Socialising within Differentiated Spaces: Between Autism, Technology and Space

Lye Ee Ng (Rebecca)
Victoria University (Melbourne, Australia)

Bachelor of Media Communications and Political Science
University of Melbourne
Master of Global Media Communication
University of Melbourne

Supervised by Associate Professor Tim Corcoran and Dr Stefan Schutt

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DECLARATION OF AUTHORSHIP

I, Lye Ee Ng (Rebecca), declare that the PhD entitled *Socialising within Differentiated Spaces: Between Autism, Technology and Space* is no more than 100,000 words in length including quotes and exclusive of tables, figures, appendices, bibliography, references and footnotes. This PhD contains no material that has been submitted previously, in whole or in part, for the award of any other academic degree or diploma. Except where otherwise indicated, this dissertation is my own work.

Signed by Lye Ee Ng (Rebecca)

[redacted]

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ABSTRACT

The Lab is an established Australian after-school network of technology clubs for young people who self-identify as having autism. Conducted at three different Lab sites across Melbourne (Australia), this research explored how these young people socialise and develop meaningful interpersonal relationships within technologically-mediated spaces—conceptualised as 'differentiated spaces'. The research was underpinned by scholarship in Critical Disability Studies, posthumanism and neurodiversity, and involved a total of 24 participants aged between 10 and 16. Informed by a transformative paradigm, the research methodology deployed three qualitative methods—participatory observation, video ethnography and online participatory ethnography. These methods were implemented in a consultative and flexible manner, to ensure that participants had opportunities to participate in research within a safe and relaxed environment.

The research found that The Lab's participants socialise, communicate and interact in their own unique ways, beyond the perceived limitations of dis/ability. This was largely enabled by the flexible configuration of the differentiated spaces at The Lab wherein participants were observed to interact and develop meaningful friendships in unstructured physical and online 'Third Places' of the programme. The study, in conclusion, advocates for a new way of understanding sociality in the digital era through the concept of 'posthuman sociality'. This concept is capable of interrogating socially diverse identities that are reflexively interconnected with the environments one occupies. Posthuman sociality has assisted in forming an understanding of how young people at The Lab achieve a unique sense of self through the ways in which they navigate online and offline spaces to connect with others.

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1.1 Prelude

> *"The beliefs we [hold] about children's learning are deeply grounded in our own convictions on what it means to be knowledgeable, intelligent, experienced, and what it takes to become so. Whether implicit or explicitly stated, these convictions drive our attitudes and practices as educators, parents, teachers, and researchers." (Ackermann, 2004, p. 15)*

I initially came to The Lab, an established after-school programme and technology club for young people with autism, as a potential volunteer in late 2013. I was deeply interested in working with autistic young people[1] as my second cousin was diagnosed at the age of eight. While we noticed his difference from his peers at a much younger age, there was a silent agreement and denial within the family about this matter until he was bullied at school. In Singapore, autism and other similar neuropsychiatric disorders[2] remain largely a stigma and people often know little about these conditions (Chong, 2007; Neik, Lee, Low, Chia & Chua, 2014; Tan, 2016). Autism is portrayed in the media as either a severe disability or gift, with the common rhetoric being that caring for people with autism can be "very draining, both psychologically and emotionally" because they lack the ability to communicate and socialise (Lin &

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[1] Phrases such as 'individuals with autism' or 'autistic young people' are used interchangeably within this dissertation. This is to acknowledge both neurodiversity and segments within Disability Studies where the focus of autism as identity is debated. Further details can be found in Chapter 2.

[2] Terms such as 'disorder', 'impairment' and 'disability' are used in conjunction with 'difference' to describe autism. While I recognise that the former descriptions are constructed within the ableist tradition, which is flagged as problematic in this thesis, theoretical and practical tensions exist, making it impossible to avoid the use of these terms. These tensions are addressed throughout this thesis.

Goy, 2016, para. 2). In some instances, the diagnosis of the child takes the blame for the discord within a family (Loh, 2016). In a recent case, a Singaporean woman pushed her son off a building, claiming that his autism was the "cause of her tiredness and (marital) problems"; she was not charged with murder (Loh, 2016, para. 3).

I should clarify that I do not wish to discredit families or misrepresent the problems they face. In fact, I often find myself admiring their dedication to supporting individuals with autism. It is not them, but rather the stigma that exists within societies, and is framed by the medicalisation of difference and its narratives (discussed in Chapter 2), that I find problematic because it has real and adverse effects on how people approach and understand those with disabilities. Many parents, including my cousins, are afraid to learn about autism because it labels children who are physically similar to others—a sign of normality which is in itself problematically situated within a culture of ableism—as disabled (see Ilias, Cornish, Kumar, Park & Golden, 2017 and Yanos, 2018 for recent evidence on parental stress, stigma and social labelling associated with children on the spectrum).

Years later, I spoke to my cousins and learnt they were worried that their child would never grow up to have a "normal" life or education if diagnosed. We, myself included, seem to live in a world where we are obsessed with normality and fitting in. This is not surprising as societies favour the able-bodied; "individuals with disabilities possess discrediting attributes that prevent them from meeting culturally constructed standards" (Reel & Bucciere, 2010, p. 91). The issue with "standards" suggests that people with disabilities are not meeting the requirements to be considered fully human—the central theme of the ableist culture or tradition, which I will discuss further in the next section and Chapter 2 (Campbell, 2009; Goodley, 2014). The education system in Singapore, though evolving, is rigidly structured so that children are streamed at a young age into different educational pathways; those with disabilities are separated from mainstream education. I was never aware of anyone being diagnosed with a disability in primary or secondary school. From recollection, children who were disruptive in class or who were different were usually transferred to another school or moved out of my classes as a result of streaming and standardised testing. I first read about a student with a disability when I began my studies at Polytechnic in Singapore; the institution's newsletter highlighted the academic success of a student with a neurodegenerative condition. I was in awe of how people with disabilities were able to exceed the expectations of society and overcome the difficulties posed by their disabilities. On reflection, I recognise that I was unintentionally an ableist. Ackermann's insight as quoted above reveals how our life experiences accumulate to shape the way we perceive ourselves and approach others.

The unspoken zero-tolerance attitude towards difference experienced by people from both my generation and the generations before it led my cousins to ignore their child's difference at a young age. They finally reached out for help and advice from family, teachers and medical practitioners after multiple instances of bullying at school. Since then, they have learnt to communicate, socialise and interact with him using a range of different techniques, working closely with his teachers to do the same. My second cousin has since told me that he enjoys going to school. In this instance, a small change in attitude opened many doors for a child with autism. Despite his different communicative pattern, my second cousin is a bright and cheerful child. And I ask myself: Why are people so concerned with the diagnosis over a child's abilities and strengths? Is it not ironic that medical science has both the ability to condemn us through labels and simultaneously help us learn more about ourselves and others? It is through my personal experience and interactions with my cousins, their child, the media, people with/without autism and The Lab that my research journey is situated.

In this chapter, I will briefly discuss the major themes and key theoretical concepts that form the underlying framework for this thesis. I will also introduce The Lab, the context in which this research was conducted, and provide an overview of this project, detailing how this research was positioned, and summarising the research questions, methodology and significance of the dissertation. Finally, I will outline the chapters which make up the rest of this thesis.

1.2 Autism, Socialisation and the Ableist Rhetoric

In this section, I briefly operationalise and discuss the relationship between autism, socialisation and ableism. This is further deliberated in Chapter 2.

Autism Spectrum Disorder (ASD), or simply autism, is defined as a neurodevelopmental disorder diagnosed on the basis of:

> *"persistent deficits in social communication and social interaction across multiple contexts, including deficits in social reciprocity, nonverbal communicative behaviors used for social interaction, and skills in developing, maintaining, and understanding relationships. In addition to the social communication deficits, the diagnosis of autism spectrum disorder requires the presence of restricted, repetitive patterns of behaviour, interests, or activities." (American Psychological Association [APA], 2013, p. 31)*

This definition is taken from the latest *Diagnostic and Statistical Manual of Mental Disorders* (DSM-V). It is the official manual for medical practitioners and "enjoys a nearly hegemonic status as the reference for assessment and categorisation of mental disorders of all types" (Kawa & Giordano, 2012, p. 1). The DSM is important as its definitions have significant impacts on how and which children receive a diagnosis, in turn affecting the way they access services and government support (Burns & Matson, 2017).

In Australia, it is estimated that over 164,000 people, or one in 150, have autism, 83 per cent of whom are under the age of 25 (Australian Institute of Health and Welfare [AIHW], 2017). By comparison, approximately 2.4 per cent of children between ages three and 17 in the United States, or one in 41, are diagnosed with autism (Xu, Strathearn, Liu & Bao, 2018). Both reports from Australia and the United States referenced the DSM to define autism. In both cases, the rate of autism diagnosis had reportedly increased in the last five years due to a number of reasons, such as increased awareness and greater consistency in diagnosis, although it is believed that this figure is stabilising in the United States (AIHW, 2017; Xu et al., 2018). Interestingly, it has recently been revealed in the media that the National Disability Insurance Scheme (NDIS) in Australia intends to deny certain individuals on the spectrum (i.e. high-functioning autism) disability support due to the surge in the number of people diagnosed with autism (Knaus, 2018; Morton, 2018). Classifications and definitions of autism, or any other disability, are therefore very sensitive because they have practical implications for individuals and families. The problems around a standardised and medicalised definition of autism—which has changed over the years, as seen below—will be discussed in the next chapter.

The increase in the figures should be treated with caution because the medical industry has been continuously changing its criteria and methods for diagnosing autism, although "practitioner-historians" would validate this process as scientific progress (Verhoeff, 2013, p. 442). However, as Verhoeff (2013, p. 454) points out in his historical analysis, the concept of autism has "evolved and mutated" so much that discontinuities and irregularities exist, although they are disregarded and unacknowledged in the DSM. In his analysis, he found that the definition of autism had gone through three major phases, from "profound affective withdrawal and aloofness", to "language and other perceptual and cognitive abnormalities", to "deficits in social cognition and intuition", the last of which reflects the current definition of autism within the DSM-V (Verhoeff, 2013, p. 454). According to Verhoeff (2013), this is surprising because medical research, a field of studies known to be scientific, objective and positivist, is meant to be the authority on this matter; yet, the understanding of the characteristics of autism seems neither scientifically nor biologically defined but is instead one that is subject to change based on context, the atypical characteristics of individuals and a variety of unknown factors. It compels us to ask: Why have these changes occurred? And how can autism be defined? With a broader definition focusing on social communication and interaction, it is possible that increases in diagnoses are due to this criterion.

The emphasis on social communication and interaction drawn out in the DSM criteria suggests that those on the spectrum are unable to socialise. As Barkan (2013, p. 100) puts it, “without social interaction, we could not have socialisation”. Socialisation broadly refers to “the social processes through which [individuals] develop an awareness of social norms and values and achieve a distinct sense of self” (Giddens, Duneier, Appelbaum & Carr, 2014, p. 69). There are variations to the definition that I will explore in the next chapter but the core principle of socialisation is to learn and assimilate into society and its culture (Barkan, 2013; Giddens et al., 2014). There is much to unpack in understanding socialisation, such as: Whose social norms are we referring to? What does it mean to achieve a distinct sense of self, and in what contexts? These will be deliberated in Chapter 2 but an intriguing aspect to highlight is Barkan’s (2013, p. 100) repeated emphasis that socialisation is part of “being fully human”. This phrase is problematic because it begs the question: What constitutes being fully human? And, conversely, what makes someone less human? From Barkan’s explanation, it can be inferred that someone with autism may not be fully human since they are impaired in social communication and interaction. The inherent assumptions within the concept of socialisation and what it means to be adeptly social are ableist. This brings me to my next point on ableism.

Ableism refers to “ideas, practices, institutions and social relations that presume able-bodiedness, and by so doing, construct persons with disabilities as marginalised ... and largely invisible ‘others’” (Chouinard, 1997, p. 380). It is not a new concept but one that is historically, socially and politically situated, as will be discussed in Chapter 2. What is “abled”, however, is “imaginary” according to Campbell (2009, p. 4) because it is unknowingly agreed upon by people who hold a “common world view that asserts preferability”. Within the context of ableism, this common world view is shaped by professional medical narratives (Goodley, 2014) which, as shown above in the case of autism, can be malleable.

This is reminiscent of Fromm’s 1995 book *The Sane Society*, in which he wrote:

> *“The fact that millions of people share the same vices does not make these vices virtues, the fact that they share so many errors does not make the errors to be truths, and the fact that millions of people share the same mental pathology does not make these people sane.”* (Fromm, *1995, p. 14)*

It reminds us that the common world view may neither hold truth nor inform us about what people, “abled” or otherwise, are or can do. Autism researcher-activist Grandin (2012, p. 1), who herself identifies as autistic, implores us to recognise individuals on the spectrum as “different, not less”. This term has received profound interest from the disability community. It echoes works by Baron-Cohen (2002) and Biklen et al. (2005), who encourage academics and institutions to challenge the network of beliefs that construct ableism and understand autism as part of a continuum of human nature, no less than an able-bodied person. My experience at The Lab and with my second cousin encouraged me to reach this conclusion—i.e. that autism is not a disorder or disability but rather a difference.

And yet, there is still a need today to understand autism as a disability or disorder because such labels are critical to families receiving government funding and access to support (Halfon & Kuo, 2013). Here, we once again see a tension between pragmatism and preference; what is seen as preferable for people with autism is to be included and not to be discriminated for their difference and yet, in our current society, many are forced to frame individuals on the spectrum as disabled to avoid further exclusion. It is here I acknowledge that autism, or any other disability, is not simply a discourse that is constructed. There are material and biological differences that affect the lives of people with disability, even as part of disablement may be manifested by the social construction of able-bodiedness (e.g. stairs are built with the assumption that people can climb them).

1.3 Spaces and Technology

An evaluation of The Lab (the setting for this research) by Donahoo and Steele (2013) showed that the spaces and technologies deployed by the program made a documented difference to the lives of its autistic young participants. Informed by this evaluation, I decided to focus my research specifically on these two areas as they align with my interests as well. It should be noted that this research examines ‘technologies’ primarily within the context of digital and online spaces. A literature review of the different spaces and technologies discussed in this section will be presented in detail in Chapter 3.

The sociology of space examines the social, material and cultural constitution of spaces. It is an established field of study; Gans (2002, p. 329) reminds researchers to avoid repetition in both the “reification of spaces” or the study to demonstrate that “all social life exists in space”. Rather, the sociology of space is concerned with understanding the social practices, institutional forces, and material complexities of how humans interact with and within spaces (Urry, 2004).

Space can be defined as “abstract geometries detached from material form and cultural interpretation ... [and] is what place becomes when the unique gathering of things, meanings, and values are sucked out” (Gieryn, 2000, p. 465). While this interpretation of space is agreed upon by some (e.g. Creswell, 2004), varied definitions exist. Lefebvre (1991), for example, refers to space and its production as a series of complex social constructions which affect our spatial practices and perceptions, in turn implicating social relations. Space in this instant is constantly produced and reproduced, representing sites of struggle (Urry, 2004). Gores (2000), whose work I explore in Chapter 3, refers to space as both abstract and physical, capable of capturing and creating experiences; it is also a psychosocial dimension where individuals situate themselves within cultures, communities and societies. Therefore, the concept of space is relatively fluid and adaptable, rather unlike that of place.

When discussing space, it is difficult to ignore ‘place’ as these concepts are closely linked (Gieryn, 2000). Place is associated with a location, a “unique entity” or “special ensemble” that has history and meaning; it “incarnates the experiences and aspirations of a people … [and] is also a reality to be clarified and understood from the perspectives of the people who have given it meaning” (Tuan, 1979, p. 387). This concept of place suggests a more defined and less abstract form of space that has physicality, is geographically located and is meaningful to a group of people (i.e. “sense of place”) (Cresswell, 2004). Places may contain spaces and vice versa. However, the distinction between space and place has become less pronounced in recent years, especially with the advent of online spaces and online communities (McArthur & White, 2016; Shehabat, 2015). Social media outlets—such as Twitter, Tumblr, Facebook and Reddit—have become sites for community gatherings that were once located within public material spaces and places (McArthur & White, 2016; Shehabat, 2015). In this instance then, online spaces may have unique meanings to their users but are not necessarily geographically located places. As social life continues to evolve as new technology does (i.e. beyond the Internet, such as space tourism), concepts of space and place are changing, even within physical environments.

As Urry (2004, p. 3) states, “the beginning of the twentieth century saw a series of sweeping technological and cultural changes which totally transformed the spatial underpinnings of contemporary life”. Perhaps what I find interesting in Urry’s quote is that when he talked about technology, he was referring to new modes of transport, such as aeroplanes and cars, or new ways people gather, access entertainment and communicate (such as going to the cinema, listening to the radio, watching television, etc.). Yet, his statement also applies to the technologies we refer to today, such as social media, augmented reality, 3D printing, and so on. Here, it is apt to note that the introduction of any technology inadvertently brings change to varying extents, from changes in individual practice and behaviour to cultural, social and spatial changes (Rose, 2015). This is because the defining characteristics of technologies are that they are “intelligent enough either to perform, or to be imbued with, a function, purpose, or benefit, that only intelligent species, human or otherwise, have the ability to appreciate" (Carroll, 2017, p. 19).

McQuire (2016), for example, discussed how we access and experience multiple spaces at once, being physically present in a private or public space or place while simultaneously accessing our networks and communities online through mobile devices. The way we interact and communicate has significantly changed through the mediating impact of technology. It would have been unimaginable to communicate across time and space in a matter of seconds a century ago, which raises the question: what does it mean to socialise today? This question will be repeated throughout this dissertation as I explore a range of spaces, places and technologies within The Lab.

In this research, I will focus on three specific types of spaces: physical, digital/online and psychosocial. Together, they are conceptualised as 'differentiated spaces' to recognise how they are individually distinct and effective yet, when working collaboratively, create dynamic and complex learning environments such as The Lab.

1.4 Critical Disability Studies

The final key theoretical framework to introduce in here is Critical Disability Studies (CDS). This is the framework that will be used to bring the different concepts and themes addressed above together in discussion with this research's findings and conclusions. I draw on CDS to analyse how the configuration of spaces and spatial practices may disable or enable people with disability. It should be noted that Critical Autism Studies (CAS), a newer subdomain of CDS, will also be incorporated into this discussion as it is eminently relevant to this research. However, due to the relative infancy of the field of studies and its conflict in definition and focus amongst scholars of the domain (Woods, Milton, Arnold & Graby, 2018), this thesis will situate its arguments within CDS more broadly. A detailed discussion on CDS is drawn out in Chapter 2.

CDS is an emerging subfield of Disability Studies (e.g. Campbell, 2009; Meekosha & Shuttleworth, 2009; Pothier & Devlin, 2006; Roets & Goodley, 2008; Shildrick, 2009; Tremain, 2005). As a derivative of critical (social) theory, the focus of CDS is on reflection and critique through the application of social, political and cultural theories (Calhoun, 1995). This is not a particularly new or radical branch of Disability Studies—after all, Disability Studies emerged "primarily [as a] materialist critique against the normative status quo" in support of the disability rights movement (Meekosha & Shuttleworth, 2009, p. 47).

According to Meekosha and Shuttleworth (2009, p. 47), there are four aspects that make a field of studies (such as Disability Studies) "critical":

> *"[1] the irreducibility of social life to objective facts;*
>
> *[2] the requirement of linking theory with praxis in the struggle for an autonomous and participatory society;*
>
> *[3] the necessity that a discipline or field of study be aware of its own historicity and critically reflect on its conceptual framework; and*
>
> *[4] the need to engage in a dialogue with other cultures on the issues and concepts of current significance." (Meekosha & Shuttleworth, 2009, p. 47)*

Within the context of Disability Studies, then, to be "critical" requires us to draw out perceptions and constructs disguised as facts about disabilities—in this case, autism—and situate them within the broader social, political and cultural frameworks (e.g. neoliberalism) that shape our current societies. Through CDS, for example, it can be inferred that the intersection between disability and the ideological foundation of societies (i.e. neoliberalism and its individualisation of success) has led to socio-political decisions (e.g. defunding of government programs) that disempower people who have disabilities. It can be argued that individuals with impairments are equally or more disabled by ableist rhetoric than their impairments (or difference) because ableism supports a certain political agenda (i.e. a neoliberal, materialist perspective on the provision of labour). This intersection will be explored in the next chapter.

Critical Autism Studies (CAS) is a derivative of CDS that provides an interesting lens to help in the redefinition of autism. Waltz (2014, p. 1337) defines CAS as an investigation of the "power dynamics that operate in discourses around autism, questioning deficit-based definitions of autism, and being willing to consider the ways in which biology and culture intersect to produce 'disability'". Drawing on CDS's domains on intersectionality, ableism and materialism, CAS encourages people to critically engage in and analyse scholarship on autism, neurodiversity and inclusion to better understand how autism is being discussed or constructed (Woods et al., 2018). Its purpose is to "unsettle conceptions of autism" and allow "autistic persons to reclaim autism narratives" – one that is aligned to the aims of this research (Woods et al., 2018, p. 977). Hence, this research will continue the efforts of CAS by situating its arguments within the three domains of CDS which will be further discussed in Chapter 2.

The critical framework provides a holistic discussion that diversifies our understanding of discourses around disability, allowing us to empathise and acknowledge the embodiment of impairment while simultaneously deconstructing the social norms that disable and exclude people with disability (Chouinard et al., 2010). While autism research is often premised on a medical model—finding improved ways to diagnose, prevent and treat the impairment (Baron-Cohen, 2002; Verhoeff, 2013)—Critical Disability Studies implore us to rethink assumptions of dis/ableism in order to avoid the alienation of people with impairments and work toward a more inclusive society. This is particularly appropriate in the context of The Lab, where tension between pragmatism and preference (as mentioned above) is prominent.

In this research, I will take an intersectional approach within CDS to analyse how spatial theories such as proxemics (Hall, 1974), spatial semiotics (Lim O'Halloran & Podlasov, 2012) and spatial justice (Soja, 2010) affect people with disabilities and autism within physical spaces. I will also apply learnings within CDS to understand how technology impacts people with disability. Studies have shown that technologies ranging from social media to 3D printed prosthetics have had a profound impact on identity construction and beyond (Campbell, 2009). Individuals with autism, for example, may rely on online technology to socially communicate as it enables them to interact without the nuances of physical communication (Davidson & Parr, 2010).

Critical Disability Studies provide a wide range of literature and approaches that I will discuss and utilise throughout this thesis.

1.5 The Lab

The Lab is a network of technology clubs for young people aged between ten and 16 with high functioning autism. While the use of the term “high functioning” is not ideal (and ableist) as 1) it isolates others on the spectrum, especially those identified to have an intellectual disability, and 2) is no longer used in the latest DSM-V, it provides a more realistic and practical view of The Lab. Members are diverse and display different degrees of categorised autistic behaviour but do not tend to have perceived cognitive impairments as compared to the average individual, a characteristic of low-functioning autism (Baron-Cohen, 2002; Giambattista et al., 2019). Hence, perceived intellect will not be discussed in relation to socialisation within differentiated spaces.

The Lab is a not-for-profit organisation that currently runs 25 sites around Australia. Each session is facilitated in donated settings by two tech-savvy mentors with expertise ranging from web and graphic design to software (specifically, game) development. In an ideal Lab setting, there are two rooms: one for its members and another for their parents. However, this is often not possible due to spatial constraints and room availability. Under these circumstances, a space is designated for members while parents are free to socialise in common areas or leave during the session. During the induction period (which may take a few weeks depending on the comfort level of the child), parents may choose to accompany their child into the room to provide reassurance. Thereafter, parents are encouraged to leave their child and mingle with other parents in the next room or in the common area. In this manner, young people who join The Lab are given the opportunity to develop their interests and build relationships with other participants at their own pace and of their own accord while their parents share experiences and provide support for each other.

Each weekly session runs over two hours. Participants of The Lab bring their laptops (or are provided with one by the programme on request) and play games or learn computing skills from the mentors. The Lab emphasises self-motivated, interest-based learning where the young person is responsible for his/her education. Hence, participants of The Lab are free to engage in any technology-based activities such as coding, gaming and robotics. Some young people, for example, may prefer watching YouTube videos or playing games for a session and resume learning computing skills another time. Throughout this thesis, I will explore the advantages and disadvantages of this learning ethos adopted by The Lab.

Unlike a classroom, learning and teaching (by the mentors) are casual and unstructured. The physical set-up of The Lab is similarly unstructured. Participants are free to sit where they prefer and tables are frequently re-arranged according to the day’s activities or through negotiations between participants and mentors where possible. On some days, for example, tables are set aside for pre-discussed group activities such as competitive or table top gaming. However, due to spatial constraints, some Labs are located in rigidly structured areas (e.g. computer labs) where the potential for movement of tables is limited. Here are some photos of The Lab (taken by the author and approved by The Lab for sharing):

Image 1: Members sit around the table engaging in different activities.

Image 2: Members are spread across the room in an unstructured manner. A mentor can be seen standing (left), moving around the room to provide members with help when needed.

Because the mentors have different skills and the physical spaces of The Labs vary from one site to another, over time, each Lab has been observed to develop its own culture. Having visited a few Labs (as part of this research and beyond) and interacted with the young people as a potential volunteer, my initial observation found that the activities offered by Lab sites differed, as they were impacted by the layout and size of the physical space (e.g. larger spaces encouraged movement) as well as the interests of the young people and the mentors. This has been further affirmed by the research and will be discussed in Chapters 5 and 6. Nonetheless, all Labs showed consistent and positive interactions between peers and mentors. I therefore became interested in looking at how differentiated spaces enabled these young people to engage beyond the supposed limitation of their disability—that is, the perceived deficit in interaction and social communication, as noted above. *Differentiated spaces*, as briefly mentioned, is an original concept devised as part of this research. It attempts to highlight the importance and functions of a variety of spaces that exist within an environment—in this case, The Lab. This concept is further explored and explained in Chapter 3.

An evaluation of The Lab by Donahoo and Steele (2013) suggests that, contrary to prevailing knowledge, young people with autism are able to socialise within The Lab's shared environment. The evaluation found that The Lab has provided an avenue for young people with autism to relax and make friends, some for the first time, and that this has had a direct impact on their emotional wellbeing and mental health. Parents have reported a reduction in anxiety and use of anti-depressive medication by their children since attending The Lab. Some parents have also reported a reduced infliction of self-harm and/or self-blame by their children since joining the programme.

Although a few factors, such as the youthfulness and tech savviness of the mentors and the flexibility of the programme, were identified as crucial to the success of The Lab, Donahoo and Steele's (2013) research did not have the scope to further explore the characteristics of each factor and how they contributed to the programme, although many of these can be inferred from other research.

One specific factor that I identified as under-researched yet largely associated with the success of the program is the utility of spaces, as previously mentioned. The unstructured physical and online spaces give Lab members freedom to interact, learn and play at their own pace. Informed by these observations and the evaluation of The Lab, my research aims to understand how physical, digital/online and psychosocial spaces enable young people with autism to socialise and develop interpersonal and technology-assisted relationships.

1.6 Research Overview

This research is situated within The Lab to understand how spaces and technology (referred in this project as ‘differentiated spaces’) enable young people with autism to define their own sociality and develop interpersonal and technology-assisted relationships.

In this section, I will discuss how the research and researcher are positioned, the aims and research questions of the project, the methodology and the significance of this dissertation.

1.6.1 Positioning of the research and the researcher

When I first walked into The Lab, I was surprised at the vibrancy of the young people in the space. It seemed as if academic and lay assumptions about autism—which focus on social and communicative deficits—were not justified: people with autism can communicate, interact and even socialise if given a conducive environment with the necessary tools and guidance. Subsequently, the overarching framework I identified to guide this research is a transformative paradigm.

According to Mertens (2007, p. 213), who is a key advocate in this area, a transformative paradigm’s “central tenet is that power is an issue that must be addressed at each stage of the research process”. It suggests that while multiple realities exist and are socially constructed, they are “shaped by social, political, cultural, economic, and racial/ethnic values [where] power and privilege are important determinants of which reality will be privileged” in society and even within research contexts (Mertens, 2007, p. 212). This indicates that some realities are privileged over others and some people have more power in shaping these privileged realities. This paradigm is mostly adopted for use in communities that are less privileged, such as the queer or disabled communities, as their voices are often excluded or negatively represented within mainstream debate (Mertens, 2015). The paradigm's distinct focus on advocacy aims to identify pockets of disadvantage and sites of exclusion, addressing social justice by placing a spotlight on the voices of the less privileged. A transformative paradigm aligns with CDS and this research because it highlights how the narratives of disability thus far have been constructed and privileged by more powerful and vocal forces in society, whereas the realities of those with a disability are either manipulated to complement common discourse (e.g. individuals will succeed in overcoming their disablement if they work hard—see Chapter 2 on neoliberalism) or kept silent to maintain the status quo.

Ontologically, I am aligned to social constructionism in that I believe our societies are constructed by multiple realities, although some realities are more prominent than others. According to Bryman, social constructionism:

> *"asserts that social phenomena and their meanings are continually being accomplished by social actors ... [and] implies that social phenomena and categories are not only produced through social interaction but they are in a constant state of revision ... [where] knowledge is viewed as indeterminate." (Bryman, 2008, p. 19)*

In other words, multiple realities are constructed and exist through constant social interactions between people. Shared knowledge is based on social conceptions held together by people who can relate to each other within the reality (Gergen, 2001). However, within social constructionism, forms of realism are acknowledged (Gergen, 2001). For example, when we say "someone has died", social constructionists do not question that the person has biologically ceased to exist—rather, they are concerned with the way death is spoken about, such as when we say the "person has gone to heaven", as it reveals certain aspects and beliefs of the individual in question (Gergen, 2001). Yet, social constructions do not necessarily conform to the way things are, such as societal associations of impairments with inability. Social constructionism rejects the notion of a single, correct reality and provides "innovative ways of appreciating and shaping realities" beyond the hegemony; it is "nonfoundationist and non-reductionist" in its attempt to reconfigure human discourses (Misha & Prakash, 2012, p. 122). This ontological stance has guided me in drawing out the untold realities of young people with autism at The Lab—many of which, such as their ability to socialise with and within the differentiated spaces of The Lab, provide new perspectives against the backdrop of deficit-based narratives surrounding autism (see Chapters 5 to 7).

Informed by social constructionism, I will therefore take an interpretivist approach to epistemology. Interpretivism contends that "how we can gain knowledge of the world … loosely rely on interpreting or understanding the meanings that humans attach to their actions" (O'Reilly, 2009, p.119). It is complementary to social constructionism in that it draws on subjective experience and interpretation, and similarly argues that there is no objective reality which can be accessed (Mertens, 2015). Interpretivism focuses particularly on understanding constructed realities and uncovering how people make sense of their world through interpreting ongoing social interactions and experiences (Tekin & Kotaman, 2013; Mertens, 2015). In this approach, the researcher is often required to be part of the research to be able to understand and interpret these social interactions and experiences, therefore, s/he is simultaneously changing and being changed while interacting with subjects—indicating the need for co-evaluation in this framework (Tekin & Kotaman, 2013). The qualitative methodology and methods in this research (see below and Chapter 4) were chosen to reflect this epistemological view.

These frameworks and paradigms have shaped my dissertation, from the research questions and methodology to the findings and discussions.

1.6.2 Aims and research questions

The overall aims of this project are to understand how young people with autism view sociality, and how a variety of physical, online and psychosocial spaces, referred to as *differentiated spaces*, shape this unique understanding, enabling young people with autism to socialise and develop interpersonal relationships. Hence, the overall guiding research question for this research is:

- How do technologically-mediated differentiated spaces enable young people with autism to socialise?

I will be specifically looking at three differentiated spaces within The Lab: physical, digital/online and psychosocial. These differentiated spaces each serve distinct purposes in the process of socialisation within The Lab, an environment that has technology embedded in its culture via hardware (e.g. laptops), software (e.g. game creation programs) and online platforms for communicating and interacting. However, it should be noted that despite my segmentation of discussion on each space, the differentiated spaces work collaboratively to build the overall unique environment of The Lab. This deliberate distinction is to ensure that each space receives our attention on its contribution to the learning of sociality at The Lab, given that we often associate the concept of space with only physical spaces. Hence, I have devised four specific research questions with regard to these differentiated spaces. They are:

- How do the unstructured physical spaces of The Lab enable young people with autism to socialise and develop interpersonal relationships?
- How does the participatory and individualistic nature of online spaces such as social media platforms affect the way young people with autism socialise and develop interpersonal and technology-assisted relationships at The Lab?
- How do the unique perceptions of the social by young people with autism, mediated by technology, enable them to socialise and develop interpersonal relationships?
- How do differentiated spaces work in tandem to create an environment that allows young people with autism to overcome the perceived limitations of their disability?

A large part of this research was informed by the transformative paradigm as discussed above. Hence, a series of interactive, flexible and partially participatory[3] qualitative methods were used with the aim of creating a conducive environment for these young people to engage in research, providing them with opportunities to present their own reality. Through these, this study hopes to develop understandings of environments that best bring forward the unique qualities and skills of those on the spectrum, beyond the label of their “disability”. Therefore, another sub-research question explored within the research was:

- Is the use of interactive qualitative methods effective in encouraging young people with autism to participate in research? If so, how and why?

1.6.3 Methodology

To undertake a critical discourses analysis around the social constructs surrounding autism, I took a qualitative approach in order to examine in-depth understandings about how the differentiated spaces of The Lab affect its members. Using a combination of participatory methods—namely, participant observation, video ethnography and online participatory ethnography—I endeavoured to:

- Answer specific questions about individual differentiated spaces and how each contributed to the process of socialisation within The Lab;
- Create opportunities for young people with autism to present versions of their realities, with the aim of enhancing young people’s engagement in research and allowing their realities to be foregrounded within this dissertation.

A total of 24 participants across three Labs in Melbourne took part in the research between April and December 2016.

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[3] While the children participated to some degree in the design of the research methodology, they did not participate in the final analysis of the findings. Instead, I often confirmed my findings through conversations with participants (which were noted after the session) and received verbal validation from mentors and parents through separate conversations within the confines of The Lab—see Chapter 4 for more details.

As mentioned above, I positioned myself as a researcher, advocate and participant within this project in order to facilitate a sense of trust and familiarity with participants. This was an effective strategy (see Chapter 4) in building respectful relationships where the power imbalance between researcher and participants was reduced, allowing most participants to feel comfortable involving me in their activities. However, I had ethical concerns as to whether these young people saw me as a friend rather than a researcher, despite several reminders of my role as the latter. These concerns will be further addressed in Chapter 4.

1.6.4 Contribution to knowledge and significance of research

The overarching research paradigm and methodology presents three potential contributions to knowledge. Firstly, it will further research in the fields of Critical Disability Studies and Autism Studies by providing a valuable case study that challenges traditional notions of dis/ableism and normativity. Critically Disability Studies (CDS) is a "burgeoning field of theorising and activism" and a "space from which to think through a host of political, theoretical and practical issues that are relevant to all" (Goodley, Lawthom, Liddiard & Runswick-Cole, 2019, p. 977). Beyond a theoretical framework, CDS aims to be the intersection between theory, practice and politics. However, as Goodley et al. (2019, p. 989) point out, it is "imperative to roll back from our knowledge production to probe further the assumptions on which we draw and the possible consequences of what we propose". Hence, this case study applies a CDS framework to understand how young people with autism can socialise within technology-mediated spaces, providing a much-needed discussion around the interrelationship with theory and practice.

Additionally, Goodley et al. (2019, p. 986) call for an expansion on scholarship around the "significance of dis/ability", particularly considering the ways in which ability and disability relate and rely on each other. This thesis aims to address this relationship, focusing on the abilities of young people with autism and how the supposed limitations as described within medical narratives are at the crossroads of dis/ability.

This thesis will also contribute to CDS through its specific focus on autism. The success of this case study provides an example as to how we can “remov[e] barriers for people with particular types of impairment (i.e. autism) but [maintain] that the problem lies in the attitudes to and barriers all people with impairments face” (Mallett & Runswick-Cole, 2014, p. 125). Therefore, while this research is focused on autism and differentiated spaces, it does not alienate or neglect broader discussions of disability, addressing these discussions by providing a case for reference. Chapter 7 presents a broader discussion of the impact of this research on disability and other vulnerable populations will be presented.

Thirdly, in previous research with members of The Lab by Donahoo and Steele (2013), it was noted that members experienced stress during the data collection phase. This stress was specifically attributed to the rigidity of more traditional research methods such as interviews. Hence, this research took on a flexible and participatory qualitative approach that allowed young people with autism to participate successfully in research within the context of an informal after-school programme. It is hoped that the understanding of this iterative process and use of modified participatory methods (see Chapter 4) will add value to future research, particularly other participatory and action research, that works with other young people with autism (or other disabilities). This thesis also provides a self-reflection of the process which aims at contributing to a community of practice around the use of creative methods and methodologies.

This research is significant because it documents processes of socialisation between young people with autism in differentiated learning spaces—even as mainstream narratives assert that those with autism are unable to socialise. In view of the limitations of mainstream narratives, specifically in the definition of socialisation, this thesis proposes a repositioning of the definition in the posthuman context. I theorise this under the term ‘posthuman sociality’, which supports the reflexive exploration of identities as interconnected and relational to our social environments. This emphasises the continuous exploration of identities through the relationship between human and non-human subjects (e.g. technology) as the means through which one achieves a unique sense of self. As is evident later in this document, this definition is not a stretch from the original definitions of socialisation; rather, it seeks a more inclusive framing of socialisation by broadening ideas of social norms and values, acknowledging individual uniqueness and providing options for people to adapt rather than assimilate. In Chapter 7, I will discuss and operationalise the concept of ‘posthuman sociality’ in detail.

At the core of this research approach is the need to better understand the structures and processes that allow young people with autism to socialise, challenging preconceived assumptions about the social limitations of people with autism. It is working from a position of participants’ ability and potential, rather than from one of perceived deficits. There is evidence, for example, that the “internet has been to the autistic community what sign language has been to the deaf community; a channel of communication that allows them to speak for themselves” (Muggleton as cited in Newton, Kramer & McIntosh, 2009). Research on how individuals interact online has shown that young people with autism have high participation rates online, though little is known about the extent to which they engage within each online session (Davidson & Parr, 2010; Ringland et al., 2016; Rosqvist, Brownlow & O’Dell, 2013). Through my research, I will present how these young people interacted and communicated both on- and offline and how the differentiated spaces of The Lab affected the way they socialised.

Finally, and most importantly, this research is significant as it will inform and contribute to the improvement of The Lab as a learning environment. It is also my hope that the knowledge generated by this research will be of use to other learning environments and institutions to create more inclusive learning spaces for young people with disability within Australia and around the world.

1.7 Thesis Outline

This thesis is divided into eight chapters. The introduction above is Chapter 1 and has provided an overview of the theoretical concepts and the tensions within them that shape this thesis. It also discussed how this research is positioned within a transformative paradigm that recognises multiple realities but also that the realities of those with disabilities are not privileged within mainstream narratives. It outlined the aims, research questions, methodology and significance of this research. To reiterate, the main aim of this research is to understand and showcase how spaces and technologies (known specifically under the umbrella term of 'differentiated spaces' in this research) enable young people with autism to socialise.

Chapter 2 is a literature review of the broader theoretical areas that foreground Disability Studies and Autism Studies. It provides existing insights and informed commentary into the emergence of Disability Studies, briefly discussing the history of disability and the implications of social and political structures on the treatment of people with disabilities from past to present. Neoliberalism—the current social, political and global ideological framework—will also be introduced to provide the context to how disability is viewed and materially (un)supported today (Blume, 2016). The chapter will then discuss the dominant paradigms of knowledge within Disability Studies, namely medical and social paradigms, and segue into Critical Disability Studies (CDS) and its importance in shaping and changing the disability rhetoric. The chapter will end with discussions and tensions around autism, neurodiversity and socialisation, and how they have thus far been constructed by neoliberal-ableism and its ensuing medical narratives. It will highlight the need to move beyond a medicalised definition of autism (e.g. towards Critical Autism Studies) and a humanist perspective to socialisation.

Because the configuration of spaces has been identified as a factor that positively impacts the ways young people with autism at The Lab socialise (Donahoo & Steele, 2013), this research will focus on understanding how autism and disability can be (re)interpreted within differentiated spaces.

‘Differentiated spaces’ as conceptualised in this research refers to a number of physical and non-material spaces, distinctly different from each other yet working in combination to make meaning of an environment such as The Lab (Ng et al., 2015). Chapter 3 will discuss existing research on each differentiated space identified as operating within The Lab, namely physical, online-digital and psychosocial spaces. It will specifically focus on how these spaces and the unique constructions around them affect the way people behave, learn and socialise. Beyond differentiated spaces, the chapter will also look into the broader theories of Third/Fourth Place and Third Space to provide an understanding of how these differentiated spaces may work together to create unique environments that cater to the needs of people engaging within them (such as The Lab).

Chapter 4 will discuss this research project’s methodology and methods in detail. To align with the transformative paradigm, a participatory qualitative approach was taken to allow participants to engage in the design of the research project. The methods used were participant observation, video ethnography and online participatory ethnography. Data collection took place over a period of a year at three Labs across Victoria (Australia) with a total of 24 participants. This chapter will detail how participants were recruited, how each method was carried out, how data were collected, transcribed and analysed, and the successes and lessons learnt from the methods that relate to the sub-research questions discussed above. It is concluded that while the reflexivity of the approach may have caused a deviation from the methods’ original intentions, it enabled the collection of quality data that was diverse. Interaction, flexibility and the positioning of the researcher and methods as participatory encouraged young people with autism to participate in this research through a levelled distribution of power, although it did raise the question of whether interactions between participants and the researcher without the traditional power boundaries have unforeseen ethical implications.

Chapter 5 will present the findings of the research in relation to each individual differentiated space and attempts to address the first three research questions discussed above. While the findings were often relational and not specific to an individual space, this chapter was deliberately structured to highlight the importance of recognising each space as serving unique purposes within the process of socialisation. Fourteen themes in relation to spaces and sociality emerged from the data collection and were discussed across the three differentiated spaces. Chapter 5, therefore, highlights how the structure of the physical spaces within The Lab altered the levels and extent of interactions. It also discusses how access to online-digital spaces during The Lab sessions acted as an extension of face-to-face interactions as well as a portal to other forms of non-physical interactions. Finally, it examines how young people at The Lab position and understand themselves and others within a psychosocial dimension, affirming other studies' findings that people with autism desire social interactions (Müller, Schuler & Yate, 2008; Ringland et al., 2016).

Chapter 6 will engage in further discussions on differentiated spaces, particularly looking at how the combinations of individual spaces have come together to build complex and unique, yet cohesive, environments. It will comment on how The Labs, though similarly organised through a single vision, have evolved into very different hybrid (i.e. physical and virtual) environments, all with positive outcomes for the sociality of young people with autism but in slightly different ways. It will also argue that The Labs and their online-digital spaces should be considered as Third/Fourth Places and Third Spaces for young people with autism. The Labs not only adhere to the criteria set out by Oldenburg (1999), who initially theorised the Third Place, they also provide a space for autistic young people to test, verify, make modifications and create new knowledge about their social interactions and the way they socialise. Hence, The Lab is not only a social Third Place to its members but one which allows them to interact and learn different skills within it, moving towards the notion of the Fourth Place (as defined in Chapter 3). This chapter also highlights how psychosocial and Third Space interactions occur within the differentiated spaces of The Lab, creating new meanings of sociality and autism for young people on the spectrum.

A major factor enabling this form of interaction can be attributed to the use of technology within The Lab. Findings from this research indicate the importance of viewing technology as a social actor rather than just a tool; technologies are themselves influencers of the way we socialise. The technological aspect of this research and its unprecedented significance as extrapolated from the findings triggered the need to discuss the redefinition of socialisation and autism within a more inclusive framework. In Chapter 7, I will further the discussion by drawing out the impacts of technology on members of The Lab and redefining socialisation through a posthumanist perspective. Socialisation has thus far taken a humanist approach (see Chapter 2) wherein people, including those with disabilities, are measured against human nature, interests, expectations and problems. However, as will be discussed within the literature and findings of my research, the way we socialise is a mixture of human and technological interactions that shape our decisions. A young person at The Lab chooses to speak to the person sitting next to him over an online messaging service rather than in person because the affordances of technology provide an alternative experience that may be preferable to face-to-face interaction for the young person in question. Whether this act is specific to someone with autism is less relevant from a posthumanist perspective because similar emphasis is given to understanding technology as a possible social actor which may be likened to a human subject. Therefore, this chapter will focus specifically on how and why there is a need to move towards ‘posthuman sociality’ whereby we take into consideration interactions with objects, spaces, technologies, environments, etc. to situate ourselves socially. Posthuman sociality will be defined as the process of exploring and developing socially diverse identities and values that are reflexive and interconnected to the environments that one occupies, enabling the individual to achieve a unique sense of self. This chapter will also draw out the theoretical and practical implications such a redefinition of sociality may have on autism and Critical Disability Studies, calling for a non-disabling redefinition of autism.

Chapter 8 concludes this thesis by summarising the findings of my research and expanding on topics raised in the research questions. It will reiterate the significance of posthuman sociality and its contribution to knowledge in the areas of autism and Disability Studies. Finally, it will address some of the practical implications this research may have on individuals with autism in the short and long term, and on the design of similar learning programmes and spaces such as The Lab. This dissertation will end with a discussion on future research in this area.

Chapter 2: Beyond the Medical Model of Personhood: Autism, Socialisation and the Disability Rhetoric

Disability Studies provides contemporary critical enquiry into dis/ableism (Goodley, 2014). Reflecting on the constructs of disability, Thomas (2007, p. 73) concludes that ableism is “a form of social oppression” that imposes “restrictions of activity on people with impairments and the socially engendered undermining of their psycho-emotional well-being”.

In this chapter, I highlight the dominant discourses around dis/ability, autism and socialisation in existing literature as situated within Critical Disability Studies (CDS). These dominant discourses will form the basis of discussion for this dissertation. The chapter begins by introducing disability within a historical context, highlighting the political and ideological nature of disability rhetoric. Then I briefly discuss the structural disablement brought about by the current dominant ideology of neoliberalism in Western[4] societies, providing a broader context for my analysis and outcomes. This is followed by a review of contemporary medical and social paradigms of disability—the main models of personhood that define disability and its discourses today. For the purpose of this research, personhood is defined as “a conditional state of value defined by society” (White, 2013, p. 74). Next, I highlight arguments made within CDS that are socially and politically situated and discuss how they may be relevant to current and future understandings of disability. Then, I move on to the definitions of autism and how they have been affected by the medical and social paradigms of disability. In this section on autism, I also touch on other emerging

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[4] The notion of “Western societies” is acknowledged to be a reductionist manner of segmenting the world. It mainly refers to Western Europe, the United States of America, Canada, New Zealand, Australia and some Latin American countries.

or changing concepts that challenge neurodevelopmental disorders (e.g. autism), such as neurodiversity. Finally, this chapter ends with an investigation of the concept of socialisation in preparation for a broader discussion on differentiated spaces in Chapter 3.

Overall, this chapter provides a review of the current state of disability and autism, detailing the discourses and material tensions that exist within Australia and other Western societies. It highlights the main narratives around autism and disabilities, and argues that individuals on the spectrum are disabled by medicalisation, individualisation, social structures, ableism, technology and concepts of socialisation. These discourses will also form the basis upon which the findings are analysed and discussed (see Appendix A for an overview of the discourse analysis).

2.1 A Short History of Disability

> *“For no one who has a blemish may approach to offer the bread of his god. For no one who has a blemish shall draw near, a man blind or lame, or one who has a mutilated face of a limb too long ... or a hunchback, or a dwarf ... He may eat the bread of his God ... but he shall not come near the veil or approach the altar, because he has a blemish, that he may not profane my sanctuary.” (Leviticus, 21:17–23)*

In this section, I provide a brief historical account of disability to draw out the similarities that construct our understanding of disabilities today. It demonstrates that structural disablement and ableism, which are discussed later in this chapter, are historically situated in that people with disabilities were similarly disadvantaged by the socio-political, economic and religious structures of their societies in the past.

The history of disability is a relatively new academic field (Hanes, 2017). While research in this area is new, accounts of disability are not, and have been evident (and well-documented) in historical texts, myths and legends of the past. From antiquity, the rise of Christianity, the Middle Ages and the medieval period through to the modern era, disability has been well recorded in scripts, books, dialogues and other communicative media. However, representations and discussions about disability have been varied. Hanes (2017), for example, points out that when we talk about disability, words like ‘crippled’, ‘lame’, ‘mental defect’ and ‘imbecile’ were readily accepted in the past but are much less so today. Indeed, many are understood now as derogatory and inaccurate due to the medicalisation and institutionalisation of disability. Despite these semantic differences, there are many similarities that we can draw on (Hanes, 2017).

Firstly, disability is always contextually situated. In other words, what we deem as forms of disability, or the ways in which we discuss disability, are dictated by social structures and constructs. An example would be emperors of the Roman Empire, notably Tiberius and Nero, who were both feared and revered for their cruelty and perverseness. In today’s context, and certainly in modern historical texts (e.g. Holland, 2015), they may be recognised as psychopaths—an antisocial personality disorder, according to the DSM-V. However, as Samama (2013, p. 245) points out, there was a sense of “Roman admiration” for certain forms of disorders or traits that were viewed as courageous (e.g. war-related) or blessed by the gods. While there are multiple interpretations of these historical accounts with no certainty of what really went on in these societies, it is clear from the trajectory of the accounts that disability is indeed contextual, specific to societies and their values.

Secondly, disability, when identified, has often been seen as a social disadvantage. Consider how Plato, one of the most famous philosophers in Classical Greece, promoted eugenics when discussing mating in his book, *The Republic*:

> *“the best of our men with the best of our women as often as possible, and the inferior men with the inferior women as seldom as possible, and bring up only the offspring of the best … children of the better Guardians to a nursery… the children of the inferior Guardians, and any defective offspring of the others, will be quietly and secretly disposed of.” (The Republic, 240–1)*

One of the most infamous instances of eugenics in the modern era is the mass murder of people from specific ethnicities, as well as homosexuals, disabled people and others by Germany’s National Socialist government in World War Two (Silberman, 2015). However, as shown above, and in many other political texts chronicling reproduction and mating practices, eugenics is a common belief of the past—parents with better genetic make-up are believed to produce better offspring. Hence, in harsh social and living conditions of the past, the culling of disabled family members/babies was seen as an acceptable practice to 1) reduce the disease of inferior genes, and/or 2) reduce the burden (and sometimes humiliation) of the family (Stainton, 2017). Other philosophers such as Aristotle followed “in much the same vein as Plato in striving to develop virtuous citizens” by condemning those who had defects or were crippled, and obsessed over the production of the “best offspring” (Stainton, 2017, p. 15). Currently, there are questions as to whether prenatal genetic screening that leads to subsequent abortion might be considered a form of eugenics, but this is still a contentious point of debate (Thomas & Rothman, 2016; Wilkinson, 2015).

Conditions changed with the introduction and spread of monotheist religions, including Christianity, which heralded a change of focus from disabled people being seen as punished by the gods to being ill and thus requiring compassion and grace. However, disabilities were still regarded as being “less of” or “less worthy” in the eyes of God (Stainton, 2017). Consider the Leviticus passage quoted at the beginning of this section. He says the blemished—clearly referencing those with impairments—may “eat the bread of his god” but not “approach to offer bread to his god”. In other words, God is kind, compassionate and merciful to all persons, including those who have a disability, and yet, one with blemishes is not worthy of offering himself and his prayers to God. While there are conflicting accounts and passages relating to disability in the Bible, there was a symbolic boundary between people who did and did not have disabilities and how they presented themselves in the eyes of God; the latter was deemed as “less of” and in need of the grace of the general population (Clapton & Fitzgerald, 1999; Stainton, 2017).

Disadvantage, however, did not always mean, for example, that neurotypicals[5] were necessarily better off than their counterparts. This is because many ancient societies were built on hierarchies and structures that did not have an obsession with ableness like we do today (Campbell, 2009). Rather, they were structured based on class, status and wealth. And this brings me to the third similarity: disability has been, and is still, a part of the broader political economy and ideologies that govern societies and cultures. Thus, intersectionality, as highlighted by Critical Disability scholars such as Dan Goodley (2014), is important in understanding how societies today perceive and react to disability. This will be discussed later in the chapter.

A prominent historical figure springs to mind when discussing disability, class and privilege. Claudius, a Roman emperor and the sole surviving heir of Augustus, had obvious physical disabilities and disfigurement—a point of contention between perceived beauty and disability—and was often seen as an unlikely candidate to be the next Roman emperor (Whitacre, 2018). However, due to his birth status, he was never considered a candidate for killing (even when he had a serious illness as a child) and rose to become the emperor of the Roman Empire simply because of his ancestry. Disability was hence very much determined by context and complex social-political structures. Consider Hanes' statement on programmes and services for the disabled below:

> *"the rise of programs and services for disabled people are very much linked to a country's political economy, wherein programs and services are connected to the need for a better trained and/or educated workforce." (Hanes, 2017, p. 4)*

According to Hanes (2017), eugenics policies and practices were also more common in history when there were shifts in economies, particularly from agrarian to industrialised societies. What Hanes (2017) is trying to highlight is

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[5] The term 'neurotypical' is often used to describe someone who does not have a neurodevelopmental disorder, most commonly identified as Autism (Silberman, 2015).

that beyond the investigation of the individual and/or one's impairment, there was a connection between disability and the social, economic, historical, cultural and political context.

Interestingly, these accounts of privileged individuals with a disability who rise to positions of power, as well as the manipulation of disadvantaged communities, are not so removed from some of our narratives today. The brief historical account presented above provides an important precedent to how I will approach the discussion on disability today. In particular, the similarities present a powerful narrative: disability is not an isolated issue and needs to be discussed in the context of the related political, economic and social climate. The findings from my research are therefore situated accordingly.

Hence, it is at this point that I will segue the discussion on the most prominent ideology that has shaped global perspectives, particularly those of Western nations, for the last four decades: neoliberalism.

2.2 Structural Disablement: Neoliberalism

> *"We live in a time of neoliberal-ableism where the privatisation of the self, the marketisation of everyday life and mantras associated with austerity politics are enshrined in a belief that global citizens will work and shop themselves into positions of self-sufficiency that no longer require the support of government nor the services of welfare systems." (Liddiard & Goodley, 2016, p. 153)*

Neoliberalism has been, and still is, the dominant ideology shaping our world—its social, cultural, political and economic implications can hardly be overstated (Saad-Filho & Johnston, 2005). In this section, I briefly examine the concept of neoliberalism and, to a smaller extent, capitalism. It will specifically focus on the role played by neoliberal ideology in constructing and governing an ableist culture, which structurally disables and discriminates people with disabilities through public policy and broader social constructs. As precedence, an overview and working definition of the terms is established as a result of the unclear and often disputed meaning. Any discussion of neoliberalism (and thus neoliberal capitalism) must necessarily begin with an acknowledgement that the precise meaning of the term is contested and often context-dependent (Birch, 2017).

Put simply, neoliberalism is a set of ideas that typically promote marketisation, financialisation, the winding back of government interventions such as tariffs and regulations, and a reduction in government social spending (Birch, 2017). Harvey offered a broad definition of neoliberalism that is still useful in describing the key features of the concept:

> *“Neoliberalism is in the first instance a theory of political economic practices that proposes that human well-being can best be advanced by liberating individual entrepreneurial freedoms and skills within an institutional framework characterized by strong private property rights, free markets and free trade. The role of the state is to create and preserve an institutional framework appropriate to such practices. […] if markets do not exist then they must be created, by state action if necessary. But beyond these tasks the state should not venture. State interventions in markets (once created) must be kept to a bare minimum because, according to the theory, the state cannot possibly possess enough information to second-guess market signals (prices) and because powerful interest groups will inevitably distort and bias state interventions (particularly in democracies) for their own benefit.” (Harvey, 2005, p. 2)*

Based on Harvey’s description, it can be inferred that neoliberalism is primarily concerned with governing through economics and markets, and for this reason is somewhat unique as a political ideology because the notion of political ideology suggests far-reaching implications beyond that of the economic sphere in which neoliberalism operates (Birch, 2017). This is an important distinction; the prevalence of the neoliberal concept in academic and general discussions has led to the application of the term in what are often very different contexts, some of which are seemingly antithetical to governments and organisations. Considering then that neoliberalism is best thought of as a theory of economic practices, the precise ways in which neoliberalism influences social and public policy, such as the regulation of the NDIS, must be understood with this distinction in mind.

Harvey's definition also points out the role state in preserving this framework of governance—that is, the state's regulation of practices that either 1) do not adhere to the political-economic framework of the system or 2) do not adhere to the goals of the system. According to Boas and Gans-Morse (2009), Harvey's definition of neoliberalism is rather generous and traditional. While it should be the role of the state to ensure that public, social and economic policies are enacted without the influences of those who look to benefit themselves, this has not always been the case (Boas & Gans-Morse, 2009). Those governing through neoliberalism have relied on market or economic leaders as the "state cannot possibly possess enough information to second-guess market signals" (Harvey, 2005, p. 2). Wealth and economic leadership have therefore become synonymous with power to influence politics and political leaders (Boas and Gans-Morse, 2009).

While neoliberalism represents ideology and governance, capitalism is a set of practices, the aim of which is the accumulation of capital, and is characterised by private property, capital accumulation, wage labour, voluntary exchange, a price system and competitive markets (Hall, 2015). At its forefront, it is interested in labour for profit motives. Consider Kumar and Hill's cynical critique of capitalism:

> *"The fundamental principle of capitalism is the sanctification of private (or corporate) profit based on the extraction of surplus labour (unpaid labour time) as surplus value from the labour power of workers. It is a creed and practice of (racialised and gendered) class exploitation, exploitation by the capitalist class of those who provide the profits through their labour, the national and the international working class." (Kumar & Hill, 2009, p. 2)*

Kumar and Hill clearly identify the issues of the “class system” within capitalism. Through capitalism, they see two distinct classes: the capitalist/elite class and the working class. The flow and control of capital in a top-down system ensures that one class has more power over the other. The provision of labour by the working class forms the basis of acquisition for capitalists, who then draw a small portion of their profits to pay their wage labour. In this instance then, wealth is not evenly or equitably distributed, leading to the imbalance of power distribution if capital is indeed the most valuable asset that determines economic viability. As Kumar and Hill (2009) point out, we live in an era where neoliberalism is coupled with capitalism—a combination that has perpetuated inequalities for decades now.

Kumar and Hill (2009), for instance, explored the impacts on education around the world within a predominantly neoliberal capitalist system. They particularly highlight the inequalities that arise within education under neoliberal capitalism—from private, for-profit educational institutions to market-driven curriculum created on the basis of providing prospective labour. Education has become a commodity that can be purchased rather than a human right. It has also become the playground for experimentation and simulation of the neoliberal capitalist market, whereby the constructs of a child’s worth are based on his/her ability to learn through fixed curriculums and examinations (Kumar & Hill, 2009). The child who does well in the system is rewarded with employment/labour while one who does not is potentially cast aside and excluded. This has significant implications for persons with disabilities.

While technological advances and automation have reduced certain employment options for persons with disabilities (e.g. the automation of telephone operation has reduced the number of visually impaired persons employed in India), privatisation and individualisation—characteristics of neoliberalism—have opened new opportunities for them in skilled and service-oriented jobs (International Labour Office [ILO], 2003). However, these opportunities are limited to those with access to higher education and training. With the focus on individual success (i.e. being able to “overcome” your disability or use it to your advantage), we begin to see how the idea of “access to education and training" could be problematic (ILO, 2003; Kumar & Hill, 2009). Who has access to education and training? What does access look like? How are education and training structured, and for whom? These are a few of the many questions I have when thinking about life in the neoliberal period. My thoughts could be summarised in the following cartoon:

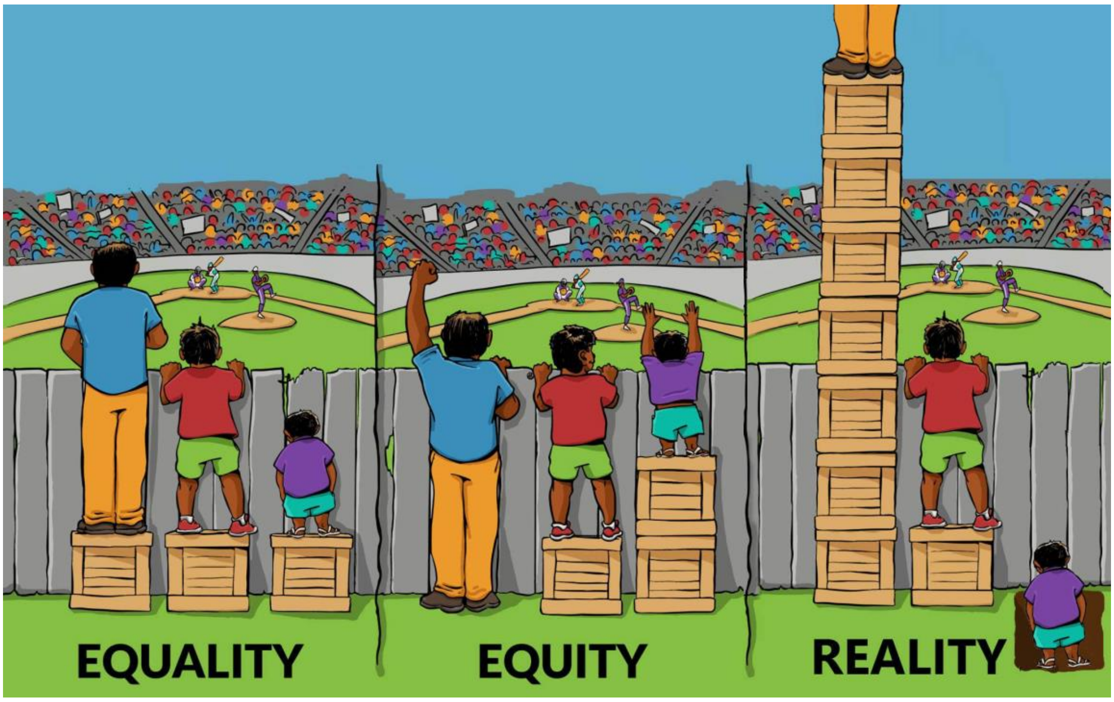

Image 3: Equality, Equity and Reality by Nagel (2016) from the Interaction Institute for Social Change (Approval received 7 August 2019).

Questions about the distribution of resources and wealth in our society, personal ability and individual success could be inferred from above. Additionally, why are fences, both materially and metaphorically, needed to segregate and categorise people? These are important aspects to consider when talking about disadvantaged pockets of society, such as people with disabilities.

Aside from access, education programmes are often not designed to meet actual sector demands, leaving individuals poorly equipped for skilled jobs (ILO, 2003). This is particularly problematic for people with disabilities, who do not fit in the ableist culture embedded within many workplaces (ILO, 2003). The growth of the informal economy—unregulated and/or unprotected economic activities—is equally concerning for people with disabilities (Kumar, Sonpal, & Hiranandani, 2012). While there is an increase in workforce participation by people with disabilities, particularly women (e.g. babysitting), this form of economic participation often seeks to further marginalise vulnerable populations (ILO, 2003; Kumar et al., 2012). These activities are 1) façades of exploitation (e.g. unpaid/underpaid work with no employment benefits) presented as participation, and 2) only suitable for particular "typecasts" of disabled people where other disabilities become less visible and more obscured (Kumar et al., 2012).

The impact of neoliberalism is not restricted to economic activities. Neoliberalism has established itself as an "achieved and normative political rationality whose values and influences are far more pervasive" in that market values are embedded in government and institutional practices as well as social action and our conception of citizenship (Kumar et al., 2012, para 15). Consider Brown's discussion of individualisation:

> *"Neoliberalism normatively constructs and interpellates individuals as entrepreneurial actors in every sphere of life … whose moral autonomy is measured by their capacity for 'self-care' — the ability to provide for their own needs and service their own ambitions … [I]t erases the discrepancy between economic and moral behaviour by configuring morality entirely as a matter of rational deliberation about costs, benefits, and consequences ... [T]he rationally calculating individual bears full responsibility for the consequences of his or her action no matter how severe the constraints on this action." (Browns, 2005, p. 42)*

Brown alludes to a "hyper-individualised conception of citizenship" where individuals are required to be responsible for themselves and participate economically in exchange for their rights to access services, facilities, etc. (Kumar et al., 2012, para 16). While this may present opportunities for those with disabilities to become active citizens within the economic sphere—keeping in mind that what it means to be 'active' here is defined within the context of neoliberal-capitalism—hyper-individualisation perpetuates the norms of the able-bodied (Galvin, 2006). As Galvin (2006, p. 507) points out, this conception of citizenship is focused on “what disabled people can do rather than on what they cannot do”. However, this is distinct from recognising their differences as abilities. Rather, it is focused on how people with disabilities can validate themselves as citizens by contributing to the economy in spite of their disabilities. In this neoliberal climate, success or failure is dependent on how individuals respond to their disability rather than society valuing their differences. Neoliberal policies and practices have hence engendered the importance of individual action and the individualisation of normative values (Galvin, 2006).

