the space.

The problem that Baudrillard, and that we found at the conclusion of our first data chapter, is where the subjective is in this world of hyperreality and hypervirtuality. Trifonova concludes their article: “The notorious “death of the subject” that has been proclaimed on more than one occasion now is nothing more than an outburst of melodrama in a philosophical trend – postmodernism – predisposed to pseudo-apocalyptic generalizations” (2003).

When reality is constructed, there is a subject to interpret such reality – be that in the *umwelt* or the wider semiosphere of culture. We conclude that the advancement of Web 3.0 in the post-COVID world will lead to the occlusion of the physical behind universal virtual signs. They move from user to inhabitant of the virtual plane – parsing themselves inside the image in the Baudrillardian implosion,

but once inside they do not cease to be – in some *Matrix*-style delimitation of self and virtual-self – but rather continue existing. The hypervirtual is the consequence of the space of the virtual becoming the new reality, but not at the cost of the self. Identity becoming commodified and lost among the virtual signs, however, may very well, lead to the loss of self/virtual-self distinction as one’s avatar become more *me than me*:

Virtuality tends toward the perfect illusion. But it isn’t the same creative illusion as that of the image. It is a ‘recreating’ illusion [...] revivalist, realistic, mimetic, hologrammatic. It abolishes the game of illusion by the perfection of the reproduction, in the virtual rendition of the real. And so we witness the extermination of the real by its double. (Baudrillard 1997: 9)

One of the directors of *The Matrix* revealed that in an original screenplay, one of the characters was supposed to be transgender – being portrayed as a woman in the matrix and a man in the real world (Shoard 2020). This transmediality of gender identity is an overt depiction of the differences of space in communication. Baudrillard may have denied the matrix as a hyperreality due to its stark delimitation, but the future is the presentation of an identity that is essentially indistinguishable from being “real” but at the same is objectively impossible as a physical being – being transgender and presenting oneself as a VTuber character is this hypervirtuality of identity. The gender of the character surpasses the virtual/physical boundary but the species for example, may not.

The following chapter contextualises the role of space and identity within the technical architecture of communication. How we integrate the digital within the physical, and the hypervirtual within the hyperreal communication model, are important for understanding how bias, access, and literacy could leave some unable to take advantage of such new methods of self-expression, or alternatively, mistranslate the hypervirtual persona and their communications within the socio-cultural spaces.

2. ARCHITECTURE OF COMPUTER (TRANS)MEDIATED COMMUNICATION

2.1. Elements of architecture

The previous chapter was an examination of the spaces where the narratives of online communication can be understood as a transmedial, hyperreal, experience with the potential for a hypervirtual spatiality occurring as the fantastic expression within the ubiquity of virtual signs. This chapter looks at the physicality of the transmedial message and considers how physical structures of semiotic signification contextualises the potential for hypervirtuality.

This chapter will investigate the technology that influences or appends the virtual simulation. Such technology directly constructs the spaces of the previous chapter, not just through the physical boundaries of the computer screen or the virtual reality tracking area (the play space), but also through the underlying code and linguistics that are translated by humans and machines for a meaningful result. Social reality is constructed via the interpretation and codifying of the architectural signs. The language of the online space includes the computer code that is translated by the computer and the human developer, the visual code that the user interprets as a meaningful entity (a button, a menu, a thing to pick up and so on) and the esoteric linguistics of the user-to-user communication.

We will continue to examine the construction of reality, and how the transmediality of self-identity may keep the hypervirtual space as hyperreal by investigating bias, representation, and literacy. Hypervirtuality is a new social reality formed as the hyperreal/real dialect becomes a mixed reality experience of the hyperreal/virtually hyperreal space – as concluded in the previous chapter. This chapter examines the problems of such hypervirtuality as it exacerbates, enhances, and normalises the negative prejudices of the offline within the online, by codifying such bias within the very structural architecture of this new reality.

To further contextualise the reflexive potential of the online space against the potential for the hypervirtual consumption of the referent, we continue our examination of the architectural texts and the role of digital literacy in accessing and contextualising the digital texts that merge into the offline, constructing the individual's social reality without distinction.

To run a full analysis of the linguistic registers of users in different situations is beyond the scope of this thesis, so instead we will look at a few key examples, primarily involving self-identity, modality of communication and use of emoji. Through these we aim to introduce some examples of different language use arising from different hardware and software spaces, while also introducing how such differing language affects identity, thus suggesting a link between hardware and software, and the user's own identity narrative.

Virtual spaces dictate different linguistic codes, consequentially influencing the language and communication between users. The level of embodiment, or connection, one feels to their virtual space and avatar appends the identity of the user

in the virtual and the physical worlds. Identity and communication are pivotal to culture and thus, the connotative interpretation of the communicated signs needs to be examined within the context and not just taken as discrete entities existing as meaningful units within themselves.

This argument leads us to the discussion of memes, emoji and the nature of digital literacy, language, and subjective/objective reality within the technological sphere. Building on our concept of a hierarchy of virtuality within the virtual plane, how hardware and language affects the hypervirtual will be addressed.

Within the following section we will examine the process of reading the signs within the virtual ecosystem, taking different signs within the web of wider meaning and investigating the individual interpretation. Taking the view that hypervirtuality may take away from the transmediality of identity and fundamentally impact the signification of self within society, the presentation of identity via language, code, hardware and so on is increasingly important as we move from Web 2.0 to Web 3.0, across VR, AR, and MR. However, access and structural bias will persist from the offline to online leading to hypervirtual prejudice exaggerating the inequality of current societies. Any model of semiotics has a moral duty to consider the ethical impacts of future development in our opinion and so we deep dive into the architectural issues of hyperreality/hypervirtuality in contemporary society.

Architecture and space are intimately entwined, as such, much of the research we draw upon has already been introduced – for example, the work of Deleuze, Baudrillard, Eco and Lotman. Randviir (2002, 2003, 2013) has provided the basis for our semiotic research of the city, while Lefebvre (1991) and Marin (1984) highlight how the use of space changes the meaning of the architecture, and vice versa. The utopian ideal degenerates into the myth when the boundary between the utopia breaks down, becoming a place “here” rather than a space “there” (Marin 1984). This is reflected in Baudrillard’s discourse on entering the image, seeing behind the hologram, and losing our reality/image dichotomy (Baudrillard 1997: 9).

The collaborative, multi-layered, construction of the social reality theorised by Berger and Luckmann (1991) is also going to be very relevant as well as Kull’s discussions on Lotman’s semiosphere and, notably, the semiotic view of meme and the controversy behind such a term (2000).

Meme introduces the more constructive side of architecture – the tools that form the entry ways and interfaces – language. Languages in the digital space range from the natural to the artificial (Tanaka-Ishii 2010: 8–21) and also includes gesture (Mittelberg 2019). The place of the human within the narrative space adds a textualization to the body, granting presence, sensory input/output, and inter-subjective communication a place within the following chapter.

How we use language – in any of its modes – to interact with the digital is of interest. The interface space of Harrison *et al.* (2007) highlights the relevance of considering oral or typed input. Such use of hardware to access the (cyber)space delimits the separation of self from the information. Our prediction is the more embedded a user is within the virtual image – the greater the sense of presence

one feels through their avatar within the digital space – the more engulfed they are by information and signs without objects.

Hardware that embeds the human within the digital sphere includes wearable technology, passive monitoring systems that reproduce simulations of expressions onto virtual characters and interfaces such as gloves or digital assistants that enable the manipulation of the information, and how this differs from the screen, will form a significant portion of the upcoming chapter. We will focus primarily on education – especially the link between education and identity.

Identity within the syntactical structure of language leads to our discussion on bias. Significant portions of the infrastructure underpinning the digital ecosystem, as well as the logic and language of the programming code was created from a Western, English-speaking, perspective. How the virtual space can enable a freedom of identity versus the biasing of identity via the underlying Anglocentric code has been discussed by this author elsewhere (Davidson 2021).

The codification of identity within this system is perhaps an overt loss of the human – the self – as Baudrillard writes, but equally, the technology that enables the monitoring of the user no matter where or when, as well as the user consenting to upload images and data, is a contemporary example of the panoptic society.

First developed by Jeremy Bentham in the 18th century, the panopticon was made famous by Foucault as symbolising the development of modernity from the society of discipline to a postmodern society of control. Subsequently, the panopticon ceased to be a physical building, with information offered voluntarily by individuals instead (Mathiesen 1997), much to the lament of some Bentham scholars (Brunon-Ernst 2012). The panoptic prison – or school or office – has transcended from the physical architecture to the virtual architecture. Enabling the institution to observe every action an individual makes restricts freedom. The digital evolution of this is the restriction on data by access (Al-Harthi, Ginsburg 2003), or the loss of serendipity in information discovery, especially in the online classroom (Pitsoe, Letseka 2013).

The culmination of the panoptic society can be seen within the Web 3.0 infrastructure. While no solid definition exists for what this future virtuality might look like, the trend, as analysed by Baudrillard, Eco, Hartley *et al.* and Foucault, is the institutionalisation of data, thus enabling the control of identity. Rewarding users for uploading their lives, either through monetary or tangible rewards or less obviously via ease of access, or indeed, the notion of access itself (with more and more service locked off to the aberrant offline citizen). While Lotman implied a hierarchy of languages, with natural language as the substrate to the semiosphere (to use a phrase from Randviir), Baudrillard goes further with his post-modern, McLuhan influenced, description:

The highest definition of the medium corresponds to the lowest definition of the message – the highest definition of the news item corresponds to the lowest definition of the event, the highest definition of sex (porn) corresponds to the lowest definition of desire, the highest definition of language (in digital coding) corresponds to the lowest definition of meaning, the highest definition of the other

(in immediate interaction) corresponds to the lowest definition of otherness and exchange, etc. (Baudrillard 1996: 30)

This high-definition image, manipulated into anything one wishes, is the expression of one's identity online as the interaction between user and code. It is the negation of the physical self from the text.

The sense of individual freedom can be seen as one such reward – the avatar website Ready Player Me invites one to: “Level up your virtual experience with selfie-based avatars that people love and emotionally connect with”⁹. The idealisation of the selfie is reprocessed – not reproduced – into an avatar. The selfie codifies identity within the two-dimensions, negating the third, while the avatar implies the addition of the third – thus negating the images dimensionality and confirming Baudrillard's simulacra as a destructive force. The selfie is a picture, unmoving like a painting while the avatar is three-dimensions from the processing of lines of text – code – by the computer. It could be said the selfie is also mere codes when digitised but printing it out provides an authentic, analogue copy, while printing the avatar would only be a snapshot – a selfie of the avatar – or even just lines of code as a shot of the architecture. The selfie of the avatar is no longer the reproduction of the user – indeed it crosses into the hypervirtual and hints at a future scenario of analogue pictures of identities that are purely virtual.

As a result, transmediality is the key to maintain the subject and prevent the loss of the self. Although the “death of subject” has the sense of the overdramatic, the loss of the object has occurred quite naturally with downloads and virtual interactions. To imagine that a song has no original is quite natural when it is a file, originally recorded in a studio onto digital media. This becomes even more ethereal when the music originates from digital toolsets within software such as *Studio One* from Presonus – and voicebanks such as Hatsune Miku. The original of such music does not lie with a tangible object anymore. The decentralisation and peer-production (*PiaPro*) software to allow for participatory culture of the internet to work together on songs has been something of a new concept in Japanese society. The Hatsune Miku idol, as an intangible, but controllable, element perhaps goes some way to maintaining a central Japanese icon to the product that is global in production and consumption now (Zaborowski 2016: 115)

The workspace of virtual music reduces music to phonemes – small units of speech that combine to form words – and visually represents aspects of music as a series of signs, tone, pitch, time and so on becoming visually represented. The programming languages similarly codify analogue data within the digital binary of the computer; we have referenced de Souza above on this regarding user interface, but the musical iconography is another distortion of the four dimensions into the two-dimensional screen. Theo van Leeuwen discusses musical logos and iconography (Way, McKerrell: 2017: 119–134) as does Ann Buckley who states that: “Music iconography is a different medium from that of sound, but it is nonetheless concerned with pictorial representation of sound, and ideas associated

⁹ <https://readyplayer.me/>.

with the experience of hearing” (1998: 9). Returning to Hatsune Miku, Zaborowski found that even the impossibly high pitch of the VOCALOID music does not detract from the karaoke experience of singing their songs (Zaborowski 2016: 120). This continues the postmodern trend of the sign losing its relationship to the object and becoming engulfed by its medium. Thus, the musical notation within the software is not a representation of the analogue equivalent but a technological simulacrum engulfing it through negation. Continuing the coded language discussion, we will investigate a few areas in more detail before progressing with the investigation.

2.1.1. Memes and emoji

“Meme” signs are something any discussion on the online space will inevitably have to address. Meme-signs, as we will call them are colloquially called “memes” in online (and offline) dialogues in reference to the memetics initially popularised by Richard Dawkins. Memetics is at odds with the principles of semiotics as Kull (2000) writes. This author has acknowledged Kull’s analysis of memes and subsequently reasoned to refer to them as “meme-signs” (Davidson 2020). Meme-signs are signs that signify what users term meme, that is, a repeated sign from a larger discourse, whittled down often to a single image, song or even a character model. As the culturally ubiquitous term of meme is embedded in the lexicon of online language, it would be impossible to not refer to the cultural unit, but equally, to deviate from the colloquial terminology is somewhat unnecessarily convoluted. Hence, meme-sign is a useful compromise between technical accuracy and readability.

Meme-signs have several functions, mostly as grammatical elements within virtual linguistics to append discussion with some level of emotion. Why this is called a “meme” is to differentiate it somewhat from the poetic language of written communication or gesture found in other aspects of interpersonal communication. This difference acts to legitimise the institution, the society, within the virtual space. Berger and Luckman discuss legitimation thusly:

legitimation is not just a matter of ‘values’. It always implies ‘knowledge’ as well. [...] Legitimation not only tells the individual why he should perform one action and not another; it also tells him why things are what they are. In other words, ‘knowledge’ precedes ‘values’ in the legitimation of institutions. (Berger, Luckmann 1991: 111)

While the knowledge of performing a meme-sign might now seem on par with the taboos and laws of the society – or clans as they refer to it in the text – the effect is to create a shared system of signs, which Berger and Luckmann describe in the fourth level of legitimation as the symbolic universe. Our later chapter of social reality will dive deeper in this but for now, it is sufficient to state the meme-signs of the virtual communities creates members and excludes outsiders, encouraging the members the uphold the values and beliefs of the virtual community.

Certain avatar models then can be perceived as unacceptable within certain groups and not updating your model to perform the latest (or correct) meme-sign can presumably be stigmatising in some instances. The symbolic universe creates a hierarchy of members, as well as a collective memory:

Thus the symbolic universe links men with their predecessors and their successors in a meaningful totality [...] All the members of a society can now conceive of themselves as belonging to a meaningful universe [...] The empirical community is transposed on to a cosmic plane and made majestically independent of the vicissitudes of individual existence. (Berger and Luckmann 1991: 120)

In a society that (at least potentially) transcends time, geographical location, age, gender, race, and technical ability (i.e., whether a user has limb tracking, or a high-grade microphone and plenty of bandwidth), the ability to formulate social collectives (Berger and Luckmann's clans), and feel included within the larger whole – connected to others in the symbolic universe – is provided by these shared, community specific signs that connect people. Berger and Luckmann continue, stating that the symbolic universe man externalised. Indeed, it can be said that the meme-sign allows users to express some aspect of themselves, within the frame of the community, circumventing the restrictions of the hardware that necessarily creates a boundary and separation between users – while simultaneously bringing them closer together on the virtual plane. Closeness and presence will be highlighted below.

Another grammatical element within the written syntax online are emoji – small pictograms that can be used to represent some larger concepts. Marcel Danesi is perhaps the foremost authority on semiotics and emoji, stating in the introduction to his text *The Semiotics of Emoji* that: “This book will look at emoji primarily from a semiotic perspective, adopting a nontechnical style, so that a general audience can engage with its subject matter” (2017: vii). We adopt a similar methodology for hypervirtuality, with this investigation in emoji providing a useful precedent for the application of semiotics. Thus, we have also written on the semiotics of the raised fist emoji as a symbol of resistance (Davidson, Bair 2019) concluding that the sign of the emoji is as powerful and meaningful as an extension of the physical body, as well as a linguistic object, applying Danesi's style of research on a smaller topic prior to this thesis.

Meme-signs – along with emoji – offer little to develop our model of VR+ communication specifically, but there are a couple of points we must discuss. Some avatar models will be designed very specifically to represent and recall a meme-sign. The flexibility of the physics within the virtual plane allows for photos or pictures to be presented within the 3D virtual space, albeit as 2D avatars – as a digital variation of the Japanese movie genre of Gekimotion, or the puppet show. The spatial effects of the avatar within the virtual area have already been analysed and the meme-sign model doesn't change that, but it does append the social reality aspect of the community building. This will be presented later in the social reality chapter.

The reason for introducing this topic at this juncture is that the meme-signs and emoji are – in our interpretation – an aspect of the language and therefore a component of the architecture and hardware. Emoji represent the character limit of modern communication, a sentiment reminiscent of McLuhan’s “medium is the message”. The mode of the message made simplistic and easily consumable (on first look anyway) by the emoji-filled message of the social media post is indictive of the communication model being altered by the hardware of online communications – namely the mobile phone and its keyboard.

However, it would be incorrect to say that emoji are as simplistic as they initially appear. Originating in Japan, they potentially convey a similar amount of data and information within one character slot as a logographic Japanese kanji, which also have multiple readings based on context and placement. As such, emoji can potentially encapsulate multiple sentiments within one sign. The reason this is useful in VR+ is that not all users have access to the hardware that enable voice communications, or not all users in the forum (or game) speak the same language. As such, the ability to send waves of certain emoji signs into the space can allow for a base level universality of communication among all users, enabling some aspect of socialness.

Additionally, different age users can benefit from the emoji, and they allow users to remain mute while still relatively able to communicate feelings and intents. Being mute online, especially in VR+ removes the foundational system of speech (in Lotman’s theory) from the productive semiotic reality. However, technology has allowed for another system to append the communication.

The relationship between language and culture is well researched, beginning with Plato, right up to the contemporary discussion of emoji-as-language and culture (Freedman 2018). While emoji and meme-signs serve to strengthen the community aspects within a reality that crosses cultural and geographical borders, it can also demonstrate geographical, real-world, features of identity that allows users to find comradeship based on the objective reality of offline culture, grounding the anonymous virtuality in some recognisable aspect – an emoji presented horizontally rather than vertically for example. Danesi goes into more detail on cultural ambiguity in his book (2017: 26–33).

A feature of the online architecture is that, with few exceptions, it belies the national boundaries and the social reality that such delineations form. The online architecture – linguistically – is not the “global village” of McLuhan for there are cultural differences in use and style of emoji (Guntuku *et al.* 2019) but there is an ability to translate between these differences that suggests a porous boundary between the spheres of knowledge. To reference Lotman again, the artificial language of emoji is not as codified or rigid as, for example, the artificial language of the programming language. The following quote by Kull is useful to explain the position of emoji within the digital semiosphere versus the artistic translation:

Lotman compares this situation [art] with the case of artificial languages which may work in machines. Since the requirement in the building of formal (mathematical) languages is the avoidance of internally contradicting situations, these

languages lack the internal untranslatability, and therefore, they lack the mechanism of meaning-making and creativity. At the same time, a logically concise formal (mathematical) language can suit perfectly for the description of non-semiotic world – as the effectiveness of application of mathematical language by physics has utterly proven.

Thus, semiosis is the process that occurs in the situation of incompatibility between codes. In such a situation, the future of the system is indeterminate. This is the situation of confusion. Also, this is the situation of freedom, or explosion, in Lotman's terms. It will be resolved by making a decision (by an organism, or a culture), thus introducing a regularity (a habit) into the system.

This (logical) kind of incompatibility between codes is something that cannot occur in a non-living system. This is because codes are always built by living systems; they are products of semiosis. Codes are relationships that do not persist or reappear otherwise than being made by living systems. (Kull 2015: 259)

This substantial quote is also applicable to programming languages by outlining where the process of semiotic meaning-making occurs within the linguistic continuum – that is, the more rigid and formal the language, the less translation can occur between the codes. The emoji, as pictures, do not specify anything concretely, they are symbols. Whilst some – like the raised fist – may be iconic to the specific action, the act then is itself a symbol (of resistance for example). There is nothing iconic about a wave and the meaning “goodbye”, but the emoji of the wave can be iconic to the human act – but there is still the reliance on cultural awareness of the action for the sign to be translated without aberration. The objective visual likeness belies the intended subjective, conceptual, interpretation.

Emoji and meme-signs are tools for maintaining the cohesiveness of the online community. They enable a visual consolidation and simplification of language production between members. There is an internal conflict arising from the use of different hardware and platforms, with some phones or social media sites displaying altered versions of the emoji or unable to display some at all. We will investigate emoji and literacy in the investigation subsection, but this concludes a brief introduction to a significant linguistic element of communication online.

2.1.2. Web 3.0

The definition of Web 3.0 is vague and unhelpful for the most part but it is an important topic as the future of the virtual plane is exemplified most overtly at the level of the internet. There is little academic or corporate research into a universal set of conditions but, initially we will use research from Deloitte as the foundation. This report begins with the rather prominent statement: “We are now seeing Spatial Web [Web 3.0] unfold, which will eventually eliminate the boundary between the digital content and physical objects that we know today” (Cook *et al.* 2020: 2).

Web 1.0 was fixed content, accessed by connecting to sites and reading text for information. There was little extra media – only the most basic images – which made the internet something like a library index card system – one of the original hypermedia systems known as HyperCard simulated a stack of cards that were linked together via a precursor to the Web-based hyperlinks.

Web 2.0 is the contemporary internet of the early 2000's. This is exemplified by user curated information – it can be collaboratively produced and collaboratively consumed via social media, streaming, forums and so on. Prosumer is very much the term of the Web 2.0. The ability to access data from a database allows for greater information to be stored and run from the remote frontend user interface.

Evidently Web 3.0 will use certain advances in technology we can see being integrated in our world currently. The Internet of Things is introducing the notion of ubiquitous computing. The technology monitors us and provides us with information when accessed via several different interfaces – speech, visual, gesture and location for example. The information is monitored and curated by AI programmes, but a future Web 3.0 will present the information it determines you will need via these AI programmes.

Web 3.0 suggests a move towards a virtual plane of data that is not just always accessible but actively takes care of the user, predicting and suggesting next steps to take before the user is even consciously aware of need such things. The interface requirements change then, from something that passively listens or reads to an interface that advises and instructs. A virtual being – with machine learning, neural networking, or deep learning AI – is a potential interface, maybe as a disembodied voice or a robot. Robots have tangibility of course but are expensive to maintain, while a voice lacks the interpersonal connection one may form with a full avatar – the parameters and limits of this connection are ongoing parts of our investigation. The hardware (and architecture) thus contextualises such a connection between user and software.

AI as a sentient semiotic intelligence, with an *umwelt*, is not something we posit as a reality. It is as fanciful as any science fiction movie. We concern ourselves with the reality of the Web 3.0 where AI controlled virtual beings are as hyperreal as the street in Disneyland. A façade of fantasy and shared willingness to suspend disbelief enables the AI to initialise a two-way relationship. This is like the relationship of the fan to the celebrity which is not a true two-way relationship but rather a one-way adoration that is compelled and encouraged by generalised actions of the seducer (in both the everyday, pejorative sense and the Baudrillardian sense).

The Deloitte report on Web 3.0 spatialises the future into three layers – hence, presumably, why they term it the Spatial Web. The first is the physical layer – the physical world. The second is the digital information layer – data that is accessed by some interface and presents a mapped representation of the physical world (something users of online classrooms, word processing software or even email accounts will be familiar with today). The final layer, the spatial interaction layer, uses future interfaces to interact with current, intuitive, contextually aware

data. It merges the previous layers and presents it via triggers: “geolocation, computer vision, and voice, gesture, or biometric commands” (Cook *et al.* 2020: 3).

The hyperreality of the digital information layer has become consumed completely, along with the physical, by the spatial interaction layer. Web 3.0 negates the difference between the real and the hyperreal, instead making reality essentially a virtual plane of data. The extremity of a commercial performance, an interactive art installation, a movie or an entertainment location becomes the hypervirtual – a specific virtual sign that over-exaggerates some artifact of the Spatial Web. What cause is there to investigate something currently hypothetical from a hardware perspective? As already described, spatially, this blurring of the physical and informational is already occurring. The virtual and physical are being presented alongside each other in transmediality to produce true synchronicity within the artistic production of *Dimension Nova*.

Virtual beings may lack the AI to reciprocate a two-way relationship, but they are emotionally tangible enough to induce and maintain a unidirectional flow of emotion. Such programs can include video game characters, one’s own avatar via the Proteus effect, others’ avatars like Kizuna AI, virtual idols and singers like Hatsune Miku, actors, influencers such as Lil Miquela (Blanton, Carbajal 2019), assistants like Siri, and virtual partners programmed to actively fulfil a partnership role – Rinko for example (Cheok *et al.* 2017). Such relationships alter the identity schema of self in response of course, as posited by other research (Naveh 2015).

The construction of one’s own reality is exemplified by the future of the web and the extension of current trends in virtual-to-non virtual interactions, both emotionally and as a form of knowledge sharing. The position of the teacher or instructor in this future is fraught with the risks of allowing commercial entities to construct AI that can disseminate information as a direct influence on a user’s identity narrative. Consider Georges’ research into the effects of social media on the developing adolescent identity (2009) but with AI instead of Facebook – but an AI with the same corporate drives and ethos as a social media website like Facebook.