While neoliberal agenda and ideology are not at the foreground of my research, it provides the premise and foundations that underlie our lives today, affecting how persons with disability operate and are perceived within this environment. It has created what critical disability scholars such as Goodley (2014, pp. 26–30) call “neoliberal-ableism” where “ableism is part of our un/conscious everyday lives ... [and] we have internalised ableist values into the very heart of our ontological souls” in pursuit of a “logic that pursues the (hyper) normal”. Neoliberal politics have normalised a “desiring of sameness” through an ecosystem that prioritises privatisation and marketisation, including that of ableism, contributing to the structural disablement of individuals (Richardson, 2005, p. 515). I will explore the framework of ableism in the next sections of this chapter.

2.3 Disability Characterised by the Medical Paradigm

As mentioned above, medical and social paradigms shape today’s understanding of disability. In this section, I will explore the medical paradigm, its underlying system of belief and how it is being adopted in current societies. I argue that professional narratives—which are also the normative view—on disabilities produced by the medical paradigm marginalise people with disabilities through fueling an ableist culture by diagnosing groups of people as less-abled than others.

The medical paradigm is characterised by “modern fact-based cultures” in which disability is seen as a “dysfunction of a particular body … which may be prevented, cured, corrected or rehabilitated” (Couser, 2011, p. 22). This model of personhood arose with the advancement of science, technology and rapid economic growth during the period of industrialisation, shaping modern medicine as we know it today (Cocks, 2006). As economic activity and labour became the forefront of social order, science and technology developed at an unprecedented rate in the eighteenth century, replacing spiritual approaches with more scientific approaches (e.g. surgical procedures) in medical practice (Kilgour, 1962). This has implications for those with disabilities as there was an increasing view that diseases, which included disabilities, could be cured or improved through technological intervention (Clapton & Fitzgerald, 1997). There was also a shift of public attitudes towards humanitarianism, defined as a “deep concern for the welfare and comfort of human beings” (Kilgour, 1962, p. 44). This led to the advocacy of preventative medicine, particularly in response to outbreaks of infectious diseases, such as smallpox, at the time (Kilgour, 1962).

The development of modern medicine under these conditions constructed various assumptions about disability and the human body. Firstly, the “perfect body” exists and can now be achieved through science and technology (Campbell, 2001; 2009; Garland-Thomson, 2015). This perfection is measured by the potential of the body to provide economic labour, which determines if someone is part of (or excluded from) the social order (Campbell, 2009).

Secondly, the assumption that disability is similar to that of diseases and illnesses and can therefore be prevented or cured by science and technology emerged (Hofmann, 2001). This point is interesting as it has risen out of compassion and suggests (as seen in the first assumption) that if you have a disability, you are imperfect and need to be fixed. This assumption presents a crude reductionist view of what it means to be human.

Finally, while disability is not a symbol of religious or moral devaluation, it is categorised as a scientific anomaly (Clapton & Fitzgerald, 1997; Couser, 2011). As Couser explains:

> *“The medical paradigm tends to demystify and naturalize somatic anomaly, stripping away any supernatural or moral significance and characterizing physical variation solely as a matter that science may investigate and attempt to remedy. Compared to the symbolic paradigm, the medical paradigm offers much benefit for people with anomalous bodies.” (Couser, 2011, p. 23)*

These assumptions, as I will discuss later, help to construct the concept of ableism—the production of preferences for certain sets of abilities and discrimination against those who do not possess these abilities—which forms the basis of critique by both the social and critical models of disability. Critical disability scholar Goodley (2014) argues that discourses derived from the medical model have thus become the “professional narratives” of disability within contemporary society. As Goodley explains:

> *“Professional narratives, especially from medicine, psychology and social policy, tell us that impairments are sensory, physical and intellectual differences or limitations. Impairments are also endlessly being identified, constituted, constructed, diagnosed and treated. Impairments may actually be part of the process of disablism and cultural artefacts of the ableism industry that is quick to categorise those ways of being in the world that fail to match up to - or worse threaten - global capitalism.” (Goodley, 2014, p. XII)*

Professional narratives are therefore standardised descriptions and scripts of disabilities created by the medical profession to justify why certain differences are categorised as disablement. They disguise their interpretation of scientific research as facts or truths about the human body.

These professional narratives not only form the premise for the marginalisation of people with disabilities but also place the responsibility of marginalisation on individuals rather than the wider discourses produced through medicalisation

(Goodley, 2014). The medical model of personhood regards conditions experienced by impaired individuals (e.g. the inability to speak if you have autism) and the subsequent social repercussions through identification (e.g. being diagnosed with autism) as inevitable because these are fact-based, scientific anomalies that do not fit into the neoliberal-capitalist model which brings coherence to the contemporary social order (Goodley, 2014). In other words, within the medical model, people with disabilities experience psychosocial alienation because of their impairments. This has formed the basis of discussion for the social model.

2.4 Counter the Medical Rhetoric: Social Paradigm

Under the social paradigm, disability is "socially constructed in the manner of race and gender" (Couser, 2011, p. 22). It is a response to and critique of the medical model of disability, targeting the individualisation of impairments (Donoghue, 2003; Goodley, 2014). The social model contends that people are not disabled by their impairments, but rather, are disabled by social constructions that favour a normative labour-intensive society (Oliver, 2004). As disability advocate and academic Oliver describes:

> *"In the broadest sense, the social model of disability is about nothing more complicated than a clear focus on the economic, environmental and cultural barriers encountered by people who are viewed by others as having some form of impairment - whether physical, mental or intellectual. The barriers disabled people encounter include inaccessible education systems, working environments, inadequate disability benefits, discriminatory health and social support services, inaccessible transport, houses and public buildings and amenities, and the devaluing of disabled people through negative images in the media - films, television, and newspapers." (Oliver, 2004, p. 21)*

Oliver (2004), whose works centre around politicising and advocating the social model of disability, brings to our attention certain key aspects to this paradigm.

Firstly, he suggests that it is the social infrastructure and built environment of our society that creates disability, rather than various impairments. Livingston (2000) and Parr and Butler (2005) note that the study and teaching of architecture and geography are implicitly ableist in that the physical environments and cultural spaces we live in and are used to, many of which are historically situated, were not built with disability in mind.

Secondly, people with disabilities are not just psychologically discriminated against, but are also materially excluded from rigid social organisations and institutions (e.g. schools). Therefore, disability is not just felt through systematic discrimination but is also lived on a day-to-day basis through engagement with society and the people within it.

Thirdly, disability is treated as a negative attribute. As Goodley (2014, p.12) argues in response to Wendell's (1989) questions about the relationship between disabled and abled bodies, persons with disabilities are implicitly regarded as "rejected bodies"—a "cultural artifact of able-bodied society that quickly risks becoming a physical reality for disabled people". Society has therefore framed and marginalised those with disabilities as the 'other', a sharp contrast to those who possess "perfect bodies" (Wendell, 2013).

Unlike the medical model, where the impairment is biologically identified to be a fact, the social model acknowledges that the term 'disability' is a fluid and changeable notion that is influenced by various social and political factors. Hence, it is not universal and contextual, instead located within communities and societies that change across cultures and time periods (Couser, 2011). This fluidity is evident when comparing societies of the past with societies of today, as well as across countries and their policies in more current times. Kim (2012), for example, found that people in the United States, Canada, Nicaragua and Korea defined and understood autism very differently. I will return to Kim's study later in this chapter when I discuss autism.

The discourses of disability identified by the social model are largely acknowledged as narratives that need to be replaced because they oppress people with impairments (Barnes & Mercer, 2004; Donogue, 2003; Shakespeare & Watson, 2002). However, as Donogue (2003, pp. 199–208), who studied the application of the social model of disability in America argued, the “social constructionist doctrine” on disability has failed to replace the medical model as a redefinition of disability. Rather, it is an “ideological surrender to the same medical model of disability” that it had attempted to replace (Donogue, 2003, p. 200). Although the social paradigm of disability has been well articulated, there has been a “general neglect of the importance of social structure in dictating the legitimate definition of what it means to be disabled and how disability arises” (Donogue, 2003, p. 200). Instead of redefining disability, it has merely existed to critique the existing medical model with hopes of improving rather than replacing current discriminatory discourses. In other words, while society is trying to improve the built environment—for example, for persons with impairments—the social model does not seek to question the construction of medical narratives of disabilities. What Donogue (2003) illuminates is the fact that the structures of civil rights are so deeply embedded in the neoliberal-capitalist system that, without resistance and an overhaul, the application of the social model of disability will inevitably be succeeded by the medical model, invalidating it.

Secondly, the social paradigm largely disregards the actual experiences of people with impairments (e.g. autistic people may have varying levels of difficulty communicating with others) and does not provide a working definition of these bodily differences (Donogue, 2003). This critique is largely accepted by critical disability scholars such as Goodley (2014) and Garland-Thompson (2014)—the latter is a disability advocate and academic who has an impairment and often discusses her own physical disability in her works. They argue that the social model, while providing the direction for dialogue within contemporary disability studies, is insufficient as it only recognises disability as a social-cultural construct—a direct response to the medical model (Goodley, 2014). In many ways, with both models of personhood, similar discourses emerged and their rhetoric has become complementary to each other, once again building towards a single “professional narrative” through theoretical and practical compromises. Therefore, both models can be seen to be building towards a coherent definition of disability that is, and has been, premised by disablement and discrimination. As Goodley (2014) argues, responses to medicalisation only enhance the discourses of disability as they are located within the same narratives, signalling that these select bodily differences identified by medical sciences are inherently disabling.

This brings me to the next point: both models of personhood use disability as the main signifier (Goodley, 2014; Thomas, 2007). As a construct of neoliberal-ableist traditions, the understanding of disability within both models is based on the assumption that a person with impairments must necessarily be less abled, discriminated, marginalised and marked by their conditions. Disability studies have largely disregarded other theories and political ideologies because our societies have been so deeply rooted in them. The social paradigm, for example, neglects other factors that may play a role in oppressive or discriminatory behaviours, such as class, race, ethnicity, gender or sexuality. In fact, most discourses that have emerged from both paradigms have largely been dominated by and from Westernised perspectives (Mitchell & Snyder, 2015). This then provides a myopic view of the marginalisation experienced by persons with a disability (Goodley, 2014). Moreover, both models fail to recognise that disability could be part of a positive identity (Titchkosky, 2011). Again, current understandings of disability through these models impose certain narratives and guidelines on persons with disabilities without consideration for other possible sites of oppression (e.g. gender) as well as the positive experiences that may have developed through their impairment (Goodley, 2014; Titchkosky, 2011).

In the words of Titchkosky (2011, p. 130), there is a need to move beyond negative narratives and allow disability to spark a “politics of wonder” that demands more imaginative and creative ways of living our lives. Couser (2011), for example, points out that despite the social aspects that restrict and discriminate against people with disabilities, medicine has given some people with impairments opportunities (e.g. employment) where they can function under a system of social and political oppression. This is often not acknowledged within the social paradigm because it is focused on critiquing the medical model. Current models of disability need to look beyond their own field of knowledge and apply broader socio-political perspectives to identify disability as part of a larger framework that can be integrated rather than disengaged from other facets of our societies and their realities.

While I look towards contributing to changing the broader constructs of disability that disable people, I wonder at times: what can we do now for the people who want to be included under the current system (e.g. mainstream schools)? There are no forthright answers (even at the conclusion of my thesis) but I look towards Critical Disability Studies—an application of broader social, political and economic theoretical knowledge to the topic of disability—to begin deconstructing and reconstructing the realities of people living with disability.

2.5 Critical Disability Studies

In 2011, the World Health Organisation (WHO) released a report titled "World Report on Disability", which attempted to reposition the understanding of normative narratives around disabilities within the international community. It proposed a bio-psycho-social model of recognising disability as "part of the human condition". This refers specifically to "the negative aspects of the interaction between individuals with a health condition and personal and environmental factors" (WHO, 2011, p. 7). The disability experience is therefore produced by the interactions between bodily differences, personal circumstances and the environments that we traverse rather than only the impairment itself. However, it should be questioned if indeed these aspects and experiences are necessarily negative, as is suggested by the report.

This bio-psycho-social model is significant because the WHO, similar to the DSM, is a reputable global organisation leading the discussion on disability through the medicalised and socialised lenses. The above quote presents a very simple yet powerful coupling of the medical and social models of disability, acknowledging 1) the impairment, 2) the broader social constructions, and 3) the individual. Hybrid approaches such as the position taken by the WHO are central to Critical Disability Studies (Campbell, 2009; Shildrick, 2009). They recognise disability as a complex phenomenon that can be shaped by multiple factors and antecedents. Hybridity in Disability Studies is particularly important in the current political climate, where systems of social organisation are largely influenced by conglomerates, organisations and stakeholders (Kamat, 2004). Service provision (e.g. disability services) has moved from robust government-funded organisations to either privatised corporations that are inaccessible to many or grassroots volunteer-led organisations that are often insufficiently resourced (Kamat, 2004). Hence, in the last few years, disability scholars have seen a global movement towards re-appropriating disability beyond the traditional models of disabilities towards resistance theories which call for political activism (Peters, Gabel & Symeonidou, 2009). Goodley (2012; 2014) and other Critical Disability Scholars such as Garland-Thompson (2005; 2014), Campbell (2009) and Shildrick (2009) urge us to draw on a variety of political, theoretical and practical considerations. In this section, I draw on three major tenets of CDS which form the theoretical basis of this research: materialism, ableism, and intersectionality.

2.5.1 A materialist approach

A materialist approach to understanding disability argues that beyond material exclusion (e.g. built environment), people with disabilities are marginalised by the production and reproduction of discriminatory discourses through the governance of material conditions (e.g. how the production of material conditions is governed by neoliberal policies). In current context, it argues that the hyper-individualisation of labour participation and material production through a neoliberal-capitalist system discriminates and disempowers people with disabilities as they less able (or conditioned through education, etc. to be less able) to meet the expectations of society.

As a concept, ‘materialism’ is based on the belief that matter—which consists of any substance or object composed of atoms and is used synonymously to refer to ‘material’—is crucial to human existence and the understanding of the conditions of our everyday lives (Coole & Frost, 2010). Within the concept of materialism then, human organisation and development are fundamentally ascribed by material conditions dependent on society’s modes of production and reproduction (Plekhanov, 2008). It is concerned with both the outcomes and processes of production, emphasising the need for labour participation to achieve the necessary material conditions required to improve civilisation and the quality of our lives (Plekhanov, 2008).

The social model of disability argues that the marginalisation of persons with impairments is a consequence of material exclusion (e.g. built environment) forced upon them by current social and political systems, as identified in the section above (Oliver, 2004). While it critiques neoliberalism—for example, for the privatisation of services—it seeks to improve the state of disability on a fundamentally flawed foundation (Donogue, 2003; Goodley, 2014).

The crucial differences between the social paradigm and CDS are in their intent and historical relevance. Beyond the material realities that affect people with impairments, critical disability studies put forth that the discrimination of people with disabilities is a production of discourses through historical narratives (Campbell, 2009; Goodley, 2011; Meekosha & Shuttleworth, 2009). The word ‘critical’ within CDS is used to recognise the “inherent historicity of society” (Meekosha & Shuttleworth, 2009, p. 53). Similar to the social model, CDS is committed to self-reflexivity—concepts are susceptible to change with ideological paradigm shifts. Therefore, in the last decade or so, the interest of CDS has been in the political structures and ideology (i.e. neoliberal-capitalism) that enable a materialist society and which now largely govern the global social order (Goodley, 2014; Meekosha & Shuttleworth, 2009, p. 54).

Neoliberal-capitalism, through a materialist approach, places the productivity and labour participation of an individual as precedents to having a fulfilling life (Goodley, 2014). The neoliberal tradition normalises this approach through the articulation of the “ideal citizen”, an “idealisation pursued through transforming economies, restructuring nation states and worshipping the market” (Goodley, 2014, p. 26). It encourages socio-economic deregulation at national and local levels and advocates for individual freedom and autonomy within (Dagnino, 2003). The individualisation of productivity can be seen through the change in the minimum wage structure in Australia, where there was a significant move away from the family wage structure towards an individual wage structure (Bray, 2013). This creates a hyper-individualised system of self-help intervention where the autonomy of the individual is preferenced over collective needs and support (Gershon, 2011).

The ability or inability to perform labour as a contribution to the economy therefore determines a person’s able-ness (Goodley, 2014). If one were unable to perform a certain standard of labour, he/she would be seen as incompatible with the neoliberal system and would therefore be alienated by society through the disability label (Goodley, 2014). If one were, on the other hand, able to overcome his/her disability to perform labour through personal will, he/she would be validated by the system through individual remuneration, in turn validating the system as credible. In 2012, 52.8 per cent of people with disabilities were employed in comparison to 82.5 per cent of people without disabilities (Australian Bureau of Statistics [ABS], 2015). In addition, people with disabilities were more likely to be employed part-time within unskilled, labouring jobs than people without disabilities (ABS, 2015). While I do not agree that labour participation should be how we identify ourselves as fulfilled individuals, these numbers are troubling as they suggest that disabled people are disadvantaged within an individualised workforce as compared to people without disabilities, making it difficult for the former to participate in what society regards as civil participation. The combination of medicalisation and individualisation puts people with disability at a disadvantage right at the moment of diagnosis because professional narratives are constructed based on the potential for labour provision (Campbell, 2001; 2009; Goodley, 2014).

From birth, the body is continually assessed and reassessed to measure this potential. This is immediately apparent when we look at how we consider changes to our bodies as we grow old as impairments or disablement (WHO, 2011). However, notions of labour, ableism and normativity are constructs from a flawed political ideology that presents a myopic view of the individual (Goodley, 2014). It “limit[s] the imaginations of those who think of themselves as non-disabled" (Garland-Thomson, 2005, p. 1567) as well as those with impairments as it presents society as a singular, one-dimensional reality (Mertens, 2015). An individual is much more than his/her labour. Materialism within a neoliberal-capitalist system, however, is only interested in pursuing a political-economic perspective to measure an individual's worth. This brings me to the section on ableism and its implications on people with disabilities.

2.5.2 Ableism

The ableist rhetoric marginalises those with disabilities as it imposes the imagination of a fully able-bodied human. Within this rhetoric, people with disabilities are seen as "less human" as they do not possess all the (vague) qualities that are iterated in this imagination, as verified by their diagnosis (Campbell, 2001). In this section, I discuss the construction of ableism and how technology can be seen to both perpetuate and subvert its rhetoric.

Fiona Campbell (2001; 2009) asserts that to understand disability and disablism, we must first examine the ableist rhetoric. Chouinard (1997, p. 380) defines ableism as "ideas, practices, institutions and social relations that presume able-bodiedness, and by so doing, construct persons with disabilities as marginalised ... and largely invisible 'others'". What is defined as abled is governed by an "imagination" which relies on the "existence of a hitherto unacknowledged imagined shared community of able-bodied/minded people held together by a common ableist homosocial world view that asserts the preferability and compulsoriness of the norms of ableism" (Campbell, 2009, p. 4). In some ways, it returns to Fromm's (1955, p. 14) discussion on sanity (i.e. "the fact that millions of people share the same mental pathology does not make these people sane") where the majority is imposing its preferences on all people.

We can apply Benedict Anderson's (1991) work on 'imagined communities', referred to as nation states, to understand the "ableist imagination". Anderson (1991, p. 2) explains that a nation/community "is imagined because the members of even the smallest nation will never know most of their fellow-members, meet them, or even hear of them, yet in the minds of each lives the image of their communion”. He argues that this imagination is possible through the mass circulation of ideas and information. Print media, which he called “print capitalism”, enabled the dissemination of common languages within Europe, as people who previously spoke only dialects were able to learn a single vernacular language to be used across the nation (Anderson, 1991). While Anderson’s focus was on media artifacts, this theory could be similarly applied to other forms of information dissemination, such as policies, trades and partnerships. Relating Anderson’s observation to a non-geographically bound community, we begin to understand how an ableist imagination can be practised.

While there is no consensus as to what “abled-imagination” may be, far-reaching, dominant ideological frameworks (e.g. neoliberal-ableism, democracy) and historical conditions (e.g. the emergence of medical science) influence and shape the basis of this imagination (Clear, 1999; Iwasaki & Mactavish, 2005; Watts & Erevelles, 2004). After all, they determine how societies operate (e.g. through the export/import of material or cultural production) within the global marketplace and what societies value (e.g. individualisation, labour participation, freedom). Therefore, similar to that of nationalism, where politics of exclusion rather than inclusion dominate (i.e. we know who/what *does not* belong rather than who/what *does*), people who are deemed unfit for the global labour market are therefore excluded from the ableist imagination packaged as the norm (Anderson, 1991; Clear, 1999). Disability discourses are produced to target “anybody capable of being narrated as outside the norm” (Mitchell, 2002, p. 17). The able-body is hence a “compulsion” that is imaginary and internalised, where one performs under these compulsive assumptions unknowingly—or knowingly, because it is normalised through the ideology and the political systems that govern it (Campbell, 2009, p. 4). Ableism is a “network of beliefs, processes and practices that produces a particular kind of self and body that is projected as perfect, species typical and therefore essential and fully human” (Campbell, 2001, p. 44). Hence, those who sit beyond this circle of constructs, such as disabled persons, are “cast as a diminished state of being human” (Campbell, 2001, p. 44).

Through the use of technology, both persons with and without disability may internalise ableism. Technology has given persons who have an impairment at birth or at any point in time a chance to attain able-bodiedness (Thomas, 2007). It validates both the notion that perfect bodies exist and that people with disabilities have imperfect bodies. Campbell (2009, p. 59) calls this phenomenon ‘dis/technology’, where the application of technology, whether it be the use of prosthetics by a disabled person or the use of computers to communicate through screens rather than speech, is crafted around the “conditions of ableism”.

Foucault (1988) references four kinds of technologies that govern how human beings come to learn knowledge about themselves—namely, technologies of production, of sign systems, of power and of self. I draw attention to the technology of self, which is concerned with how one perceives and uses technology. According to Foucault, technology of self:

> *“Permit[s] individuals to effect by their own means, or with the help of others, a certain number of operations on their own bodies and souls, thoughts, conduct, and way of being, so as to transform themselves in order to attain a certain state of happiness, purity, wisdom, perfection, or immortality.” (Foucault, 1988, p. 18)*

While he did not specifically refer to disability or disablism, it is an important aspect of ableist rhetoric where the choice to incorporate technology into one’s life is led by the belief that it would help us attain a form of happiness. The rhetoric points out the dissatisfaction one may have with one’s body and how technology can be used to compensate and help construct this self-image of perfection. Feminist Donna Haraway (1999, p. 272) points out in her seminal work ‘A Cyborg Manifesto’ that humans have become cyborgs, a “hybrid of machine and organism” that condenses the “image of imagination and material reality”. This imagination for people with disabilities is constituted by ableism, where what is deemed as needing technological intervention is the impairment. It should be noted that in Haraway's discussion this imagination may not necessarily be filled by the possibilities and narratives fed by dominant ideologies; rather, societies have turned opportunities for the reimagination of the body and identity into one that fits into its dogma through what I believe to be the deception of being able to achieve individualism.

Critical disability scholars such as Campbell (2001; 2009), Garland-Thompson (2014) and Thomas (2007) therefore argue that the use of technology by disabled persons is a way of internalising ableism—one that conforms to ableist expectations and imitates the able-bodied. The application of technology to the human body creates an extension of the self to attain an imaginary sense of fulfilment and happiness prescribed by social norms. It is seen as an opportunity to overcome disability and its imaginary barrier to labour participation (synonymous to leading fulfilling lives, as mentioned above), working towards repairing faulty bodies to meet society's expectations of the able-bodied. As Marks (1999, p. 25) succinctly summarises, "humans are internalising oppression". Technology presents a way to "purge, restrain, realign and normalise ableist comportment" under the disguise of providing material support to those with disabilities (Campbell, 2009, p. 47).

Through ableism, disableism can therefore be defined as "a set of assumptions (conscious or unconscious) and practices (e.g. use of technology) that promote the differential or unequal treatment of people because of actual or presumed disabilities" (Campbell, 2009, p. 4). Campbell (2009) and other critical disability scholars (Garland-Thompson, 2015; Goodley, 2011; 2014; Iwasaki & Mactavish, 2005; Marks, 1999; etc.) argue that it is perhaps time to shift our point of focus away from the ableist rhetoric when understanding dis/ableism. We should instead consider the possibilities and imaginations that disabilities can bring and the way people with disabilities "think/speak/gesture and feel different landscapes not just for being-in-the-world, but on the conduction of perception, mobilities and temporalities" (Campbell, 2009, p. 15). This would open a new horizon of perceptions and imaginations of the world that have insofar been bound by our obsession with ableism. While technology is problematic at this stage, I will unpack its complexities and discuss how the application of technology can both provide material support for persons with disability while resisting the ableist rhetoric in the next chapter.

2.5.3 Intersectionality

Finally, through adopting an intersectionalist approach, critical disability studies examine how other dominant social discourses that marginalise and "restrict the lives and govern the bodies of people", such as race and gender theories, can be similarly applied to disability scholarship (Garland-Thomson, 2005, p. 1567; Goodley, 2014). Defined by Crenshaw (1989) in her seminal work on the intersection between racism and feminism, intersectionality is a theoretical framework for understanding how aspects of one's identities, social or political, combine to create unique modes of discrimination. Hence, the intersectionalist approach draws from the experiences of alternative theoretical concepts (i.e. how they have been theorised and applied) and applies their arguments to disability studies (Goodley, 2014, p. 35). Goodley (2014, p. 35) contends that "modes of ableist cultural reproduction and disabling material conditions can never be divorced from hetero/sexism, racism, homophobia, colonialism, imperialism, patriarchy and capitalism". It is through the intersectionalist approach that we do not isolate disability as the only site of "otherness", allowing for a broader discussion on the ableist rhetoric and the re-imagination of normative bodies.

Campbell (2009) suggests that perspectives on sites of oppression, such as race, queer, crip and feminist theories, are good analogies to begin with. Each of these theoretical perspectives, along with disability studies, is susceptible to neoliberal-ableism, which constructs aspects of race, gender, class, sexuality, etc. (Hall, 2011). For the purpose of this literature review, I will mainly draw on feminist theories to outline how social constructions of the body—particularly the female body—can be understood as an ableist rhetoric that is applicable to disability studies.

According to feminist disability scholars such as Garland-Thompson (2005), Weiss (2015), Hall (2011) and Shildrick (2009), patriarchy is aligned with ableist theories as both are established on the basis of power and social order. They are necessarily related because both ableism and patriarchy are embedded within our societies to serve the interests, and maintain the power and privileges, of those who benefit from it (Hall, 2011). Patriarchy can be defined as “a system that creates privileges and oppression”—specifically, privileges for heterosexual men and the oppression of women (Neuenfeldt, 2015, p. 20). According to the World Economic Forum Gender Gap Report, approximately 70 per cent of people living in poverty are women and most developed Western countries such as Switzerland and Germany have a reported pay gap between men and women of around 18 to 22 per cent (Hausmann, Tyson & Zahidi, 2011). In Australia, the pay gap is approximately 15.3 per cent and women are less likely to participate in the labour force and more likely to work part-time than men (i.e. 45 per cent of women in the labour force worked part-time compared to 16 per cent of employed men) (ABS, 2017). These numbers show that there are broader social systemic issues brought about by patriarchy.

The patriarchal concept of beauty within Western societies, for example, has an immense impact on persons with disabilities. Beauty is a socially constructed concept that is dictated by and for men, according to Butler (1999) and Wolf (1991), as well as many other feminist scholars. Female and, to a smaller extent, male bodies are compartmentalised, objectified and sexualised from the shades of their hair, the fullness of their lips to the size of their bust, waist and hips (Szymanski, Moffitt & Carr, 2011). As Gillespie claims:

> *“‘Mirror, mirror on the wall, who’s the ...?’ Most of the time when the question is raised, the answer isn’t you. In fact, most women rarely (as in almost never) look in a mirror and are satisfied with what they see. You are either too shot or too tall, too fat, or too thin. Your eyes aren’t the shape, size or color that is considered beautiful. Your hair doesn’t blow in the wind, or drape on your shoulder, or fluff out on his pillow.” (Gillespie, 1998, p. 186)*

The ideal body—as presented in movies, advertisements, novels, fairytales and even toys, like the Barbie doll —never represent the average bodies of women (Ponterotto, 2016). The politicisation and sexualisation of the female body, and more recently, the male body, are sites of oppression that are continually reviewed and renewed by and for the male gaze (Ponterotto, 2016). This gaze is repeatedly reproduced by the media and consumed by the public, and is then normalised and performed by both genders, similar to that of the internalisation of ableism (Ponterotto, 2016; Weiss, 2015). Now, imagine this gaze thrown on people who have a physical disability, deformity or cerebral palsy. The concept of beauty would further disable them as not only are they deemed to be less able to participate in the labour force on first impression, they are also not fit for the common gaze (Garland-Thompson, 2015). There are many other examples that can be cited from a feminist perspective, such as the critique of gender roles and stereotypes (e.g. men are better at sports than women; men are less likely to show emotions such as pain than women), which may further disable a person with an impairment (Weiss, 2015).

Within the field of autism studies, gender is certainly an important intersection to consider due to the disproportionate number of males diagnosed with autism over females (Geelhand, Bernard, Klein, Tiel & Kissine, 2019). This ratio discrepancy (i.e. four males to every female in Australia [AIHW, 2017]) has serious implications on our understanding of autism in girls.

As pointed out by Geelhand (2019), research in this area has been grounded in male-dominant samples, consequently affecting the way we conceptualise, measure, and diagnose autism, focusing on a male-centric presentation of autism. This is problematic as 1) it creates an identity dilemma for females with autism, and 2) it infers that autism is inherently gendered. Consider this quote by renowned autism researcher Baron-Cohen (2003, p. 1): “The female brain is predominantly hard-wired for empathy, [while] the male brain is predominantly hardwired for understanding and building systems”. Baron-Cohen (2003) goes on to conclude that sex, or gender, is an important indicator to understanding autism. However, this explanation for autism has the twin effect of normalising the condition as part of gender/sex while essentialising gender differences (Bumiller, 2008). Hence, the intersection between gender and autism is crucial in our understanding.

Yet, this research faced similar challenges with other autism research in that only one in forty of the participants was female. Therefore, further research on differentiated spaces and the use technology by young girls with autism is noted as necessary in the future. Some observations between gender dynamics will be discussed in Chapter 8 as part of a closing statement on its importance to this area of research.

The arguments around the intersection of gender and disability can be similarly applicable to other theoretical frameworks such as race, crip or queer theories (Goodley, 2014). In a controversial study which has been replicated several times with children on racial stereotypes, it was found that both African-American and White American children had “white bias” and were more likely to pick white “nice” dolls over black “ugly” dolls despite some participants relating themselves to the latter (Erves, 2019). Racial stereotyping opens yet another dimension to understanding how people with disabilities may be further disabled and discriminated against based on the colour of their skin.

The intersectionalist approach enables us to understand different aspects that contribute to disablement, moving away from using ‘disability’ as the main signifier. Through this, a better understanding of disability can be achieved by comprehending how it is constituted and constructed within broader social and political landscapes. In the case of feminist disability studies, it provides a perspective of the private—how we see ourselves and how others see us—through a patriarchal system (Goodley, 2014). Within my study, gender, though minimal, plays a role in how young people with autism within The Lab interact with each other (see Chapter 8).

Through these critical inquiries regarding disability, namely the materialist approach, ableist rhetoric and the intersectionalist approach, we begin to understand how disability is socially constructed and constituted by political and ideological systems, more specifically, *neoliberal-ableism*, as discussed in the previous sections. The understanding of other sites of oppression also enables us to recognise that impairments are not the only signifiers of disableism but that the constructs of race, gender, class, sexuality, etc. contribute to the overall marginalisation of persons with disability. It is through these critical inquiries that I begin to analyse autism in contemporary society.

2.6 Autism, Socialisation and Neurodiversity

As mentioned in the last chapter, autism is conventionally defined from a deficit-based medical perspective as a neurodevelopmental disorder. In the DSM-V, it is diagnosed on the basis of:

> *"persistent deficits in social communication and social interaction across multiple contexts, including deficits in social reciprocity, nonverbal communicative behaviors used for social interaction, and skills in developing, maintaining, and understanding relationships. In addition to the social communication deficits, the diagnosis of autism spectrum disorder requires the presence of restricted, repetitive patterns of behaviour, interests, or activities." (APA, 2013, p. 31)*

There are five major criteria to diagnosing a person with autism (APA, 2013, p. 50–51):

1) Persistent deficits in social communication and interaction—this criteria is also used to measure the severity of the condition
2) Restricted, repetitive patterns of behaviour—under this criteria, persons diagnosed must also be hyper or hyporeactive to sensory stimulus or are unusually interested in sensory aspects of the environment
3) Symptoms must be present at an early stage of development, although one can be diagnosed in later stages of life
4) Symptoms must be clinically significant
5) The condition must not be explained by other neurological impairments such as intellectual disability

It is worth mentioning some of the differences between DSM-IV and DSM-V as these have significant research and practical implications (Vivanti et al., 2013). The main difference between DSM-IV and DSM-V is the shift from subtypes of mental disorders associated with autism, such as Asperger's syndrome and Rett syndrome, to the amalgamation of these disorders under one central diagnosis: autism spectrum disorder (Vivanti et al., 2013). While low-functioning autism previously meant a lower Intelligence Quotient (IQ) in comparison to an average person, which is sometimes interpreted as an intellectual disability, the new diagnostic criteria suggest that autism is not correlated with intelligence (Baron-Cohen, 2002; Vivianti et al., 2012).

According to Macintosh and Dissanyake (2004), the rationale behind changes to the DSMs are due to inaccuracies in identifying autism and its subtypes. Evidence to date suggests that subtypes of autism are most likely a "variation of the same underlying condition or aetiology" rather than a different diagnosis (Young & Rodi, 2014, p. 759). In addition, many subtypes of autism present with similar behaviours, such as social communication difficulty, with slight variances that may lead to a different diagnosis by different medical professionals (Vivianti et al., 2013). There is also no scientific evidence that any one specific biological factor is responsible for autism or its subtypes (Grandin, 2012). Hence, to create a more coherent understanding of the relationship between autism and its subtypes, the DSM-V consolidated these diagnoses and presented them across a spectrum rather than as separate entities (Young & Rodi, 2014). Persons who only have difficulties in social communication and interaction are now diagnosed under Social (Pragmatic) Communication Disorder.

However, Verhoeff (2013) points out that the concept of autism has not been coherent and consistent since its discovery. Instead, it has "evolved and mutated" so much so that discontinuities and irregularities exist, although these are generally disregarded and unacknowledged by the DSM or medical profession (Verhoeff, 2013, p. 454). In his alternative historical analysis, Verhoeff found that the definition of autism had gone through three major phases, from “profound affective and aloofness, to language and other perceptual and cognitive abnormalities, to deficits in social cognition and intuition”, the last of which reflects the current definition of autism within the DSM-V as shown above (Verhoeff, 2013, p. 454). By comparison, the history of autism as written by medical institutions presents a “sense of scientific progress and an essentialist understanding of autism” that seeks to legitimise and reinforce current understandings of autism (Verhoeff, 2013, p. 442).

The transition between different definitions of autism is problematic, particularly from DSM-IV to DSM-V, as many who were previously diagnosed with subtypes of autism, such as Asperger’s syndrome, may now fall out of the Autism Spectrum Disorder category and into the Social Communication Disorder category (Burns & Matson, 2017). While one may argue that the categorisation of disability—a potential form of discrimination—should not be emphasised, it has practical and research implications. From a practical viewpoint, this may signify a change in government funding for families and schools, affecting existing institutions who rely on this support (Burns & Matson, 2017). From a research perspective, it creates discrepancies between past, present and future research on autism as the sample would not be comparable.

Apart from these implications, this change also has significant implications as it fails to “emphasise the notion of multiple conditions within the spectrum” (Vivanti et al., 2013, p. 260). The DSM-V appears to reflect the “homogeneity in the core symptoms and the heterogeneity in severity levels” without condoning mutually exclusive categories (Vivanti et al., 2013, p. 260). This presents two major problems for this research. Firstly, it would make comparability between new and old theories difficult and even inaccurate (Vivianti et al., 2013). Secondly, it does not aptly describe this research’s participants, who were previously diagnosed or self-diagnosed under the DSM-IV. While I regret it is not in the scope of this research to cover ASD diagnostics comprehensively, the nature of this research makes specificity more practical and applicable. The results will assist institutions like The Lab to make short- to long-term informed decisions about the configuration of technologically-mediated spaces that will have a direct impact on young people with autism.

Certainly, one of the hopes of this research is that its findings and discussions may possibly apply more broadly and be extended to other ASD individuals or persons with a disability. For the purpose of this project, I will specifically be focusing on people known in modern society as presenting with having high-functioning autism (which includes those who were diagnosed with Asperger's syndrome).

The definition given by the DSM-V emphasises differences experienced by and with autistic individuals as deficits (mentioning the word thrice within two sentences), conforming to ableist expectations and the medical model of personhood. The deficit-based medicalisation of autism has led research in this field to primarily focus on "solving the problem" of the individual through prevention or cure (Baron-Cohen, 2002; Verhoeff, 2013). A library database search on peer-reviewed journal articles in English published in 2017 with the word "autism" in the title (N = 2772) revealed that more than 50 per cent of the articles were categorised in the field of medicine (1471), approximately 28 per cent in psychology (765) and about 19 per cent in education (525). Most other articles were categorised under pharmacy, therapeutics and pharmacology, anatomy and physiology, public health or social welfare and social work. It should be noted that some of these categories overlap. We can infer from the categories that there is an absence of socio-cultural research. A review of a sample of the articles (N=100) through their abstracts also suggests that most seek to 1) identify causes of autism, 2) provide more details and evidence of autistic behaviour, and 3) present options for intervention, either medically or through various educational or therapeutic programs. Only one in the hundred sampled described autism to be alternatively enabling rather than disabling. Hence, Baron-Cohen (2002) and other researchers in the field such as Grandin (2012) and Biklen et al. (2005, p. 1) encourage academics and institutions to challenge the "network of beliefs" that constructs ableism and understands autism as part of a continuum of human nature, no less than an able-bodied person.

Molly and Vasil's (2002) research on the social construction of Asperger's syndrome presents a good model for further analysis. In their research, Molly and Vasil (2002, p. 659) fundamentally ask the question, “is Asperger’s Syndrome (AS) a disorder or a neurological difference that has been socially constructed as a disorder?” They argue that AS was “readily adopted as a category because of its value as a category of special education” and was constructed for the purpose of categorisation, arguably to benefit individuals who experience this neurological difference and/or require services (Molly & Vasil, 2002, p. 664). In other words, consistent with the CDS narrative, Asperger’s syndrome was introduced as a way to differentiate between those who fit in with the normative, ableist education system and those who do not. Molly and Vasil hence criticise the DSM:

> *“The [DSM] operates solely according to the medical model: there is no acknowledgement of the history of AS as a medical condition or of the role played by those doing the labeling in creating and shaping the condition.” (Molly & Vasil, 2002, p. 664)*

They conclude that while people with AS have neurological differences compared to their peers, they are systematically disabled by the physical, social, political, economic and cultural structures of society rather than by their condition (Molly & Vasil, 2002). This is similarly argued by Nadesan (2005, p. 4), who acknowledges that while autism has a “biogenetic component”, the “matrices of social practices and institutions [enable] the identification and interpretation of (the idea of) autism” rather than the embodied experiences of condition. While academics do not deny that symptoms of autism are biological, they question the categorisation of autism, particularly AS and high-functioning autism, which creates its disablement.

In Kim’s (2012) study on autism across cultures, he found that perceptions of autism varied widely across Korea, Nicaragua, the United States and Canada. In Korea, autism is associated with “shame and guilt [where] the mother is the locus of responsibility for her child” (Kim, 2012, p. 543). Interestingly, he points out that autism is synonymously used with reactive attachment disorder (RAD), where a child is neglected and persistently fails to establish or initiate social interactions and relations (See APA, 2013), and suggests that RAD is more “culturally and socially acceptable than … autism” (Kim, 2012, p. 538). He claims that the “public’s attitudes towards people with disabilities are indifference, neglect and hostility … [perceiving] them as stubborn, irresponsible, unsophisticated and incapable” (Kim, 2012, p. 539).

By comparison, Kim (2012) found that the US and Canada were more accepting of people with disabilities and their families. Aside from having a wider range of services available to individuals with autism, families interviewed by Kim felt that people were also more welcoming and less judgemental. In Nicaragua, autism was generally unknown and used as a term for a “generic notion of disability” (Kim, 2012, 543). Unlike Korea, Nicaragua takes a child’s disability as a community responsibility rather than a mother’s fault. Hence, teachers at schools and extended family members were engaged in helping individuals with autism.

In Kim’s (2012) research, there is a clear social aspect to disablement. The medical labelling of autism as disabling forms the basis for social and cultural interpretation that can be morphed into something more disabling, unrecognisable and impactful for the individual, his/her family and the community. Cultural perspectives can distort and hinder how we understand and approach people with disabilities, providing both opportunities for enablement or further disablement. Poor understandings of autism can lead to wrong or preferenced medical diagnosis, as seen in Korea.

Therefore, a broader definition of autism that is not disabling is required. In recent years, a subset of CDS called Critical Autism Studies (CAS) has emerged to address the specific issues related to autism within the medical and social models (Woods, Milton, Arnold & Graby, 2018). Previously, I noted that CAS can be defined as “power dynamics that operate in discourses around autism, questioning deficit-based definitions of autism, and being willing to consider the ways in which biology and culture intersect to produce ‘disability’” (Waltz, 2014, p. 1337). Derived from CDS, it seeks to:

- Understand and critique how power relations shape the field of autism;

- Create and promote new and enabling narratives of autism that challenge the predominant deficit-based narratives used to inform policies, public opinion and popular culture; and
- Develop new analytical frameworks using inclusive and non-reductive methodological and theoretical approaches that are emancipatory and value each individual’s unique autism (Davidson & Orsini, 2013; Woods et al., 2018).

CAS additionally challenges the understanding of (dis)ability from a medical perspective as it interrogates the construction of autism as a spectrum of difference configured as social and cognitive impairments (Davidson & Orsini, 2013). It is through this lens that I introduce the emerging concept and paradigm which has become part of the CAS discussion: neurodiversity.

2.6.1 Neurodiversity

In the last decade or so, Disability Studies has seen the emergence of a new theoretical framework—the neurodiverse paradigm—to provide a critical alternative to both the medical and social models of disability. While the concept of neurodiversity is highly contested, it advocates the recognition and respect of neurological differences as human variance (Jaarsma & Welin, 2012). It “[celebrates] autism as an inseparable aspect of identity” in which autistic behaviours are not inherently deficits in themselves (Kapp, Gillespie-Lynch, Sherman & Hutman, 2013, p. 59). This builds on the previously cited work of neurodiverse scholars (e.g. Grandin, 2012; Kapp et al., 2013) who argue that autism should be accepted as an identifier (i.e. autistic person rather than person with autism) as it is a difference that is part of human variance rather than disabling (Jaarsma & Welin, 2012). They argue that placing autism as secondary to a person’s identity foregrounds autism to be undesirable and disabling.

The neurodiverse paradigm is also political. One of its first proponents, Singer (1999, p. 64), argues that the categorisation of people with autism and other similar disabilities as "'neurologically different' represent a new addition to the familiar political categories of class/gender/race". It acknowledges that social conditions created by current forms of governance construct this form of disability in the same way as gender disempowers women or the colour of our skin informs expectations of society; this augments, and is not dissimilar to, the arguments put forth by the social paradigm.

However, neurodiversity recognises that neurological differences do exist; autistic persons do have difficulties socialising and communicating with their neurotypical counterparts (Silberman, 2015). But is this necessarily a negative attribute that requires intervention or is this form of categorisation simply (unbeknownst to most of its perpetrators) political? Must we then change society to accommodate persons with neurological differences?

These are difficult questions, but the neurodiversity paradigm provides us with a framework for how we can move forward from the current medical and social models of personhood. As Waltz (2014, p. 1337) prompts in his definition of CAS, society needs "to consider the ways in which biology and culture intersect to produce 'disability'". Neurodiversity provides an avenue for understanding this intersection by 1) redefining and allowing for the change of perceptions of neurological impairments, providing the much-needed definition of disability that the social model lacks, and 2) recognising differences as present but not disabling, prompting society at large to become more inclusive through allowing these neurological differences to thrive rather than be suppressed and/or "cured" (Kapp et al., 2013). A broader question springs to mind: can medical science identify and categorise differences such as autism without insinuating negative professional narratives? After all, within neurodiversity, identity is still an important element in understanding ourselves and others (Jaarsma & Welin, 2012).

Journalist Blume wrote in his article, *Neurodiversity: On the neurological underpinnings of geekdom*:

> *"Neurodiversity may be every bit as crucial for the human race as biodiversity is for life in general. Who can say what form of wiring will*

> *prove best at any given moment? Cybernetics and computer culture, for example, may favor a somewhat autistic cast of mind." (Blume, 1998, para. 4)*

Indeed, the neurodiverse paradigm may yet prove to be an important social phenomenon as we move towards a globalised networked society, assisted by new technologies and ways of communication. As I will discuss in the next chapter, digital and online spaces have become crucial elements in our everyday lives and more work needs to be done to reconsider and redefine old theoretical and political frameworks, such as neoliberal-ableism. Through these critical perspectives, my research will identify individuals with autism as differently abled, having social and communicative particularities and different learning processes.

I will now segue into the final section of this chapter to understand and interpret sociality in the context of defining autism.

2.6.2 Socialisation: The need to move beyond a humanist perspective

As mentioned earlier in this chapter, the DSM's definition of autism emphasises the social communication and interaction deficit by of those on the spectrum. As Barkan (2013, p. 98) points out, "without social interaction, we could not have socialisation". Therefore, in the final section of this chapter, I turn my focus on understanding social interaction and socialisation, and argue that socialisation is an ableist and humanist construct which disables those on the spectrum on the basis of imagined social norms and values in relation to the ways we interact.

2.6.2a Why do we socialise?

Before I began this research, I often wondered at the significance of socialisation. From a layman's perspective, it was the portal through which one could become accepted by and in touch with the world. And as I will discuss in

Subsection 2.6.2c, this interpretation of socialisation is not far from its definitions. An important aspect of why socialisation is deemed necessary is its importance in identity formation (Barkan, 2013; Castells, 2010). As Manual Castells (2010, p. 2) writes, “identity is people’s source of meaning and experience”. The quest for finding self-identity is largely related to existentialism where one questions *Who am I?* and *What to do?*.

Giddens (1991) discusses self-identity as "not a distinctive trait possessed by the individual” (p. 53) but one that is reflexively understood and situated within “social conventions produced and reproduced in our day-to-day activities … as part of ‘going on’ in the variegated settings of our lives” (p. 35). It suggests that our identities, while not necessarily defined by the ways we socialise, are interconnected and responsive to our social environments as they change over time.

Castells (2010, p. 4) agrees with Giddens but also states that the rise of the network society, necessarily linked to the use of online/mobile technology, calls into question the “processes of the construction of identity … inducing new forms of social change”. While I will discuss this further in the next chapter, it suggests that our identities, both social and individual, are impacted by our interactions with and within technologies as they introduce new forms of connecting with others, with increased accessibility to diverse amounts of information. For the purpose of this thesis, I will discuss social and individual identities with some degree of differentiation, even as they are not mutually exclusive, because the notion of the social may be differently perceived by individuals with autism (in comparison to their neurotypical counterparts) (Ringland et al., 2016).

Tajfel (1981, p. 255) defines social identity as “that part of an individual’s self-concept which derives from their knowledge of their membership of a social group (or groups), together with the value and emotional significance attached to this”. It is largely associated with collective identities that have high commitments to groups or communities (Ellemers, Spears & Doosje, 2002). This definition presents a point of interest worth noting: it is almost a mirror of the definition of socialisation, suggesting that identity formation and socialisation have a distinct interconnected relationship. This notion is further explored in Subsection 2.6.2c.

Individual identity—or personal identity, on the other hand—is concerned with “identity, consciousness, concern, and responsibility” (Strawson, 2011, p. 157). It is related to self-perception, self-esteem, personality, individuality (i.e. what makes you unique) and self-characterisation, and has low commitment to society (Ellemers et al., 2002; Strawson, 2011). While it is impossible to separate the individual from the social, as previously mentioned, these distinctions present us with a trajectory to determine how young people with autism may develop their own identities.

In Donahoo and Steele’s (2013) evaluation of The Lab, they observed that young people at The Lab were keen and able to make friends and interact with each other both off- and online—unlike their experiences out of The Lab. I interpret this as a development of social identity, where young people with autism form a sense of attachment to The Lab as a social hub. As I will discuss in the next chapter, the observations are in line with Wittel’s (2001) conception of ‘network sociality’—a form of socialisation enabled by technology that is largely interest-based, requiring lower commitment in comparison to traditional notions of communities. This form of sociality is brought to the physical space of The Lab, where young people with autism interact in ways comparable to their interactions online.

2.6.2b Social interactions

Social interaction is an important aspect of socialisation. It is the process whereby two or more social actors—often human but could also constituted by non-human actors (see 2.6.2d)—influence each other through some form of action, verbal/non-verbal communication or any form of engagement (Cahill, 2005). Individuals “influence one another’s action in some form when in one another’s immediate physical presence but may also do so through varied media of communication when spatially and temporally separated” (Cahill, 2005, p. 745). While studies of social interactions have to date focused primarily on face-to-face interactions, Cahill (2005), Baym, Zhang and Lin (2004), Mikami, Szwedo, Khalis, Jia and Na (2018), and many other researchers in a variety of fields (e.g. sociology, human–computer interaction) have noted the increase in mediated social interactions. As we move seamlessly between spaces today (as will be discussed in the following chapter), the ambiguity and complexity in understanding and classifying social interactions have dramatically expanded. I will briefly discuss the concept of friendship in the next chapter and how it is changing through a combination of face-to-face and mediated social interactions in multiple spaces. For the moment, it is important to note that social interactions can occur within a variety of spaces and that each interaction influences our actions, behaviours and thoughts.

Social interaction is also a link between the individual and society and is often facilitated by common interests, social identity, focus of attention, etc. (Cahill, 2005). Collective identities can therefore be produced and reproduced through social interactions (Cahill, 2005; Ellemers et al., 2002). It is, as Cahill (2005, p. 745) explains, “the medium through which culture and society directly influence individuals and through which individuals collectively produce and reproduce culture and social arrangements”. Reflecting on Anderson’s (1991) “imagined communities”, social interactions form part of our experience, informing our imagination of society and culture, such as our understanding of disability. This link between the individual and society also suggests a two-way influence—social interactions between individuals can produce new collective meanings and identities.

Goffman (2005) argues that social interaction should, however, not be reduced to individuals’ psychological state of mind. In other words, we should not assume that an individual’s social interaction is solely controlled by his/her own decisions. Instead, social interactions are governed by expressive conventions called the “interaction order”, in which interactions become ritualistic in nature (Goffman, 2005). What Goffman is highlighting is the presence of guiding principles behind the way we interact socially, suggesting that not all forms of interactions are acceptable. Some facets of social conversations and interactions include (Cahill, 2005):

- Structures and procedures in interactions (e.g. “Hello”, “Goodbye”, turn-taking techniques)
- Preferences that are controlled by systematic bias
- Contextualised interactions dependent on time and space

While Goffman’s text, and to a smaller extent, Cahill’s research, may be slightly dated, they present a narrative that is consistent with other sociological research today: the way we socialise is governed to a large extent by conventions which are socially constructed (see Preece, 2004, for an example of online interaction etiquette). People with autism are diagnosed as unable to socially communicate and interact due to the structures and etiquette that exists within social interactions. It suggests that the diagnosis of autism is relational to and dependent on social expectations that are ableist rather than a focus on individual dis/ability. In several studies, including this research, it has been found that individuals with autism desire social interaction and often search for and find ways to interact with others (Müller, Schuler & Yates, 2008; Ringland et al., 2016) These social interactions, however, may be unconventional (e.g. using mobile phones to talk to someone who is physically next to you) as they are complicated by sensory overload and other experiences associated with autism. The influence and narratives of social interaction by people with autism are often excluded from mainstream conventions of social interaction, affirming the existence of privileged realities as discussed in Chapter 1. This discussion associated with conventions will be further unpacked under ‘socialisation’ in the next subsection.

2.6.2c Socialisation

Socialisation broadly refers to “the social processes through which [individuals] develop an awareness of social norms and values and achieve a distinct sense of self” (Giddens, Duneier, Appelbaum & Carr, 2014, p. 69). There are, however, variations of the definition.

Clabaugh (2010), in an interpretation of Lev Vgotsky's work, refer to socialisation as a process of cultural transmission that is a combination of the performance of personal embodied experiences and social norms. Ryan (2005), on the other hand, refers to socialisation as a form of internalisation of larger norms and values, assisting individuals in making a distinction between right and wrong (Ryan, 2005). This definition is premised on the notion that normative order can control behavioural order, whereby passive social actors are taught to internalise standards of the larger social system (Ryan, 2005). Speier (1971, p. 189) argues, however, that "socialisation is the acquisition of interactional competencies", a two-way interaction between a receiver and his/her teacher, suggesting the presence power between persons.

Another earlier definition of socialisation by Durkheim (as seen in Ryan, 2005) refers to the term as a way to restrain innate human passions through a sense of collective morality or collective conscience via three goals: to discipline, to provide individuals with a sense of autonomy (through believing that the larger social norms and values should be desired at one's free will) and to instil loyalty to the society and its moral system.

These definitions, only a small number of the myriad of definitions available today, show conflict between what it means to socialise and be socialised. They are, to varying degrees, different from each other, ranging from their intent (e.g. individual versus collective gains) and the ways in which sociality is disseminated or learnt (i.e. active versus passive individual), to the role of the individual/society. It presents the changing nature of the concept, one which I observed to have shifted its focus from collectivism (i.e. what is good for society) to individualism (i.e. what is good for the individual), which is very much in line with the neoliberal agenda, as mentioned earlier. However, this also presents an opportunity for a redefinition to incorporate a posthuman perspective (see 2.6.2d).

Nonetheless, the definitions suggests four key aspects to socialisation:

1. It is an active social and cultural process
2. It is concerned with an individual's experience, behaviour and identity

3. It is related to our perceptions of social norms and values
4. While it is unclear from the definitions above if the need to socialise is biological, they suggest that the process of becoming socialised may be learnt or transmitted

However, these aspects are inherently vague. What are social norms and values? How do societies and individuals qualify, quantify or standardise them to create common knowledge that can be disseminated? These definitions need to account for differences between societies and cultures, as well as the changing nature of norms and values.

It is for this reason that I wish to move the discussion from socialisation to sociality. Sociality can be defined as “a dynamic relational matrix within which human subjects are constantly interacting in ways that are co-productive, continually plastic and malleable, and through which they come to know the world they live in and find their purpose and meaning within it” (Long & Moore, 2012, p. 41). While sociality in this definition is similarly focused on human subjects, it is more concerned with the process of co-producing knowledge to achieve a distinct sense of self rather than adhering to predefined social norms or values. Within this thesis, the term sociality is used to describe the process of socialising; one that is ongoing and does not necessarily have an end point (i.e. to be socialised).

An interesting discussion to be had here is the concept of “autistic sociality”, an intersection between sociality as discussed thus far and autism. As argued by Ochs and Solomon (2010), autism and sociality are not in opposition with each other or oxymoronic. They conceptualised the notion of “autistic sociality” through a “domain model”, where “domains of orderly social coordination flourish when certain situational conditions are observed” (Ochs & Solomon, 2010, p.69). In their research, they identified an algorithm for enhancing autistic sociality consisting of nine domain parameters: Language, conversation, sequences, topic, corporeal alignment (e.g. body language), mediation, communicative medium, emotional intensity and tempo. These parameters were derived from extensive linguistic observations and are significant to this research as they discuss communicative patterns of children with autism, highlighting the importance of object-mediated communication, non-verbal communication and conversational cues and sequences. As noted in Chapters 5, 6 and 7, these communicative patterns were similarly observed in this research whereby technology provided young people with autism alternate ways of establishing orderly social coordination that met the situational conditions within The Lab. Hence, autistic sociality is part of the foundational locus I will be using in this research to discuss how young people with autism socialise through differentiated spaces and technology.

However, autistic sociality is human-centric and focusses on communication as a means to become socialised. Therefore, this research will expand the notion of autistic sociality to include a posthuman perspective on what it means to be socialised within the information technology space.

An intriguing aspect that Barkan (2013, p. 98) points out, one which is also implied in other similar texts, is that socialisation is part of “being fully human”. This phrase is problematic because it begs the question: what constitutes being fully human and, conversely, what makes someone less human? From Barkan’s explanation it can be inferred that someone with autism may not be fully human since they are impaired in social communication and interaction. The inherent assumptions within the concept of socialisation and what it means to be social are therefore ableist.

With globalisation and technological advances, the understanding of experience, identity, social norms and values has altered and, I argue, so must our understanding of socialisation. Take online and social media such as Facebook or Twitter. Research has found that young people, in particular, are managing, negotiating, and interacting in and with multiple socialites, identities and realities at the same time (DiMico & Millen, 2007; van Dijck, 2013). Our understandings of what is socially acceptable and what it means to be sociable have therefore changed significantly as we engage in identity management across multiple platforms, including that of our identity within the physical world (Mascheroni et al., 2015). How does socialisation account for these changes and differences, particularly in its use as a measure to diagnose and understand someone with autism? How do autistic individuals perceive and react to their social realities? How do they identify themselves and interact with social processes through this understanding?

These questions present opportunities within the research to explore alternative social realities. Knowledge of spaces may therefore be key in unfolding these alternative realities within the process of socialisation as they provide a context for how people should behave and make meaning from their circumstances.

2.6.2d Beyond a humanist perspective to socialisation

One observation made about socialisation is that it generally takes on a humanist perspective (Goodwin, 2003). Humanism refers to:

> *"a broad category of ethical philosophers that affirm the dignity and worth of all people, based on the ability to determine right and wrong by appeal to universal human qualities – particularly rationality … Humanism entails a commitment to search for truth and morality through human means in support of human interests. In focusing on the capacity for self-determination, humanism rejects validity of transcendental justifications … Humanists endorse universal morality based on the commonality of the human condition." (Wolfe, 2009, p. XI)*

Reflecting on the definition above, the centre of consideration and prime concern of humanism is human interests, issues and problems. Within the context of socialisation, it is therefore implied that the way we socialise is based on human social interactions. In defining autism then, the tacit agreement is that autistic individuals are unable to communicate and interact with and through human subjects.

However, there is a need to understand socialisation or sociality beyond a humanist perspective. This is because the universe is a "complex assemblage of human and non-human, planetary and cosmic, given and manufactured" elements (Braidotti, 2013, p. 159). Humans are not immune to or isolated by external environments or objects, such as new technologies. By taking a humanist perspective, we are underestimating the impact non-human actors have on our sociality and interactions, and vice versa. Therefore, Braidotti (2013), as well as Goodley et al. (2014), encourage us to take on a posthuman perspective. Posthumanism, with its varied definitions, broadly refers to:

> *“the embodiment and embeddedness of the human being in not just its biological but also its technological world, the prosthetic coevolution of the human animal with the technicity of tools and external archival mechanisms (such as language and culture).” (Wolfe, 2009, p. XV)*

In juxtaposition to humanism, posthumanism characterises the “self as an extended, distributed, interconnected and relational entity ‘embodied and embedded’” within a society that is made up of human and non-human actors, including animals and technologies (Goodley et al., 2014, p. 348). It is reflexive and post-anthropocentrism, seeing the human subject as ever-changing and as only part of a broader ecology. An example of a posthuman view of sociality is the concept of object-centred sociality.

Engeström (2005) discusses the term ‘object-centred sociality’, whereby shared artefacts, such as photos on Flickr, documents in Google Drive or URLs, become the means by which people asynchronously connect with each other to form social relationships and networks. The terms ‘sociality’ or ‘social interaction’ often focus on human relationships (Cetina, 1997); even Wittel’s network sociality, which I will discuss in the next chapter, implicitly fixates on human relationships and how they are changing due to the manner in which we interact (e.g. through online networks). However, object-centred sociality brings in a new dimension in which artefacts become an essential aspect, mediating and enabling social relationships. Connections are created not just between people but between or around people and objects.

Object-centred sociality is only one of many concepts that can be categorised under a posthuman view. Actor Network Theory (ANT) suggests that social activities are an assemblage and “process of heterogenous engineering in which the social, technical, conceptual, and textual are puzzled together and transformed” (Ritzer, 2005, p. 1); this is yet another concept that can be categorised as posthuman. Throughout this dissertation, I will broaden the scope for understanding sociality from a posthumanist perspective, which is not only beneficial for incorporating the narratives of people with autism but also an important progression, I believe, in comprehending our societies today.

This research will focus on young people with autism enrolled at The Lab who have previously been diagnosed as high functioning. The evaluation of The Lab by Donahoo and Steele (2013) has shown that the setting of this technology club has made a documented difference in the lives of these autistic young people. Drawing from these previously reported experiences of The Lab, I showcase how diagnosed-as-disabled individuals can perform beyond the perceived limitations of their “disability”, focusing on how individuals known to have social and communicative “deficits” can participate within a social domain through a posthuman perspective.

In this chapter, I have broadly reviewed literature in the areas of disability studies, autism and sociality. What emerged is the need to critique and further understand these areas of study beyond a neoliberal-ableist lens, as current interpretations of disabilities are dominated by paradigms of knowledge (e.g. medical model of personhood) that support this framework, which is inherently biased and disabling to those who do not fit into its narratives.

In the next chapter, I explore the literature around spaces and places, focusing on the physical, online-digital and psychosocial spaces that make up The Lab. The study of such spaces may be the key to incorporating alternative narratives and realities that support those who are vulnerable and less privileged by the current system of governance as it enables new contextual and situational possibilities.

Chapter 3: Situating Differentiated Spaces Within the Geographies of Disability

In the previous chapter, I broadly discussed the history of disability and how the understanding of disability manifested itself into its current state through political, social, cultural, economic and ideological forces—the basis of Critical Disability Studies. Specifically, I looked at how neoliberal ideals such as individualisation and economic laissez-faire have impacted persons with disability and how they are viewed in society (i.e. as lesser humans) unless they conform (often through transformation via medical procedures) to certain social and economic expectations. In the final sections of the chapter, I focused on autism and its focus on an individual's dis/ability to socialise, highlighting the ambiguity of the concept of socialisation and why a redefinition is needed, particularly from a posthuman perspective.

In this chapter, I will discuss how the theorisation of differentiated spaces assists in the understanding of technology-based communication and socialisation. The word 'differentiated' is used in this thesis to recognise specific spaces as unique, serving distinct purposes in processes of communication. Yet, these differentiated spaces overlap and interconnect to form an environment and unique culture of socialisation within The Lab (Ng et al., 2015).

I will begin this chapter by operationalising the terms 'space' and 'place' in the context of this research. Then, I will explore the literature within each individual differentiated space—namely physical, online-digital and pyschosocial. Finally, I will look at Third Space and Third Place theories, which implicitly discuss the amalgamation of differentiated spaces and how they come together to form a cohesive environment. This chapter positions the synthesis between differentiated spaces and socialisation within the broader study of critical disability studies and contributes towards a posthuman understanding of sociality.

3.1 Defining Space and Place

Steven Gores operationalises the notion of space:

> *"[It] refers to a number of both physical and abstract phenomena. On the most physical level, space designates the concrete materiality of books, canvases, ivory miniatures, buildings, and other aesthetic objects. However, space may also denote a kind of experience that these objects provide: for example, the microcosmic world of a novel, the vision of place created by a painting, or the shape of living space created through domestic architecture. Finally, space may describe the psychosocial realm in which individuals situates him- or herself in relation to culture and specific communities within it." (Gores, 2000, pp.13–14)*

He articulates 'space' as a fluid notion that has the potential to be physical, abstract and psychosocial at the same time. It is a complex concept that encompasses and enables different processes. For example, an individual reading a novel may begin visualising the setting or characters and form certain personal interpretations and impressions. According to Gores, this process of imagining can be said to involve transiting through a translational space where words take on certain visual imaginary representations in our mind and imagination.

Human geography scholars, rather similarly, may discuss space as a multi-dimensional container and beyond, one that can encompass feelings, ideas, material, perceptions, concepts, etc. as part of streams of experiences (Campbell, 2016; Tuan, 1979). While space can be shared, it is important to consider the personal aspects of it as each of us traverse through and experience spaces very differently. It should be noted that for this thesis, I have specifically selected this form of understanding space as the term has been conceptualised in a vast multitude of ways from physics, astrophysics, geography and architecture to philosophy and sociology. Certainly, my concern with space is its role in affecting social relations and the construction of knowledge.