The panopticon as a philosophical model of always being watched – in schools, prisons and so on – is becoming an actuality within the online community. We willingly upload our movements and data trails to the online sphere, inviting people to look and judge our lives – the hyperreality of life anyway – but with the coming Web 3.0, the Spatial Web encompasses its users within its physical boundary. The user no longer chooses to be online, the online instead delimits the tracks of the individual through society – both virtually and physically. Web 3.0 seems to suggest the removal of the human decision in the process of uploading one’s data to be on public display and instead automates it under the guise of “prediction” and enabling a smoother user experience.

Indeed, the very name Spatial Web implies that the cloud-based web of Web 2.0, with its ethereal “over place” of data is no longer. Instead, the web has prevailed over the physical and – in a very overt way – consumed it.

With Web 3.0, the proposition changes from a transmedial communication to one that is perpetuated by the AI being. The discourse model of the user-to-user communication with the virtual appending and forming some aspect of the communication to complete it meaningfully, thus becomes a one-way communication between the user and their technology. It seems that the prediction of mid-20th century philosophers about the death of human interaction would be, essentially, completed by this model.

The mediation of technology into the communication model reduces the connection between users to the simplistic, robotic, repeatable labour of uploading information for those who require it. Knowledge is controlled by power (Foucault 1980) and contemporary information is knowledge – it is as Foucault stated, literally power/knowledge.

Web 3.0, following this consumption of data, will regurgitate it back for us and complete the cycle of the simulation. A recent and somewhat famous example of how this cycle might look in Web 3.0 is the AI bot Tay Microsoft released onto Twitter (Neff, Nagy 2016). The software absorbed what users fed it and it became racist and sexist to such an extent that Microsoft were required to cancel the experiment after a few days. The Spatial Web appears to be a simulation, a replication, of the human. We would argue it is the replication of the hyperreal human – the human that exists online in its exaggerated, egotistical, commercialised extremes. This is, in our view, a process of virtual hyperreality – hypervirtuality – but one that lacks the transmediality of the current communication model which grounds the communication to physical reality in some way.

Going forward, there are hints that Web 4.0 or even 5.0 will incorporate the emotional capacity of the user into its design (Benito-Osorio *et al.* 2013), although the specific technologies or definitions remain almost in the realm of science fiction due to the ever-changing nature of society and technology. However, it seems that role of emotions and potentially neurotechnology will be prominent. The trend towards integrating the human mind within the digital space, bypassing the physical interaction, further dispels the separation between reality and hyperreality, leading to the fantastical presentation of self within such a space being increasing hypervirtual. While including emotional design in the user experience is seemingly a positive, it runs the risk of digitising the emotional self, further hypervirtualising the users construction of reality and their embodiment within it.

Digital literacy education and encouraging the user to append themselves via the potential to construct a lasting, meaningful, identity within the virtual space, while not forgetting the impact or relationship such identity has on their physical selves, will enable the transmediality to continue, without descending into a Baudrillardian black hole. While many functions of society require the virtual space, and the use of digital signs, identity is a key architectural element where a physical object (the person) can remain. However, virtual beings and the loss of unmediated, offline interaction could create a situation when the elements discussed above – language, access, presentation and so on – could create a virtual-only culture with physical space only as a border around the infinitude.

2.2. Conceptualising architecture

Previous research into the architecture of the online space has covered a vast range of concepts which we are now tasked with pulling together into a coherent and focused line of investigation. While space was essentially just different interpretations of the concept, what constitutes architecture in the virtual and digital spheres crosses from hardware to software, from natural language to formal language. The link between gaming and virtual beings, is deep and varied, with multiple discussions such as hardware, language, or digital literacy necessitating a methodology that acknowledges gaming while developing the topic towards virtual beings as a hypervirtual concept within the broader society.

For this, we chose the “new normal” of the virtual classroom amid the COVID-19 pandemic. We see education as a multi-faceted scenario which – rather obviously – incorporates digital literacy, but also identity and meaning. The collaborative reality of entertainment has evolved towards the education sector, with virtual beings crossing the line from entertainer to educator. It is our duty to reflect this evolution and especially within the architecture defining the space of the classroom or the stage.

2.2.1. Language and software

Language, as established, is the primary modelling system of the semiosphere, and thus the identity narrative construct arises from the base of the spoken language. This communication model is therefore instrumental in the identity narrative via the establishment of an addresser/addressee relationship and the consequential delimitation of a space (Lagopoulos, Boklund-Lagopoulos 2014), contextualising the meaning of the message and subsequently appending the interpretation of the spoken language. The study of the spoken word is one of the foundational semiotic elements to investigate (Gramigna 2013).

Language is, additionally, a symbol of identity, from cultural/geographical to social-economic. The narrative space of our own identity is built from the interpretation of the signage one uses to communicate and express themselves to others. Randviir highlights an argument that if space is the formation of the semiotic understanding of the human, and natural language is the primary modelling system of the semiosphere with culture as a secondary modelling system, then space is the primordial system – or substrate (Randviir 2002: 148). This links the architecture of culture to the space of signs in the previous chapter, and spatialises culture within the bounded space. This is a model we have replicated for the virtualised world of signs promised by Web 3.0, negating reality in favour of the hypervirtual, while still being bounded by the space at a primary level. However, the concept of natural language in the digital age is increasingly at risk, with what Baudrillard terms the Babel Syndrome:

With virtual languages we are currently inventing anti Babel, the universal language, the true Babylon, where all languages are confounded and prostituted one to another. A veritable pimping on the part of communication which is the opposite of the magic illusion of otherness [...] The de-programming of language will be the work of language itself (Baudrillard 1996: 91)

The metalanguage discussion must be considered and perhaps the replication of some aspects of natural language via emoji and codified programming languages are akin to the so-called postmodern negation of some dimension of reality. Specifically, when considered with the expression of one's identity, we can see that the universal language of the emoji perhaps restricts the expression of self to a greater degree than even the anglicization of language. Eco describes the sign (of the emoji for example) within the wider encyclopaedia model, where context and prior knowledge remain important. While such information is transmedial we believe the Babel Syndrome will be prevented. However, should all significant input be virtual in origin then the artificiality of the linguistic model may reduce all social constructions (culture and identity) to the virtual-only semiosis.

The modality – the experienceable sensation from a message's medium – has been altered from the *de facto* face-to-face spoken word communication model as technology and society evolved. Such evolution includes the printing press or telecommunications like Morse code or the telephone, and contemporarily we now have an “always-on” virtual communication network that transcends, (in theory at least) geographical, social, and cultural boundaries. However, the effect of a virtual plane, accessible and viewable to the physical user via varying degrees of technological embodiment, has led to several discrete situations where variations of the traditional natural language model exist as the primary form of communication in the virtual space, and, concurrently, a similar linguistic process is ongoing in the creation of the software that provides the overt spaces where these user-interpreted communications are occurring. Note, we say user-interpreted rather than user-to-user communication as we shall demonstrate several scenarios where an interpreter is communicating with only the perception of another but in fact the message is originating from a non-human creator. We could, in previous decades, have said this to be CMC of course – a mediated communication process with the non-human avatar acting at the behest of another user – but with AI formulating many of its own natural language communication processes and augmenting the physical reality around it in a way to alter the context to the process visually, it is perhaps more prescient to concern ourselves with the “interpreters interpretation” to “users umwelt” communication model to be more eloquent.

The transmediality of the message has evolved with the technology too and perhaps is best exemplified by emoji. Emoji as a case study allows us to introduce several facets of the investigation into the changing nature of communication, and model perhaps not the shift in how we interpret the message, but where we interpret.

Reading emoji as a text is functionally like the reading of any text – as theorists have found (Cohn *et al.* 2018). To create an emoji, a user can either select the icon from the menu, which inserts a copy into the text field, or a user can type a short code – :D for example – which is translated by the device and/or programme and presented as an icon akin to the one that could be selected from the menu. Behind the picture on the menu, there is a similar translation exercise occurring where the icon is translated into a code that is readable by the computer.

As shown, language is fundamental to establishing the narrative space of the interaction, so computer readable language literally creates a space of interaction. The code of programming languages – no different in principle to the short codes of emoji – is a linguistic syntax that is readable both to the human user, and to the computer, as a translatable set of instructions. It is these instructions that form the transmediality of the message by delimiting the threshold between the virtual and the physical – only the virtual is coded by the programming languages and only the physical exists externally to that code. However, the reproducibility of the signs from the virtual world in the physical via, for example, spoken language, highlights a process of transmodality whereby the sign is artificial but used to express a natural emotion; it is the high-definition language as described by Baudrillard.

In our previous chapter we investigated the space of the virtual and physical and the overlap that forms, creating a blurred threshold between the mode and media – transmodality and transmediality of the message as an experience and presentation, respectively. The virtual world is software. Software is established by the code of programming syntax, whose creators and originators are varied and anonymous. Indeed, how the syntax is constructed is as arbitrary as how the word “dog” was formed when understanding the evolution of the animal. As such, the user is communicating with the software directly to formulate their message in cases where there is not a direct interaction with another user – for example in games, user interface design, and the object of our research, Hatsune Miku.

There is a common aspect to the communication model between user and software that will append the message and directly enhance or diminish the transmediality of the process, and that is the hardware. It is impossible to separate computer architecture into hardware and software without referring to the other, and the embodiment of the user within the virtuality of the space is the basis for our thesis as a contemporary analysis of the current research. That is, the extent to which one’s own communication modes (gesture, speech, presence, expression, emotion) can be replicated, represented, or appended by a virtual layer is a measure of the increasingly transmedial message. From this, there is the converse, whereby we interpret signs from avatars that may or may not be human, with all signs essentially originating from software encased within hardware. It is this embodiment that is, to us, shifting “mediation” to “creation” in the communication model, and the language of the software is the primary system for the narrative space.

Emoji are very much mediated by the computer with the user directly instructing the computer to produce the ideogram as an expression of a concept, which is

then translated by another computer, and the icon is interpreted by the receiver. Traditionally the emoji requires the hardware as a medium for the presentation of the emoji, and while this is still the case there is a potential use case scenario where participants in a communication, augmented by a dynamic virtual space (such as HoloLens or some form of dynamic mapping and projection) could express their emotions with the emoji alongside facial expressions.

This author has researched emoji and their multimedial presentation as a representation of a physical gesture of resistance, and the subsequent evolution as the sign of the resistance itself (Davidson, Blair 2018). This demonstrates the role of the emoji pictogram in the offline cultural zeitgeist, as well as online. Clearly, this is not a transmedial communication given that the message is the interpretation of a single piece of media, albeit within a larger context that transcends the offline/online threshold. However, within the scenario above, the message content would be the emotions of the addresser, which the addressee would need to interpret from both physical and virtual signs operating together. While this is still not a perfect example of mixed reality, the emoji case study is important for illustrating how virtual signs could be included in the non-virtual space – in other words, virtual syntax is no longer creating a purely virtual narrative.

Emoji represents another facet of the software-to-user communication experience, one that further opens the path to our later discussions of how we integrate the hardware into our *umwelt*. Each device environment translates the emoji Unicode according to its only library. This leads to hardware specific (re)presentation of the emoji and thus offers a link between the medium (the operating system – Android, Apple – or website – Twitter, Facebook and so on) and the intended content of the message. In early 2020 a Twitter user posted about the COVID pandemic using the “Hand over the mouth” emoji to express her shock. Unfortunately, she posted using her Apple phone, and on the Twitter website the same emoji has less of a shocked expression and more of a giggling or mocking eye design. This example demonstrates the multimodal nature of current communication, with the different technological eco-systems producing different translations of the sign. This hints at interpretation errors arising from the cross-cultural nature of digital language, (Freedman 2018), thus highlighting an anti-Babel aspect of technology (Baudrillard 1996). Such failures in communication are a mismatch in the interpretation of the linguistic signs and will impact the subsequent narrative space and identity portrayals, as well as meaning of course.

Such issues with the eco-system of the interface leads one to a discussion of the user interface design. In a transmedial communication process the interface becomes another case study since, rather than acting as a mediation, a space of presentation of the message, it becomes part of the message itself. Avatars are a primary example of this but also the virtual presentation of interfaces within the virtual space that are not bounded by an overt physical threshold. This can include accessing a virtual computer screen when already in virtual reality, or the holographic overlapping of signage between the physical and virtual layers to complete a single, dynamic message. Also, from an artistic standpoint, the delimitation of

the artwork from the viewer by the threshold of, say, a canvas, is removed when viewing it in the 3D virtual space.

Iconography, like emoji, are present in all interface designs and with the blurring of media, the shift in modality, how these icons are presented is a key research idea for us. Language, as the primary modelling system, is the foundation of the transmedial cyberworld narrative spaces where a story can be told utilising both the physical and the virtual signs of a space delimited not by the threshold of a screen, but by the narrative of the interaction itself. Such linguistic codes are not limited to the emoji or visual elements of pictograms, but also in the meme-sign that conveys esoteric code.

2.2.2. Computer languages and cultural semiotics

One aspect of the contemporary bias is the role of English programming in the online communication model and the possible effects on the MR transmedial message that would be a bilingual sign assuming the person interpreting the virtual sign does not have English as a first language.

Kumiko Tanaka-Ishii states programming language signs are representations of physical segments of hardware memory (Tanaka-Ishii 2010: 19). Thus, the language and the hardware are interconnected and transmedial in their presentation of any instruction. The VOCALOID piano roll is a visual proxy of time, with the signs placed to represent different elements of music and singing (see Figure 3). The sign becomes a representation of a concept, in much the same way as natural language of course.

But what is the effect, as a culture artifact, of the sign that is not in one's primary language? There are multiple languages within the online sphere and indeed, the definition of "language" at a semiotic level is difficult. The semiotic model allows for a hierarchy of different languages of different formalities, with programming languages as formal; that is, they lack the flexibility for translation. However, these same formal languages underpin the programme that simulates user interaction in virtual beings – the AI is constructed within the programmatic paradigm.

The language of the visual user interface can be used to construct a space that can transcend the written syntax of the user – the use of icons that resemble the interaction can circumvent cultural differences, and indeed, even with homogenous cultures the iconography of everyday life impacts the usability of devices – the symbols and icons of toilets, car dashboards, phone interfaces and even road signs can aid understanding or disrupt it depending on how translatable they are to the users expectation of the potential use or meaning (within the wider social context) of the sign (Page 2018). For example, using a boat on a standard road sign would create significant confusion because one would not know if the sign is intended for boats or cars, or whether the boat was meant to represent the car – the web of social context, the encyclopaedia would both help and hinder the interpretation via the knowledge that signs do apply to boats and that signs on the

road are usually intended for cars, but this sign lacks formality appropriate to the context.

Baudrillard dismisses the representation of the physical via digital languages, instead continuing the argument that it removes (or negates) a dimension of the physical world. The negation via simulacra rather than creation from the two dimensions to the third or fourth through narrative addition:

This has nothing to do with representation, and even less to do with aesthetic illusion. The whole generic illusion of the image is cancelled out by technical perfection. As hologram or virtual reality or three-dimensional picture, the image is merely the emanation of the digital code which generates it. It is merely the mania for making an image no longer an image or, in other words, it is precisely what removes a dimension from the real world. (Baudrillard 1996: 30)

The question of whether an AI would comprehend the difference between a boat and a car leads us to the issue of ontological categorisation within language. The lack of poetry – for that is what natural language is in many ways, with its metaphors, similes, and inference – in artificial languages leads many to opine that AI speech remains unable to form the colloquialisms, the metaphors, the artistry of informal speech (Roy 2005). There are several points to discuss with this statement – AI now data mines the multitude of conversations users have online and repurposes them into its speech. This means that the language of AI is an average of the language used by human users. At the same time however, while AI is using natural language over its formal language, human users are changing how they use language – the short post on social media, the use of emoji, the change in function and audience – writing a letter to friend versus decrying, publicly, the politics of a group of people on social media.

This thesis cannot go into the nuances of the semiotics of speech, natural language, and artificial language construction. However, it is important to point out that AI is becoming natural enough through analysis and reproduction to offer autocompleted sentences in emails, tailored to match one's own idiosyncrasies. This has the dual effect of teaching and refining the AI algorithm based on what you write, to be more natural in future, while simultaneously teaching the human user to be less original, less independent, and to accept the AI suggestion. In a 1993 lecture Rick Roderick¹⁰ gave on Baudrillard, he states that children are becoming robotic, simulating, and reproducing the language and actions of the computer screen. Those children are now adults, and the implication is that the trend has continued. Of course, this is debatable, as language is still complex and nuanced, emoji are not simple or lazy alternatives to the natural language of past generations. The AI behind virtual beings may do a good reproduction of the human but the production of new language is, currently, the purview of humans and human society only.

¹⁰ <https://www.youtube.com/watch?v=2U9WMftV40c>

The formality of the programming languages may therefore bias the education of the programmer. It can also form a space of translation akin to the edge of the semiosphere, when the user and the AI teach, translate, and refine each-other's use of the language. This Baudrillardian simulation process may end in the human being unable to distinguish the virtual being linguistically. The dialectical reproduction of the language between user and AI will ultimately shape the society and culture of the future. This is the key take away that the language of the user not only shapes the AI but is reciprocally shaped by the technology itself.

There are examples of bias in algorithms, (Obermeyer *et al.* 2019), that exist due to human perception, not the objective facts of the world. Such a subjective leaning in something that will subsequently shape society is as worrying as any bias in education. Knowledge – information – is controlled by the powerful and in turn keeps the powerful in control. This does not seem to disappear with the introduction of virtual beings, although the simulation of the virtual language – the hypervirtual – may cement such bias within the cybernetic feedback loop of user and virtual being hypervirtual interaction. Cybernetics will be addressed in more detail below.

2.2.3. Hardware and embodiment

A feature of the virtual plane, mentioned above, is that the virtual plane can simultaneously bring people together and highlight the separation between users. The virtual plane exists without the limitations of space or time that the physical world has – users from all countries can connect with all other users in the virtual space without limitation or hinderance. However, the hardware does create a hierarchy and places a restriction on the accessibility of the space by different users.

One case to consider is the rise of limb tracking. While this enables embodiment, presence, and expression, of the user to a greater degree, it automatically highlights those users who do not have the technology – they may not be able to afford it, they may not have access to the hardware in their country, or perhaps they are not physically able to move or control their limbs in this way.

Of particular interest is the technology of disability – Stephen Hawking for example refused to upgrade the voice of his computer because it was *his* voice. He embodied that voice. Hatsune Miku was upgraded with an English voicebank – her original vocal donor was taught English to provide the English donations to maintain *her* voice. The hologram embodied the voice – a sentiment Zaborowski finds shared among fans of the music (Zaborowski 2016). This hints at the trans-mediality of identity forming a single concept currently, merging the biological and technology.

The issues that surround hardware and disabled users are complex (Standen, Brown 2005; Kuhlen, Dohle 1995), and perhaps the critic of post-modern liberalism would suggest that it continues a trend of “normalisation” in society – a sentiment Baudrillard might see as the loss of the individual. While limb tracking

may also be exclusionary to some users, other hardware – hand tracking for example – can enable users to meet with people in places and spaces with a degree of freedom that they might lack in the physical world.

While the user with social anxiety can find companionship in the virtual city, it should not be assumed that this is the *solution* to such health problems – although there may be evidence that VR can be used to change a user’s perception and help them overcome such anxieties in the “real” world (Garcia-Palacios *et al.* 2002).

The technology therefore has a duty of care to those who use it – the ability to circumvent physical obstacles can be enabling, but it can be reductive. There is perhaps a bias in the hardware to enable the user to “overcome” their disability rather than use the technology to embrace and positively represent disabled users within the virtual space.

Basic accessibility tools can make a difference to the disabled user playing games – subtitles, colour correction and so on. But when we start using the virtual plane to actively represent our self-identity, however that may be, hardware has a duty to ensure openness and inclusivity for all users.

Current hardware trends are working towards making the barrier between the physical user and their virtual self as reduced as possible – haptic feedback controls that simulate resistance, texture and so on enables the user to feel via their avatar, reducing the gap between “it” and “I” (Whitwell *et al.* 2015). Embodiment via hardware demonstrates a dialogue between the objective and the subjective planes – or universes, or spheres of realities, or the *umwelt* and the objective environment – that is continually happening to establish semiotic meaningfulness for the individual about the external signs. The individual wants to present an identity to the world, an identity that is itself influenced by the environment (such as the city or perception of signs, language, and culture and so on). The identity one presents in the virtual space changes what the user can or cannot influence in the construction. The hardware limits what the user can do – they cannot present themselves as 500 smaller versions with photo-realistic rendering without causing significant errors on the server, with contemporary technology. Equally, they can be racist, sexist, or push the limit of good taste, but the social controls within the spaces (the moderators who act as police or the companies that host such servers) will eventually suspend tacit support for such acts (consider, for example, the 2021 expulsion of a former world leader from nearly all social media platforms and the refusal by some hosting companies to continue providing a space for their followers to meet).

There is always an external, institutionalised, objectivity that contains the subjective in some way. This is not necessarily a bad thing – protecting people from abuse, objectively setting some moral limits on acts that may harm others (terrorism for example), and indeed language – as we have seen – acts at the metalevel via emoji and meme-signs.

The hardware that one has at an individual level also puts limits of the level of embodiment – whilst haptic feedback is being developed, it still represents a

“simulation” of senses. The sign is mediated through the glove or controller, with haptics suggesting a greater embodiment of the virtual limb (Fröhner *et al.* 2018).

Semiotically, it forms a part of the users’ *umwelt*, a semiotic reality from the sensation – whether it is regarded as a simulation or real is taken into that *umwelt*. The differences and consequences between each are perhaps dependant on the extent to which one believes that all sensation is simulated. The sensation of running one’s fingers over a wall is mediated by the atoms in the skin, in the rock, transmitted by the electric signals of nerves detecting the pressure, and then decoded within our brain as the sensation of rock on our fingertip. Should that feeling be mediated again by the haptic feedback device, one wonders if the brain will eventually demonstrate its plasticity to encompass it. The signification then would become a transmedial message with the sensation of the rock requiring the controller or glove to present the sensation, with the visual and aural sensations of the virtual act additionally providing further feedback from the headset.

Aural and visual Sensio-kinetic gestural feedback – both client side (the user) and server side (the objective reality of the other) – has changed significantly with ongoing hardware developments. The ability to track limbs has led recently to increased finger mapping – such dexterity reduces the delimitation between the “self” and the “virtual self”. Presence in the virtual space is increased with greater fidelity, or realism (Gilbert 2016). The translation between the virtual and the physical creates a psychological and spatial gap. Reducing this by reducing the overt translation means creating a seamlessly transmedial experience, and a separation between the physical reality and the *umwelt*.

Gesture is replicated in the virtual space via the avatar as a proxy for self. While there is a sensation of the avatar, it is still a simulation to the addressee. The viewer receiving the gesture or motion from the avatar may accept that it is a communication from the human, but the process may begin one of association of the human response and trigger to the avatar. The loss of the human-to-human communication by the development of human to AI interactions, may be somewhat easier if the user invites the change with the association of human behaviour and transference of humanity on to the non-human. At a semiotic level, the interpretation of the sign is not dependant on the producer’s humanity but the interpretation of the sign by the individual within the wider social context. Should the institutions and influencers (to use a contemporary term) begin the legitimisation of the non-human as a reasonable source of emotion, then the signs it produces can (and will) be interpreted as such (Yamaguchi 2020).

Digital literacy has the potential to hinder or help this legitimization process depending upon who has control of the architecture for dissemination of information for such literacy. The current rhetoric for creating avatars that you can feel and sense via your own senses gives a humanity to the virtual that can either be taken as a transmedial message of the computer-mediation communication or as the death of the individual physical reality under the fully virtual.

VR+ implies a difference in access and hardware to simply browsing the internet on one’s phone or playing a game on the computer. The relationship the user has to the space has already been discussed but regarding the relationship

one has to the hardware is also important – as important as the physical objects one maintains around their physical selves to express an identity (statues, art, books, and so on). Playing a game upon the computer requires there to be physical distance between the user and the screen. This distance can be psychologically reduced (a user may get “tunnel vision” and be focused entirely on the screen) but the distance still exists objectively. With VR the presentation of the game does also have a similar distance – albeit somewhat less – by presenting the space via small screens held at a distance from the eyes.

Rune Klevjer, using Maurice Merleau-Ponty’s bodily intentions, describes the embodiment of the game player as using the character on screen as an extension of their own. The avatar thus becomes a proxy for the self, within the screen world (Klevjer 2012). Nathaniel Stern adds to this discussion by integrating the body into interactive art pieces, further demonstrating the embedding the physical within the virtual, literally incorporating the body presence within a virtual narrative (Stern 2013)

However, there is significant research to demonstrate that the relationship the user has to their avatar is still strong, regardless of the distance between realism and fantasy, as an example of the Proteus effect. The reactions of others to the avatar start to affect the physical identity offline according to research. The impact of this will be discussed in our investigative below but we can discuss the relationship between the body and virtual presence. Presence with AR and MR changes significantly from the VR space – the hardware enables the physical space to be present and visible alongside the virtual. Irene Mittelberg (2018) concludes an in-depth analysis of gesture, embodiment, and virtual presence, in the augmentation of knowledge (image schemas) and force, thus:

gestures, due to their corporeality and pragmatic mindedness, are particularly apt at instantiating spatial and dynamic properties of conceptual structures and processes. Hence it offers further support for the theory of the embodied mind (Gibbs 2006; Johnson 1987; Lakoff and Johnson 1999) and particularly the idea of enactivism (Varela, Thompson and Rosch 1991; see also Krois 2011). With reference to crucial aspects of work on the psychological reality of image schemas (Gibbs 2005; Gibbs and Colston 1995), the gesture-based approach presented here aims to provide further evidence for the semiotic reality of such patterns of multi-sensory experience (Danaher 1998) and advances the use of motion-capture technology to this end (Mittelberg 2018: 16).

Mittelberg offers a somewhat more positive view of the digitisation of presence and the textualization of the body. Donna Haraway and the notion of the cyborg will be expanded shortly but her text is relevant to the current discussion on embodiment:

Technological determination is only one ideological space opened up by the reconceptions of machine and organism as coded texts through which we engage in the play of writing and reading the world. ‘Textualization’ of everything in post-structuralist, postmodernist theory has been damned by Marxists and socialist

feminists for its utopian disregard for the lived relations of domination that ground the ‘play’ of arbitrary reading. (Haraway 1991: 152)

The virtual being is not something we embody of course, but it could impact how embodied we perceive ourselves to be within the virtual world. A recurring theme in the hyperreality of post-modernism is the notion that the virtual – the hyperreal – is not an overtly separate space from reality. Once you cannot tell the difference, the real experience, the human experience, has died (it is the simulacra). Our thesis states that digital literacy and identity can maintain a transmediality – that is, incorporates the physical and the virtual into the one meaningful narrative while delimiting the two as separate concepts. However, once we interact completely within the virtual space, once we embody the virtual signs of identity and space, once we interact with the virtual being – and not the transmedial virtual avatar or augmented reality hologram – we essentially bring about the end of the transmediality.

While there is still hardware, then the separation remains. It is when the virtual becomes not just embodied, but embedded, when we become cybernetically enhanced within a system of sense data and feedback, without requiring the access portal of a mobile screen or computer, then we lose the difference between reality and virtuality. Don Ihde discusses the embodiment of the self within the technology by suggesting that where the camera is reframes the context, stating that: “By taking the subject out of the camera and finding him or her *in the world*, one simultaneously has deconstructed the god-trick of early modernity and established an embodied situated knowledge” (Ihde 2002: 75). Situated knowledge defines knowledge via a spatialisation, a positional account of what can be known. Semiotics, via Peirce or Eco, could suggest something akin to this via what is contextually known about a sign to append the translations process. The position of the addressee to the sign takes on a rather more literal aspect when considering digitisation of the body and where the self perceives itself to be embedded.

While the hardware appends rather than completely fulfils a role within the human narrative, then it remains a tool. This language is very similar to Heidegger’s discussion of “being” and “doing” which Kumiko Tanaka-Ishii applies to computer code:

This difference in focus for relation construction in ‘being’ and ‘doing’, in my opinion, derives from a difference in regarding an object from an interior or an exterior view. ‘Being’ takes an interior view, stipulating an object from what it is, whereas ‘doing’ takes the exterior view, stipulating an object from how it looks from the outside and how it can be used. The difference lies in the position of the focus vis a vis an object – inside or outside. (Tanaka-Ishii 2010: 83)

This internalisation or externalisation of the object is what keeps it separate to the self, but with the digitisation of the object *and* the self, then where is the external? Once the phone, the chip, and the virtual screen, are required for the functioning of the human in society, then we can see it has become embedded, and ubiquitous embodiment seems certain. This may happen without the requirement of the

individual either, with the advancement of the Spatial Web and AI taking over the roles that once we would have used tools for – driving, investing, or communication, for example. Embodiment may, potentially, occur through senses and sensations of the external world.

One final area of analysis is the interface, and specifically the natural-language interface. While a digital assistant like SIRI is just a voice, it is a design choice that other researchers have posited enables for a multimodal communication experience – via gesture and position again. The voice input is essentially a metaphor of the human and therefore the inclusion of a body enables some deeper level of embodiment of information (Cassell *et al.* 1999; Cassell *et al.* 2000). Even a chatbot AI like Kuki still maintains a physical identity of sorts, stating that she is an 18-year-old girl should one ask her. Whether this ages in real time remains to be seen but humanising the interface in such a way recognises the importance of physicality in conversation, with emoji and VR-specific gestures allowing the replication of such external features in the digitised human.

2.2.4. Cybernetics and umwelt

The cybernetic feedback loop can perhaps be viewed as the hardware/architectural appending of the umwelt. Cybernetics, whilst not a primary focus of this thesis, must be mentioned to some extent in any conversation about computers enhancing the senses of the self.

Norbert Wiener defined Cybernetics in his 1948 text *Cybernetics, Or Control and Communication in the Animal and the Machine* (1985). That is, cybernetics is a self-regulating control system, both biological, and mechanical. The word somewhat evolved with William Gibson's popularisation of the term "cyberspace" and the inclusion of the shift towards cyber meaning a more futuristic, technology-based concept rather than the teleology of the ancient Greek. Of course, cybernetics does not require the interface of man and machine but the concept of the cyborg in Donna Haraway's "A Cyborg Manifesto" is that of: "A cyborg is a cybernetic organism, a hybrid of machine and organism, a creature of social reality as well as a creature of fiction. Social reality is lived social relations, our most important political construction, a world-changing fiction" (1991: 149). Along with cyberspace, this has led to the notion of a self-regulating, goal driven cooperation between people and technology.

While we do not subscribe to the notion of an AI ever attaining full sentience without crossing and flattening the boundary between technology and biological, this does somewhat leave the path open to the cybernetic possibility of enhancements impacting the umwelt in the human and animal – that is, the control and communication of the biological with increased efficiency with the addition of machinery.

When applying the theory to VR+, we reference the previous discourse on umwelt. The sensory-phenomenal information is received and translated by the organism's sense data, which can also be presented via hardware of the virtual

world. Senses like touch, sight, sounds, and equilibrium can be manipulated by the hardware. The conclusion we drew above is that the *umwelt* remains unchanged at its base level because the human is receiving the input via unchanged sense organs – it makes no difference conceptually speaking where the sound comes from.

However, if the user is perceiving only virtual input at the loss of the physical – in origin that is, since the biological ears still hear regardless of the source of the sound – there is an alteration to the feedback loop of perception and reception from the data. In VR it is overtly a simulation – the headset, the haptic gloves provide a barrier that always reminds one of the virtuality of the sense data. But there are situations where the sense data is being treated as natural, potentially in the prehension, grasping, act for example (Whitwell *et al.* 2015). Additionally, mixed reality blends the organic and digital into the same transmedial narrative.

Cybernetics, in the techno-futuristic sense, offers a visual transmediality of the user's *umwelt* – the physicality of the body – the senses – that directly receive the signs to be translated into the individual semiotic world (the *umwelt*). This individuality is at risk from the increasing lack of grounding in the signs. This simulacrum of signs is still translated at an individual level providing the self with some meta position from which to form the communication model. Once even that sense data becomes mediated then it begins a process like that of the nihilistic postmodernists. Of course, while the cybernetic is transmedial, then the human individuality plays a role in the translations of the sign but should the cybernetic be replaced by the cyberspace, digitising knowledge, and replacing the individuals' teleological space – the *umwelt* – with a universal collaborative space? While initially this seems like a positive, there are concerns with normalising society and standardising humanity towards a universal. Sherry Turkle states: “When people adopt an online persona they cross a boundary into highly charged territory. Some feel an uncomfortable sense of fragmentation, some a sense of relief. Some sense the possibilities for self-discovery, even self-transformation” (Turkle 1995: 260). Turkle continues, reinforcing a theme from Baudrillard:

Multiple viewpoints call forth a new moral discourse. The culture of simulation may help us achieve a vision of a multiple but integrated identity whose flexibility, resilience, and capacity for joy comes from having access to our many selves. But if we have lost reality in the process, we shall have struck a poor bargain. (Turkle 1995: 268)

Finally, supporting our position that digital literacy will enable the experience of freedom to maintain the tangibility of the self without losing oneself completely to the virtual, she states simply:

People can get lost in virtual worlds. [...] Our experiences there are serious play. [...] Without a deep understanding of the many selves that we express in the virtual, we cannot use our experiences there to enrich the real. If we cultivate our awareness of what stands behind our screen personae, we are more likely to succeed in using virtual experience for personal transformation. (Turkle 1995: 268)

The virtual world is altering the physical response to phobias too (Garcia-Palacios *et al.* 2002). This research demonstrates that at a biological level, the human response to the virtual input is not distinguishable from the real. The *umwelt*, taking the cybernetic sensory information of the hyperreal, translating a phenomenal world into meaningfulness agnostic of the physicality or virtuality of the sign itself. The realisation of Baudrillard's theory of the simulation as no longer distinct from the reality is complete when the human user only receives virtual or computer-mediated sensory data and still exhibits biological responses.

The online-only, socially distanced future is promising this situation, turning all communications into a cybernetic relationship. The hyperreal virtual sign is one that is perceived as more real than reality, as a stimulating, intoxicating, fictionalisation of the mundane sensory input that is the simulated simulation, the fetishization and objectification of a ubiquitous virtual norm.

2.3. Analysing architecture, space, and users

This chapter has introduced the ways in which architecture – the construction elements of the space rather than the space itself – creates, mediates, or appends human communication. If space is the medium and mode of communication, then the architecture is the boundary elements that shape the translation between such spaces. The architecture in the embodied sense of self in relationship to the space of communication and thus, it is the identity and individuality one presents and perceives.

While we have introduced several tangential elements – meme-signs, emoji, embodiment, and cybernetics – they are all elements of language and perception within the virtual space. Language is the substrate of culture (Randviir 2002) and language can be interpreted as biased (Menegatti, Rubini 2017) – an area that semiotic research is still catching up on.

Literacy should strive to reduce such bias but without a metanarrative there is little ability for the teacher to stand separate from the bias, especially with education moving into the online classroom. The “new normal” has not created a trend, but rather sped up a movement that was already underway – one that pushes the human into an ecosystem of completely digital signs and information. The notion of the real has been under threat since the dawn of postmodernism in the latter half of the 20th century, but with the advancements in technology – specifically AI and the Spatial Web – we have constructed a virtual bubble around ourselves, willingly it seems to embrace the death of the real experience, with “online” as the new panoptic space. The virtual classroom moves to further replace the bricks-and-mortar classroom, with enhanced controls on information. Any possibility of being able to exist externally to the virtual space is diminishing, with the digital overlay replacing direct human interaction.

2.3.1. Digital literacy

It is worth at this point drawing together the contextual analysis already completed and exploring the role of digital literacy itself. The problem of hyperreality occurring in a virtual-to-virtual communication space has been outlined. With the identity narrative so heavily influenced at individual and collective (micro and macro) levels, the transmediality of these signs offer a key grounding to the reality. Literacy of these signs teaches an awareness of the influence they have on our offline and online personas, our realities, and aids to filter out the influx of information from the digital media. This new media, and the increasing online lives we live, requires that literacy is now a digital literacy.

Literacy as a process of semiotics is, for this author, something akin to managing the internal dialogue that constructs the *umwelt* and the awareness of one's place within a wider social reality. The interpretation of signs as a process, particularly signs of media and pedagogy, have been researched as literacy within the semiotic paradigm (Mackey 2010). Literacy is not an equivalence to semiotics however, as we will see, since one can interpret a sign at an instinctual level, but literacy suggests something more intentional. Perhaps saying that literacy is the application of the semiotic framework is more accurate (Cowan, Albers 2006: 124–137).

Digital literacy as a concept was overtly defined by Paul Gilster in his book *Digital Literacy* (1997). David Bawden provides a clear introduction to Gilster's theory and how it pertains to contemporary digital scenario:

[Gilster] specifically noted that digital literacy involved an understanding of how to complement digital resources with such things as reference works in libraries, printed newspapers and magazines, radio and television, and printed works of literature, expressing a particular fondness for the last. While the inexorable shift to digital formats in the decade since his book appeared might make these qualifications and caveats seem less important than when they were written, it is important to note that from its first mention, Gilster's digital literacy is not about any particular technology, not even—paradoxically, given the term—digital technology itself. It is about the ideas and mindsets, within which particular skills and competences operate, and about information and information resources, in whatever format. The term itself is quite reasonable in this context, since all information today is either digital, has been digital, or could be digital. (Bawden 2008: 19)

The cross/trans/multi-mediality of comprehending (and filtering) relevant information and making critical judgments about the information presented online and offline is demonstrated to be a skill of comprehension within the digital age, but not a uniquely digital skill. There is still a requirement to comprehend the physical signs offline, within the concept of digital literacy. Digital literacy is not the abandonment of the physical.

This is the key argument we pursue throughout this thesis, with identity as a concept that must be comprehended across all realities, not relegated to the virtual space only – nor does the offline only identity narrative seemingly exist anymore.

This crosses the body boundary as well, with the body transcending the physical/virtual narrative. The notion of gesture in the digital narrative offers an opportunity to cross over the physical space to the virtual, as well as face tracking which allows the face-to-face interaction as described by Microsoft about their Mesh avatar programme above.

The digital literacy conceptualisation requires a constant and continued update due to the ever-changing advancement of the technology. This includes technology that allows face-tracking being sold with commercial VR products (from VIVE currently) and the recent development of advanced eye tracking glasses that can be used to improve game response times as well as several medical uses such as epilepsy and concussions (from AdHawk). The face and expressions come under the body language schema with gesture and physical presence also being key in the identity narrative especially within the wider social reality of how people perceive each other as explored in a study on youth offenders and virtual conferencing (Martin *et al.* 2013).

The body language signs are part of the image schema that has been extensively researched by Mittelberg who posits that the gestural form (or at least some gestural forms) has similarities with certain image schemas – that is, we perceive the gesture as more than the act itself but as a cognitive and behavioural communication which perhaps is a more immediate and more embodied representation of meaning than written or spoken language (Mittelberg 2018).

What is the role of literacy in comprehending these schemata? This begins a conversation on whether gesture or natural language is the foundation of the semiosphere. Sebeok, as stated, highlighted how animals develop non-verbal communication:

the entire phenomenal manifestation of animal communication, what Sebeok (1979a) calls semiotic self, is the result of an animal's configuration of signs. Therefore, we cannot speak of an animal mind, which can be studied or proved with the help of scientific methods. Sebeok's stance is in line with the Peircean notion of abduction, a process that is neither induction nor deduction, but a "rule of thumb" way of creating a link between inputs and outputs (Barbieri 2009: 27). Abduction, Peirce's logical category, departs from deductive and inductive reasoning in that by abduction we can extrapolate from limited data, successfully interpret the world, and build a valid representation of it. (Gómez-Moreno 2014: 406)

Such semiotic modelling has been discussed already, where the model of the self highlights the role of the verbal and non-verbal in the communication process, something which Lotman himself discusses, as summarised here:

when Lotman discusses symbolic behaviour of animals, he notes that the dialogue between animals essentially differs from the dialogue between humans: animals use one concrete language that eliminates ambivalence in communication, and the interpretive possibilities of any message in animal interaction are predetermined. That is also why there is a great discrepancy between human dialogue and the "one-sided animal-training" (Lotman 2005: 218). Human communication, in contrast,

always presupposes a conflict between collective and individual memory, between various individual languages (Lotman 2014: 54–55). (Semenenko 2016: 502)

Aleksei Semenko continues to highlight that collectively, humans are polyglot, with multiple languages used across the world, and at an individual level, the human uses multiple semiotics systems, acting in a constant dialogue with each other. Thus, individually we are polyglots, with the dialogue internally (as an *umwelt*) and externally (as a *semiosphere*) necessitating translation and interpretation. This tension, as Semenko states, generates meaning.

The relationship literacy has to the schema within this myriad of different languages has been explored by Margaret Mackey, who asks similar questions to this thesis. Mackey states that when reading or learning to read, a child is employing their own exploratory techniques to embed such literacy of the text within a deeper schema of awareness. However, with the distractions of the screen, the car, the computer, the young child is no longer walking through their environment. The schemas of deep contextual awareness are flat. Lundström, Olin-Scheller (2014) state that the traditional encoding and decoding model of literacy, with its narrow focus of reading and writing ignoring the multimodality of the multimedia classroom. Similarly, Mackey concludes:

We need to know more about the implications of western children’s inability to walk their own worlds—implications for their capacity to map and understand mapping, implications for their ability to measure a story world by the scale of their own little bodies. It may be that preschools and daycares should be organizing more of those charming crocodile outings in which a string of children holding hands moves into the environment, acquiring at least basic exposure to ideas of path, landmark, and edge. It may be that outings to the park and the playground are even more vital to children’s well-being than we thought, that they offer potential for cognitive as well as physical wellbeing. Or it may be that my story offers only one kind of geographical and historical entree’s into the power of interpreting fiction, and that today’s children explore the limits of their existence in different and dynamic new ways. (Mackey 2010: 339)

Mackey spatialises the question of literacy, employing both aspects of the digital (integrating the computer into learning) and space-as-body with the awareness of one’s location within the wider world as important in the formation of schema and deeper understanding of human communication. This hints also at the bias possible within such literacy.

Body language becomes one of these individual languages, of the polyglot, as does the digitisation of body language. This could be the visual recording and representation of the gesture on the screen, or the translation of the action upon an avatar character. It could also be the slightly removed act of performing a pre-set gesture by your avatar from a menu, rather than performing the act yourself. Finally, the linguistic signs for gestures such as the raised fist emoji (Davidson, Blair 2018) as a visual appending of the body image within the virtual – textual – narrative space, or even the text “LOL” to signify that someone is laughing.

The textualization of the body physical demonstrate different qualities of embodiment and therefore it can be reasonably suggested that production of the gesture leads to a different level of presence or connection to the act. For example, embodying the virtual sign – the gesture – impacts schema formation and the metonymic nature of such acts transcends the virtual/physical boundary (Mittelberg 2019).

However, gesture, speech, writing, or emoji, can all be digitised and represented within the deterritorialized space of the virtual world. All these will be “read” by someone within the digital eco-system, and an awareness of the context is vital for interpretation and production of appropriate acts and actions when formulating one’s online identity.

While we have discussed the human-centric semiotic modelling, schemata are often presented within the field of zoosemiotics. Mittelberg presents an argument for the non-verbal gesture as an image schema but we must differentiate these image schemas as a biological concept from the schemata of von Uexküll:

In analysing a given animal’s response, image schemas are also shown to contribute to the Umwelt Theory, serving as a bridge between an animal’s *Innenwelt* and *Umwelt*. The notion of image schema as envisaged in this study should not be mistaken for von Uexküll [...] notion of schema (*Gestalt*) [...] image schemas in the spirit of modern cognitive psychology and linguistics are skeletal, *non-representational* cognitive constructs that underlie content-rich mental images. Despite also having a sensual and functional grounding, Uexküll’s *schemata* are something else, evolving from the pure reflection/image of objects (*Objekte*) to the summary of their most important features. Thus, Uexküll’s *schemata* do have a representative function. (Gómez-Moreno 2014: 407)

The role of the image schema is to provide something akin to the structure of the encyclopaedia model of semiotics – an awareness of how an encyclopaedia works perhaps, the alphabet, the index and so on. It is the “deep read” of Tim Wynne-Jones that Mackey references. This is instinctual in some respects perhaps but for others it may be taught. Certainly, there are cultural differences that are less obvious than the primary language of the individual.

In the context of digital literacy then, there is not just a requirement to translate the language of the space, but rather an underlying text that is responsible for the semiotic meaning to be interpreted, both individually and collectively. Digital literacy is not about making the communication space “easy” by formulating universal rules or languages – as English is within the programming space. This leads to more tension biased against those who do not have English as a first language, or Western logic as their schema. This is perhaps the biggest challenge for user interface (UI) design in the increasingly globalised virtual space.

In other research, this author has highlighted a requirement for interdisciplinary research into the impact of transmedial identity through avatars and the virtual classroom – primarily through targeted and specific education (Davidson 2021). Hartley *et al.* equally highlight the need for digital literacy to take a holistic approach and consider the ethics and social factors of this new digital space:

Digital and media literacy cannot be confined to technical skills alone. There is also a need for collaboration among three sets of agencies: *policymakers* who legislate for productivity, growth and change in a competitive but open society; *media companies* raising and reporting issues for the public (in both factual and fictional forms); and *advocates* for change (including philanthropic and activist agencies) (Keating, 2019). (Hartley *et al.* 2021: 30)

The digitisation of the self-narrative of identity and the role of the schema means creation is part of the wider concern now for digital literacy. The transmediality of communication is evident, both as a mediating element, and as an element of text itself – that is, we talk to each other via screens, but we also use emoji to punctuate our everyday language or let AI construct our emails for us. The digital semiosphere has brought with it the overlapping of realities – VR, AR, and MR.

While the future of communication – within the so-called Web 3.0 era – may see the complete digitisation of the individual where all physical actions are appended by a digital sign (the “thumbs up” may be accompanied by a virtual cloud of emoji-like symbols, seen through the mixed reality headset), the contemporary space of communication is vital for an updated educational paradigm to enable the post-COVID generation to operate online without losing their offline connections.

The impact of digital literacy on teens, globally, is of key importance. In Davidson (2021) the role of the teacher and the classroom is highlighted as an important space for starting this digital literacy programme. Specifically, for this thesis, the role of identity formation between different cultures is discussed. We concluded that the literacy of the teacher is as important as the student for preventing a hypervirtuality of identity – that is, for keeping the self grounded in the context of physicality.

The transmediality of the virtual learning environment and identity construction, suggests that a digital literacy is important for contextualising the discussion. While digital literacy was an awareness of how to source information online and merge it appropriately with the offline, it is also, in our view, an awareness of how to process the digital semiosphere through an individual’s image schema, to generate an individual semiotic world view – an *umwelt* – that isn’t biased for or against one group of people, or against the physical in favour of the digital.

While identity formation online seemingly has significant advantages – especially within gender identity – there are some key negatives. In Davidson (2021) we discuss at length the problem of users online feeling like they need to fit in or “pass” for a different race, citing Lisa Nakamura thusly: “The illusion of diversity through digitally enabled racial passing and recombination produces a false feeling of diversity and tolerance born of entitlement” (Nakamura 2008: 1674). Nakamura introduces the concept of identity tourism where users wear a skin, which is justified as ludic and fleeting, rather than racist. We also discover, however, that some studies also show that different avatars reduce racial bias (Peck *et al.* 2013).

This is also worrying when we look at the Proteus effect and the impact hypersexualised avatars have on the physical health and wellbeing of users. Jesse Fox, Jeremy Bailenson, and Liz Tricase (2013) researched the effect of “rape myth acceptance” – which blames the victim – and seeing one’s face on a hypersexualised avatar in a game, concluding “Women who were embodied in sexualized avatars that resembled the self demonstrated greater rape myth acceptance than women who were embodied in other avatars” (Fox *et al.* 2013: 935).

While Baudrillard and other’s statements about the “loss of the self” may be dismissed as nihilistic and unrealistic, we posit that there is a real issue with hyperreality, and even more so with hypervirtuality. The psychological effect of the virtual space on the physical is already demonstrably, and empirically, occurring within certain demographics. The effect of the digital world on schema formation in young children can potentially alter the ability to read deeper behind stories that exist outside this contemporary techno-sphere (Mackey uses the example of children’s author Enid Blyton, much of whose schema may not be comprehensible to a reader who has not experienced nature, whilst also lacking the ability to contextualise Blyton’s own racially insensitive schema). The Proteus effect, as a (negative) extension to the digital, kinaesthetic metonymy of Mittelberg, suggests a blurring of the virtual and physical image schemas already. The transmediality of the sign, within the *umwelt* and between *umwelten* in the semiosphere, suggests that the framework – the encyclopaedia, or the social reality – of meaning, is lacking an ability to differentiate between what is real and what is not.

It could be said that already in the contemporary age, the virtual is as real as the physical. The self has not been lost *per se* but it has been digitised. Should a user inhabit an avatar that becomes more indicative of their identity than their physical self, when the physical space becomes extensively mediated by the digital layer of information, as in Web 3.0, then the self is lost to the hypervirtual schema and *umwelt* of virtual signs. Digital literacy enables a contextualisation, an evaluation, of the framework.

Bias within the architecture of the virtual space is another area where digital literacy will be important. While avatars may allow the user to present themselves as their inner self – an externalisation of an identity they have always wished to embody – there is a risk of a two-tier system occurring, biasing some users. This expression of inner self was referenced by Davidson (2020), specifically citing the furry and otherkin communities who have found the online space as particularly amenable to their desire to embody another identity. The anonymity and collaborative nature of the online space enables such communities to formulate identities around a central fandom (Johnston 2013: 293–306).

Ola Knutsson, Mona Blåsjö, Stina Hällsten, and Petter Karlström (2012) perform a deep analysis of the different registers within a virtual learning environment and examine the role of digital literacy in enabling communication between the teacher and student. In Davidson (2021) we analyse Knutsson *et al.* at length, what follows is a summary of that analysis.