While our interpretation of space can be a personal experience, it can also be a social construct (i.e. how we perceive space is predetermined) and mediator that creates new meanings through interactions, exchanges and conflicts within it (Gergen, 2001; Low, 1996). After all, spaces are inherently social because they capture and are part of all human activity and interactivity (Reed-Danahay, 2013; Soja, 2010). However, it should be noted that this social construction is not static, but rather *reflexive*, as "social patterns [are in] constant flux; styles, ideologies, public opinion, and customs are subject to historical shifts" (Gergen, 1996, p. 4). Gergen (2001) explains that all social constructions of perceived realities are co-constructed, relational and an exploration between individual minds. Social construction (of spaces) is thus a continuous accumulation of our experiences, (mis)interpretations, interactions and other forces that produce, shape and/or change these realities. Drawing from 'Third Space' theory which will be discussed in the final section of this chapter, new knowledge can therefore be produced and learnt through interactions with and within spaces (Bhabha, 1994; Soja, 1996).

Spaces can become places when specific values are attached to them, such as our understanding of home—although, as mentioned above, these values and meanings are reflexive (Lee, Danis, Miller & Jung, 2001). Beyond values, place is often associated with a location, a "unique entity" or "special ensemble" that has history and meaning; it "incarnates the experiences and aspirations of a people … [and] is also a reality to be clarified and understood from the perspectives of the people who have given it meaning" (Tuan, 1979, p. 387).

Hence, a place has established meanings to people, while space is more expressly open for personal interpretation. However, while the terms are separate concepts by definition, space and place are unquestionably interrelated as our experience with each is dependent on the other. Spaces make up places and vice versa. When multiple people view a space (or many spaces) in a similar manner, it can become a place with established meanings. While it is understandable that we often associate a place with a physical space (especially considering its relationship to location), the term in itself does not necessarily suggest this is so. Online or psychosocial spaces can also be considered places, as will be discussed later in this chapter.

Spaces and, more relevantly, *places* play important roles in “encoding the cultural and social understanding of the behaviour and actions appropriate to an environment” (Lee at al., 2001, p. 60). To a large extent, they are part of the socialisation process where people learn about social norms (i.e. what to do and not to do) through their interactions within and with spaces. Places and spaces are embedded with certain signs and signifiers that influence and guide our behaviours through them. This will be further discussed in the next section.

Reflecting on these understandings and pulling spatial theories together, I have identified three important aspects of space relevant to this research:

(1) Space enables us to perceive and become aware of people, places and objects based on its configuration. This perception is reflexive and subjected to social construction, as suggested above (Gergen, 2001).

(2) Social relationships are formed and affected by the construction of spaces as human activity and interactivity necessarily live within them (Reed-Danahay, 2013; Hall, 1974; Soja, 2010).

(3) People react, develop emotions and undertake personal interpretations with their understanding of space and place (Ravelli & Stenglin, 2008). This enables the construction of new knowledge about spaces and places, although, as mentioned in Chapter 1, some realities/knowledge may have been privileged over others.

It is important to recognise that these three aspects of space do not exist in isolation and can alter our experience of space by any variance. As noted by disability geographers, who are primarily concerned about “disabled persons’ experiences of space” (Jaconson, 2013, para. 1), spatial configurations and movements can have a profound impact on the lives of people with disability as they have the capacity to provide a variety of embodied experiences that are different from one other (Chouinard, Wilton & Hall, 2010; Gleeson, 1999;

Jacobson, 2013). Such application has the potential to improve the lives of, and alter discourses around, people with disability through careful considerations.

In this research, I focus on three differentiated spaces: physical, online-digital and psychosocial. Through these differentiated spaces, I hope to understand how a combination of technology-enabled, physical and individual spaces has impacted the way young people with autism socialise. It seeks to understand how these spaces interact and work together to enable social action that is valued by individuals with autism—including this project’s participants, who have developed meaningful relationships at The Lab (Donahoo & Steele, 2013). Hence, for the most part of this chapter, I focus on reviewing discussions around these spaces and their impact on communication, interaction and socialisation.

3.2 Physical Space

In this section, I will discuss the elements that make up physical spaces and how they affect and bring meaning to the way people socialise and interact within them. Each of the subsections build on each other to provide a coherent understanding of physical spaces within learning environments like The Lab. From spatial signs and signifiers and personal and public social spaces to power relations and the configuration of learning spaces, these subsections highlight the complexity that goes into built environments and how they impact the way we interpret, understand and behave within physical spaces, most of which unintentionally exclude those who are unable to adapt and conform to spatial expectations, such as those on the spectrum.

3.2.1 Making meaning of space: spatial semiotics

‘Spatial semiotics’ is a system that broadly studies the meaning of space as a series of signs or symbols, comparable to that of language (Halliday, 1978; Ravelli & Stenglin, 2008). Adapted from the work of Halliday (1978) on ‘social semiotics’, spatial semiotics is concerned with how space can be constructed to convey meaning (e.g. expected social etiquette) (Ravelli & Stenglin, 2008)

‘Social semiotics’ is primarily concerned with how systems of language act as both signs and signifiers (i.e. they have and give meaning) that impact the way language is used in social situations (Halliday, 1978). Halliday (1978) argues that the system of the English language is organised for three communicative functions: ideational, interpersonal and textual. These three communicative functions form the basis of understanding spatial semiotics (Ravelli & Stenglin, 2008).

The ideational metafunction is concerned with “how events are portrayed, including the activities which are construed as taking place, represented in language through particular process types” (Ravelli & Stenglin, 2008, p. 357). This function of language represents ideas that are constructed and perceived through the specific use of language such as the way ‘terrorism’ has been framed since the September 11, 2001 attacks. The use of language helps people gain knowledge and awareness of the world through its relativity to time and events. Indeed, Gergen and Gergen (2003, p. 18-19) suggest that language plays a central role in the social construction of our reality – how an idea is expressed changes its meaning; not forgetting the diverse languages, each with their own unique structures and grammar, present yet another way of expressing and thus interpreting ideas and symbols. As Fairhust and Grant (2010, p. 174) write, “language does not mirror reality; rather it constitutes it”. Language is the cornerstone of social construction – and so is space, which in itself is a form of language.

The textual metafunction is concerned with “bringing together the disparate elements of a text into a coherent whole, and relating the parts to each other” (Ravelli & Stenglin, 2008, p. 357). This function connects ideas and makes them relevant to specific contexts. For example, when talking to your partner about “work”, it is contextual because he/she would already have known what you do, the environment you work in and the people you work with. In this case, context is relational; how you interact with people is dependent on your relationship with them, where they come from, etc. (Kress & van Leeuwen, 2006).

Finally, the interpersonal metafunction is concerned with “participation and interaction, as well as the negotiation of feelings, attitudes, and judgments” (Ravelli & Stenglin, 2008, p. 358). This function facilitates certain kinds of social and interpersonal interactions through how we use language. For example, when engaging in a conversation, people take turns to speak, adopting different speech roles depending on social situations (e.g. Best friend: “I just broke up with him” [contributor of information], You: “I’m so sorry to hear that” [supportive role]). In this manner, social contexts and relationships predetermine the way people use language. But again, this changes as more conversations and interactions take place, making the use of language dynamics (Kress & van Leeuwen, 2006).

These three communicative functions of social semiotics can be applied to our understanding of spatial semiotics, particularly in looking how physical spaces can be constructed to convey meaning. According to Ravelli and Stenglin (2008, p. 355), spatial semiotics “actively construe interpersonal relations within and around the space”. In their research, Ravelli and Stenglin primarily focused on physical spatial relations, looking at how buildings within public spaces alter the way we feel and interact (Ravelli & Stenglin, 2008). They suggest that there are “representational, interpersonal and compositional meanings” of space—comparable to that of ideational, interpersonal and textual metafunctions respectively—that construct human experience and the expression of ideas and attitudes, enabling us to organise meaning into coherent units of understanding our society (Ravelli & Stenglin, 2008, pp. 356–357).

‘Representational meanings of space’, similar to that of the ideational metafunction, refers to how “spatial texts” have “narrative processes” (Ravelli & Stenglin, 2008, p. 357). The White House where the president of the United States resides, for example, represents a political space for its occupants and visitors. From its size, architectural style and location to the materials used, these constitute spatial texts that give meaning to our understanding of the White House which gradually changes with time, its surroundings, historical events, people, etc., offering these spaces narratives that we consume, comply and apply as knowledge to similar architectures.

Interpersonal meanings of space refer to how we construct and maintain interactions within spatial texts (Ravelli & Stenglin, 2008, p. 360). There are five resources that affect interpersonal meanings within space: contact, social distance, power, involvement and modality (Kress & van Leeuwen, 2006; Ravelli & Stenglin, 2008). The first three of five will be discussed later in relation to Foucault’s (1977) theories on power and Hall’s (1963) concept of proxemics. With regard to involvement and modality, the first is concerned with how space engages us through the placement of specific spatial texts, such as doors, while the second is concerned with how we experience and associate with spatial texts—a combination of their practicality, design and function (Kress & van Leeuwen, 2006; Ravelli & Stenglin, 2008). These resources highlight the way space interacts with us and vice versa, constructing and maintaining our attitudes and behaviours towards objects and subjects within it through specific placements and localities of spatial texts.

Compositional meanings of space, corresponding to the textual metafunction of language, are concerned with how different elements within space—such as buildings, roads, bridges and people—come together to give context and cohesion (Ravelli & Stenglin, 2008). A suburb in Melbourne is easily identifiable from its central business district (CBD) because of the architecture, the density of people and buildings, the traffic and roads, the social distance between buildings and people, etc. Thus does the composition of space produce discourses on its utility (Sassen, 1991).

Spatial semiotics presents us with an overview of how spaces, specifically physical spaces and the elements within it, affect the way we communicate and interact. Spatial texts, such as the physical distances between people and objects, influence the way we socialise as space is a construct that informs our behaviour, governing the creation and sharing of meaning in our society. Although spatial semiotics touches on people as one of the subjects within space, its main emphasis is on built forms of, and architecture within, spaces.

Hence, it is the area of human interactivity through space that I explore in the next section.

3.2.2 The significance of space in communication: Proxemics

Since the 1950s, the study of nonverbal communication has been a growing multidisciplinary field that disperses across a wide range of academic interests (Knapp, Hall & Horgan, 2014). These interests and modalities range from facial, vocal, eye, body behaviours to haptic (i.e. tactile) interactions (Knapp et al., 2014). I am particularly interested in one field of nonverbal communication study, proxemics, because it demonstrates how space intersects with sociality.

Proxemics is largely referred to as social ‘distance sets’ (Hall, 1974). It suggests that the distance between people, facilitated by environment and culture, indicates a type of relationship, intimacy and communication that pre-exists (or not). Hall (1974) categorised four physical distances within spaces: intimate, personal, social and public. Here is a chart illustrating the social distance set:

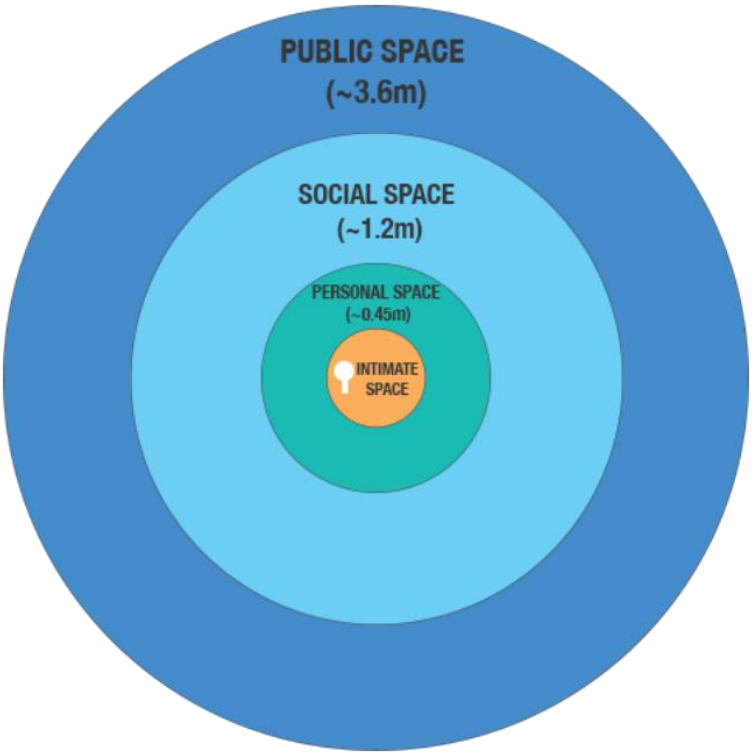

Image 4: Edward Hall’s Personal Reaction Bubbles. Drawn by author.

Hall’s social distance set is a relative gauge to people’s relationships with others, significant for its concept rather than its accuracy (Anderson, Gannon & Kalchik, 2013). Different cultures and environments can change the nature of relationships, altering an individual’s perception of these social spaces while maintaining different types of relationships (e.g. work spaces can be rather limited, which would change the distance one permits within each space) (Anderson et al., 2013). It provides a basic understanding of how an individual may perceive personal spaces from non-personal spaces, despite changing distances depending on context (Anderson et al., 2013) The thought process between the various physical spaces and its corresponding social relation from an individual’s perspective is therefore both flexible and structured. That is, while we assess our intimate, personal, social and public spaces contextually, we still largely segregate the “closeness” of our relationships through these four indistinct spaces (Anderson et al., 2013; Hall, 1974).

The understanding and application of proxemics, along with other spatial design principles, such as flexibility and movement, is important in built considerations, especially for people with autism (Humphreys, 2005). As an architect specialising in designing spaces for autistic individuals, Humphreys (2005) notes that people with autism require greater personal space to make sense of the environment around them, helping them orientate, reduce over-stimulation and feel safe. Being able to accommodate for diversity in personal disposition and spatial interpretation, such as accounting for the difference in our gauge of personal space, can improve the way people, especially those with disabilities, experience physical spaces.

3.2.3 Public places, private spaces

While Hall’s (1974) concept of proxemics provides insights into an individual’s perception of the personal and the public, it does not address spatial understandings from an institutional level. This brief section introduces these spatial understandings to provide an overview of how public/institutional spaces such as schools can impose on our personal spaces, especially of those who are vulnerable to these institutions, such as persons with disabilities.

On a day-to-day basis, people classify spaces into two broad categories: public and private (Low & Smith, 2006). These two categories are not mutually exclusive and often constitute each other, blurring the line between the private and the public (e.g. private functions in public spaces). Consider Madanipour's definition of public space:

> *"Public space (and public place) refer to that part of the physical environment which is associated with public meanings and functions. The term public sphere (and public realm), however, has been used to refer to a much broader concept: the entire range of places, people and activities that constitute the public dimension of human social life." (Madanipour, 2003, p. 3)*

In contrast, Mandanipour defines the private space as below:

> *"Private sphere, therefore, is a part of life that is under the control of the individual in a personal capacity, outside public observation and knowledge and outside official or state control. It follows that private space is a part of space that belongs to, or is controlled by, an individual, for that individual's exclusive use, keeping the public out." (Madanipour, 2003, p. 35)*

What is apparent in Mandanipour's definitions is that public and private spaces exist within almost separate spheres that affect our public and private social lives, although we have more control in the latter. He suggests that public spaces are constructed for distinct public-serving functions such as schools and community centres and are therefore ascribed certain public life images and meanings. Private spaces, on the other hand, are presented as being opposite to public spaces, which are concerned with individual agency, capital and liberties—the idea of the personal space, as suggested by Hall (1974).

Giroux (2003) and Blackmar (2006), however, suggest that there is no clearcut definition or distinction between the public and the private. Private spaces often live within public spaces and vice versa, complicating the notion of public and private lives, particularly in this day and age where surveillance has increased with the advancement of technology (e.g. cookies on websites, webcams) and the escalation of the "terrorist" rhetoric post 9/11 (Giroux, 2003). Low and Smith (2006) contend that public spaces are inherently political and are constructed by the state and its corporate partners for administrative purposes (i.e. to account for and manage people) and to consolidate control over its citizens.

Blackmar (2006) furthers this argument, explaining that while public spaces consist of institutions that are supposedly for the benefit of its citizens (e.g. public transport systems), individuals have self-interests and may extend units of private spaces and interests within public spaces for material gain (e.g. privatised, profit-driven public transport systems). I should point out that this argument is a demonstration of the neoliberal agenda, where private interests are disguised as public good, even in spatial terms. Privately-owned public spaces present an irony—a contradiction that creates unresolved tensions within the system (Low & Smith, 2006). These unresolved tensions are evident within different public spaces, including schools and classrooms, which I discuss in further detail later in this section.

3.2.4 From a Foucauldian perspective: space and power relations

While individuals have the agency to make personal interpretations of space, they do not necessarily have the power to influence or change social constructs. Power is one critical variant that dramatically changes the dynamics within/between people and their relationships within spaces. For the purpose of this research, I will specifically discuss power from a Foucauldian perspective as I consider this to be the most applicable notion of power to the understanding of space and spatial relations (Crampton & Elden, 2007).

Foucault emphasises the interconnectedness between power, social relations and space, in that:

> *"it is somewhat arbitrary to try to dissociate the effective practice of freedom by people, the practice of social relations, and the spatial*

> *distributions in which they find themselves. If they are separated, they become impossible to understand.” (Foucault, 1984, p. 246)*

From a Foucauldian perspective, power is knowledge—it is everywhere, transferred from one subject/object to another, but is never destroyed (Crampton & Elden, 2007; Foucault, 1977; 1984). As indicated in the quote above, space, power and knowledge are necessarily related. To remove any one from the mix would impair our understanding of the others. Crampton and Elden (2007) thus argues that spatiality occurs as an integral part of a larger concern and presents itself as a tool of analysis rather than merely an object of it. To analyse power, it is imperative that we analyse space and knowledge, and vice versa.

Drawing on the concept of the ‘panopticon’, Foucault (1977) exemplifies how space can be an instrument of controlling knowledge and, hence, *power*. The initial concept of the panopticon penitentiary, designed by Bentham (1843), is a prison design that would allow a single watchman to observe inmates without the latter being able to tell whether or not they are being watched. As such, inmates assume that they are being watched all the time, disciplining themselves constantly as a precaution. From the literal panopticon, we can see how spatial configurations can bestow knowledge to one single person (i.e. watchman) while withholding knowledge from many others (i.e. inmates). Bentham (1843, p. 39) notes that the panopticon can also be used in other settings, such as schools, hospitals and asylums, and is a structure that promotes “a new mode of obtaining power of mind over mind”. From this, Foucault (1977) began using the idea of the panopticon—a specific configuration of space—to understand social surveillance.

McKinlay and Starkey (1998, p. 3) define the panopticon as described by Foucault as “the metaphor for the disciplinary mode of domination”. While factories, schools and many other public institutions with hierarchical structures are not built as prisons, they are able to command similar self-disciplining behaviours through the placement of technology (e.g. CCTVs) or the hidden adaptation of the panopticon through spatial configuration. Panopticism is therefore a form of surveillance where the assumption that someone of higher power with more knowledge is constantly observing you. This creates a certain kind of fear that shapes our behaviour (Foucault, 1977). However, this assumption is mostly false and is enforced by a combination of space, technology, people and social institutions (e.g. laws). This is otherwise known as “the political anatomy of society” (McKinlay & Starkey, 1998, p. 21), through which a self-disciplining mechanism is introduced as a by-product. McKinlay and Starkey (1998) go so far as to argue that reading this document is a form of panopticism where one is expected to interpret it from the very political anatomy that disciplines us, surveying our thoughts and reactions within our private spaces through invisible power structures that are either bestowed on us (as dominant) or hidden from us (as inferior).

3.2.5 Spatial pedagogy and the ‘safe space’: Understanding the classroom

Spatial semiotics, proxemics, the public/private space debate and panopticism are foundational to the ‘spatial pedagogy’ which focuses on the set-up of space within the classroom (Lim, Polasov & O’Halloran, 2012). It is important for this thesis to discuss the spatial texts of classrooms because The Lab has often been described as deliberately different and separate from them (Donahoo & Steele, 2013; Ng et al., 2015), which begs the question: how different are they and how do they impact the way young people with autism socialise?

Schools are publicly- or privately-owned institutions that are located within Madanipour’s (2003) public sphere. For the purpose of this thesis, I will refer to schools as ‘public institutions’ because even if they may be privately owned, they are institutionalised and regulated by the state for the benefit of a larger citizenry (Blackmar, 2013). They are the first environment after the home, and probably the first public space in which children identify and develop a sense of belonging and familiarity (Burke & Grosvenor, 2005). They are mainly associated with formal learning that is structured by a state-based or national curriculum, depending on the country’s system of political administration (Burke & Grosvenor, 2005). Hence, the spatial configuration of schools, while flexible to a large degree, is compartmentalised into different recognisable sections across schools, including classrooms, multipurpose halls, etc., to meet the structural standards of the curriculum, within which classrooms serve distinct purposes for the communication of learning objectives and dominant discourses; this process, as previously mentioned, is called ‘spatial pedagogy’.

Theorising spatial pedagogy, Lim et al. suggest that:

> *“Specific spaces in the classroom take on certain meanings because of the nature of pedagogic discourse that occurs on the site and the positioning and distance of the site relative to the students and the teaching resources.” (Lim et al., 2012, p. 235)*

Lim et al. (2012) argue that there are specific spaces within a classroom that establish formality and relationships between teachers and students. From a spatial semiotics perspective, the configuration of classroom spaces creates representational, interpersonal and compositional meanings (Lim et al., 2012). In a typical classroom, one can usually find whiteboards, chairs, tables, tools for teaching (including books), the teacher’s desk and (more recently) tablets, computers, screens and the like.

The composition of these elements forms the spatial texts of classrooms. People identify this particular space as a “classroom” because each of these elements are placed in specific areas that conform to the political anatomy of a learning space, particularly one that is catered to the transmission model of teaching where the teacher is the centre of knowledge, disseminating information to students (Lim et al., 2012). It should be acknowledged that, in recent years, there has been a move towards more flexible student-centred learning spaces and classrooms (e.g. Byers, Imms, & Hartnell-Young, 2014; Chandler, 2009). However, as discussed above, changes in spaces are only relative to the way people interpret them. Chandler (2009) noted that many teachers are not utilising these spaces but rather are falling back on traditionally known teaching practices (i.e. the transmission model). Hence, if teaching practice is not similarly updated to reflect the changing spatial configuration, a knowledge vacuum is formed through the mismatch; persons in positions of power (in most cases, the teacher) would therefore have the advantage of constructing the meanings of the space. Here are some examples of classrooms in Australia:

Images 5 and 6: Different classroom set-ups in Australia's schools, from left to right, taken from Education WA (n.d.) and MediaAccess (2015) (CC0-01).

As we can see, students are made to face in one direction, usually towards the front of the classroom, where the teacher and whiteboards are positioned. This is a form of instructional learning that facilitates "one is to many" teaching and learning whereby the teacher is presented as the centre of knowledge while the students are passive learners (Lim et al., 2012). This is in line with the transmission model mentioned above. Students are also seated within this structured space and are not expected to move around during the class; they are separated from each other spatially within less than one metre of range, while the teacher has unrestricted movement within the classroom (Lim et al., 2012).

The structure of the space and the relative distance to/between objects, students and teachers therefore forms a metaphoric panopticon which establishes certain control and power relations in a classroom via semi-invisible surveillance (Foucault, 1977). While the teacher is able to observe students at his/her own will, the latter are unable to know if they are being observed (e.g. when the teacher is standing behind them) and hence behave in accordance with the rules set by the teacher and the institution. These established spatial relations determine communication within a classroom (e.g. when a teacher speaks in front of the classroom, students are expected to listen, unless otherwise instructed).

The distance and spatial relations between students and teachers aid the development of specific interpersonal relationships; students who are constantly forced to interact within their “personal spaces”, as discussed within proxemics, may develop friendships with each other while the student–teacher relationship is more formal based on the power dynamics (i.e. teacher as having more power because of assumed knowledge) and the interaction that flows between personal and social spaces (Anderson, et al., 2014; Lim et al., 2012).

Learning within these spaces and the development of interpersonal relationships in the specific manner mentioned above are expected; any other forms of behaviour are therefore seen as outliers. The spatial configuration of classrooms thus creates certain representational discourses of learning and the development of interpersonal relationships. While it has previously been explained that within the study of proxemics, the social distance set is fluid and flexible, changing based on circumstances, the structured nature of classroom spaces rejects this notion and, instead, defines and standardises the communication of learning and the development of interpersonal relationships. This can lead to exclusion for those who are unable to conform, such as students with disabilities.

Armstrong (2012, p. 612) draws on Soja’s (2010) concept of ‘spatial justice’ as a way to explore “processes of inclusion and exclusion” within learning spaces. He points out that “questions of ‘justice’ always have a ‘spatial dimension’”; justice and injustice are visible in space. This is in line with Soja’s (2010) argument that “everything that is social (justice included) is simultaneously and inherently spatial, just as everything spatial, at least with regard to the human world, is simultaneously and inherently socialised” (Soja, 2010, pp. 5–6). This quote, in some ways, reaffirms every aspect of physical space I have discussed thus far: the construction of physical spaces, especially within classrooms, is connected to the way we socialise and understand sociality. Spatial configurations of physical spaces systematically overlook disability and are unjust; they are both an outcome and enabler of ableism.

One metaphor that is often used to describe a classroom is the concept of ‘safe space’. Interestingly, this metaphor has also been used to describe The Lab (Donahoo & Steele, 2013), which renders our attention. Consider this definition of the ‘safe space’:

> *“The metaphor of the classroom as a ‘safe space’ has emerged as a description of a classroom climate that allows students to feel secure enough to take risks, honestly express their views, and share and explore their knowledge, attitudes, and behaviors. Safety in this sense does not refer to physical safety. Instead, classroom safe space refers to protection from psychological or emotional harm. It is concerned with the injuries that individuals suffer at the hands of society.” (Holly & Steiner, 2005, p. 50)*

From the above, we can list some of the key characteristics of a ‘safe space’. Firstly, it refers to a space where students can freely express their opinions. The ‘space’ is ‘safe’ when individuals and groups know that they will not face criticism that would challenge their expressions of identity (Rom, 1998, p. 407). However, if students are to challenge others or risk self-disclosure, the rewards must outweigh the penalties (Holly & Steiner, 2005, p. 50). Secondly, it is a space that is concerned with the emotional and psychological well-being of its students. And finally, it views society as the ‘other’ that inflicts emotional and psychological injury upon students.

Latting (1990, p. 43) also stresses the importance of instructors maintaining a “demeanor of nonjudgmental acceptance of students as individuals”, even when students’ comments are “reprehensible”. Boostrom adds:

> *“The concept of care … states that there must be absence of threat in the classroom in order for any type of learning to take place. Absence of threat and care go hand in hand. Absence of threat encompasses not only physical safety but also safety from intimidation and stress. In this brief statement, Kinnaird shows us where the ‘safe space’ metaphor*

> *leads: a ‘safe space’ is a place without stress. In a ‘safe space’ classroom, students are not isolated, alienated, threatened, intimidated, or ‘stressed-out’.” (Boostrom, 1998, p. 405)*

In both Rom’s and Latting’s descriptions of the ‘safe space’, they suggest a classroom should be free from threat—mainly discriminatory or judgmental views. However, if classroom life is to be exemplary to its students, taking on a specific moral compass imposed by society while following a strict routine for academic and professional learning, I ask: how can we create a safe space for diverse students while maintaining “censorship” in critical thinking? The idea of allowing freedom of expression even if it is “judgmental” or “reprehensible” while keeping a classroom space “safe” from judgment is an ironic concept (Rom, 1998).

In Holly and Steiner’s (2005) study of 121 tertiary students, they found that for a classroom to be a safe space, it needed: 1) instructors, peers and self to be non-judgemental, honest, respectful, participatory and open-minded; and 2) the physical environment to be spacious (i.e. not small or cramped), conducive for discussion and at a comfortable temperature. However, the physical space of the classroom, as previously discussed, is rigidly structured to conform to traditional roles between teacher and students. The complexity within a classroom setting and learning is beyond that which can be explained through the metaphor of the ‘safe space’.

In adopting the ‘safe space’ metaphor to describe the classroom, we are indoctrinated “to resist the thoughtlessness, banality, technical rationality, carelessness, and ‘savage inequalities’ that now undermine public education at every turn” (Greene, 1995, p. 2). Therefore, there is a need to reconsider the metaphor of the safe space and what it entails within a learning space.

The physical spaces of The Labs aim at being unstructured and in juxtaposition to the classroom setting. Barratt, Davies, Zhang, & Barrett (2017) found that learning environments with higher flexibility, lower density and more naturalness (i.e. sunshine) encouraged active learning between peers, longer discussions and higher levels of performance in class. Montgomery (2008, p. 122) also found that “spatial management and movement can impact upon the construction of meaning within education and upon the dynamic of learning”, in which alternative educational spaces can change and improve students’ interactivity and learning outcomes. However, the body of literature available is not extensive, particularly in the areas of disability and autism studies. This research intends to further understand how the physical space of The Lab affects the way young people with autism socialise.

3.3 Online-Digital Space

In this section, I explore the online-digital[6] space, from the utopian vision of the space of the past to the social and technological nuances that make up the space today. While much has been achieved, such as enabling asynchronous and synchronous communication and connectivity across different time zones, places and spaces, a different set of issues and social implications has arisen. One example is the conceptualisation of network sociality based on the interactions observed online. It describes the changes in the ways we approach human relations, such as friendships, where traditional notions of the term have altered due to the short, intense and focused interactions preferred in this space.

The online-digital space is also different from the physical space because it introduces technology, involving both software and hardware, that is rapidly changing, as its mediator. The use of the online-digital space forces us to reconsider the ways we interact and communicate on a daily basis. In this section, I will highlight how the online-digital space can provide new avenues for social interaction and participation, identity and rhetoric construction, and new ways of envisioning sociality. These are important to this research as they

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[6] The term ‘online-digital’ is used throughout this thesis to recognise the space as not just the Internet but a sum of its hardware and offline digital spaces.

showcase the potential for the online-digital space to subvert mainstream narratives and constructs about persons with disabilities.

3.3.1 How did we perceive sociality within a mediated space?

Unlike physical or psychosocial spaces, the online-digital space is a construct and product of technological advancement introduced with the popularisation of computers and the World Wide Web (WWW) in the early nineties (Choudhury, 2014). Theorists such as McLuhan (1962; 1964) and Giddens (1991) forecasted that the advancement of media technologies would change the way people socialise and interact within societies. This subsection highlights these past imaginations of mediated spaces and provides a starting point for understanding how online-digital spaces operate and are organised today.

Although McLuhan conducted his research 30 years before the WWW was created, he prophesied the potential of web technology as an “extension of consciousness” that would include “television as its content, not as its environment”, where information retrieval and communication would be enhanced and “speedily tailored” (Guertin, 2012, p. 39). He theorised this as the ‘global village’—a medium where global exchanges and communications take place through forces of globalisation and technological advancement (McLuhan, 1964). McLuhan foresaw that media technologies would become an extension of the self rather than passive, one-way communicative tools. New media would not only be a collection of content created for and by users, but also a network of mediated relationships, both locally and globally (McLuhan, 1964). Most importantly, it would enable a form of global culture that would transcend beyond physical boundaries and nation states (Tomlinson, 1999; Volkmer, 2002).

Although McLuhan’s metaphor of the ‘global village’ as a new zeitgeist for perceiving the world has been heavily criticised for being simplistic, imperialistic and elitist, failing to address the (political) complexities and affordances of such technological advancements, it provides insights as to the potential of new media technologies (Tomlinson, 1999; Volkmer, 2002).

The concept of the ‘global village’ has often been associated with notions of a global ‘public sphere’ (Volkmer, 2002). The ‘public sphere’ was initially theorised by Habermas as:

> *“the sphere of private people come together as a public; they soon claimed the public sphere regulated from above against the public authorities themselves, to engage them in a debate over the general rules governing relations in the basically privatized but publicly relevant sphere of commodity exchange and social labor.” (Habermas, 1989, p. 27)*

While similarly criticised for being idealistic, overlooking pockets of inequalities and adhering to materialist and capitalist traditions, Habermas’s public sphere, albeit in variance, has nonetheless become the aspired model of political administration in today’s society, where it is argued that citizens should have a stake in all public matters, taking a bottom-up rather than a top-down approach to governance (Rospocher, 2012). The global ‘public sphere’ is an extension of Habermas’s theory where citizens within the ‘global village’ can impact and address global issues through mediated means—including the constructs that disable people with impairments (Chouinard et al., 2010; Volkmer, 2002).

Although the concepts of ‘global village’ and global ‘public sphere’ are hypothetical and have taken a relatively different face since the introduction of WWW (see next subsection), they highlight the potential for new dialogues to be created through new media technologies that avert us from the constructs constrained by current physical spaces and political systems.

While McLuhan conceptualised the broader impacts of new media technologies, Giddens was more interested in the specific affordances of the medium. He observed that while time and space used to be “connected through the situatedness of place”, globalisation and the advancement of technology was leading to time-space “distanciation” (Giddens, 1991, p. 16). Instead of existing in relation to each other, time would be independent of space, “stretched over shorter or longer spans” (Giddens, 1991, p. 16). This would allow one to exist and interact in multiple spaces at any point in time.

Expanding Gores’ (2000) definition of space where he characterises space as a number of physical, abstract and psychosocial phenomena, the potential of new media technologies from Giddens’ perspective would mean the existence of multi-dimensional spaces where physical, virtual and psychosocial spaces do not just exist linearly but concurrently with each other over a number of platforms. This complicates the notion of space as individuals can be present on multiple planes of reality at once, each with its own unique platform, identity and experience. And this, as we all know, is already available to us today via the online-digital space. However, is it enabling the changing of discourses, disability and beyond through a global dialogue? Have we seen a ‘global village’ or global ‘public sphere’ where multiple issues are debated and new rhetorics are formed with worldly consensus? More importantly to this thesis, have new media technologies changed the way we socialise and understand sociality? The answers are both yes and no; I will explore these questions in greater detail throughout the rest of this section.

3.3.2 Theorising the online-digital space and the network society

The online-digital space emerged when the World Wide Web (WWW) was invented by computer scientist Tim Berners-Lee in 1989 (Choudhury, 2014). In its first iteration, the WWW was an information management and file-sharing system which married hypertext with the Internet (Choudhury, 2014). Berners-Lee was able to create the first browser and website in 1991, opening doors to a host of new ways to present and disseminate information online (Choudhury, 2014). However, these websites, now categorised under the term ‘Web 1.0’, were read-only and static in design (Choudhury, 2014). Their sole purpose was to establish an online presence and make information available from creator to consumer (Choudhury, 2014).

In the early 2000s, O'Reilly (2005) urged web designers and developers to move towards a more dynamic and interactive platform to reinvigorate the WWW. The second generation of the WWW, known commonly as 'Web 2.0' or the 'read-write web', is characterised by its interactions between people and systems. Websites such as Wikipedia or similar collaborative editing platforms and social networking sites began emerging, where passive consumers could now become active users of the web through content creation (O'Reilly, 2005). O'Reilly (2005, p. 2) called Web 2.0 the "architecture of participation", where networks of users became part of the collective intelligence and content creation process. In the next subsection, I will further discuss participation based on Web 2.0's model of content co-creation.

Beyond Web 2.0, we are increasingly moving towards Web 3.0 and Web 4.0, where intelligence is built into the technology. Web 3.0, also known as the semantic web, is concerned with automation, data integration and reuse of content/data across various applications (Choudhury, 2014). It is the convergence of artificial intelligence, machine learning and, to a smaller extent, the Internet of Things—or the intelligence connectivity of a network of devices—where algorithms are making decisions for us based on the data we input (e.g. content-generated, personalised advertisements) (Choudhury, 2014; Nath & Iswary, 2015). If you have enabled location tracking on your mobile phone, for example, you may have been recommended places to eat in the area or even been prompted on where you have parked your car—this is part of the Web 3.0 architecture.

Web 4.0, referred to as the 'symbiotic web', is often seen as an extension of Web 3.0 (Choudhury, 2014; Nath & Iswary, 2015). It continues to explore the convergence of artificial intelligence, as mentioned above, but places more emphasis on the human–machine interaction rather than machine learning. It hopes to integrate interactions between humans and machines in a more symbiotic manner, predicting our needs, for example, before we even search for them (Choudhury, 2014; Nath & Iswary, 2015). This, however, is still a relatively nascent concept and I will not presume to discuss more than is known.

While all developments of the WWW (within a span of under 20 years) have changed the way people consume information and interact with others or with the systems online, Aghaei, Nematbakhsh and Farsani (2012) noted that Web 3.0 and 4.0 required consumers to adapt to the technology, whereas Web 2.0 laid the foundation that changed consumers' mindsets, practices and roles from passive to active users online. It is this change that enabled socialisation within this space as multi-directional interactions online became possible. It has also enabled human–machine interactions as seen in Web 3.0 and 4.0. I argue that this change has a profound implication on how we understand sociality today as it has paved the way for a posthumanist view on social interactions where the technology and its responses are as important as the subjects within it; I will further this discussion in the later chapters of this dissertation. For the purpose of this research, I will specifically be discussing online-digital space in relation to Web 2.0 and beyond as earlier versions of the WWW did not facilitate interactions or the formation of relationships that are typical within social spaces.

3.3.2a The Reality of Online-Digital Spaces

A question that arises in exploring the relationship between the physical and the online-digital is: Are online-digital spaces real? (Boellstorff, 2016). There are two aspects to this question. First, it questions the "realness" of the spatial dimension – can a virtual space created by wires, hardware, software, servers, etc., for example, be a place? Second, it questions the "realness" of the experience – are our relationships online, for example, real? Certainly, the notion of reality, as mentioned in Chapter 2, is subjective and socially constructed, and for the purpose of this research, I will not delve further into the psychology of reality, or the false binary between what is real and what is not. However, the notion of impact, which is what "realness" in this instance is trying to ascertain, can be documented.

According to Boellstorff (2016), there are existing "conflations of physical with real and digital with unreal", even in rhetorical passing. These have serious consequences on our understanding of online-digital spaces as it misrepresents the impact the virtual or digital space has on individuals. Boellstorff (2016) instead asserts that online-digital and physical spaces sit on a continuum that shape what we understand to be real. In other words, our experiences within each of these spaces impact and contribute to our understanding of our reality, validating the online-digital space as a spatial dimension which can shape and affect us on various levels (e.g. experientially; world-view). This sentiment is similarly echoed by Dourish (2001) and Ringland (2019) in their research on embodied interaction and digital embodiment respectively.

Dourish (2001, p. 2) defines embodied interaction as "interaction with computer systems that occupy our world, a world of physical and social reality, and that exploit this fact in how they interact with us". There are three aspects to his definition. Firstly, it prompts us to think about how our physical bodies are involved in interacting with technology. In Dourish's research, he further discusses this interaction as similar to how we may think about gesturing: one that can both be natural and learnt. Secondly, his definition encourages us to think about how these interactions occupy, impact or shape our world. And finally, Dourish encourages us to consider how technology, its physicality, virtual elements or otherwise, may then interact with us. There is an inseparable, multi-way relationship between the virtual, physical and even psychosocial spaces where our interactions and experiences within and with each cannot be segmented. This is in line with Boellstorf's (2016) and Ringland's (2019) argument that the various spaces sit on a continuum that shape what we understand to be real.

Within Ringand's (2019) research into digital embodiment where she looked at the embodied experiences of young people with autism within online spaces, she argues that interactions in Autcraft, a dedicated Minecraft server for children with autism, are real and valid, and contribute to the ways people with autism socialise and understand the world both within the online-digital and physical domains. As she asserts:

> *“The physical, liminal, and virtual spaces of the Autcraft community are not separate entities, but rather intertwined and intersecting to make up the embodied experience of being in Autcraft.” (Ringland, 2019, p. 288)*

The experiences within the online-digital space are not only considered real to those who interact in the space, but are also physical in that their bodies are physically involved in those interactions. This is what Boellstorff (2020, p. 5000) terms as “being-inworld” where there are embodied interactions and experiences as we explore the online-digital space. These are important arguments to this research as one of the main goals is to understand how differentiated spaces - the physical, online-digital and psychosocial space – come together to shape an environment such as The Lab. The symbiotic relationship between spaces and types of interactions (e.g. online or physical) that is suggested here will provide a basis of argument and starting point to the discussion on differentiated spaces which will be presented in Chapter 6.

3.3.2b The network society: Socialising within online-digital spaces

Manuel Castells (2010) theorised that the values and technologies of the information age have caused the emergence of a new society with different organisational principles. Castells defines this new society as a ‘network society’:

> *“The new society is made up of networks. Global financial markets are built on electronic networks that process financial transactions in real time. The Internet is a network of computer networks. The electronic hypertext, linking different media in global/local connection, is made up of networks of communication-production studios, newsrooms, computerized information systems, mobile transmission units, and increasingly interactive senders and receivers. The global economy is a network of financial transactions, production sites, markets, and labor pools, powered by money, information, and business organization. … And the most dynamic social movements are connected via the Internet across the city, the country, and the world.” (Castells, 2010, p. 695)*

Instead of a world organised by the communities or modern nation states which predominated the nineteenth and twentieth centuries (Anderson, 1991; Wittel, 2001), Castells implores us to look beyond geographical social organisation towards a more flexible and fluid organisation of industries, economies, governments and societies through networks that are not bound by physical boundaries. They are instead aided by technological advancements, notably the Internet and its online-digital space, in which transactions—not just monetary transactions, but social exchanges—can transcend across multiple time–space dimensions.

Networks are “appropriate instruments for a capitalist economy based on innovation, globalisation and decentralised concentration … [while also facilitating a] culture of endless deconstruction and reconstruction” (Castells, 2010, p. 470). In other words, Castells believed that networks have the capacity to improve capitalist economies while also restructuring cultures and societies at the same time, creating opportunities for new constructs. While it is unclear at this stage if the continual fuelling of neoliberal capitalist traditions within a network society would be counter-productive to this deconstruction and reconstruction of culture for marginalised people, it presents the online space as an opportunity that has the potential to change current systems which have been so institutionally rooted since the beginning of the twentieth century. It is this opportunity—the chance to deconstruct existing ideologies and create new inclusive rhetoric for marginalised people—that I am interested in harnessing within this new social organisation. How can a network society allow individuals with disability to avert the ableist gaze and social hostility within pre-disposed communities and find diverse networks of support and participation?

Castells’ works on theorising the ‘network society’ have led to the conception of several other theoretical frameworks. One such theoretical framework derived from Castells’ work includes Wittel’s (2001) concept of ‘network sociality’. As the term suggests, it is closely related to Castells’ ‘network society’. However, its focus is on “translating this macro-sociology of a network society into a micro-sociology of the information age” (Wittel, 2001, p. 52). Wittel is concerned with not the networks themselves but with the making of such networks. How do people build, maintain and alter social ties within practices of networking?

Wittel discusses five features of network sociality: individualisation, ephemeral and intense relations, informational relation, assimilation of play and work, and technology. Under individualisation, individuals make decisions to “actively construct social bonds” rather than be inducted into familiar social groups (Wittel, 2001, p. 65). The formation of identity within this network depends increasingly on an awareness of the relations with others (Featherstone, 1996) rather than a “shared history or a shared narrative”, as previously imagined within a community-based society (Wittel, 2001, p. 65). Drawing from Giddens’ previously mentioned work on time–space distanciation, Wittel (2001, p. 65) argues that sociality is also distanciated and immediate; people within online spaces are taken out of their contexts and “reinserted in largely disembedded social relations”. They are required to continually construct these online spaces as opposed to socialising within predisposed constructs, bringing new dynamics to social relations.

Wittel (2001, p. 66) also puts forth that through network sociality, people tend to develop short-term but “intense, focused, fast and over-loaded social ties”. This is due to the need for information exchange rather than the laborious performance and perfecting of shared narratives. As network sociality focuses on the individual and his/her development, Wittel (2001) suggests that the main purpose of such interactivity is to exchange information rather than to play a role within communities. Hence, once information is received, relationships within networks end, similar to the termination of other forms of social contract.

This leads me to discuss briefly the concept of friends and friendships as noted within Donahoo and Steele’s (2013) evaluation of The Lab, in which they observe that members have developed friendships over time. This is an important aspect of this research as it explores how young people develop and pereive interpersonal relationships. If network sociality is the basis of online interaction, does it mean long-term friendships cannot be formed? According to Helm (2017, para. 1):

> *"Friendship … is a distinctively personal relationship that is grounded in a concern on the part of each friend for the welfare of the other, for the other's sake, and that involves some degree of intimacy." (Helm, 2017, para. 1)*

In Helm's definition, he points to three key elements in defining a friendship. Firstly, it is personal, where an individual is involved in a relationship with another individual rather than a community. Secondly, there must be concern, or "mutual caring", for the overall well-being of the other individual. Thirdly, it is an intimate relationship. But what constitutes concern and intimacy? According to Brown et al. (2012, p. 1): "Physical space has a fundamental effect on social ties. The probability of friendship quickly decreases with increasing spatial distance between people". In other words, Brown et al. (2012) suggest that space, particularly physical space, plays an important role in an individual being able to give concern to another individual or be intimate with him/her. Spatial distance, in this case, has become the measure of both concern and intimacy. However, these assumptions are historically and philosophically grounded and do not take into account the affordances of new media technologies (Helm, 2017). While I am not suggesting that Helm's definition of friendship is no longer applicable, the online space brings new meanings to understanding friendships.

In Elliso, Steinfield and Lampe's (2007) research on Facebook friends, they described the experience of social media as more community- and networked-based, with individuals being more concerned about their wider networks, image management and the building of social capital rather than that of individual friendships. "Friends", in their research, range from those known through physical encounters to games or other online networks (e.g. Twitter follower to Facebook friend). This form of friendship, where personal gains within a networked community trump intimacy and mutual concern between individuals, echoes Wittel's concept of 'network sociality' where communication is short-term and based on mutual interests via social contracts.

Chan and Cheng's (2004, pp. 305–320) research with 162 Internet users found that "offline friends involved more interdependence, breadth, depth, code change, understanding, commitment and network convergence than online friends". It suggests a distinct difference between offline and online friends: offline friends were more akin to traditional notions of friendship while online friends were more like acquaintances—except that the individuals involved were found to have strong emotional connections to their online networks as a whole rather than on a one-on-one basis (Chan & Cheng, 2004). Network sociality in this context seems to be more community-like than Wittel described it to be. Chan and Cheng (2004, p. 318) also found that qualities of both online and offline friendships "improved as the duration of relationships increased, [and] the differences between the two types of friendships diminished over time", concluding that long-term friendships can be established within online settings. It suggests that online friendships are complex; while short-term social relations are more likely to develop within online spaces, long-term relations can also develop over time.

Perhaps the most important finding that emerged from Chan and Cheng's (2004, p. 315) research is "the influence of the structural and normative constraints typically found in face-to-face interaction may be different in the online setting". They put forth that there are more cross-gender online friendships than same-sex friendships, unlike within offline spaces. This is significant to the current research as it implies that friendships online may not be bound by normative structures (i.e. neoliberal-ableism), giving young people with autism equal opportunities to socialise and interact online in comparison to their neurotypical counterparts. Again, it adds weight to the notion that online space is distinct from offline space and is able to enact change in social norms and values, albeit manifesting change in rather different ways, such as that of understanding friendships.

Within network sociality, one of the features discussed by Wittel (2001) is the assimilation of play and work: network sociality blurs the line further between private and public lives. Going back to Wittel's first point again, network sociality is a highly individual and personal affair. Hence, it is inevitable that play and enjoyment are injected into work environments within network sociality as people choose their networks of social relations rather than being allocated into one.

Finally, Wittel (2001, p. 69) describes network sociality as essentially a "technological sociality insofar as it is deeply embedded in communication technology, transport technology and technologies to manage relationships". The shift from community-based engagement towards network sociality is a product of technological advancement as technologies have given us a choice to socialise beyond the confinements of physical localities. The Internet and online space are examples of such technologies where network sociality can occur. The use of social networking sites such as Facebook and Twitter, for example, is built upon these principles; users choose to follow or add people to their networks through specific platforms, which in turn allow them to receive information about their networks through an algorithmic feed (Hanna et al., 2007).

Beyond technologically driven sociality between people, Wittel's point also reminds us of the discussion on object-centred sociality in the last chapter, where social relationships are formed through the connection with objects (Engeström, 2005). Platforms and social media like Instagram are set up to facilitate interactions based on shared artefacts: photos, stories, videos, etc. While it should be acknowledged that physical artefacts, such as books, can also facilitate object-centred sociality (e.g. book clubs), the online-digital space, also known as the information space, is primarily driven by object-centred sociality; WWW and Web 2.0 were designed to encourage participation through the sharing of resources and information (Jenkins, 2006). I will discuss the participatory culture of the web in the next subsection.

Network sociality is exemplary of interactions online and it is in the interest of this research to understand how people with autism are able to harness the opportunities within the online-digital space to extend their influence and create new constructs about themselves within their online networks.

3.3.3 Online space and participatory culture

In the earlier half of this section, I have broadly characterised the elements that make up the online-digital space and what sociality looks like within it. For the rest of this section, I will delve further into the participatory culture of Web 2.0 and beyond, and focus on the user and identity construction within online-digital spaces. This section is aimed at exploring how young people with autism may be able to participate within online-digital spaces and create new meanings around their impairment without the negative discourses that limit them within physical spaces.

Henry Jenkins (2006) mapped the rise of the ‘participatory culture’ based on observations of online fan cultures. Participatory culture can be characterised as “relatively low barriers to artistic expression and civic engagement, strong support for creating and sharing one’s creations, and some type of information mentorship whereby what is known by the most experienced is passed along to novices” (Jenkins, 2006, p. 7). Online and digital spaces provide “inexpensive tools for capturing, editing, organising” and publishing content that were previously unavailable in other media (Delwiche & Henderson, 2012). Some of the key enablers are its ability to store, broadcast or narrowcast content and share information across an abstract space unrestricted by physical localities and time (Giddens, 1991; McLuhan, 1962; 1964). Thus, individuals are encouraged to become active contributors, generating content of interest for other users. One such example is fan fiction, where fans of popular culture products, such as the Harry Potter franchise, write stories about characters and settings as spinoffs to the original content so as to share their fantasies and thoughts, “creating bonds and allowing [prolonged] conversations between fans” (Hellekson & Busse, 2006, p. 29). This ties back to the discussion within Critical Disability Studies about imagination, where online-digital spaces give people the opportunity to subvert social constructs within neoliberal-ableist agenda and arrive at different conclusions through new ways of imagining ideas and realities. User-generated content thus enables individuals within online spaces to produce discourses about themselves from different viewpoints (e.g. as a fan, as an individual, as a professional).

According to Bruns (2008), people in this participatory paradigm become ‘produsers’, taking on both the roles of the user and the producer, as a form of “resistance” to mainstream media content. Unlike physical spaces—where roles, identities and statuses are largely prescribed—the online space enables the choice of anonymity, which breaks down power relations between users, encouraging them to participate in ‘produsing’ (Bruns, 2008; Jenkins, 2006). Most importantly, the participatory culture fosters social relations through producing and sharing (Delwiche & Henderson, 2012; Jenkins, 2006; 2010). Writing a blog, “tweeting” or chatting over Facebook, for example, are all processes of creating content that act as active forms of “mediated interaction”, substituting “orality” and enabling information exchange within interest groups (Castells, 2010, p. 392). The online space therefore enables socialisation in the form of ‘participatory culture’ because of its lower barriers to entry, lower costs, time-space (ir)relativity, and availability of tools and spaces for specific interests.

However, it is important to understand that participatory culture in this sense is not simply equivalent to online culture, but rather, is enabled through online-digital space (Jenkins, 2010). Users have a choice to be as active or as passive as they want, which is in itself problematic. van Dijck (2009), amongst other media scholars, argues that participatory culture is a flawed concept as it assumes that users have equal opportunities to participate and contribute to this dynamic space. In a survey conducted in 2006, 33 per cent of all users on user-generated content sites were discovered to be “passive spectators” while 52 per cent of them were “inactives” (OECD, 2007). In more recent reports, the number of users across multiple social platforms has increased in Australia, with approximately 46 per cent of Australians using these sites to share photographs and videos, catch up with family and friends (85 per cent), watch news or current events (36 per cent), watch videos (32 per cent) or retrieve other forms of information (Yellow, 2018, p. 30). These statistics are relatively similar across other international or US-based reports (e.g. Smith & Anderson, 2018). It should be noted that recent statistical reports on social media use have mainly been utilised for marketing and branding purposes and may contain bias.

While these numbers may not be reflective of all user status, it becomes readily apparent that “participation” does not necessarily equate to “active contribution”; rather, participation is a relative term when a large group of people within social media are only using private messaging tools or are passive recipients of content, although some may argue that access to content is in itself a form of participation (OECD, 2007).

Jenkins (2010) argues that the relationships between spectator, participant, contributor and user are relative rather than merely definitive. While power relations exist in the form of accessibility to technology, knowledge of coding, etc., they are unlike physical spaces because codes of conduct applied to physical spaces do not necessarily apply to online-digital spaces. Within online spaces, a person with a physical impairment, for example, is not seen as disabled because traditional notions of ableism do not apply even if others online are predisposed to that knowledge. This is because communication and interactions within these spaces are mediated through a screen (i.e. their impairments, physical or otherwise, are not visible) and can be asynchronous, providing opportunities for curation and alterations, tailored to personal needs (Jenkins, 2010; Davidson & Parr, 2010). The interactions within online spaces and physical spaces, though similar in some ways (e.g. ease of diction within emails may be similar to the way we converse with different people, from casual to formal, based on the relationship), are more dissimilar in other ways due to the nature of mediation (Wittel, 2001). This segues into my next discussion about mediation and identity.

3.3.4 Online space and identity construction: A mediated experience

Apart from identifying online-digital space as unique from physical or psychosocial spaces, it is also important to recognise it as a mediated space—a combination of media and virtual space (Tomlinson, 2007). This last section is dedicated to briefly discussing online-digital spaces as forms of media that enable people to create individualised identities.

Since the creation of print technologies, media has become an important aspect of identity formation. According to Benedict Anderson (1991, p. 44), “print-capitalism” unified fields of exchange and communication between social classes of people and established languages of dominance within regions, surpassing dialects and defining the boundaries of a nation through this unification.

Fast-forward to the development of television and radio—Featherstone (1996, p. 57) argues that images and sound bites broadcast over media were able to create a “common repository of myths, heroes, events, landscapes, and memories that are organised and assume(s) a primordial quality”. Individual identity, as mentioned earlier, was synonymous with communal or national identities in the twentieth century where shared narratives and history were crucial to the formation and development of this identity. Featherstone (1996, p. 57) observed that national identity was increasingly constructed by the media as it created a sense of inclusion and approximation amongst local audiences through recorded and live events. Rituals and costumes, as shown in the media, for example, contributed to the “[reconstituting of] the ceremonial space in the home” (Featherstone, 1996, p. 57). According to both Featherstone (1996) and Silverstone (2007), consuming media enabled us to participate in the lives of others within our community and imagine ourselves in relation to them within our personal space. It shows that the media has the capacity to bridge the public and the private, constructing images of communal existence on top of unifying communication, influencing what is “imagined” as a nation (Featherstone, 1996, p. 57). Up to this point, media has always been part of disseminating collective identities. However, the introduction of online media platforms has changed the way information is socially organised, as highlighted above, altering the consumption of content for a more individualised identity (Tomlinson, 2007).

Moving into the 21st century, Flew (2007, p. 138–139) states that media, particularly online media, is crucial to the formation of identity as it is “the principal bearers of symbolic and informational content through which people make sense of their world, and their relations to distant others”. I know about my ancestral heritage, a very specific part of Chinese culture, only through reading texts on- and offline or chatting with my distant family members through WeChat. From this, as a global citizen, I choose to assimilate only the values that I deem appropriate—a *want* rather than a *need*—to my individual status as a Singaporean living in Australia. Similarly, Tomlinson (2007) points to the significance of media, particularly online, social and new media, in shaping this identity. Drawing from Castells’ (2010, p. 404) ‘network society’, where he claims that “all reality is virtually perceived” and signs and symbols are contextual and somewhat displaced in relation to their assigned semantic meaning, Tomlinson (2007, p. 92) argues that the media “occupy a space in the everyday flow of experience within an individual’s life” and presents the world as “distinct, yet integrated with face-to-face interactions of physical proximity”. In other words, online media becomes part of the creation of experience with people, place or information. Writing a tweet or participating in online forums on mobile devices while walking on the streets are examples of active forms of “mediated interaction” that integrate within physical spaces, substituting “orality” or the need for physical interactions within public spaces (Castells, 2010, p. 392).

Media technologies, as discussed by Castells (2010) and Tomlinson (1999/2007), have altered the way our memories and experiences are created, particularly with heightened participation and interconnectedness within online-digital spaces. Our imagined relationships and identities to places have also become increasingly mediated. Seidler’s (2010) research further explains that media technologies help people to “test” and “explore” new identities that may or may not ever be articulated in a person’s normal everyday lives. Seidler (2010) contends that the media, particularly online-digital spaces, can create embodied experiences for its audience, helping them to renegotiate their identities beyond those framed by physical localities. This may enable those who are bound by traditional discourses around their disability to find new meanings in them, such as what it means to embrace autism as an identity (as discussed under ‘neurodiversity’ in Chapter 2).

So far, I have given a summary of how media facilitates interactions and identity formation. It plays a complex role, from disseminating collective identities and social roles to creating an environment for individuals to seek out unique identities for themselves. I argue that the online-digital space is more a medium for open dialogue on existing discourses and a channel for new information to be created and disseminated, allowing for individual identities to be shaped by what is to come rather than what is already known.

While communication has been a key aspect of mediated identities, online-digital spaces specifically allow for multi-directional conversations so that people can negotiate for themselves an identity that they are comfortable with. Instead of being fed “symbolic and informational content” that fits within a broader narrative, the nature of online space allows for the gathering of information to build a personal rather than a shared narrative. Consider McQuire’s argument:

> *“[C]ontemporary cultural identity is consequentially less defined by an ‘imagined community’ based on geographical borders ... but increasingly assumes the mosaic pattern adumbrated by the overlapping footprints of satellites and the flows of digital networks.” (McQuire, 2008, p. 6)*

McQuire (2008) encourages us to look beyond physically-shaped identities to understand people based on their interactions over multiple platforms and networks. While it is unclear as to whether online identities transcend multiple spaces, the above discussions show that 1) media—offline to online—have always had an impact on people’s interactions and socialisation, and 2) online-digital spaces have the capacity to help individuals create new identities beyond the perceived and constructed identities prescribed by society based on their gender, disability, class, race, etc. Online-digital spaces present opportunities to understand individuals as individuals rather than as constructs of society—in this case, shedding light on the institutional disablement of people with autism.

A large volume of research on online space and participatory culture has involved young people. This is because there is a higher uptake of new media technologies amongst youth in comparison to adults, as the former grew up within the digital environment (Banaji & Buckingham, 2013; Yellow, 2018). A number of studies have found that online activity promotes civic engagement and socialisation among youth (Banaji & Buckingham, 2013; Raynes-Goldie, 2008; Sefton-Green & Erstad, 2013). Some evidence suggests that persons with Aspergers' syndrome and high-functioning autism are better able to interact and communicate within online spaces (Benford & Standen, 2009; Davidson & Parr, 2010). Bendord and Standen (2009, p. 1) found that the "complexity of communication was lessened, and a greater sense of control could be achieved" because online interactions lessened the "emotional, social and time pressures experienced in offline situations" for persons with Aspergers' syndrome and those on the spectrum. The online-digital space presents itself as an accessible space for people with autism as it does not impose common ableist communication on these individuals. Instead, it gives people on the spectrum more freedom and the flexibility to communicate as they deem comfortable.

Disability geographers Davidson and Parr (2010) have recognised the potential of online space as both enabling and disabling for autistic people. They argue that the space is enabling because autistic individuals are able to interact without the nuances of physical communication, such as body language, eye contact and emotional cues (Davidson & Parr, 2010, p. 72). This is simultaneously disabling as it perpetuates a "performance of normality" in that the implicit standard of communication and socialisation is not challenged; autistic individuals interact similarly online to their neurotypical counterparts (Davidson & Parr, 2010, p. 73). I intend to contribute to such research by investigating the processes and patterns of socialisation by autistic youth online.

3.4 Psychosocial Space

Psychosocial studies is an interdisciplinary field of inquiry which looks into “ways in which subjective experience is interwoven with social life” (Association for Psychosocial Studies, 2019, para. 1). Woodword (2015, p. 35) refers to ‘psychosocial’ as a “seamless entity” and “space in which notions that are conventionally distinguished, such as individual and society, are thought of as together and as intimately connected or possibly even the same thing”. Researchers such as Frosh (2003) and Stenner (2014, p. 205) discuss psychosocial studies as a “critical entity towards psychology” that emerged as a “non-foundational transdiscipline” concerned with human subjects as “social entit[ies]”. The term ‘psychosocial’ was chosen in this thesis because it embeds a critical viewpoint towards understanding individual experience. It seeks to position personal space within a social context, similar to how perceptions of disablement need to be contextually analysed. In this section, I will define and examine the psychosocial and its corresponding space to unpack how we may critically consider the individual experiences of young people with autism while also understanding the nuances of the individual psyche.

3.4.1 Pyscho-social: between psychology and sociology

Psychosocial studies, as its name suggests, is a combination of psychology and sociology. Psychology can be defined as “the study of the mind and behaviour … [which] embraces all aspects of human experience — from the functions of the brain to the actions of nations, from child development to care for the aged” (APA, 2015). It is concerned with individual mental life and can be considered the “inner world” within the psychosocial realm (Stenner, 2014, p. 205). However, Stenner (2014, p. 207) critiques the inner world and contends that it is an “illusion” that “subjectivity can be reduced to discursive practices”. He argues that it is necessary to consider social phenomena as it contributes to and manipulates our psyche.

Sociology, broadly defined as the study of social life and society, covers a wide range of theories, from political structuration and constitution to cultural identity, globalisation and social classes (Giddens & Sutton, 2013). It is the "outside world" to Stenner's "inner world", which makes the psychosocial a critical form of psychology (Stenner, 2014, p. 205). Mandeville, in the seventeenth century, for example, theorised that society functioned as a collective influence on the psyche and made links between the most intimate, and hidden, emotions—such as shame—with notions of society and its governance (Jones, 2011). He suggests that how individuals think, feel and act are not simply personal choices, but are located within the broader political, social, economic and cultural structures of our society (Jones, 2011).

Stenner (2014, p. 207) calls the combination of psychology and sociology a "double-bind"—an individual must and cannot separate the "inner" from the "outer", which roughly translates as the "psyche" from the "social". While there is no argument that psychology and sociology are inherently related, further investigation between the details of relationship need to be established: is an individual's psyche more affected by his/her social life or vice versa? To date, researchers in both psychology and sociology are still debating the extent of their relationship, leading to an increasing interest in the field of 'psychosocial studies'. Frosh provides a concise definition of this field of study:

> *"Psychosocial studies seeks to investigate the ways in which psychic and social processes demand to be understood as always implicated in each other, as mutually constitutive, coproduced, or abstracted levels of a single dialectical process. As such it can be understood as an interdisciplinary field in search of transdisciplinary objects of knowledge." (Frosh, 2014, p. 161)*

Psychosocial studies thus encourages researchers to interrogate both the experiences of individuals as well as the social "realities" that shape their interpretation of information, unlike critical or discursive psychology, which tends to lean towards discourse (Stenner, 2014). A psychosocial approach enables us to negotiate and come to terms with one's place as an "individual" but within a social order.

Rudberg and Nielsen (2012), for example, argued that “social change and psychological desire are dynamically interwoven at any given historical moment, and that changes in gender relations must be understood in a cultural, generational, as well as psychobiographic perspective”. In their research, they drew on feminist perspective of sex and gender and put forth that while sex is biologically determined, gender is constructed. However, they recognise that sex and gender are inseparable concepts. From a psychosocial perspective, an individual’s ideological conception of gender is constituted by both his/her biological make-up and social interactions (Rudberg & Nielsen, 2012).

The psychosocial provides a critical insight into an individual’s psyche which addresses both the individual and social aspects of being human—an argument that is consistent with neurodiverse scholarship. Bringing the psychosocial perspective closer to this project, I question: how do people with autism negotiate their place within the social environment, recognising both the social-communicative particularities they experience and the discourses surrounding disability and autism?

In many ways, the psychosocial approach is a complex multidimensional way of deconstructing the relationship between the individual and the social. This approach will be further explored in this dissertation, focusing on how young people with autism understand themselves as unique individuals within the broader social sphere that interprets their difference as disability. Through this knowledge, we may yet be able to deconstruct the autism discourse, similar to how we are beginning to deconstruct and reconstruct gender identity.

3.4.2 Defining the psychosocial space

In my research, I have specifically qualified the psychosocial as one of the three differentiated spaces. This is because the psychosocial is a transitional space that exists within and around individuals, going back and forth between the individual psyche and the social (Gores, 2000). As mentioned, this research seeks to understand how individuals with autism position themselves within the social environment and explore how the social has implicated this position. Therefore, the psychosocial space was selected to explore this relationship between the individual and the social.

The conceptualisation of the psychosocial as a space was inspired by Roseneil's theorisation of the psychosocial imagination:

> *"The psychosocial imagination is, I would suggest, at once historical and spatial, prospective and retrospective, theoretical and empirical, specifying and generalising, quantitative and qualitative, artistic and clinical, microscopic and macroscopic, global and local, literal and metaphorical, poetry and prose, and all the spaces in-between these problematic binaries." (Roseneil, 2014, pp. 133–134)*

Roseneil's (2014) discussion prompts me to think about the psychosocial as spaces that help us position ourselves within each of these polarising themes or topics she calls "problematic binaries". How individuals perceive each of these topics and their relationships with each other (e.g. global and local) is influenced by our psychosocial imagination, which is constituted by our individual psyche, social experiences and beyond. Instead of using the term 'imagination', which suggests the capacity to create and construct new ideas without prompts, I prefer the term 'space' because it signifies a container or similar that allows us to accumulate experiences, resources and information that are used to help us construct these imaginations.

Gores (2000) offers a more comprehensive understanding of the psychosocial space that is adapted in my research. He argues that the psychosocial space is about how an individual "situates him- or herself in relation to culture and specific communities within it" (Gores, 2000, p. 14). It is "manifold and is constructed imaginatively by each individual, both conscious and unconsciously" (Gores, 2000, p. 14). It should be noted that this dissertation will not explore ideas of consciousness as it is not within the scope of this project. Rather, it will interpret Gore's perspective as to whether we actively seek to construct these imaginations or unintentionally perceive these constructs. According to Gores (2000), psychosocial space is both individual and relational. In his writings about visual and verbal readings of British culture between 1750 and 1820, he was particularly interested in exploring how a person constructs his or her identity through interacting in and with other spaces, people and society through access to various art forms (see also Woodward, 2015). He confessed that he was uncomfortable in discussing historical “truths” that his primary source materials provided because:

> *“subjectivity is caught up in ‘imaginary’ and/or ‘symbolic’ relations to culture. Thus, no subject can write a detached, objective history; the structure of the self necessarily produces historical narratives that are imbricated in that self’s culture, reflecting its biases and priorities concerning what is judged to be important enough to be considered ‘history’.” (Gores, 2000, p. 14)*

Here, we begin to understand that while multiple sources of evidence support an event’s existence, each narrative is constructed through a subjective lens based on personal interpretation. It is interesting to note the similarities with Gergen’s (1998) discussion on social constructionism and realism where he talks about death as both an event (i.e. someone is dead) as well as the way people interpret it (e.g. he has gone to heaven/left us).

What is fascinating about Gores’ work is not simply the exploration of identity formation through the consumption of culture (e.g. appreciation of artworks) but also the personal narratives created by artists and writers. On top of that, Gores explored his own interpretation as part of his “historical” and “cultural” narratives. The fascination with the psychosocial space is therefore not just about an individual and his/her identity or personal space. Rather, it is concerned with the interconnectedness and complexity of personal and social relations, and the parallel relationships that develop between various subjects and objects. Other academics in the field of psychosocial studies, such as Jones (2013), Hollway (2011) and Diamond (2013), have also used similar models of analysis, drawing on different relationships between subjects and objects to discuss a range of topics.

Jones (2013), for example, used the psychosocial to explain a link between consumer culture and criminality. He discussed how the individual psyche, influenced by consumerism and materialism, led to the rise of crimes such as looting and violence in London. The consumer culture created a desire for material needs that eventually became part of the individual psyche (Jones, 2013).

In Hollway's (2011, p. 92) work on understanding pregnancy, she discussed writing through a psychosocial epistemology, which she defines as "a new paradigm for theorising how researchers and readers/audience of naturalistic empirical research know what we encounter". She emphasised that "socio-cultural themes are not excluded from the use of subjectivity" in that our social views, even as researchers, are subjectively interpreted by our personal views, similar to Gores' observations (Hollway, 2011, p. 92). She argues that researchers are part of understanding the experiences of their participants as it is impossible to withdraw individual subjectivity from research themes in the way "objective" research is framed (Hollway, 2011).

Diamond (2013) explores the psychosocial space to investigate why and how our bodies relate to the cinema as a social artefact, in that our cinematic experiences are heightened and our individual psyches are influenced through viewing and relating to other bodies on screen. Constant exposure to cinema, according to Diamond (2013), may shape the way we view and idolise or reject certain bodies.

The examples above show the extensive breadth in which psychosocial spaces can be applied to understanding individuals within various socio-cultural phenomena. It is in the interest of my research to investigate the psychosocial spaces of young people with autism to explore how they perceive sociality and situate themselves within environments which disable them through medical discourses.

3.5 Understanding Differentiated Spaces Together: Third Space and Third Place

So far, I have discussed the three differentiated spaces and how each impacts people who inhabit them in different ways. However, these spaces do not exist alone and thus cannot be understood or analysed in isolation. Merriman (2012) and McQuire (2006), for example, discuss the relationship between physical and digital spaces enabled by mobile devices and media technologies. Along with Giddens (1991), they argue that socialisation is no longer one-dimensional within the relativity of time and space, but rather, occurs simultaneously within multiple spaces and “screens” across different time zones (McQuire, 2006; Merriman, 2012). Merriman (2012) particularly focused on how mobile phones have enabled us to extend our networks and our private lives within public spaces.

How does that change our relationships with others within physical spaces? How do online interactions available “24/7” affect our psychosocial well-being and impact our identities? Hassan (2011, p. 1) has called this phenomenon a form of “chronic distraction”, making us less focused on a few things but more spread out over many things. He argues that it has made adopters of mobile technologies and social media less critical as users are one click away from all the information they need, giving preference to immediacy rather than critical thinking or problem solving (Hassan, 2011). How does that impact people’s socialisation—from those who use these technologies to those who do not? The simultaneous participation within multiple spaces alters and brings new meanings to the production of knowledge and constructs, changing the way people socialise. I suspect that The Lab is facilitating this form of multifaceted socialisation through technology and I am therefore interested in furthering this research through understanding differentiated spaces as a combined effort. The interactions between differentiated spaces invite the notions of Third Space and Third Place theories.

3.5.1 Third Space

Third Space theories have been defined and discussed in many different contexts. I will be focusing on the two most significant streams by theorists Edward Soja and Homi Bhabha, which are the most applicable to my research.

Postmodern political geographer and urban theorist Soja (1996, p. 1) refers to Third Space as uncovering “meanings and significance space and those related concepts that compose and comprise the inherent spatiality of human life”. Consider this short interpretation of Lefebve’s (1991) work on the production of space:

> *“The message is clear … [with] powerful connotations: that all social relations become real and concrete, a part of our lived social existence, only when they are spatially “inscribed” - that is, concretely represented - in the social production of social space. Social reality is not just coincidentally spatial, existing “in” space, it is presuppositionally and ontologically spatial. There is no unspatialised social reality. There are no aspatial social processes. Even in the realm of pure abstraction, ideology, and representation, there is a pervasive and pertinent, if often hidden, spatial dimension.” (Soja, 1996, p. 46)*

This suggests that space is inseparable from our lives and is part of our lived experience. It is a pertinent aspect of social and meaning-making processes—how we know what we know *always* has a spatial dimension. This dimension, as Soja (1996, p. 74) suggests, is the trialectics of spatiality, which consists of “lived”, “perceived” and “conceived” spaces determined by First, Second and Third Space epistemologies. First and Second Spaces have been repeatedly discussed throughout the early twentieth century (Lefebve, 1991). The First Space is concerned with the “physical” and “geographical” (Soja, 1996, pp. 75–77). For example, urban cities such as Melbourne are sometimes zoned into different areas: school zones, residential areas, industrial zones, public facilities (e.g. sports halls, malls, markets), etc. (ABS, 2017). These areas are mapped and have a physical and geographical location, and have been allocated a sizeable area based on their utility. This is considered the first and most visible space. According to Soja (1996), it is a form of “perceived” space that is planned based on its objectives and utility.

The Second Space, on the other hand, is “mental”, “symbolic” and “ideational” (Soja, 1996, p. 78–81). Soja (1996) refers to this as the “conceived” space where people envision what this place does. For example, when an artist conceptualises a school, he or she attaches the idea of learning and teaching to the space. The Second Space can be considered as the conception behind the First Space. While these two concepts are not foreign to most people as they are directly related to functionality within our social lives (e.g. schools for education, hospitals for health care), they do not reveal all the “lived” experiences within space. This is where Soja’s theory of the Third Space comes in.

The Third Space is socially and historically located. It is “imaginary”—a “discourse” that is “distinguishable from other spaces and a transcending composite of all” (Soja, 1996, p. 62). The Third Space is a form of lived space: how people socialise within space and ascribe meaning to places. At schools, for example, aside from learning, children make friends, interact with teachers and/or are bullied. They discuss the latest movies and toys, gossip and share their interests or withdraw from others. The Third Space is where they give meaning and develop different levels of emotional attachment to a place based on individual experiences.

Soja’s conceptualisation of the Third Space brings us back to the beginning of this chapter where I discussed the three aspects of space: 1) space has and gives meanings, 2) space affects relationships and 3) space alters our state of mind. It is everywhere and is inherently social because all lived experiences are spatially located. However, Soja’s theory of the Third Space does not particularly touch on the processes of creating these meanings and discourses. Hence, I look towards Bhabha’s (1994) theory of the Third Space to further understand the complexity of spaces.

Postcolonial theorist Homi Bhabha (1994) refers to the Third Space as "a challenge to the limits of the self in the act of reaching out to what is liminal in the historical experience, and in the cultural representation, of other peoples, times, languages, texts" (Bhabha, 2009, p. xi). While there are multiple interpretations of Bhabha's work, I will largely draw on Gutierrez's (2008, p. 152) adaptation of the Third Space as a "transformative space where the potential for an expanded form of learning and the development of new knowledge are heightened". While we can recognise space and everything within it as social constructs, we are only able to understand them within the "locality of cultural translation" (Bhabha, 2009, p. xi). For example, if a European were to have a conversation with me, a person of Chinese descent, about *kung fu,* we may come to the same conclusion that *Aikido* is more practical, but our thought process about the conclusion may be different because it would be based on how we situate *kung fu* or *Aikido* within our cultural knowledge. Through this cultural translation, new "knowledge" can be produced.

Gutierrez's empirical work with Mexican migrant students found that the interaction between non-dominant and dominant forms of learning developed sociocritical literacies—a "historicising literacy that privileges and is contingent upon students' sociohistorical lives, both proximally and distally", replacing traditional forms of academic literacies (Gutierrez, 2008, p. 149). She was able to understand and develop this form of literacy through investigating within a collective Third Space, where participants "reconceive who they are and what they might be able to accomplish academically and beyond" within their own cultural experiences (Gutierrez, 2008, p. 148). The tension between traditional forms of academic literacies and these migrant students' visions of their academic capacity as situated within their personal experiences creates new knowledge about best practice within forms of learning. These tensions, interpretation and resolutions are processes within the Third Space articulated by Bhabha (1994) and Gutierrez (2008).

The Third Space can therefore be understood as a transitional space or even *process* whereby meaning is created through each individual's psychosocial participation (Bhabha, 2009; Gutierrez, 2008). However, it is important to note that this notion of the Third Space is very fluid and hybridised, and can also be understood as interactions between multiple differentiated spaces (Rizzo et al., 2012; Soja, 1996).

Drawing from Soja's and Bhabha's notions of Third Space, I therefore question: How does a combination of differentiated spaces produce new meanings and discourses? Can it create new knowledge about spatiality, socialisation, disability and autism?

This research is interested in understanding how the psychosocial spaces of young people with autism interact with other differentiated spaces of The Lab. The project aims to investigate how individuals situate themselves in relation to The Lab and others within it. I believe that The Lab has enabled more effective multifaceted Third Space engagement due to the use of technology, spatial flexibility and the gathering of youth with varying degrees of autism who share similar interests and experiences in comparison to their neurotypical counterparts at school or in other spaces.

3.5.2 Third Place and … Fourth?

The Third Place was conceptualised to differentiate itself from the home (i.e. First Place) and the workplace (i.e. Second Place) (Oldenburg, 1999). Third Places "provide opportunities for important experiences and relationships in a sane society, and are uniquely qualified to sustain a sense of well-being among its members … [they] exist outside the home and beyond the 'work lots' of modern economic production" (Oldenburg & Brissett, 1982, pp. 268–269). They are informal public gathering places, such as pubs, churches and libraries, which contribute to building civil societies and are anchors of community life (Oldenburg, 1999). Oldenburg (1999) identified eight characteristics of Third Places:

1. ***On neutral ground***

   Neutral places where individuals have little to no obligation to be there and "may come and go as they please, in which no one is required to play host, and in which we all feel at home and comfortable" (Oldenburg, 1999, p. 22).

2. ***Leveller***

   Places that are inclusive and where participation is based on the individual's own enjoyment rather than an obligation to society, home, state, etc. In these places, no one should feel more or less welcome based on their status or jobs in society.

3. ***Conversation as main activity***

   According to Oldenburg (1999, p. 26), while "neutral ground provides the place, and levelling sets the stage for the cardinal and sustaining activity of third places everywhere … [and] that activity is conversation". Playfulness, light-heartedness and wit are especially valued.

4. ***Accessibility and accommodation***

   Third Places are open, easily accessible and accommodating to those who visit them.

5. ***Regulars***

   Third Places are frequented by regulars who are part of characterising the place, which attracts newcomers.

6. ***Low profile***

   Third Places are "typically plain", homely and unpretentious (Oldenburg, 1999, p. 37).

7. ***Playful***

   Banter, playfulness and inclusion are emphasised in Third Places to ensure that "joy and acceptance reign over anxiety and alienation" (Oldenburg, 1999, p. 38).

8. ***Home away from home***

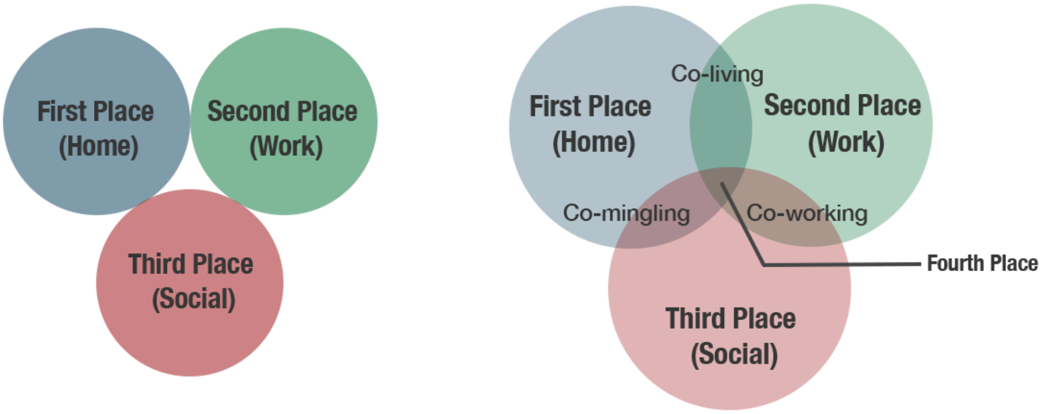
   While Third Places are different from the home, they are recognised as homely and provide warmth, comfort, support and a sense of belonging and familiarity to those who visit them.

At the time of writing, Oldenburg identified Third Places as physically located built environments, such as parks and cafés. From Oldenburg's (1999, p. 12) perspective, contemporary media are the cause of the decline of civic and social life in the United States as media consumption "thrives in the dearth of the informal public life" by substituting involvement in the social world with "vicarious watching and listening".

However, in recent times, others such as Steinkuehler and Williams (2006) and McArthur and White (2016) have explored the possibility of virtual Third Places within digital gathering sites, such as Twitter and large-scale multiplayer online games (e.g. *World of Warcraft*, *Minecraft* servers). While some characteristics were less pronounced than others, homeliness was difficult to measure within some twitter threads (McArthur & White, 2016) and “low profile” was difficult to achieve in game environments which emphasised the grandiose (Steinkeuhler & Williams, 2006); digital and networked gathering spaces enabled community-like engagement, informal sociability and the building of social capital, which are the focus of Third Places.

In my research, I am interested in examining The Lab as incorporating both physical and virtual Third Places as it has the characteristics mentioned above, despite them being manifested in different ways. I will discuss The Lab as Third Places further in Chapter 6.

In the last few years, there has been some interest in theorising the Fourth Place, triggered particularly by a global move towards knowledge-based economies instigated by technological advancements (Morisson, 2017). While there is still no consensus as to what the Fourth Place is, it is closely related to the Third Place in terms of its social and behavioural characteristics (Aelbrecht, 2016). However, Fourth Places are more mixed relational locales, characterised by the “in-betweenness” of locations, activities and spatial conditions, as well as publicness (Aelbrecht, 2016, p. 126). According to Morisson (2017), Fourth Places are amalgamations of all three places as lines between the home, the workplace and the social place blur with the increasing importance of online-digital technologies in knowledge-based economies (Morisson, 2017). New social environments, such as hacker spaces, maker spaces, and shared living and work spaces, have emerged in the last two decades; these have complicated the relationship between the home, the workplace and the social place. Consider the Venn diagrams below:



Images 7 and 8 from left to right: 7 represents places before the knowledge economy and 8 represents places in the current knowledge economy (adapted from Morisson, 2017).

Morisson’s diagrams suggest that new typologies of places have emerged where in the Fourth Place, “the frontier between social and private dynamics, work and leisure, networking and social interactions, and collaboration and competition are blurry” (Morisson, 2017, p. 6). While The Lab cannot be categorised as a Fourth Place since it is not considered a home, Morisson’s and Aelbrecht’s concepts are relevant to this discussion as it highlights the shifting definition and purpose of places, particularly with the increased reliance on information and communication technologies. With its online-digital space and unstructured nature, The Lab is both a social and learning place where young people with autism can converse, find support and socialise as in a Third Place, but can also learn new and personalised skills at their own pace, much like in a Second Place (which would be equivalent to the school for these young people). I will therefore further this discussion in Chapter 6 of this dissertation.

In this chapter, I discussed the characteristics of spaces and places. They are important to us and to this research because they are capable of shaping our perceptions of people, places and objects. They also impact how social relationships are formed, which is the premise of this research. Over time, individuals may develop emotions and a sense of attachment to spaces and/or places, ascribing meaning to them.

This chapter also highlighted three differentiated spaces: physical, online-digital and psychosocial. These differentiated spaces, each with their own uniqueness, were selected as they make up the environment of The Lab. Physical space—its composition, contents and even its empty spaces—provides context and indications as to how we interpret our surroundings and face-to-face relationships, as well as how we behave within them. Online-digital space is mediated through technologies and presents a radically different kind of space to physical space. For one, it enables asynchronous communication that ignores the relativity of time and space. It also introduces new intelligences that are non-human and are constituted by learning algorithms. It is an information space that is made up of texts, files, images, folders, etc. within web architectures that are searchable and easily accessible. Most importantly, the space invites individual participation (e.g. content creation/sharing) and allows for the construction of new meanings and socialities. Psychosocial space—unlike physical and online-digital spaces, in that even in the most intimate of these spaces we may find traces of others—is concerned with how individuals situate themselves socially in relation to culture and the communities within it. While the interest in physical and online-digital spaces is in understanding how they, as large spatial entities, accommodate and affect sociality, the interest in psychosocial space is in the unique experiences of individuals within these spaces. Through unpacking the characteristics of differentiated spaces, we begin to see how they may complicate notions of sociality, especially for those on the spectrum who now have the opportunity to communicate and interact without the nuances of non-verbal physical communication. It is therefore in the interest of this research to understand how each of these spaces contributes to the way young people with autism socialise within and between them.

In the final sections of this chapter, I explored Third Space and Third Place theories as possible avenues to understanding differentiated spaces together. Third Space, sometimes referred to as a ‘transitional’ or ‘transformation space’, is interested in how individuals ascribe meaning, develop emotional attachment and produce new knowledge about social spaces and places through each individual psychosocial participation. Here, I am interested in uncovering how new knowledge, particularly in the understanding of sociality and autism, may be developed through the interactions between and within differentiated spaces. Third Place theory is concerned with the formation of social spaces beyond the home and the workplace. Conceptualised by Oldenburg (1999), it identifies eight distinct characteristics that make up social spaces and explains the importance of each in our public lives. In recent years, there have been speculations as to the existence of the Fourth Place—one that blurs the lines between the First, Second and Third Places due to the increasing reliance on information communication technologies (which enable online-digital spaces). I suspect The Lab is a combination of Third and Fourth places and will discuss this possibility in the later chapters.

The literature review in this chapter directly corresponds to the findings and discussions in Chapters 5, 6 and 7, where I will further investigate how differentiated spaces and their combination have impacted the sociality of young people with autism.

Chapter 4: Methodology

In the previous chapters, I discussed how individuals and collectives are impacted by the construction of space(s) and the discourses created by long-standing ideologies, paradigms and ableist cultures. More specifically, I explored how the identities and attitudes of young people with disabilities, particularly autism, can be shaped by these differentiated spaces.

A recurring theme, examined and deliberated at length in Chapter 2 and then again in Chapter 3 from the viewpoint of separate differentiated spaces, is the concept of socialisation. This is especially important to this research as the conceptualisation of sociality is often divorced from conversations regarding autism, although the latter takes the brunt of the discussions around the concept (Muller et al., 2008; Ringland et al., 2016). While autistic individuals are associated with having difficulties in making eye contact, or misinterpreting non-verbal cues such as body language, these challenges should not be immediately judged as an inability or lack of desire to communicate and socialise. Interviews conducted by Muller et al. (2008), for example, found that individuals with autism desired social interactions with others but were often impeded by sensory overload or other autism-related challenges. Ringland et al. (2016, p. 1259) found through their analysis of an online gaming platform and forum dedicated to young people with autism that “members of the [community] search for, practice, and define sociality”. This suggests that there needs to be a renewal in the conceptualisation and broadening of the terms ‘socialisation’ and ‘sociality’ to incorporate the voices of minority and disadvantaged groups, such as people with autism, as well as new processes and technologies (e.g. socialisation within online, networked communities). It is from the position of hoping to include the perspectives of those who have been excluded that I developed the methodology for this research project, which consists of three ethnographic participatory methods: participant observation, video ethnography and online participatory ethnography.

4.1 Recap of Research Questions

This research intends to further examine the relationship between autism, socialisation, technology and differentiated spaces. Therefore, the overarching research question is:

- How do technologically-mediated differentiated spaces enable young people with autism to socialise?

While differentiated spaces work in combination to build the overall unique environment of The Lab, as part of an effort to ensure that each space receives our attention as to their contribution to the learning of sociality, I have further written four sub-research questions. They are:

- How do the unstructured physical spaces of The Lab enable young people with autism to socialise and develop interpersonal and technology-assisted relationships?
- How do the participatory (e.g. social media) and individualistic natures of online spaces affect the way young people with autism socialise and develop interpersonal and technology-assisted relationships at The Lab?
- How do the unique perceptions of the social by young people with autism, mediated by technology, enable them to socialise and develop interpersonal relationships?
- How do differentiated spaces work in continuum to create an environment that allows young people with autism to overcome the perceived limitations of their disability?

A large part of this research was also conceived based on a transformative paradigm (refer to the next section). Together with the use of technology as part of embodying The Lab's culture, the methodology aims to create an optimum environment for these young people to engage in research and provide them with opportunities to construct their own narratives about themselves. Therefore, one of the research questions I also explored within the research was:

- Is the use of interactive qualitative methods effective in encouraging young people with autism to participate in research? If so, how and why?

4.2 Theoretical Paradigm

In the introductory chapter of this dissertation, I discussed how a transformative paradigm underpins this research. As previously mentioned, the transformative paradigm, also known as the advocacy/participatory paradigm, is an extension of the constructionist paradigm where it argues that while multiple realities exist and are socially constructed, some realities are priviledged over others due to uneqaul (Creswell, 2007; Mertens, 2015). In this section, I will discuss how a transformative paradigm informs the methodology to support the aims of this research.

A transformative paradigm is inherently political and is concerned with constructs that are unjust. It seeks to rectify injustice through advocacy, collaboration and action. The aim within a research guided by a transformative paradigm is reiterated by Creswell:

> *"[The] basic tenet of this worldview is that research should contain an action agenda for reform that may change the lives of participants, the institutions in which they live and work, or even the researchers' lives" (Creswell, 2007, p. 21).*

Hence, research within this paradigm must seek to improve the lives of people who have been historically, politically and socially disadvantaged and its methodology must engage and reflect these voices that have been “traditionally unrecognised or excluded” (Mertens, 2010, p. 27). Therefore, from a methodological viewpoint, a transformative paradigm calls for participatory research as it is a form of “inquiry completed "with" others rather than "on" or "to" others" (Creswell & Poth, 2018, p. 37). This is important “in helping individuals free themselves from constraints found in the media, in language, in work procedures, and in the relationships of power in educational settings" as it provides participants with the opportunity to subvert hegemonic narratives (Creswell & Poth, 2018, p. 37).

Scholars such as Mertens (2007; 2015) and Guba and Lincoln (2005) also recommend a dialogic qualitative (or alternatively, mixed-methods) methodological approach in which contextual and historical factors of oppression are addressed, power inequalities within social relationships are considered and participants who have been marginalised are actively involved in the planning, implementation and reporting of the research. It is through this framework of advocacy, collaboration and action that I have designed the methodology for this research.

4.3 Qualitative Research in Disability and Autism Studies

Qualitative research is interested in "understanding how people interpret their experiences, how they construct their worlds, and what meaning they attribute to their experiences" (Merriam & Tisdell, 2015, p. 5). Because my research was designed to investigate the experiences of young people with autism within differentiated spaces, a qualitative approach was no doubt more suitable than a quantitative approach. However, it was not the fitness of qualitative research that was questioned in this dissertation, but rather the extent of its usefulness within the context of disability and autism studies, both of which necessarily work with people who are generally more vulnerable and disengaged from society and research (Mertens, 2015).

Kiernan captures the political nature of qualitative research with people with disabilities:

> *"The goal of qualitative research is quite explicitly to 'ground' studies in the experience and views of respondents. Nonetheless, even in qualitative studies, it is the researcher (or, in externally funded research, the funding body) who determines the overall research questions, and the researcher who gathers, analyses and interprets the data and draws conclusions." (Kiernan, 1999, p. 43)*

Kiernan's point poses the question of how notionally able-bodied researchers can validly represent and interpret the experiences of disabled respondents. The embodied experiences of those with disabilities, be they disabled by social narratives, medicine, physical impairments or otherwise, cannot be easily understood by those without these experiences. In addition, disability theorists such as Barnes & Mercer (1997) and MacLeod, Lewis and Robertson (2014) argue that researchers in this field often carry polarising views (e.g. advocating for change in social and medical narratives versus the need for more precision in diagnosis) and may inadvertently misrepresent the experiences of those with disability through specific agenda-setting.

While qualitative research can access the perspectives and experiences of vulnerable groups lacking the power to make their voices heard through traditional academic discourse (Creswell, 2007), the focus here is methodological: how can qualitative researchers conduct research with people with disability without misrepresenting their experiences? The philosophical or political questions have practical and methodological ramifications. Kiernan (1999) hence argues that qualitative research with persons with disability should be a "cooperative experiential inquiry" with research subjects becoming co-researchers in participatory methods.

According to MacLeod et al. (2014), participatory methods "sought to overcome barriers to [research] participation" for autistic people deemed as often "problematic" to communicate with. This is echoed by other researchers within the field of autism studies such as Lewis (2009) and Bagatell (2007). These researchers have conducted participatory research with autistic individuals through engaging participants in a consultative process, involving them at different stages of the research project as collaborators. Stone and Priestly (1996) argue that structures of traditional methodology may encourage unequal power relations between the researcher and their participants, particularly in the case of Disability Studies. In interviews or focus groups, for example, the researcher poses as the interviewer or facilitator and may ask questions known or unknown to participants, controlling and shaping the flow of information. Stone and Priestly (1996) thus propose that a participatory methodology may redress some of these power dynamics and enable researchers to engage in meaningful research with participants with disability. More importantly, Donahoo and Steele (2013) found that traditional forms of qualitative research imposed stress on participants at The Lab prior to their evaluation, which in turn informed their evaluation methods. Therefore, qualitative participatory methods are considered in this research to mitigate this stress by building relationships with participants and positioning them as of equal importance to the researcher (Mertens, 2015).

However, researchers need to be aware of the limitations of enabling partial collaboration. Townson et al. (2004, p. 73) write that "being partly included … also means partly rejected, by someone else". While in some projects, such as in Townson et al.'s (2004) people-led research in which the research team included people with learning disabilities to ensure inclusion rather than rejection of ideas, such possibilities are less realisable for people with more profound difficulties who lack the requisite skills to be in control at every, or any, stage of the research process. For some people with autism who may not possess the communication and social skills or flexibility of thought required within traditional research frameworks (which are stringently ableist), active participation may be a challenge (Beresford, Tozer, Rabiee & Sloper, 2004). Therefore, beyond involving participants in research, we need to consider the needs of participants and ensure care is taken when selecting and administering methods (Beresford et al., 2004).

As mentioned in the previous chapters, by investigating how differentiated spaces and technology within an environment (i.e. The Lab) affect autistic young people, my research hopes to understand and promote practices of sociality projected by participants who have been systematically categorised as disabled due to deeply-rooted medical assumptions. It advocates for a broader understanding of sociality to recognise autistic individuals as differently abled and the creation of more inclusive spaces—particularly within educational institutions, where crucial years of development for children and young people, neurotypical or neurodivergent, take place. Informed by MacLeod et al.'s (2014) consultative participatory research for persons with autism and Mertens, Sullivan and Stace's (2011) ethnographic approach within a transformative paradigm, this research is led by a series of qualitative participatory and ethnographic methods.

4.4 Scope of this Research Project

This research deployed three ethnographic participatory methods: participant observation, video ethnography and online participatory ethnography.

While there are several perspectives and definitions of ethnography, the focus of ethnographic research remains unchanged: to “[describe] and [interpret] a culture-sharing group” (O’Reilly, 2005, p. 78). According to O’Reilly (2005, p. 3), ethnography involves “direct and sustained contact with human agents, within the context of their daily lives (and cultures)”. She continues to posit that it is equivalent to “watching what happens, listening to what is said, asking questions” so that we might go beyond “producing a richly written account that respects the irreducibility of human experience” (O’Reilly, 2005, p. 3). The key here is experience—part of ethnographic studies is to document the experiences of those within the culture-sharing group, as well as that of the researcher. While few argue the importance of understanding experience within ethnographic research, the question is how we capture or understand experience in the first place. Some scholars, such as Howes (1991) and Classen (1993), argue that to research experience, we need to go beyond language and focus on the senses—sight, sound, touch and smell—as a cultural phenomenon where “perception is informed not only by personal meaning … but also by the social values it carries” (Pink, 2015, p. 21). This recognition of the senses is particularly important according to Stoller (1989), because culturally specific artefacts such as food and songs cannot be understood experientially simply through sight or language.

In a world where digital media and technologies have become entwined with our lived experience, it is therefore important to consider our experiences in the virtual world within ethnographic research. As put forth by Richardson (2011, p. 421), “in an environment of multiplying handsets and frequently upgraded portable game consoles, it is salient to examine the perceptual specificity of our interactions with and experiences of such devices”. This is further explained by Pink et al. (2016, p. 23), who argue that “the emergence of new digital platforms has made lived experience possible in new ways”. Looking closely at these claims, it can be deduced that technology does not simply aid or support our lived experience; rather, it has fundamentally changed the way we conduct and experience relationships with peers, friends or family.

In research on the 3D virtual simulation platform Second Life, Boellstroff observed that:

> *"Second Life's reliance on textual chat instead of voice during the period of his fieldwork, the limited capacity for avatar facial expression, and a general tolerance for delayed or unexpected responses (for instance, because persons often afk [away from the keyboard]) made it possible for many residents with autism to be competent social actors to a significantly greater degree than in the actual world." (Boellstroff, 2008, p. 147)*

This example is of particular interest to my research as it reveals that the online world has opened up a new way of experiencing communication and sociality for people on the autism spectrum. In many ways, technology has enabled the creation of new subcultures and communities that have redefined lived experiences for groups of people, such as those with autism, as discussed in the previous chapter. Therefore, in exploring experience within the digital sphere, we need to look beyond traditional ethnographic methods and investigate the possibilities of what has been deemed 'Digital Ethnography'.

The digital ethnographic methods in my research, namely video ethnography and online participatory ethnography, look to explore 1) the physical experiences of using and interacting with technology and 2) the changing lived experiences enabled by the affordances of technology and the online-digital space.

Through these methods, I engaged participants in a consultative process throughout the data collection phase so as to incorporate their perspectives more accurately—an aim of the transformative paradigm (Mertens, 2015). The specific methods chosen have been used to evaluate individual or a combination of differentiated spaces, as I will illustrate in the next section. All methods were conducted simultaneously within a one-year timeframe. Data collected was stored on multiple password-secured disk drives and analysed using critical discourse analysis (CDA), looking at “language and its role in the constitution of social and psychological life” (Willig, 2013, p. 130). This will be further elaborated upon towards the end of the chapter.

4.5 The Participants

A total of 24 young people with autism participated in this research, out of approximately 38[7] Lab members. They were recruited from three different Labs located in Melbourne, Australia: Frankston, Footscray and Reservoir. Of the 24 participants, 11 were from Frankston, five were from Footscray and eight were from Reservoir. Amongst the participants, only one was female, but this is not surprising as throughout the data collection phase I only encountered a total of three female participants, two of whom only attended one or two sessions. However, female siblings of participants and mothers were constantly moving around the spaces, especially at the Frankston Lab. A list of pseudonyms and information of participants is included in Appendix B.

Participants of the research were young people between ages nine and 17 who identified as having autism or Aspergers’ syndrome, and were attending either mainstream, special education or home schools. Most of the participants were members of the respective Labs prior to the research, with the exception of three participants who joined The Lab, and the research, after the data collection phase had begun. Three participants left The Lab, and hence the research, in the final stages of the data collection phase. It should be noted that

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[7] This is the total maximum counted across The Labs including trial members. Usually, approximately 30 or under members attend the sessions. While members who have not signed the research consent form have not been quoted or given a pseudonym for this project, it was not possible to separate this group of members from consenting participants due to the nature of The Lab program. Hence, in describing the broader interactions of The Lab, some activities – rather than a specific member – have been identified in this dissertation to provide a holistic view of program.

there were other new or trial members who attended The Lab intermittently during the research phase. However, they were not invited to join the research project as I was either too far into the data collection phase or thought they seemed uncomfortable with people approaching them during their initial ‘settling in’ period at The Lab.

During Lab sessions, participants were noted to play a variety of computer games (e.g. single-player, multiplayer, online flash-based games); stream online videos; create animations, videos or 3D games through free software (e.g. Scratch, Paint and Unity3D); design and print 3D models; and engage in group-based tabletop games. They are assisted by two to three mentors each week, all of whom are technology professionals, game developers, graphic designers or programmers. While the participants of the Frankston and Footscray Labs are encouraged to bring their own laptops, participants at the Reservoir Lab are provided with individual laptops that are labelled with their names, however, these are not used beyond the session. This has implications that will be addressed in the next chapter. The programme of The Lab, as previously mentioned in Chapter 1, is largely unstructured or semi-structured. However, as most participants have been to The Lab for over a year, they often create certain structures and perform routine activities from week to week; again, the implications of this will be discussed later in the dissertation.

4.6 Ethics

As my research focuses on young people under 18 with a disability, it is a high-risk project that requires human ethics approval. Children and individuals with developmental disabilities such as autism are considered vulnerable and “experience greater burden [emotionally]” in comparison to non-disabled adults (Yan & Munir, 2004). According to the National Statement on Ethical Conduct in Human Research (NHMRC, 2007), the level of maturity of children and young people affects “their capacity to understand what the research entails”, which correlates to their ability to give consent. They are also more susceptible to coercion by parents, peers or researchers, which may threaten their emotional and psychological well-being. In this case as well, people diagnosed with autism have been observed to be impaired in the areas of social and communicative development within ableist structures of society and research (APA, 2013; MacLeod et al., 2014). Hence, the project was designed so that the “respect for the participants is not compromised by the aims of the research” and that the participation of disabled minors is justifiable by its merits (NHMRC, 2007). More importantly, the research design aimed to ensure that participants were not in distress due to unequal power relations exerted by my status as the researcher (NHMRC, 2007). As such, most research activities, while designed by me before the sessions, were directed by participants at different points of the data collection phase. This flexibility was designed into the research methods and I was constantly evaluating the impact of derivative research activities by consulting the aims and research questions of the project. This will be further elaborated in the next sections.

I situated myself as both researcher and participant within the methods and established relationships with the participants prior to and whilst conducting the research. Distress cues that required the research to stop immediately included signs of aggression, emotional unease and other significant changes in behaviour (Hagenmuller, Rossler, Wittwer & Haker, 2014). To mitigate risk, the research required both oral and written consent from young participants and their parents. A simplified plain language statement and consent form were handed out to participants and their parents.

Before proceeding with the research, I briefed the participants, mentors and parents who were interested as a group or individually and allowed them to ask questions at any point of the research. They were also verbally informed of my position as a researcher when I spoke to them individually during the course of the data collection phase. All potential participants were made aware of the project and their role within it prior to receiving consent forms, which were handed out in March/April 2016. However, in some cases, participants and parents chose to opt out of certain stages of the research (e.g. video ethnography) prior to the start or during the data collection phase as the activity made them uncomfortable or did not appeal to them. While this had some impact on the amount of data collected (especially for the online participatory ethnography phase—see Section 4.7.3), I felt that the stress of the participants was not justified in pursuing it further. Instead, these discrepancies continued to be noted in my observation notes, which provided other interesting perspectives on this research. Moreover, it was not the aim of this project to direct participants into groups or separate them from the activities they were already engaged in at The Lab.

All members of The Lab were informed about the research and my position as the researcher, as well as the processes and methods that were to be used, prior to the start of the data collection phase, as mentioned above. The Lab’s physical layout and flexible programme also allowed participants to move around freely, beyond the periphery of the researcher, if they did not wish to be observed or filmed. The position taken by the researcher (i.e. me) to be involved as a participant and the methodology chosen were specifically designed to invite participants into the research process through interaction so that they could be included without feeling stressed about conforming to standards of traditional methods.

An ethics application was submitted to and approved by Victoria University on 1 March 2016 (ID: 0000024193). See Appendix C for Ethics Application.

4.7 Data Collection Methods

As mentioned earlier, this research implemented a total of three methods: participant observation, video ethnography and online participatory ethnography. In this section, I will discuss each these methods in detail, including how they were conceived, adapted, implemented and what data output they collected. Below is a table summarising the three methods used and the amount of data collected from each:

Table 1

Summary of data collected from each method

METHOD	PARTICIPANTS	SESSIONS/HOURS	COMMENTS
Participant Observation	24 (10 from Frankston, eight from Reservoir and five from Footscray)	47 recorded entries	Notes were taken during the session and reviewed through recollection after
Video Ethnography	21	Over two hours (approximately 140 minutes) of footage collected over eight separate sessions (each between five to 30 minutes, depending on group size and activity)	Noting that most of the videos were members sitting silently at their tables immersed in their own activity, only conversations, notable actions and movements were transcribed
Online Participatory Ethnography	13	Nine recorded entries (entries were meant to be kept once every fortnight but decreased as participation dipped) and a series of photos of screens/screenshots	Only a group of two members completed the task

4.7.1 Participant Observation

Participant observation is useful in “obtain[ing] an insider view of some aspects of people’s everyday lives” (Willig, 2013, p. 33). Unlike non-participant observation, I was actively participating in research (and Lab) activities while also observing my participants (Willig, 2013). Within the context of The Lab, the aim of this method was to learn how the specific use of physical and psychosocial spaces affects socialisation among participants.

The use of participant observation is believed to have many benefits for research with children for a number of reasons. Firstly, it can be empowering for both those being observed and for the researcher as we are actively speaking and listening to each other (Grieg, Taylor & MacKay, 2012). Secondly, it is a study of behaviour in “naturalistic” and “real-world settings” (Grieg et al., 2012, p. 149), contextualising the behaviours observed (Graue & Walsh, 1998). Lastly, it does not exclude participants on account of communication differences or other difficulties and disabilities (Johnson, 2011). For these reasons, the use of participant observation was chosen as the primary source of data as a way to be inclusive of all children.

The decision was also influenced by the fact that I wanted to build relationships with the children based on honesty and trust. This was to reduce stress as well as level power relations between the researcher and their participants (Grieg et al., 2012). I wanted to avoid non-participant observation, as being passively observed is not an uncommon occurrence for these children, who are continually monitored, assessed and judged by a wide range of professionals. I was keen to ensure that I would not be mistaken for another doctor, social worker, therapist or psychologist who was going to give an assessment on the individual.

Evidence from Mandell (1991) shows it is possible to have input into how the participants view the researcher, levelling power relations by adopting participant observation. This method of observation eliminates “status differentials” such as gender, class, race and age, resulting in a mutual acceptance between participants and the researcher as everyone is seen as an equal member within the space (Mandell, 1991, p. 40). I also attempted to adopt an attitude devoid of the identity structures that feature in adult–adult relations (e.g. professional identities and hierarchies) as I wanted these children, whose identities as autistic have been imposed on them culturally and medically, to identify me as both a researcher and an equal participant (Parsloe, 2015).

Participant observation meant that I could be continually open with the children about my purpose for visiting, an approach advocated by many researchers (Grieg et al., 2012; Willig, 2013). This was very much in line with the ethical position of the research, which hoped to gain assent from participants. Assent is particularly important when working with children as they may not be able to fully understand the implications of giving informed consent to participate in research (Mishna, Antle & Regehr, 2004). Consider Cook's discussion on the importance of assent:

> *"Assent is represented within the relationship between the researched and the researcher, by the trust within that relationship and acceptance of the researcher's presence. It removes the reliance on the child demonstrating adult-centric attributes such as maturity, competence and completeness; rather it accepts the child's state of being. It is also something which relies on the successful reflexivity of researcher and is most effective when placed centrally within an ethical framework." (Cook, 2006, p. 257)*

Being participatory in observation and throughout the research allowed me to be aware of whether the participants were comfortable with my presence, enabling reflexivity, as mentioned above. As part of getting assent and checking the validity of my observations, I also asked participants to clarify certain activities and conversations at every session to ensure that my notes were accurate—this will be discussed later in the chapter.

I conducted participant observation approximately every fortnight throughout three school terms (approximately 30 weeks). During my visits, I roamed around The Lab, speaking with participants and immersing myself in its culture. I took brief notes during the session on my mobile devices (i.e. smartphone and laptop) and reviewed these notes, which were transferred to a digital diary after the session. These notes recorded the number of participants and mentors, date, location and observations. A total of 47 observation entries were recorded between April and December 2016 across the three labs.

While I was able to engage in participant observation at all Labs, the extent to which it was carried out was determined based on the preferences of The Labs and the individuals within. While the Labs have a similar vision, outcomes and overarching strategy, each Lab has been observed to be very different in its settings, energy and levels of engagement. As will be discussed extensively in the next chapter, the Reservoir Lab’s programme is semi-structured compared to the Frankston and the Footscray Labs. The Footscray Lab, also the longest running session, has the oldest participants on average with two long-standing mentors. Other factors that determined the culture of each Lab included mentors, space and the availability of technology. I wanted to flag these differences as they inadvertently shaped the way I conducted this section of my research. At the Reservoir Lab, there were minimal interactions between members, therefore I took a more reserved and passive stance, mimicking the atmosphere of the room and observing from my seat, which was located within the group space, and only occasionally conversing with other participants when invited. However, at the Frankston and Footscray Labs, I took an active approach to participant observation as 1) members were more comfortable moving around and 2) I was “obliged” at times to avail myself for certain activities (e.g. playing D&D) instigated by motivated members.

At all Labs, it has also been observed that participants were not bothered or alarmed by visiting guests and/or strangers. This included my presence as a researcher, which allowed me to roam around the room and observe participants at a close distance, and converse with them. In some ways, during this section of the research, I felt as if I became a junior member of The Lab, allowing myself to be guided by more senior members as I learnt new games and skills through my interactions with participants, members and mentors. A detailed discussion of the results will be presented in the next chapter.

4.7.2 Video Ethnography

The aim of using video ethnography within my research was to understand how the unstructured physical space of The Lab and the unique perception of the social impacted the ways young people with autism developed interpersonal and technology-assisted relationships. It was also an opportunity to understand how these young people interacted with video technology, a common tool used in the online-digital space for information creation and sharing.

Video ethnography is the recording of the natural stream of activities performed by subjects in real-world settings in order to experience, interpret, and represent culture and society (Pink, 2007). Apart from aiding the researcher in recording data, the process of video ethnography enables participants to present a specific and detailed narrative of their disability (Pink, 2012; Pink et al. 2016). The presence of the video camera involuntarily affects the way participants react and present themselves, as they often display their best qualities and put on their best behaviour for the recorded material as though they are being surveilled (Pink, 2012). The idea of what “best” means is certainly subjective. Hence, not only the recorded conversations need to be analysed, but details from the aesthetics, body language, etc. also need to be discussed. This was important to the research as it could potentially contradict medical narratives about autism and provide evidence as to how individuals on the spectrum were able to socialise using different social cues (e.g. eye contact), helping us understand how the elements within The Lab, physical or otherwise, may enable sociality.

I conducted video ethnography between July and September 2016 at three different Labs located within Victoria; it should be noted that it was run concurrently with participant observation (see previous section). Over two hours (approximately 140 minutes) of footage was recorded over eight separate videos. Each video ranged between five and 30 minutes depending on the size of the group and activity. A total of 20 participants were filmed.

In the initial stages, I had planned to record my interactions with two to three different participants every fortnight for approximately fifteen minutes each session to ensure that all participants were covered by the end of the term. This plan was drafted based on my interpretations of good practice in planning for video ethnography (e.g. Genzuk, 2001; Neuwirth, Bellows, Jackson & Price, 2012). I drew up a draft schedule for the term and intended to approach the selected participant after he/she had settled in. Then, I would ask for permission to film his/her interactions and place the camera in relatively close proximity to the participant on a non-obstructed table, pointing the camera towards the participant, who would be seated at the time. I did not intend to move the camera during the duration of the recording as I anticipated that the movement of the camera may have made certain members of The Lab uncomfortable. After the first participant, I approached the next participant and repeated the above procedures.

However, individuals at The Lab reacted to the placement of video cameras very differently. From the first person I approached, I had to adapt to suit their needs. While most young people were not bothered by wide-angle, distant filming, they often became anxious if I asked to place the camera in front of them. There were broadly three different scenarios that occurred:

1) *Can you not film me?*—Out of the 21 members recorded, most indicated that they did not want to be filmed up close.
2) *Can I play with your camera?*—Unlike other participants, two participants were immensely interested in the filming of their sessions and strongly expressed intentions to become more involved (e.g. "I was surprised that [Richard] asked if I could film him instead so that he could upload it onto his YouTube Channel", Frankston Lab, 30 August 2016). As such, the recordings of these videos involved young people talking to the camera rather than continuing with their activities at The Lab.
3) *Sure, but not so close*—Most participants were happy to have the video camera rolling as long as it did not disrupt or obstruct their activities.

Through the filming sessions, it became evident that the presence of the video camera had more impact on the young people than my presence at The Lab. According to Pink (2007, p. 4), this is possibly because video recording is a disruptive activity: "people in a video are always 'people in a video'" in that a certain etiquette is expected on camera. Following the initial responses from participants, I altered the video ethnography method according to the suggestions of the young people, making the method more reflexive. This was done with two concerns in mind. The most important reason for taking a more flexible, participatory and creative approach was to ensure that young people at The Lab felt comfortable with participating in research while not disrupting their activities at The Lab. My first concern was therefore to ensure all research activities were in accordance with these young people's expectations of The

Lab. Secondly, if a flexible approach was to be taken, the results had to be in line with the initial goal of the approach and method. With these two concerns in consideration, I revamped the video ethnography method to the following:

First, I ensured that mentors, parents and young people at The Lab were aware of filming for the day by informing them as a group at the start of the session in question. During the session, I would approach the young person I intended to film and ask if he would like to be 1) be filmed alone, 2) be filmed together with others or 3) not be filmed. If option one was chosen, I would commence filming as previously planned. If option two was chosen, I would invite other participants in the research to be videoed together and if at any point they felt uncomfortable, they were free to leave the area. And if the third option was chosen, I would not ask them one-on-one again unless a group opportunity came up.

The recording sessions became semi-flexible to ensure that participants had a choice regarding when they felt most comfortable being filmed. After all video sessions, I was able to video a total of 21 participants, mostly in groups of two to six. Only two participants opted to be filmed alone while three research participants opted not to be recorded at all.

This method is valuable as it allowed me to understand how participants socialised within the intimate physical space of The Lab. The Lab environment gave me the opportunity to understand the diverse sociality of up to 24 participants, allowing me to capture the variety of social cues people with autism used and create an alternative narrative of their socialisation.

At this stage of the research, Lab activities were not disrupted by video activities. Videos recorded were, and are, stored in a secure private networked drive accessible only to myself. I recorded approximately two hours of footage, which was reviewed and transcribed where possible. It should be noted that most video recordings showed little audible or comprehensible conversations. Therefore, notes were made to record activities, unusual movement and notable body language. Audible conversations were transcribed and analysed through discourse analysis (see Section 4.8). There was no conflict of interest in terms of data ownership as I personally recorded all the videos using a video camera or my laptop. However, as will be raised in Section 4.9, with videos where participants were actively performing for the video camera despite being reminded of my role as a researcher, I was unsure as to their level of understanding about the purpose of the recording, which raises ethical implications.

4.7.3 Online Participatory Ethnography

The aim of the online participatory ethnography was to understand how the participatory and individualistic nature of the online-digital space affected the way young people with autism socialised and developed interpersonal and technology-assisted relationships at The Lab. It should be noted that this method and its execution was exploratory because there were no existing online communities specific to these young people that could be studied. Hence, they were requested to develop the online-digital space for themselves instead (i.e. hosting their group *Minecraft* world).

Online, ‘virtual’ or ‘digital ethnography’ is not a new concept. It is an adaptive form of ethnography that uses digital tools to conduct research in online/virtual communities (Boellstorff, Nardi, Pearce, & Taylor, 2012). Online ethnography works particularly well with young people with autism as individuals are able to interact without the nuances of non-verbal communication, such as body language, eye contact and emotional cues (Davidson and Parr, 2010). However, the emphasis here is on its participatory nature. ‘Participatory’ refers to two different aspects of participation in this case. Firstly, the design of the method was negotiated through consultations with participants. Secondly, feedback was sought and the method responded reflexively where possible throughout the data collection phase.

Kozinets (2010) conceptualises online ethnography that specifically looks at virtual communities within computer-mediated spaces as ‘Netnography’. He argues that within networks are micro communities that require “self-identification as a member … shared knowledge of some rituals and customs, some sense of obligations, and participation" (Kozinets, 2010, p. 10) and these micro communities may or may not live out of the online space. Netnography illustrates the possibilities of multiple lived experiences, identities and socialities within the online-digital space. While I acknowledge that a combination of our socialities may inform our day-to-day decisions, it does not necessarily translate to the way we deliberately communicate within different spaces and platforms. This is particularly important in the ethnographic world as it paves the way to understanding "internet use and its relationship to everyday materialities" (Pink et al., 2016, p. 106). More importantly, it flags the possibilities of a different range of socialities that may exist online.

According to Pink et al. (2016), digital ethnography needs to embrace multiplicity, openness, non-digital-centric-ness, reflexivity and unorthodoxy in communication because digital spaces are different from each other as well as other spaces (e.g. physical) and are ever-changing. Nonetheless, they exist within a larger suite, each contributing to the sum of our lived experiences. Therefore, there is a need to consider the concept of plurality and real-time change when conducting digital ethnographic studies.

In most cases relating to digital ethnography, the online environment has to be specially programmed for research (Underberg & Zorn, 2013). However, this may not always be effective for a few reasons:

1) There are a wide variety of digital tools that already exist. Within the field of education, teachers are already re-using and re-appropriating technology for the purpose of teaching. Hence, from an education perspective, I believe research in this area can stand to benefit from adapting to and understanding the use of existing digital technologies.
2) Familiarity—participants may already be familiarised with existing tools that aid the understanding of ongoing learning (i.e. what they may be experiencing and learning online now) instead of new learning.

Therefore, to incorporate research and self-directed learning as well as to fit into the culture of The Lab as an interest-driven space, I conducted the online participatory ethnography on a 3D multiplayer sandbox simulation gaming platform, *Minecraft*. This game was the platform preferred by participants as verbalised during an earlier consultation in groups (e.g. with the specific Lab) because they were familiar with and loved the game. In fact, frequent competitions were held at The Lab where members use *Minecraft* to showcase their work. In addition, research done by Ringland et al. (2016) reveal the potential of *Minecraft* as a space for creative and social learning for children with autism, including the building of virtual support networks and friendships.

Thirteen participants engaged in this phase of the research, which took place over one Australian school term between September and December 2016. Most participants were from the Frankston Lab, with two from the Reservoir Lab and none from the Footscray Lab. I suspect that members of the Footscray Lab, who were older on average, were not interested in this phase of the research as they were not currently playing the game, even though they expressed a fondness for the platform. However, I was able to extrapolate some of their online-digital experiences based on observation and informal discussions.

While planning for this phase of the research, I had hoped to run a competition, getting young people at The Lab to build different infrastructure within one dedicated *Minecraft* server according to the theme and rules I drafted. The initial plan was as follows:

A) Participants of the research will be given access to the game space during The Lab sessions. Before they enter the space each time, they will be required to give consent via an electronic tick-box as part of ethical concerns regarding deception (i.e. framing this activity as gameplay rather than research).

B) They can engage in free-form alteration of the space based on the theme or complete set tasks—these tasks are optional and serve as helpful guides (e.g. “Build a transport system”).

C) These sessions will be recorded via a screen capture programme on my computer.

D) I will gather feedback on the gameplay session by talking to a few participants each week. These will be recorded in a diary after the session.

However, upon consulting members and mentors of the various Labs, I realised that 1) they did not want to share a game space with other players for fear of sabotage or giving away their ideas and 2) members wanted to have a bigger say in the theme and the rules/running of the competition. In addition, while participants were generally happy to start their project in the *Minecraft* world, they also wanted other members of The Lab to be involved. Upon this feedback, I altered my methods accordingly. These consultations were done either as a group together with the mentors (as in the Frankston Lab) or individually (as in the Reservoir Lab).

Participants were asked to create an online world within their own *Minecraft* server in teams of two to four under an agreed-upon theme. At both Frankston and Reservoir, the theme was to create something for their respective Labs. I was given access to their *Minecraft* worlds to observe and participate in their projects. Each fortnight, I would go around the teams to discuss their progress and some of the problems they may have encountered in order to understand their process of communication. As other members who were non-participants, either in this phase of the project or for the whole research, wanted to be involved in the competition but not necessarily using *Minecraft*, the mentors decided that these young people could also participate in the competition but not be actively involved in the research. These were then noted in the participant observation segment of the research rather than the online participatory ethnography segment.

The final rules circulated were as follows:

1) Participants may work individually or as a team of up to four persons based on the agreed-upon team.
2) Participants are encouraged to work on the competition during The Lab sessions rather than out of session.

3) Participants will give me access to the server. However, I can only take screenshots or videos when approved by the group for privacy reasons.
4) I will gather feedback on the gameplay session by talking to a few participants each week. These will be recorded in a diary after the session.
5) No sabotaging or destroying of others' work within or out of the team.[8]
6) No bullying and use of abrasive language.
7) No cheats/cheating—this is fairly common in other servers as players are not penalised for using cheats. Instead, they are encouraged to build creative worlds using any resource they can get.

To receive feedback about the gameplay and their experience with other players, I spoke to different players each week as a form of consultation. All feedback and modifications to the game were noted in a diary during the session. I was also personally involved where I joined different game sessions as an observer, actor and helper. The activity was either hosted by a group member to secure their privacy or publicly hosted for convenience purposes. As members were either competitive or wanted privacy, I focused on immersing myself in the gameplay and took notes after the sessions instead of requesting to screen capture each session. After all, the interactions offline were as important to this research as the interactions online. A total of 13 members participated in this activity and only nine entries, accompanied by a few screenshots and photographs, were logged for this method, together with consultation notes. It should be noted that only a group of two members completed the task. While the data collected was small in number as the method was more exploratory and most participants did not succeed in creating an online-digital space or community, interesting findings and learnings emerged from this method—these will be further discussed in the next three chapters.

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[8] It should be noted that points five to seven were more important to young people as they saw this activity as a competition more than a research activity.

4.8 Data Analysis

Due to the variety (i.e. different types of data collected due to the methods used) of qualitative data, I employed a three-step process to analyse the data. First, I had to systemise the written or transcribed data. Systematisation is the process of "going through all the material, sorting it, marking it up and annotating it where needed" (Boellstorff et al., 2012, p. 165). Words and phrases such as 'conflict', 'friendship groups/cliques', 'online friends', 'offline friends', 'gender', 'learning moment', 'responsibility', 'trust', 'meltdown', etc. were used in the first round of systemising or the free-form coding of the data. This was to ensure that the sets of data collected from the various methods could be combined to search for recurring patterns and anomalies. The latter aspect is often not discussed or emphasised in data analysis as it is likely to be considered insignificant since anomalies are not recurring behaviour or patterns that can be analysed in detail. While I did not delve deeply into the standalone results, I did find it useful to identify data anomalies as part of recognising complexities: young people with autism are not simply defined by their autism but should also be recognised as equally complex individuals with identities as any other persons.

After the first stage of coding, I moved on to thematise and theoretically analyse the data through Critical Discourse Analysis. This process was derived largely from Angrosino's (2001) and Boellstorff et al.'s (2012) research on the analysis of ethnographic data.

Angrosino (2007, p. 67) proposes two forms of analysing ethnographic data: descriptive analysis and theoretical analysis. Descriptive analysis is the "process of taking the stream of data and breaking it down into its component parts; in other words, what patterns, regularities, or themes emerge from the data?" (Angrosino, 2001, p. 67). This is similar to Boellstorff et al.'s (2012, p. 166) concept of thematising qualitative ethnographic data through "looking for patterns" and "critical moments where a phenomenon is echoing through the culture in a significant way". Systemising and the coding of data is the first step to identifying patterns.

To thematise the data (as adapted from Angrosino, 2007), I first looked for "consistencies and inconsistencies" in the coding and started grouping and classifying the data into categories or themes. Each theme is accompanied by a short narrative description to provide contextual knowledge. The 14 themes identified from my data notes were:

1) *Configuration of physical space and mobility*

This looked at how the configuration of physical space and mobility affected the activities and social interactions at The Lab.

2) *Team-based activities*

This theme identified any group or team activities that were either voluntarily occurring or organised by mentors. This included in-person or online activities amongst members of The Lab.

3) *Autonomy*

This identified how young people at The Lab acted independently of their peers.

4) *Common topics of interest*

This looked at common conversation topics among members, occurring both offline and online.

5) *Communication beyond The Lab*

This examined specifically at out-of-The Lab communication between members as well as online communication with others out of The Lab.

6) *Formation of friendship/social groups and clusters*

This theme explored how young people interacted within The Lab and with whom.

7) *Peer influence*

For this category, I specifically looked at how participants' behaviour and activities changed (or not) due to peer influence.

8) *Difference in perception of The Lab between parents and members*

This theme was unintentional as I was not observing parents. However, through unintended interactions and observations of their interactions with their children, this category aims to capture the different perceptions between parents and their children at The Lab.

9) Learning activities

This identified specific learning activities participants chose to engage in. While members of The Lab learn through activities, not all activities are necessarily learning-focused (e.g. playing games versus learning to code). This theme identifies activities that are learning-focused.

10) The role of mentors

This explored the role of mentors to the members, including how mentors shaped activities and culture at the various Labs.

11) Empathy (or the learning of)

This theme looked at unintentional roles that were formed between and within members (e.g. buddy system).

12) Safe space

This category looked at how the physical or online space enabled and facilitated young people to socially communicate and interact beyond the perceived limitations of their disability, creating safe spaces.

13) Flexibility versus routine

People with autism have been said to prefer routine-based activities/actions and repetition (see Chapter 2). This theme looked at the occurrence of both flexibility and routine in participants' actions and activities within The Lab.

14) Responding to social norms

This category looked at how participants related and responded to social norms. It should be noted that this is subjective to the experiences of the researcher.

According to Angrosino (2007, p. 68), we are "capturing life" and may not always be "in control of all elements in the research process" as "things that might appear meaningful to us as outsiders might or might not be equally meaningful to people who live in the community". Therefore, as advised by Angrosino (2007, p. 68), "constant validity checking" was conducted throughout the research. Perspectives were verified through 1) verbal conversations with participants, 2) consultations with participants throughout the data collection phase, and 3) confirmations with mentors, parents and participants (e.g. "Do you mean to say ...", "Do the members of the Lab often Skype/chat with others out of the programme during the session?", "Do parents sometimes discuss with you [mentor] about their child’s safety online?”). This form of validity checking is called ‘think aloud’ or ‘active intervention’, a method through which young people are encouraged to give a verbal (and non-verbal) response and the researcher is actively asking relevant follow-up questions or “laddering” to get participants to reveal their personal values and intentions (Zaman, 2005, p. 2). This method was chosen over other methods, such as member checking, because it was more suitable to children and vulnerable populations (such as participants of The Lab) who may not understand the purpose or expectations of the research, or have the knowledge or the ability/desire to recall details of the research process (Lobe, Livingstone & Haddon, 2007). Mentors were also consulted via a group discussion and email about the results and initial analysis at the end of the data collection phase to identify consistencies, accuracy and irregularities in the data collected. These steps were taken to ensure that the coded and thematised data were relatively representative and reflective of the community. However, researcher subjectivity should also be equally considered and analysed because “subjectivity ... [and] personal experience [are] part of ethnographic research” (Boellstorff et al., 2012, p. 43).

The final stage of data analysis involves theoretical analysis. Theoretical analysis is the “process of figuring out how those component parts fit together ... [to] explain the existence of patterns in the data, or [account] for the perceived regularities” (Angrosino, 2007, p. 67). While Angrosino does not explicitly discuss the relationship between descriptive and theoretical analyses, his discussion regarding their specific order suggests there is a process in analysing ethnographic, or qualitative, data: first, pattern identification, then pattern and data analysis. However, his ideal of theoretical analysis leans more towards inductive analysis, such as using grounded theory, where “specific field observations gradually lead the researcher to generalised plausible relationships proposed among concepts and sets of concepts” (Marvasti, 2013, p. 363). The purpose of my data analysis is to find out how young people with autism may perceive and construct their own universe. Hence, instead of a theoretical approach that attempts to explain patterns through existing theory, I adopt a constructionist approach by conducting discourse analysis on the data available under each theme to understand 1) the relationship that exists within the theme or pattern, 2) the relationship that exists between themes and patterns, and 3) the themes and data within the broader context of The Lab and beyond.

Specifically, I employed a Critical Discourse Analysis (CDA) framework, which used critical theory to examine social practice and power relations through language. The framework highlights the discourses within language that perpetuate political and social inequalities through notions of power, and draws out broader discourses beyond the medical and social boundaries of disability studies through the use of critical theory—one that aligns with Critical Disability Studies, the foundation of this thesis. In the next section, I will briefly talk about CDA as a discourse analysis method; this is followed by discussions on how CDA was applied to interpret the data in this research and data storage arrangements.

4.8.1 Critical Discourse Analysis (CDA)

CDA is a theory of investigation that seeks to highlight the “structures, strategies or other properties of text, talk, verbal interaction or communicative events” that serve to perpetuate social problems (van Dijk, 1993, p. 250). Fairclough and Wodak offer a succinct definition of CDA, a useful starting point for explaining the method:

> *“CDA sees discourse – language use in speech and writing – as a form of ‘social practice’. Describing discourse as social practice implies a dialectical relationship between a particular discursive event and the situation(s), institution(s) and social structure(s), which frame it: The discursive event is shaped by them, but it also shapes them. That is, discourse is socially constitutive as well as socially conditioned – it constitutes situations, objects of knowledge, and the social identities of and relationships between people and groups of people. It is constitutive both in the sense that it helps to sustain and reproduce the social status quo, and in the sense that it contributes to transforming it. Since discourse is so socially consequential, it gives rise to important issues of power. Discursive practices may have major ideological effects – that is,*

> *they can help produce and reproduce unequal power relations between (for instance) social classes, women and men, and ethnic/cultural majorities and minorities through the ways in which they represent things and position people." (Fairclough & Wodak, 1997, p. 2)*

From this description, we can infer that CDA is explicitly social in its focus and is a method designed to ultimately redress social injustice. For this reason, CDA is political and ethical in nature, critically evaluating certain social practices and suggesting that some may be immoral or wrong (e.g. discrimination against people with disability) (van Dijk, 1993).

van Dijk recognises and articulates this important aspect of CDA, suggesting it to be a critical component of the method:

> *"[CDA researcher's] critical targets are the power elites that enact, sustain, legitimate, condone or ignore social inequality or injustice. That is, one of the criteria of their work is solidarity with those who need it most. … Their critique of discourse implies a political critique of those responsible for its perversion in the reproduction of dominance and inequality. Such a critique should not be ad hoc, individual or incidental, but general, structural and focused on groups, while involving power relations between groups. In this sense, critical discourse scholars should also be social and political scientists, as well as social critics and activists. In other words, CDA is unabashedly normative: any critique by definition presupposes an applied ethics." (van Dijk, 1993, p. 252–253)*

CDA is therefore multidisciplinary in nature, as any critique of discourse will necessarily overlap with other academic fields of study in order to provide a comprehensive perspective. Indeed, it should be noted that CDA theorists are often hesitant to describe CDA as being strictly a method (i.e. a systematic way of gathering and uncovering new information) but also "a theoretical perspective on language" (Wodak & Meyer, 2001, p. 3). The meaning of the term 'discourse' must also be explained, as while CDA is primarily concerned with the relationship between language and social practices, the method is not limited to written and spoken text, but instead includes all forms of meaning-making, such as images, body language or behaviour. Fairclough (2001), in recognition of the importance of meaning-making beyond language, has suggested that ‘semiosis’ is a more appropriate term than ‘discourse’ in this regard as it encapsulates all forms of signification. Accordingly, he has asserted that “CDA is an analysis of the dialectical relationships between semiosis (including language) and other elements of social practice” (Fairclough, 2001, p. 122). Under this definition then, non-linguistic occurrences such as facial expressions and style of dress can all be considered aspects of discourse and so are relevant to CDA. This is a particularly crucial consideration of my research as the analysis of observations, video and media material of young people with autism must indeed extend beyond the threshold of language and social practices, since their mode of expression often stretches beyond these elements.