Knutsson *et al.* analyse the interactions between teacher and student and identity difference in the formality – or register – of the language used between each party (Knutsson *et al.* 2012: 240). The role of the design of the virtual learning environment (VLE) – the contextual space – is also analysed:

The meaning of a sign is not exactly the same interpreted in a Western cultural setting as in that of another setting, or the same sign in the Middle Ages as today. Similarly, the same sign in a computer interface design does not always mean the same to the same user, as choosing OK or Enter has somewhat different meanings in different situations (cf. De Souza, 2005). Instead of speaking of an arbitrary relation between sign and meaning, as traditional semioticians, social semioticians state that the connection between sign and meaning is motivated from the language user's point of view. (Knutsson *et al.* 2012: 238)

The design and lexical choices made within the VLE space itself require a level of digital literacy, both in production and interpretation. There are several elements of digital literacy then; the contextual space (the design of the interface or virtual world), the avatar as an identity (including the connection the user has to their online persona), and the language used (the register):

systemic theory gives prominence to discourse, or 'text'; not – or not only – as evidence for the system, but valued, rather, as constitutive of the culture. The mechanism proposed for this constitutive power of discourse has been referred to as the 'metafunctional hookup': the hypothesis that (a) social contexts are organic–dynamic configurations of three components, called 'field,' 'tenor,' and 'mode': respectively, the nature of the social activity, the relations among the interactants, and the status accorded to the language (what is going on, who are taking part, and what they are doing with their discourse); and (b) there is a relationship between these and the metafunctions such that these components are construed, respectively, as experiential, as interpersonal, and as textual meanings. Register, or functional variation in language, is then interpreted as systemic variation in the relative prominence (the probability of being taken up) of different options within these semantic components. (Halliday 2003: 437)

Michael Halliday developed Systemic Functional Linguistics (SFL), which foregrounds the paradigmatic over the syntagmatic, structural, formation of language. This focus on the context is reminiscent of digital literacy too, and the dialogue between language and cultural formation has been presented throughout this thesis.

While Halliday introduces the terms, field, (what the text is about), tenor, (the relationship between those interacting), and mode, (the method of communication), Knutsson *et al.* apply them to the VLE, linking SFL overtly to digital literacy. Knutsson *et al.* also highlight that there are multiple different literacies – citing music, computers, and maths, as other modes (2012: 237). The polyglottal individual is literate in multiple modes, multiple languages, in order to function within the collective. This is the same when interacting online, although, as Knutsson *et al.* demonstrate, there are differences in use:

Digital literacy may be defined as access to three different registers: everyday, specialized and reflexive. These registers are enacted depending on the context of an interaction in terms of Field, Tenor and Mode [...] There are new types of objects in every new digital environment. Designers and teachers as “co-designers” need to reduce the gap between everyday and specialized digital literacy. (Knutsson *et al.* 245)

Digital literacy links the individual to the collective, and vice versa, providing a context for the interpretation and production of the signs within the online space. Actions that we might not consider as needing to be literate of (such as gestures) exhibit culture differences (Rehm *et al.* 2008), which, when digitised in the de-territorialized online, could offend. The effect of digitising the self in digital literacy is an area requiring significant research. A digital-only literacy would exacerbate the negative consequences of hypervirtuality – that of the interpretation of virtual signs within the virtual context, and – most problematic – applying a virtual identity to one’s self-image schema.

Davidson (2021) discusses the role of social media and the digitisation of the selfie, enhancing and commodifying one’s self-image within the virtual, institutionalised, narrative. The loss of the physical behind the edited selfie, the snapshot of reality that is staged, edited, filtered, and shared without the original has been turned into an art piece itself – described as performative spectatorship (Hunter 2018).

Understanding the selfie is another aspect of the digital literacy model which indicates the potential future of hypervirtual. Sofia Caldeira eloquently concludes a study of 12000 photos with a statement that demonstrates the problems of identity within the era of Instagram, and how it is different from the analogue era of photography and self-representation:

These images, in particular selfies, are created in a deliberate and reflexive manner, with the subject reclaiming a larger control over every step of the photographic creation of his own self-image, carefully curating the photographed moments and hiding any undesirable aspects, thus presenting a highly selective and idealized version of himself.

But, as already happened in the analogue era, and now heightened by the sheer size of the potential Instagram audience, the conscience of this photographic exposition of the self and the pressure to conform to an unattainable ideal often creates a certain sense of discomfort, that can lead the users to seek alternative representation strategies that subvert the logic of direct representation. (Caldeira 2016: 155)

Caldeira points out that the identity formed from these Instagram posts are constantly “in flux” as they require updating and reposting in order to represent the offline identity online, with each new image replacing the previous one in the constant drive to attain likes and validation, which Caldeira describes as, “a cycle of creation, fascination and forgetting” (Caldeira 2016: 155).

An interesting alternative take however is that selfies teach digital literacy (Choi, Behm-Morawitz 2018: 345). The educational value of the selfie as a

reflective tool is described in their research, highlighting that the selfie is meaningful in its content, employs a range of techniques, and creatively reduces boredom. Grace Choi and Elizabeth Behm-Morawitz highlight the role digital media plays in gratification theory:

Millennials may hold the expectancy that engaging with social media and participating in the selfie culture will meet their needs of being up-to-date, interacting with others, passing time, seeking information, and escaping the pressures or boredom of daily life. Digital and social media, in particular, may be linked to Millennials' expectancies that selfie-taking may satisfy these needs. (Choi, Behm-Morawitz 2018: 346)

We will look at the transmediality of identity in the next section, specifically within the classroom environment. However, digital literacy can clearly demonstrate an important role in the identity formation of the user online and offline within contemporary technology. With awareness and education however, the online space can allow for the freedom to express oneself, rather than acting as narcissism or replacing the real:

Through selfies, artifactual literacies, and video, LGBTQ youth are creating new spaces not only to express their thoughts and identities but also to be known differently. The authoring affordances of youth livestreaming were an aesthetic communicative power that revealed particularly salient narratives about knowing and making known differently on one's own terms. (Wargo 2017: 575)

The notion of multiliteracies, akin to the multimodalities of Knutsson *et al.* demonstrates the wide-ranging topics of literacy. There is another aspect of digital literacy that we will discuss in detail below but deserves introduction here – the issue of bias. With the online space already contributing significantly to the identity narrative of its users, the role of digital literacy should also aim to allow the inclusion of non-English speaking, non-Western users to take advantage of the communicative processes. The architecture of the virtual space is seemingly biased in a way that institutionalizes, and normalises, the identity of others to “fit in” with the majority: “The illusion of diversity through digitally enabled racial passing and recombination produces a false feeling of diversity and tolerance born of entitlement” (Nakamura 2008: 1674). Digital literacy can, and should, challenge this but there are serious issues, as we will investigate.

2.3.2. Bias, identity, and the classroom

We state throughout this thesis that the classroom is the key place of maintaining the transmediality of identity. As researched elsewhere (Davidson 2021), the classroom space and education is intrinsic to the young formulation of identity (Daniels, Brooker 2014; Idris *et al.* 2012; Reed-Danahay 1996; Verhoeven *et al.* 2019) and schema:

we [argue] that emotional acts are generated by cognitive appraisals of situations, and that these appraisals are influenced by the local social order. The appraisals involve a comparison of the interpreted situation with expectations. As Averill (1986) stated, “In cognitive terms, emotions may be conceived of as belief systems or schemas that guide the appraisal of situations, the organization of responses, and the self-monitoring (interpretation) of behavior” (p. 100). With regard to mathematical problem solving, beliefs about the nature of mathematical activity and about one’s own and others’ roles in the classroom would seem to be particularly relevant. (Cobb *et al.* 2011: 45)

Cognitive belief is to believe you know something, formed from the constant appraisal of the information provided. It is therefore instrumental for making sense of the classroom space, the interactions with others, and the material being taught itself. Additionally, the impact on young students from social media has been discussed by Georges:

The representation of identity in a mixed reality changes, at least partially, the problematic of self-representation: in it, reality is interfaced with a layer of digital information in which the body a priori resumes its place in the representation of the person, although it can also be augmented by information visible to a third party (for example, by visually associating facial recognition with information on that person’s centres of interest). The consequences are significant: in “on-screen” devices, users remotely dialogue through the intermediary of a graphic, auditory, and textual representation of their identity. (Georges 2009: VI)

The identity of the individual is formulated through the constant dialogue with the world around them, and the individual referencing itself in relation to the collective. This has been the process for much of the semiotic modelling we have discussed – from the social reality of society to the personal *umwelt*. The need for dialectical, critical, reasoning to ascertain meaning is the process of semiotics that comes from the polyglottal, non-concrete language of humans.

Thus, an awareness of the context is vital, via the field, tenor, and mode of SFL for example. Eco highlights the contextual importance of interpretation (Eco 1988: 16, 68–70). The judgment or first impression of the sign based on one’s imagination and schema, without contextual analysis or deeper reading, lacks critical analysis. Similarly, Peirce’s immediate interpretant demonstrates a lack of critical reflection when quickly viewing a sign (CP 8.315). We take the view that such reflection is a skill taught with reference to context, akin to the skill of reading the encyclopaedia, finding the word, and choosing the most appropriate definition.

School, as a social space of many young people, is the primary location for introducing and developing these schema-building skills and developing deep reading skills such as Mackey and Wynne-Jones describe above. While semiotic modelling is described in more detail elsewhere, we believe a specific focus on identity formation within the transmedial classroom, the role of the teacher, and

the potential bias or freedoms that might arise as education inexorably progresses online, is relevant.

The condition of hyperreality and the subsequent hypervirtuality, is, seemingly, driven by the market forces of capitalism, institutionalisation, and entertainment (Baudrillard 1975). The technology we have available to us enabled (at least in the developed world) the movement of workers and students to the online space during the pandemic of 2020/2021. However, this was not new technology, the foundation was already in place, with remote learning portals for students who may be unable to attend class directly due to location – an example of the globalisation of the education system.

The physical signs of the brick-and-mortar space are appended or negated by the virtual plane of information (QR codes, augmented reality maps, virtual guides, social media representations of hyperreal vistas and so on), with the digital information layer of Web 3.0 promising to mediate the physical even further through ubiquitous accessibility to the online space. The pandemic led to restrictions on physical interaction for much of the world. Thus, the everyday connection of the physical space is negated, with little interaction or schema building. It is the child in the car, travelling between locations, while playing on the GameBoy as described by Mackey.

While the post-pandemic classroom promises to return to the physical space, the role of online teaching is not going to diminish. Research by *The Guardian* in the immediate aftermath of the pandemic posited that online education within higher levels (university for example) may be permanent due to the flexibility afforded by the classes. However, it is the young learner whom we will consider specifically (Razavi 2020).

As established, digital literacy aids the conceptualisation of identity within the virtual/physical spaces. The interaction of the physical with the virtual keeps the sign relationship from devolving into the hyperreality, identity being one of the key signs given the relationship between user and avatar, as referenced in Davidson (2020), where research found emotional attachment to character avatars (van der Land, Schouten, Feldberg, Huysman, van den Hooff 2015; Nowak, Rauh, 2005; Martey, Consalvo 2011).

This introduces a key concern for the online teaching paradigm – avatars. The use of avatars in the online space is being made commonplace by software such as Microsoft Mesh, and Ready Player Me which advertises an emotional attachment to the avatar.

Mittelberg has introduced the notion of presence in the virtual space being metonymically similar to the physical presence, with Georges confirming the impact of social media on the young person's identity. Marika Tiggemann and Isabella Anderberg (2020) additionally highlight that body dissatisfaction is impacted by the idealised Instagram image, while conversely Choi and Behm-Morawitz (2018) posited it had positive effects for digital literacy. These elements suggest a situation where the virtual classroom as a space would contextually impact the identity of the individuals within the boundary, and the information delivered, in connection with internalising the meaning. The representation of

each subject within this space additionally adds meaning to the signs. The subtle effects of beauty filters and the overt impact of avatars within the classroom environment can potentially change the way the young learner views themselves and the world. Should avatars be accepted within the classroom as an expression of freedom and inner identity, then the inequality and bias of the architecture online will create a two-tier system of self-representation unless addressed through access and literacy programmes.

The virtual learning environment has been discussed by Knutsson *et al.* above with significant reference to the design of the space. They posit that the teacher should act as co-designers to the space, enabling the structure of the virtual room to be dictated at a class level, rather than a systemic level (Knutsson *et al.* 2012: 245). The impact of the virtual classroom has been discussed also by Dorothea Anagnostopoulos, Kevin Basmadjian and Raven McCrory (2005) who introduce the problem of social presence – citing Short, Williams, and Christie, (1976) among others, they state social presence is the prominence (or salience) of interpersonal interactions. They continue:

Studies of social presence detail how teachers and students use personal language, first names, and emoticons, reveal personal information, and show interest in other people's lives to create social presence in online environments (Anderson, Rourke, Garrison, & Archer, 2001; Garrison, Anderson, & Archer, 2001; Gunawardena & Zittle, 1997; Lombard & Ditton, 1997; Rourke, Anderson, Garrison, & Archer, 1999; Short *et al.*, 1976). Students report being both more satisfied and learning more from online classes in which both the teacher and the students make themselves socially present, though social presence has not been found to predict substantive engagement with ideas or the development of meaningful discourse (Ben-bunan-Fich & Hiltz, 1999). (Anagnostopoulos *et al.* 2005: 1700)

This meaningful discourse could be summarised as part of the literacy (and digital literacy) of the classroom – a contextual expression and dialogue between participants. The social reality of Berger and Luckmann is the precedent for such a model of socio-semiotic relationships. The role of the teacher, and of the space itself, is lacking in the previously cited research, according to Anagnostopoulos *et al.* who use the case of their own online class, contextualised within the research of Giddens and his dialectic on globalisation.

As introduced above, Giddens sees modernity characterised by: “the separation of time and space, disembedding, and reflexivity” (Anagnostopoulos *et al.* 2005: 1701). The lifting out of space and time allows for the disembedding of space and culture, via two key mechanisms. First, the symbolic tokens of money that can be exchanged via a standardised system, and secondly the expert systems of knowledge which have permeated all aspects of our society – such as communication and logistics. The continual creation, and reflexive revision of new information at an institutional level reduces the importance of traditional values – this is mentioned above of course, but what Anagnostopoulos *et al.* suggest is that Giddens' work can be applied to the virtual classroom.

Students no longer need to be in the same physical space as each other or even in the same time zone. The space of education is no longer localised but centred on the virtual space – the virtual hyperreal space of the online classroom. While the student on the other end is situated in a physical space – a kitchen, or office for example – then it grounds the classroom within their physical space, albeit accessed via the portal of the screen. The disembodied classroom becomes easily replicable online, allowing, as Anagnostopoulos *et al.* state: “interactions become increasingly standardized and for the creation of new spaces distinguished by the absence of preestablished conventions and structures and the construction of new types of social interactions. Teachers and students can import conventional classroom practices, such as lectures and recitations, into the virtual classroom” (2005: 1703). The “new normal” of society when interaction in physical proximity has been portrayed as potentially deadly will, we suppose, culminate in the creation of a new standard, ideally constructed with updated digital literacy protocols in mind.

The absence of in-person, interpersonal, interactions would free the student and teacher from the previous structure of the classroom. The research conducted by Knutsson *et al.* demonstrated the flexibility of language within the VLE, shifting formality and register. The blurring of the online spaces leads to behaviours that students may express outside of the VLE bleeding into the classroom, while teachers may continue to try and enact physical classroom etiquette within the virtual space:

in the face-to-face classroom, basic conversational norms make it difficult for students not to respond to teacher questions in some way, whether in words or in gestures, and teachers have a range of tools available to them to demand student responses, including physical maneuvering, verbal demands, and, ultimately, banishing students from the physical classroom. (Anagnostopoulos *et al.* 2005: 1703).

While they reference gestures as an offline tool, it has been demonstrated previously that the online technology does allow for the gesture act to exist trans-medially. The key concern raised so far is the space of the virtual classroom and the limitations of the architecture, altering the power balance between student and teacher. The student may be more adept and familiar with the new technology, leading to increased confidence – i.e., the student is more digitally literate than the teacher. The transference of skills and behaviours would bring the student’s gaming language and customs into a discourse with the teachers’ offline formal classroom management. The space of the virtual classroom is not set up currently for either situation. The tenor is altered by the mode.

Continuing this theme, Anagnostopoulos *et al.* cite Norman Fairclough’s democratisation of the space: “Fairclough argues that the reduction or elimination of power markers relates to the tendency towards informality in democratized discourse” (2005: 1703). For Fairclough, the private/public boundary blurs, with the personal lives of individuals open to institutionalisation. The “expert systems”

of Giddens exercise increased control it seems. The altering of the power balance, within the classroom space, should be an example of the democratization of the discourse of course, allowing students some level of equality with the teacher to discuss opinions and ideas. The “shifting of the lifeworld domains and discourse into the public sphere” (Anagnostopoulos *et al.* 2005: 1704), when applied to the image schema formation of Mackey, suggests a route to hypervirtuality and recombination of the virtual space within the virtual space without reference or ground to the physical space.

This is equally applicable to the formation and development of self-narratives and identity within this hypervirtual space of virtuality referencing and manifesting as virtual signs, should the student and teacher choose to present themselves via their virtual selves. The avatar-to-user emotional response has been demonstrated already, so the question might be, if the avatar enables relationships between users anyway, does it matter if the student is not physically represented? This indeed could be positive for students wishing to express themselves as alternative gender or exploring their sexuality (Craig, McInroy 2014; Green-Hamann, Sherblom 2016; Marciano 2014). Whilst the effect of only interacting with virtual avatars has not been empirically researched due to the obvious ethical concerns, the philosophy of interacting online only seems to suggest a plethora of floating signifiers, and potential abuse. Amy Bruckman studied the effect of gender on interactions in MUDs (Multi-User Dungeon or Domain), which were text-based spaces for role playing games. She writes:

Female characters are often besieged with attention. By typing using the who command, it is possible to get a list of all characters logged on. The page command allows one to talk to people not in the same room. Many male players will get a list of all present, and then page characters with female names. Unwanted attention and sexual advances create an uncomfortable atmosphere for women in MUDs, just as they do in real life. (Bruckman 1993)

The impact of gender swapping avatars then could lead to young female students opting for non-gendered or male avatars to avoid such a climate. This would seem like placing the onus on the victim to change rather than correcting anti-social behaviour online and offline. While the potential to negate gender and represent all students as neutral avatars could prevent such bias, perpetuating the negative stereotype and placing emphasis on the victim’s behaviour is not appropriate. Adan Jerreat-Poole (2018) references the so-called “GamerGate” event when anti-women groups launched targeted attacks on women calling for equality and reduced-sexualisation in game avatars. Those who harassed and sent death threats were let off however:

Their insistence that digital harassment is not real harassment, that digital embodiment is not real embodiment, and that online life is not real life works ideologically to mask the connection between offline and online violence against women and the way in which women’s self-narratives are turned against female bodies, wielded as modes of attack, and made to silence or cast doubt on women’s testimony. (Jerreat-Poole 2018: 473)

Jerreat-Poole confirms the risk in a lack of co-ordinated models of interaction and embodiment online. While research finds the Proteus effect can affect offline identity and behaviour via the online avatar, the institutions of law contest that digital embodiment is not serious. Within the VR+ space, even if identity in the classroom is not fully obscured by avatar masks, the digital space still creates an environment that must be recognised as psychologically impactful on users (Lumsden, Morgan 2017; Franks 2011).

Significant research has been devoted to the online identity – or persona – of young internet users however, with John Seely Brown (2000) highlighting the digitally literate student learns differently to the non-digitally literate adult:

our observation of kids working with digital media suggests *bricolage* to us more than abstract logic. *Bricolage*, a concept studied by Claude Lévi-Strauss more than a generation ago, relates to the concrete. It has to do with abilities to find something – an object, tool, document, a piece of code-and to use it to build something you deem important. *Judgment* is inherently critical to becoming an effective digital *bricoleur*. (Brown 2000: 14)

The student as a *bricoleur* online suggests advanced digital literacy skill but this can only really be true while the student is adapting faster than the technology is developing; it leaves older students adrift without the tools required for such critical thinking. This does not solve the problem of the subjective self being lost among the virtual objectivity of the online space: “an order of pure decision [...] can nourish itself only on its own values and cannot rely on an objectivity that supposedly transcends it” (Ewald 1993: 225). This phrase by Ewald about nature itself is used by Alessandra Lemma in their article “An Order of Pure Decision: Growing Up in a Virtual World and the Adolescent’s Experience of Being-in-a-Body” (2010) where they analyse the psychological impact of disavowing the physical body.

The negating of the physical in virtual education – and virtual society – is a trend that has been incrementally developing, with the avatar as perhaps the final example of complete virtuality. Research into the effect of immersive learning and avatars in the virtual classroom is slim on data, especially between different realities (VR, AR, MR) and mostly it is from the student perspective: (Sharma *et al.* 2013; Hu, Zhao 2010; Jones 2009). More research is needed on VLEs, embodiment, and avatars overall.

Virtual beings similarly affect the classroom as a contextual element. The inability to distinguish between real and virtual people online would, to us, seemingly affect the trust and connection a student could place in another online-only entity. The impact of chatbots, which use relatively basic grammar rules to communicate, is already recorded, with focus on the potential emotional impact (Shum *et al.* 2018). The motivation behind chatbot use is still primarily productivity (Brandtzaeg, Følstad 2017). However, Liesbet van Zoonen, citing Fischer, highlights the gendered bias of different communications: “Industry leaders and professionals objected to such uses of the telephone. They considered

chatting on the telephone as ‘one more female foolishness’ (Fischer, 1992: 231)” (van Zoonen 2002: 7). The mediatization of such narratives requires education that nullifies such bias, or we risk pushing people towards the hyperreal avatar to escape prejudice.

The psychology of community interaction via an avatar, especially within the trans LGBTQ+ community, can either be negative or positive: (Blodgett *et al.* 2007; Morgan *et al.* 2020; Baldwin 2018; Griffiths *et al.* 2016). The role of digital literacy is to highlight the nuances, the transmedial nature, the emotional connection people feel to their avatar, especially within the classroom.

Following this, we must ask is the classroom online representing students as icons, indexes or symbols? When interacting with someone face-to-face, it is perceived that the physical person is the icon of the personality of course. However, online the separation and reproductions create the video or photo as an index at least, while the abstract, removed, avatar, is the symbol of the self.

However, this alters when someone may not identify with the biological body they were born with. Thus, while we do not subscribe to the cartesian separation of mind and body, the avatar may be a more accurate representation of the self, and the user. The lack of research in this matter necessitates speaking in hypotheticals, but the concern is still one of digital literacy, and hyperreality, and the future of VLE could be a key space for study.

Relating to this comes the bias architecture has when it comes to offering different users the freedom to fully create, customize and personify an avatar that they want to embody within the online space. With programming in English primarily, (Raj *et al.* 2018; Guo 2018), one’s English ability, as well as access to the hardware and software, could create a situation where a hierarchy of users is formed, with those who are able to use the software more easily and effectively able to form deeper and more nuanced identities online.

However, the converse of this is that those with the greater digital literacy skills may be at risk of losing touch with the physical self through the deeper embodiment their greater skill enables. Such a situation is evidence for the transmedial nature of the digital literacy model.

This problem has been researched by us (Davidson 2021) and the issue of bias from programming skill is not just one of identity but also one of learning and functioning within the online sphere. The cultural bias exhibited by, for example, coding languages and logic, is an act of disembedding and reterritorializing entire groups under the paradigm of the Western, Anglo-centric digital eco-system. Regardless of the potential for hypervirtuality, the prevention of this through digital literacy education for all is paramount. The offline effect of actions online has been detailed above and the institutionalisation of such inequality could drive the virtual hyperreality of self via ignorance.

The notion of power and control in the classroom changes in the online space. The teacher is potentially decentred, no longer positioned at the front of the physical classroom, (Anagnostopoulos *et al.* 2005; Jeris 2001). The teacher has a responsibility to educate the student, including the instruction of digital literacy. However, this does require the teacher to be educated on the methodology them-

selves (Wilson, Stacey 2004). This is a situation where a metalanguage is needed to help bridge the gap in understanding and enable the formation of new knowledge within the *umwelt*.

Virtual humans alter the schema of not just student but also the teacher, whose *umwelt* will be constructed from the dialogue and interaction with the students. Should some students emulate or even replace their own presence with a virtual being then the relationship changes. However, is this different to the transgender student who interacts through an avatar that is the representation of their inner, true, self? There is a difference between the student and the act behind the presentation, but the teacher and other students will need to be educated to be aware of the difference, without risking offence, misinterpretation, or conflation. As a process of semiosis, the avatar as a symbol of the student could be taken in a similar way as the symbol of the work produced by the student, negating the biasing effect of the identity of the student in the grading scheme. The risk here is the transmediality of identity becomes negated – and the connection to the physical self in the identity formation within the classroom is lost. The virtual persona is achieving the grades in school. This situation highlights the need for discussion and research into the topic, as well as the reason for this thesis existing.

Perhaps the question becomes, is the virtual representation of the student within the classroom (itself online and virtual) a mirror or the formation of a new persona? Is the student that the teacher interacts with the icon of the student or the symbol? David Hill states:

There is no connection between icon and object – avatar and user – if we adopt the avatar-as-icon: there is only resemblance. This is further unsatisfactory since not all avatars resemble their users. [...] The avatar-as-index would point back to the user, like a sign post, fulfilling our desire for the presence of whomever we communicate with online (Hillis 2009, p. 109). Peirce noted that photographs were not mere resemblances – icons – but rather indices. (Hill 2013: 78)

If the icon includes portraits, then is the avatar a photograph of the user? Ladislaus M. Semali wrote extensively on the issues of the transmediation and identity in the classroom. Introducing the topic, they state:

Borrowing from semiotics, the authors of this volume explore as educators and researchers the relationship of visual and verbal abilities found in students. Our central concerns are two: First, what is the relationship between what the students know and the signs they encounter in their classrooms about race, class, gender, disability, and sexual orientation? What meaning do they make of these semiotic systems? Second, how are the signs representing race, class, and gender combined into codes. (Semali 2002: 1)

They continue, referencing Peirce, to write that realistic portraits are iconic, while indexes are embodied (Semali 2002: 2). There is clearly much nuance with the question of whether the avatar is an icon, index, or even a symbol. We find Hill to be a telling quote however, since it suggests that the indexical avatar refers to

the user. In the hypervirtual future, the avatar is no longer the index, signifying the qualities of the user embodied by the avatar and instead it is iconic, a direct representation of the user. The move from representation of quality to direct representation is perhaps the death of the human in the avatar communication model.