CDA is also concerned with the way in which texts themselves have been constructed, ordered and shaped in terms of their social and historical situatedness (Waitt, 2010). Texts are thus both the product of and in turn, produce, discursive-based understandings of aspects of reality. But any text will only ever convey and produce a partial perspective of the reality being presented. The image of an object represented in a text is formed according to the frame or focus that shapes what is to be seen. This is similarly supported by digital and video ethnographers, such as Pink et al. (2016), who posit that the framing and focus of videos changes the perspectives of both the “performer”—referring to those being recorded—and the “spectator” and/or “intruder”.

Through CDA, I look to understand the discourses of autism and disability beyond their current frameworks and paradigms. I hope to draw out the broader socio-political discourses that frame the disability rhetoric and reveal the premise of power, presenting my participants’ perspectives and knowledge of themselves through a collation of the different aspects of their reality, not the professional narratives I discussed earlier.

However, discourse analysis has its caveats. According to Waitt (2010), there are three limitations. Firstly, discourse analysis may isolate texts from contexts and place them within a single reality. From my research perspective though, a single reality from an alternative view (i.e. those of autistic individuals) would be significant if we were able to compare this knowledge with other realities about the same group of people (i.e. from the medical perspective). Secondly, Waitt (2010) cautions about researcher bias. I have tried to acknowledge this within my research, both by stating how I position myself as a participant within the project (as highlighted in Chapter 1) and including this awareness in the analysis and reporting of findings. Finally, discourse analysis, as with many qualitative methods and analysis, is not generalisable; however, this is a positivist approach and is not the purpose of this research. It should be noted that I disagree with Waitt's (2010) claim that this is a limitation. A positivist approach, put simply, is concerned with quantifiability, objectivity and fact-finding; science is a backdrop to this approach and its methods (Mertens, 2015). Within a positivist study, results are expected to be replicable and hence, generalisable. However, the purpose of this research is to draw out individual experiences and understand how young people with autism perceive their reality. As previously mentioned, this thesis aims to provide a case study that offers insights into how disability discourse is formed and how it can be changed through variables such as differentiated spaces.

4.8.2 Applying CDA to analyse data

To conduct this discourse analysis, I took a six-step approach that is often taken within CDA to analyse the data (Willig, 2013). These six steps include identifying discursive objects and constructions, locating discursive constructions within wider discourses, understanding action oriented around discourses, analysing subject positions, determining the relationship between discourse and practice, and finally, exploring subjectivity within discourses. An example has been laid out in the table below.

Table 2

A detailed example of how CDA was applied to the results

Six Stages to CDA	**Analysis (quoted from video)**
1) Identify discourse	Context: A participant was playing Pokemon Participant: “Magikarp vs Magikarp. Come on!” (Does a half cartwheel) Participant: “Yes! That’s it, splash!” (In reply to an inaudible comment across the room) Participant: “Are you playing Yu-gi-oh?” (Back to in-game battle) Participant: “Come on just one more!”
2) Locate discursive constructions within wider discourses	Young people with autism are unable to socialise and communicate within a group context.
3) Understand action oriented around discourses	With the wider discourse in mind, we often expect young people with autism to be less sociable.
4) Analyse subject positions	Within The Lab, members feel comfortable with mentors and peers within an unstructured learning environment. They do not have to confine their communications to formal, face-to-face interactions and are able to use technology as a form of distraction (so as they do not experience a sensory overload).
5) Determine the relationship between discourse and practice	Certainly, within other group contexts, this wider discourse may be applicable under different circumstances. However, this example is used to illustrate how young people with autism might communicate and socialise, albeit differently from how we expect, in group contexts under the right circumstances.
6) Explore subjectivity	1) Not all young people with autism are able to respond in similar ways; we need to acknowledge their uniqueness as individuals. 2) Different environments may yield different results, even if they are similar in practice.

Please refer to Appendix A for an overview of how CDA was applied to this thesis.

4.8.3 Data Storage Management and Procedures

The data of this research has been stored in three separate, secured and password-protected hard disks. These can only be accessed by the researcher and will be kept for a minimum of five years, in compliance with the university’s policy and the Australian Code for the Responsible Conduct of Research. All data will be destroyed thereafter, as indicated to participants and their parents during information sessions and in the consent forms.

4.9 Reflections, Limitations and Learnings from this Methodology

This section addresses the sub-research I introduced earlier: Is the use of interactive qualitative methods effective in encouraging young people with autism to participate in research? If so, how and why?

Donahoo and Steele's (2013) evaluation of The Lab found that traditional methods (such as interviews) made young people at The Lab nervous and uncomfortable during the research process. This greatly informed my research. Although my initial introductions to these young people were met with apprehension, I felt that because I was collecting data for each stage of my research, Lab participants became increasingly comfortable with my presence over time. And I felt the same too. In fact, there is evidence that I gained some of the members' trust: they asked me to be involved in their personal projects, such as helping them film short clips for their YouTube channels or playing games with them. As a result of this trust, I was able to encourage young people with autism to open up and provide me with insights, and inevitable data, for this research.

However, I continue to wonder if they talked to me and involved me in The Lab's activities in confidence or for the purpose of research. Although I repeatedly reminded them of my position as a researcher, from their perspective, was there a difference between seeing me as a fellow member of The Lab or an approachable researcher? It is in light of this dilemma that I am concerned about the ethical implications of my research.

On the one hand, participants who were conventionally known to be vulnerable and awkward during the research (as implied by MacLeod et al., 2014) were approachable and reliable in providing information when in a comfortable situation. On the other hand, their comfort may be based on a deception—not because I did not try to clarify my position, but because they were able to trust me and participate (or not participate) in my research methods not for the purpose of research but for companionship, just as they sought it from other members of The Lab.

The relationships I had with the participants also allowed members to be forthcoming about their participation, despite consent forms being signed previously. Although most were happy to continue with participant observation, they participated in video ethnography and online participatory ethnography in varying degrees depending on how they felt. The flexibility I provided in my qualitative methods meant that they could participate or withdraw at any time—this had both advantages and disadvantages.

Through my research process, I was able to collect an reliable set of data and narratives by deploying a variety of methods. This flexibility, use of interaction and technology led to other possibilities beyond the scope of my research methods (e.g. young people engaging me to film personal videos during the video ethnography segment which, in comparison to the videos filmed from a distance, reveal different sides to participants). In some ways, video ethnography represented a service to me where they needed to “perform” in front of a camera for my research, a concept highlighted by Goffman (2005) and Pink (2015), and the act of filming for their personal videos, although in line with what I was already physically doing (i.e. videoing), represented a service to them.

Nonetheless, this created two issues. Firstly, the dilemma of whether I could include these videos as data within my research (in the same way as to whether I could consider my participation in their games data). Secondly, it developed a relatively flippant attitude from the participants towards research whereby they removed and included themselves in the research as they saw fit. To reduce the ethical implication of the first issue, I thoroughly looked through all collected information and ensured that no images or sensitive information from these videos were used in the thesis; however, they may be broadly discussed under themes.

Another concern I had with the online participatory ethnography was the versatility of the online space. While young people were participating in the research, they were simultaneously engaged in other activities online, such as chatting over social media, many of which were personal. Unlike traditional research methods, where the boundaries of research were much more defined (e.g. finishing a survey within a stated period, or ethnographic research within a community with a pre-defined space), online research and ethnography must take into consideration the versatility and variance of the space. As previously mentioned, “virtual worlds are places of imagination” (Boellstroff et al., 2012, p. 1). Hence, one must take into account the plurality of places and the significance of imagination taken by participants when researching within the open online space. For this research, it was at times difficult to ascertain if young people were participating in the research or attending to personal interests, making screencasting from, or videoing of, their screens (as initially planned) unmanageable.

Retrospectively, I believe a better balance between more defined, structured parameters and flexibility would have improved the process of data collection. However, it should be noted that the quality of data collected was diverse and reliable, despite the fact that it deviated from the methods’ original intentions. Nonetheless, interaction, flexibility and the positioning of the researcher and methods as participatory encouraged young people with autism to participate in research through a levelled distribution of power (i.e. researcher and participant as equally serviceable to each other). This therefore affirmed other participatory researchers’ findings, such as Macleod et al. (2014), Lewis (2009) and Bagatell (2007), which indicate that participatory methods mitigate stress by building relationships and levelling power relations between participant and researcher. However, as highlighted by my reflection above, there are other considerations and caveats involved and further research into similar methodological approaches is recommended to verify my findings and arguments.

In summary, this chapter specifically discussed the methodology and methods used in this dissertation. Three methods—participant observation, video ethnography and online participatory ethnography—were used to identify and provide explanations as to how young people with autism socialised within the physical, online and psychosocial spaces of The Lab. As discussed, a total of 24 members across three Labs participated in this research and data collected was thematised into 14 themes. Critical Discourse Analysis was used to analyse and interpret the data. Finally, while the use of interactive, consultative and flexible methods enabled the collection of reliable data and encouraged participation by young people who would otherwise be unable or unwilling to participate due to stress induced by traditional research methods, they revealed certain ethical and data consistency issues which require further investigation in future research.

In the next three chapters, I will discuss the results in detail, adapting the 14 themes raised above to address the research questions posted at the beginning of this thesis and the chapter.

Chapter 5: Findings and Discussions Around Differentiated Spaces

> *“Because media and communication technologies have the capacity to reconfigure spatial and temporal parameters of perception and experience, enabling us to see, hear and even act ‘at-a-distance’, they alter frames of existence previously taken for granted as natural, if not immutable.” (McQuire, 2008, p. 4)*

McQuire’s (2008) book, *The Media City*, discussed how cities and public spaces have changed with the integration of media technologies. While we may be walking the same streets today as we were a decade ago, our experiences weaving through physical spaces have changed as we are increasingly moving through multiple spaces—the personal, private and public—all at once with the uptake of mobile and online technologies. While there are research studies about how the introduction of the online-digital space has affected individuals’ behaviours, much less has been said about how the perception of physical spaces and psychosocial spaces has changed with online-digital spaces.

Findings from The Lab demonstrate that as young people with autism interact and learn from and within the online space, they begin perceiving their physical surroundings and psychosocial self differently. In many ways, The Lab has morphed into an extension of their online mentality. Previous research has found that youth and children have relied on their parents, peers and teachers as ‘socialisation agents’ to help them understand and learn social norms and practices (Shin & Ismail, 2014). However, internet-enabled online spaces are increasingly acting as important socialisation agents, with its effects extending beyond the online-digital space (Lee & Conroy, 2005; Parente, Swinarski & Noce, 2009). As this research will present in the next three chapters, young people with autism are applying social skills learnt online to their physical surroundings, interacting with peers, family members and mentors in similar ways we have previously categorised as ‘online interaction’.

In this chapter, I will discuss the findings of this research and argue that the combination of its differentiated spaces has enabled young people with autism to socialise beyond the perceived limitations of their disability. The themes identified during the data analysis stage (see Section 4.8) have been used to inform the findings presented in this chapter – they have been hyperlinked at the start of each section. This chapter will begin by exploring how young people perceive, interact and learn within each differentiated space.

5.1 Unstructured and Mobile Physical Environment

> *“The Frankston Lab moved from the computer lab to a more spacious, unstructured room today – and increased movement was visibly observable.” (Observation, Frankston Lab, 7 June 2016)*

Based on the findings, I argue that mobility and the configuration of physical space have facilitated and changed the way young people with autism socialise and interact with each other, indicating that power dynamics and discourses can be embedded within material spaces. While the initial concept behind The Lab was to promote an unstructured learning environment, including an unstructured negotiable physical space, this was not always possible due to the spatial constraints of the available rooms at various Lab centres. The differences between The Labs involved in this research thus provided interesting insights into the impact of physical spaces on the programme and young people with autism.

In this section, I will discuss the analysed findings to show how the physical space of The Lab can empower young people with autism to socially interact and create new meanings about a space for themselves and their peers.

5.1.1 Spatial semiotics: Making your own meaning of physical spaces

In this section, I present the findings as coded under themes one, two, four and six (refer to Appendix A or Section 4.8). The findings show how the spatial signs and symbols within The Labs affected the ways young people with autism interacted within them. As you will notice below, the physical configuration and layout of each Lab was different, leading to different types of interactions, such as cluster-based or more intimate one-on-one interactions (see 5.1.1a and 5.1.1b). This section was mainly analysed against literature presented in Sections 3.2 and 3.2.1 and 3.2.4.

As discussed in Chapter 3, many spaces and places contain signs and symbols that have prescribed meanings and significance (Ravelli & Stenglin, 2008). These signs and symbols form spatial texts that create representational, interpersonal and compositional meanings—also known as 'spatial semiotics'—to guide us to behave in accordance to the expectations of the space/place (Ravelli & Stranglin, 2008).

What are some of the signifiers within the physical spaces of The Labs that bring meaning to members and young people with autism? I argue that while there were similarities across The Labs, such as the use of common objects (e.g. laptops), different spatial texts were formed based on the size and configuration of the physical spaces, creating contrasting representational, interpersonal and compositional meanings for members.

Consider the physical spaces through the floor plans I drew of the three Labs I investigated:

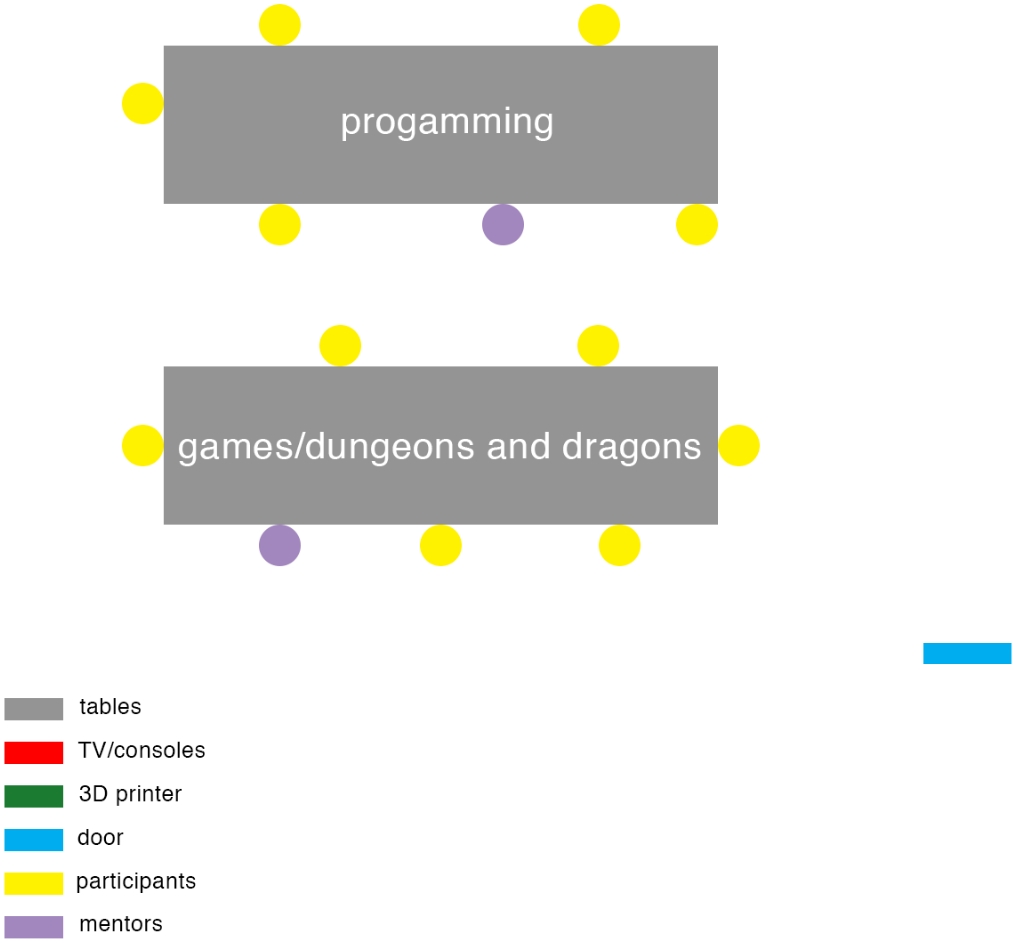

Image 9: Floor plan of the Footscray Lab (Observation, Footscray Lab, 11 August 2016)

The Footscray Lab was organised by, and located at, the Footscray Community Arts Centre. The area was relatively spacious, with removable tables and chairs where young people could negotiate with mentors as to the physical layout of the space each week. However, on most weeks, members of the Footscray Lab often separated themselves into two large tables, as seen above: one for members who wanted to do programming or game making, and the other for members who wanted to socialise, play computer games or *Dungeons and Dragons*, a role-playing fantasy tabletop game. I noted in my observation that:

> *"It is strange how the Footscray Lab hasn't changed much since I was hoping to be a volunteer [in 2013/4] – They still have the same, or similar,*

> *layout as before – though different from their Saturday group*[9] *.” (Observation, Footscray Lab, 25 May 2016)*

The two large tables, in addition to having one mentor on each table, seemed to signal to members to engage in different activities on different tables. As the Footscray Lab was the first and longest-running Lab, members may have colonised the space and informally assigned meaning to these tables—social versus learning—based on ongoing negotiations with peers and mentors. Regardless, the Footscray Lab had become synonymous with these two separate and broad activities, ascribing meaning to the space.

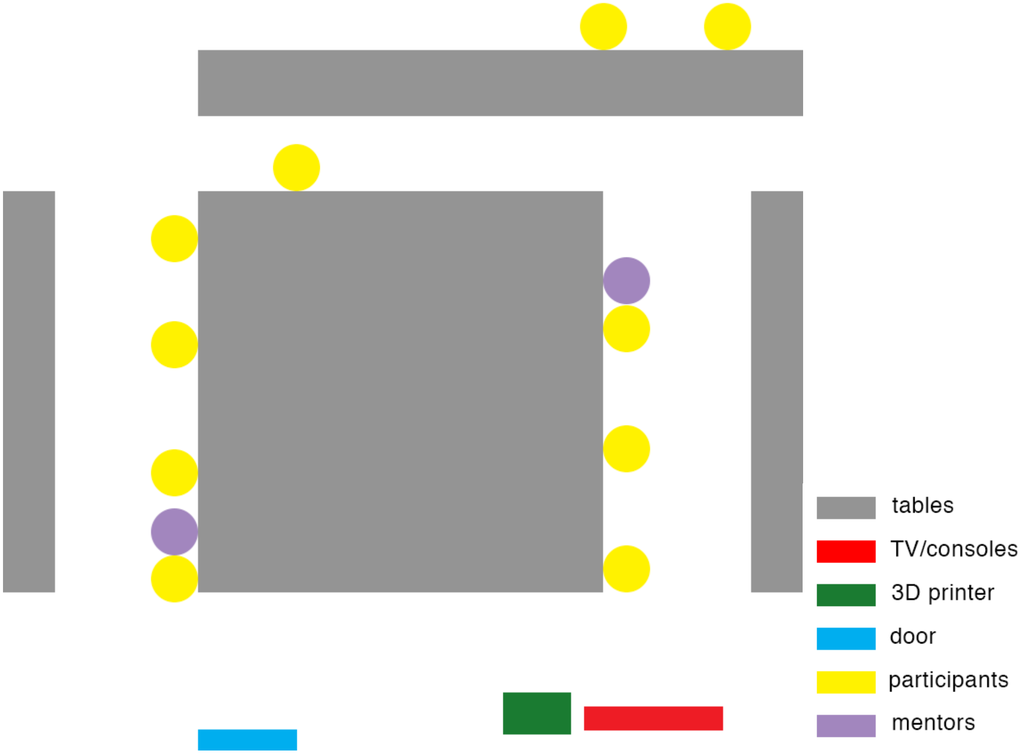

Image 10: Floor plan of the Reservoir Lab (Observation, Reservoir Lab, 6 August 2016)

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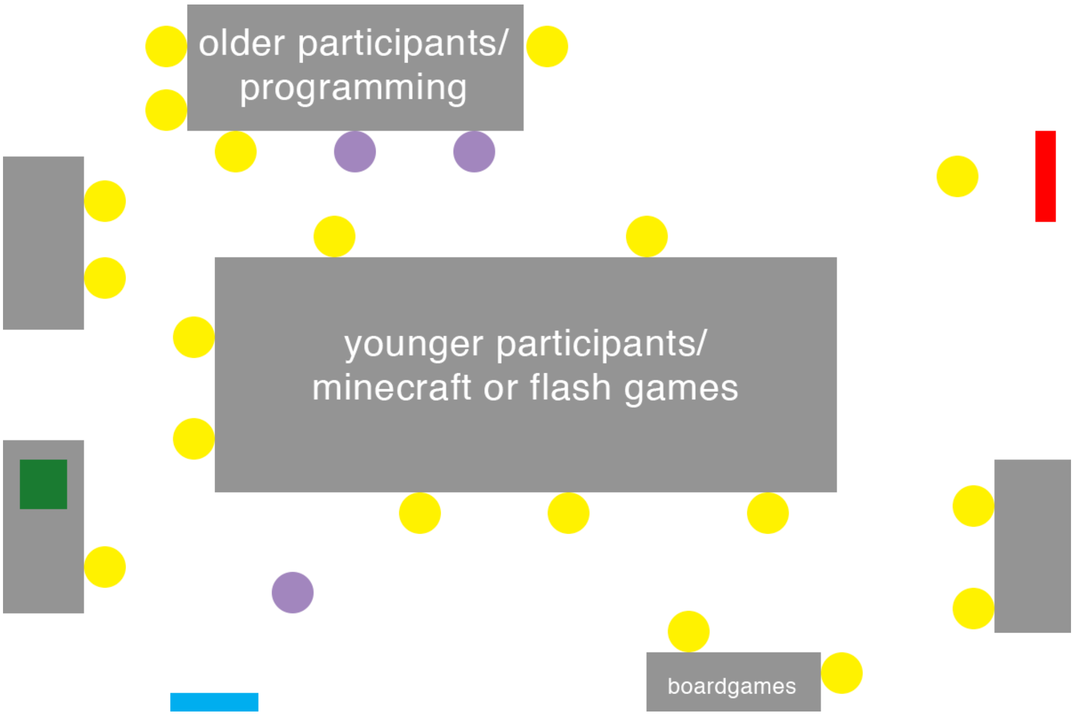
[9] The Footscray Lab also ran Saturday sessions, mainly for new and younger members, which I attended prior to the data collection phase. However, as with the sessions at the other Labs, I was unable to include them in my research due to the limitations of being a single researcher and the conflicting times of the sessions.

The Reservoir Lab was organised by, and located at, the Reservoir Neighbourhood House. Unlike the Footscray or Frankston Labs, the Reservoir Lab was located at a computer lab with fixed tables and moveable chairs. However, due to the limited space, mentors often assigned members to specific seats by placing and arranging Lab-owned laptops in the same spots each week: "The mentors set-up the place with laptops that have the kids' names pasted on them. Hence, the kids always sit in the same place – no clusters, unlike the Frankston or Footscray groups" (observation, Reservoir Lab, 25 June 2016). While members were free to move around, they often stayed at their designated seats and played games or worked on projects individually. This method of allocating limited space seemed to have unintentionally imposed a structure and routine (i.e. sitting at their allocated seats) on members and signalled that movement was less encouraged than at other Labs. Hence, unlike the Footscray or Frankston Labs, it was observed that young people at the Reservoir Lab did not form task-specific clusters (see next section).



▨ tables
🟥 TV/consoles
🟩 3D printer
🟦 door
🟨 participants
🟪 mentors

Image 11: Floor plan of the Frankston Lab (Observation, Frankston Lab, 9 August 2016)

The Frankston Lab was located at a public school and organised by individuals from The Lab network and parents. This area was significantly more spacious than the Reservoir or the Footscray Lab and members were able to negotiate with mentors as to the physical layout of the space each week as tables and chairs were movable. As seen above, specific clusters formed in different areas of the room, with older participants who were interested in programming and game making organised around the mentors' table, while younger participants who played games or *Minecraft* together located themselves in the centre of the room. There were also other smaller clusters that formed occasionally, including a board games corner and a competitive gaming area around the television to which members or mentors brought in their own consoles. However, this floor plan was more a snapshot of a point in time than a standard layout, as seen at the Footscray or Reservoir Labs, because the placement of the furniture changed from week to week; the lines between social and learning activities seemed more blurred in this context. It is interesting to note that previously, the Frankston Lab was conducted at a computer lab, similar to the Reservoir Lab above (see quote at the beginning of Section 5.1—observation, Frankston Lab, 7 June 2016). While members did occasionally work in groups (i.e. programming or *Minecraft* groups), they did not form ongoing clusters. It was also observed that younger and older participants interacted more prior to the shift into this newer area—e.g. "It seemed like when they were in the smaller room, [younger and older members] had no choice but to sit in close proximity. But now that they have the space, they seem to sit in their cliques separate from each other unless they didn't have one or they are a 'wanderer' like [Devin] – doesn't stop them from annoying each other!" (observation, Frankston Lab, 21 June 2016). This suggests that changing spaces can also change the dynamics of a group, affirming that physical spaces can convey meaning (as discussed in Section 3.2.1).

As seen above, all three Labs were located at different places and within different spaces. Of the three Labs, the Reservoir Lab was the most restricted in space and structure, with little room to negotiate the configuration of the space or move objects around. On the other hand, the Frankston Lab was the most unstructured, with a lot of space to move furniture and objects as negotiated between mentors and members. The Footscray Lab was more similar to the Frankston Lab because it had a lot of space relative to the number of regular attendees and the furniture were portable. However, they were less likely to change the configuration or move around in comparison to the Frankston Lab as they had organically developed two distinct activity groups over time. I call this ‘cluster-forming’.

5.1.1a Cluster Forming

At the Frankston and Footscray Labs, friendship groups and clusters seemed to form based on interests, familiarity (e.g. going to the same school), games or age (see Image 12). At the Frankston Lab, it was observed throughout the data collection phase that some of the older members grouped together (top left corner of Image 11) as they had common interests in programming or were able to relate to each other in conversations. For example:

> *“While talking to [Jack] about his Minecraft world, I overheard the three older kids – who seem to stick together - talk about dating girls through games while on their mobile phones or laptops. My first thought: boys will be boys!” (Observation, Frankston Lab, 26 April 2016)*

The same group was noted to talk about American politics (observation, Frankston Lab, 26 April 2016), *Game of Thrones* (observation, Frankston Lab, 2 May 2016), and 3D programming on *Unity* (observation, Frankston Lab, 9 August 2016).

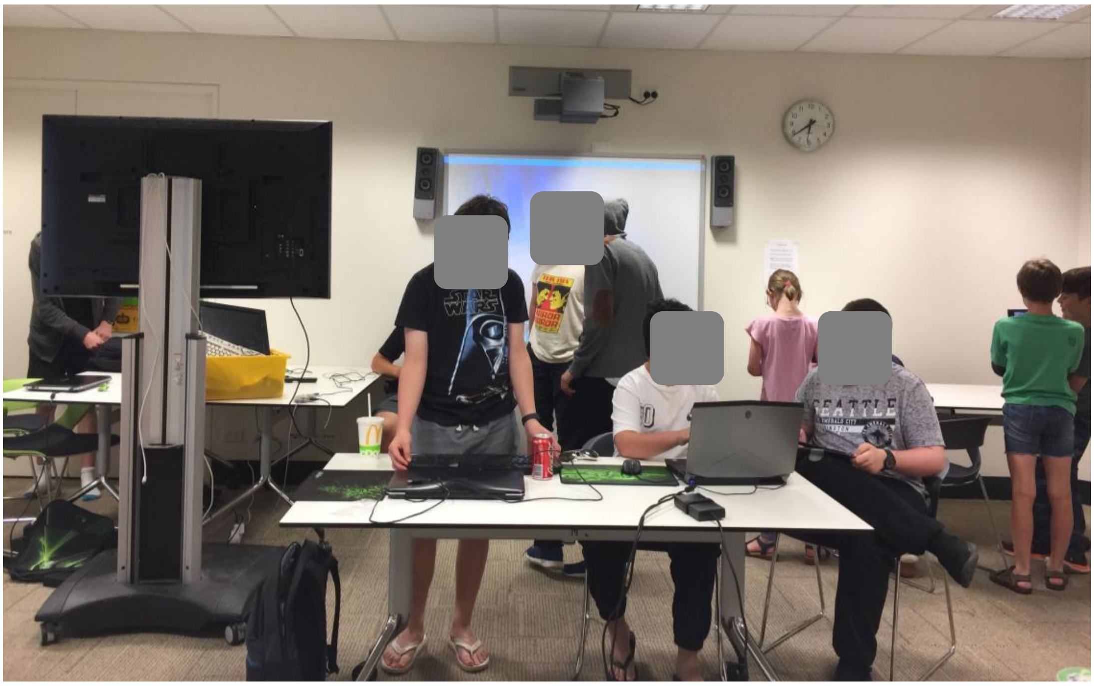


Image 12: Young people with different interests or of different age groups form micro-clusters (Video Ethnography*, Frankston Lab, 2 August 2016)

*****_It should be noted that at the start of the video recording session, only three participants were in the frame._

In another example, a group of younger and older members came together to build a *Minecraft* world due to their common interest in the game. Below is an excerpt taken from my first[10] observation entry at the Frankston Lab:

> *"[Jack] and the team – who each had nicknames for one another – were walking me through their enormous Minecraft village. I didn't even know you could have villagers in this game! The kids were all very enthusiastic to explain to me the function of each room while also giving each other instructions on what to build next." (Observation, Frankston Lab, 12 April 2016)*

While most of the build directions (see Image 15) were given by Jack, an older member of the group, other members of the social group were happy to follow his instructions and build the necessary infrastructure assigned to them. If new ideas arose, these were discussed with the group to assess their value to the

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[10] This was the first session I recorded, not the first session I attended.

Minecraft world and added to the to-do list (see Image 15). Hence, there was evidence of collaboration, although each member worked on their assigned building individually both at home and at The Lab.

While micro-clusters formed within the Frankston Lab based on interests, they were not exclusive or confining. James, who was also part of the *Minecraft* social group mentioned above, often invited me to play *Batman Returns* or board games with him and others (e.g. “[James] invited me to play the card game *Go* with the group – they are so competitive!” [Frankston Lab, 9 August]). The social groups at the Footscray Lab seemed much less informal.

As mentioned above, there were two distinct activity groups observed at the Footscray Lab sessions: a programming cluster and a social gaming (i.e. Dungeons and Dragons) cluster. The repetition of these activities were noted in my observation entry:

> *“On one table, two members were coding racing games together as usual and one other was learning some form of programming. On my table, [Isaac], [Scott] and the mentors were talking about super heroes or playing google translation again, [Tom] and [Damien] were chatting amongst themselves, and [Joe] wouldn’t stop making me solve his puzzles AGAIN!” (Observation, Footscray Lab, 25 August 2016)*

I often sat at the social gaming table as members who were there were often participants of my research. Additionally, I observed a distinct difference between the tables—it was generally “quiet” on the programming table and “chatty” on the social table (observation, Footscray Lab, 26 May 2016). This difference indicated to me the expectations of each table. It demonstrates that I was also responding to the signs of the physical space. It should be noted that members who were non-participants often chatted with me about their projects as well. This is important as the activity tables seemed to imply exclusivity but this was not the case; members who often sat on that table when they were working on their projects would sometimes move around the room to interact with others.

Cluster-forming, however, was not particularly observed at the Reservoir Lab (see Image 13). The physical space of the Reservoir Lab was more cramped, structured and restrictive, seemingly resulting in less mobility. There was little space for small group activities or conversations, leading to more individualistic learning and play or, as I noted several times to similar effect, “Generally not ‘groupy’ and doing their own thing” (observation, Reservoir Lab, 28 May 2016). While friendship groups still formed, they were often smaller in numbers (i.e. a pair of friends) who seemed to know each other outside of the Lab—e.g. “I overheard John and Mandy talking about school – but it was very brief” (observation, Reservoir Lab, 6 August 2016). Nonetheless, due to mentors encouraging and not restricting mobility within the space, members at the Reservoir Lab still interacted with each other at times over similar interests—e.g. “Everyone got excited when someone unlocked everything in Five nights at Freddy’s. They all ran over to watch!” (observation, Reservoir Lab, 28 May 2016). This suggests that the physical layout of the space was not the only determinant to how participants socially interacted within The Lab; mentors and (non)established rules also shaped the interactions within the space.

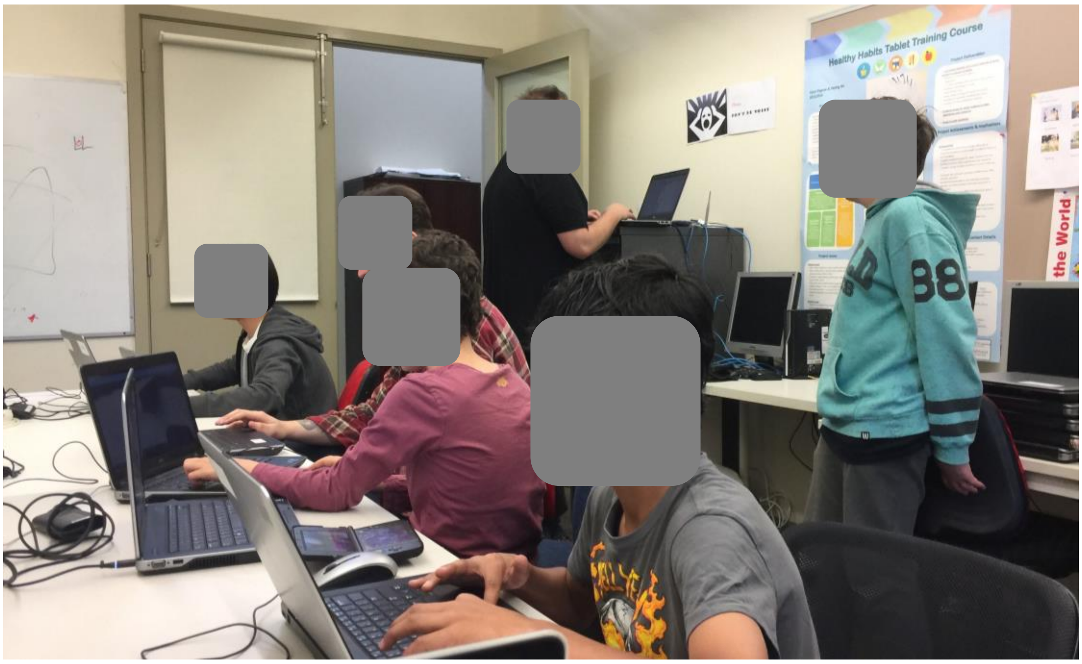

Image 13: Semi-structured and smaller spaces encourage more individualised learning. Video Ethnography, Reservoir Lab, 17 September 2016.

From the short anecdotes above, we can see that the physical spaces seemed to have an impact in the ways young people interacted within The Labs. I attribute these differences specifically to how young people with autism view spatial signs and symbols within each Lab.

5.1.1b Applying Spatial Semiotics to Understanding the Physical Spaces of The Labs

Representational meanings of signifiers provide spatial texts with narratives (Ravelli & Strenglin, 2008). Being able to visually see and physically feel the technologies, such as laptops, gaming consoles, computers and laptops enabled young people to regard The Lab as a technology club. The unstructured space and programme of the Frankston and Footscray Labs also seemed to inform members that they were allowed negotiate the meanings of different spaces (e.g. programming versus social gaming tables) and create environments more suited to their needs. In many ways, the furniture at these Labs were meaningless until they were ascribed meaning by members or mentors (e.g. group table for board games) because they did not hold significance or expectations on how young people should behave.

These Labs were therefore unlike classrooms which, as mentioned in Chapter 3, "take on certain meanings because of the nature of pedagogic discourse that occurs on the site and the positioning and distance of the site relative to the students and the teaching resources" (Lim et al., 2012, p. 235). Whereas classroom spaces were generally predetermined for a transmission[11] model of learning, The Lab and its spaces took on a more constructionist view where "learners engage in a conversation with (their own or other people's) artefacts, ... boost self-directed learning [through these conversations], and ultimately facilitate the construction of new knowledge" (Ackermann, 2001, p. 1). The way members at the Footscray and Frankston Labs negotiated with mentors to

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[11] Spaces that support the transmission model of learning do not necessarily mean the teaching is as such; my critique is spatial rather than pedagogical.

structure the space showed how young people with autism were able to construct spaces that were meaningful and comfortable to them and their peers, enabling them to socially interact with each other on their own terms.

While the space of the Reservoir Lab was seen as more structured than the Frankston or Footscray Labs, it was dissimilar to that of a classroom. Apart from its physical layout and the pre-arrangement of laptops, it did not have the same signs and signifiers of a classroom. For example, mentors did not conduct the session at the front of the space like teachers (see Images 10 and 13)—rather, they roamed around and sat amongst members. It suggests that the physical bodies that inhabited the space were part of the spatial text. Members were also not prohibited to move around, but were less likely to do so seemingly because of the limited space available. The combination of structure and freedom resulted in a more individualised learning-focused environment with fewer cluster-forming behaviours but still encouraged spontaneous interactions—I will discuss this later in the chapter. An excerpt of a video recording session with Xavier (video ethnography, Reservoir Lab, 17 September 2016), demonstrated how these interactions may be informal and playful:

> *[Xavier] has his laptop on this chair and is kneeling on the floor. He is playing a Pokemon fusion game.*
> *Xavier: Magikarp versus Magikarp. Come on!*
> *He does half cartwheel, seemingly to celebrate the victory.*
> *Xavier: Yes! That's it, splash!*
> *At this point, [Paul] makes a comment from across the table – the brief conversation that follows is generally inaudible to the recording.*
> *Xavier: Are you playing Yu-gi-oh?*
> *[Xavier] gets right back into his game after.*
> *Xavier: Come on just one more!*

Hence, the layout of physical space, the signifiers within them (including the physical bodies) and the approach taken by the programme—i.e. constructionist—allowed for individual interpretations of the space, making the Reservoir Lab a hybrid learning and social environment.

Interpersonal meanings of spatial signifiers are concerned with how we construct and maintain interactions within spatial texts (Ravelli & Strenglin, 2008). They highlight the way space interacts with us and vice versa. The hybridity of the Reservoir Lab presents an interesting dynamic in interpreting interpersonal meanings. On the one hand, the rigidity and limitations of the space invited a level of discipline similar to the panopticon and promoted isolation due to the lack of personal and social spaces. Hence, individual learning was observed to be preferred over group learning. On the other hand, the programme approach, flexibility of the mentors and mobility encouraged reflexivity in the interpretations of structural rules and modalities, invited members to interact as and when they felt comfortable.

At the Frankston and Footscray Labs, the unstructured physical space and programme enabled young people to define the parameters of the space and incorporate physical objects within it to help them achieve their goals. This was evident when members such as “[Peter] brought in two car-shaped boxes of games and items including his old Playstation and plugged it into the TV for everyone to play/compete” (observation, Frankston Lab, 9 August). In this example, by bringing his own console and games into the space, Peter used objects to invite others to interact with him, which illustrated object-centred sociality. The flexibility of the spaces enabled young people to create their own interpersonal meanings of spatial texts and have control over what they wanted the space to be. This was, of course, subjected to negotiations between peers and mentors.

Nonetheless, findings indicated that the unstructured physical spaces of the Frankston and Footscray Labs allowed young people with autism to develop interpersonal relationships on their own terms as they were not bound by pre-defined spatial rules of engagement as in classrooms. In one session, I noted that:

> *“[Richard] was upset with [Adam] for taking his hot chips and started to cry. Fortunately, [Jack] and the mentors were there to control the situation.*

> *Eventually, [Richard] sat on [Jack's] lap and [Jack] had a chat with [Richard] - like brothers" (observation, Frankston Lab, 21 June 2016).*

The "brotherly" friendship between Richard and Jack extended beyond this example—e.g. "I have seen [Richard] calling [Jack] on his mobile phone when the latter did not attend the Lab session" (observation, Frankston Lab, 11 October 2016)—and I suspect the unstructured physical space of the Frankston Lab enabled this form of trust and relationship building.

Compositional meanings of space are concerned with how different elements within space come together to create context and cohesion. Consider this quote by Hahn and Weis (2013, p. ii):

> *"Objects are in perpetual flux, leaving visible traces of their age, usage, and previous life. While travelling through time, objects also circulate through space, and their spatial mobility alters their meaning and use with respect to new cultural horizons."*

It suggests that the meanings of objects are cultivated over time, space and culture. These objects and their placement in turn make up the compositional meanings of the spaces they inhabit.

While members at the Frankston and Footscray Labs were given autonomy over the set-up of the physical space, the compositions of both spaces were fairly consistent during the data collection period with few changes from week to week, despite members having to rearrange the furniture every session. Unlike the Reservoir Lab, which had limited flexibility, the Frankston and Footscray Labs chose to keep their physical structure. This suggests that 1) familiarity may be valued, and 2) the select configuration of the space may have compositional meanings to the members, enabling them to contextualise their behaviour. The difference between these Labs to the Reservoir Lab was in how these spaces came to be composited.

As young people at the Footscray and Frankston Labs were able to negotiate the configuration and had ownership in the set-up of the physical space, it allowed them to ascribe personal meanings to the physical objects (e.g. furniture, television) and the space. Clusters were sometimes protective of their areas, tables and chairs because these made up part of the group space—e.g. “[Richard] asked others to go away politely – ‘sorry, this is my seat’ – so that he could be close to [Adam] and [Jack] whom he adored. At one point, when [Devin] was taking a close look at his computer tower, he screamed ‘stop touching my computer!’” (observation, Frankston Lab, 17 May 2016). Different areas at the Footscray Lab also indicated different objectives, such as the programming space, where members were generally quieter versus the social space, where the main activity seemed to be conversation; these areas were observed to be respected and acknowledged by its members—e.g. “Today, [Scott] was on the “other” side of the room and coding something by himself instead of chatting with us” (observation, Footscray Lab, 2 June 2016).

At the Reservoir Lab, as mentioned above, the space and placement of laptops were predefined each session, which seemed to signal order and discipline; I observed over several sessions that members at the Reservoir Lab were generally “very quiet”, working on their own projects and sitting at their designated seats (e.g. observation, Reservoir Lab, 16 April 2016; 28 May 2016; 25 June 2016).

From the above discussion, we begin to understand the importance of physical spaces in how young people with autism may socialise and develop relationships with each other at The Labs. Being able to construct or ascribe individual meanings to physical spaces enabled young people with autism to interact and communicate on their own terms. Beyond their configurations, the physical spaces were also informed by the programme approach which affected the way members may have perceived the space, such as at the Reservoir Lab. Hence, both the physical components and the conduct of the space should be considered when developing activities for those on the spectrum or when discussing their sociality.

5.1.2 Personal space

In Chapter 3, I discussed the significance of spatial distance in communication, specifically through the study of proxemics and the notion of the personal and private space (Halls, 1973). Images nine to 13 clearly show how different configurations of space changed intimacy and interpersonal relationships between members. They suggest that the configuration of the physical space, structured or unstructured, impacted the ways individuals perceived personal space. The findings presented in this section was drawn from themes one, two, ten and 13 and analysed against Section 3.2.2.

At the Reservoir Lab, members were assigned seats based on how laptops were distributed by mentors. Each member was spaced equally, establishing a unified distance of personal space around them. This seemed to facilitate more disciplined interactions where members of the Reservoir Lab were documented to be respectful of each others' personal space—e.g. "[Elliot] was walking around the room, looking at what everyone was up to from a distance. He stood behind [Xavier] who I think was watching a gameplay video. And [Xavier] invited [Elliot] to join him! So [Elliot] pulled up a chair beside him" (observation, Reservoir Lab, 25 June 2016). It was interesting to note how members perceived personal space within structured versus unstructured environments; the former seemed to have provided guidance (through its structure) as to how members should survey and interpret the space around them. The Reservoir Lab, through its unique combination of a structured environment within a flexible programme, allowed young people with autism to explore personal and social boundaries rather than set personal or social spaces, as seen at the Frankston or Footscray Labs.

At the Frankston and Footscray Labs, members were required to establish their own personal and social spaces. Jerome from the Frankston Lab, for example, sat alone beside the 3D printer each week, away from the crowd—e.g. "[Jerome] set up his 3D printer and 'desk' right outside the room in the corridor" (observation, Frankston Lab, 2 August, 2018). While he occasionally walked around to check on what other members were up to, he seemed to have established and communicated to others a much wider personal space around him than the rest of the members within the Frankston Lab, with noticeably fewer members interested in his project except myself and the mentors. Similarly, at the Footscray Lab, members moved to the programming table and spread themselves out when they did not want to talk to other members. I noted in my observations at the Footscray Lab (21 July 2016), that some members at the programming table were “not interested in our conversations” and often sat “in the far end of the room, about a trestle table length apart from each other despite seemingly being good coding buddies[12]”.

In some ways, having the choice to pick their own seats enabled members to survey the room and others within it and set their own personal spaces. My observations at the Frankston and Footscray Labs suggest that Humphreys’ (2005) assertion about autistic individuals’ need for greater personal space to make sense of the environment around them may be correct. However, beyond “greater personal space”, I argue that choices available to these young people are equally important to the amount of space allocated to them, although this may indicate equity issues if some choose to have more space than others.

Although the unstructured space of the Frankston and Footscray Labs enabled some members to create a wider buffer between their social and personal spaces, it also allowed others to experiment with closer distances and develop more intimate relationships. As previously mentioned, Richard and Jack had a “brotherly” relationship with each other. Richard was noted to be generally distant with other members and often told them—or, more accurately, *yelled* at them—to go away, especially when he was frustrated—e.g. “[Richard] started yelling at [Randell] and telling him to go away when [Randell] would not stop singing under his breath. Honestly, [Randell’s] very subtle singing didn’t seem to bother anyone else” (observation, Frankston Lab, 7 June 2018). Jack, an older member who was liked by younger members, was able to establish a close relationship with Richard, guiding the latter in close proximity (e.g.

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[12] The programming and social gaming tables were made up of several tables joined together.

allowing Richard to sit on his lap) when he was upset or frustrated. The unstructured physical space of the Frankston Lab gave Richard the opportunity to experiment with different levels of personal space. When he had had a bad day and needed more personal space, he was able to pull himself away from others simply by moving a table and chair to a corner of the room (observation, Frankston Lab, 30 August). On other occasions, it allowed Richard to move closer to others when he wanted attention and interaction. Hence, my observations at The Lab showed that young people with autism were capable of constructing their own personal spaces by assessing their needs at different times. Meanings of personal space at The Labs seemed to change and were relative to mood, availability of space, activity, specific members within it, and more. While all three Labs were structured differently, with variable levels of flexibility in the physical design of the space, each showed that beyond the amount of space selected by or allocated to its members, the meaning of personal space needed to be perceived and established by the individual. Therefore, the support given in the psychosocial space, which I discuss towards the end of this chapter, was important to help young people with autism navigate physical spaces.

5.1.3 Public place, private space—a matter of perception

In this section, I discuss the notion of public/private space (as seen in Section 3.2.3) within the context of The Lab. The findings from this section was derived from themes three and eight. Please note that as the Footscray Lab showed little signs of pointing towards a public/private space dynamic within its physical space, it will not be mentioned in this section.

To young people at The Lab, privacy could be interpreted as a space that “belongs to, or is controlled by, an individual, for that individual’s exclusive use, keeping the public out” (Madanipour, 2003, p. 35). However, they seemed to define the “public” more narrowly to refer to spaces where parents or other authoritarian figures are present, which resonates with Foucault's theory of panopticism and surveillance.

From my observation, parents and members of The Lab perceived the programme and space differently. Parents indicated that they had hoped members would learn more practical computer skills at The Lab—e.g. "[The organiser] said that parents, himself included, want 'more learning and less playing'" (observation, Frankston Lab, 2 August 2016). At the Reservoir Lab, feedback from parents led to the delivery of a semi-structured coursework where mentors gave a short five- to ten-minute tutorial/demonstration about a topic each week at the beginning of the session (observation, Reservoir Lab, 25 June 2016). This coursework was not compulsory or conventionally structured. Rather, it was built each term by the mentors upon assessing what members were interested in. For example, seeing the popularity of *Minecraft*, mentors decided to include *Mine-imator*, an animation tool that allows users to make *Minecraft* movies, into the programme (observation, Reservoir Lab, 16 April 2016). This suggests that parents saw the function of The Lab as a learning rather than a social space. I overheard parents asking their child on a number of occasions to show them what they had learnt at the end of the session—e.g. "I spoke to [Devin's] mother today and she mentioned that she had hoped that they were learning more – but she also said she was glad that he is happy" (observation, Frankston Lab, 19 April 2016); "I overheard [Elliot's] grandfather (I think) asking him if he was just watching YouTube videos again or actually learning something this week" (observation, Reservoir Lab, 8 October 2016). Parents seemed to assess the usefulness of The Lab based on some form of labour skills development where, for example, learning to animate in *Minecraft* was more valued over gameplay on the same platform. Their perception of the Lab was therefore more akin to a public learning space such as a classroom.

Young people, on the other hand, viewed The Lab as a very different programme and space. Some younger members of the Frankston Lab, for example, expressed their desire to have their own "private" or "personal" time during The Lab sessions—e.g. "[Richard] cried when his mother said they had to leave early and complained about the lack of privacy at home" (observation, Frankston Lab, 11 October 2016). While they did not view their peers or others at The Lab as intruding their privacy, they viewed their parents as signifiers of intrusion into their private space. Members often used their time at The Lab to socialise with others (both online and offline), play games or learn computing skills at their own pace, without the constant surveillance of their concerned parents. In other words, they seemed to view The Lab as a leisurely or recreational space that allowed them to unwind, relax and do things they enjoyed without requiring permission from others, especially their parents. While members acknowledged that their parents cared about their well-being—e.g. "[Jerome] says that at home, even though he knows his mother and sister are worried about him, he just needs to be in a dark room alone at times" (observation, Frankston Lab, 19 July 2016), my observation suggests that they felt the need to have time to themselves and experience sociality in their own terms, particularly in a physical space where they are able to explore, either through movement or configuration, more than within other formal learning spaces. In many ways, the findings indicated that they viewed The Lab as a safe and private space.

From my perspective, the young people I socialised with at The Labs were seemingly capable of learning ways to care for themselves if they were given choices. Jerome, as mentioned above, was able to relate to me the ways in which he coped with stimulus both at home and at The Lab. He explained that there were times at The Lab when he needed to close his eyes and cup his ears to feel less agitated or anxious, just like being in a dark room at home (observation, Frankston Lab, 19 July 2016). He knew that he had autism and understood what that entailed, at least from a medical perspective.

The Lab can therefore be seen as a hybrid space between the public and the private, enabling young people with autism to socialise and learn (both formally through mentorship and informally through self-enrichment) but also to reflect and discover more about themselves through independent exploration, devoid of authoritarian figures (e.g. parents at home and teachers at school—mentors are positioned as more approachable older companions) and strictly regulated spaces.

5.1.4 The Lab as a safe space

The findings, drawn from theme 12 and analysed against Section 5.3.5, suggest that The Lab is a safe space and familiar environment for its members. Unlike schools, where the structure of the classroom resembled a panopticon, the unstructured nature of the physical space and programme of The Lab seemed to change the power dynamics between members and mentors. Even within the Reservoir Lab, young people were free to move around and away from the eye line of mentors, who sat among members instead of standing at the front of the room (e.g. Image 16, Reservoir Lab, 17 September 2016).

Young people were able to speak freely and share memes, which were sometimes vulgar, with each other and move around the space comfortably without the judgement of mentors, parents, organisers or peers—e.g. "I overheard some members using swear words in their conversations but mentors didn't seem to be concerned" (observation, Frankston Lab, 19 April 2016). Young people felt secure to the extent that they were unaware of strangers or other children who entered the room without consent or permission. In one session at the Frankston Lab, my observations noted:

> *"A young random boy from another after-school programme I presume was running in and out of the room, occasionally stopping to see and ask what members were doing. Everyone except me seemed unconcerned and talked to him normally as they would to others, without suspicion or worry. When I asked one of the mentors about this child, they shrugged and said he was probably from the sports club. I also asked some of the members who spoke to him afterwards if they knew the child and all of them said no. How weird!" (Observation, Frankston Lab, 19 April 2016)*

This incident happened early in my visits and I later recognised that it was a rather common occurrence: a new child or an adult would walk into the room and members of The Lab would be unfazed by their presence. This illustrates, in my view, that these young people developed a sense of trust in the people at the programme as well as the place.

The Lab demonstrates every aspect of Holly and Steiner's (2005) definition of a 'safe space': security, freedom to express, honesty, and protection from psychological and emotional harm. The young people observed at The Lab were unafraid of self-disclosure and were able to express themselves and their autistic identities, albeit not always in a non-disruptive manner (see Section 5.3 on psychosocial space), without discrimination or judgement. During a session at the Footscray Lab (26 May 2016), I was caught off guard when Damien opened up to me about the difficulties he had had dealing with mental health issues and identifying as a transgender teenager, all while having soft electronica music playing in his earphones. In my notes, I reflected that "I was unprepared for such a personal conversation and felt somewhat guilty for being unable to help as a researcher" (observation, Footscray Lab, 26 May 2016). It was an interesting experience for me as I recalled being unsure of what to write in my observation notes after the session and decided to keep it brief. In that moment, I did not seem to be perceptive or sensitive to what he was saying to me as I felt conflicted about my role at The Lab. In addition, I was also indoctrinated to the social etiquette of appropriate self-disclosure within public spaces—which was not observed to be present at The Lab. This example showed how some members felt emotionally and physically secured at The Lab to freely express and share about themselves, demonstrating aspects of a 'safe space'.

5.1.5 The physical medium of technology

Unlike other spaces, the online/digital space is mediated and requires a physical medium. Therefore, in understanding sociality through technology, the physicality of the medium must be considered as it changes the power dynamics within spaces. The findings from this section was taken from themes one and nine and analysed against Sections 2.6, 3.2.5 and 3.3.2.

Disability geographers Davidson and Parr (2010) argue that the online-digital space is enabling because individuals with autism are able to interact without the nuances of physical communication, such as body language, eye contact and emotional cues. Similarly, within the physical space of The Lab, young people with autism used their screens as a way to avoid these nuances of physical communication. For instance, in one of my video recordings, I noted that two young participants were focused on their laptops and did not talk to each other the whole time (video ethnography, Frankston Lab, 30 August 2016). However, as I sat beside them, I was able to see that they were in fact chatting to each other—and others as well—on Google Chat (observation, Frankston Lab, 30 August 2016). At the Footscray Lab, I observed that "[Damien] and [Tom] – who were both sitting beside me and only spoke to talk to me - were chatting on a Facebook group together. I felt slightly left out!" (observation, Footscray Lab, 14 July 2016). This form of online interaction, while being in the same physical space, was similarly noted during the online participatory ethnographic (OPE) section, where young people would chat with each other and with me over the *Minecraft* chatroom instead of in-person (OPE, Frankston Lab, 11 October 2018—see Image 15 below for an example). In these cases, mobile technologies enabled young people at The Lab to talk to each other without verbal or non-verbal (i.e. body language) communication while being in the same physical space. This does not necessarily mean that these young people were uncomfortable or were avoiding physical interactions. Rather, they had the choice to communicate offline or online, and chose the latter.

In other examples, young people were more often seen interacting without looking directly at their peers. Instead, their eyes were concentrated on the screens in front of them. This could be seen in a previous example where Xavier was video recorded commenting on his game out loud, interjecting with a response to someone else's conversation and then returning to his game, all while looking at his screen (video ethnography, Reservoir Lab, 17 September 2016). Adrian, who joined the Frankston Lab and this research slightly after it began, was paired with Adam to help him get started in *Minecraft* in his first session. I noted that "[Adrian] seemed quite shy (in comparison to others) and spoke quietly to [Adam] throughout the session, with his eyes affixed to the screen" (observation, Frankston Lab, 2 May 2016). In later sessions, I found that Adrian became acquainted with Adam, speaking to him with eye contact, but not to the mentors—e.g. "[Adrian] was sitting alone today and [a mentor] went up to talk to him; he was nervous, fidgety and avoided [the mentor's] eye contact mostly" (observation, Frankston Lab, 30 August 2016).

Similarly, I observed that Mandy, who only seemed to talk to John, with whom she was familiar from school, spoke to one of the mentors about her *Minecraft* world without eye contact or looking up from her screen for the entire conversation (observation, Reservoir Lab, 10 September 2016).

In my observation notes, I recorded over seven instances where young people were seemingly trying to make "eye contact" with me. Some, as I noted, were "staring quite intensely into my eyes while giving a demonstration of his project at the end of the term" (observation, Reservoir Lab, 25 June), while others were awkwardly in and out of eye contact as they talked me through what was on their screens (observation, Footscray Lab, 28 July 2016). There were also young people with autism—generally older members—who had no problems with making eye contact, such as James, who said "after jokingly disturbing me that he is a really good guy – which made me laugh" (observation, Frankston Lab, 21 June 2016).

Hence, the physicality of technology seemed to provide a distraction for these young people to keep eye contact to the minimum while engaged in conversations. It enabled them to express themselves within a physical setting without the pressure to comply with the socially accepted rules of physical communication. This form of communication is not limited to young people with autism (e.g. avoidance of eye contact is also noted in research with Indigenous people) and demands a redefinition of the social norms guiding communication. When parents were in the room, they sometimes asked their child to look at them or the mentors while speaking (observation, Frankston Lab, 5 July 2016; observation, Reservoir Lab, 8 October). However, for members at The Lab, the presence of the technological medium provided them with an opportunity o avoid physical communication, which may bring discomfort through sensory overload, and effectively converse or communicate with others within their means (Davidson & Parr, 2010). In addition, as seen from the examples above, some members were able to make eye contact with people they trusted or were familiar with over, but they needed to do it within a supportive environment according to their own capacity. Therefore, we need to expand and rethink what we understand to be socially acceptable, or "polite", forms of communication so as to create a more inclusive society.

On another front, the physicality of technology may also impede communication. While I was video recording the sessions, some participants were visibly nervous or unusually quiet and composed. Others asked questions about what I was using the footage for (after video ethnography, Footscray Lab, 10 August 2016) and if I could delete certain sections of it (after video ethnography, Frankston Lab, 13 September 2016). They were assured that only stills would be shown and parts where they felt uncomfortable would not be disclosed. The video camera hence became an imposition on their freedom—it became a surveillance tool. According to Davidson and Parr (2010), the physicality of technology and the online space may also restrict people with autism from wanting to learn and communicate with others who are not on the spectrum as they may retreat into their comfort zones, creating exclusive clusters and communities online or offline rather than trying to be included by others who are different from themselves. The intricacies and complexities of technologies call for a greater number of considerations to be taken into account when analysing the use of technologies as mediums for communication. This leads us to the next segment of this chapter, where I further explore how technology and the online-digital space affected the way young people with autism socialised and developed relationships within The Lab.

5.2 Technology as an Extension of the Self

> *“all technologies are extensions of our physical and nervous systems … Any extension, whether of skin, hand, or foot, affects the whole psychic and social complex.”* (McLuhan, 1964, p. 4)

> *“Tuvok: Curious. I have never understood the Human compulsion to emotionally bond with inanimate objects. This vessel has done nothing. It is an assemblage of bulkheads, conduits, tritanium – nothing more.*
> *Janeway: Oh, you’re wrong. It’s much more than that. This ship has been our home. It’s kept us together. It’s been part of our family. As illogical as this might sound, I feel as close to Voyager as I do to any other member of my crew. It’s carried us, Tuvok. Even nurtured us. And right now, it needs one of us.*” *Star Trek Voyager, Year of Hell Part II (Vejar, 1997)*

I enjoy watching *Star Trek*, a leading science fiction television series in its day. *Star Trek* explores various themes, including interactions with and within, and respect for, technology. In the quote above, which was taken from the fourth series of the *Star Trek* franchise *Voyager*, the captain (Janeway) explains to a crew member (Tuvok) why she refuses to abandon the starship even in times of danger. While fictional, it succinctly summarises our relationship with technology today: beyond its physical components, technology is a part of us and has the ability to change who we are. This sentiment is echoed by McLuhan (1964) in that he encourages us to see technology as an extension of ourselves rather than a supplement. In this section, I will discuss how technology and the online space are shaping the lives and sociality of young people with autism.

The overall findings of my research reveal that communication and interaction through online and mobile technologies were important and impactful to young people with autism in making friends and being involved in communities. Walking into The Lab, I often saw young people talking to each other while texting on their phones and messaging on Discord or Skype—e.g. “[Paul] and

[Cameron] both had their phones, laptops and Nintendo DS in front of them. They seem to be working on a project together but were also texting on their phones, watching videos on their laptops and playing Yu-Gi-Oh – I think – on their DS" (observation, Reservoir Lab, 17 September 2016). They travel between and within multiple spaces at the same time, learning to socialise as they communicate on different platforms. In many ways, how they communicated online and offline were more similar than different at The Lab, moving towards Wittel's vision of 'network sociality'.

Socialisation is no longer one-dimensional within the relativity of time and space; rather, it occurs simultaneously within multiple spaces and "screens" across different time zones (Merriman, 2012). Therefore, there is a need to redefine sociality in the context of technological change. Technology has changed our attitudes, behaviours and patterns of communication, both positively and negatively, and it should be regarded beyond simply a set of tools that are used to improve performance, enhance learning, etc.—the implication here is that they are separate rather than integral aspects of our lives. As suggested at the beginning of this section, technology has become an extension of the self. This is supported by the findings of this research presented below.

5.2.1 Network sociality—Is this really how we socialise now?

In this section, I discuss how the findings correlate to Wittel's discussion on network sociality presented in Section 3.3.2. It will reveal that while some elements of network sociality were present in both young people's interactions online and offline, other findings indicated a more complex form of sociality. The findings from the section was drawn from themes two, five and nine.

Inspired by Manual Castell's work on network society, Wittel (2001) conceptualised the term 'network sociality'—a form of socialisation enabled by technology that is largely interest-based and requires lower commitment in comparison to traditional notions of socialisation and communication. It enables people to socialise within extensive networks focused on individual connections rather than membership to exclusive communities. Wittel's 'network sociality' suggests that we communicate at high levels of intensity on a need basis, similar to that of a social contract between two or more people.

It was evident that young people at The Labs communicated through technology and the online-digital space. This form of communication included texting, calling, emailing, Skyping, chatting over Facebook groups or in-game message boards, etc. When a member of The Lab was absent, other members tried to contact them during the session—e.g. "[James] called [David] to ask why he wasn't there yet because they were working on a video project together"—observation, Frankston Lab, 5 July 2016). In a previous example, I mentioned members using Google Chat to communicate online. At the Frankston Lab, I noted that "even though [Richard] and [Adam] used to be loggerheads, now that [Adam's] left The Lab programme – I presume since he hasn't been here all term – [Richard] seems to be talking to him on Google Chat and told me he had invited [Adam] to join his *Minecraft* server (which I was in as well)" (observation, Frankston Lab, 13 December 2018). Hence, we know that young people at The Lab interacted through technology, as discussed throughout this chapter (and thesis)—but was this facilitating network sociality as described by Wittel? My findings suggest that while network sociality was present, its broader application may be varied.

At the Footscray Lab, it was observed that Tom influenced Damien to join and participate in online social groups on Facebook (observation, Footscray Lab, 14 July 2016). The social groups were interest-based, made up of a combination of known and unknown people to Tom and Damien, and were conducted solely online. This suggests that while Tom and Damien did not see each other on a day-to-day basis, they networked and stayed in contact beyond the physical boundaries of The Lab, similar to James and David or Richard and Adam. A few characteristics of network sociality identified in Chapter 3 were: individuality, high-intensity and low commitment to relationships. The examples above illustrate that while there may be low commitment to the online social networks or groups (which I cannot conclusively say from my findings), there could be an overall increase to commitment to the social relationships that developed. This is because beyond physically meeting at The Lab, members were also able to communicate out-of-session. In this instance, the online-digital space amplified relationships that were physically established, although, it was unclear as to how these relationships lasted without The Lab as a physical gathering space. In some cases, as both Adam and Jack had left the programme towards the end of my research, I noted that Richard was still in contact with them via Skype or Google Chat/Hangouts; however, I did not know if this only happened when Richard was at The Lab (observation, Frankston Lab, 11 October 2016; 13 December 2016). I do know that some members met or talked outside of The Lab, and will discuss this in the next section under ‘friendship’.