Hill, however, takes the discussion to another postmodernist – Jean-François Lyotard – and “tensor”. The tensor is a sign of two sides, one of the semiotic and one of disguise, which flows out of the system of meaning it is in and escapes into new systems. The encyclopaedia interconnectedness of the sign from Eco and Peirce places the sign within the context of the addressee and society, and thus seems more appropriate to us as a model of semiosis. Hill states that the tensor extends the human outwards, allowing the avatar to create a space of potentiality where the user is signified beyond the avatar:

In short, if the avatar is a tensor then it extends the user forwards such that they can be encountered; since the meeting of two users so extended is also a tensor, it is a sign that intentions and desires must be limited, that responsibility must be taken not to do harm to the intensity of the other (moral humility); and where the encounter with the other (grounded in the tensor) brings suffering to attention, that responsibility needs must become a response to alleviate said suffering (moral enthusiasm). (Hill 2013: 82)

The message-sign is the extension of the user, and as such moral and ethical consideration should be applied to the avatar as if it were the user is appropriate and worthy. We can see this with the research into the Proteus effect. The role of the tensor is an interaction, an intensity and tension, between two extended bodies. This highlights the transmediality of the current avatar-user communication model, one where the avatar is the extended personality of the offline user.

However, we concern ourselves with the potential loss of the human in this model, and the idea that the physical human becomes just another space, like the bricks-and-mortar city. It has no communicative value beyond acting as canvas – or boundary – within which the interaction between *umwelten* occur. The question becomes, is the avatar a tool for freedom of expression or the substitution – a proxy – of the user within communication? The proxy would be iconic, like the Hatsune Miku avatar or Kizuna AI models, since the voice actress or the actress that is videoed performing the dance routines is not the focus of the sign-user relationship. The audience is interacting with the avatar – the esoteric language and body movements that would be out of place except in the context of this avatar refers to this, such as describing oneself as an AI or referencing that they live in an infinite virtual white space. It is notable that Miku and AI both, on occasion, reference the “other” who provides them a voice and thus creates a separation or gap between them and the physical human. The audience, whilst presumably aware of the virtuality of the avatar, still treats the avatar *as* the sign of Miku or AI. In the classroom this would alter the schema of developing students should students hide their offline selves behind such avatars.

Digital literacy can help contextualise identity online within the space offline. This transmediality of identity enables the self to remain grounded in the physical space, perhaps as one of the last sign relationships to remain fully transmediated. This digital literacy should begin in the classroom, where students are forming their identities and self-image schemas. However, the move to online education in the wake of the COVID pandemic risks allowing institutions – especially Western, English, institutions – to commodify and dictate the eco-system within which such digital literacy and identity formation occurs. The teacher can, and must, educate their students but how can we educate the teacher to instruct outside of the VLE, to make use of the digital signs online to teach about the signs online? The non-English speaking teacher is just as disadvantaged as the student by the architecture. Knutsson *et al.* state that the designer and the teacher-as-design should work together to construct the VLE (Knutsson *et al.* 2012: 244) and create a space that is conducive to education.

We concur with this but with the additional statement that transmediality – offline – identity signs should be included within the semiosphere of “identity”. The online-only identity model would seem to us to be the finality of “reality”. The question of whether the teacher can educate while learning within the same instance leads us to back the question of “being” in the space, versus the mere “doing” of the task, as a variation of the work by Heidegger. We will address this critique in an upcoming section.

2.4. Findings of the analysis

Hypervirtuality does not require reality but rather the physicality of the space – the boundary within which the virtual and “real” are overlapped, replaced, and otherwise embedded. This is the virtual evolution of the hyperreality. The language of physical signs is the information that Baudrillard and Eco were concerned as losing meaningful substance as a real human experience. However, these signs have progressively become digitised, with the reaction to them at a sensory, emotional, level being as real – or maybe even more real – than the real signs. But within the totality of the virtual space, we see the promise of the digital utopia – a virtual space where we can experience something “significant”. *The Matrix*,² the cyberpunk aesthetic, as the anti-commerciality of social reality, attacks the institutionalisation of the floating signifier while becoming itself, codified by the language and pop culture of the current virtuality.

VR+ may take on the anti-mainstream sentiment, through its esoteric language, popularity with modern music and art, and the expression of a free identity that does not exist in the physical world seems to realise the utopian ideal. However, the companies behind these virtual spaces – Facebook, Valve, HTV, Microsoft and others – are becoming, or already are, the mega-corporations of the cyberpunk lore. The rebellion, the utopia, seems almost archaic compared the media. Rather than the cyberspace of William Gibson, with the adventure-inducing techno-jargon, we have cute emoji, ubiquitous meme-signs of questionable

humour, and the mundanity of the classroom represented within the software window. The anti-establishment future of the virtual has been institutionalised by the virtual government portal.

Before we begin the investigation into identity and the transmedial classroom, we want to consider another feature of the current digital architecture. Currently, any user of a website in the EU area will find themselves bombarded by multiple messages – popups. The purposes of these popups are two-fold, but they amount to the same thing – the end of the hyperreal internet, and the beginning of the institutionalised digitised reality. The popups in question inform users about cookies – small files designed to streamline the user experience online by storing data and tracking the habits of the user. Few people read the messages, most click accept and move on. The legislation behind such messages apparently educates and informs consents between the user and the website. The reality is the legitimation of tracking data. The popups request permission to provide notifications, to join email lists, to turn off adblocking software, or to advertise the latest offer. The bombardment of the user by so much information erodes the signification and creates signs that acquire the meaning of being another hurdle or obstacle to clear before accessing a website. The legalisation of tracking is thus viewed as another sign. The content is irrelevant. The experience of moving through “cyberspace” today, once seen to be dangerous, cool, and fun is now a robotic chore, with privacy viewed as boring (Williams *et al.* 2017). Perhaps this is most exemplified through the idle game. An idle game is a game where the player waits before “achieving” some reward which enables the wait to be decreased – but the next reward is incrementally scaled to necessitate a longer wait time. The lack of skill or story mirrors the mundanity that the virtual space now embodies. This is the culmination of the institutionalisation of the virtual space. This is the actualisation of hyperreal simulation of *The Matrix*, where signs have no value, except when exchanged within the game itself. The user is rewarded for simply waiting.

The VR+ future is currently exciting but will necessarily follow the same normalisation and the associated sense of being boring as it saturates the human experience. The hypervirtual will be the future attempt at promising a utopia of excitement, of signs that mean something. The future hypervirtuality will be valuable, because it is different to what one currently experiences, but is similar enough to be recognisably different, with language and aesthetics being pre-introduced by corporations now, with the legislation of the virtual space accepted as an obstacle. The need for digital literacy is increasingly urgent.

The previous investigation concludes that the process of deindividualization and the destruction of the physical space – a deterritorialization – is instigated at the very foundational layer of virtuality. The promise of freedom and individualism in one’s expression of self is realised for some, but not for all. Like any freedom, it is often at the whim and behest of some greater power that sees a benefit in allowing such freedom to continue – it is seemingly the decision of the technology corporations to allow the community to currently drive and direct its own narrative in the virtual space.

The problem of the underlying architecture as a biasing rather than a liberating element is starting to gain traction. It has been addressed somewhat by the increase in more visual languages – emoji for communication, real-time translation overlays, the programming environment that presents the visual design of the frontend negating some of the syntactical elements all seemingly aims toward the egalitarian opening of the potential of the virtual space.

However, the institutions of virtual space require mass labour to keep producing, consuming, and using the legitimising signs to maintain its establishment. To be the centre of the semiosphere requires the rigidity of a well-established language of signs and defined meaning. The ability to translate and manipulate the message may be useful for spreading the knowledge but the permeability of the translation boundary must be controlled.

For this reason, the classroom of the virtual, online, future will continue to regulate appearance and clothing. The ability to present an avatar of oneself will be controlled and restricted to specific parts of the online experience, with the literacy required to create such a model limited to certain specific use-cases – art class or fabrication lessons for example.

The argument, however, against the complete deconstruction of the physical into the purely virtual is that, reading into the descriptions of the hyperreal by Eco or Baudrillard, an element of the physical reality is required to make the hyperreal knowable. Without comprehension of a street in America, of the Wild West, of a mouse, the hyperreality of Disneyland falls apart. It becomes, simply, reality. The requirement of the mundane to be known to make exceptional, exceptional, leads to a duality between the relationship of signs. The hyperreal requires the education of the mundane before it can present the fantasy. This is – to use a media Rick Roderick cites in his lectures – why *Jurassic Park* begins with the excavation of the skeleton. The skeleton is the mundane reality of the dinosaur, while the hyperreal presentation of the “living” beast is presented as more real than the skeleton with pseudo-science jargon and so on.

The hypervirtual however would not recognise the physical as anything except a border, an expanse. Such a border delimits the omnipresent, decentred, flow of data in the metaphorical “cloud” as the mundane “realness” of the virtual life. *The Matrix*, *Tron*, the concept of the android, the cyberspace of William Gibson, all posit a future fantasy of where this data can create something more virtual than virtual. *The Matrix* overtly demonstrates “reality” as an exaggerated, impossibly virtualised simulation.

The truth is perhaps far less spectacular than science fiction presents it. Web 3.0 is not a fantasy nor is it an explosion of semiotic meaning. It is a quiet switching off of the human flow of information and a switching on of the AI assistant. The teacher who moves from educator to facilitator of online, self-directed learning has given up the role of information controller and handed power to the virtual learning environment. Virtuality is the new reality, with entertainment, marketing, and the spectacular moving from referencing reality to self-referencing their own the virtual architecture. Transmediality ceases to include the reality of physical space as identity and education becomes centred on the

virtual environment. Entertainment follows with references the younger generation comprehend – that is, virtual interactions rather than the physical of previous generations.

Literacy currently highlights the virtual as a simulation, a representation, of physical world artefacts. The virtual classroom presents the social space as a proxy for the physical classroom with the replication of rules, boundaries, materials and so on. However, there is no requirement to maintain the physicality of the virtual classroom when the physical classroom becomes uncommon. The spatiality of the virtual plane only needs to be contained within the physical boundary, but the information presented – the interfaces, the linguistic text – are increasingly virtual in presentation. Why is this different to the written text or TV? As Baudrillard states, the virtual space is the negation of a dimension while apparently adding a dimension. It is not the reproduction of a physical reality but the creation of a new one, and by extension, current models of literacy and identity will not apply when our knowledge schemas, our umwelts, only receive such virtualised data causing a textualization of the self.

Architecture, like space, is a broad term and there have been multiple tangents and threads of investigation introduced. The core argument is that digital literacy is imperative if we are to make use of VR+ for freedom of expression, to append our offline identity, while not losing touch with the physical self, of ourselves and others. The demonstration of how such literacy can be applied – within the classroom space – also highlights one of the dangers of the future “new normal” society, where social distancing and inclement physical conditions encourage or necessitate the increased use of the virtual classroom. The extremes of the virtual society are unregulated and as such hold attraction to the perverse, with role play and sexual harassment as the two sides of such libertarian spaces. However, the institutionalisation of the spaces suggest that the regulation of architecture is coming but the roles of online and offline in construction of social reality becomes increasingly based on hyperreality and the exaggeration of such hyperreal communication. The potential for exacerbating the prejudices and inequality of physical society is demonstrated within this chapter. The duality of social construction means the exaggerated negative aspects of the hypervirtual may influence identity offline. The increased mainstream exposure given to online education, virtual conferences, VR travel, and remote working, along with the entertainment industry – from Shakespeare to electronic dance music – embracing the use of the virtual world as an alternative to the restricted, abnormal, physical space – all creates a normalisation effect upon the virtual signs.

Commerce, government, pop culture, sports, and marketing are using and habituating the language, actions, and identities of the online user. The hyperreal virtual space is now the “new normal” of the post-COVID society. There are several consequences, but the main one, for us, is that normality is, essentially, boring. Habits are sold as the new entertainment, games based on waiting, chores, and simulations of mundane household tasks demonstrate the toyification of everyday life. Travelling to another country is simulated in a game where the player spends 6hrs in a simulation of an economy plane seat and lists the ambient

sound of a crying baby and a magazine with sudoku among its features. While this is meant to be taken as “fun”, the game *Airplane Mode* is indictive of the way the digital space is being used to reflect and normalise the mundanity physical.

The representation of the mundane in the virtual creates a complex situation. The virtual sign becomes institutionalised and normalised. The repetitive nature of games that gratify through chores and waiting change what the society considers ludic. This extends to identity via the introduction of cosmetic apps that apply makeup in AR, continuing the blurring between the physical and virtual. While education and identity have been clearly demonstrated to be deeply entwined with the loss of the physical sign and the requirement for digitally-focused linguistics, there is another sector that is corrupting the hyperreal/real boundary – especially during the pandemic – and that is music.

“Live” concerts have been streamed on YouTube and other websites for several years, and the technology was applied copiously for bands willing to play to a virtual audience during the near global ban on travel and gathering. A new type of concert also became more common, one that differs from the viewer merely watching a stage show on a screen, by using VR technology. Such concerts allowed users to watch a concert within the virtual space via a 3D avatar. The spaces manipulated scale, perspective, and reality, while also presenting the musician as an avatar. This avatar moves in accordance with the musician, tracked in real time. The musician does not require the wearing of a VR headset to see the audience. Additionally, they can show a live feed of a camera in the studio showing behind the VR avatar.

This hyperreal situation becomes more complex when we consider the virtual avatar of a performer like Hatsune Miku, who performed several such concerts with live musicians. While she is clearly a recorded layer not interacting with the audience or band in real time (a standard augmented reality situation), the streamed concert of Kizuna AI merged the live performance tracking with a live musician creating the appearance of synchronicity. She interacted with other VTubers and the camera moved through the space in a way that would be impossible since the camera itself was never in shot of other cameras – ergo the cameras exist invisibly to each other, suggesting the whole space is indeed, a virtual stage. The blending of these realities leads to the ultimate situation where the physical people, the actress, the DJ or band member, are at the back, occluded by the virtual sign, within the virtual space. The audience is virtually interacting with the stage in near anonymity, sending emotes to demonstrate approval.

The architecture – the linguistic elements of the digital cultural text – has been demonstrably shown to already impact the construction of social reality for users offline and online. While VR and AR enable a difference of space, MR creates a cultural text that creates a formal, artificial reality of seemingly organic referents. Web 3.0, as an example of MR institutionalised within society, turns everyone into an avatar, completed only when appended by the digital information stored externally to the physical body. The simulation references the simulation, while the physical referent is negated and consumed by the MR identity constructed by the language of the near-omnipresent online culture, beginning within the class-

room. The freedoms of some within this new hypervirtuality is offset by the restrictions upon others, however.

This hyperreality is due to the presence of the physical person but the replacement of the human with virtual beings would suggest a hypervirtual situation and the near death of the offline *ab initio* as the normalisation – institutionalisation – of language, society, space, sense of presence, and other sensory data are presented via virtual origins and the resulting individual interpretation creates a virtual identity in a virtually interacting society.

3. SOCIAL REALITY IN COMPUTER (TRANS)MEDIATED COMMUNICATION

3.1. Elements of social reality

We have discussed throughout this thesis the role of human subjectivity in social construction, and when such subjectivity is almost completely digitised, we risk losing the physical grounding. COVID has sped up a process of transitioning the physical experience into the virtual and legitimised the experience of the virtual sign as an emotive, informative, viable alternative to the physical. This chapter will present some examples of the apparent “death of self” – situations where the referent of physicality has become consumed by the self-referencing virtual-in-virtual space. These examples are spaces where the cultural text has transcended the virtual simulation of the physical to the virtual simulation of the hyperreal, becoming a hypervirtual semiosis. The construction of social reality and the symbolic interactions of the semiosphere mixes realities into a single complete chain of semiosis, but one that increasingly negates the physical in favour of the digital.

In the previous chapters we have researched the micro level of how signs – offline and online – are used by individuals to situate themselves within the society and direct behaviour or language. This symbolic interactionism is contextualised by the macro investigation of social constructivism. How societies create knowledge and institutions is a larger web of interactions arising from interactions between the smaller clusters of individuals within a dialectical exchange of value and meaning. This process of interpretation, meaning, and exchange, is the semiotic process that describes how signs signify. Thus, the semiosphere takes oral language as fundamental to the process of sharing values and meaningfully interpreting what others do and say. The semiotic processing of individual *umwelt* precedes the interaction between *umwelten*. The exchange of knowledge and identity is therefore both an individual semiotic process and a society-wide operation, with such models being dialectical and two-way in their meanings. Berger and Luckmann have demonstrated the institutionalisation and objective/subjective signs in the construction of social reality (culture).

For this chapter, we take concepts like cryptocurrency, or the virtual being which exemplifies the floating signifier, and contextualise it within a macro concept like the death of subjectivity in the digital society. We then analyse how transmedial identity (and the semiotic process of meaning-making from each self-sign element) is demonstrated here as the cause of hypervirtuality, while inversely being key to the digital literacy we propose as being antithetical to hypervirtuality. By educating young people about the placement of signs within the wider grammar of society, we show that their identity is a transmedial text and not a purely online sign but one constructed offline too.

Institutional elements like cryptocurrency create signs that normalise the purely digital within the MR space of society. Commerce and marketing drive a large

part of this process – we have already discussed the commodification of identity online – and digital relationships are changing the way people “use” digital objects. We have mentioned sex and simulated love in the digital space, and the use of virtual beings to create emotive relationships between people and institutions like shopping brands, is an indication of the new MR society. Hypervirtuality arises from Web 3.0 when the individual and the micro interactions are subsumed into the digital macro by such floating signifiers which alter how we interact with objects. Heideggerian philosophy demonstrates the changing value placed on an object within society depending on how individuals interact with it. Such interactions construct the moral norms of the wider society too. Within the digital space, how we emotionally respond to the virtual representations of identity will dictate the morality of Web 3.0 and describe any hypervirtual interactions within it. The ethical issues of a virtual rape enacted against a virtual representation that has physical, emotional, consequences is a demonstrable example of the problem of hypervirtuality magnifying the extremes of hyperreal/offline culture and neglecting the individual behind the supposed floating signifier of the avatar within a ubiquitous digital society. As a society, whether or not Web 3.0 takes culture into the hypervirtual, the signs within the digital space must be considered as potentially more than mere puppets, tools, or toys.

The collaborative culture of the online space has pulled together to remove the boundaries and replace the physicality that once seemed irreplaceable and encouraged the culture of civilization to conduct their normal (or “new normal”) lives on the virtual plane. The social reality that children form within their classes has inexorably altered with the advent of increased virtual education.

It is, of course, a marvel of technological achievement that most aspects of society can continue without the requirement for the physical space or interaction – such a process has undoubtedly improved lives. But the process has been a continuing evolution from modernity to postmodernity accompanied by the fear of losing our physical, tangible, society.

This chapter covers the collaborative impact upon the individual of the virtual classroom, the avatar, and the blurring of the physical and virtual space. It also investigates the freedom one can have in their identity, the positive impact of the new, seemingly utopian virtual fantasy world. However, like all utopian ideals, it is based on the simulation and mirroring of the current age. The contemporary era that this thesis is written within is one that has been marked by the negating of the scientific fact, the rise of misinformation, the loss of trust in the bricks-and-mortar institutions, and indeed in the corporations that control the information. The twist in this narrative is, of course, that those same corporations have been enabling, encouraging this spread of fear.

The Gulf War was – to Baudrillard – fought on CNN as he wrote in his text *The Gulf War Did Not Take Place* (1995). Information and performance are the new objective reality. The media have been constructing and re-constructing the reality of society through a controlled presentation of hyperreal media. The social reality of the TV advert has become the reality of the wannabe traveller, which then becomes the Instagram story – where influencers travel to “Instagrammable

places” and take edited, staged, photos with the pretence of the lifestyle being natural, candid, or authentic, since it was shared so casually on a site like Instagram, which anyone can access. At least, anyone with resources, skills, time, and the appropriate marketable aesthetic for Instagram.

Social media created the phantasmagorical, mediated, narrative of (hyper-real) information that led to President Trump – an evolution of the television media that created the movie star President in the form of President Reagan – the “Teflon President”. Twitter and Facebook seemingly sought – and became – the replacement for TV. 30-minute shows became the 240 characters of the social media post. The medium is message perhaps, but is the medium still social media?

As a generation evolved within the TV narrative, so a generation has grown-up with the narrative of social media. The mistrust of the hyperreal has been consecrated in the era of President Trump and legitimised by the social media companies themselves. But the consumption of the physical reality by technology has not ended, it has changed to be more pervasive, less overt. The fight against COVID has been fought online during the construction of this thesis and demonstrated not just the extremes of the hyperreal but also the consumption of it. Reality via modernism ended arguably in the post-World War Two era of the Cold War with mass communication, media, computers, and TV. During that time, sociologist Erving Goffman began his work into the interactions and presentations of everyday situations, significantly in the field of media, ritual (or hyper-ritualisation), identity, and the modern consumer society (1979). In his text *The Presentation of Self in Everyday Life*, Goffman suggests that within society we perform as the audience, creating mystification using information and ritualising performances (1956: 44–46). The social construction of reality and society present in Goffman, and Berger and Luckmann, highlights the roles of the individual as a performer, the role of society as audience, and the reciprocal institutionalisation of the signs by the society. Mass media, of course, exaggerates such institutionalisation. Fernanda Carrera updates Goffman’s research with cyber-advertising, stating:

The understanding of cyber-advertising as part of a transformation of contemporary sociocultural practices, then, presupposes its engagement in what is understood as cyberculture (Lévy, 1999). Understood as “a new relationship between technique and social life” (Lemos, 2008, p. 15), contemporary culture establishes new forms of sociability by allying itself to the suggestions and developments of digital technologies. By allowing the interweaving of these technologies to the minutiae of life in society, revealed in the daily life of social relations, culture is seen in transformation, whose evidence is also translated into advertising constructions impregnated with stimuli to participation and technological interaction. (Carrera 2019: 5–6)

Carrera continues with an analysis of the advertising in the digital age, gender, and identity, with reference to Goffman, demonstrating a meaningful continuation of such research and the requirement for continued updates – especially with the authenticity of the message. While discussing brand marketing, this notion can

easily be applied to the authenticity of the presentation of the self within the society and – reciprocally – the authenticity of the cultural space.

In contrast to the nihilistic Baudrillardian perspective of consumerism, Black Hawk Hancock and Roberta Garner write: “Goffman provides us with the dialectic between the protean, media-scripted, dis-integrated, hyper-ritualized self of contemporary societies and the grounded, embodied, territorially-coherent self that exists in some form in all societies” (2014: 164). However, they state, the hyper-ritualisation of performance somewhat aligns with the hyperreality of Baudrillard. Goffman initialises the theory of a dialectic formation of society – and individual reality – which Berger and Luckmann continue. Within the semiotics of the *umwelt*, this grounding of the society (institutionalisation) and the self-as-performance, is spatialised by the society itself.

Some suggest that Goffman was a proto-postmodernist, maybe even creating the postmodern movement, although it is more accurate to state that Baudrillard, among others, was not a postmodernist *per se*, due to the significance placed on the space and time of previous eras on the current age (Hancock, Garner 2014). We view that the historical narrative is no longer meaningful but rather an illusion of images and slogans simulated by the contemporary media. Adverts featuring WW2 battles to sell the ethos of a supermarket chain are an example of this, and so we would argue that hyperreality now is occurring in the postmodern.

The messages of information, identity, education, play, religion, are all elements of society that have proceeded to become (trans)mediated and appended by the virtual sphere to such a degree that significant tracts of the human experience could not function without the virtual. Those that refuse the online space have become delegitimised by the institutions of society – the individual is delegitimised by this process of deindividualization by the relationships described above between self and meaning.

The future however, in the post-Trump era, in the “new normal” of online spaces as a foundational element of social reality, lacks physical substance. The Spatial Web – with AI predicting its user’s needs and wants, and virtual beings increasingly taking over from the physical interactions that cannot be experienced in a socially distanced future – is poised to be the new reality. Identity will be formed and constructed online – as it was offline – but without the constraints of the physical reality. The musician, the entertainer, the media (journalists and marketing agents alike) exaggerate the signs of the virtual, not of the real. The reproduction of the hyperreal theme park in the virtual realm of *VRChat* is the new hyper exaggerated sign.

There is no concrete term to describe the complete erosion of hyperreality as the grounding of the social construction of meaning. We have used hypervirtuality because the process of travelling through the Spatial Web of the future mirrors Umberto Eco’s tour of America. The façades and illusions transcend the limitations of pure fiction to become its own non-fictional truth. The narrative of the ubiquitous virtual space completely consumes the physical.

VR, far from being liberating, restricts and confines the user to a mapped physical boundary, tethered by scanners and hardware. The AR app on the mobile

phone enables the dullness of reality to be overlaid with something more interesting, a content layer that maintains attention and provides information that the mere physical space could not offer. MR merges the two, offering a blend of the virtual content, seemingly grounded by physical reality. However, this reality ceases to be relevant as increasing numbers of overlays, more data, and more information, are delivered to the consumer. These are reciprocally produced as the enticement of more content, more rewards. This reality is the figurative, substance-less simulation. How this process of hyperreality in the fully virtual world (hypervirtuality) is changing the notion of concepts of identity and transmediality in the social reality of VR+ is the focus of our final chapter.