The findings also suggest that The Lab was akin to a social contract where high-intensity interactions and relations were formed but individuals were committed to the programme rather than the persons within it. Derek, a long-term member of Reservoir Lab was leaving the programme in the final term of my research. Before he left, he gave a speech and thanked everyone for the time he had at The Lab. I noted in my observation that “apart from the mentors who were listening [to his speech] and were visibly emotional, the members did not seem to care or listen, saying goodbye and immediately returning to the activities they were engaged in” (observation, Reservoir Lab, 8 October 2016). While I do not know if these young people were saddened by Derek’s departure, my observation suggested that members of The Lab were not surprised by his departure. The termination of the social contract with The Lab and its members seemed to be expected—a crucial aspect of network sociality.

Another characteristic of network sociality is playfulness. I noted, for example, that “[Joe] and [Isaac] were pranking [one of the mentors] by emailing him in Japanese which was translated - several times over - from text in English via Google Translation” (observation, Footscray Lab, 23 June 2016). In an excerpt of a video recording, Jack could be seen imitating voices and singing to the younger members (video ethnography, Frankston Lab, 30 August 2016):

> *[Jack] was imitating Goofy before and when [Randell] and [Richard] cheered him on, he stood up.*
>
> *Jack: There is one voice I really like doing a lot … [incomprehensible] the Swedish Chef muppet.*
>
> *Richard: Ok do it!*
>
> *[Randell] and [Richard] now stood up and were giggling. Waving his arms like a chef I suppose, Jack started his imitation.*
>
> *Jack (imitating the Swedish Chef muppet who is generally incomprehensible): Di di do di do, bop bop bop bop!*

These examples show that beyond learning skills or building *Minecraft* worlds cooperatively in teams, young people at The Labs were playful with each other—with or without technology.

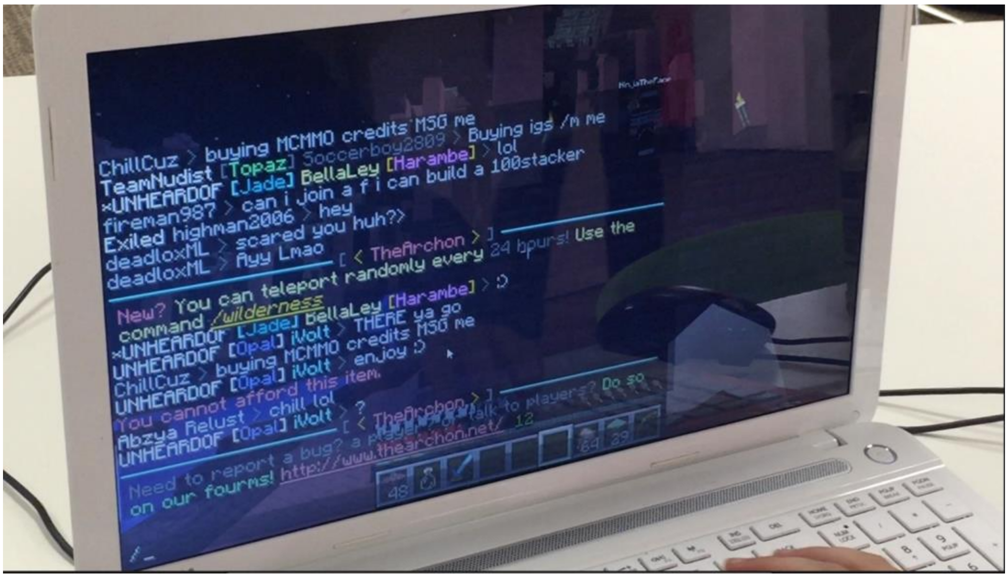
Where network sociality was most prominent was when young people at The Lab were engaged in specific activities or projects, such as the online participatory ethnographic (OPE) aspect of this research. During that time, I observed that young people were generally goal-oriented with high intensity interactions both online and offline—e.g. "[James] was running around looking for [Peter], his teammate, saying something along the lines of – 'we need to get this started'" (observation during OPE, Frankston Lab, 18 October 2016).

In an example I discussed previously, I mentioned that Jack and his team were working on their *Minecraft* worlds over a long period of time. While they worked on the world in their own time out of The Lab, my conversations with them indicated that they did not communicate much with each other except through in-game messaging when necessary (Image 14). Below is an excerpt of my notes about their project:

> *"[Richard] and [Jack] were working on their Minecraft would again. [Jack] showed [Richard] a massive list of to-do items in the world (see Image 15) which he allowed me to look and photograph. At some point, [Richard] took out a drawing block with a map of buildings he had prepared at home to show [Jack]. Apparently, it was meant to be a secret and [Richard] got*

> *quite upset at me when I tried to peek.” (Observation, Frankston Lab, 9 August 2016)*

From my notes, we begin to see a few aspects of network sociality subtly play out. Firstly, members convened at The Lab to have a group discussion about the project. Secondly, they worked separately at home without much knowledge of each others’ progress even as they continued to be connected online. Thirdly, they had a common interest in a project where I was the outsider. Finally, they used their time at The Lab to exchange information. I also noted in the session that they mostly spent their time chatting or updating each other on their individual progress in the world with much enthusiasm, comparable to the likes of what we traditionally understand as “best friends” (observation, Frankston Lab, 9 August 2016). This short anecdote showed elements of network sociality: commitment to a project, high-intensity interactions, use of technology and connectivity. I should clarify that I am not suggesting that this is an example of network sociality; it simply showed how certain face-to-face interactions embedded elements of network sociality—suggesting that our online interactions may have impacted our offline interactions and decisions.



```
ChillCuz > buying MCMMO credits MSG me
TeamNudist [Topaz] Soccerboy2809 > Buying igs /m me
×UNHEARDOF [Jade] BellaLey [Harambe] > lol
fireman987 > can i join a f i can build a 100stacker
Exiled highman2006 > hey
deadloxML > scared you huh?>
deadloxML > Ayy Lmao
[ < TheArchon > ]
New? You can teleport randomly every 24 hours! Use the
command /wilderness
×UNHEARDOF [Jade] BellaLey [Harambe] > :)
UNHEARDOF [Opal] iVolt > THERE ya go
ChillCuz > buying MCMMO credits MSG me
UNHEARDOF [Opal] iVolt > enjoy :)
You cannot afford this item.
Abzya Relust > chill lol
UNHEARDOF [Opal] iVolt > ?
[ < TheArchon > ]
Need to report a bug? a player? talk to players? Do so
on our fourms! http://www.thearchon.net/
/_
```

Image 14: Conversations young people have within the Minecraft in-game chatroom (observation, Frankston Lab, 13 December 2018).

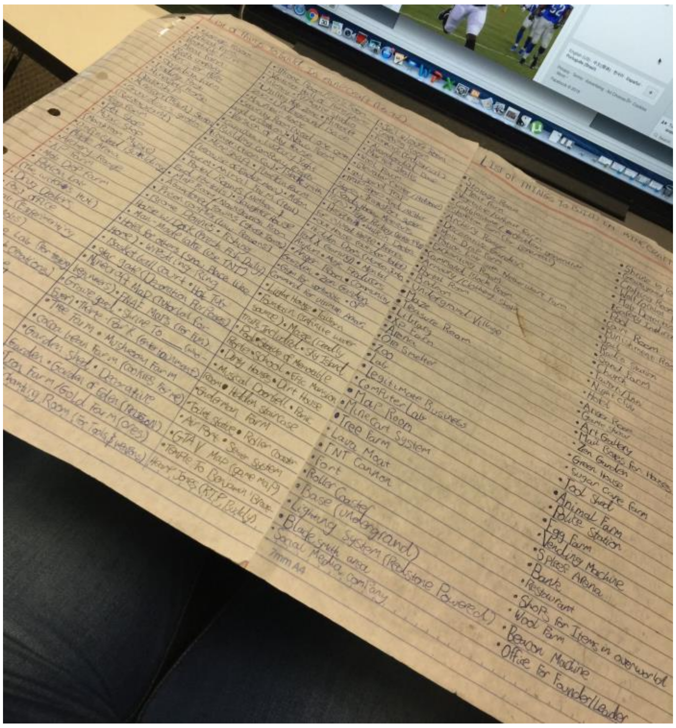


Image 15: List of items to be built in the Minecraft world, written by Jack, observation, Frankston Lab, 9 August 2016.

Image 16: An example of the infrastructure that is built in Minecraft—this was my personal castle that I had learnt to build, guided by the young people at The Lab during the course of my data collection phase.

This form of engagement was similarly seen during the OPE phase where I observed that young people within teams maintained a high-intensity relationship with each other—more so than other times. I noted that in my attempts to join their *Minecraft* servers to observe and/or help out, I was caught off guard by their in-game messages because “the messages came in droves and I did not know how to respond technically” (observation of OPE, Frankston Lab, 25 October 2016). Instead, I was often “told what to do with no choice” or “told that my ideas were ok but … in gist, [Jerome] didn’t really want me to do it as he had already decided on what he wanted to do” (observation of OPE, Frankston Lab, 11 October 2016). The antics of this dominant behaviour will be discussed later in the chapter. Beyond group projects, members seemed to return to their individual activity and were often seen silently doing their own thing with their earphones plugged in, with low commitment to each other (observation, Frankston Lab, 11 December 2016).

Therefore, in some ways, while The Lab can be seen as a technology community, it facilitated aspects of network sociality through interest-based activities that grouped members together to actively work on projects. Hence, rather than a standalone concept, network sociality from the perspective of The Lab sat within other forms of sociality, and one that will be discussed in Chapter 7 is posthuman sociality.

5.2.2 Who do we consider our friends?

The findings, drawn from themes five, six and seven and analysed against Section 3.3.2, reveal that interpretation of friendship was different from individual to individual, suggesting a need for more nuanced understandings on how online-digital spaces impact interpersonal relationships.

I was told by mentors on different occasions, to similar effect as the quote noted in my observations, that “everyone wants to be famous on YouTube” (observation, Reservoir Lab, 26 November 2016). While I will discuss this form of attention-seeking behaviour more in the next part of this chapter, it is an interesting perspective on how young people with autism view friendship.

During one session at the Footscray Lab, I casually asked one of the members about his week. This is what I wrote in my observation notes:

> *"[Damien] asked me about my week and after talking about myself, I asked him about his. He replied saying he spent most of his time playing games and chatting to people online. When I asked if he hung out with his friends over the weekend, he said he had no friends offline - he was clearly unsettled by my question and I did not pursue further." (Observation, Footscray Lab, 14 July 2016)*

What was interesting from this conversation was that it showed the distinction between offline friends and online people. To "hang out" with someone immediately implied a physical friendship. On the other hand, chatting to people online did not equate to friendship. It seems to imply a significant difference in the importance of offline friends over online people.

This degree of uncertainty, however, was different from other young people at The Labs. Tom, a member of the Footscray Lab whom I refer in my notes to be a "friend" of Damien as they were often spotted together, seemed more open to the idea of making friends online. He told me stories of the Facebook groups he joined, which he encouraged Damien to be part of as well. However, I noticed that he talked about these friends as groups of people with similar interests in games or technologies rather than as "distinctively personal relationship[s]", even when I prompted him to talk about how he knew them and if he knew them individually (Helms, 2017, para. 1; observation, Footscray Lab, 14 July 2016). Most people in these groups, as it turned out, were not people he knew in person. This resonates with Chan and Cheng's (2004) research on Facebook friendships, where they suggested that individuals involved in online communities have a stronger emotional connection to the group itself rather than to its individuals.

In another example, Richard, who was a YouTube star wannabe—e.g. during our filming session, he had asked me to take videos that he could post on YouTube, starting with the opening lines as transcribed: "Hey, what's going on guys! And welcome back to [incomprehensible]" (video ethnography, Frankston Lab, 20 September 2016)—was insistent on talking to his online friends over Skype during a Lab session. He cried and screamed at his mother when she discussed the problem she had with this activity with a mentor (observation, Frankston Lab, 11 October 2016). She did not approve of his online communications as neither she nor Richard knew the people he was talking to online—e.g. “[Richard’s] mother told [one of the mentors] that she was uncomfortable with him talking to strangers online and wanted to know if she could at least monitor it” (observation, Frankston Lab, 11 October 2016). From another conversation I had with Richard, one of his online “friends” was an older *Minecraft* player who owned a popular private server—e.g. “He often asked me and other members to join a specific server which he claims ‘My friend owns and can let you in’. When I asked him more about this friend, he just said it’s someone he met on *Minecraft*” (observation, Frankston Lab, 29 November 2016). For Richard, even though he may not have met these online friends, he seemed emotionally involved in these relationships, possibly because of the perceived benefits he received from them (e.g. being added to an exclusive server).

In addition, it is worth mentioning that during this episode, Richard constantly pleaded with his mother to give him “privacy” at The Lab and told her he “didn’t have enough time to be alone with his online friends” (observation, Frankston Lab, 11 October 2016). Going back to one of my discussions in the previous section, technology has changed the perception of privacy and personal space to a point where it is difficult to distinguish between what privacy entails within physical and online spaces as they are intertwined and part of each other. Similarly, it has changed, redefined and broadened notions of friendship as it is becoming more difficult to separate, identify or categorise different relationships based on whether they are off- or online. Based on the findings, I was unable to conclusively discuss if the participants’ relationships online had elements of friendship (see Section 3.3.2). This is because I do not know the context of the relationship (e.g. how long they had known each other or how they came to know each other). However, the findings showed that there seems to be more ambiguity as to what constitutes a friendship online.

Going back to YouTube stardom, the likes and comments by people on personal blogs, websites, posts and YouTube seemed to provide young people with autism instant gratification. Consider this brief note that I made regarding a member's reaction to his blog: "[John] looked very pleased that there were new comments on his blog. He seemed to have regular commenters – but I'm not sure if he knew them offline" (observation, 16 April 2016). While John did not expressly describe these commenters as friends, it provides an insight into how these young people may view online relationships in that they bring recognition, social interaction, companionship, etc. This can also be seen in Richard's video recording transcription above, where he assumed an audience on the other end when he referred to them directly—i.e. "Hey, what's going on guys". It suggests that active "produsers" (see Chapter 3 on participatory culture) believe that the content they have created is not simply trapped in a void but transmitted to someone as a form of communication.

This assumption may be explained by the Uses and Gratifications approach, which seeks to understand how "media are used to satisfy cognitive and affective needs involving personal and entertainment needs" (Urista, Dong & Day, 2009, p. 219). Academics argue that the use of social media and participatory media fulfils needs such as social interaction, identity management, information sharing, entertainment, relaxation, selective on-demand access to content, networking, and much more (Urista, Dong & Day, 2009; Whiting & Williams, 2013). I have listed a few attributes to illustrate the possible differences between online and offline spaces in that the online space, contained behind screens for end-users, is an inseparable combination of information and human interaction. Offline spaces, on the other hand, can provide for each these needs, but often at a delayed pace or requiring multiple actions (Urista, Dong & Day, 2009). Online participatory media is easily accessible if you have the means or infrastructure, and can be asynchronous, instantaneous and constantly gratifying (Urista, Dong & Day, 2009; Whiting & Williams, 2013). In other words, online-digital spaces have changed our expectations in the way we interact with others in that a different form of fast-paced social interaction has emerged, not to replace offline interaction, but to run alongside it, which necessarily changes the nature of human interaction. Therefore, it is not surprising that young people at The Lab may consider some of these strangers online as "friends".

So what qualifies someone or a group of people as friends? My findings were inconclusive and a clear definition of what “friends” or “friendships” mean to these young people could not be established through this research. On an observable level, “friends” seemed to mean people who members enjoy interacting with over a period of time, offline or online. However, mutual concern for each other, as indicated by Helm (2017), was not observable in my research. While it is clear that members distinguish between offline and online friends by mentioning the determinant (i.e. offline/online), the differences to members may not be as pronounced as expected, ranging from knowing a person by his or her real name to identifying someone by his or her profile picture, screen name or affiliation to a specific social group. Both online and offline friendships showed some form of emotional involvement with another person or the group associated with, albeit differently in online and offline spaces. However, this research was not able to explore the extent of emotional involvement or trust developed within these friendships.

While more research is needed in this area to understand how friendships can be developed online, it should be acknowledged that technology and the online-digital space have provided another form of interaction and socialisation, especially for those on the spectrum who seemed to be more engaged in non-verbal communication. The online-digital space has changed how we perceive and develop friendships—one of the most intimate interpersonal relationships young people can develop at The Lab. This is also applicable to people, neurotypical or otherwise. Therefore, reconsideration of the concept of socialisation is needed in this technological age.

5.2.3 “I’m googling this”: Role of mentors, self-motivated learning and participatory culture

In this section, I discuss how the online-digital space changed the role of mentors within a learning context in which mentors were less required to disseminate knowledge and more involved in providing guidance or exploring solutions with participants through the online-digital space. The findings from this section were drawn from themes nine and ten and analysed against Sections 3.2.5, 3.3.1 and 3.3.3.

The online-digital space, with its development of Web 2.0 to 4.0, has enabled individuals to become consumers and producers of information (Jenkins, 2006). Advancement in machine learning has also arguably enabled us to search for information more efficiently and effectively (Nath & Iswary, 2015). Young people at The Lab are able to find extensive information about a wide range of topics over search engines, apply this newly acquired knowledge to their projects and circulate them upon completion via YouTube or other sharing sites. Learning is not restricted by the curriculum as in schools or the skills of mentors; the online-digital space has given these young people with autism, and many others, the agency and autonomy to learn skills based on their interests, searching for self-help information at their own pace. The mentors at The Labs are not teachers to members, but instead provide individual guidance as needed, allowing members to explore as much or as little as they want at their own pace.

The semi-structured programme of the Reservoir Lab allowed mentors to provide direction to members who were either unaware of certain software and techniques or unmotivated to learn without direction. In one session, the mentors brought in a 3D printer as part of the week’s learning topic. Throughout the session, members seemed extremely keen, pacing around the printer and discussing with mentors and each other about how 3D printing worked and conducting online searches for 3D models they could print (observation, Reservoir Lab, 17 September 2016). In this example, mentors took an active role to pique the group’s interests in 3D modelling and the online-digital space became supplementary to completing this activity.

In other instances, mentors provided encouragement and ideas for how young people could develop their interests on an individual basis. Edward, who was one of the quieter members, often played games such as *Minecraft* on his own. While he did not speak much, he would interact with others by joining in on watching group videos or gameplay. I noted in one session that “[his] *Minecraft* was down and the mentors couldn’t seem to fix it. Instead, [one of the mentors] showed him Mine-imator - specifically on making TNT exploding videos in *Minecraft*. And he made a video by the end of the session!” (observation, Reservoir Lab, 20 August 2016). In this example, the mentor, through knowing Edward’s interests, introduced him to video making/editing. In another session at the Reservoir Lab, I noted:

> *“Today was extraordinary: one of the members wrote an incredibly complex and wonderful tune/harmony only after a few weeks of looking at basic software and music theory with [one of the mentors]. It really makes me rethink about our assumptions of autism! Just wow!” (Observation, Reservoir Lab, 28 May 2016)*

For this particular example, my notes indicated how it developed over the few weeks before the showcase of his composition. Cameron and his father had flagged with the mentors and organiser Cameron’s interest in music composition and enquired about the skills and software needed (observation, Reservoir Lab, 16 April 2016). One of the mentors who had some level of musical knowledge recommended a free software platform and showed Cameron some basic music theory (observation, Reservoir Lab, 14 May 2016). From there, Cameron researched and explored on his own, creating a composition which I also noted as “very unusual in terms of rhythm and certainly not written by someone with formal music training but strangely melodious” (observation, Reservoir Lab, 28 May 2016). In both examples, the mentors acted as conduits to learning, providing different levels of support or motivation according to the needs of members at The Lab.

This form of individual mentoring was similarly noted at the Footscray and Frankston Labs. At the Frankston Lab, for example, Jerome became interested in 3D printing after one of the mentors brought in his 3D printer to demonstrate how the machine worked (observation, Frankston Lab, 7 June 2016). Subsequently, Jerome bought a DIY 3D printer under the advice of the mentor, built his own machine and learnt to do basic 3D modelling and printing through a combination of getting help from the mentors and searching for information online (observation, Frankston Lab, 2 August 2016). After dropping out of the OEP segment of my research where he and I were trying to re-create The Lab's logo in 3D using *Minecraft*, he decided that he would instead create an actual 3D model of the logo. The results can be seen in Image 17 below.

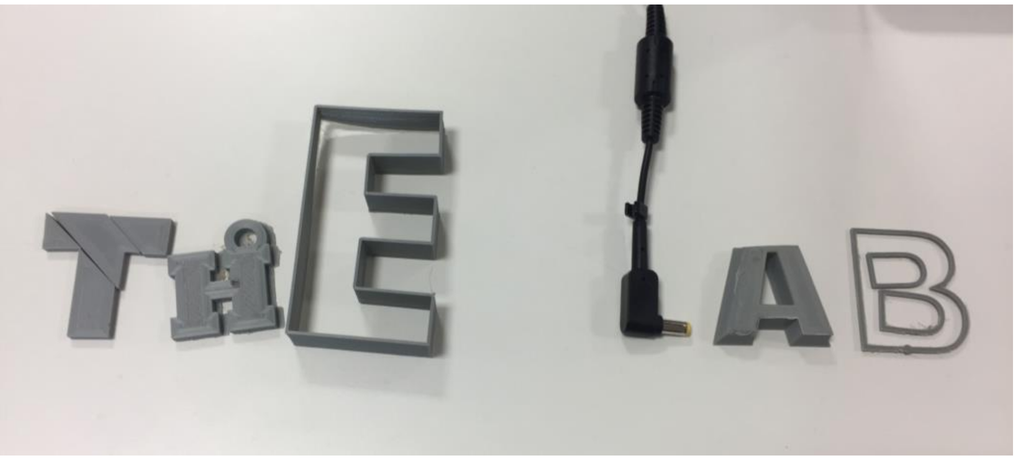


Image 17: Jerome had 3D modelled and printed the letters corresponding to "The Lab". The letter "L" was missing as it did not print out the way Jerome had envisioned it to be. The letter "T" is a little puzzle, which was surprisingly difficult; Jerome made us solve the puzzle before he revealed the rest of his creation (observation, Frankston Lab, 20 December 2016).

At the Footscray Lab, members were generally older and had been working on projects over months and sometimes years. I noted that the mentors rarely intervened unless members had specific questions they could not answer, in which case, the mentors, who may or may not have the skills in the area, would sit and explore/research with the participant on how to approach the problem (observation, Footscray Lab, 14 July 2016). In most instances, members seemed to be able to problem-solve themselves by searching for information online. I noted that one member of the Footscray Lab had been working on his animation project using paint and YouTube for some years. He had developed his own process of making these animations, from planning, drawing each frame and narrating to producing and publishing (observation, Footscray Lab, 28 July 2016). In the time that I was at The Lab, I observed that he was a very "independent" learner and did not seek help from the mentors; rather, he was conducting his own research about how he could upgrade his tools (e.g. Paint to Photoshop) and techniques to improve his animation production (observation, Footscray Lab, 28 July 2016). In this example, the online-digital space became the personal tutor and library to the member, allowing him to learn without being limited by an individual's (e.g. mentor's) skill set or knowledge.

This was also the case for other members across The Labs, such as John from the Reservoir Lab, who wanted to prank people and independently "created a *Minecraft* animation which shows the firing of a TNT gun when played – the unexpected bit is that after the video plays, it brings you to youareanidiot.org and shuts your game down. The mentors and I had no idea and were all pranked" (observation, Reservoir Lab, 30 July 2016). John's independent research also taught him how to "hack a computer" and challenged one of the mentors to overwrite it (observation, Reservoir Lab, 8 October 2016). Hence, the curiosity of the members encouraged them to learn and search for information themselves, with or without the guidance of the mentors. The online-digital space thus enabled an active form of mediated learning, allowing information and interactions online (e.g. forum discussions) to substitute for "orality" or the need for physical teaching, extending Castells' (2010) theories of online mediated communications to learning. Young people were able to access information easily on multiple devices and participate, not just in the creation and sharing of artefacts online, but in their own learning process. Therefore, based on the findings of this research, the online-digital space not only changed information access and sharing practices, but also altered the way individuals learn and interact where they had more autonomy and agency over what they learnt and how this learning could be nurtured. The role of the mentors was crucial not in teaching but in facilitating and supporting an environment that allowd for this form of learning to develop in a cohesive manner (e.g. information may be scattered and require synthesis).

5.2.4 Other influences of the online-digital space on learning: Simulating online communication offline

The findings from this section, as explored through themes 11 and 14 and analysed against Sections 3.3.4 and 3.4, suggest that young people with autism were observed to emulate behaviours and speech from what they learnt online.

Learning by simulation or simulated-learning is not a new concept. It has been used in education, particularly in higher education, to “replace and amplify real experiences with guided ones, often ‘immersive’ in nature, that evoke or replicate substantial aspects of the real world in a fully interactive fashion” (Lateef, 2010, p. 248). Lateef (2010) argues that it is a “technique” that does not necessarily involve “technology”, although he acknowledges the role of technology in enhancing it. This is similarly implied by Wulandari and Narmaditya (2016) where simulation, a form of role-playing that can occur within physical or online settings, is used as a method of teaching. It assumes that learning through simulation is directive rather than organic. Similar to the medical model of personhood, technology in education is seen as a specific tool built for an explicit purpose: teaching. However, my research at The Lab has revealed that young people with autism learn social and communication skills through simulating gameplay. This is often constituted under the behavioural effects and impacts of gameplay; a common rhetoric, for example, is that playing violent games leads to aggressive and addictive behaviours (Anderson, Gentile & Buckley, 2007). While these behavioural changes may be seen as consequences of playing games, they are nonetheless a form of learning, despite not being credited with the common, positive connotations of learning.

During one of the sessions, I sat with Elliot, who was playing Emily is Away, a narrative-based chat game where users either pick pre-programmed lines or type in personal responses to engage in a conversation with the computer-generated character, Emily.

emerly35: whats up?
neo: the ceiling! what are you up to?
emerly35: lol, nothing really, just listening to music =]
emerly35: do you like coldplay?

1. i dont know
2. yeah, totally
3. theyre shit

Image 18: An ongoing game of "Emily is Away".

This child developed a romantic relationship with Emily within the game by choosing lines that he did not seem to fully understand. At some point, he turned around and asked me if this was what boys said to girls, as my observation notes record: "I was very amused when [Elliot] talked to me about Emily is Away – which I was somewhat worried was a real messenger at first (as it was getting slightly too romantic for me) only to be explained it was a chatbot. He asked me if this is how boys pursue girls - I didn't know what to say" (observation, Reservoir Lab, 12 August 2016). In this particular example, there was a real sense that Elliot was not able to discern simulated conversations with online conversations possibly because the bot—short for 'robot'—is programmed by its programmer to respond as 'humanly' as possibly. This reminds me of the book *To Siri, With Love*, written by an autistic child's mother, who describes how the iPhone's intelligent assistant becomes a 'friend' of her son (Newman, 2017). It highlights how the online-digital space and machine learning has the capacity to shape the way young people with autism view and learn interaction, communication and socialisation. After all, an audience, virtually created or otherwise, can only be perceived through a screen; even video calls that supposedly show the person on the other end can be easily faked with applications such as FakeTime.

In other instances, young people at The Lab sometimes speak in a similar fashion to the way they communicate online. Abbreviations and shorthand commonly used in text messages or online chats, such as “LOL” and “YOLO”, were observed to be used in young people’s conversations with each other, especially amongst older members. In an excerpt of a video transcription[13], Frankston Lab 7 June 2018:

> *Some older members gathered around to read/proof-read a short story written by [Jeremy]. One member was reading the story about John and Nora meeting at a party out loud while the rest were laughing*
>
> *Participant 1: What kind of party is this? OMG it sounds M18.*
>
> *Participant 2: She’s into electricity – Nora’s into tasering*
>
> *The members laughed and were briefly drowned out by the voice of a young member who was shouting at his screen.*
>
> *Participant 3: Hashtag inappropriate!*
>
> *Participant 1: Bow chica wow wow!*

The use of the word “hashtag”, for example, came from social media as a metadata tag to help people find information easily; popular hashtags that brought social issues to the forefront of political debate in 2017–2018 included #MeToo (sexual abuse and harassment), #WhyIDidntReport (sexual abuse and harassment) and #TakeAKnee (police brutality against African American men in the United States). The use of the term in speech and the high-profile status some hashtags have gained show how influential the online-digital space can be in the way we interact with others and understand the issues around us. This form of transferring online communication styles to an offline medium is not unique to young people with autism and has sometimes been called Internet or online ‘slang’ (Kleinman, 2010). It suggests once again that the concepts of

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[13] Please note that this video had quite a few other ongoing conversations and I have only isolated specific sections.

socialisation and social interactions need to be reconsidered to include new practices and conventions within online-digital spaces.

These examples illustrate the impressions online conversations and communication may have on young people on the spectrum who may transfer these skills offline. Some young children with autism have been reported to have negative or very few face-to-face interactions with their peers outside of The Lab (Donahoo & Steele, 2013). Thus, positive communicative experiences online may impact the way they speak or behave, inserting shorthand into their speech or prompting them to engage in conversational styles similar to that of their online communication to simulate these positive experiences.

As demonstrated in this section, technology and the online-digital space have a profound impact on young people with autism, enabling them to learn, make friends and communicate in their own unique ways. Unlike physical spaces where objects are material and must necessarily occupy a space, whether pre-arranged or not, aspects of online-digital spaces are less defined. Certainly, we can say that each file takes up a portion of space on our computers or over cloud systems (e.g. this thesis is more than ten megabytes in size). However, with expanding hard disks and Internet space, the proportion becomes less significant than the existence of the digital trace itself. When we have seemingly deleted conversations on our Facebook or videos we have posted online, this data often continues to leave a digital trace that can still be found and is possibly stored and archived in another place in the online space (e.g. you may have deleted a picture but it may have been posted elsewhere without your knowledge). The lack of material clarity provides both opportunity and vulnerability to technology and the online-digital space. I will discuss this in detail in the next two chapters to contemplate how it affects members of The Lab and, more broadly, individuals on the autism spectrum. In addition, as technology does not simply exist in one’s life in that it requires sufficient skills, accessibility and affordability to own and use technology, how do these impact the way young people with autism learn to communicate and socialise? While this question cannot be answered within the scope of this project, it is important to take it into consideration as technology can further diversify what it means to socialise and beyond—not just through its affordances, such as the ability to connect people across different time zones and spaces, but also according to its potential to isolate or distant certain pockets of people.

5.3 Knowing You Knowing Me: The Autistic Identity

In this section, I explore how young people with autism psychosocially positioned themselves within The Lab. I also identify how they view The Lab and what it means to them. All findings from this section was analysed against Sections 2.6 and 3.4, and drawn from all themes, since the psychosocial is inadvertently part of every interaction.

5.3.1 “Is anybody even listening to me?”: A different need for attention and affirmation

One of the more striking findings from this research shows that young people with autism want attention and affirmation, though they may not necessarily reciprocate when given attention. Research in this area has varied, with some academics pointing out that people with autism have poorer social initiative skills (Bauminger, Shulman & Agam, 2003; Peper, Wal & Begeer, 2016), while others have reported that individuals on the spectrum, depending on their intelligence (i.e. higher intelligence leads to increased social interactions), can be “active in initiating of and responding to social interactions” (Scheeren, Koot & Begeer, 2012, p. 2047). Certainly, in all studies, they acknowledge that the social-communicative “deficit” related to autism is manifested in different ways by different individuals, from aloofness to overbearing attention-seeking behaviours (Sheeren et al., 2012). Beyond these medically defined factors, the findings from my research show that the environment has an impact on the way young people with autism initiate or participate in social interactions and that all members want some degree of attention and affirmation.

At the Frankston Lab, I argue that due to its unstructured nature, members are more expressive in the way they seek attention. My video recordings revealed that Frankston Lab sessions had significantly more conversations and shouting than sessions in the other two Labs. In one video, Randell could be seen talking very loudly over a group conversation to his right, claiming that he had programmed the game he was playing; he could be seen smiling cheekily when David and James eventually replied to him, saying that he, in fact, did not programme the game (video ethnography, Frankston Lab, 7 June 2016). This suggests that Randell lied to seek attention from other members in the room and because none of the mentors actively tried to stop him or others from talking over conversations (or tried and failed), shouting was observed in many sessions at the Frankston Lab—e.g. “The kids were shouting at each other – [Adrian, Adam, Randell and Richard] in particular – but making no eye contact because they were always looking at the screens” (observation, Frankston Lab, 9 August 2016).

In another case, a group of young people at the Frankston Lab were caught up in the craze of memes and were incessantly laughing and unable to stop sharing them with the mentors, even after the mentors expressed indifference and annoyance (observation, Frankston Lab, 18 October 2016). This showed that they wanted some form of acknowledgement from the mentors, even if it was simply annoyance. Once, I was sitting between Richard and Adam and they constantly badgered me to watch and play *Minecraft* on an online server with them—e.g. “I had only looked away for a short period of time when Richard said ‘lady, are you even watching me play?’” (observation, Frankston Lab, 2 May 2016). This was similarly the case when I sat with other members, such as James (observation, Frankston Lab, 30 October 2016) and Jack (observation, Frankston Lab, 19 July 2016), on separate occasions and they enthusiastically described a detailed walkthrough of their gameplay (e.g. Batman: Arkham City) and *Minecraft* world even though I tried to walk away. These examples indicate to me that these young people were actively seeking attention and wanted to be heard. However, this may not be reciprocated.

In another session at the Frankston Lab, I noted that two members were talking to each other but without the flow of ideas that you would normally anticipate—e.g. “[Richard] and [Randell] were talking to each other but I’m certain one of them was talking about mining diamond ores in *Minecraft* and the other about a Pokemon mod – they were taking turns to talk about not really addressing each other’s conversation topic” (observation, Frankston Lab, 21 June 2016). It shows the need for members to share the responsibility of listening and responding—one which coincides with Sheeren et al.’s (2012) description of active-but-odd individuals on the spectrum. However, unlike Sheeren et al. (2012), I believe that beyond biological factors (i.e. high-functioning autism), the environment of the Frankston Lab had a role in this form of attention-seeking behaviour.

At the Footscray and Reservoir Labs, young people seemed less rowdy, although still showing signs of needing attention and affirmation. Joe, for example, often asked me to solve one of his puzzles or watch him play games, such as Just Cause 3 (observation, Footscray Lab, 23 June & 25 August 2016). However, as the mentors intervened when they felt that he was being inappropriate, I noted that Joe made an effort to ask me if I was OK and wanted me to watch or join him in gameplay (or learn the solution to the puzzle), giving me choices (observation, Footscray Lab, 25 August 2016). Similarly, most members at the Footscray Lab I interacted with seemed to have understanding of boundaries and often paused to ask for my opinions—e.g. “Damien was concerned that I was upset when he mentioned ‘No Man Sky’ – I did not like the game - and actively tried to ask me if I was alright” (observation, Footscray Lab, 15 September 2016). This suggests to me that the Footscray Lab, with slightly more interventions by mentors over what they could say/do or not (e.g. no swearing at the Footscray Lab), developed a more group-centred rather than an individual-centred culture whereby members were expected to both share and listen even if they were free to move around and engage in a multitude of interest-based activities (including playing card games or Mad Libs—a storytelling game where members contribute by providing words to fill in the blanks—as a group).

At the Reservoir Lab, the semi-structured physical space seemed to also impact the attention-seeking behaviour of the young people as it facilitated more disciplined interactions, as previously mentioned. Members still asked if I was interested in seeing what they were doing but were generally more polite and less insistent—e.g. “[John] said hi to me and politely asked if I wanted to watch him make *Minecraft* mods which I [only] did later in the session – he was really chirpy!” (observation, Reservoir Lab, 30 July 2016). Similar to the Frankston Lab, I noted that young people at this Lab “love[d] talking to themselves, walking around to see what others were doing and talking to people beside them” (observation, Reservoir Lab, 30 July 2016). However, they only occasionally talked loudly over conversations or across the room, usually in response to the broader group discussion. Most members also initiated conversations with me if I was standing close by—e.g. “[Cameron] was very candid and showed me his measuring meter of everyone when I stood behind him – he even guessed my height and added it to his spreadsheet” (observation, Reservoir Lab, 16 April 2016).

This series of examples suggest to me that the environment young people are socialising within has a significant impact on the way they initiate conversations or respond to social interactions (mainly verbal communication, in this case). The findings suggest that they want and actively seek out attention and affirmation, exhibiting this desire in different ways depending on the physical space, style of mentors and level of discipline within the environment. The Lab as a social space and technology club is an avenue for these young people to showcase their knowledge or share experiences and information with others without the strict boundaries of other learning spaces (e.g. classrooms), even if the receiving party may not necessarily be a willing listener.

5.3.2 Why allow “autistic” behaviour? Escapism and relief

Autism researchers such as Bogdashina (2016) and O’Neill and Jones (1997) have reported on the sensory-perceptual differences that individuals with autism experience. These perceptual differences include sensory overload or stimulation where certain visual, auditory or tactile cues may trigger “strange” and sometimes “bizarre” behaviours (Bogdashina, 2016, p. 23). Of course, this is in comparison to behaviours normally displayed by their neurotypical counterparts. In one session, I noted:

> *“[Richard] is running around the room, screaming and cupping his ears. He seems to be frustrated and triggered by something. According to his mother, the sound of rain stimulates her son because it reminds him of being trapped indoors – and nowhere to let steam off.” (Observation, Frankston Lab, 2 May 2016)*

In other examples, I recorded that the constant chattering and movement within the room seemed to stimulate other participants, such as Randell and Xavier, prompting them to sing or play music loudly (observation, Frankston Lab, 2 August 2016; Reservoir Lab, 30 July 2016). While these behaviours are considered undesirable within public spaces or other institutions (e.g. schools), they may provide avenues for young people with autism to transform sensory overload into relief. However, these behaviours can be seen as disruptive to the running of any programme, including The Lab—e.g. “[One of the mentors] had to keep telling the members to keep their music down or plugin (their headphones) so as not to disturb others” (observation, Reservoir Lab, 30 July 2016). One strategy used by The Lab and its mentors was to negotiate and divert relief using technology.

Richard, as mentioned above, was often calmed when given a task to do in *Minecraft*. According to the mentors and Richard who set up the group server to build the extensive *Minecraft* world, transforming hand-drawn cities into a digital universe helped Richard to “yell through his keyboard”, either by writing to the group, destroying blocks, building his own sanctuary or obsessively mining materials within the *Minecraft* world for this team (observation, Frankston Lab, 21 June 2016). *Minecraft* (and the inclusion within a team) enabled him to focus on tasks, and possibly find sensory relief, within a confined, less disruptive space. While Richard still occasionally ran around the room screaming, especially when it rained, his attention was easily diverted to the online technological space.

In other instances, young people with autism may have experienced sensory overload when having face-to-face conversations. Eye contact, a form of non-verbal communication, may cause undue stress or anxiety for these individuals due to sensory perceptual differences (Davidson & Parr, 2010). I observed at The Lab that young people tended to have ongoing conversations for the whole session without making eye contact, interacting without the nuances of non-verbal communication, such as body language, eye contact and emotional cues. When Randell was playing Goat Simulator on high volume, for example, other members told him to be quiet; instead of replying or looking up, Randell plugged in his headphones and continued playing his game without any acknowledgement of the incident (observation, Frankston Lab, 26 April 2016). A similar interaction was recorded in one video ethnography session (Frankston Lab, 30 August 2016):

> *Members were sitting around the centre table and playing games or fixing old laptops brought in by a volunteer. Everyone seemed to focus on their screens or the task at hand*
>
> *Participant 1:* *It is telling me I need to re-install.*
> *Mentor:* *It seems to be fine.*
> *Participant 2 (from across the room):* *Don’t think we can install anything, the Internet’s down.*
> *Mentor:* *Nah, I don’t think it is going to work. Super lag.*
> *Participant 3:* *It should work.*
> *Mentor:* *Wait a second.*
> *Participant 3:* *You are not in yet. It’s because of [the other mentor]. Blame [the other mentor]. He is downloading a driver.*
>
> *This entire conversation happened without the members or mentors looking up from their screens.*

While in this example (or other examples discussed previously), young people were not necessarily uncomfortable with eye contact, their screens allowed them the option to look away without the awkwardness that ensued in face-to-face communication and enabled them to avoid non-verbal communication when needed. In some ways, these devices became coping mechanisms, allowing young people to relieve themselves from the sensory overload of physical communication by talking through their screens.

In some cases, the screen may have provided an avenue to avoid emotional stress. In one session at the Reservoir Lab, we were informed that Derek’s mother, who was friendly to everyone, would be away for the week but Derek seemed unaffected at first, running into The Lab enthusiastically. However, when John tried to ask Derek to pass a laptop that was close by, I noted that Derek did not respond at all, even after a mentor intervened; the mentor advised John to give Derek some time and space (observation, Reservoir Lab, 20 August 2016).

For some young people, the repetition of certain behaviours seemed to provide comfort to them. Paul from the Reservoir Lab constantly fidgeted with his hands, rubbing them for a few seconds in the same manner every few minutes to seemingly help him think or focus on the activity he was engaged in (observation, Reservoir Lab, 25 June 2016). Others, such as Damien, have been noted as “listening to electronica music very silently on his headphones while conversing with me or anyone in the room” (observation, Footscray Lab, 2 June 2016).

The Lab recognises the sensory perceptual differences young people with autism may experience. Instead of trying to change this difference, The Lab uses technology to divert sensory stimulation into sensory relief by allowing members to vent or find their own solutions within a social environment. It acknowledges autism as being part of an individual, permitting members to be different while giving them the opportunity to translate their behaviour into something valuable for themselves and the team within a social environment. Hence, to these young people, The Lab is seen as a non-judgemental space that allows them to comfortably reveal some of these behaviours that are not socially accepted otherwise in learning or social environments.

5.3.3 Other psychosocial considerations

In this subsection, I will discuss how young people within The Lab position themselves and are in turn influenced by others within the social environment. As you will notice, these young people's psychosocial space is constantly being constructed, deconstructed, reconstructed and affirmed based on their activities and interactions within The Lab. The range of psychosocial considerations presented here, all briefly described, seek to show a variety of unique and vibrant individual and social interactions displayed by young people with autism.

5.3.3a Routine with a twist

Individuals on the autism spectrum have been speculated to prefer routine over flexibility (APA, 2013). However, a combination of routine and flexibility seemed to be preferred at The Labs.

It was observed that while young people at The Labs were given a choice to move around and work on projects or play games that interested them from week to week, they often sat at the same spot every session and played the same games or worked on the same project over long periods of time, especially within more structured spaces, such as the Reservoir Lab. From the time I started to the end of my research, I noted that young people at the Reservoir Lab usually sat in the same seats, which were pre-arranged through the distribution of laptops by the mentors (as mentioned earlier). However, they enjoyed the flexibility of moving around and returning to their seats afterwards as it allowed them to engage in what others were doing—e.g. “Everyone got excited when someone unlocked everything in Five Nights at Freddy's. They all ran over to watch!” (observation, Reservoir Lab, 28 May 2016) or simply take a stroll for some fresh air—e.g. “[John] announced that he had to leave the room for some fresh air after trying to get people's opinion on a colour for the end year Lab souvenir” (observation, Reservoir Lab, 17 September 2016).

At the Frankston Lab, which had by far the most unstructured programme and space, I noted that some members seemed to engage in the same activity over long periods of time. One example was Randell, who played Goat Simulator over two school terms consecutively, despite complaints from other members over the noise of the game as well as encouragement (including incentives) by mentors to experiment with other games (observation, Frankston Lab, 9 August 2016). Another example was a long-standing member of the Footscray Lab who had been working on an animation project for years. When asked about the completion date, he indicated that he intended to finish the specific animation in question by the end of the 2016 but had hoped to work on other episodes after that (observation, Footscray Lab, 23 June 2016). This was a common occurrence among members across all the Labs I observed. While young people of the various Labs enjoyed the flexibility of the programme and space as it seemed to provide the perception of choice and hence reduced the pressure to follow timelines or structures, they also fell into a routine that they had constructed for themselves. In this case, the constructionist approach to The Lab programme had enabled young people with autism to explore their own comfort levels and construct spaces and routines that sat between their needs, the needs of their peers and the confines of The Lab.

5.3.3b Diversity in conversation

Individuals on the spectrum have been known to be hyperfocused on specific—sometimes unusual—activities and pursuits, with no breadth in interests (Scheeren et al., 2012). However, during my research, particularly among older members, young people engaged in a diverse range of conversations, which suggests that while they may be hyperfocused on some activities, they may also be able to showcase/broaden their interests within social environments that accommodated their differences.

For instance, the data collection phase coincided with the lead-up to the American election. The candidates of the various political parties of the American election, particularly Donald Trump, became a topic of interest at the Frankston and Footscray Labs, often leading to heated discussions as to who would win the election (video ethnography, Frankston Lab, 30 June 2016; observation, Footscray Lab, 26 May 2016). Other conversation topics included:

1) pop culture references such as *Game of Thrones*, *Batman versus Superman* and *Doctor Strange*,
2) work/jobs—e.g. "[Tom], [Damien] and I were talking about part-time jobs today – [Tom] works at McDonalds in Highpoint" (observation, Footscray Lab, 14 July 2016),
3) cars (e.g. "[Peter], the mentors and I were discussing which cars were fastest on the road legally – I honestly thought my 4-cyl Honda Accord Euro was great!"—observation, Frankston Lab, 13 December 2016),
4) school,
5) friends,
6) games, and
7) autism—e.g. "[Jerome] was asking the mentors if [Richard] was really autistic – extrapolating his own experience of autism" (observation, Frankston Lab, 18 October 2016).

In addition, because most members of The Lab (including mentors) were males, they also conversed about courtship and girls more generally, as noted previously. These conversation topics—only a fraction of which I was able to witness or join in—indicated that young people at The Lab developed different interests through peer influence and engagement with others—which will be further discussed in the next section. These conversations were often conducted between older members of The Lab. It should be noted that, in my analysis, I found both the Footscray and Frankston Labs to have more diversity in conversations while the Reservoir Lab, with members who were generally younger and part of a more structured learning programme and space, housed conversations that were less personal and orientated towards the activities within The Lab. One possible interpretation is that, beyond age, the differences in conversations, particularly in relating to personal experiences and opinions, were impacted by the flexibility of the physical space and programme.

5.3.3c Team-based games: Encouraging (unlikely) interactions

At the Frankston and Footscray Labs, mentors or members often brought in their game consoles to play on the television provided by the organisers or venue. These consoles included Nintendo 64, Wii-U, Playstation 2 and 3, and Xbox 360. Games played on these consoles ranged from Super Smash Bros (series of crossover characters fighting game), Need for Speed (racing game) and Zelda (action-adventure game). While some games were single player, most games were multiplayer and encouraged young people at The Lab to get together to either watch other players or be involved in the game. Consider this note:

> *"5 to 8 members were gathered around the TV at the front of the room playing Super Smash Bros – which I gathered was one of those 2D fighting games. It was on 4-player mode and they were taking turns to play although there were some hog-gers. It looked like a mini fight club scene where members were cheering for each other when someone dealt a blow to their opponents – some even tried to mimic sports commentators." (Observation, Frankston Lab, 12 April 2016)*

The note suggested that voluntary team-based activities that were of interest to these young people (i.e. games and technology) encouraged interactions, even amongst members who rarely reached out to each other. These team-based activities were not confined to video games. The Frankston Lab also ran regular table-top (board or card) game sessions, playing games like *Sheriff of Nottingham* and *Exploding Kittens* (observation, Frankston Lab, 2 August 2016; 9 August 2016; 30 August 2016). The Footscray Lab, on the other hand, ran a *Dungeons and Dragons* (D&D) role-playing game most weeks, where members made their own characters (guided by an official gameplay sheet) and tried to navigate through a storyline developed by one of the mentors. I joined in the game as a cat with high agility and stealth (observation, Footscray Lab, 10 August 2016), which signified that the game mode, as modified and designed by the mentor, was inclusive and flexible, and allowed for people to join and leave at different times, encouraging interactions that were at the members' discretion. This form of team-based gameplay also extended to computer games such as *Minecraft*, where young people rallied others to join their servers, and *Team Fortress 2*, a multiplayer first-person shooter game—e.g. “[John] was playing Team Fortress 2 (TF2). A new member was standing behind him looking really excited and he decided to invite [Mandy] and the new member to join him” (observation, Reservoir Lab, 8 October 2016).

At times, team-based games also caused conflict at The Labs, ranging from accusations of cheating and lack of team spirit to hogging of game spots. However, these conflicts were resolved amongst themselves or by mentors through negotiations or self-imposing rules and order. During a session of Super Smash Bros, for example, a mentor at the Frankston Lab had to set up a rule where the winner of the match was the only person allowed to continue on to the next round, while others had to give up their spots to the next challenger (observation, Frankston Lab, 10 May 2016). He then appointed an older member to keep track of the rotation, ensuring that everyone had an equal opportunity to play the game. In a later session, this behaviour was mimicked by Peter, whom I mentioned earlier brought in his own console and racing games (observation, Frankston Lab, 9 August), where he set up similar rules for other players while he facilitated the cluster himself. This form of mirroring approach showed how young people at The Lab could be influenced by social interactions and learn through self-selecting (i.e. interest-based that is not forced upon them) engagement with others.

One interesting note for further discussion in the next chapter is that such breakout activities often required technology (not just computers, but access to devices such as consoles and board games), mobility, flexibility of programme and physical space. Hence, this form of team-based activity was less commonly observed at the Reservoir Lab unless it was online, because the physical space was more limiting.

5.3.3d Peer and mentor influence

Young people at The Lab were observed to influence each other. At the start of the research, it was noted that one member and mentor of the Frankston Lab were playing *Halo*, a first-person shooter game (observation, Frankston Lab, 19 April 2016). In subsequent weeks, more than five members were playing Halo at different times—e.g. “I have noticed that more kids have started – or maybe are replaying – Halo since [Devin] and [one of the mentors] downloaded it a couple of weeks ago” (observation, Frankston Lab, 2 May 2016). Peer and mentor influence played a significant role in determining the activities at The Lab. Although most games did not seem unfamiliar to these young people, the games they decided to play at The Lab, such as *Minecraft, Terraria, Five Nights at Freddy’s* and *Pokemon* simulations seemed to be influenced by what other people were engaging in as well. This is perhaps why fads were different across the Labs but members within each Lab often played the same games or were engaged in similar activities.

The Reservoir Lab, for example, was the only Lab that used *Mine-imator* (software that combines animation with *Minecraft*) during the research period. This may have been influenced by a mentor and John who were exploring the programme during a session. The Frankston Lab, on the other hand, played *SpaceMade*—a 3D sandbox game in space—which became popular after James started playing it—e.g. “[Adrian] asked [Adam] about the *Minecraft*-like space game that [James] was playing. After finding out what it was (i.e. SpaceMade), they downloaded the game and tried it out” (observation, Frankston Lab, 10 May 2016). As previously mentioned, the Footscray Lab was the only Lab where members played *D&D*, however, they did not seem to play online games or *Minecraft* as much as the other two Labs. In fact, during most weeks, some members were either programming/coding or chatting and playing social games such as *Mad Libs* and *Superfight!* (a card game with similar mechanics to *Cards Against Humanity* but instead involves solving problems with superpowers). This suggests that young people with autism may be influenced to engage in social activities and may want to be included in specific group dynamics. Accordingly, every Lab site developed unique environments and cultures based on the members, mentors, technologies, interests and spaces that existed within its ecosystem.

5.3.3e Role of members and the learning of empathy

While the role of mentors evolved based on the needs of the specific Lab, members themselves sometimes assumed roles within each Lab. This was particularly pronounced at the Frankston Lab.

At the Frankston Lab, older members sometimes assumed the role of mentors to younger members. They helped or demonstrated to younger participants on how to, for example, download or play certain modified content in *Minecraft* or other games. Consider this excerpt of a video recording (video ethnography, Frankston Lab, 2 August 2016):

> *Adam slides his chair over to James who is focusing on his screen/game and leans over*
>
> *Adam: Do you know how to download (Minecraft) maps*
>
> *James: Like this?*
>
> *James can be seen scrolling through his screen, supposedly showing an example of a Minecraft map.*
>
> *Adam: Awesome. Do you know how to download maps like this?*
>
> *As Adam puts his laptop down, James leans over to look at Adam's screen.*
>
> *Adam: It won't let me download it.*
>
> *James: Hmmmm. No idea. Let me take a look.*
>
> *Adam: Thank you.*

Instead of asking a mentor for help, Adam—a younger member—approached James—an older member. Although James was already engaged in an activity of his own, he was patient with Adam when approached and even tried to help him, despite not knowing the specific knowledge at that point in time. They continued conversing a short while later in the video where James leaned over to Adam, seemingly guiding him through how to download the *Minecraft* map. However, their conversation was inaudible and I was unable to conclude if the help was successful. Nonetheless, it showed that young people at The Lab trusted each other and older members were sometimes mentors to younger members.

Similarly, as previously mentioned, Jack acted as a brotherly figure to Richard on several occasions, helping Richard get through emotional meltdowns by talking to him or imitating characters to make him and other younger members laugh. He also planned and led the group *Minecraft* world, assigning Adam and Richard to work on tasks. In return, Richard respected and looked up to Jack, and in one of my observations, I noted:

> *"[Richard] specially made wings for [Jack's] Minecraft character – and kept pestering [Jack] to look at this gift he made. And he said something along the lines of '[Jack] is my protector' to me when I asked him about the gift." (Observation, Frankston Lab, 2 August 2016)*

Through this process of mentoring, young people with autism seemed to have developed some empathy as they appeared to similarly relate to other members at The Lab. And while certain interactions may not be responded to, as discussed above, some emotional attachment and respect may be reciprocated, such as in the case of Richard and Jack.

To a smaller extent, young people at the Reservoir and Footscray Labs showed similar levels of empathy for others. At the Reservoir Lab, for example, Paul was seen helping Elliot, a new member, with *Scratch*, a basic visual programming language for creating animations, games and interactive narratives (video ethnography, Reservoir Lab, 20 August 2016). At the Footscray Lab, I was surprised at how helpful some young people—who were on average older than members of the other Labs—were, in terms of trying to make me feel comfortable and involved at The Lab. During a D&D session, I noted that "[Scott] and [Isaac] were patient enough to explain to me what was happening (in the game) while [Tom] and [Damien] always bothered to save me when I made bad choices!" (observation, Footscray Lab, 15 September 2016). In both cases, although the members were not necessarily older than the people they helped, they took on the role of mentors because they recognised that they were more experienced, and possibly less nervous, than the other person in question. From my observations, I believe that The Labs have developed into inclusive communities of care for its members, regardless of whether they were new or experienced members.

5.3.3f Learning social norms: rigidity and practice

Although young people were familiar with The Lab space and were unafraid to speak up or engage in banter with each other, they still displayed certain rigidities and practised social norms taught to them, especially when met with uncertainties. Interestingly, Parsloe's (2015, p. 347) research on autistic identity online revealed that the "inability to innately grasp the social norms of Neutrotypical culture was reclaimed as beneficial" because her participants, all on the spectrum, claimed that people with autism are able to identify why something is socially awkward better than their neurotypical counterparts not because they feel it but because they had to "learn the rules". While I do not think young people at The Lab always knew if something was socially acceptable or not, the findings from my research affirmed Parsloe's argument in that if young people did learn specific rules about social norms, they actively practised them.

When I first joined The Lab, I noted that I was greeted with an unprecedented amount of politeness, although members were clearly uncomfortable with, but equally curious about, my presence—e.g. "They seem to always greet me and ask 'Do you want to play with me' or 'Do you want to watch me play [a game]' – these kids are very polite" (observation, Frankston Lab, 9 August 2016). In another example previously mentioned, Damien was very concerned that mentioning something I did not like offended me. It suggests that young people with autism can be sensitive to someone else's feelings, but may have come to the conclusion (e.g. that I was offended) by identifying negative emotions through literal meanings of spoken words rather than non-verbal communication.

Members of the Lab may also have learned and practised social norms through communication with other members or mentors. Consider this observation note:

> *"[Scott] was very angry at [Damien] during D&D as [Damien] did not want to help the team. [One of the mentors] stopped [Scott] and pulled him out after the game to explain why he shouldn't have gotten angry. [Scott] apologised to [Damien] after the talk." (Observation, Footscray Lab, 26 May 2016)*

What was interesting in this instance was Scott's reaction to the mentor's explanation. Scott did not oppose to the mentor's actions or explantion; rather, he apologised to Damien in a polite manner, suggesting that the act was deliberate and practised. Similarly, in one session, Joe was inching very closely towards me to tell me about his game when one of the mentors noticed my slight discomfort. The mentor then tried to explain to Joe about "boundaries", which I noted as a "funny encounter" (observation, Footscray Lab, 2 June 2016). However, Joe did not lean towards me during any future conversation, implying that he had accepted the mentor's suggestion.

Young people at The Labs sometimes displayed conflicting social cues, further affirming the argument that social norms were learnt and practised. In one session at the Reservoir Lab, I noted:

> *"I approached [Edward] while he was watching YouTube – with his face so close to the screen it looked like he was falling into it. But before I could say anything or sit beside him, he stretched out his hand in front of my face and told me he didn't know me and wanted me to go away, very politely though." (Observation, Reservoir Lab, 30 July 2016)*

What is significant in this instance is the perceived rudeness in the gesture but politeness in response and tone, suggesting that Edward may have been unaware that he may have been simultaneously rude (a socially constructed perception that was derived from my perspective) and polite to me but was clearly uncomfortable with my presence. Young people with autism seemed to understand that they need to practise social norms for the comfort of others, like myself, despite being uncomfortable themselves in some situations. It signalled to me that while individuals on the spectrum are both compromised by and compromise for the system in which we live, there is less understanding and accommodation of autistic behaviours and identities by their neurotypical counterparts.

5.3.3g Inclusion and exclusion

One of the more ironic findings from this research is the existence of the ‘inclusion and exclusion’ dynamic within Labs. Previous studies have shown that young people with autism are bullied and excluded from mainstream education and find it difficult to make friends at school due to their differences or, more accurately, their disability (Hauck, Fein, Waterhouse, & Feinstein, 1995). A similar phenomenon, with the exception of bullying, which was heavily monitored by mentors, was observed at The Lab, albeit less seriously or widespread.

During the OEP session, I noticed that Randell, who was initially teamed with Richard, Peter and James, was asked to join the *Minecraft* server at first but was later removed from group conversations or ignored by other members, especially Richard, who also knew him outside of The Lab program (OEP observation, Frankston Lab, 11 October 2018). I noted that he was asking a lot of questions such as, and I quote from my notes, “What is it? Is this a train? Is this a shop? Is this a building?” (OEP observation, Frankston Lab, 11 October 2018). This behaviour seemed to have been distruptive to the group, leading to his exclusion. Richard was also later excluded by Peter and James and started his own *Minecraft* project as he insisted on doing the project his way, both online and offline (OEP observation, Frankston Lab, 25 October 2016). During my time with the group, I noted that Richard repeatedly asked James and Peter for better equipment and armour over the *Minecraft* chatroom (OEP observation, Frankston Lab, 18 October 2016). In December, I noted that “[Richard] kept asking me to purchase a package for him to improve his *Minecraft* project – to which I refused and reported to the mentors” (OEP observation, Frankston Lab, 13 December 2016). These examples showed that young people at The Lab may not have perceived their own behaviour as disruptive or problematic but were able to discern if someone else's behaviour may have been unacceptable, using this perception to include or exclude people from their groups. This form of exclusion based on behavioural difficulties is not uncommon and has been found in studies beyond those that focus on people with autism. Leeur, Boer and Minnaert (2017, p. 166) found, for example, that students with "social, emotional and behavioural difficulties [were] often socially excluded".

Exclusion were also observed to be based on age group and interests. The older members at the Frankston Lab, for example, often chided younger members for talking or playing games too loudly. They did not include younger members in their discussions, conversations and some projects; this could be seen in a video recording where five older members gathered in a corner to discuss Jeremy's short story while laughing and chatting very loudly but told Randell, Adrian, Adam and Richard to go away or keep quiet, even though some of them were playing *Minecraft* together (video ethnography, Frankston Lab, 7 June 2016). The dynamic between groups and practices of inclusion and exclusion were most observable at the Frankston Lab, possibly because it was the largest group of the three researched, with more diverse members (i.e. bigger age range). However, members of other Labs were also observed to exercise similar inclusion and exclusion practices.

In a session at the Reservoir Lab, Mandy, who always sat beside John, was noted to have "asked Derek to move one seat down so that John could sit beside her" (observation, Reservoir Lab, 8 October 2016). Similarly, two members of the Footscray Lab who sat in the corner coding racing games often excluded themselves by sitting away from the rest of the group (observation, Footscray Lab, 25 August 2016). They did not interact with others unless approached. Hence, some friendship groups that formed were also excluding. It should be noted that not all activities or friendship groups were excluding, as noted in other interactions, such as the D&D session at the Footscray Lab. However, this section hopes to highlight that young people with autism may apply inclusion and exclusion techniques similar to the ones used to exclude themselves in other facets of life (e.g. school). As Recchia, Brehl and Wainrhyb

(2012, p. 196) argue, “children's exclusionary behaviour is a normative aspect of their social lives” that is constructed by their own experiences, often reflective of the self (e.g. why did I do this?) and others (e.g. what were his/her intentions and how did they align with mine?). While this thesis does not have the scope to explore inclusion and exclusion in detail, this brief discussion highlights that young people with autism do construct their own psychosocial space—of who they are in relation to others and how others affect them—and make assessments as to how they want to interact with others.

In summary, this chapter consolidated the findings of this research and presented it through discussion and comparison to the existing literature on each of the differentiated spaces detailed in Chapter 3.

The physical spaces and qualities of The Lab were significant in informing young people how to socialise and interact with each other. The informal and unstructured nature of the programme and, to a smaller extent, the physical space, enabled young people to interpret The Lab as a safe and private, yet public, place and create new meanings about themselves and others. These were facilitated through negotiated configurations of the space and unique social interactions where, for example, the physical medium of technology was used to assist face-to-face communication.

The discussion on online-digital spaces showed the complexity of social and networked interactions within the context of The Lab. Findings revealed that young people valued online interactions. Different degrees of interactions were observed online: from extensions of physical interactions at The Lab, such as messaging each other even when both were located in the same space; and network sociality, where interactions were intense but short-term, as seen in task focus group work, such as during the online participatory ethnographic phase of this research; to long-term communication online, where young people continued past friendships made at The Lab through web applications or made new friendships through online communities. The online-digital space no doubt impacted the way young people interacted offline as it provided new and often positive avenues for communication that did not rely on conventional etiquette and expectations of social interaction.

Finally, from a psychosocial viewpoint, young people with autism were able to develop a distinct sense of self that embraced their autistic traits and identity (such as in Section 5.3.2) by socialising within the spaces of The Lab. Findings showed that their preferences and interactions changed over time as they learnt new skills, such as empathy, and/or became socially active within The Lab.

From this chapter, it is clear that young people with autism at The Lab had the ability to learn and the desire to be understood and included. In the next chapter, I will discuss the broader implications differentiated spaces have on the way young people interacted within The Lab.

Chapter 6: Building Dynamic Environments with Differentiated Spaces

> *"A social sphere, which is neither hierarchy (organisation), nor market, governed by relational dynamics and horizontal coordination of activity that is dependent upon some level of cohesion, social capital and a sense of interdependency between actors." (Johnson, Knudsen & Normann, 2014, p. 237)*

In the previous chapter, I presented findings specific to the corresponding differentiated spaces. While there is a need to recognise and assess the independent qualities of the spaces, especially the online-digital and psychosocial spaces as their importance have been much less emphasised in scholarly literature than that of physical spaces in broader discussions within spatial and social sciences, it is important to discuss the differentiated spaces as a cohesive environment as they are far less distinguishable than I had even imagined at the beginning of my research.

Although the findings demonstrated the importance of independent spaces and showed how individuals each brought unique experiences to their environment, the sum of our experiences is dependent on the interactions of and between these spaces. The accumulation of experiences of independent actors—such as mentors, members and parents—within these spaces were observed to have a large impact on the culture of each Lab, leading to very different environments, despite working with similar spaces, (pedagogical) approaches and technologies. Nonetheless, while differences can be observed, similarities in their overall development trajectory can be discerned.

In this chapter, I draw on the findings of this research to further understand how the interdependency, composition and mingling of spaces present us with broader implications to consider. Firstly, I discuss how a combination of differentiated spaces can enable hybrid environments such as The Lab, where the flow of interactions by young people with autism within and between multiple physical, online-digital and psychosocial spaces has become seamless and indistinguishable. Borrowing from the concept of mixed reality[14], I argue that our experiences, decisions and social interactions are far more consistent between differentiated spaces than the barriers of the physical and virtual spaces would have us believe. The boundaries of these spaces are much less defined and each individual's overall understanding of sociality and beyond is impacted by the sum of all interactions.

Secondly, I discuss The Lab as a Third/Fourth Place (see Chapter 3): a safe social environment for young people with autism to experience and experiment with their own sociality while learning varied skills. In this section, I compare The Lab to the characteristics of Third Places drawn up by Oldenburg (see Chapter 3) and argue that while The Lab does not meet all its criteria, the overall atmosphere of the space and place may be likened to Third Places. More interestingly, with its additional focus on unstructured learning, The Lab can be seen as a Fourth Place for young people with autism.

Finally, this chapter touches on how the differentiated spaces of The Lab enabled Third Space interactions where new meanings about autism and sociality were developed through each psychosocial participation within the spaces. For the individual, new knowledge acquired through interactions (including those with non-human subjects) are constantly being interpreted, applied and reinterpreted. This form of interpretation and application could then be observed over time as collective knowledge and experiences were developed and became visibly pronounced within environments such as The Lab.

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[14] 'Mixed reality' is used to describe a technological advancement of blending virtual and real environments. It should be noted that this thesis does not refer to this term from a technological perspective—please see below for further discussion.

6.1 The Lab as a Hybrid Environment for Hybrid Experiences

In Chapter 3, I briefly discussed the multiplicity of space with the introduction of online and mobile technologies. Indeed, with mobile technologies, many have discussed the changing nature of how we understand physical spaces and the term ‘space’ in general (McQuire, 2017). For one, we exist in multiple spaces at once: we talk to friends, family and even strangers over Facebook, Twitter, WhatsApp, etc. while we are in class, in our offices or other public and private spaces. We are much more networked with separate individuals or groups of people than before, when we relied on connections within physical communities (Wittel, 2001). We are experiencing sets of differentiated spaces that create unique environments at every moment; how we view our physical space while interacting online (and vice versa) is therefore unique because our psychosocial space is altered accordingly. While I do not presume that our behaviours and sociality were more simplistic and straightforward before digital technologies, they are complex today because we are constantly shifting and changing to adapt to multiple hybrid environments and spaces. The Lab is a testament to this complexity and, in this section, I will draw on the concept of mixed reality to further elaborate on this hybridity of experience.

The term ‘mixed reality (MR)’ has insofar been defined from a technological perspective, referring to “various forms of multimedia involving layering virtual information on the physical environment” (Rouse, Engberg, JafariNaimi & Bolter, 2015, p. 175). In one of the most authoritative and earliest definitions of mixed reality, prior to the mass production of smartphones, Milgram and Kashino (1994, p. 3) referred to mixed reality as “one in which real world and virtual world objects are presented together within a single display” that sits between the virtuality continuum (see Image 19 below).

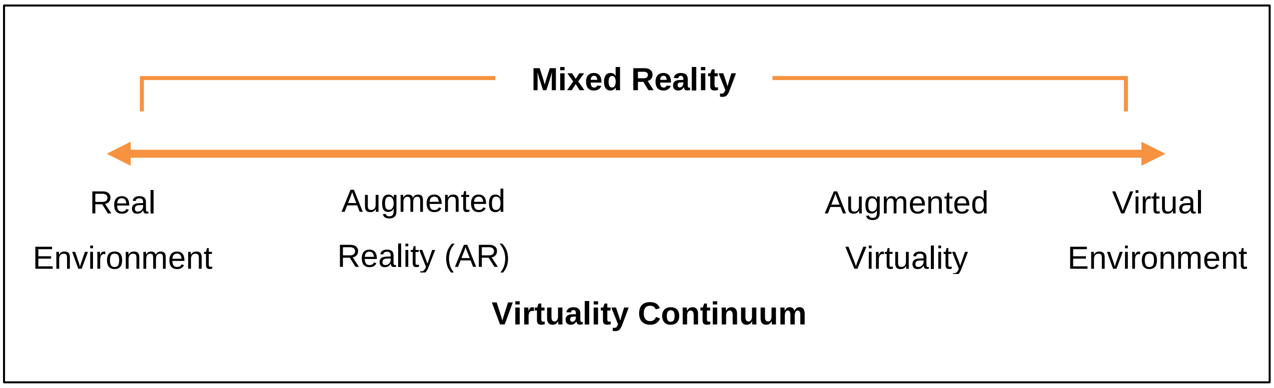

Image 19: Mixed-reality spectrum of Milgram & Kashino (1994) as part of the Virtuality Continuum (VC). Drawn by author.

Both Milgram and Kashino's (1994) and Rouse et al.'s (2015) definitions are concerned with how technology enables the layering of virtual spaces onto unmediated physical spaces. An example is the augmented reality (AR) game, Pokemon Go (see Image 20), which was observed to be played by several members across the various Labs (e.g. observation, Footscray Lab, 14 July 2016; observation, Frankston Lab, 21 June 2016). To clarify, AR is a particular kind of MR (Milgram & Kashino, 1994), which is "a content display technique that provides [people] with a connection between virtual objects and real environments" (Smith, Cihak, Kim, McMahon & Wright, 2016, p. 4).

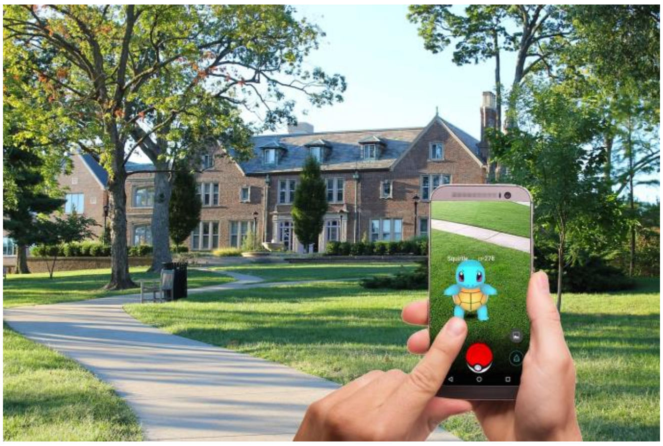

Image 20: Pokemon Go, an augmented reality game played by young people at The Labs (Pixabay License – Free for commercial use)

However, beyond the technological aspects of MR and its systems, MR experiences can be “hybrid”, “deeply locative and site-specific” and “aesthetic, performative, and/or social” (Rouse et al., 2015, p. 178). The affordances of technologies, specifically MR systems identified in these studies, enable users to perceive and gain different cognitive perspectives based on their embodied experiences and interactions within the real-virtual environment (Rouse et al., 2015). While this research did not observe and will not be discussing mixed reality from a technological context because the use of AR or virtual reality applications was minimal, I want to draw on MR experiences to frame how young people with autism perceived The Lab. I argue that young people with autism were experiencing mixed realities within the hybrid environment of The Lab from a psychosocial viewpoint. Put simply, their experiences in both online-digital and physical spaces at The Lab were meshed and layered into narratives, where the virtual and the “real” were far less distinguishable from each other. As argued by Sicart (2017, p. 31) in his editorial on Pokemon Go and game design, “reality has always been augmented, and it has always been a space for play … from writing on walls to making way-finding signs and maps, culture develops as we add informational layers to the world”. In his article, Sicart discussed AR as beyond a technological advancement but one that is part of our layered experiences. The online-digital space did not open another portal parallel to the physical space; our experiences within it inform who are and what we do in other spaces.

The experiences at The Lab were hybrid, specific to the environment, social and to some degree, performative. The Lab, as a technology club for young people with autism to socialise and learn informal skills, is fundamentally made up of a combination of online-digital, psychosocial and physical spaces. Without one or the other, the experiences of these young people with autism are changed. Take the following example: in Section 5.2.4, I noted that Elliot asked if his chatbot experience in *Emily is Away* was comparable to offline conversations (observation, Reservoir Lab, 12 August 2016). In this instance, it showcased how online experiences could inform offline behaviours, similar to how mobile devices may be used to validate, verify or enhance what we may do within physical spaces. There is a symbiotic relationship between the physical and online-digital spaces, especially at The Lab, where a self-directed, constructionist approach prompted young people with autism to search for and translate meaningful interactions and information online—which they might have otherwise found difficult to draw out within offline spaces—to inform their physical interactions.

As shown in the findings, young people used their interactions and findings online to inform them of what they did and who they interacted with at The Lab and vice versa. It was observed that sociality at The Lab was mainly object- or activity-centred, whereby social connections between members were facilitated through common points of interest. This was particularly apparent in the *Minecraft* group at the Frankston Lab, where both online and offline discussions were focused on developing and building a common vision within the *Minecraft* world. As a creative online multiplayer game, *Minecraft* is an immersive social gaming space as it allows its players to work individually or together to find and mine the necessary resources to plan and build a landmark, village, city and beyond (Riordan & Scarf, 2017; Schmidt & Beck, 2016). Beyond *Minecraft*, the online space offered young people the opportunity to be immersed in a virtual environment while extending this immersion within an offline environment.

Without going into detail, immersion in games can be broadly characterised as “engagement”, “flow”, “time (spent)”, “emotional involvement”, “imagination”, “engrossment”, “authenticity” and “presence” (e.g. Cairns, Cox & Nordin, 2000; Wiebel & Wissmath, 2011). The last two descriptors above are especially of interest as they describe the most intimate forms of immersion. “Authenticity” in games is concerned with the “sense of genuineness that causes people to perceive people, things, rituals, and traditions as real” within the game space (Wu & Hsu, 2018, p. 242), while “presence” relates to locating oneself and others within a virtual environment as if they were physically present (i.e. non-mediated) (Tamborini & Bowman, 2010). In many ways, both these concepts within immersion point to a sense of realism as perceived by the player. And this sense of realism, particularly its perceived social connections and interactions between one player and another, was demonstrated in the

Minecraft groups formed at The Lab, including the ones that formed during the online participatory ethnographic phase.

Minecraft is a first-person sandbox simulation (see Chapter 4 for more information) where the player views the game world through the eyes of his or her character. Within the game, young people often greeted each by leaping in the air (as waving is not possible) and using the in-game chat to interact with each other (observation of OPE, Frankston Lab, 11 October 2016; see Image 14 in Chapter 5 for an example of in-game chat). Although character customisation was relatively limited, players gave their characters different outfits, accessories or armour that were made in-game or downloaded. These details were important to members of The Lab as they provided some form of identity to their characters; in Section 5.3.3e, I recounted, for example, when Richard bestowed wings (identical to the ones he had) on Jack's character to signify the latter as his protector. As Solarski (2017) argues, customisation gives a character personality, as if it were alive in the mind of the player, and contributes to the overall narrative and immersion of the game. Through their characters, players are able to communicate their "presence" in the game world and create "authentic" experiences through interacting and working with others.

When participants of The Lab took me on walkthroughs of their creations in *Minecraft*, they portrayed a strong sense of pride and ownership over the work, detailing every aspect of their build and design (see Sections 5.1.1a and 5.2.1). The characteristics of such gameplay and dedication indicated that young people at The Lab were engrossed in the game and turning their imaginations, drawings and plans into actual creations online (see Section 5.2.1).

This form of immersion was enabled by the format of The Lab as it gave the participants the necessary time without interruption, as well as the space and knowledge, to be immersed in the activity of their interest. Beyond immersion online, this similar immersion was also brought offline, where social interactions, such as the discussion of the list of items seen in Chapter 5, Image 15, were focused on the activity. This allowed individuals to move fluidly between the online and offline space as activities and interactions complemented each other. This example shows how the differentiation between the spaces and their utility can become unclear as aside from the actual gameplay, interactions and planning activities were not specific to the space, although each may have different and unique affordances.

Cairns et al. (2014) talk about how immersive games can impact people’s thoughts and feelings, while the way people act and react within these games and out are simultaneously shaped by their current state of mind and environment. It signals a multimodal, iterative and evolving process of perceiving as one interacts within and across differentiated spaces, particularly through platforms and spaces such as *Minecraft* and The Lab. As Ekaputra, Lim and Eng (2013, p. 237) state, “games are not just played; they are talked about, read about, fantasized about, altered, and become models for everyday life”. For young people at The Lab, online activities such as playing *Minecraft* in groups presented them with a reality that was both impacted by and contributing to other realities, such as those being physically present at The Lab. In some ways, these socially constructed separate realities were amalgamated into sensible narratives that were neither just online or offline for these young people.

Hence, beyond McLuhan’s (1964) vision that technology can be an extension of ourselves, it can also be an extension of our experiences. From the examples above and throughout this thesis, it is evident that there is a layering of experiences online to experiences offline and vice-versa. Each psychosocial participation in these spaces further informs us of how we may behave, interact and/or socialise in other spaces. The Lab is one example of a hybrid environment that enables hybrid experiences and mixed forms of reality where the experiences within online-digital and physical spaces are streamlined into coherent narratives within our psychosocial space.

6.2 Third Place and Beyond: Exploring the Social Domain of The Lab

When I first started writing this chapter, the terms Third Place and Third Space confounded me. These are two separate concepts that are related semantically and on a foundational level. ‘Third’, in both terms, signals some form of in-between state: ‘Third place’ refers to a place which is neither the home nor the workplace, while ‘Third Space’ refers to a space that is neither perceived or conceived but one that is transitional and uniquely interpreted through lived experiences (see Chapter 3). Both these theories also emphasise the emotional attachments and affectations that are developed with and within spaces and places. And both these concepts, in their own ways, produce new discourses and knowledge about people and the psychosocial spaces that they inhabit.

In this section, I will discuss how The Lab is a Third Place for young people with autism. Following this discussion, I will demonstrate how a combination of differentiated spaces can enable The Lab to facilitate multiple Third Places and, in the process, become a Fourth Place (See Chapter 3). In the next section, I will discuss how third space interactions within differentiated spaces have created new meanings about sociality and autism for members at The Lab.

6.2.1 The physical space of The Lab as a Third Place

The Lab is a Third/Fourth place for young people with autism. As previously discussed, Third Place as a “home-away-from-home … [that is] neither the office now the residence but a place between in which social capital can be realised and applied” (McArthur & White, 2016, p. 10). This sentiment was taken from the concept’s originator (Oldenburg, 1999), who discussed the home as the First Place, the workplace and school as the Second Place and a relaxed, social environment as the Third Place. With increased connectivity, global networks and a move towards knowledge-based economies, some speculators have been theorising the Fourth Place: one where the boundaries between the home, workplace and social place have become increasingly blurred (Aelbrecht, 2016; Morrison, 2017). The Fourth Place is a testament to the importance and affectations of virtual spaces and how they impact the way we view physical localities. I will return to discussing Fourth Place theory towards the end of this section.

Using the eight indicators Oldenburg (1999) laid out in his qualification of a Third Place, I demonstrate how The Lab could be considered to be one. However, it should be noted that these indicators and characteristics are more applicable to Third Places for adults, where the subject has authority and agency to make decisions for themselves (e.g. going to a pub). Decisions regarding young people, especially those who may be vulnerable such as members of The Lab, are often made by parents or guardians. While young people may have a degree of influence over these decisions, spaces that they mingle in, such as The Lab, are usually decided by their parents. Therefore, Oldenburg's (1999) concept of the Third Place may not always apply to these social environments as they are not self-selected or available for participants to come and go freely. The Lab, for example, had specific requirements for membership (i.e. the child must be recognised by parents or guardians to have autism) and registration processes that required the consent of parents; these inevitably became barriers for participation, openness and inclusivity. However, these conditions were drawn up to ensure that young people with autism had a curated space where they felt included. Moreover, as pointed out by McArthur and White (2016), Third Places do not necessarily sit within the physical plane—they can also live within online spaces such as Twitter. Loosely adapting from Oldenburg's (1999) indicators then, I demonstrate how The Lab can be seen as a Third Place.

6.2.1a Home-Away-from-Home, Neutral Ground and Leveller

The Lab is first and foremost a social space. As is evident in Chapter 5, young people at The Lab seemed to spend a large proportion of their time engaging in group activities online or offline. They played games together, teamed up to work on projects, and/or talked to each other about a variety of topics. While The Lab was advertised as a technology club that hoped to improve its members' digital literacy and develop their competency in using different types of digital and online technologies, it did not have a strict curriculum as compared to schools. Instead, it encouraged young people to develop skills based on individual and shared interests and positions itself as a learning, social and safe environment that focuses on the wellbeing of its members rather than the goals and ambitions of an institution (e.g. schools), parents or mentors. Hence, The Lab was neither a school nor a home, but an environment that was welcoming, supportive and familiar to its participants, enabling them to feel safe and cultivate a sense of belonging. This was particularly evident based on the discussions which took place in Sections 5.1.3 and 5.2.2, which revealed that young people such as Jerome and Richard felt that The Lab, while being a public space, enabled privacy away from family members. In my observation notes, Jerome's description of his home versus The Lab stood out for me: the former provided comfort as it allowed him to keep himself confined within a "dark room alone", while the latter was described as "fun" and where he "liked being around the mentors and (some) people of The Lab" even though there were times when he would become anxious and wanted to shut himself out (observation, Frankston Lab, 19 July 2016). In Richard's instance, it was clear that he saw The Lab as an opportunity to play games and socialise with friends off- and online without the supervision of his mother (observation, Frankston Lab, 11 October 2016).

Sections 5.2.2 and 5.3.2 also showcased how young people at The Lab felt safe in the space to either ignore the presence of strangers or to express themselves without fear of repercussion, such as talking through screens without eye contact or conversing with their headphones on to cope with stress. These examples show how The Lab maby be a comfortable space for its participants without the obligation to behave and perform according to the social expectations that may be imposed on them by other spaces (such as at school). Hence, it fits the criteria of a Third Place as a home-away-from-home, neutral ground (where there is little to no obligation to be there) and leveller (where participation is based on enjoyment rather than obligation).

It should, however, be mentioned that The Lab is not conventionally a neutral ground or leveller. It is a membership-based club that is exclusive to young people with autism. There are stipulated times when Lab sessions take place (i.e. it is more a programme than a place), although young people may arrive or leave at any point during the session. Nonetheless, it aims to bring in inclusive practices and help its members develop a sense of belonging which they may not otherwise be able to gain from other social environments. This is because other social environments may be inclusive in principle (e.g. policy, availability, etc.) but inadvertently exclude those who may not fit in. The Lab facilitates social inclusiveness for young people with autism and is a Third Place specifically to its members.

6.2.1b Conversational and playful

The setting of The Lab is informal and unstructured, allowing for conversations and play to take place. In Oldenburg's original conception of the Third Place, playfulness (in mood) and conversations can be interpreted as inseparable indicators as they were both used to describe, to some extent, the actions and activities within the place. As iterated by Oldenburg (1999, p. 37), the main activity within a Third Place should be conversation that is playful, light-hearted and witty so as to ensure "joy and acceptance reign over anxiety and alienation". While activities undertaken by young people at The Lab may vary widely from personal endeavours to group projects, conversations and playfulness often underlie these activities.

A video discussed in Section 5.2.1 revealed how young people at The Lab valued playful interactions where a member boisterously imitating a fictional character was met with laughter and cheers by other members (video ethnography, Frankston Lab, 30 August 2016).

In another session at the Reservoir Lab, I was caught off guard by one of the members who wanted to scare me and other participants of The Lab by hiding under the tables (observation, Reservoir Lab, 17 September 2016). When the right moment came, he started talking and emerged out of the tables close to me. When I asked him later why he was hiding, he replied, and I quote from my notes, “[Xavier] replied that it was for no reason: he just wanted to have some fun” (observation, Reservoir Lab, 17 September 2016). This form of playfulness and impromptu interactions was seen across all Labs.

At the Footscray Lab, for example, members talked at length about a wide range of topics, such as superhero movies (e.g. which superhero character would you want to be and why), card games and the Trump presidency (see Section 5.1.1a for examples). Other activities that the group seemed to enjoy include *Mad Libs*, a word game where one player prompts another to provide a list of substitute words that is then used to replace blanks within a story to create an amusing/absurd narrative (see Section 5.3.3d), and translating sentences into different languages for the joy of pointing out how wrong translation services could be.

Thus, beyond the non-conversational activities young people engaged in at The Lab (such as gaming or coding), these examples showed that The Lab provided opportunities for playful interactions and conversations that were not specifically associated with the initial goals the programme.

6.2.1c Accessible and accommodating, regular visits and low profile

Aside from the initial verification and membership sign-up and renewal processes, The Lab was accommodating and easily accessible to its members. Young people at The Lab were not mandated to attend any amount of sessions and are able to arrive or leave the session at any time. During my observation period, while members signed up to specific sessions, they were able to negotiate with the mentors to attend another session on site or even those at other locations if they were unavailable (e.g. members at the Frankston Lab would sometimes attend the Mornington Lab sessions as the mentors overlapped). Hence, the programme was very flexible and allowed its members to participate without the stress of adhering to strict rules and regulations such as those put in place by schools.

The Lab was also a relaxed space that was low profile, encouraging members to bring their own devices, including 3D printers, Nintendo Wii-Us, Xbox 360, etc. (see Sections 5.1.2, 5.2 and 5.3.3c for examples). Throughout the data collection phase of approximately one year, only three of the 24 participants left the programme, indicating a high retention rate with regular attendees. In fact, I had known some of the participants at the Footscray Lab prior to engaging in this research as I had visited the programme as a potential volunteer previously. Two members of the Reservoir Lab were also previously from the Footscray Lab, demonstrating loyalty to the programme. As mentioned in Sections 5.1.1 and 5.3.3d, for example, these regular attendees, together with the differentiated spaces that they occupied, allowed for the development of unique cultures at each separate Lab.

Based on the indicators above, The Lab can be seen as a Third Place, but one that is specific to its members rather than other groups of people. An important aspect of The Lab that is different from other Third Places is that, beyond a physical location for social gathering, it is a programme and club that is mentored and monitored with the goal of achieving some form of learning outcome. However, its unstructured nature, flexibility and member-centred approach (i.e. interest-based and constructionist) provide the conditions that enable it to become a Third Place to its members.

6.2.2 Has the online-digital space been a third place to members at The Lab?

While members of The Lab were physically located, much of their time during a session was spent within an online-digital space. Has the online-digital space been a Third Place to members at The Lab?

In Section 5.2.1, I pointed out that Richard stayed in contact with Jack and Adam on Skype and Google Chat even after they had left The Lab. He continued playing *Minecraft* with Jack and Adam, either in a dedicated group server or in an open server, even when they were not physically present together (i.e. The Lab). In the same section, as well as in Section 5.2.2, I also highlighted how Tom and Damien participated in Facebook groups that were interest-based and developed new online friendships with group members they had never physically met. These examples hint at the possibility of Third Places experienced by young people at The Lab beyond the physical plane.

In Richard, Adam and Jack's example, the online-digital space became an extension of The Lab and, together with its multitude of applications, allowed for the continuation of social relations and gathering that were of a different format but similar to interactions at The Lab. On the other hand, Tom and Damien's example showcased an independent online-digital Third Place where the conditions laid out by Oldenburg could be adapted. Facebook groups are open to anyone who is interested in specific topics and allow for the exchange of ideas and information through online chats, posts and conversations. As McArthur and White (2016) argue in their research on social media spaces, particularly Twitter, as digital Third Places, these are communities of interests keen to interact with like-minded people online. And, as explained by Tom and Damien, membership of their Facebook group was voluntary, non-obligatory and dependent on personal interests and enjoyment, and accessible via most Internet-enabled devices, such as mobile phones; members were free to engage or disengage in the group as much or as little as they chose to. During one of The Lab sessions, I noted that Tom seemed more involved in these Facebook groups than Damien, often encouraging the latter to participate, indicating the flexibility in engagement of the space (observation, Footscray Lab, 14 July 2016). These different online-digital spaces are certainly home-away-from-home, oriented towards social interactivity rather than work. While they are not physically located, they are identified by a unique name and have shared meanings with others based on the activity (e.g. *Minecraft*) or the topic of interest—this is compatible with the definitions of place I presented in Chapter 3.

Beyond The Lab, other similar game spaces and forums accessed by individuals on the spectrum, such as *Autcraft*, can also be considered as Third Places. Within the forums of *Autcraft*, individuals congregate to discuss topics beyond the boundaries of *Minecraft* (Ringland et al., 2014). Examples provided by Ringland et al. (2014) show the intimacy of spaces where young people with autism shared experiences, feelings and stories about themselves that were acknowledged and responded to by others, demonstrating how the online space can be an informal, supportive and conversational community that facilitates social interactions and reciprocity similar to that of physical places like The Lab (Ringland et al., 2014). These examples about online-digital spaces and places are important to my discussion (especially in the following chapters) as they showcase how the space can both be 1) an extension of the physical space and body, and 2) an independent place that is separate to physical spaces.

This discussion also highlights how the online-digital space has given new meanings to the concept of Third Place. While multiple physical Third Places exist, an individual can only participate in a single Third Place at any point in time due to the limitations of the physical body. With the online-digital space, one can participate simultaneously in multiple Third Places, whether they are physically located in one or not. This brings me to the next point about Fourth Place.

6.2.3 The Lab as a Fourth Place

Beyond the Third Place, The Lab may be an example of a working Fourth Place where the social space, workplace and, to a smaller extent, home can be amalgamated. Young people were often seen socially engaged with members at The Lab while simultaneously interacting or working online, such as chatting on social media, sending emails, learning to code, checking information sent by the school, etc., as extensively demonstrated in Chapter 5. The workplace, which in this case mainly refers to formal learning institutions, can be accessed through the online-digital space while being physically located in a social environment. Tom, who worked at McDonalds part-time, was triggered by one of our conversations to check his work schedule, which he was easily able to accomplish in the moment via an application on his mobile phone (observation, Footscray Lab, 14 July 2016). This suggests that interactions with a combination of differentiated spaces can facilitate the formation of a Fourth Place, particularly within a Third Place or flexible environment where responding to a series of social, personal and work engagements is not prohibited.

Additionally, in previous sections, I specifically referred to The Lab as a programme rather than just a place. This is because while The Lab can be identified as physically situated in a location, it also has an online presence through a Facebook group, website and, more importantly, connections with members and mentors. When Adam was unable to attend The Lab sessions, he informed Richard that he would still be present in their *Minecraft* world at a certain time (see Section 5.2.1). This connection, which was made from home, suggests that The Lab can also be part of other Fourth Places (and the overlap and existence of multiple Fourth Places). The online-digital space not only enabled the easy access of information or the making of new, asynchronous connections but also altered the relationships between spaces and places and created new meanings about being at home and/or at work (e.g. working from home) and, more significantly to this research, the understanding of being socially active. I will discuss this further in the next chapter.

Further to Ringland's (2019), Dourish (2001) and Boellstorff's (2016) discussions on the intersection between online-digital and physical spaces (see Chapter 2), this thesis thus puts forth that the convergence of differentiated spaces extends the experiences of young people with autism into the Fourth Place. As discussed in previous chapters, the online space is a portal to retrieve information and connect with people. These online interactions then directly or indirectly impact interactions within a face-to-face context as seen within The Lab. Similarly, face-to-face interactions can also inform online interactions; it creates a loop or cyclical effect where our experiences within each informs the other, blurring the boundaries between the social, personal and work from a spatial perspective. This is in line with Boellstorff's (2016) argument that both physical and virtual spaces exist on a continuum that shape what we understand to be real. The relationship between online-digital and physical spaces are not simply interconnected: they are symbiotic and inseparable as seen within The Lab. This poses both opportunities and challenges to spatial experiences such as control over how young people may socialise and learn within The Lab (for examples, see Sections 5.1.3 on privacy and public space and 5.2.4 on simulating online interactions offline). However, as argued, intersections between the online-digital and physical spaces (e.g. Dourish, 2001; Ringland, 2019) are inevitable – even if we do not engage with the online-digital space, it exists and impacts people around us, and by proximity, impacts us as seen within the engagements of The Lab. This provides an interesting correlation to the concept of differentiated spaces whereby spaces are identified as distinctively different yet working in combination to make and bring meaning to the environment. Hence, the Fourth Place view of The Lab provides an viable model for understanding intersections between the online-digital and physical spaces.

6.3 Third Space: Creating New Understandings of Autism and Sociality

In brief recollections about young people of the Lab prior to joining the programme, as recounted in publicly accessible video interviews and excerpts from Donahoo and Steele's (2013) evaluation of the programme, a common theme emerged about how poor participants' wellbeing was due to their inability to socialise. Some examples include stories of members never having a friend, walking around the parameter of the school field during recess, taking large quantities of anxiety medication, etc. These narratives left a strong impression on me as I never thought of these specific young people as being unable to socialise; from the first day I visited, I had always marvelled at how vibrant the interactions were at the Lab. To clarify, before the start of this research, I thought I had a vague idea of what autism was since my second cousin was on the spectrum. And I certainly arrived at The Lab with expectations of social awkwardness with little to no interaction. However, I recognised, firstly, that these young people could socialise and, secondly, that each person's interactions were unique. While I encountered several unexpected interactions, such as the anecdote discussed in Section 5.3.3f where Edward told me to go away with his hand stretched out in front of my face, I never thought of such interactions as inappropriate as these young people had the right to react in ways that they felt comfortable—that simply because someone like myself who agrees with socially constructed norms feels uncomfortable does not invalidate someone else's interpretation of sociality. Moreover, when informed of my discomfort, these young people reacted to and respected my boundaries, such as when Joe was casually told by one of the mentors that leaning too closely to me might make me feel awkward, he apologised and did not do it again (observation, Footscray Lab, 2 June 2016). Beyond being told to socially interact in specific ways, I believe that these young people have developed newfound understandings of autism, sociality and themselves through Third Space interactions.

In this section, I argue that the narratives from this research, particularly in comparison to the recollections, suggest that Third Space interactions were occurring at The Lab and young people were constantly creating new knowledge for themselves about autism and sociality.

The concept of Third Space, as elaborated in Chapter 3, can be defined as a transitional or transformation space that is interested in how individuals ascribe meaning, develop an emotional attachment and produce new knowledge about social spaces and places through each individual psychosocial participation. Beyond understanding an idea based on how it is conceived (e.g. autism defined by medical science) or perceived (e.g. autism as a constructed disability), the Third Space implores us to interpret and create new meanings about the idea based on our current understandings, experiences, translations and interactions with other psychosocial spaces.

6.3.1 Understanding autism: A changing perception

Beyond the medical definition of autism, Third Space interactions allow for new meanings of autism to be understood by young people at The Lab. As mentioned in Chapter 2, the medical definition of autism from the DSM-V provides a very negative view of the condition, within which individuals on the spectrum are seen as deficient in several areas, regarded as suffering an inability to communicate or interact socially and restricted patterns of repetitive behaviour. This negativity informs individuals with autism that they are disabled and, therefore, less human (Campbell, 2001). However, as demonstrated throughout this dissertation, young people with autism want to—and seek out—social interactions (see Section 5.3.1), even though they may not adhere to conventional rules such as those pointed out by Goffman (1967) in his discussion on "interaction order" as presented in Chapter 2. But does difference equate to deficiency? Out of context, this question seems absurd and I argue that within the definitions of autism, a value judgement was made on these differences.

However, The Lab's non-judgemental approach to the programme, where young people were able to be "autistic", particularly in dealing with stress and anxiety, as discussed in Section 5.3.2, enabled members to see autism more positively. Through their interactions with people and spaces at The Lab, young people with autism were able to identify similarities between themselves and others, and feel comfortable with who they are. The examples of members sitting side-by-side but chatting to each other online or talking without moving their gaze from the screen showed, to some extent, that participants understood how the nuances of non-verbal communication, such as body language and eye contact, may have been stressful to themselves and others. Over time, they developed a mutual agreement that body language in communication was unnecessary if it made them feel uncomfortable, an agreement which may not be appreciated in other social environments. At other times, when given the signal, young people reciprocated and engaged in conversations with eye contact, such as between Adrian and Adam after they became more acquainted with each other (see Section 5.1.5). In other cases, The Lab and its members seemed to be accommodating to certain repetitive behaviours, such as when Paul constantly fidgeted with his hands, making a clapping noise every time he did so (see Section 5.3.2). However, as the noise or movement did not interfere with members' activities, it was either ignored or shut out with headphones. Other repetitive behaviours, such as engaging in the same activities from week to week, was also welcomed by members as they enjoyed the repetitiveness and routine of these activities. But, as discussed in Section 5.3.3a, these young people with autism enjoyed the flexibility of the programme and would sometimes venture out of their routine and engage in a different activity.

These experiences informed young people with autism that they and others like them can be comfortable with their conditions and differences. Their Third Space understandings of autism were developed and interpreted by the positive experiences of those who were autistic rather than those who were affected or, as I would say more accurately, inconvenienced by the conditions. In other words, autism, unlike sickness (which inevitably brings physical discomfort to the person), can be a very positive and empowering experience in the right company and in the right environment. In addition, this research also showed that young people with autism were able to break out from the medical definition of autism to socialise and engage in a variety of activities—what does this tell us about the accuracy of the medical definition?

Interestingly, behaviours that irritated and annoyed young people at The Lab also made them question autism. In one of the most memorable anecdotes, a member questioned the mentors if another member was indeed autistic after the latter threw a tantrum (see Section 5.3.3b). There are two intriguing yet opposing views here: the negative behaviour was both associated and disassociated with autism. Jerome, who made the comment, clearly wanted to distance autism from the negative behaviour, indicating a protective stance of the condition and identity. However, his immediate reaction also showed a general association between negative behaviours and autism. The tantrum in itself could have been manifested by many other factors (e.g. temper, frustration, lack of patience, etc.) and yet, Jerome chose to specifically comment on autism.

Hence, undesirable behaviours and negative experiences prompted young people at The Lab to reflect on autism and what it meant to them. For Jerome, it seemed as if autism had become an identity to him and that to associate it with a behaviour he disapproved of would be an affront.

6.3.2 A Third Space understanding to social interactions

Over the course of this research project, it was clear that young people at The Lab did make an effort to socialise and wanted to engage in social activities and interactions. In Section 5.3.1 for example, I talked about how young people used different tactics—even lying playfully—to seek attention and be involved in group conversations. This claim about individuals with autism actively trying to socialise was echoed in Ringland et al.’s (2016, p. 1259) research with Autcraft participants in which “members of the [community] search for, practice, and define sociality”. While I will be discussing the need for redefinition of sociality in the next chapter, it is worth considering how Third Space interactions can create/have created new meanings for young people with autism about their sociality and interactions.

As mentioned above, young people at The Lab seemed comfortable interacting with each other without the nuances of physical communication. This interaction were either be online or offline, as long as they were able to cope with the stimulation, stress and anxiety associated with non-verbal communication, such as having a physical object like a screen at hand to distract them (see Section 5.1.5). With the increasing availability of portable devices such as mobile phones, laptops and gaming consoles (e.g. Nintendo DS or Nintendo Switch), these young people did not seem to find social interactions to be particularly uncomfortable or inconveniencing. In fact, conversations, interactions and chattering were consistently part of The Lab sessions.

This indicates that to a large extent (with a few exceptions), young people with autism did not find social interactions with others at The Lab difficult. In fact, it seemed as though they were accustomed to such interactions, hinting at a broader shift and acceptance from face-to-face only communication to technology-assisted communication. In addition, they demonstrated that there were multiple ways to engage in social interaction: offline, physical-online (i.e. being physically present but interacting online), online face-to-face (i.e. synchronous communication over video conferencing applications such as Skype) and online (i.e. a combination of synchronous and asynchronous communication). For these young people, they no longer had to feel restricted by the discomfort of physical communication as other avenues of interaction were available to them through the use of technology. While each form of social interaction may have had different affordances and opportunities, the goal of communicating information from one person to another or to a group could be met, to varying degrees, by all. And although it has been argued that online computer-mediated communication is more impersonal than face-to-face communication, whereby the former cannot simply replace the latter (Sundar, 2015), for young people with autism, 1) the statement may not be true as online communication provides them with a means to become more immersed in personal conversations rather than be distracted by discomfort, and 2) it may be their preferred choice of interaction that helps them achieve their goals. Again, through the experiences of these young people with autism, it became evident that the values of certain people and forces were more dominant than others.

However, young people at The Lab were sometimes cautious of interacting with people who were unfamiliar to them. Edward, who put his hand in front of my face and politely told me to go away, became less guarded in the later half of my research, allowing me to sit beside him and watch him create *Mine-imator* videos (see Sections 5.3.3f and 5.2.3). In another example, Adrian, who joined The Lab partway through this research, was observed to be very shy and reserved when he first arrived (observation, Frankston Lab, 2 May 2016). Aside from the mentors, he did not talk or make eye contact with anyone in the first few sessions (seeing Section 5.1.5). Even when Adam, who was assigned to him by a mentor, spoke to him, he replied very quietly with “his eyes affixed to the screen” (observation, Frankston Lab, 2 May 2016). However, with familiarity and continual interactions with Adam and other members, Adrian quickly became acquainted with members of The Lab and began interacting actively with others and engaging in group activities.

These examples show young people with autism’s vigilance in assessing and responding to their social environment. Lab participants cautiously observed and assessed the space and the people within it as both conveyed certain values through body language, configuration, etc. A series of Third Space interactions with human and non-human subjects occurred over time, allowing these young people to make an assessment as to how they could or wanted to interact with others within the space. I suspect that role models at The Lab such as Adam to Adrian or Jack to Richard prompted participants to interact or reciprocate interactions in similar ways.

From my own interactions with young people at The Lab, one of the more interesting revelations for me has been the idea of normality, where what is accepted to be normal practice (e.g. like the practice of social norms) is only as normal as it is acknowledged by those who occupy the space. I sometimes felt left out as I was not used to some of the ways they interacted with each other, such as prolonged online communication with others while sharing a social space. In an earlier session, I noted as part of my observation and reflection that:

> *“young people with autism, for the lack of a better word, seem so ‘weird’ to me at times – (Tom) was whispering something about Trump to us while using his mobile phone; (Damien) was explaining to me about … and the telestrations of colours which I am still unclear about; (Joe) was indirectly talking to us, I think, through announcements while playing his game.” (Observation, Footscray Lab, 26 May 2016)*

Looking back on this note, I was able to see that they were not “weird”, but rather, that I was the one who was socially awkward in the room. These interactions exposed certain privileges that are invisible to the people benefiting from them: sociality is a constructed concept in which certain social interactions and identities are accepted and privileged over others. Young people with autism are unique individuals who want to socialise, interact and communicate—their sociality is just not privileged. This point of contention is a fitting segue into the next chapter on redefining sociality.

In this chapter, I have explored how the interactions between the differentiated spaces of The Lab facilitated hybridity between the virtual and the physical, the creation of adapted Third/Fourth places (i.e. social-learning environments), and Third Space interactions that allowed for the construction of new understandings and knowledge, both individually and collectively, of autism and sociality. The differentiated spaces of The Lab enabled young people with autism to socialise, interact and communicate with others creatively in their own ways without the negative ‘gaze’ of society or the perceived limitations of autism. This brings me to the next chapter: how can we define this diverse form and understanding of sociality?

Chapter 7: Redefining Sociality: Towards a Posthuman Perspective

In the previous chapter, I talked about how differentiated spaces at The Lab have enabled hybrid environments and experiences, the formation of Third and Fourth places for its members, and Third Space interactions between young people with autism and the spaces they occupy. Through these discussions, I have found that the experiences of young people between online-digital spaces and offline spaces have blurred where the interactions within both spaces are informed and impacted by each other, creating a type of feedback loop. With increased forms of interaction (e.g. human-computer), the meaning of sociality, then, has changed as the norms and values that measure our sociality have diversified.

In this chapter, I present the synthesis between the findings of this research and the discourses identified within this thesis in Chapters 2 and 3 under the concept of ‘posthuman sociality’, which aims to de-centralise the role of and focus on humans within sociality. Posthuman sociality is my proposal to understanding the complex social relations and interactions discussed in this thesis. It hopes to be a significant contribution to knowledge particularly in the field of sociology and critical disability studies as it is intersectional and responsive to changes in the technological landscape.

This chapter presents how sociality can be redefined to be more inclusive and reflexive to represent a shift from the normative understandings of socialisation which have underpinned the rhetoric of disablement for those with autism. Technology, while mainly represented by the online-digital space, is symbolic to this concept as the ‘other’, non-human aspects, alike to animals, that affect the way we perceive and socialise with others within differentiated spaces and social environments. Through posthuman sociality, the measurement of a person’s sociality (i.e. how socialised one is)—which has been key to understanding autism—becomes redundant as each individual’s sociality will be contextual, reflexive and beyond human interactions, not bound by social norms and values but relational to the ways we interpret them.

This chapter will begin by discussing the role and affordances of technology in the way it affects sociality by providing new ways and opportunities for individuals to interact online and offline, and enabling the learning and perceiving of sociality. Then, it will define posthumanism and discuss its relevance to understanding sociality today. Finally, this chapter will conceptualise posthuman sociality and consider how this concept may impact the autism narrative and contribute knowledge to the field of Critical Disability Studies.

7.1 Technology: Why We Need to Redefine Sociality

Anyone who has watched the television show *Black Mirror*, a science fiction series set in either an alternative timeline of the present or near future which examines the often unanticipated consequences of new technologies with dark, cynical endings, would find it difficult to ignore its blatant message about the current influence and power technology has over society and our personal lives. This has come to the attention of some media scholars (Cirucci & Vacker, 2018; Martin & McIntyre, 2019). As Cirucci and Vacker argue:

> *"Technology is never neutral in its effects - subtle, profound, and usually unexpected. Fire gave us heat and kept us warm, but it also made us into carnivores, leading us to kill off mammoths, endanger other species, and eat billions of hamburgers every day. … [O]ur satellites and media technologies have connected our peoples and nations around the world, ensuring that our world remains aglow on our screens, too. The consequence is more than mere global warming and climate change, because we humans have effected the Anthropocene, the new epoch of planetary evolution caused by the 'great acceleration' of technological civilisation since the middle of the twentieth century." (Cirucci & Vacker, 2018, p. x)*

Cirucci and Vacker discuss *Black Mirror* and technology in relation to human identity, surveillance culture, hyperreality, post-humanity and beyond. Similar to Martin and McIntyre (2019), many themes of the book circle around Donna Haraway's influential work, *A Cyborg Manifesto* (see Chapter 2), which discusses politics of the body, hybridity between animal/human and machine and the fragmentation of identity. Technology can be extensions of both society and ourselves; we can either be further controlled by dominant narratives (e.g. such as the neoliberal, patriarchal and ableist agendas) or socially construct our own sense of being. As Haraway (1984) argued, cyborgs are partially genderless and the realities of the social and the body can become imaginative resources and open fields for the reinterpretation of our identities through the use of technology. I believe that The Lab is facilitating the latter, whereby technologies have enabled young people with autism to communicate and interact beyond the perceived limitations of their diagnosis, urging us to redefine sociality and, consequently, autism. In this section, I will discuss how technology, specifically media, mobile and digital technologies, has provided young people with different ways and avenues to socialise and has enabled them to learn sociality.

7.1.1 Technology provides new ways for young people to socialise, both online and offline

As seen in the previous chapters, technology has enabled young people to communicate. Communication, an important aspect of socialisation, is a concept that everyone has heard of, but one that is difficult to define. To summarise the various models and definitions of communication for the purpose of this discussion, it is the process of transmitting and exchanging information through which new meanings emerge and social realities (e.g. relationships) are created (Fiske, 2010). In talking about communication, there are often distinctions and sometimes tensions between human and mediated forms of communication as the former is concerned with non-verbal and verbal communication while the latter focuses on the medium, its channels and how they impact communicators and receivers (Littlejohn & Foss, 2011). Mass media communication, for example, is much less about an exchange than a transmission of information to large cohorts of audiences (Fiske, 2010). However, with Web 2.0 and beyond, mediated communication has become more personalised and individualised, with the spotlight on “produsage” (i.e. the convergence of producer and consumer), online participatory culture and networked sociality, as discussed in Chapter 2 (Bruns, 2008; Jenkins, 2006; Wittel, 2001). We are as, if not more, involved in mediated communication as we are in verbal and non-verbal communication as technology becomes increasingly embedded in our society and personal lives (Silverstone, 2017). Therefore, rather than contending human communication, and hence socialisation, against mediated communication, the latter is becoming, as McLuhan (1964) had hoped, an “extension of our consciousness” whereby the ways we interact, think and act are influenced and expanded by the use of technologies. It should be noted as a preamble to the following sections in this chapter that McLuhan’s view of technology stems from his humanist perspectives, in which technology is a tool to people who use it (e.g. technology only affects us based on how we choose to use it). I argue that beyond this extension, the affordances of technology have changed the broader social realities and discourses; how we understand sociality, for example, is constantly altered as we interact with technology and vice versa (see Section 7.3 for a detailed discussion).

For young people with autism, the online-digital space as enabled by technology has given them an opportunity to share, receive, contemplate and respond to information. In Section 5.2.2, I wrote about how Richard wanted me to take videos of him for his YouTube channel. In the videos, you could clearly hear Richard directing me on how he wanted it to be filmed—at which angle, distance, etc. (video ethnography, Frankston Lab, 20 September 2016). The anecdote demonstrates how online information can be curated before it is shared; as Pink et al. (2016) put forth, video presentation is a form of performance where the subject being recorded is trying to put on his/her best self for the camera. In this instance, Richard is using content he produced together with the online-digital space to share information about himself with others, to communicate who he is and his interests. Through comments, likes and other forms of response mechanisms available on online social networks, young people receive feedback about their communication. As mentioned in Section 5.2.2, John, for example, seemed happy when he received comments on his blog from people I gathered to be regular commenters. Through technology and the online-digital space, individuals are able to communicate with others in a deliberate manner where they are not expected to react or respond immediately. For young people with autism, this is especially transformative as it allows them to interact without the need for the nuances of non-verbal communication.

Hence, technology has provided different ways for individuals to socialise within both online-digital and offline spaces, including young people on the spectrum. As raised in the previous chapter, with technology—both as a physical and an online medium—individuals are able to and I suspect, *want to*, communicate over multiple spaces and channels. They can communicate face-to-face or via multiple online media which allow for simultaneous synchronous interactions (e.g. Skype, FaceTime, Zoom or any video conference tool), participate in asynchronous interactions (e.g. emails and discussion forums such as Reddit) and communicate vocally offline, but with an absence of non-verbal interaction. It has opened up possibilities for different forms of communication that impact our social realities, such as the development of new kinds of relationships, from offline-only friendships to online networked friendships (see Section 5.2.2). Beyond the impacts on individuals, it has fundamentally changed the way communication takes place within societies. As a global citizen, I am able to contact my family from Australia without the constraints of time and space. People are able to move between places without necessarily being disconnected from their communities as communication through technology transcends physical spaces. Therefore, there is a need to redefine sociality as technology has enabled new perspectives and ways of communicating between people, spaces, time and technologies.

7.1.2 Technology enables young people with autism to learn sociality

> *“Technology affords a range of opportunities that can transform the learning process, offering enhanced possibilities for knowledge and skills acquisition. It does not determine or control.” (Goodyear & Retalis, 2010, p. 8–9)*

In Chapter 2, I defined socialisation as a process whereby individuals develop an awareness of social norms and values to achieve a distinct sense of self (Giddens et al., 2014). This is one of the many definitions available across scholarly literature but one that I think has succinctly and comprehensively summarised the general sentiment. As presented over several definitions in Section 2.6.2, socialisation is generally not defined as biological but is instead a process that is developed over time. The term ‘development’ has several interpretations, each stemming from different ontological viewpoints. While some argue that development is a form of maturation and growth separate from learning, others view them as distinct yet mutually dependent concepts (Vygotsky, 1978). Vygotsky’s (1978) seminal work on the Zone of Proximal Development (ZPD) discusses how individuals have different levels of development—the space between one’s actual development level (i.e. unaided mental capabilities and development) and potential development level (i.e. aided mental development) is his/her ZPD. Vygotsky’s argument is that some development processes need to be “awakened” through learning, where “learning is a necessary and universal aspect of the process of developing culturally organised, specifically human, psychological functions” (1978, p. 90). Based on Vygotsky’s approach, I argue that the development of sociality, especially for those on the spectrum, can be learnt and that technology can be a driver to this form of learning and development. It should be noted that Rizzo, Schutt and Linegar (2012) have previously proposed a similar discussion about the enablement of Third Space learning through ZDP at The Lab. This section is an extension of their discussion.

According to Goodyear and Retalis (2010, p. 6), “learning is conventionally defined as the process of acquiring competence and understanding”, either in knowledge or skill. It can be “implicit, informal or formal” and, admittedly, “often hard” (Goodyear and Retalis, 2010, p. 2). The last point of the previous sentence was drawn out because it is important to recognise that learning, as much as it can be intuitive at times, presents challenges and difficulties for people at different levels based on their capacities. Young people at The Lab, for example, may not necessarily have the implicit aptitude for learning normalised social and communication skills.

Clark et al. (2009) discussed the ways in which young people learn through Web 2.0 and beyond, highlighting the low cost and technological barrier to finding, creating and sharing content (as previously discussed in Chapter 3—see references to Jenkins, 2010 and Bruns, 2007), and the importance of interconnectivity between technologies to aid learning. They argue that through the use of technologies in different spaces, such as the home, workplace or the social space, the lines between formal and informal learning have blurred as the ways we learn are no longer bound by curriculum or the classroom. The technologies we use algorithmically inform each other about our search terms, the content we create and/or share, etc. through data sharing practices and, in turn, connect us to different aspects of our lives, allowing us to accomplish multiple tasks through one or a few devices. This resonates with my experience at The Lab where young people used multiple devices and software simultaneously to 1) learn skills (e.g. coding), 2) communicate with peers in and out of the room, and 3) play games.

Apart from the multitasking aspect, the snapshot of these young people using technologies to achieve multiple goals reveals the reason why we need to redefine sociality. As Clark et al. (2009) point out, there is a “digital dissonance” that occurs around learners’ experiences. According to Powell:

> *“[digital] dissonance is characterised by the disruptive consequences inherent in technology’s incursion ... the explosion in social-media interaction that is changing the complexion of human contact, and our*

> *expanding reliance on the World Wide Web for negotiating commerce, culture, and communication". (Powell, 2018, p. ix)*

In the context of learning and sociality, technology has disrupted the way people learn, particularly in formal settings, where instructional teaching and learning, which were previously physically located, can now be displaced in time and space (Clark et al., 2009). Hence, although young people with autism may not necessarily develop the same social skills supposedly implicit to others, the affordances of technology have enabled the potential development of both traditional and new forms of sociality for these individuals.

Mayes and Freitas (2013, p. 25) describe "learning as behaviour, learning as the construction of knowledge and meaning, and learning as social practice". While learning through behaviour takes place through feedback, positive reinforcement and/or the application of appropriate stimuli to instil and solidify desired behaviours, learning through the construction of knowledge and social practice occurs through active engagement and continuous participation in communities of interest, where participants are encouraged to be involved in the process of knowledge production and construction key to meaning-making. Young people at The Lab constantly use technology to learn through these mechanisms. For example, in Section 5.2.4, I recounted how Elliot asked if his interaction within a game-based simulation game was comparable to offline interactions, specifically in the domain of courtship. This is noteworthy because, firstly, the social experience of interacting with others online seemed positive and made an impression on Elliot, and secondly, he was trying to ascertain if this experience could be replicated in other contexts by surveying my thoughts.

Through this process, new knowledge about sociality can be developed, particularly between the persons involved, through meaning construction by reflecting on one's experience with someone else's prior knowledge and experiences—a form of Third Space interaction, as noted in the previous chapter. Elliot may have gained a better understanding of interactions between romantically-involved people by comparing his simulated online experience to my personal knowledge on the subject. In fact, it has triggered me to ponder the differences between offline and online interactions in this specific area and arrive at certain conclusions about my preferences, which I believe will be projected in future engagements—this is part of my meaning-making process.

Technology has enabled learning for Elliot and I in two ways. Firstly, it has allowed for active engagement within its online-digital spaces. New social spaces and communities of interests (e.g. in games such as *Emily is Away* or *Minecraft*, and on social media platforms) have emerged and are continuing to be created with the advancement of media technologies and its storage systems. These online spaces also require us to socialise ourselves within it, learning different interaction techniques (e.g. email writing versus online chats) and etiquette, but are different from offline spaces as they are not bound by location, physical bodies or linear time, and come in different forms and formats, such as group chats, forums, games etc. (that may or may not involve other human actors). In addition, within online platforms, sub-communities driven by users can be created, adding a different layer of complexity and rules directed by and for users. For example, Davidson and Parr's (2013) research found that individuals on the spectrum enjoyed participating in membership-based online sub-communities to discuss a range of topics and talk about their interests. As mentioned several times throughout this thesis, the online space provides people with autism an avenue to engage in conversations with others without the nuances of physical communication. However, Davidson and Parr (2013) also found that individuals preferred talking to others with autism, assigning a specific set of expectations to these online groups. Technology therefore expands and opens up new social spaces for individuals to actively engage in the knowledge construction and practice of sociality.

Secondly, it has allowed for active engagement with human and non-human actors within these spaces. Aside from providing a platform for interaction, it has also allowed for different kinds of engagement. In Emily is Away, for example, Elliot's engagement is based around a responsive (albeit pre-programmed) human simulator, a form of social interaction between human and non-human actors. *Minecraft*, on the other hand, relies on object-based sociality, as discussed in Chapter 2, whereby one's interaction with other human actors is a result of similar interests to a set of non-human actors—in this case, a sandbox game where players use basic blocks to build more complex objects. In both cases, technology has enabled a combination of interactions between human and responsive non-human actors, highlighting how perceptions of what it means to be socialised can change with increased variety and diversity in the ways individuals interact and come to learn about sociality through the use of technology.

Sociality must hence be redefined as it can be constantly constructed, deconstructed and reconstructed through active engagement with and within technology. Although some children and young people are able to acquire and assimilate social skills easily and even instinctively (e.g. Carpendale & Lewis, 2006), individuals on the spectrum may require other actors, such as mentors, parents, peers and online artefacts/objects, to help them conceive and learn about what sociality is before practising these interactions. Technology has become part of the learning and knowledge construction process, whether in its ability to provide new user-driven platforms for social interaction or its potential to facilitate new forms of sociality through the involvement of objects and digital artefacts as social actors.

7.2 Towards a Posthuman Definition of Sociality

> *"In aiding the sociality of individuals with autism, therapies often support the social skills and social needs of individuals with autism but tend to support a particular view of sociality." (Ringland et al., 2016, p. 2)*

So why do we want to redefine or broaden our definition of socialisation? After all, definitions of socialisation were similarly drawn from a series of studies and analyses. Throughout the course of this research, I realised that young people with autism value social interactions in that they actively want to communicate and socialise with others (see Section 5.3.1 for examples). Through the use of differentiated spaces and technology, young people at The Lab have sought to develop unique individual identities, such as recognising autism as part of who they are, as well as a collective social identity, interacting and participating as members of The Lab and building positive experiences together that in turn influence the way they view socialisation and autism (see Section 6.3). Based on recollections by parents versus all evidence collected to date about The Lab, including the evaluation by Donahoo and Steele (2013), young people at The Lab have developed more self-confidence and self-esteem since joining the programme as they have a group of people they can associate with and rely upon. In a promotional video made for the programme (The Lab, 2018), young people have expressed that “every time I come [to The Lab], I just feel happy” and that The Lab is a place “where I can be me … where people understand me”. How can we invalidate these interactions if up to 2.4 per cent of the population (i.e. autism prevalence data taken from Xu et al., 2018) may be experiencing a similar form of sociality? Why, as I have asked myself repeatedly, is a neurotypical’s experience of sociality one that is more valued than others?

Based on my analysis of the literature presented in Chapters 1 through to 3, there are two conclusions that can be drawn. Firstly, some realities are favoured over others, such as ableism in a neoliberal society, where the power of discourse is given to the political and economic elite. Said’s (1978) influential work on orientalism noted how Western imperialists, who were more technologically advanced and thought themselves superior, saw the eastern region as inferior and primal, often culturally misrepresenting and ‘othering’ them. This analogy is apt in discussing many dominant discourses today, including that of sociality and disability, as obscure behaviours not recognised by elite groups are often pushed to the periphery of boundaries that contain ‘norms’ and are therefore seen as the ‘other’. In many ways, it is not about what social norms or values (or socialisation as a whole) are, but rather, what they are not. Secondly, as the medical and social paradigms of disability have insofar been dominant in shaping the discourses of those with autism, their sociality and other positive experiences have not been the primary focus of discussion; rather, it is their disability (i.e. what disables them) that has been the centre of attention.

Aside from the biases of our society that invalidate the experiences of those who are different, a humanist view of sociality and technology is often taken, whereby the former is concerned with socialising through and with humans, while the latter is consumed by the belief that technology is a tool to be utilised. However, as discussed above, technology has fundamentally changed the way we interact and communicate. We have moved beyond engaging in only physical human communication, which exists on a single plane, to multiple mediated forms of communication enabled by mobile technologies and the online-digital space. Communication and interaction can now be displaced across time and space; people can connect with each other from across the world, both synchronously and asynchronously (see Chapter 3). Mobile technologies such as laptops and phones have enabled us to extend our networks and our private lives within public spaces, blurring the boundaries between physical, online, private and social spaces. Beyond an avenue to host communications, technology and its online-digital space have triggered a change in the way society and its people function. Through unjust biases to changes in the way society interacts and communicates, there are therefore compelling reasons to redefine and reposition sociality. Based on the evidence and narratives presented in my thesis, I propose the concept of posthuman sociality.

7.2.1 Defining posthuman sociality

> *"[We need] expanding definitions of sociality that help to weave on- and offline behaviour and resonate with the people engaging in them." (Ringland et al., 2016)*

Through this thesis, it has become increasingly evident that the implicit humanist perspective taken in discussions on socialisation provides limited insights into the way sociality and interactions have changed and are continuing to change in the age of digital technologies. While searching for the right term to discuss this repositioning of sociality, I have come across other concepts, such as object-centred sociality and actor network theory (see Chapter 2).

However, these concepts are either much more focused on a niche type of sociality or are concerned with defining the actors within processes. In other words, they do not seek to provide an alternative interpretation of the current definition(s) of sociality and socialisation. The concept of ‘posthuman sociality’ is positioned as an evolved version of the definition(s)—one that does not simply aim to replace, expand or provide an alternative explanation, but rather, seeks to acknowledge its legacy while presenting new meanings and knowledge about sociality that 1) recognise the changes in society and its ecology, and 2) reduce or even remove (if possible) its inherent biases and subversions to certain values and principles.

In Chapter 2, I briefly discussed the theory of posthumanism as a prelude to this concept. In short, posthumanism characterises itself as an “extended, distributed, interconnected and relational entity ‘embodied and embedded’” within a society that is reflexive and post-anthropocentrism, seeing the human subject as part of rather than the focus within a broader ecology (Goodley et al., 2014, p. 348). This is in juxtaposition to humanism, which defines itself as “a commitment to search for truth and morality through human means in support of human interests … [rejecting the] validity of transcendental justifications” (Wolfe, 2009, p. xi). In comparison to posthumanism, humanism is individualistic, egocentric and anthropocentric, believing in self-determination and science.

Semantically, ‘posthumanism’ is used to “mark the end of that period of social development known as humanism, and so in this sense it means ‘after humanism’” (Pepperell, 2003, p. iv). However, I think the term should be used reflectively with caution. The concerns of this thesis are evidently from the perspective of being human in support of certain human interests—which, to some degree, makes it humanist. However, these concerns are posthuman in that they recognise humans as not being the centre of the universe; our concerns as a species are not greater than the environment, the climate, the animals, the technologies, etc. that surround us. In some ways, we are not ‘after humanism’, signalling a full departure from humanist views, but instead, *beyond* humanism; the interests of the species are situated within a broader symbiotic ecology. Put simply, I believe that we are not just either human or posthuman, but human within a posthuman environment. It is with this distinction in mind that I define posthuman sociality.

Posthuman sociality, according to this research, refers to the process of exploring and developing socially diverse identities and values that are reflexive and interconnected to the environments that one occupies, enabling the individual to achieve a unique sense of self. Unlike its predecessor, this definition is not aimed at measuring sociality (i.e. based on one’s level of awareness of social norms and values) but is aimed at advocating and supporting the ongoing exploration of sociality by individuals and society as a whole. It should be noted that this definition is not limited to understanding how young people with autism socialise; the evidence of this research simply exemplifies a definition that can be broadly adopted. In the remainder of this section, I will provide an in-depth examination of the different elements of this definition.

7.2.1a Valuing exploration and the development of social diversity

Posthuman sociality values exploration and the development of social diversity over socially constructed norms, highlighting progression and an ongoing socio-cultural process rather than one that has a defined destination. In Section 2.6.2c, I noted that there were four key aspects of socialisation that could be drawn from the various definitions. Firstly, socialisation is defined as a social and cultural process. Secondly, it is related to our perceptions of norms and values. Thirdly, it is concerned with an individual’s experience, behaviour and identity. And finally, socialisation can be learnt or transmitted. In conceptualising posthuman sociality, I incorporated these aspects through critique and extensions of its definition, as young people at The Lab did demonstrate each of these conditions, although in unexpected ways at times.

Young people at The Lab, for example, were trying to perceive and learn social norms and values. In Section 5.3.3f, I discussed how members were practising certain social expectations set by mentors and/or external influences (e.g.

parents, schools). For example, after talking to a mentor, Scott apologised to Damien for becoming angry during a team-based activity. The apology showed that Scott accepted the mentor's expectation of how one should behave and deal with conflict within a social space such as The Lab, indicating that members can be receptive to being taught and learning social norms. In other instances, young people were trying to conform to structures of interactions by greeting others at The Lab, taking turns to speak, asking if someone wanted to join them in gameplay or being polite, even in the most uncomfortable situations (see Section 5.3.2).

However, as discussed in Section 6.3, the practice of some social norms, such as maintaining eye contact during a conversation, may have made young people at The Lab uncomfortably stimulated and stressed. As such, through collective psychosocial participation and Third Space interactions, young people developed their own interpretations of interacting within The Lab that were beneficial for each other, such as using screens or activities as distractions to overcome discomfort during a conversation.

These examples provide a glimpse of how young people with autism may search for and discover their own social identities and a sociality that is beyond the norms and values constructed by society. As briefly discussed in Chapter 2, social identity refers to "that part of an individual's self-concept which derives from his membership of a social group (or groups), together with the value and emotional significance attached to this" (Tajfel, 1978, p. 63). Through their positive (and sometimes negative) experiences at The Lab, young people with autism have been able to learn different types of social interactions that suit their needs and the needs of the people within the environment. In the process, they have been able to develop friendships and a sense of belonging or even duty to the community, where they serve as role models and/or mentors to other members. The Lab has enabled them to celebrate their autistic identities rather than be and feel punished for their differences, as discussed in Section 6.3. In doing so, they have also contributed to the collegial culture of The Lab, allowing it to positively influence other members.

By being reflexive, socially diverse and open to change, The Lab has become a social, Third and even Fourth place that is welcoming to young people with autism. While social norms and values may at times act as points of reference, they can also restrict the sociability of an environment and the potential capabilities of its occupants. In this case, The Lab's members are able to communicate and interact beyond the perceived limitations of autism as the environment, which is not judgemental or prejudiced against certain types of interactions and behaviours, enables them to continually explore and negotiate their social identities and sociality. The values of diversity and exploration found at The Lab were highly influential in the conceptualisation of posthuman sociality.

These aspects of posthuman sociality may also have broader implications beyond those with autism. As discussed in Chapter 2 under Critical Disability Studies and intersectionality (as will be further discussed in the next section), socially constructed norms and values have a significant impact on many vulnerable populations, such as women, the LGBTIQ+ community, migrants, etc. With the de-emphasis of norms and values and their use in the measurement of sociality, individuals and communities (such as those with autism) may be able to create positive and unique social and individual identities within a posthuman society that focuses on inclusivity and diversity, moving away from disabling or discriminating discourses such as ableism, sexism or racism.

7.2.1b Recognising reflexivity and interconnectivity between human and non-human actors

Posthuman sociality is reflexive, relational and interconnected to a range of human and non-human actors (e.g. technologies, animals) within the environments that we share. Technology, a non-human actor, becomes an extension of our bodies and beyond, and is essential to the narratives we build about ourselves and our society. As argued above, the understanding of what it means to socialise changes as we explore different types of social interactions and communicate with others. Knowledge construction of sociality, as seen in the discussion on Third Space, is based on evaluating our experiences against the experiences and values of others and of society. For some, these values are well-aligned, resulting in mutually positive experiences, such as neurotypicals socialising in places that embody social norms and values constructed by other neurotypicals. For others, such as those on the spectrum, social expectations of certain places such as schools may bring challenges and negative experiences, as the values between the place and the people in question are incompatible (Goodall, 2018).