3.2. Conceptualising space and architecture in virtual identity

As the final data chapter, we will draw on much of the previous research already discussed in the thesis – the space is the substrate to culture, and architecture adds a textualization to the information that controls the power.

The control of the human and disappearance of the self is continued, using Foucault and Baudrillard, with Eco enhancing the discussion on hyperreality. The central theme of this final chapter is to summarise how the previous research culminates in the hypervirtuality of an always online society, and how transmediality in our identity formation during the teen years – which Georges highlights as a particularly fragile time – should be structured by an updated digital literacy that not only keeps users safe, but also allows for the freedom of expression to be used constructively, sensitively, and without misunderstanding or bias. Additionally, this digital literacy model keeps the transmediality of signs by textualizing the self as a separate mode to the virtual signs around it, rather than deindividuating the self into the mass media, virtuality, of social media in Web 3.0.

The cyborg is an example of the transmedial identity demonstrating the use of technology to augment one's identity. Blurring the offline and online body space has been physically explored through body hacking: “an exploration of Eva Hayward's concept of transbecoming, exploring the perpetual change of the body in transition, particularly in relation to posthumanistic transformations” (Olivares 2014: 287).

Continuing the feminist discussion, of special interest to this thesis is the delicate balance between freedom of expression and the loss of grounded identity within this ongoing dialectical exchange. The positive, creative, expression of exploring identity has been explored with the curriculum of the “Cyborg Selfie” by Ernest Truly, with the intention of guiding students through the creation of an online persona:

In each implementation of the curriculum, between five to ten percent of the learners struggled relating to the concept and seeing themselves as unified. The remainder of the group will say that they understand the concept, and five to ten

percent of that group will enthusiastically relate to the concept and seem relieved to find camaraderie within the perception of a fractured self. (Truly 2017: 171)

The key to addressing identity is education and discussion. Digital literacy is lacking in terms of educating about race, gender, sexuality, and identity but it could be the key to equality: “Digital literacy provides access to the power available through technology and media, enabling girls to more effectively resist negative media messages, become media producers rather than solely consumers, and claim their rightful place at the virtual table” (Preston-Sidler 2015: 203).

To enable a freedom of expression at a gender level is right given the social awareness of gender as fluid, but we should be careful about the reasons behind such shifts. In contrast to the “extreme otherness” of body hacking, some virtual users may be looking to “fit in” or take advantage of opportunities biased against their offline identities. Such a situation suggests society is failing to provide an equal footing for all people offline and online, and the institutionalisation, or normalisation, of such processes is worrying to say the least.

Sex and relationships will be a significant discussion – indeed we have already discussed virtual relationships but within the upcoming chapter we find it necessary to address it further. Sex normalises the abnormal and society often strives to institutionalise behaviour it deems abnormal (homosexuality for example). The role of sex as a driving factor in the move to the virtual/hyperreal space should not be underestimated, especially with expression, experimentation and access considered. Studies have shown significant differences in gender and racial bias between avatars, for example, female avatars in *Second Life* display more naked skin than men, which potentially indicates a hyper-sexualisation norm among female avatars: “the propensity of female avatars to reveal naked skin persisted despite explicit cultural norms promoting less revealing attire” (Lomanowska, Guitton 2012: 1). While the study lacks data about the gender of the users, beyond the overt pejorative consequence of hypersexualised, nude, females, there is perhaps a rebellion against restrictive, gender-based modesty in wider society – suggesting a possible freedom within the online.

Attractiveness and gender biases actions within the virtual space: “Attractive avatars received more help than less attractive avatars, but female users received less help than male users when represented by avatars that were less attractive or male” (Waddell, Ivory 2015: 112). The consequences for such findings, especially in a society where online identity is free to choose and is one’s primary identity, are interesting. Assuming such bias is bleeding from the offline into the online, then the ability to negate such bias through the manipulation of the avatar may be better than the offline alternative. However, that bias exists, and the role of mediated society in institutionalising such gender bias – as presented by Goffman’s hyper-ritualisation of gender in the 1970’s – is especially worrying.

Similarly, racial bias can be seen in a game space for younger players, additionally creating a situation where media is normalising bias, (Kafai, Cook, Fields 2010: 43–63). This is despite the collaborative, participatory nature of the internet, which often acts at odds to the institutions of government, as Nicholas

DeArmas, Jennifer Millar, Wendy Givoglu, David Moran, and Stephanie Vie demonstrated with the contrasts between public and “counterpublic” hashtags following the Orlando Pulse tragedy (2019).

3.3. Drawing together space, architecture, and identity formation

The social reality of online communication has the potential to include every facet and nuance of human life and semiotic understanding. However, for the purposes of this thesis we are going to maintain a clear focus around identity formation online, the transmediality of contemporary signs of identity, and the relationship between the offline and the online. The future of transmediality – and the seemingly inevitable transition towards the online-only, hypervirtual, reality of the Web 3.0 future will be discussed in its own upcoming section.

However, the contemporary model currently relies significantly on the message being formed by the offline and the online working within a single, dialectical, relationship. Such a relationship is present for both addresser and addressee in most relationships. The social reality model of Berger and Luckmann has been a useful beginning, but it lacks the finesse of language that this thesis requires – most notably the use of real to mean that which exists. When discussing the reality of the virtual plane, what is real and what exists are not necessarily interchangeable.

For our investigations, we have used Baudrillard, although it is clear that his theory lacks substantiated evidence and neglected the virtual-in-virtual space. Thus, to provide support for the model we will continue to use Lotman’s semiosphere model where translation occurs at a permeable edge of the cultural grouping. Additionally, Eco’s theory places the interpretation of the viewer within a web of contextual social meanings completes the framework which has allowed us to investigate the semiotics of space, language, and hardware so far.

The final role of this investigation, and our methodology for tackling it, will be drawing together the space and architecture discussions above, and discussing a topic that we introduced at the start of the thesis – the medialization and deterritorialization of the online community. Given the role that language plays in the topic, as well as the ability to access and make use of the hardware, such a discussion is better investigated within this chapter. The collaborative, participatory nature of reality, the way meaning is interpreted from the social context rather than objectively applied, and the fluidity of translation across technology and media, are our recurring themes. The positives of being free to choose one’s identity online versus the more prescriptive, denotated, identity within the physical space highlights equally the (perceived) ethos of the society within the physical versus the online society and the technology available to each group.

Note the use of “perceived” above because the question of whether the online society *is* free or whether there are the same constraints and controls is something

we have continually referenced. Foucault predicted, from the work Jeremy Bentham, the panoptic society where people would work and live under the gaze of the overseer. Today, we willingly post our movements, hobbies, likes, fears, political views, shopping habits, work, and education online. We use social media to express our gender identity, whom we love, whom we hate, and share photographs, conversations, GPS data, and spending habits. The panoptic society of control has seemingly become complete.

The data we share forms the reality of social construction. The relationships we form online are grounded in the reality of the data we upload. These may be false – we may lie about our weight, height, interests and so on when searching for a romantic partner on a dating app. But the lie is still an input from the user, interacting with a device, in the physical space. The message, the communication that subsequently forms, is mediated by the computer. The algorithm used to match your inputs with another user is as biased as the human who wrote it. The offline thus legitimises the online, with hypervirtuality beginning where the online subsequently writes further online spaces – via AI or self-modifying software.

The freedom arises however from the virtual avatar – a mask essentially to hide your physical identity. Gender, age, location, voice, physical proportions, race, and so on can be completely disguised by the avatar. The acceptability for doing so varies between context – with the space of *VRChat* encouraging it, while instances of it occurring during formal meetings online are presented as humorous anecdotes for the news. This is where digital literacy is required, because contrasting a lawyer presenting himself as a cat during a legal meeting with the situation of a student using AI to emphasise different features to present themselves as the gender they identify as requires very different reactions from the society at large.

From a semiotic perspective, how the user interprets the sign will be influenced by the wider society – if a cat avatar is emotive and nuanced enough to portray the emotions of the user behind the avatar then it only differs from the filters in so much as the cat is considered a “joke” and not acceptable.

The conclusion to this investigation will be the result of Web 3.0 and identity in the hypervirtual world. The following section will discuss the digitisation of the human, but within the context of what has been discussed, the loss of the transmedial cannot truly occur when there is some requirement by the user to physically input the data. That is, the choices we make to upload and share data automatically add a transmedial aspect to the interaction. The promise – or threat – of Web 3.0 is a ubiquitous monitoring and interaction process that does not offer the user a choice. Such institutionalisation of the techno-sphere adds an element of control and power, with the associated inequality consequently.

Not having a computer per child during the pandemic of 2020/21 led to parents having to make a choice about how to educate multiple siblings. This restriction on access is a small microcosm of the hindering effect of poverty and infrastructure that will be exacerbated within the future. Not being a part of the web in the future will not just mean an inability to play games, but rather an exclusion to the online community – the *de facto* society of reality.

The society of control shifted the illegitimate from those who committed a crime against the state – as represented by the monarch for example – to those who merely existed outside of the “normal”. The abnormal thus had to be treated and cured, monitored, and put right. The future of society can see those who refuse to participate in the online being considered abnormal. The marketing of expensive retreats that promise an opportunity to disconnect from phones or emails implies the current hyperreality of the offline, with the online as mundane reality.

Such a trend, then, in the era of ubiquitous virtual intersubjectivity, would suggest a reality where being offline is in fact a simulation of the offline within the online. The current use of apps that mute notifications or shut down your technology for certain periods of time are already constructing the simulation of the offline within the online. In the 2020 game *Cyberpunk 2077*, there is an opportunity to engage in Zen Buddhist meditation via a headset and the simulation of nature. This is, already, a feature of technology which purports to aid mindfulness. The irony of using an app to separate oneself from the online can be expanded to the social reality at large, which was a hyperreal theme park, promising utopia but selling reality as an aspiration. The online freedom of identity promised much, while the legitimisation and institutionalisation of the online through governments, education, corporations, and finance suggests instead, a virtualisation of the society of control. The spatialisation of the previous society – the disciplinary society of previous decades – has been replaced by ubiquitous monitoring. The discussion of using dreams and meditation to help model immersive virtual reality has been discussed with reference to morality too (Healey 2018). Understanding the link reinforces the need for digital literacy.

Identity then, in the online classroom will seemingly be as prescriptive and controlled as in the bricks-and-mortar class while offering the freedom of location – a student can choose which school to attend based on commercial factors such as job prospects and pass rates, rather than simple location. The discipline and control of the classroom itself as a virtual concept will be maintained. Thus, the freedom of expression must happen in a different “part” of the online world. The spatialisation of concepts within the virtual plane leads to different semiotic worlds – the signs of the classroom and the signs of the social community online are no longer delimited by a space or even time – the globalisation of the social community means that “outside of work” is no longer a single timeframe.

The subjectivity of identity has thus become a collaborative process – the assets (the virtual objects one uses to construct an identity online) are crafted by others unless you have the programming skills necessary to build your own. Such assets differ from, for example, clothing or accessories in the physical world, because they actively work to change one’s physical presentation. Perhaps cosmetic surgery would be the closest physical proxy to the virtual model, and it would not be unreasonable to say that cosmetic surgery leads to a collaborative identity production. Of course, identity as a receptive sign – the addressee – will construct opinions and judgements from a variety of contextual cues, not just the sole sign of the figure. Whether this virtual asset represents the death of the self, or certainly the death of the physical self, in contemporary and future society will be our next discussion.

3.4. Analysing the death of the human and the rise of the hypervirtual

The work of this thesis up to now can be addressed with the floating signifier. The virtual being has no signified object. Signs in the postmodern capitalist society are traded not because of content or value but because of the worth the system has generated from its own demand. Consider the virtual currency of Bitcoin. It could be argued that finance is a hyperreal concept, certainly Eco seemed to find that many hyperreal artifacts in culture were fronts for commercial outlets, and that behind the façade of the utopia there was a shop selling trinkets advertising the dream: “The Main Street façades are presented to us as toy houses and invite us to enter them, but their interior is always a disguised supermarket, where you buy obsessively, believing that you are still playing” (Eco 1986: 43). Bitcoin perhaps is the epitome of the valuation of pointless work. Leaving a computer on, performing a repetitive, unproductive, task results in something that is valued externally as equivalent to something mined through physical labour perhaps (gold for example). Dogecoin, the virtual currency that is based around the meme-sign of a Shiba Inu dog, was given a boost in value by tweets from Elon Musk – the then richest man in the world (Ante 2021). The value of the “coin” became the value of the sign as a famous sign. Giddens describes the coin as circulating media but “money proper” as:

a specific type of symbolic token. It is fundamental to the disembedding of modern economic activity generally. One of the most characteristic forms of disembedding in the modern period, for instance, is the expansion of capitalistic markets (including money markets), which are from relatively early on international in scope. (Giddens 1996: 26)

Dogecoin was valued higher as it became more known. There is no intrinsic value to the currency as its equivalency is not proportional to the energy put into generating the currency. Giddens cites Marx with a very appropriate quote on the pure commodification of currency: “Marx spoke of money as “the universal whore,” a medium of exchange which negates the content of goods or services by substituting for them an impersonal standard” (Giddens 1996: 22). Related to this are the recent – and perhaps fleeting – trend in selling Non-Fungible Tokens (NFT). These are digital artworks, such as pictures or 3D houses, which have a value placed on them due to a one of a kind blockchain code embedded in them. The mechanisms in place to provide value to the blockchain are notoriously complex. Ultimately, there are concerns around copyright since the artist of the art that has the blockchain embedded is not part of the transaction. Famously, a Toronto artist sold an AR sculpture of the world’s first NFT-backed house for \$500,000¹¹. The extreme of this process is the purchase of digital real estate and design elements

¹¹ <https://www.dezeen.com/2021/03/22/mars-house-krista-kim-nft-news/>

over physical, using AR to overlay the physical with something more valuable and aesthetic.

Virtual currency then, is even more self-referential than hyperreal finance. In the new future of Web 3.0, where AI trades lightning fast based on trends in commerce or politics, at speeds which humans can only monitor after the fact, wealth becomes based on internet speed and service hardware. The money-sign becomes a floating signifier, something that has no concrete, objective, meaning within the web of society. It could be argued that such a sign does not exist because everything can have a interpreted meaning attached, but as the sign is lacking a physical object, it becomes self-referential in its semiosis. However, the semiotics we have modelled above is somewhere in the middle of these extremes – with the context of the social web providing some framework for the individual to ascribe meaning to it. The one is the translator but the many provide the encyclopaedia for aligning meaning with some level of homogeneity.

However, the virtual being is a sign that means nothing concrete. It is a person but not, it advertises whatever product it is required to, and it is famous because it was designed to be. Such virtual beings – like the virtual influencer Imma¹² – are already exemplifying the death of the physical space as anything other than a screen for the virtual. Ikea used Imma, (an influencer on Instagram who is a model and not physical, but “photographed” as if she is), in a physical installation in a store in Tokyo. The model walked around living spaces created using the Ikea brand of furniture and sold the lifestyle and ethos of the corporation. The following is a substantial but highly relevant quote by Baudrillard that contextualises and seemingly predicts the phenomenon of Imma:

Up to now, we have thought an incomplete reality, shot through with negativity; we have thought what was lacking in reality. Today, we have to think a reality which lacks nothing, individuals who potentially lack nothing and therefore can no longer dream of a dialectical sublation. Or rather, the dialectic has indeed fulfilled itself, but ironically, one might say, not at all by taking in the negative, as in the dream of critical thought, but in a total, irrevocable positivity. By absorption of the negative, or quite simply by the fact that the negative, denying itself, has merely generated a redoubled positivity. Thus, the negative disappears in substance and, if the dialectic has run its course, it has done so in the parodic mode of its elimination, by the ethnic cleansing of the concept. So we are still forced to think this pure positivity, to think the ‘depassed real’ (as one speaks of a ‘depassed coma’) and no longer the peaceful surpassing of the real or its doubling in the imaginary.

It is not certain that we possess the necessary concepts to think this *fait accompli*, this virtual performance of the world which is tantamount to the elimination of all negation, that is, a pure and simple de-negation. What can

¹² See <https://www.designboom.com/technology/ikea-home-life-with-imma-japans-first-virtual-model-09-11-2020/>

critical thought, thought based on the negative, do against the state of denegation? Nothing. To think extreme phenomena, thought must itself become an extreme phenomenon; it must abandon any critical pretensions, any dialectical illusions, any rational hope, and move, like the world, into a paradoxical phase, an ironic and paroxystic phase. (Baudrillard 1996: 66)

Imma is not a copy, a replica, but her own complete reality, without the dialectic of social reality construction. The death of the human and of the reality that is required by hyperreality is exemplified by this case. What Imma is selling is the fantasy lifestyle of the furniture brand – something that cannot be obtained through purchasing the items you see her interact with. This is not just because of the hyperreal marketing fantasy but because the furniture and the space Imma is interacting with are computer-generated simulations of physical pieces, not the furniture itself. Imma is not a real person with any level of physicality, and the lack of physical space of interaction makes her even less authentic than an actress. Indeed, the only physical piece of the marketing case is the shop window. Since the shop is in Harajuku, only a small percentage of people will ever walk past and experience the installation. There exists at time of writing, an unlisted (hidden) video playlist from Ikea on YouTube consisting of 9 videos ranging from 5 to 10 or so hours in length¹³. They show Imma, living in real time. Of course, the time is not real since she does not experience it, so it is an artificial timeline created for the viewer, who is watching the shop not in the physical space of Harajuku, but online via YouTube.

The message of the object/interpretant/representamen relationship between the ultimate addresser (Ikea) and addressee (the customer) is that the furniture brand will match and enable a certain lifestyle. The reality of these signs is a virtual-to-virtual relationship, with the shop physicality not a mediation but just a contextual sign to the narrative of the message. The message is self-referential in the very extreme since to experience the virtual lifestyle of Imma, one must exist in a simulacrum of the virtual space, thus watching the physical space would automatically negate the experience. It was always intended to be viewed as a social media post, shared virtually, and targeting the always-online generation who use the products and understand the lifestyle.

This is the start of the hypervirtual. The physicality of the product keeps the sign grounded due to the social reality of furniture – the physicality of friends visiting and seeing your furniture. However, in the post-COVID society, such physical meetings may increasingly be conducted in the virtual space. Such Ikea furniture will be used for the background of virtual meetings or posted on Instagram as an example of the lifestyle you are curating. It becomes feasible at this point to imagine that Ikea could see the virtual product, a virtual background for the virtual meeting, or the virtual furniture to add into the Instagram photo as a filter. Such an app – akin to an AR make-up and cosmetics app – replaces the physical

¹³ See <https://youtube.com/playlist?list=PLuxc-SKi-5-wBaSSI5oSumNNuQfvevuzr>

reality with the virtual for the same lifestyle effect. This situation was seemingly predicted by Goffman, much like Baudrillard did above, with a quote highlighting the relationship an individual has to reality and their perception of content – substance – behind the object:

In short, since the reality that the individual is concerned with is unperceivable at the moment, appearances must be relied upon in its stead. And, paradoxically, the more the individual is concerned with the reality that is not available to perception, the more must he concentrate his attention on appearances. (Goffman 1956: 161)

The embodied avatar is the focus of the thesis as a study into identity in the classroom. The future of a social reality is sold by Imma, with entertainment provided by virtual idols, simulating and negating the physical essence of the human interaction. The online interactions of social media, education, virtual office, virtual hangouts in spaces decorated with assets bought by the user reflect an idealised inner desire of appearance. There is an empowering effect that should not be discounted as a pejorative aspect of online identity). Users may produce virtual content, using virtual beings in place of friends to create the effect of the sublime, an Imma for every creator, a floating signifier for the marketing of the virtual fantasy – the hypervirtual social reality and identity.

Such a relationship between an individual and society is not an unrealistic fantasy. The apps designed to manage time and encourage getting in touch with nature by growing a virtual tree through mindful meditation, and the intersection of one's digital health and physical health in the current social reality are beginning the process of normalisation of the online over the offline. French Situationist, Guy Debord, wrote that institutionalisation – via some overarching societal elite like media – of that which lies outside of the mainstream, as a potential risk of order and control, and essentially predicted the recuperation of online spaces (Vinson *et al.* 2010: 85–113). We can see a process occurring in *VRChat* or *Alt-Space* via conferences, or the COVID lockdown book clubs that found a space in *Second Life* to simulate the physical experience of sharing a book with others. The skeuomorphism of replicating the physical three-dimensional space of the “real” world serve little purpose beyond enabling a legitimisation of the virtual by lessening the gap between the two spaces. Thus, the overt detachment from the physical constraints within the virtual for the gratification of the human desire for emotional stimulation becomes the hypervirtual.

The loss of the self as a subjective entity is seemingly an inevitable consequence in the non-transmedial society of the virtual avatar in the online-only space. The freedom of being able to express one's inner identity may conversely prove to be an allure and speed up the institutionalisation as governments race to control such freedom of expression within the moral and legal systems of the wider society. The classroom, considering the trends of the pandemic, will be one of the cultures at the forefront the government institutionalisation, one that will, consequently, legitimatise the loss of the human subjective identity online within the virtual web of objective, online, communities.

Lucas D. Introna takes an alternative view, launching his paper on cyberspace and Heidegger, with the line: “In cyberspace the *praxis* of hyper-nihilism can be made real” (Introna 1997: 2), stating that Baudrillard’s hyperreality is the nihilism of Nietzschean philosophy bringing an end to the modern. Within the virtual, there is no *real* anymore, except that which we produce. Rather than the hyper-nihilism within the virtual space, we have used this thesis to pursue the hypervirtual, the belief in nothing except that which is presented to us via the virtual space, and clearly transmediality maintains a link to the physical, grounding the belief in something tangible – thus preventing hypervirtuality. Hyper-nihilism however negates the representation of the physical, instead engaging an “always becoming”.

Introna’s paper continues, positing the future of cyberspace and introduces a concerning situation: “If an individual cyber-traveller claims to have been raped in cyberspace (Dibbell, 1994), what does such a claim mean?” (1997: 3). Elsewhere we posit the effect of abuse of one’s avatar on the person offline, citing the Proteus effect, and concluding that the social responsibility of treating the avatar as an icon – a direct representation of the addressee in a communication – requires the user to contextualise the avatar with the emotions of the physical i.e., by the nature of the act, it suggests the attacker interpreted the avatar as being emotional and sentient. Turkle also raises the consideration of accountability for virtual rape, and the legal issues of murder and kidnap online concluding, with emphasis very much the author’s: “But what exactly do I *feel*? Or, what exactly do *I* feel?” (1995: 254).

The problem for Introna is that while the virtual space is the hyperreal, the individual is still *being-in-world* at the physical level. While above we suggest that identity can be made meaningful within the virtual space, Introna does not disagree that the interactions within cyberspace are meaningful, just that the self is not separate from the physical reality. Introna questions whether cyberspace would be the promised hyperreality of plastic identity and freedom of expression. Using Heidegger, he links the concept of the *Dasein*, the being-in-the-world, to the virtual.

Crudely, *Dasein* occurs because of the fundamental relationship between the person and world, where tactile interaction, use, and comprehension of objects negates the separation of the object from the person and instead, appends oneself within. The exact nature of the *Dasein* has been the discussion of many theorists for decades, and we do not intend to answer the question in this chapter. However, the arguments Heidegger proposes, and how they challenge – or support – Baudrillard’s hyperreality and our construction of the hypervirtual are relevant.

In *Being and Time* Heidegger writes: “Da-Sein always understands itself in terms of its existence, in terms of its possibility to be itself or not to be itself. [...] We come to terms with the question of existence always only through existence itself. [...] The question of existence is an ontic “affair” of Da-Sein. (Heidegger 1996: 10).

Heidegger’s philosophy is one that posits the experience of existence is one of being in the world then. The human is not separate from the world, observing

it from afar. As James Fitchett and Michael Saren explain, with relation to the museum experience:

Heidegger argued that human beings are not subjects, observers, spectators of the world in which we find ourselves, separated by an invisible glass window from material objects. We are not disconnected from the external world 'out there'. Rather, we are existentially part of it, participating in it, and, he emphasises, coping with it from our very beginning to our very end. The concept of *Dasein*, according to Heidegger, suggests that we find ourselves in a world that is already articulated-i.e. everything is always laid out in a context of functional relations. He calls this "the referential totality of significance", which is already constructed for us by a shared understanding of being. (Fitchett, Saren 1998: 327)

They continue, using Heidegger, to highlight that everything the individual does is within the context of the world of other individuals. Thus, the *Dasein* is never out of the context of the society, the world as a social construct. The value of objects in the museum comes from the authenticity and whether the object was used within the culture. They disagree with Baudrillard's sign value theory, stating:

Museum objects are valued not because they are useful, but because they signify that they were once useful. It is both sign value and a use value of a sort, more accurately described as sign-use value. The application of a theoretical distinction between use value and sign value cannot be maintained in practice, at least as far as museum consumption is concerned. It is not a matter of whether an object is valued functionally or semiotically since, as this analysis has shown, both regimes of value can apply in any one consumption scenario. Rather it is the discourse through which this value is communicated that is of relevance. The discourse of sign-use value is semiotic with all values manifest as signs. Through this discourse utility becomes a sign and is consumed as a sign. (Fitchett, Sara 1998: 328)

It is the utility, the functionality, and thus the physical connection of the object to the culture and the individual – the *Dasein* – that causes the sign value. The commodity value is negated in this instance, replaced instead by the Heideggerian sense of presence – what Fitchett and Saren call the "Dasein Value" (1998). The economic value of the object in the museum is lower by the fact that it is part of an exhibit where one can touch or experience the presence of the tools: "Visitors do not value the experience of viewing museum artefacts because they are economically valuable or because they have some potential functional application. Nor can this be called sign value, because it is not the image that is valued above the material" (Fitchett, Sara 1998: 327).

This reaffirms Introna's statement that the virtual space will not follow the Baudrillardian hyperreality due to our experience, connection, of the world through our existence within it – the individual is *Dasein*. But what of the avatar and its presence in future virtual spaces? For Tom Boellstorff, virtuality creates a virtual chora – a place, where games and actions occur rather than the game act itself. We log in to the virtual space. Boellstorff continues, stating the virtual world is a recursively created chora from the *techne* – the use of an object and the change

in society by such a use: “Virtual worlds underscore how chora is not place per se, but place-making or worlding (Zhan 2009), the embodied “dance” of techne making possible “being-in-the-world.” As this last term suggests, this reframing of chora links it to a phenomenology of the virtual body” (Boellstorff 2011: 510).

While Introna states that we cannot descend into hyperreality due to our being-in-the-world as a physical, Boellstorff seeks a different conclusion. For Introna, the virtual as the alternative reality negates the hyperreal situation, but we suggest that there is no distinction when the physical is overlaid with the constant ubiquity of virtual information. This is highlighted especially by the avatar, whose *presence* changes the construction of the virtual space:

In a virtual-world context, to “fill a place” is the effect of a virtual body’s being-inworld. If virtual worlds can be considered instances of “the world of the cyphers” (Jaspers 1959: 49), then the avatarized subject of that being-inworld would be not the cyborg, but the “cypherg.” The cypherg is virtual corporeality through which “a participation in Being takes place” (Jaspers 1959: 61), a participation through techne that makes possible the conditions for emplaced being itself. A recursive indexicality, made possible by the pluralization of being-inworld, is quite literally the “point” of the virtual body. (Boellstorff 2011: 515)

The inworld – the being in the virtual space – delimits the notion of the virtual and physical in this instance but the inworld could easily delimit the different spaces within the virtual plane, the hypervirtual can be visualised as the more-virtual-than-virtual inworld, a place where one could engage within the physical space but idealised within the virtual. The cypherg is an interesting and perhaps relevant term for the new human – the one who has lost themselves completely within the hypervirtual. Introna states:

Self and identity to be meaningful must have a horizon of significance. To have a horizon of significance is to choose to accept one’s thrownness as beings-in-the-world, to accept the possibilities *within* the already there boundaries – contested as they may be. You can not have the one without the other. The cyber-traveller cannot gain significance without ‘paying’ for it in thrownness. It seems that the alternative of an infinitely plastic Baudrillardian hyperreality as proposed by Rheingold, Turkle, and others is nothing more than a form of escapist entertainment, an existential flatland. (Introna 1997: 11)

But Heidegger himself, rather than offering an alternative, or criticism of hyperreality, suggests a route of how hyperreality – and hypervirtuality – would seemingly be accelerated. The presence of the avatar within the virtual space is an act of techne – it is a “useful” sign, and the virtual object as a tool, as extension of the self, transcends from the physical space. Already, the terminology of discussing the virtual as a chora, a place one visits in one’s phone rather a mere act performed by the tool of the phone, suggests the objectification of the virtual. We are, essentially, becoming digital-*Dasein*.

Introna cites Heidegger, stating that the *Dasein* connectedness to life provides an ontological approach to reality. The virtual as ontic negates the ontological,

marking for Introna a distinction where the virtual sign and reality separate due to the very lack of the horizon of significance: “Cyberspace as hyper-space is a flatland that does not contain its own horizon of significance. To state it simply: it does not make sense to talk of identity and self in cyberspace, to be-in-cyberspace!” (Introna 1997: 9). This horizon is what marks the dwelling-in the world.

However, Boellstorff states that the embodiment of the virtual avatar constitutes dwelling in the Heideggerian sense, bringing together dwelling as being-in-the-world and performing acts and actions, embodiment as (citing Merleau-Ponty) a place where tasks need to be done within a system of potentiality and actions, and finally, stating:

It is helpful to think about this dwelling-relationship between embodiment and place in terms of indexicality. When Heidegger referred to *techne* as making something appear “as this or that, in this way or that way,” he emphasized an indexicality, a relation of pointing, that lies behind the mutually constitutive being of body and world. This indexical relation of making something appear “as this or that” is predicated on *chora*: it links *chora* to *techne*. (Boellstorff 2011: 514)

Ergo, the embodiment of the avatar, the identity constructed around the virtual self, and the institutionalisation of the virtual space to negate the endless potentiality, thus creates a digital horizon. Such horizons includes the classroom, the office, and the shop, all of which have defined virtual spaces while their physical spaces are imploded into the single room and screen. The plasticity of identity then finds expression within the virtual world – perhaps as the virtual Zen retreat, the simulation of the utopian physical space (the VR holiday for example).

Baudrillard is summarised by Introna thus: “The simulation becomes a simulation of a simulation that accelerates us into the dimension of the hyperreal. In the hyperreal everything is already simulation; everything is always already reproduction” (Introna 1997: 6). It is when the virtual ceases to be the simulation that we foresee the hypervirtual scenario. In Baudrillard’s research – namely *The System of Objects* (1996) and *Symbolic Exchange and Death* (1974) – there is implied to be some unknowable system that constructs equivalency and thus value to signs. This system implies that the physical as an incidental boundary space to the meaningfully virtual already has a precedent. Indeed, Matthew King details how while Heidegger has the object revealing its value to us, Baudrillard puts this in the background:

Yet, contrasted with Heidegger, it is critical for Baudrillard that this backgrounded system is not a kind of more primary relationship, or a revealing, but rather a kind of code which conceals the fact that reality has been replaced by a kind of hyper-reality admitting no withdrawn origin, existing only on the surface. (King 2019: 76)

While Heidegger posits that the relationship and existence within the world imbues meaning, Baudrillard sees a hidden code. This “spoken system of objects” (Baudrillard 2002: 4–5) and the distinct plane of unspoken equivalency is, as

King states: “technological rather than practical” and its relevancy to the virtual space, both contemporarily and of the future – is obvious.

Tanaka-Ishii has introduced us to Heidegger with her discussion of the being and doing of computer code, stating that the interior analysis – being – is akin to Heidegger’s *vorhanden*, while the primordial external view – doing – is that of the *zuhanden*. “When there exists one object and another object wanting to use the first object, to the extent that its use is known, then it is unnecessary that the actual content be known. As one continues to use the object, one will gradually understand what it really *is*” (Tanaka-Ishii 2010: 84).

But both signs are in the digital code in this example. The language, internal and external, spatialises the virtual – that, the horizon of significance that is the boundary preventing hyperreality is reformed within the virtual space already. The use of the virtual is therefore ontologically like the physical for both Heidegger and Baudrillardian philosophy. In our analysis, both have relevancy – with Heidegger offering a view of presence and phenomenology of identity within the world (Martin 2012). However, Baudrillard’s hyperreal takes the loss of objectivity and virtualises it, allowing us to see the transference of the physical to the virtual. It is perhaps, not the death of the human *per se* but the death of the physical self.

What then of the virtual being like Imma? Currently a virtual being has the use value of being a customer help desk representative or a digital assistant. With Imma, the use value comes from the product itself – the concept of the virtual being and the lifestyle it then sells to others. However, should the virtual being evolve to perform tasks without the human being aware that they are interacting with a virtual being, then the technology becomes the epitome of the Heideggerian example of new technology hiding its use. It lacks any exchange value – as Baudrillard would say – beyond the mere existence of itself. That is, except to sell the recursive dream – the lifestyle – of the online virtual being. In a way, Imma’s primary value is to market the lifestyle of existing as a virtual being – either literally through an avatar or figuratively. The process of revealing the value of technology in virtual reality, is no longer grounded, but rather marketed and produced to be such. The hypervirtual object, taken on its own without concern of who made it (via object orientated ontology) would somewhat allow the Heideggerian process to be unified with the Baudrillardian: “Just as how sign-exchange marks the disappearance of the object of reference into the play of signifiers, Heidegger’s standing-reserve marks the condition where “even the object disappears into the objectlessness.”” (King 2019: 79).

What then, of the answer regarding the rape of the avatar or even the virtual being like Imma? In 1997 Richard MacKinnon researched the question, arguing that rape comes from the offline social construction and that the virtual construction does not have to be a proxy. It can be a space of “social reordering”. MacKinnon discusses the case where a user injected code that forced other users’ avatars to perform sex acts via use of a voodoo doll. The word “rape” is never mentioned in the code, but it is, as MacKinnon writes, socially interpreted.

Introna uses the example as a rather insensitive illustration of the difference between the virtual and physical spaces. However, even prior to the GamerGate incident mentioned above, the power imbalance between men and women in the virtual is an example of why identity is important online. The concept of “reordering” online seems similar to the notion of starting again, forming a new society, and indeed, we can see throughout the previous thesis many examples of where the online is perceived as offering this freedom and safety and examples of the offline subsequently impacting the online for the worse – the institutionalisation of access for example and the anonymity afforded to trolls.

However, should the online be fully realised as a safe alternative to the offline, a place of freedom, then the space of being – where the *Dasein* dwells – would become this the virtual space. The commodification of the virtual identity however will always remain a potential threat, while the perceived democratisation of the self is in the hands of corporations, leading us to the Baudrillardian hyper-reality/hypervirtuality of Web 3.0. This transition would be the progression from the situation Boellstorff currently sees: “For virtual embodiment, but for all aspects of virtual culture as well, the gap between virtual and actual is constitutive of bidirectional meaning-making, value production, subjectivation, and social praxis” (2011: 509). While the offline reality is constructed by the online, we can maintain the gap of being.

Babette Babich concludes their article on the transmediality and trans-humanism with a discourse of activism and the link between the physical and virtual. Through digital literacy and education, we should keep questioning the virtual and consider what keeps the physical meaningful:

Yet we still think, especially we academics, of ourselves as «activists» if we post a link on Facebook (and then worry if this costs us our desired popularity) or if we click on an email link and hit return. But if we worry about the social and sometimes legal consequence of net activism, real activism remains more significant than ever – precisely as it is practiced at the cost of and for the sake of «real life» freedom (Babich 2012: 83).

3.5. Findings of the analysis

We posit that identity in the virtual space is a form of role-play and it is worth discussing role-play as a concept in the postmodern society with reference to the death of the self as mentioned above. This will add context to the investigation below.

Virtual role-play implies a ludic aspect to portraying a character, a temporary representation of an alternative identity. However, there are teleological aspects to the role-play conditions, for example creating a realistic scenario to help women recognise and resist sexual attacks (Jouriles *et al.* 2009) and to teach children to understand narrative, characterisation, and dialogue, especially in students with low literacy ability (Robertson, Good 2003) – which also suggests a digital literacy

methodology to demonstrate the impact virtual signs and the VR+ space can have on identity.

Within the virtual space, the visual aspect of identity is significant. While the VR+ world is working on accessibility models, currently sound lacks development and haptic feedback is still a new design element. This prioritises the visual aesthetic. Visual reality includes occlusion, perspective, and relationships between objects. We can read the visual elements within the grammar of the larger world. The visual representation of the real and virtual, as discussed previously, leads to different contexts, and changes the sense of embeddedness the viewer has within the world.

We consider the future of Web 3.0 and posit that it will bring about a ubiquitous plane of reality. This is not to say that visual elements of the physical world will be hidden or removed, but rather that they become irrelevant within the contextual creation of the social reality of the individual. People are unaware of the infrastructure around them, with few people constructing their identities around the electricity, water, or gas infrastructure – consciously anyway since access to such resources necessarily shapes the society and identity of the individual. The reality of the physical world is, today, often commodified into the hyperreal YouTube video highlighting the untouched natural world around oneself. However, the concept of the natural world being truly natural is itself, a fallacy. What is considered natural, has little to do with the biology of the world but the commodification of the ideology (Higgs 2000: 200).

What is considered the social reality of the individual has equally little to do with the physical space and more to do with the perception of the physical space. That is, what the individual believes to be the truth of their surroundings will be so.

In a purely virtual space, there is no objective referent. It is all hyperreal as Eco and Baudrillard both describe it. The loss of physical substance leaves only the performance, the theatrical. Within the contemporary VR+ world, it is easy to imagine a physical proxy for the virtual sign – it is the essence of the trans-medial communication that we have highlighted throughout this thesis. The Spatial Web – and the future where the death of the real experience has become complete except when mediated or initiated via some level of virtuality – promises a future discourse where there is a transmediality between signs of differing virtualities. When the real is replaced completely by the hyperreal, then the process begins again – the virtual being who is the model and influencer, replaces the hyperreal human who is the model and influencer. Thus, we have the virtual hyperreal – or hypervirtual.

The virtual being is not like the hyperreal hologram of Hatsune Miku or the hyperreal classroom where a communication relies equally on the virtual and the physical operating concurrently (Hatsune Miku cannot present an augmented reality concert without there being a reality to augment). However, the online-only future of the post-COVID society, the culmination of the three decades worth of technological and sociological development, promises radically different architecture and social reality space. The physical access points will be replaced with an omnipresent voice recognition system, virtual avatars that operate

autonomously and the structure and control of the society will rely on access to the virtual plane, thus completing a process of exclusion for those unable to afford the hardware that the online service industry began, and the online classroom has legitimised. The language and rhetoric of everyday life is fully entrenched within the virtual space, with even the most physical of concerns – climate change for example – becoming a movement mostly perpetuated online through social media. Language, art, entertainment, work, and education increasingly push the subject online, deeper into the web of signs that increasingly exist without physical grounds.

Perhaps one of the most overt, and potentially damaging, examples of this is the virtual partner. When a user becomes infatuated to the point that they cannot distinguish their feelings for the virtual character from what they expect to feel within a physical relationship, there is a loss of intersubjective communication. The social bonds that form society within the physical space are altered by this new relationship. The creator of Rinko, one example of these virtual girlfriend programmes – and subject of the web show *Digital Love* by Vocativ¹⁴ – states that the modern world does not enable to the duality of human-to-human companionship, but human nature still desires to be more than a single entity. Thus, the computer fills the missing link – what the creator calls a 1.5 relationship. That is, a relationship that is not quite two people, but appends the singular self with something external to it. It is a companion contained within a games console that people connect with emotionally while negating the collaborative physical reality.

Relationships form in virtual worlds, ignoring the physical boundaries and delegitimizations of previous generations. The avatars used within the virtual space normalise the non-human human, the intersubjective collaboration is legitimised as a role play, as fun, as freedom to express one's inner identity. Indeed, as Zaborowski found when interviewing fans of Hatsune Miku, because they could not meet a singer anyway, what does it matter if Miku was real:

“It does not really matter,” said Aiko about the fact Hatsune was not human, “It’s not as if I could meet her [if she was].” This, a commentary about the star culture and the performer-audience proximity in late-modern popular culture, is perhaps most importantly an indicator of socioeconomic status, and the divides within music audiences. Most of my rural and small-town participants admitted to never having attended a big concert. Because of the distance to the nearest prefecture capital city, where popular acts may (or may not) perform during a national tour, the cost in time and money is too great to be able to participate. Television and video-sharing websites (rarely concert DVDs) remain the primary sources for watching an idol sing. (Zaborowski 2016: 123)

The positive aspect of the online discourse is framed as a space that can keep people safe and connected, a space that enables a freedom of identity and allows people to participate and collaborate in a new social reality. The negative comes

¹⁴ See: https://www.youtube.com/watch?v=ABSMi_n5RDk.

however when this, like any space that promises to be inclusive, necessarily excludes some. Those who cannot afford or cannot use the hardware are left behind. The point at which the transmediality of identity is replaced completely, where the virtual self is the considered the only “real” self, is when the simulacra is no longer a hyperreal sign, but a hypervirtual indicator of the death of reality in its finality.

This thesis does not intend for there to be any judgment about the hypervirtual. We have examined the role of the VR+ transmedial sign in identity, and how digital literacy can help users participate within this process safely and equally. However, the trends of the past and the current “new normal” mean we must consider the (seemingly near) future of a Web 3.0 social reality – collaboration and intersectionality show a separation in offline institutionalisation society and online “counterpublics” within the discourse of sexuality (DeArmas *et al.* 2019) and delegitimization of race politics by online creators (Ross, Rivers 2020).

This collaboration, appended currently by the transmediation of the virtual, may enter a situation where humans cannot distinguish between human and AI. Today, when we call our bank, we may be asked questions by a slightly stilted voice adhering to the formality of the situation. When we engage in a chat online to enquire about an order from a website, we will be presented with a formal, artificial, set of instructions that suits the situation. These are not real humans, but AI bots designed to filter and mediate the incoming calls before reaching the customer service team themselves. We can, mostly, identify them as artificial and, whether we want to or not, accept that they exist now. They have legitimised – normalised – the concept of interacting with a virtual entity. The virtual assistants of SIRI or Alexa are overtly “different” with their boxes and trigger phrases acting as gatekeepers between the virtual and physical narratives. They append the social reality; they do not inhabit it. However, the technology does not require the box or the trigger, and the use of such amenities suggests more about human nature. One only needs to watch a few episodes of Star Trek to see crew members (actors) interacting with the computer via communication devices, addressing it directly via “Computer”, or just asking questions into the void.

The transmediality of identity is an overt concept – wearing an avatar, setting ones pronouns on social media, describing oneself on dating sites and work profiles alike. However, the biometric data, face, fingerprints, DNA, voice, GPS location, bank details and shopping trends, personal interests, hobbies, and sexual fantasies are stored within the virtual plane. They influence the adverts users receive, the ease with which one moves through an airport, and the credit a bank offers. Such signs all reciprocally form an identity, to the individual and to others. The virtual is already removing serendipity – this is not a new discussion – but one that constantly needs to be updated. Semiotics models the ways in which we interact with signs and predicts the social reality of a future with no reality. However, few predicted a social reality where the process of real and hyperreal signs would continue, but with a virtual reality not a physical reality. As a final word on this analysis, we turn back to Rheingold, who states (prophetically, considering it was written in 1991):

Whenever I think of the vision of the billions of earthlings of future, all plugged into their home reality sets, I think E.M. Forster's dystopia of a future in which people remain prisoners of their cubicles, entranced by their media, not even aware of the possibility of physical escape. And then I think that it is good to beware of looking at the future through the moral lens of the present: in a world of tens of billions of people, perhaps cyberspace is a better place to keep most of the population relatively happy, most of the time. (Rheingold 1991: 351).

Social reality in VR+ is a reality where the human user is constantly choosing signs to append their identity narrative in both the physical, and in different virtual situations. The sudden speed with which the online-only world has been – almost violently – thrust into the mainstream has driven the need for a digital literacy to enable all people to equally, and safely, take advantage of the potential of the trans-medial society.

Such a reality has been described in previous years with positive and pejorative language – the collaboration and participation of the prosumer society enables a freedom of work that takes the freelance creator back to the feudal era where means of production was dictated by the worker. The converse, however, is the reality now that the work/home separation has ended, and the corporation now has stricter, more invasive, controls over the behaviour, time, thoughts, and production of the employee.

The duality of these situations is further exacerbated by the classroom – removing the distinction between class and home prepares the student for a life where they are expected to continually train and demonstrate competence within the framework of the Foucault-esque panoptic society of control. Identity at home is thus constrained when within the times of online class – for student and for parent. The promise of the freedoms then within the virtual spaces outside of these controlled times become more enticing and again, occur within the physical space of the home, presenting the virtual space as the space where signs matter and manipulation, presentation, collaboration and emotional resonance occurs. Hyper-reality frames the background of the online *Zoom* call as the only portion of your house that needs decorating (see the British DIY chain, Wickes, and their contemporary adverts on curing “Housebarrasement” that legitimise the idea of designing your house around your online office space).

Of course, with virtual backgrounds, physical decor is already an outdated concept, an attempt to retain the significance of the physical in a world where increased sales of pyjamas and working from bed have become the norm. The Spatial Web required a layer over the physical city that virtualised the physical high street. The decline of the high street during the pandemic may have made this process occur significantly faster. To travel outside requires a place to be, a reason, a time slot that is controlled and apps that allow employers to track those who remain off work too long. The physical space does not exist without the virtual anymore.

Giddens states that a macro/micro social theory is not enough, that there needs to be consideration of the agents within the social space and the actions of such actors intersect with the structures of the wider society. With the semiosphere model, we have been able to examine individual *umwelt* within the wider semiotic structures as it is self-referential (Nöth 2006). This self-referencing is seen as a key to humanity by Tanaka-Ishii, while Baudrillard sees the subject as eventually unable to escape the self-referential space and becomes trapped (or seduced) into hyperreality. While we don't see hyperreality as being quite so extreme and instead view it as Eco did, via the examples of entertainment, we have presented several examples for hypervirtuality seducing one into a self-referential, groundless, society. The lack of physical object referent in the hypervirtual – or indeed consideration of the physical object (the individual) is an example of broken semiotics. The chain of semiosis has been artificially curtailed by socio-cultural and commercial entities who consider the value of the online interaction greater than the value of the human experience. It is these institutions which semiotics mediates and moderates, preventing the macro from ignoring or consuming the micro interpretations of signs. The MR space of Web 3.0 has the potential to allow a freedom of expression within a safe space and to connect people who might be otherwise excluded. However, if the chain of semiosis is broken – an aberration made possible by the artificial nature of the online space – then hypervirtuality occurs, losing the transmediality of the self. This chapter – and the thesis overall – has demonstrated the role of semiotics within the macro social reality and the construction of any future digital culture.

The pandemic did not create this social reality, the technology and the trends were already in place. However, COVID has sped up the process by enabling an institutionalised approach to the virtualisation of one's identity. It has ceased to be a choice driven by marketing, but a legitimised requirement of the state to only conduct interpersonal relationships online. When this thesis started being written, the space of *VRChat* and *Zoom* was a niche, *avant-garde* space of concepts that existed for ludic, artistic purposes only. Now, as we approach the conclusion, such a virtual space is the norm for state meetings, mass media presentation, and an entire generation of “school” children. It has forced the collaboration of a society required to participate in the online or remain, not just marginalised, but abnormalized. The language of the media in marketing the “new normal” is not unique in tone or content, but the speed and veracity with which it has intersected itself with the physical society is indictive of the panoptic society of control we embedded ourselves within for a generation previously.

IN CONCLUSION

To holistically consider different spaces and scenarios where the semiotics of reality (in the Milgram and Kishino sense of the word), especially in a future society of increasingly ubiquitous digitisation was the original inspiration for embarking on this thesis. To demonstrate a requirement for updating the previous literature, to show that there is, and will be, an evolution in the medialisation and representation of self, and thus to highlight the necessity for an equivalent evolution and development to the current model of hyperreality, were the goals and intents of the work overall. As such, they were addressed with the adoption and redefining of the term hypervirtuality as an appropriate and contemporary next step (showing the move from the ground of “reality” to “virtual” as that which is simulated). The contextual elements of Hyperumwelten, Hypersemiosphere, and Hyperobjects provide additional semiotic concepts that may highlight the fundamental change in how social reality is formulated across the mixed reality spectrum compared to the distinct offline/online spaces of Web 2.0.

Digital literacy focusing on the semiotics of the wider webs of meaning can help navigate our new virtual world and, in theory at least, enables us to construct the truest expression of self within the promised digital Elysian. However, literacy is knowledge – the comprehension of data – and as such is controlled and dictated by our society and institutions. The idea that the virtual world is a utopia, free from the power controls of the physical is evidently false because the signs and information of the space, the tools, the language, and the hardware, are designed by the same people who control the offline power and access. Indeed, the reality/hyperreality dichotomy is not transcended or surpassed in the VR+ space, but rather we have a virtual/hypervirtual relationship operating, following the same controls, the same hierarchies, as the physical. Identity online has the potential to be free – but so did the offline. However, literacy can mean more self-determination online, as it does offline, by conceptualising the chain of semiosis within the transmedial spaces, in both the *umwelt* and the potential Hyperumwelt interactions. Pejoratively, the reasons why the offline reality was driven toward the hyperreal – marketing, power, money, capitalism, human nature – all exist in the VR+ space.

The relationship between the signs of our conceptual reality and individual self is the same in the virtual as it was in the offline with the drive towards decreasing physical boundaries, greater embodiment of sense data and so on. Thus, we have entered an almost neo-postmodern panoptic space of hypervirtuality, where our fantasies are pushed to become more fantastical. The phantasmagorias of the virtually simulated reality are not enough. Increasingly, we need a reproduction of the virtual with more extreme gratification, glorification, exaggeration, to make it feel more virtual – more significant. The physical-real has lost itself under the technology, while the utopian-real of the tv program, or the Disney theme park has lost itself under the collaborative web signs of the new online-real. The online web has presented an updated ideal of collaboration, freedom, and representation. When analysed however, the truth – like in any

utopia – is ultimately more telling of the desires and missed opportunities of contemporary society. The hyperreal experiences of previous generations could not match the promises of fictional media. This process has encroached slowly but following the Covid pandemic and a shift in entertainment and education towards the online sphere as part of the “new normal”, the desire to escape the mundane physical into the dreamlike virtual has sped up the negation of human subjectivity.

The transmedial self is a demonstration of our new identity and communication model, where the offline is appended by the potential meaning offered by online signs. The future posited by science fiction is always at the extremity of the current narrative – shifting in relation to the current (social) reality. The predictions of the online/offline dialectic have changed however, seeing less a space of opportunity, and increasingly one of existential crisis. The virtual space, populated by the hyperreal floating signifiers, is the realisation of what was once considered the techno-utopia of free time and free expression. Thus, we needed to redefine the ideal and the relationship between individual and objective reality, as technology continues to consume not just *the self*, but *itself* too as hyperreality is simulated again as the hypervirtual.

Our relationship to the macro culture, as a Hyperobjective digital space affects, and is affected by, the micro level interactions we have within our smaller communities. The reality we construct – our semiosphere – is a dialectic relationship where semiotics enables the signs of the cultural text to be read and understood, and subsequently created. The semiotic principle enables communication across physical, VR and AR realities, creating a self-connection to the symbolism of society. MR mixes the digital with the physical, subverting the object as a physical element, and potentially negating the natural language of spatial-temporal texts of physical culture in favour of the artificial, highly commodified, digital signs. Perhaps a true loss of self within the digital space is more within the realm of “weird fiction” author Harlen Ellison rather than a scientific consequence of hypervirtuality. However, the socio-cultural negation of the physical self has the potential for inequality, prejudice, and a digitisation of emotions in the sense of stratifying differences rather than taking the human experience as a continuum. It could be that the semiotics of hypervirtuality is not so much broken, as reduced to an artificially dyadic construction of social reality.

This thesis has attempted to show that one of the concepts grounding hyperreality is identity construction. Even in VR, there would be a known physical presence at the other end due to the way the technology works. However, the Web 3.0 universality of digital information that is promised may remove that physical object as the undeniable, known, constant. Currently we append ourselves with hyperreal signs of social media, but they remain an appending element. By requiring the use of a physical phone, there remains a decision to enter the digital illusion.

The promise to allow every person their individual right of expression – and to be the gender or sexuality they are – may actually speed up the loss of the transmedial subject once such a freedom is institutionalised. It would be undemocratic

to require a person who lives as a virtual character to reveal their identity offline if the online persona is the subject. From this perspective, the role of the physical self as anything beyond a metanarrative that controls and focuses the online self is questionable.

The VOCALOID of Hatsune Miku is the digital representation of many artists via a single hologram or digital avatar. Her voice is the voice of multiple people's words, but overtly separated as an AR entity rather than an MR experience. When avatars surpass the real – as deepfakes have already threatened – then the separation between the virtual being, the avatar, and the true human becomes a matter of who performs better online. With the post-COVID world hinting at the potential difficulty an offline user may experience, the collapse of the physical as anything except a border (or a canvas within which the meaningful signs of the digital layer are presented) becomes likely. The hyperreal becomes the reality, with the new hyperreality as virtualised illusions of virtual representations. Thus, the hypervirtual is formed.

To suggest that hyperreality may become reality and that hypervirtuality will merely be a “new hyperreal” is to imply that there is no conceptual, semiotic, difference between physical reality and hyperreality. Given the work of this thesis we can show that while the process of semiotic translation is the same between realities, the sign lacks a tangible object, an existential experience of sorts.

The digital semiosphere – or possible Hypersemiosphere – of the near-modern world, and the upcoming Web 3.0 in the post-pandemic world highlights the shift in data input from Lotman's somewhat more analogue experience to the fundamentally digitised, hypervirtualised Hyperumwelt (see Figure 4). We updated the postmodern hyperreality with the mixed reality potentiality for digitising all human-readable information. Once digital literacy becomes just “literacy” and a student no longer experiences a need to form an offline identity narrative, then transmedial subjectivity will be lost.

The concept of hypervirtuality within this thesis is not just an updating of the hyperreality, but also models a potential link between Web 3.0 and our analysis of cultural literacy in the new transmedial digital semiosphere. The multiple languages of the digital space requires the polyglot user to demonstrate an ability to translate signs across media, online and offline.

As Web 3.0 completes a process of digitisation, moving to overlay the physical with a universal data layer of virtuality, so the artificial languages of emotes, translated speech, or programming code begin to move from meta language to object language. They no longer provide a means to codify reality, but rather they become an integral part of the constructed social reality itself. Natural language becomes increasingly mediated to the point where unfiltered gesture or speech may be used primarily to describe the online space, seemingly becoming a meta-language itself. The classroom, as an online space, uses mediated natural language, while the students and teachers present themselves through a digitised window where a transmediality of culture occurs. As the online takes on more significance – emotionally, functionally, and socially – for the user, so the transmediality of the language becomes lost, reduced to a single modality – the online –

for identity construction. The transmediality, within a semiosphere of translation, is required to maintain a connection with the offline to the online, and thus avoid the hypervirtuality of Web 3.0's online-only persona.

The semiotics model is one that enables this construction of digital and cultural literacy, focused on the transmediality of education as a process of identity construction. The preceding chapters confirm and describe such a model, from the space of the semiosphere as a construction of reality at both an individual and societal level. The architecture – the language, software, and hardware – suggest the problems of an online identity as the primary identity schema, with concerns over access, Anglocentrism, and Western bias. Finally, we confirm that while the online space can potentially enable the freedom of expression for the individual, the negatives of the society offline are potentially replicated and exacerbated online. Virtual rape and racism against an avatar is shown to affect the user offline, but the potential for such activities is seen as risk free, anonymous, and lacks legal accountability.

The summary of the thesis is that while hypervirtuality may be as inevitable as hyperreality was, the offline signs of self cannot be taken as separate or less meaningful as the online self. The semiotic model of identity is a collection of signs, across realities and media, requiring the ability to contextualise and translate between the digital and physical.

This process – literacy – can and should be taught in schools, where there is an audience of users interacting with each other to develop their identities. A digital literacy programme would focus on the contextualisation of the individual within the digital and the physical, highlighting the information that each reality can and cannot provide, while maintaining that the self is not one or the other but the holistic construction of all signs.

Future research would be required to fully analyse the impact of teaching this digital literacy via the online classroom, since the self-referential model of digital literacy being taught within the space, via the very community that it contextualises, could potentially create a hypervirtual situation itself. The need for further research into a metalanguage or metaverse for the education of a new digital literacy would be the concluding find from this thesis.

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SUMMARY

This thesis aims to semiotically model hyperreal communication in contemporary digitised society and beyond into the burgeoning Web 3.0 era of ubiquitous digitisation. We propose a new “virtual hyperreality”, or “hypervirtuality” whereby society is a virtual simulation within a virtual space, with the physical space acting as a mere container for the digital signs that construct our realities, and identities. We investigate virtual reality (VR), augmented reality (AR), and mixed reality models (MR), stating that VR and AR lack the interaction with the physical space to create hypervirtuality, but mixed reality overlays the physical with a digital layer of information, negating the physical space to a meaningless boundary.

Hyperreality is the theory that as more and more of the information presented to us is digitised, so the construction of reality becomes supplanted with the medialised simulation. This is not a sudden shift between spaces, where one plugs in to a virtual plane and chooses to exist in virtual reality but is something rather more subtle. There is a replacement of physical objectivity with the virtual. The semiotic reality of society becomes constructed from the interpretation, mediation, and dialectical relationship between the virtual object, and the subjective. Yet, virtual signs are the epitome of floating signifiers – signs whose meaning lack concrete definition. They are pliable and increasingly manipulated by institutions to target base human responses of desire, gratification, and immediacy. The floating signifiers of digital identity negate a true notion of self because they lack the object of the physical space.

There are developments that have led to this thesis such as the coming of Web 3.0. Web 2.0 is the contemporary, socially constructed, participatory web that we interact with currently. Web 3.0 promises to negate the human imperative by using AI to predict our wants and desires, offering suggestions and information without requiring the phone to access the data, but rather replacing the physical experience with the overlay of digitised signs.

Symbolic interactionism works with the semiotic concept of the sign for a macro-micro model of hypervirtual signification. Our research proposes that hypervirtuality is the simulation of hyperreality, within the ubiquitous digital world of Web 3.0. We posit a transmediality of meaning is key to grounding the semiosis within physical reality, and specifically, that identity may be one of the last post-COVID constructions to enable this transmediality going forward. Should a Web 3.0 future be inevitable, we feel preparation should begin in the classroom, educating a generation of users who are potentially growing up in an entirely online society – driven by the trend towards the online classroom. The requirement for an updated digital literacy, taught in schools with an aim to contextualise the online space and self among their offline counterparts is examined as hypervirtuality could lead to the biases and prejudices of the offline being replicated and exaggerated within the online space.

Chapter 1 examines space, and how the changing relationships between people and digital communities alter the relationship one has to physical reality itself. We consider an example in the form of Main Street in Disneyland. This is the simulation of small-town America, with an aesthetic crafted from fiction. It is not the true, authentic, small-town experience, but the Disney version of it. The utopian idealism of the perfect architecture and sparkling clean sidewalks have little to do with historic accuracy rather Disneyland is itself a series of floating signifiers that the viewer interprets as authentic. Upon entering the theme park space participants construct the hyperreal narrative through their actions and interpretations, within the wider web of semiotics within the park attendees. In our investigation, we predict the virtualisation of such a hyperreal space, suggesting that the semiosphere is an appropriate demonstration of the relationship between layers of realities, people as semiotic consciousnesses, and between people and signs.

Chapter 2 continues with a technical analysis of the hardware and cultural texts within the online space. Signs like emoji blur the offline and online texts, while the Anglocentric nature of the software suggests a society based entirely online will be hierarchical. Users who have better English proficiency and access to hardware, will be able to present themselves with more nuance and adeptness online. The architecture of the online space also includes our relationship to hardware and the interface, via the embodiment of virtual avatars. This chapter concludes that we are already experiencing deep emotional attachments to our virtual selves, with the acts committed online affecting our offline schemas – what is known as the Proteus effect. An increased sense of embodiment leads to greater emotional attachment, with mixed reality merging virtual signs, like avatars, within one's physical space, blurring any difference. The hyperreal – and subsequent hypervirtual – situations are directed by multinational corporations who commodify identity and self, institutionalizing society through signs of commercial value.

Chapter 3 explores the identity of the user online as a commodity of social media. We suggest that while the virtual space offers significant freedoms when creating an identity, it should not become separate from the offline self and social space. Specifically, the classroom is a place for identity formation, but the negative impact of social media is already demonstrable, and the presentation of oneself via an avatar, as the totality of meaningful identity, is a dangerous escalation. A potential risk of developing an identity schema for the always-online student in Web 3.0 is that it may fundamentally alter one's attachment to the physical world. In a virtual space where nothing has consequences to the wider society, it becomes easy to ignore that actions have consequences at an individual level.

The rise of the Virtual YouTuber demonstrates a new hypervirtual connection between the micro and macro construction of reality. The identity of the person performing a video is no longer relevant. Physical aspects like age, gender, race, location, language, and so on are no longer instrumental in the communication model. Rather, it is the virtual avatar that is key. This goes beyond merely acting, since the avatar of Kizuna AI, for example, is a fully realised identity that

completely obfuscates the offline persona. Kizuna AI, and other VTubers, are their personas to their fans and audiences. The offline identity is as integrated into the narrative as they choose it to be. The freedom to be whoever, or whatever, in the case of VTubers who choose to be a non-human avatar, has evolved out of the ludic space – the game space or entertainment video – into the everyday. The idea that we may all, one day, have a dynamic avatar persona that becomes our primary identity online may sound like science fiction, but it is already coming to pass. The information we present is digitised, idealised, and filtered. Social media alters our photos and turns our lives in virtual stories which we are compelled to add to. The mundane, daily, chores of living have been “gamified”, with loyalty points, Instagram marketing, and even computer games that simulate everyday life. The social reality of the everyday, and the identity of everyone who interacts within the digital semiosphere – the model of interactions between people and technology – is increasingly medialised. Thus, we are hyper-realised.

In Web 3.0, the rise of virtual beings and primacy of the online signs of identity leads to the hypervirtual recursion of the virtual reproduction of the offline within the virtual everyday space. There is no exit to the virtual information layer but only the reterritorialization of a digital space.

Digital literacy with a focus on contextualising the freedom of the online, with the grounding offline, prevents a situation where the physical is just a space. Our findings show that the architecture of the internet and hardware/software literacy required to exist online, is unequal. The online space is biased toward certain groups by the market forces that created them. As such, the hypervirtual narrative may be free for some, but for others it could mean the loss of their culture, language, and heritage. Additionally, the negative behaviours of offline society can become more stratified and overt. Sexism, racism, violence and so on must be contextualised with the offline impact they cause.

In conclusion, we find that the semiotic model of such hypervirtuality suggests a loss of the subjective self within a ubiquitously MR society. Our identity schema is no longer one of self-discovery and growth, but one of purchasing externally manufactured elements with which to curate a desired identity, or if you are fortunate enough to be educated appropriately, by coding your own identity. While there is undeniably a freedom associated with the self-determination of creating yourself, doing so without consideration for the physical self seems to negate the experience of life. Further research is required to identify the effects of hypervirtuality (negative and positive) but the goal of the thesis is to demonstrate that semiotics can effectively provide a framework for understanding and modelling the process. In summary an updated digital literacy, taught in schools, could maintain a transmediality of identity and provide a physical ground against hypervirtuality.

SUMMARY IN ESTONIAN

Identiteedi ja kommunikatsiooni semiootiline modelleerimine virtuaalreaalsuse, lisareaalsuse ja segureaalsuse puhul

Käesolev doktoritöö seab eesmärgiks semiootiliselt modelleerida hüperreaalsust tänapäeva digitaliseerunud ühiskonnas, isegi kaugemaleminevalt WEB 3.0 valla-pääsenud ja üldlevinud virtuaalsuse ajastus. Pakume uurimiseks välja uue „virtuaalse hüperreaalsuse“ ehk „hüpervirtuaalsuse“, kus virtualiseeritud reaalsuse sees simuleeritakse virtuaalreaalsust ning kus füüsi(ka)line ruum toimib tähendusetu kontekstina elik lõuendina digitaalsete märkide jaoks, mis pakuvad vahendeid loomaks meie tegelikkusi ja identiteete. Me uurime Virtuaalreaalsuse (VR), Lisareaalsuse (LR, *Augmented Reality*) ja Segureaalsuse (SR, *Mixed Reality*) mudeleid väites, et VRi ja LRi puhul puudub hüperreaalsuse loomise jaoks vajaminev interaktsioon füüsi(ka)lise ruumiga. Samal ajal võib Segureaalsus katta füüsilise reaalsuse informatsiooni digikihiga, muutes füüsi(ka)lise ruumi mõtte- tuks piirialaks.

Hüperreaalsus on niisugune teooria, mille järgi üha rohkem ja rohkem infot antakse meile digiteerituna, nõnda et reaalsuse konstrueerimine hakkab asenduma meediasimulatsiooniga. See muudatus ruumides ei ole äkiline, kus inimene lülitab ennast virtuaalsele tasandile või valib virtuaalreaalsusest väljumise, vaid pigem midagi palju raskemini hoomatavat. Toimub füüsi(ka)lise objektiivsuse asendamine virtuaalsega. Ühiskonna semiootiline reaalsus leeb konstrueeritaks intepretatsiooniga, vahendamisega, dialektilise suhtega virtuaalse objektiivsuse ja subjektiivsuse vahel. Siiski on virtuaalsed märgid ujuvate tähistajate kehas- tused – need on märgid, millel puudub konkreetne määratlus. Nad on paindlikud ning järjest rohkem manipuleeritud institutsioonide poolt, et olla kooskõlas inimeste põhiliste soovide, rahulduse ja vahetusega. Virtuaalruumi ujuvatel tähis- tajatel pole tõest tõlgendatust, sest nad eitavad füüsi(ka)lise ruumi objektiivset reaalsust.

Käesoleva doktoritööni on viinud mitmesugused arengud, nagu näiteks Web 3.0 juurutamine. Web 2.0 on tänapäevane, sotsiaalselt konstrueeritud ja osalus- põhine veeb, millega me praegu interakteerume. Web 3.0 lubab inimimperatiivi eitada, kasutades tehisintellekti ennustamiseks meie soove ja ihasid ning pakkudes soovitusi ja teavet ilma, et telefonil peaks andmete juurdepääs olema. Selle- asemel asendab see füüsilise kogemuse digiteeritud märkide kattekihiga.

Sümbooliline interaktsionism töötab koos semiootilise märgikontseptsiooniga, et jõuda mikro- ja makromudelini hüpervirtuaalsest tähistamisest. Meie uurimus- töö pakub, et hüpervirtuaalsus on hüperreaalsuse simulatsioon Web 3.0 kõike- hõlmava digimaailma sees. Me sätestame, et tähenduse transmediaalsus on võti, põhistamaks semioosi füüsilisse reaalsusesse, ning eriti, et identiteet võib olla üks viimastest COVIDi-järgsetest konstruktsioonidest, mis aitab sellel trans- mediaalsusel edasi minna. Juhul, kui Web 3.0 tulevik on vältimatu, leiame, et ette- valmistused peaks algama klassiruumis, kus haritakse kasutajaid, kes kasvavad

potentsiaalselt üles täielikult võrgusiseses ühiskonnas, mida tingib suundumus võrguklassiruumi poole. Koolides õpetatakse digikirjaoskust, et kontekstualiseerida võrguruumi ja iseennast vastavate võrguväliste osapoolte suhtes. Me uurime, kas hüpervirtuaalsus võib selles mõttes viia olukorrani, kus hoiakuid ja eelarvamusi võrguvälisest kopeeritakse ja võimendatakse võrguruumis.

1. peatükk uurib ruumi ja seda, kuidas inimeste ja ruumide vahelised muutuvad semiootilised suhted muudavad seda suhet, mis on inimese ja füüsi(ka)lise reaalsuse vahel. Me vaatleme näidet Disneylandi peatänava kujul. See on Ameerika väikelinna simulatsioon kirjandusest kujundatud esteetikaga. See ei ole tõeline algupärane väikelinn, vaid Disney versioon taolise kogemisest. Täiusliku arhitektuuri utopistlikul idealismil ja sätendavalt puhastel kõnniteedel pole ajaloolise täpsusega palju ühist. Pigem on Disneyland ise ujuvate tähistajate seeria, mida vaataja tõlgendab autentsena. Peale teemapargi ruumi sisenemist konstrueerivad osalejad oma tegevuste ja tõlgendustega hüperreaalse narratiivi, seda pargisolijate laiema semiootikavõrgu kontekstis. Oma uuringus modelleerime me sellise hüperreaalse ruumi virtualiseerumist, pannes ette, et semio-sfäär on reaalsuste kihtide vaheliste seoste näitamiseks kohane vahend.

2. peatükk jätkub võrguruumi keele tehnilise analüüsiga. Märkid nagu emotikonid hägustavad võrguruumi ja võrguta ruumi, samal ajal kui tarkvara anglo-tsentriiline loomus eeldab, et täielikult võrgus olev ühiskond oleks hierarhiline, kasutajad oleksid inglise keeles pädevad, ning et neil oleks ligipääs haridusele ja riistvarale, miska nad saaksid ennast esitleda täpsemate nüanssidega ja võrgus vilunumana. Võrguruumi arhitektuur sisaldab ka meie suhet riistvarasse ja kasutajaliidestesse, seda virtuaalsete avataride kehastumise kaudu. See tähendab muuhulgas ka meie emotsioonide ja identiteetide kehastamist virtuaalruumis. See peatükk sätestab, et me juba kogemegi sügavat emotsionaalset kiindumust meie virtuaalminadesse – seda meie niisuguste võrgusolekutegudega, mis mõjutavad ka meie võrguväliseid skeeme. Seda tuntakse Proteuse Efektina. Suurenenud kehastamine viib suurema emotsionaalse kiindumuseni Segureaalsuse kokkuliituvate virtuaalsete märkidega, nagu avatarid indiviidi füüsilises ruumis, miska hägustavad igasugused erisused. Hüperreaalsed ning järgnevad hüpervirtuaalsed olukorrad on seega juhitud paljurahvuseliste korporatsioonide poolt, mis kaubastavad identiteedi ja Mina-tunnetuse, institutsionaliseerides ühiskonna turuväärtuse märkidesse.

Kui sedastati, et niisugune nihe hüperreaalsusesse on midagi möödapääsmatut ja me ei peaks selle vastu võitlema, siis kaasaegsed arengud on viinud käesoleva doktoritöö aruteludeni, mis on seotud Web 3.0 tulekuga. Web 2.0 on kaasaegne sotsiaalselt konstrueeritud osalusvõrk, millega me praegu suhtleme. Facebook, Instagram ja Wiki on vastavad näited meie lemmikfilmidest. Web 3.0 lubab inimimperiatii vi eitada, kasutades tehisintellekti meie soovide ja ihade ennustamiseks, pakkudes lahendusi ja informatsiooni ilma, et nõuaks selletarbeks telefoniga infole ligipääsu ning pigem asendades füüsi(ka)lise kogemuse digiteeritud märkide kattekihiga.

3. peatükk vaatleb võrgus oleva kasutaja identiteeti kui sotsiaalmeedia kaupa. Me pakume välja, et kui virtuaalruum annab identiteediloomeks märgatavaid

vabadusi, ei tohiks see muutuda võrguvälisest minast ja sotsiaalsest ruumist eraldiseisvaks. Just klassiruum on identiteediloome paik – nagu Georges on seda teemat avanud, kuid sotsiaalmeedia negatiivne mõju on juba tuvastatav, ning enese esitlemine avatari kui tähendusliku identiteedi terviku kaudu on ohtlik eskalatsioon. Võimalik risk pidevalt Web 3.0 võrguühenduses oleva õpilase arenevale identiteediskeemile on see, et viimane võib fundamentaalselt muuta tema seotust füüsilise maailmaga. See oht kätkeb endas muuhulgas laiema maailma kohta käivaid kahandatud teadmiskeskeme, võimetust asetada ennast vastavatesse paikadesse ning emotsionaalse sideme kasinust teistega. Virtuaalruumis, kus millelgi pole järelmeid laiema ühiskonna jaoks, muutub indiviidi tasandil lihtsaks ignoreerida tegude tulemusi.

Virtuaalse Youtuberi esilekerkimine on vast võtmenäide uuest hüperreaalsusest. Videot tegeva isiku identiteet ei ole enam oluline. Füüsilised aspektid nagu vanus, sugu, rass, asukoht, keel jms pole suhtlusmudelil enam instrumentaalsed. Pigem on võtmeks virtuaalne avatar. Asi läheb pelgalt näitlemisest kaugemale, sest näiteks Kizuna Ali avatar on täielikult realiseeritud identiteet, mis hämardab võrguvälise isiku täielikult. Kizuna Al ja teised youtuberid on oma austajatele ja auditooriumidele iseenda persoonid. Võrguühenduseta identiteet on nende narratiivi sisse kirjutatud just niipalju, kui nad ise soovivad. Vabadus olla kes iganes või mis iganes on nende youtuberite puhul, kes valivad mitte-inim-avatariks olemise, arenenud välja mänguruumist – mängude ruumist või meelelahutusvideost – igapäevaellu. Mõte, et meil kõigil võib ühel päeval olla dünaamiline avatarpersoon, mis saab meie esmaseks identiteediks võrgus, võib tunduda ulmeline, aga see hakkabki juba toimima. Info, mida me esitame, on digiteeritud, idealiseeritud ja filtreeritud. Sotsiaalmeedia parandab meie fotosid ja muudab meie elud virtuaalseteks lugudeks, mida me peame igapäevaselt lisama. Igapäevased talitused on „mängustatud“ koos lojaalsuspunktidega, Instagrammi turundamisega ja isegi arvutimängudega, mis simuleerivad igapäevaellu. Igapäevaellu sotsiaalne reaalsus ja kõigi identiteet, kes interakteeruvad digitaalses semiosfääris – mudelis inimeste ja tehnoloogia interaktsioonidest – saab üha enam vahendatuks. Seega oleme me hüperrealiseeritud.

Web 3.0 puhul viib virtuaalolendite esilekerkimine ja identiteedi võrgumärkide esmasus selleni, et võrguvälise virtuaalne taastootmine igapäevaellu virtuaalses ruumis muutub hüpervirtuaalselt rekursiivseks. Virtuaalse informatsiooni kihist pole väljapääsu, jääb ainult digiruumi ümberterritorialiseerimine.

Digitaalne kirjaoskus koos keskendumisega võrgus toimuva vabaduse kontekstualiseerimisega ja võrguvälise maandamisega (*grounding*) hoiab ära olukorra, kus füüsi(ka)line on ainult ruum. Meie uurimistulemused näitavad, et interneti arhitektuur ja võrguühenduses eksisteerimiseks vajaminev riist- ja tarkvaraline kirjaoskus on ebavõrdses seisus. Turujõud kallutavad võrguruumi nende guppide poole, mille nad ise on loonud. Hüpervirtuaalne narratiiv võib olla mõnede vaba, aga teistele võib see tähendada oma kultuuri, keele ja pärandi kaotamist. Lisaks võivad võrguvälise ühiskonna käitumised muutuda rohkem kihistatuks ja väljapaistvaks. Seksism, rassism, vägivald jms tuleb kontekstualiseerida koos selle võrguvälise mõjuga, mida nad põhjustavad.

Kokkuvõtteks võib öelda, et taolise hüpervirtuaalsuse semiootiline mudel ennustab subjektiivse Mina kadumist kõikehõlmava segureaalsuse ühiskonnas. Meie identiteediskeem ei põhine enam eneseavastusel ja kasvul, vaid erineva kraami ostmisel poes. See on hüperreaalse poe hüpervirtuaalne evolutsioon. Selle asemel, et moe väljamüügid pakuksid riideid, pakuvad nad persoone.

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