However, incompatibility should not be seen as an inability to socialise. Even drawing from Giddens et al.'s (2014) definition, where the phrase "awareness of social norms and values" is used, there is no indication that Lab participants were considered to be unable to socialise if they disagreed with these norms. As seen from the findings, young people with autism were aware or trying to be aware of these social norms. At The Lab, they were constantly seeking attention and affirmation from others on what they were doing, and practising certain social etiquette, such as being polite, trying to make eye contact while talking, apologising for unintended mistakes, etc. to expose and embed themselves into the social environment (see Section 5.3). As Ringland et al. (2016, p. 1) point out, individuals on the spectrum, unlike misconceptions derived from medical narratives, "search for, practice and define sociality through a variety of communication channels"; they want to interact with others socially and develop meaningful relationships, even if they may have difficulties adapting to constructed norms and values. Within an environment like The Lab, they are able to explore and better understand what social norms and values mean to them and how they can relate to and interpret these social graces, taking them in their stride. Posthuman sociality intends to move beyond simply acknowledging social norms and values, the perception that they form the baseline to sociality, to asking whose norms and values these are and how they relate to each individual and their social environment.

Posthuman sociality takes a reflexive and relational approach as it recognises that social expectations as defined by norms and values are constructed by certain privileged voices and hence, problematic as they hide behind the guise of medical science to place judgement on different types of sociality. Through posthuman sociality, where social norms and values are expected to be constantly, critically and contextually reviewed, it is hoped that the perspectives of vulnerable populations, such as those on the spectrum, can be heard and incorporated into broader social discourses, creating more inclusive spaces.

Aside from the renegotiation of understanding sociality between human actors, a large part of posthuman sociality is concerned with the change in social dynamics brought about by non-human actors, such as the online-digital space. As detailed throughout this thesis, the affordances of technologies provide young people with autism opportunities to socialise in a number of ways. Firstly, it is a medium for facilitating different and multiple types of human communication and interaction. At The Lab, it has been observed that young people with autism often communicate with each other through messenger apps (e.g. Facebook Messenger, Google chat, *Minecraft* in-game chat) and video conferencing tools (e.g. Skype). This is often in addition to face-to-face interactions where they are talking to each other while also chatting online or engaged in other activities, such as playing games or coding. With technology, we have become more connected and networked, transcending across time and space to extend our interpersonal communication and connections with others.

Following from the previous point, technology thus changes the way we approach social interactions. With online-digital spaces, we can connect with multiple individuals both synchronously and asynchronously. In Section 5.2.2, I discussed how mobile technologies and online-digital spaces have extended young people’s friendships at The Lab: they keep in contact with each other out of sessions through texting, in-game messaging, etc. While there have been other methods of extended communication prior to these technologies (such as letter writing), there is a shift away from face-to-face, physical communication as the primary mode of human interaction with the increasing use of technology. Current modes of online interactions, as previously mentioned, are instantaneous, networked and not bound by time, physical location or common social etiquette; in fact, different sets of interaction orders such as those discussed by Goffman (1967) within offline communication have developed over time, such as the etiquette of writing emails. These illustrate the need to include technology in the redefinition of sociality as it has fundamentally changed the way we approach human interactions and hence, how and what we come to understand as social norms and values. Technology has enabled us to extend our social presence beyond the physical body, presenting ourselves to others in different forms and formats. While some people may know you physically, as young people at The Lab do with each other, others may only know you by the words you type or the audio transmissions and video screencasts that you have recorded and shared. This was exemplified by young people at The Lab, where they have been observed (see Section 5.2.2) to enjoy sharing videos and blog posts, and/or talking to strangers/people with similar interests over YouTube videos, blogs, Facebook groups, *Minecraft* messenger, Google chat, Skype, etc. They regard these people as online friends and acquaintances, modifying the notion of friendship. And perhaps one of the most important aspects of this form of technology-enabled communication is that beyond an extension of ourselves, technology has allowed for new social identities that are context- and user-driven to be developed where individuals are able to deliberate and curate which aspects of themselves they communicate to others and how (Cover, 2015).

During one video ethnography session (Frankston Lab, 20 September 2016) with Richard where he asked me to film him for a YouTube video, for example, there was a clear sense that he had wanted to present himself as friendly, approachable and knowledgeable in *Minecraft*, referring to viewers as “guys”—an informal and relaxed way of referring to a group of people—and alerting them to the fact that he was doing a series of *Minecraft* videos with the words “welcome back to”. He had asked me to take several shots, looking back at them after each take to ascertain that these were the right videos. This process is a form of curation, as noted by Pink (2013), in which people want to present the “best” qualities of themselves for the recorded material. Social interactions online are therefore different from offline interactions as social actors are more active in the construction of their own identity and social narrative within online spaces than dependent on and/or reactionary to other physical bodies within offline spaces (see Chapter 2). Thus, beyond being defined by socially constructed norms and values, with technology, a person's sociality is now a combination of socially and individually constructed narratives, allowing for new meanings about oneself to be presented and socialised.

Finally, through technology, we socialise with non-human actors; how we perceive social realities is shaped by our interactions with objects, algorithms, artificial intelligence, etc. As discussed in Section 6.1, our interactions with and within technology have enabled the formation of hybrid environments and identities. For young people at The Lab, interacting with games such as *Minecraft* and *Emily is Away* produced new perspectives on social relations, such as romantic relationships and friendships. Rather than learning through observation, practice or being taught, the online-digital space, particularly Web 2.0 and beyond, has allowed individuals to actively search for information on a range of topics, including sociality. Interactions with and within technology and non-human actors produce feedback that is not just an echo of human input; with each interaction, we gain new knowledge that informs our behaviour. This was evident at The Lab when young people used online slang such as "hashtag" and "YOLO" to emphasise a point in offline conversations or when they pondered if their interaction with an online avatar was a simulation of real-life relationships (see Section 5.2.4). The physicality of technologies such as screens and earphones also allowed young people at The Lab to interact comfortably with others without the physical cues (e.g. eye contact) that overstimulated them. In these instances, objects can be seen as points of interaction/interest, similar to a human counterpart. What separates new media technologies from other inanimate objects is that they require some form of participation whereby individuals are actively listening to music or playing games while interacting with these technologies. I thus argue that a renewed definition of sociality is needed as these technologies respond to our participation, prompting us to interact with them and others, human or non-human, within a broader ecosystem in different ways as compared to traditional face-to-face communications. The use of online slang in offline conversations, for example, is a product of online interactions and cannot be replicated without technology. Posthuman sociality recognises the impact technology and non-human actors have on different interactions and their potential to enable change in the production of personal and social narratives through increased interconnectivity and responsiveness.

7.2.1c Achieving a distinct sense of self without the prejudices of social norms

Posthuman sociality continues to encourage individuals to achieve a distinct sense of self, as described by Giddens et al. (2014), but without the prejudices of social norms constructed by the voices of the privileged. Sociality should be used as a means to develop further understandings on a variety of human and non-human relationships rather than as an end to categorising what being human means. Through reflexivity and the use of technology, posthuman sociality allows individuals to achieve a distinct sense of self by interpreting and developing individual and social identities that are relative to social cues, norms and values. As drawn from Wittel's (2001) concept of networked sociality, posthuman sociality puts forth that we are networked and relative to our social environments, human and non-human counterparts, and constructed social realities rather than found/trapped within them. In other words, while conventional definitions of sociality imply that they expect individuals to develop a sense of self within the boundaries of social norms and values, posthuman sociality advocates for sociality to be understood as individually or collectively developed through critical evaluations and interpretations of these norms, values and beyond.

In Section 6.3, I discussed how young people at The Lab may have developed a deeper understanding of autism and social interaction (both at an individual and group level) through traversing across differentiated and Third Spaces. With reduced stress to conform to the rules of traditional social and learning spaces (e.g. schools), young people at The Lab were able to explore what autism and being socialised meant to them, drawing particularly on the positive experiences relative to each, and develop individual and social identities through these experiences and understandings. For some members, the questioning of what constitutes autism revealed how they identified themselves with the diagnosis: it was as much an identity to them as it was a medically defined condition, in line with the arguments of neurodiversity (see Chapter 2). In other cases, young people with autism were able to draw on their positive social experiences and extend technology-enabled communications to the physical space of The Lab, enabling them to interact without the nuances of physical communication that often discomforted them within other social spaces. Over time, this form of communication became part of the culture of each Lab—a new "norm" in which all members participated and communicated in relatively similar ways. These showcased how the flexibility of differentiated spaces, which de-emphasised the enforcement of social norms and values, allowed for individuals on the spectrum to successfully modify, adapt and socialise within an environment. Posthuman sociality aims to legitimise these varied forms of social interactions and communications through positioning social norms and values as points of reference, open for interpretation, rather than binding principles that impose on our sense of self. After all, norms and values are socially constructed and malleable by those who have the power to steer discourses (e.g. political elite).

Posthuman sociality therefore seeks to be transformative; the voices of vulnerable populations are not drowned out by privileged voices who have insofar been given the authority by society to define our social and individual identities. Instead, it acknowledges that sociality is reflexive and relative to people, technology, environment and society, and is context- and user-driven rather than derivative from constructed norms and values. It strives to be an inclusive cosmopolitan of socialities, celebrating diversity in the ways people interact with a range of human and non-human actors and come to be part of social environments, such as the unique manner in which young people with autism socialise within The Lab. Most importantly, posthuman sociality hopes to empower individuals to discover their own individual and social identities, explore the values that are important to them and the people within their social environments, and achieve a unique sense of self that is relative to, but not defined by, social norms and values.

7.3 Posthuman sociality: Implications for Autism and Critical Disability Studies

The concept of posthuman sociality, together with this dissertation's discussions on technology and differentiated spaces, has implications on a number of fronts. In this section, I will discuss their potential impact on autism and Critical Disability Studies.

7.3.1 Posthuman sociality and the redefinition of autism

Posthuman sociality can change the understanding of autism from deficit-based and disabled to 'differently abled'. It can also allow individuals on the spectrum to incorporate autism into who they are and what they can do rather than see it as a condition that is undesirable or one that makes them less human.

In this thesis, I have demonstrated that young people at The Lab can socially interact and communicate with others within differentiated spaces. From my findings presented in Chapter 5, young people with autism have been observed to be able to hold conversations both off- and online, as well as work together to achieve similar goals and develop meaningful relationships with others that extend beyond the hours of The Lab sessions. They were observed to enjoy the flexibility of the programme and its unstructured nature as it gave them control over what they could do and allowed them to explore their sociality, identity and preferences in engaging with others. However, their interactions, which may be limited in and by ableist environments such as schools, have been defined by the medical paradigm as a deficit because they do not necessarily conform to social norms and values or the 'interaction order' conceptualised by Goffman in as early as 1956 (see Section 2.6.2b). This, I argue, is an unjust assessment of autism as 1) norms and values are constructed and hence biased against what they are not, and 2) technologies have changed the way we interact and communicate with each other since 1956. In Chapters 3 and 5, I discussed the affordances of differentiated spaces, how they make up social environments and their impact on the ways people interact within them. In ableist environments, social spaces are constructed by norms and values that necessarily exclude people who are unable to conform to these expectations, making these spaces disabling (see Chapter 2). However, as seen at The Lab, where norms and values are de-emphasised and the preferences of young people with autism—be it their choice of activity, interaction or the way they configure the physical space around them—are respected, considered and negotiated between individuals, social environments that adapt to the needs of the people who occupy them can be empowering and enabling, allowing for vibrant and diverse interactions to take place within them.

In addition, the use of technology at The Lab as a means to expand learning, extend communication and connect with human and non-human actors has allowed for varied forms of social interactions to flourish. Coupled with the unstructured spaces and Third/Fourth place nature of The Lab, it has encouraged members to seek new meanings of autism and sociality for themselves (see Section 6.3) and develop a social identity relative to The Lab. As put forth in Chapter 2, individuals on the spectrum are therefore not disabled as a result of their autism, but rather, are disabled by the discourses and socially constructed environments that surround them. Posthuman sociality provides an opportunity to change this discourse and shape environments to be inclusive and enabling instead of disabling.

Posthuman sociality recognises and validates the use of technology for different types of social interactions and welcomes diversity in the way people socialise; it does not seek to discredit the need for social norms and values. Furthermore, it is not within the scope of this thesis to discuss if or to what extent they are necessary to society. This thesis acknowledges only that they are constructed, but considers them as points of reference according to which individuals relate and orientate themselves rather than allowing themselves to be defined by them. By this definition, people with autism can interact, communicate and socialise, as exemplified by young people at The Lab. However, these interactions may manifest differently from person to person and between persons with autism and their neurotypical counterparts. One of the goals of posthuman sociality is to move away from measuring how socialised an individual is against norms and values, instead recognising the potential of different bodies, minds and environments to interpret spatial and social cues and develop approaches to socialising with others based on an individual's abilities. In defining autism then, it discredits the ableist and deficit-based model taken by the medical paradigm as posthuman sociality does not measure the efficacy of social interactions or communications, but simply identifies them as different.

However, posthuman sociality does not intend to change the view of autism to being just a social construct, nor does it suggest that individuals on the spectrum do not need help socialising with others. People with autism enjoy repetition and certain routines, as observed at The Lab. Even when members of The Lab were given the freedom to move around the room or reconfigure the physical space, they often sat in the same spot or relative to the people they were familiar with and engaged in the same activities, such as building a *Minecraft* world or playing *Goat Simulator* over long periods of time across multiple Lab sessions. Recounts of experiences by parents and young people at The Lab also suggest that individuals on the spectrum may and do also have difficulties interacting with their neurotypical counterparts because they can be overstimulated or feel discomfort about social conventions imposed on them by the latter, such as physical contact, etc. In other words, the biological effects (e.g. overstimulation) that one with autism experiences are real; but, as alluded to earlier, these experiences are mostly triggered by ableist discourses and environments that disable individuals on the spectrum, imposing norms and values that exclude their wellbeing in the first place. As a point of contrast, at The Lab, I previously mentioned that I sometimes felt out of place (see Chapter 6) because the social environment recognised and accepted the different ways in which young people with autism socialised, which was instinctively a foreign concept to me. Posthuman sociality seeks to recognise this variety of socialities and help different groups of people or individuals to appreciate and adapt to each other through understanding sociality as relative to context and user and, therefore, necessarily relational. Individuals on the spectrum should be seen as differently socialised and abled, even possibly requiring mediation through and with technology to be able to interact with others, but not disabled by their condition.

Posthuman sociality, together with technology and the affordances of differentiated spaces, provides opportunities for autism to be redefined as a human condition, not disability, characterised by unique social communicative, interactive and behavioural patterns that are neither deficits nor a ‘lack thereof’ in these areas. This redefinition is in line with and an expansion of the neurodiversity movement discussed in Chapter 2, in which autism is positioned as part of an individual’s or a social group’s identity rather than an impairment. Beyond being ‘differently abled’, posthuman sociality proposes that people may be ‘differently socialised’. It reaffirms neurodiversity’s assertion that neurological differences such as the ways we understand sociality exist and may cause tension between peoples who are neurologically different. However, it does not suggest that these tensions are caused by a false, constructed binary between the correct ways to socialise versus the incorrect. Posthuman sociality thus seeks to expand our understanding of autism and neurodiversity in that each individual may be differently socialised based on their intersection between biology and culture, a vision explored by Critical Autism researchers such as Waltz (2014) and Woods et al. (2018).

After all, as observed by Verhoeff (2013, p. 454), the professional and medical definitions of autism have changed over the last six decades or so, from “profound affective withdrawal and aloofness” to “deficits in social cognition and intuition”. This change in definition is not simply a scientific progression, as practitioner-historians would have it, but an attempt to group biologically unexplained differences that have been observed together (Verhoeff, 2013). As such, I argue that the medical narratives and diagnosis of autism are contentious and have insofar been mechanisms to control the bodies of people who are deemed less desirable to society—hence the use of the term ‘deficits’. The findings of this research and the concept of posthuman sociality call for a redefinition of autism which celebrates neurodiversity and returns the power over bodies to individuals on the spectrum. This brings me to my final discussion point of this chapter on the relevance of this research to Critical Disability Studies.

7.3.2 Posthuman sociality and its implication for Critical Disability Studies

> *"Reconception of the human body, which decenters the dualism prevalent in humanistic thought. The posthuman body is not a discrete entity under complete control of a self-governing rational subject. Instead, under the posthuman paradigm, the body is necessarily relational, fluid and multiple." (Dolezal, 2017, p. 60)*
>
> *"Disability is but one cultural artifact that signifies the 'demise of humanism' precisely because disability demands non-normative and anti-establishment ways of living life. ... [It is] the quintessential posthuman condition: because it calls for new ontologies, ways of relating, living and dying. ... Disability, then, emerges in these contemporary (posthuman) times as a moment of relational ethics: urging us to think again about how we are all made through our connections with others and encouraging us to embrace ways of love and life that are not rigidly framed by humanistic values of independence and autonomy." (Goodley et al., 2014, p. 350–352)*

The quotes above, in my opinion, form a very succinct summary of the relationship between posthumanism and disability. Critical Disability Studies, a field of research which "question[s] traditional and normative understandings of the human individual ... offering new, collectivist, and crisp alternatives", calls for a posthuman view of disability as it has always contravened the traditional classical humanist conception of what it means to be human (Goodley et al., 2014, p. 346). Disability, as argued by Goodley et al. (2014, p. 348), is inherently posthuman because people with disability must necessarily live in "extended, distributed, interconnected and relational" ways as they are implicitly considered to be less human and are dependent on people or technology (as argued in Chapter 2). While some aspire to become able-bodied, fitting in with a materialist and ableist society, others live subversively and alternatively to seek fulfilling lives beyond the prescribed ways of being human.

Posthuman sociality contributes knowledge to the field of Critical Disability Studies as it provides an alternative way for people, especially those with disability, to reimagine how they relate themselves to their social environments through defining sociality on their own terms. At the crux of the materialism and ableism that constitute mainstream social and political discourse, in my opinion, is conformity and control of how society (mainly powerful political and economic elites) can control our bodies and make us work in ways that are aligned to their ideological framework and labour requirements (see Chapter 2). Sociality insofar has been part of this discourse, implicitly encouraging conformity to social norms and values that have been constructed by these very same discourses. Posthuman sociality is thus subversive to mainstream rhetoric as it provides alternative pathways to conceptualise what it means to be socialised beyond conformity and is critical of traditional approaches to sociality and how they have tried to dictate our individual and social identities. For people with disabilities, it is an avenue to explore new ways of being and becoming that celebrates diversity in sociality rather than adherence to social expectations.

The use of technology in the context of posthuman sociality also attempts to move beyond achieving ableism. As discussed above, technology has opened up opportunities for different ways to communicate and interact, from distantiated online interactions and human-to-human interactions via the physical hardware of technology, to human to non-human interactions. While many young people at The Lab have been observed to want to learn, understand and practise social norms, the affordances of technology within non-conformitive differentiated spaces encourage them to explore and seek out new meanings of sociality and autism beyond the confines of social or medical narratives, developing unique identities and a distinct sense of self through being interconnected and relational with a range of human and non-human actors. Unlike the subservient role of technology assumed in humanism, posthuman sociality posits technology as part of a broader ecosystem where humans and technologies are interdependent, enhancing humanity by introducing new possibilities to living, in line with Braidotti’s concept of the posthuman condition.

Posthuman sociality is also an intersectional concept, as briefly discussed in Section 7.2.1. It does not only apply to people with autism or disability but is also applicable to other vulnerable populations, such as the queer, the displaced, the discriminated, etc. It allows for new social identities and communities that are otherwise beyond the periphery of norms and values to emerge. Young people with autism are not just individuals on the spectrum. They identify, for example, with a certain gender which, as briefly discussed in Section 5.3.3h, affected the way they socialised with others at The Lab. Female members often isolated themselves from participating in activities or interactions undertaken by male members as they were severely outnumbered and, to some extent, excluded for being different. Individuals are not simply grappling with one aspect (e.g. impairment) that constructs the entirety of their identity, but rather a multitude of factors (e.g. gender, race, socio-economic status, access to technology) that impact the way they identify themselves, relate to others and socialise within different environments. Posthuman sociality allows for all to define their own sociality by drawing from their experiences and identities in relation to others and their social environments, and utilising what they know, rather than assumed knowledge of what they should know (i.e. norms and values). It aims to be authentic to the experiences of individuals and social groups rather than derivative from vague, constructed norms and values that represent only one of the many voices that exist within our society.

In this chapter, I discussed the role and affordances of technology in the way it contributes to our understanding of sociality. Firstly, it provides new ways and opportunities for individuals to interact off- and online by allowing for extended forms of communication that can be both synchronous and asynchronous. Secondly, it enables young people with autism to learn, perceive and interpret sociality through their experiences and interactions online—the online-digital space, with the semantic web (i.e. Web 3.0) and beyond, engages us in different ways (e.g. human to non-human interaction) that do not simply affect the way we socialise online but also the way we socialise offline (as discussed in Chapters 5 and 6). The chapter also defined posthuman sociality, with three distinct characteristics. In the first instance, posthuman sociality values exploration and the development of social diversity over socially constructed norms. It is also reflexive, relational and interconnected to a range of human and non-human actors (e.g. technologies, animals) within the environments that we share, de-centralising the human actor. Finally, it encourages individuals to achieve a distinct sense of self but without the prejudices of social norms constructed by the voices of the privileged. These characteristics of posthuman sociality prompt us to rethink the definition of autism and the broader implications this changing notion has on vulnerable populations.

Chapter 8: Conclusion

As I approach the end of this dissertation, I find more questions unanswered, more realities of those with autism unexposed to mainstream discourse and more day-to-day practicalities that affect young people with autism still left untackled. But what I am certain of, through the findings of my research, is that young people with autism at The Lab are unique individuals who can socialise and develop meaningful relationships with others through the appropriate configuration of differentiated spaces and the use of technology. At The Labs, I observed vibrant discussions, playfulness, conflict and resolution, teamwork and complexities in the way autistic individuals communicated and interacted with each other. I learnt a lot about these young people, not because my experiences at The Lab were unique—in fact, I noted in many of my entries that the sessions were similar and rather unremarkable—but because my interactions with them felt familiar, alike to other social spaces and programmes with children of the same age. This is not to say that the children at The Lab did not behave unexpectedly (e.g. throwing uncontrollable tantrums) or expectedly (as described by their diagnosis) at times; however, when given the opportunity, they were able to engage in social activities and interactions that were authentic, dynamic and meaningful. While young people with autism may choose to communicate in unusual ways, such as wearing earphones that play soft electronica music in the background while talking, they are able to effectively connect with their peers in environments that empower them; this was seen at The Lab, where young people were observed listening, responding, engaging and encouraging each other to participate socially throughout the sessions.

In this chapter, I summarise the findings and discussions of this research, addressing the research questions I put forth at the beginning of this dissertation, and consider the broader theoretical implications that differentiated spaces and posthuman sociality may have. Then, I discuss some of the practical implications this research hopes to achieve, particularly in relation to programmes such as The Lab, as well as in the future definition of autism. Finally, I will discuss the limitations of this thesis and call for further research in understanding the sociality of young people with autism.

Overall, this research is positioned as critical in four ways:

- It is critical of the normative and humanistic narratives surrounding sociality, autism and disability. Through the findings of this research, new posthuman understandings of sociality and autism have emerged.
- It is critical of the agenda set out by dominant ideologies (i.e. materialism and ableism) to control the bodies of those who possess different attributes. Findings of this research show that young people with autism can be equally “abled” and innovative in the ways they socialise, communicate and interact if they are empowered by their environments, nullifying the deficit-based professional medical narratives that have insofar been used to define them.
- It is critical of the configuration and affordances of spaces, which often embody social norms and values. Following from the previous point, spaces that expose the hypocrisy of constructed norms and values used to control our bodies can be enabling and empowering to vulnerable populations, such as The Lab to young people with autism.
- It is critical of the use of technology in that technology is recognised as not just a tool or extension of ableism but one that changes whole societies where its affordances can help people to develop unique individual and social identities.

8.1 How Do Spaces and Technology Enable Young People with Autism to Socialise?

The differentiated spaces of The Lab and technology have enabled young people with autism to socialise and develop meaningful relationships—the main premise of this research—through facilitating and accepting new and different ways of interaction and communication with others.

‘Differentiated spaces’ as conceptualised through the process of this research refers to a number of physical and non-material spaces which are distinctly different from each other yet working in combination to make meaning of an environment (Ng et al., 2015). This concept was drawn up to recognise:

- Individual spaces as differentiated from each other and having distinct qualities that alter social environments and impact the people (e.g. the way they socialise) who occupy them.
- The plurality and interconnectedness of spaces that influence and shape each other, and bring meaning to social environments and the people who occupy them.

In this section, I will summarise how individual differentiated spaces contributed to the sociality of young people at The Lab, addressing the sub-research questions raised in this thesis. Then, I will discuss how the combined differentiated spaces of The Lab enabled young people with autism to socialise, communicate and interact beyond the perceived limitations of their (dis)ability.

8.1.1 The role of distinct spaces

The affordances of each of the spaces enabled young people to communicate and interact in different ways. In this section, I discuss interactions specific to each of the differentiated spaces identified, namely physical, online and psychosocial.

8.1.1a Physical Space

The unstructured physical space of The Lab enabled and invited young people at The Lab to create new meanings about the space, explore social relations and interact with each other.

As discussed in Chapter 5, different Labs are located in different physical spaces. Using spatial semiotics, this research was able to identify how the level of flexibility, mobility and the configuration of the space contributed to different social outcomes and interactions for young people with autism. The Frankston and Footscray Labs, being more configurable (e.g. offering the freedom to move furniture), allowed young people to develop clusters with like-minded individuals, while the Reservoir Lab, restricted by space and layout but still allowing mobility, allowed for more one-on-one or large group interactions.

Mobility, enabled by a combination of the size and configuration of the physical space, and the unstructured nature of the programme, facilitated different forms of interactions between young people: human-to-human (i.e. group or individual conversations), human-to-computer or human through computer. It gave them the opportunity to negotiate the meaning of the communal space between others and themselves. I argue that this unstructuredness and freedom of movement, unlike a panopticon, empowered young people to make decisions about the space and the way they socialise, reducing the unequal power relations between the mentors and members that are often present within other social or learning spaces such as classrooms. It allowed young people with autism to express themselves without the restrictions imposed by other spaces (such as those of structured classrooms discussed in Chapter 3), allowing them to establish greater personal spaces, which helped them to make sense of their social environment, and experiment with different social distances and relations suitable to their needs.

The physical space of The Lab, therefore, gave young people autonomy to make choices and care for themselves, constructing safe spaces for all and supporting rather than obstructing their need to avoid different stressful scenarios (e.g. making eye contact with others) without explanation. The role of physical spaces then can be seen to embody the rules and regulations of the environment. The size, configuration of the space, maneuverability of furniture, etc. are spatial signs and symbols that direct us to interpret how we might behave in these spaces. For young people with autism, the characteristics of the physical space of The Lab informed them about the constructionist approach taken by the programme: explore your own interests and discover for yourself what it means to socialise, interact or communicate.

8.1.1b Online-digital space

This research revealed that the online-digital space can be a socialisation agent for young people with autism. Unlike mass media, where people are more likely to passively consume and imitate certain social behaviours, the online-digital space invites individuals to socialise through active participation (Jenkins, 2015). Through this, individuals become co-creators of information and knowledge that may be both explicit (i.e. found over the Internet) and tacit (i.e. undiscovered knowledge about one’s sociality), allowing them to socialise within both online and offline spaces, as seen at The Lab.

The online-digital space at The Lab also facilitated different forms of sociality, such as network, object-based and community-based socialities for young people with autism. It was interesting comparing the findings to this research to Wittel’s (2001) concept of network sociality as it showed that while the online-digital space did facilitate a more networked, short and intense form of sociality, it also opened up different possibilities for extended forms of offline interactions or the mirroring of these interactions when fully online (i.e. community-based rather than networked). As evident from the findings of the research, young people with autism engaged in different types of interactions ranging from casual conversations on- and offline, and Facebook group chats to focused, group/activity-based interactions (e.g. building a *Minecraft* world). Each of these interactions was extended or enabled by the online-digital space, in which young people were able to interact with each other based on needs or preferences, displaced in time and place when necessary (e.g. out of The Lab). This impacted the ways young people at The Lab perceived social relations and may be illustrated by the concept of ‘online friends’.

As discussed in Chapter 5, online friendships manifested quite differently from physical friendships for young people at The Lab. The term ‘friends’ within the online context is difficult to define as it can take on a range of meanings for different members, from strangers and acquaintances you may only know by nicknames in games, to people whom you regular meet/may have met face-to-face. For some, online friends seemed much less intimate, or even unreal (and generally less significant), than offline friends. Nonetheless, the interactions that the online-digital space afforded were equally important to those afforded by the offline space as they provided individuals, especially young people on the spectrum, with opportunities to interact with others and feel involved and included in communities. Online interactions even made some members at The Lab feel valued (e.g. comments and likes on blogs and YouTube videos) and accepted by the community—something they may not have experienced within a physical context. Hence, the online-digital space has diversified the way we approach, understand and value social relations such as friendships, allowing individuals to explore a range of different relationships that may seem less feasible within a physical context (e.g. knowing someone by his/her nickname within a game or forum).

The online-digital space also facilitated independent, self-directed and self-motivated learning where human interaction was not necessary. This relates to an earlier discussion on the online space as a socialisation agent; it is not just a space where human-to-human interactions occur, but one where content, simulations, games, etc. also become points of socialisation, de-emphasising the necessity for human interaction in all situations (e.g. young people may learn some skills through videos, forums or other online interactions rather than from mentors or peers at The Lab). These non-human interactions, in turn, have been observed to impress upon young people at The Lab, and alter their perspectives of, how to socialise with others within different environments.

The role of the online-digital space is thus to enable new ways for social interaction and communication, and the exploration of sociality. It has allowed young people with autism to learn and perceive sociality more independently (see Chapters 5 and 7), decreasing interdependence with peers or others to socialise or learn sociality. It should be noted that this thesis does not seek to de-emphasise the need for human interaction, particularly within a physical capacity. Rather, it focuses on the increasing need to understand non-human interactions as they become more prominent from a technological viewpoint. The online-digital space has been observed to be profoundly significant to these young people on the spectrum who find the nuances of physical interactions stressful. It has opened up opportunities for them to be socially engaged and involved in communities, activities and networks online that were previously inaccessible to them within the material space. In many ways, the online-digital space has changed the way we socialise and understand sociality.

8.1.1c Psychosocial space

Unlike physical or online-digital spaces which host sociality and social interactions, the psychosocial space is the intersection between what these spaces afford (i.e. enable them to socially interact) and how individuals or collectives interpret sociality and position themselves within these spaces and environments. Young people with autism perceive the physical and online-digital spaces of The Lab as safe and inclusive social spaces where they can interact and socialise with others without feeling ostracised or out of place.

As discussed in Chapter 5 and, to a lesser extent, Chapter 6, young people with autism want to be part of social environments. At The Lab, they were constantly seeking attention and affirmation from peers, mentors and even myself. While to some extent I believe this enthusiasm and attention-seeking behaviour was part of legitimising their sociality, on another level I argue that young people have been enabled by the spaces of The Lab to socialise and interact with others—something they may not have been able to do within other more restrictive social or learning environments.

Without the restraints of social norms and values, young people with autism were able to be themselves (i.e. be autistic) and utilise different techniques (e.g. constantly fidgeting with their hands) to provide sensory relief, allowing them to interact and communicate with others comfortably without the anxiety that they otherwise experienced in other social environments. It allowed them to apply what sociality meant to them and others at The Lab better, as discussed in Chapter 6.

This research has also highlighted certain contradictions typically associated with autism. For example, young people observed The Lab enjoyed both routine and freedom to choose; they could be both highly focused on an activity (e.g. *Minecraft* or *Goat Simulator*) and distracted by a diversity of interests, including the interests of others. These highlight the problems in the definition of autism: are individuals on the spectrum disabled by the social environments they (attempt to) inhabit rather than the differences they are diagnosed with?

These contradictions prompt us to rethink how the psychosocial spaces of people may be impacted by the way social environments allow us to position ourselves within them. The spaces of The Lab have enabled young people with autism to position themselves as active social members within the environment, engaging in social activities such as being involved in team-based activities, or simply chatting over a range of topics. However, it should be noted that the psychosocial spaces of individuals are affected by factors beyond those afforded by the spaces. At The Lab, young people have been noted to seek out, learn and practise social norms and values, even as these are de-emphasised at The Lab in comparison to other social and learning environments. The decisions of young people may also be influenced by social constructs.

In the initial presentation of my thesis, I had included a section on gender which was subsequently removed due to the sparseness of data. However, in this conclusion, it is important to note that where there were interactions between males and females, these were vastly different from those between male peers and mentors. For example, although I was in the same age range as most of the mentors, I was often immediately viewed by participants as not savvy with technology or knowledgeable about games—so much so that young people often offered to teach or show me something — e.g. “[Joe] kept asking me trying to teach me “Just Cause 3” even though I told him I have played the game before” (observation, Footscray Lab, 23 June 2016); “[James] was giving me a stepby-step introduction on how to playthrough Batman: Arkham City” (observation, Frankston Lab, 30 October 2016). On two occasions when new girls came to The Labs for trial sessions (observation, Frankston Lab, 2 August 2016; observation, Reservoir Lab, 10 September 2016), they were left alone and not interacted with throughout the session. I noted that one of the girls approached me specifically to ask if I wanted to watch a video with her, despite knowing Jerome from another out-of-school program; they did not interact beyond greeting each other (observation, Frankston Lab, 2 August).

These observations suggest that social constructs of gender (and gendered diagnosis of autism) may have led young people at The Lab to engage in exclusive practices that are gender-based. In other words, the psychosocial spaces of individuals are multi-faceted: while the configuration of social spaces can impact the way people construct knowledge about sociality, they are also being interpreted by individuals based on their prior experiences and knowledge. The way young people with autism position themselves within The Lab is a testament to this tension and constant change in the way we understand and perceive sociality. Hence, we must move towards a more reflexive approach to defining sociality—one that recognises it as a process rather than a destination.

8.1.2 The role of differentiated spaces

In the sections above, I have explicitly illustrated the role each differentiated space may have played in assisting young people at The Lab to socialise, interact and communicate. While the physical space of The Lab embodied rules and regulations guiding sociality in an environment, the online-digital space allowed for new opportunities for an individual to interact outside of the physical space, and the psychosocial space defined the ways in which an individual chose to socialise, informed by personal interpretations and experiences of other spaces.

However, as noted in Chapter 6, the differentiated spaces of The Lab did not work in isolation. They influenced and impacted each other, constantly changing how individuals view each space and their social environments. As such, they enabled hybrid environments, the development of Third/Fourth Places at The Lab and Third Space interactions that created new meanings for young people with autism through individual and collective reflections about their sociality and interpretation of autism.

Within The Lab, hybridity between the physical and the virtual was evident as young people constantly traversed between these spaces to interact and socialise with each other at The Lab. As discussed, there was great difficulty in separating the sociality of members online and offline as their experiences in both spaces were meshed and layered into coherent narratives, where the virtual and the “real” were not distinguishable from each other. For many members, meaningful human-to-human interactions were made possible via mediation through screens. The online space also served as an information gathering ground where young people were able to use what they learnt online to apply in physical settings. For others, the online-digital space enabled for similar immersive activity-based sociality offline, making the online-digital very much a part of the physical and psychosocial spaces.

The differentiated spaces of The Lab also created a unique Third/Fourth Place for young people with autism. While not all eight indicators of Oldenburg’s (1999) original concept of the Third Place were met—for example, The Lab is an exclusive place for young people with autism and has stipulated session times—its unstructured nature, flexibility and member-centred approach (i.e. interest-based and constructionist) provided conditions that enabled members to feel comfortable and socialise in a playful manner within a space away from home. This is particularly significant for young people with autism as they may not be able to find similar social spaces or Third Places that accommodate their quirks and needs. The Lab is hence a Third Place for individuals on the spectrum.

Beyond a Third Place, The Lab was also a social environment for learning alike to Fourth Places. Using the online-digital space, individuals were able to access spaces that are normally associated with the home (e.g. watching videos may be likened to watching television) and the workplace (e.g. emails, learning resources). This provided young people with autism the opportunity to socialise in casual but meaningful ways where there may be more purpose for interaction, leading to friendships that extend beyond the boundaries of The Lab, as was evident in this research.

Most importantly, the differentiated spaces of The Lab enabled young people with autism to socialise by empowering them to build positive narratives and experiences around their autism and sociality. Through Third Space interactions (i.e. interactions between psychosocial spaces, as well as other spaces of The Lab), young people were able to create new knowledge about themselves and others with autism. Through The Lab's non-judgemental and constructionist approach, young people were able to learn that being autistic may not necessarily impede them the way medical narratives have described. In fact, it was evident that autism was very much a part of their identity—a part that allowed for positive social experiences at The Lab. Through Third Space interactions, members were able to appreciate new possibilities for social communication and interaction enabled by the hybridity of the environment. This appreciation led me to conceptualising the idea of posthuman sociality.

8.2 Defining Posthuman Sociality

Through witnessing vibrant social interactions between members of The Lab, this research indicated the need to redefine sociality and, in turn, autism. The deficiency in social communication and interaction (as emphasised by professional medical narratives) that define autism were not applicable to the participants of this research. Similar to other disabilities, autism needs to be defined beyond its disablement, recognising its symptoms and abilities as constituting difference, not being less human.

Chapters 5 and 6 showcased how young people with autism were able to socialise through the use of technology and within a unique combination of differentiated spaces. This provided a set of conditions that were suitable to be applied to the reconceptualisation of sociality. Most prominently, this research presented the complex relationship young people had with technology; Lab participants were presented with multiple ways to interact with other actors, both human and non-human. Through these interactions, members of The Lab were informed and empowered to learn more about their sociality and the ways in which they could socially interact and communicate with others. This complexity, together with the impact of the differentiated spaces of The Lab, alluded to the fact that our sociality is beyond human relationships, interactions and constructed norms or values: the environment and non-human actors around us have a significant effect on the way we are contextually socialised.

Therefore, I looked towards the posthuman to provide guidance in how sociality can be redefined.

8.2.1 Definition of posthuman sociality

Posthuman sociality, according to this research, refers to the process of exploring and developing socially diverse identities and values that are reflexive and interconnected to the environments that one occupies, enabling the individual to achieve a unique sense of self. It was developed based on Braidotti's (2013) and Goodley et al.'s (2014) concept of the posthuman condition in relation to the understanding of disability, where life can be seen as beyond the self and the species. Posthumanism is defined by its post-anthropocentrism, reflexivity and view that humans are part of their broader ecology. Using these indicators, together with the findings of this research, I conceptualised 'posthuman sociality'.

Posthuman sociality is characterised by three distinct attributes. Firstly, it values exploration and the development of social diversity over socially constructed norms. As seen at The Lab, the unique combination of differentiated spaces enabled young people with autism to explore their sociality and interact vibrantly within a social environment. How someone is socialised (i.e. behaving in a way which is acceptable within an environment—Giddens et al., 2014) is therefore contextual rather than conforming to social norms and values as different environments subscribe to different attributes.

Secondly, posthuman sociality is reflexive, relational and connected to a range of human and non-human actors (e.g. technologies, animals) within the environments that we share, de-centralising the human actor. Again, as evident at The Lab, technology has a profound impact on the ways members interact and communicate with each, from providing a medium for extended interactions or a physical barrier to reduce stress in face-to-face conversations, to being a responsive, non-human actor that gives advice, albeit algorithmically, to its human counterpart. Hence, a person's sociality needs to be viewed as adaptable, changing in relation to their environment and the interactions they have with a range of human and non-human actors.

Finally, posthuman sociality encourages individuals to achieve a distinct sense of self but without the prejudices of social norms constructed by the voices of the privileged. As seen in the discussion of Third Space interactions, young people with autism are able to produce positive narratives about themselves and their way of being under the right conditions. The traditional definitions of socialisation have bound us to the vague and constructed social norms and values of the elite and privileged voices. How can one achieve a distinct sense of self if one is chained by the social constructs of a few?

Therefore, the concept of posthuman sociality is significant as it opens up new perspectives on the ways people work towards defining themselves within their social environments. This is especially applicable to understanding autism.

8.2.2 Posthuman sociality on its implication for autism and broader disability and ideological rhetoric

Posthuman sociality provides an opportunity for us to redefine autism as it nullifies the notion of deficiency in social interactions and communications as we are no longer able to measure the performance of sociality against social norms and values since sociality is relational and reflexive to its context. Within a posthuman argument, autism can be redefined as a human condition, not disability, characterised by unique social communicative, interactive and behavioural patterns that are neither deficits nor less human.

One of the most significant aspects of posthuman sociality is its recognition and validation of the use of technology for different types of social interactions. This was particularly applicable to young people at The Lab as they were constantly experimenting (e.g. downloading new games or apps) and interacting with and through technology. By putting the spotlight on technology, it has allowed us to see how sociality can change, with new ways of interacting with others. At The

Lab, for example, extended communication out of session over mobile devices or Skype was observed as a common practice for keeping in touch, showing how a ‘norm’ within this social group and beyond could be established through the introduction of technology.

Posthuman sociality also allows us to align understandings of autism more closely with the concept of neurodiversity. Beyond being ‘differently abled’, posthuman sociality introduces the notion of being ‘differently socialised’. As previously mentioned, posthuman sociality can remove the stigma around deficits in social interaction and communication as these attributes have become relative to context and thus, are not qualifiers and quantifiers of what it means to be socialised. Autism then becomes a way of being some people may experience, one that is experienced by the person (e.g. overstimulation, hyper-focused) yet not disabling, as certain contexts (such as The Lab) may welcome these differences. Neurodiversity proposes this as a crucial part of a person’s identity but not disabling or all of who/what they are (Kapp et al., 2013). The contention between the use of the term (i.e. an ‘autistic person’ versus ‘person with autism’) becomes less relevant because it does not carry negative connotations and should relate to how one identifies him- or herself.

As seen above, posthuman sociality provides alternative ways for people with disability, such as those on the spectrum, to reimagine how they relate themselves to their social environments by defining sociality on their own terms. This contributes to knowledge in the field of Critical Disability Studies as it is an intersectional and transformative concept, subversive to mainstream rhetoric and applicable to all, particularly to vulnerable populations who have been stripped of their voices in place of more privileged voices who dictate social norms and values. The alternative ways according to which people with disability often live become recognised as different but not less fulfilling than those belonging to individuals without a disability.

Posthuman sociality is an example of life beyond self and species. Technology as not simply a tool for ableism but one that can change and enhance[15] humanity, introducing alternative ways of socialising through its distinct qualities that can be extensions of ourselves but also affect us through the ways we interact with it. Sociality can, therefore, be seen as relational to both human and non-human actors. While human interactions are significant, it does not diminish the equal importance of non-human interactions as we live amongst animals, technology, plants, etc. and within a broader ecology. Posthuman sociality recognises that our sociality is more than the sum of our human interactions, particularly beyond the constructed conventions of interactions imposed upon us by privileged voices.

Posthuman sociality is also concerned with diversity in values and identities. It provides an alternative way to understand how individuals socialise and are socialised, beyond labels (e.g. disabled, gay, transgender, woman, man) that have been imposed on us by society to control our bodies and establish social order.

8.3 Practical Implications

While this thesis would like to tear down the literal and metaphorical fences so that everyone has an equal opportunity, the reality is that societies are bound by rules and ideologies. We still live in a neoliberal capitalist world, for example, where individual achievements, especially from an economic and labour market viewpoint, are important to the way society views and values us, and more importantly, our view of own self-worth as it is situated within this outlook. From a practical perspective, young people with autism and their families still require access to services and assistance to enable participation in society.

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[15] While I have used the term ‘enhanced’ to describe the use of technology, the opposite—in which technology negatively impacts people—could also be true (Goodley et al., 2014). However, this was not observed in this research and requires further examination to verify it.

Hence, in the short term, the findings of this research provide a good case study for others to understand how young people with autism can perform beyond the perceived limitations of their disability through the configuration of differentiated spaces and the use of technology. Individuals on the spectrum can indeed socially interact and communicate, albeit in distinct ways, if given the opportunity. This observation is in opposition to the ways they have been described as disabled within medical narratives. However, it does not diminish need nor responsive attention—The Lab is a programme that provides such a service to support young people with autism. The case study brings to light that people who require assistance are not necessarily disabled. Rather, it is an issue of equity within a socially constructed society that requires large degrees of conformity and integration that may not be immediately apparent to certain groups of people, such as those deemed to be disabled. Seeking and/or requiring help does not make a person less human or capable of living a less fulfilling life, as argued in this thesis through the showcase of how young people with autism were able to socialise at The Lab.

In the longer term, it is hoped that the concept of posthuman sociality and its flow-on effects on the definition of autism may change the broader discourse of autism and disability. Through a relational and reflexive, rather than a definitive, approach, posthuman sociality opens up new possibilities in the ways people can imagine their sociality and how they are positioned within our society and vice versa. It celebrates diversity and does not discriminate against people's bodies, mental states and differences. It is through this that individuals with autism can be seen as differently socialised rather than disabled.

The findings of this research can also inform the configuration of differentiated spaces within learning and social environments for young people with autism. Depending on the objectives of the space, the physical and online-digital spaces can be configured to facilitate better communication and interaction between people on the spectrum. Some considerations on the configuration of the physical space, as discussed in Chapter 5, include size, flexibility, mobility and layout. The ideological approach that underpins any programme is also important in configuring the space. The Lab, for example, takes a constructionist approach that is complemented by its use of flexible physical spaces, allowing young people with autism to negotiate between their interests, the potential of the space and their existing knowledge to decide on how they want to socialise and what they can learn. A space that is learning-centric, for example, may take on a similar approach to the Reservoir Lab, which allows for mobility but is laid out in a structured manner, while a space that focuses more on social interactions may prefer the configuration of the Frankston Lab, which is highly configurable, spacious and unstructured.

Similarly, the design or configuration of the online-digital space should be aligned to the objectives of the physical space and the approach of the programme. As Radcliff (2009) points out, there is a close-knit relationship between the use of technology, pedagogy and physical space in providing a comprehensive learning experience today. At the Reservoir Lab, for example, young people were assigned laptops with pre-downloaded programmes such as *Minecraft*. While they were not generally restricted to what they could access via the online-digital space, their learning and sociality were directed by these factors. In contrast, the Frankston Lab, which facilitated more social interaction than learning, was unstructured. Young people were advised to bring their own devices, allowing for more exploration (see Section 5.1 for more information). Hence, learning and social environments can direct how individuals access and interact within the online-digital space. However, even under scrutiny, the online-digital space still allows for creativity and independence that is unlike physical spaces in that it is a set of networks that can be easily navigated through a click of the button. Instead of restricting access, providing guidance while allowing for such creativity and exploration, as seen at The Lab, has been shown to be beneficial to the ways young people with autism interact with each other.

8.4 Moving Forward

In this section, I discuss some of the limitations of this thesis and talk about how future research can complement and enhance the findings of this dissertation.

From a theoretical perspective, because the findings of this research are largely focused on The Lab and its members, further research is required to verify and refine the concept of posthuman sociality. This thesis has sought to develop a conceptual framework that captures the way young people with autism socialise within the context of The Lab. Posthuman sociality attempts to be the intersection between the theories presented in this paper and findings of this research. While this is not generalisable—nor was it meant to be—it provides an opportunity for a much-needed, future theoretical discussion on the validity of understanding socialisation within a posthuman context.

This thesis has also been framed in the context of CDS rather than other forms of disability and autism studies. This is because research in relation to autism and disabilities has often been undertaken from either a medical or interventionist perspective, which frames people on the spectrum as having deficits in social communication and interaction. However, in discussions around posthuman sociality, or posthumanism, it is important to include these medical and interventionist perspectives as they provide yet another layer of complexity, particularly in the ways we understand how others may choose to socialise with those with a disability.

In addition, this research presented fewer opportunities to discuss intersectionality than initially anticipated. During my visits to The Lab, I heard a range of discussions amongst parents and mentors around access to facilities and programs based on financial capabilities, access to transport, etc. I observed underlying tensions between the capacity of families to support a child with autism and the actual support the child needs. This indicates possible systemic and structural issues that are unresolved within this context but also highlights the need to seek out and understand those tensions which may sometimes be invisible, particularly of those who are not at the Lab, because of impeding circumstances. How might (posthuman) sociality look when those who are unable to access services such as The Lab or other programmes are included in the discussion? Additionally, the minimal discussion around gender dynamics in this thesis due to the lack of female participants also requires further attention in future research around social spaces for people with autism.

From a methodological point of view, the design and execution of the participatory methods could have been improved to achieve a better balance between flexibility and control. As discussed in Section 4.9, although young people and their parents signed consent forms, it was unknown if participants were fully aware of my intent as a researcher, even after being verbally reminded. This was because I maintained a close relationship with participants, hoping to ease them into the research to reduce the stress that has been known to be associated with participation in research (Donahoo & Steele, 2013).

However, this circumstance caused ethical dilemmas for me as I was unsure how and if I should be sharing some of the information disclosed to me during the data collection phase. Although I had tried to clearly document within the initial ethics application the boundaries of data collection (e.g. recording observation data that does not identify or breach the privacy of participants), the actual implementation of boundaries was far more unclear than anticipated due to the participatory nature of the methods and the context within which this research was situated (i.e. an existing programme with established social dynamics). Nonetheless, as noted by Dwyer and Buckle:

> *"Being a member of the group under investigation does not unduly influence the process in a negative way. Disciplined bracketing and detailed reflection on the subjective research process, with a close awareness of one's own personal biases and perspectives, might well reduce the potential concerns associated with insider membership." (Dwyer & Buckle, 2009, p. 59)*

While the insider-outsider effect has its opportunities (i.e. familiarity with participants) and challenges (i.e. bias), Dwyer and Buckle (2009) argue that these are necessarily part of any qualitative research. To ensure a plausible account is presented, it is therefore important to recognise and acknowledge the issues presented and reflect deeply as to the experiences encountered by the researcher and the conclusions drawn from these experiences (Dwyer & Buckle, 2009). As documented in Chapter 4, I kept detailed observation notes together with my reflections, many of which were presented in this thesis, to ensure transparency in my thoughts as both a participant and researcher. Further consideration and documentation of strategies around boundaries for using participatory methods within similar contexts should be incorporated into future research.

In addition, because this research took place within existing Lab sessions, members were free to join or leave the research, particularly during the video ethnography and online participatory ethnography phases, to pursue more interesting activities happening at The Lab. This brought about a certain ambiguity as to their continued participation in the research that I had to gauge on a case-by-case basis. I also noted that although the quality of data collected was diverse and reliable, it deviated from the methods' original intentions. Therefore, I recommend that such methods need to be more structured, with defined parameters, such as conducting the research within a researcher-controlled online space while retaining a level of flexibility through consultation. This would improve the data collection process and the validity of the data. Further research into this combination of methods is also recommended.

Further to the methods used in this dissertation, there are opportunities in expanding the research through other qualitative and quantitative approaches. One of the initial goals of the research was to privilege the voices of young people with autism. However, the methods used, in hindsight, were more focused on my interpretation of their activities and interactions rather than a presentation of their own voices. Hence, there is scope for future research at The Lab to complement or challenge the arguments made in this thesis. Additionally, other stakeholders of The Lab, such as parents and mentors, need to be included in future research as they are very much a critical part of The Lab.

From a practical perspective, a longer timeframe, especially during the online participatory ethnography phase, was needed to observe the activities of young people online. This phase was particularly challenging because the set-up of the method required members to establish an online space rather than be studied within an established context, which may also be reconsidered in future research. As members only visited The Lab once a week, it was difficult to conduct this research online due to the discontinuity brought about by the time between sessions, as well as members' choice to engage in the activity on a weekly basis. Hence, a longer timeframe with a more established set of rules for participation may have allowed for a greater amount of qualitative data to be collected and analysed.

A limitation of this research is its containment within Melbourne. The Lab is an established network across Australia and more varied and extensive data could have been collected from Labs outside of Melbourne. This would have been of particular interest to this research as I wanted to further discuss how the unique culture of a Lab is established based on its spatial configuration, mentors and members. However, due to primary researcher availability, it was not practically possible within the timeframe and scope of this thesis to extend this research beyond Melbourne. However, this could be a future consideration for further research.

Personally, the process of conducting research has been both tumultuous and rewarding. Because I had not conducted research at this scale previously, there were areas of improvement that would have bolstered the findings. Firstly, I needed to learn strategies and establish protocols to adapt to difficult situations. As this was my first time researching with children (with or without a disability), I found the experience challenging as I was initially unable to orientate myself to participate in their activities; their constant enthusiasm made it both exciting and distracting for me to concentrate on my role as a researcher. Secondly, I was also unfamiliar with the analytic methods I had chosen. While I had previously engaged in discourse and content analyses, these were on existing texts rather than primary data sources. Hence, there was a steep learning curve to synthesising the data and establishing a framework to analyse the results. I should clarify that these personal pitfalls were not necessarily limitations to this research as I was able to accommodate these challenges by adjusting my timeline (i.e. allocating more time to addressing these challenges); rather, they need to be considered for others who may be embarking on a similar journey or working with children in future research.

8.5 Concluding Remarks

As demonstrated in this thesis, the differentiated spaces of The Lab and the use of technology enable young people with autism to socialise, albeit in ways that may be different from others. However, this does not disqualify the validity of their sociality—one that is vibrant and beyond the perceived limitations of their disability. Hence, redefinitions of sociality and autism were presented and discussed in this dissertation to bridge the gap between the research findings and current understandings of these concepts. In the end, as discussed through the transformative paradigm which formed the overarching framework of this research, I hope that this thesis has presented and advocated for the realities of young people with autism, highlighting the need for more inclusive environments and social discourses to improve the lives of individuals on the spectrum.

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Appendices

Appendix A: Research Summary of Critical Discourse Analysis

THEORETICAL AREA	DISCOURSES IDENTIFIED WITHIN THE LITERATURE	THEMES AND THEMATIC AREAS (TA) IDENTIFIED AND PRESENTED UNDER FINDINGS	FINDINGS	RELATIONSHIP BETWEEN DISCOUSE AND FINDINGS
Autism	From a medical perspective, individuals with autism are deficient in socially communicating and interacting with others. This is the normative narrative surrounding autism.	1. Configuration of physical space and mobility 2. Team-based activities 3. Autonomy 4. Common topics of interest 5. Communication beyond The Lab 6. Formation of friendship/social groups and clusters 7. Peer influence 8. Difference in perception of The Lab between parents and members 9. Learning activities 10. The role of mentors	Young people socially communicate and interact with others under conditions established by The Lab (Thematic Areas [TA] 1, 4, 5, 6, 7, 10, 11, 12, 13).	Young people are able to socially communicate and interact with others under certain conditions. The medical definition of autism is a specific narrative that cannot be applied to all contexts. The social and neurodiverse perspectives provide a more accurate view of how those on the spectrum may be able to communicate and interact under certain circumstances. However, these perspectives do not attempt to define autism.
	Under the social construction model, while no alternative definition of autism (or disability) is provided, it is implied that those on the spectrum are more disabled by norms around social communication, interaction and behaviour than differences they may possess.			
	From a neurodiverse perspective, those on the spectrum are neurologically different, not disabled, from their neurotypical counterparts. However, this is the least privileged paradigm.			

Socialisation	As socialisation requires interaction, this implies that individuals on the spectrum are unable to learn social norms and achieve a unique sense of self, i.e. to be socialised.	11. Empathy (or the learning of) 12. Safe space 13. Flexibility versus routine 14. Responding to social norms	Young people are able to socially interact under certain conditions. They also practice social norms, albeit not always successfully. Young people with autism are learning to understand themselves, others and their autism during the sessions (TA 3, 7, 10, 11, 14).	Young people with autism are able to socially interact and achieve a distinct sense of self despite not always acting within social norms. Social norms are subject to context and young people with autism are able to socialise within The Lab (in that they were noted to adhered to the norms set up by the space). Renewed understanding of socialisation is needed.
Ableism	To be considered fully human, people should possess the capacity to be socialised.		Young people with autism are able to socialise under certain conditions (TA 3, 7, 10, 11, 14).	Young people develop ways of socialising which suit them, hinting at their ability to adapt to their differences from others if given the opportunity. Ableism is a flawed construct that aims at controlling the bodies of people within its governance.

Technology	Technology is considered a double-edged sword. While it can aid people to overcome their disability and fit into society better, it perpetuates the notion that those with impairments have imperfect bodies and are thus not fully human. However, this is a humanist perspective where technology plays a support/secondary role to human functions and interactions.		Young people with autism use technology to extend their ability to interact and communicate with others. They learn hard and soft skills through their interaction with technology and the algorithms which automatically present information that young people search for or interact with within the online space (TA 2, 3, 5, 6, 9, 11).	Technology allowed young people with autism to learn new skills, meet new people and find opportunities to socialise where they may otherwise be unable to. Through this process, they also developed new ways of understanding themselves and how they prefer to communicate with others. Interactions with and within technology are not secondary to human functions and interactions and need to reconsidered beyond a humanist perspective.
Structural and Materialist Disablement	Within a neoliberal-capitalist political framework, the measure of success is based on one's individual ability to provide labour. With the marketisation of society and its focus on economic production, people who are unable to provide labour that is valued by society are rendered less valuable. Hence, people with an impairment are more likely to experience structural disablement as they are deemed to be potentially less able to provide valued labour.		Young people at The Lab aspire to become coding experts, writers, self-made media producers (i.e. YouTube stars), etc. They learn skills online or through mentors to work towards this goal. They also gather feedback from peers about their products (TA	Tensions exist between what parents following the contemporary labour system wanted their child to do and what the child wanted to do. Parents viewed learning differently from their child (and the ethos of programme). Young people are exposed to structural disablement at a young age due to their environment. Young people continue to hold aspirations that may or may not fit within dominant ideological systems.

			2, 4, 6, 7, 8, 10).	
Physical Space	Physical spaces can produce, perpetuate and amplify certain discourses and power dynamics.		Mobility and the unstructured nature of the programme (and physical space where possible) allow young people with autism to decide how they socially interact and communicate with others (TA 1, 13).	The physical space of The Lab impacted the way young people with autism socialised within the space and with others. Material spaces can change or perpetuate discourses and power dynamics. When designing physical spaces, this requires recognition as it can promote or hinder inclusiveness.
Online Space	Online spaces can change the dynamic within communities and between individuals, providing new opportunities for different forms of civic participation, social interaction and discourse production.		Young people with autism participate in online communities, forums and commentary. They make friends with other online users and extend their interactions with peers at The Lab through online communication (TA 5, 6, 7).	The online space has allowed young people with autism to participate in communities and provide additional avenues to interact and communicate with others. The online space needs to be further considered when understanding the socialisation of individuals.

Psychosocial Space	The psychosocial space is a transitional space that exists within and around individuals, going back and forth between the individual psyche and the social. It looks at how people socialise based on the way they perceive themselves within a social environment.		The psychosocial spaces of young people with autism are constantly changing as they interact and navigate within online and physical spaces (TA 3, 5, 7, 13, 14).	Young people with autism socially situated themselves based on context. The access to non-judegemental physical (e.g. mobility) and online environments (e.g. Facebook group) enabled them to interpret how they could socially interact at The Lab, affirming that the ways we socialise are based on the environments that we inhabit.

Appendix B: Participant Overview

	PSEUDONYMS	LAB	SEX	Age under 13?	Observation	Video Ethnography	Online Participatory Ethnography
1	Adrian	Frankston	Male	Yes	Y	Y	Y
2	Adam	Frankston	Male	Yes	Y	Y	Y
3	Jerome	Frankston	Male	Yes	Y	Y	Y
4	James	Frankston	Male	No	Y	Y	Y
5	Jeremy	Frankston	Male	No	Y		Y
6	Jack	Frankston	Male	No	Y	Y	Y
7	Richard	Frankston	Male	Yes	Y	Y	Y
8	Randell	Frankston	Male	Yes	Y	Y	Y
9	Devin	Frankston	Male	Yes	Y	Y	Y
10	Peter	Frankston	Male	No	Y	Y	Y
11	David	Frankston	Male	Yes	Y	Y	Y
12	Damien	Footscray	Male	No	Y	Y	
13	Joe	Footscray	Male	No	Y	Y	
14	Isaac	Footscray	Male	No	Y	Y	
15	Tom	Footscray	Male	No	Y	Y	
16	Scott	Footscray	Male	No	Y	Y	
17	Edward	Reservoir	Male	No	Y		
18	Cameron	Reservoir	Male	Yes	Y		
19	Paul	Reservoir	Male	No	Y	Y	
20	Xavier	Reservoir	Male	Yes	Y	Y	
21	John	Reservoir	Male	No	Y	Y	Y
22	Mandy	Reservoir	Female	No	Y	Y	Y
23	Elliot	Reservoir	Male	No	Y	Y	
24	Derek	Reservoir	Male	No	Y	Y	
TOTAL					**24**	**21**	**13**

KEY	
Pink	Members who joined after the start of the data collection phase
Purple	Members who left before the end of the data collection phase

Appendix C: Ethics Application

Application for Ethical Review of Research Involving Human Participants

Application ID :	HRE15-240
Application Title :	How do different spaces and technologies combine to affect the way young people with autism socialise and develop relationships at The Lab?
Date of Submission :	11/09/2015
Primary Investigator :	DR TIMOTHY CORCORAN
Other Investigators :	MS Lye Ee (Rebecca) Ng DR STEFAN SCHUTT

Introduction

Important Information

Form Version: V.13-07. Last Updated: 08/09/2014.

IMPORTANT INFORMATION FOR ALL APPLICANTS:

- Applicants are advised to follow the guidelines provided on the **Human Research Ethics website** prior to submitting this application.
- Ensure all questions are appropriately answered in plain language with correct spelling and grammar.
- All applications must be sighted and approved by all members of the research team and any relevant parties. Applications will not be reviewed without appropriate authorisation.
- To avoid unnecessary delays, please ensure application is submitted in full by the submission deadline for the relevant HREC.

You are reminded that your project may not commence without formal written approval from the appropriate Human Research Ethics Committee.

Contact:

Ethics Secretary
For help and further information regarding ethical conduct, refer to the Human Research Ethics website:
http://research.vu.edu.au/hrec.php or contact the Secretary for the Human Research Ethics Committee, Office for Research.
Phone: 9919 4781 or 9919 4461
Email: researchethics@vu.edu.au

Quest Service Desk
For technical help, refer to the Quest website: *http://research.vu.edu.au/quest.php* or contact a member of the Quest team.
Phone: 9919 4278
Email: quest.servicedesk@vu.edu.au

External Resources

- NHMRC: National Statement on Ethical Conduct in Human Research
- NHMRC: Human Research Ethics Handbook
- NHMRC: Australian Code for the Responsible Conduct of Research

Quest Guide

Quick Tips for Using Quest

Need Help? For help and instructions, we strongly recommend that you download the full Quest Online Ethics Guide (.pdf). Your questions may also be answered in the FAQ page on the Quest Website.

- **Answer All Questions**:

  Most questions are mandatory and must be completed before the application can be submitted. These questions are marked with a red asterisk (*)
- **Access Help and Tips**:

  The ? help icon, found next to questions and at the top of each page, will provide you with detailed advice on ethical content.
- **Remember to Save**:

  Use the 💾 floppy disk icon (and the ✓ green tick in some sections) regularly to avoid losing any answers. Each page will save automatically when you click *Next* ➡ or *Back* ⬅.
- **Print or Save a Copy of Your Application**:

  You can use the 📄 report icon at any stage to generate a printer friendly version of the form. Select HTML to print to screen. To save as a .pdf file to your computer select PDF then save a copy from the pop up screen. *(Don't forget to save a copy before you submit!)*
- **Submit Application**:

  When you have completed your application, click on the *Action* tab in the left-hand column and click *Submit Application*. The system will then convert the form to read-only and send it to the Ethics Secretary for review.

  You will receive an email confirmation at submission. Double check that your application has been submitted by viewing the application status in the *My Applications* page.

Responding to comments (if your application is returned)

There may be stages throughout the application process in which the Ethics Secretary will instruct you to amend your application form. These amendments will be communicated to you via 'Comments' within the eForm.

1. **Generate a List of All Comments**:
   Click the report icon, select *Comments Report* from the Document drop-down field and click *OK*. This list will show all comments created in your application and which page they are applicable to. Click *Cancel* to return to the application form.
2. **Revise your Answers**:
   Open the page which shows a red flag; these denote an Action Comment which you are required to respond to. Revise the relevant question(s) in your application form as required. Remember to click save!
3. **Respond to Action Comments**:
   AFTER you have revised your answers, you must provide a response to each Action Comment explaining to the Committee how you have addressed their communication. Open the Page Comments window and click New Comment to enter your response into the textbox. Click the green tick to save your text.
4. **Mark Comments as Responded**:
   Once you have revised your answers AND finished responding to all comments, reopen Page Comments window, use the checkbox to select the *Action Comments* and click *Mark Selected Comments as Responded*. The colour of the flag will change to yellow and the page will become Read Only.
   Important: *DO NOT mark the comments as 'Responded' until you are completely satisfied with your revised answers - you will lose access to edit the page and the comments.*
5. **Submit Revised Application**:
   Once you have addressed all of the Red Flags, open the *Action* tab and click *Submit Revised Application*. The system will then send the form to the Ethics Secretary for review. Remember to save a copy of your application by clicking the Report icon and generating a PDF or printer-friendly version.

[Office Use Only - Administration]

Application ID - *Assign HRE # using "Manage Applications"*

HRE15-240

Clearance Purpose

Research

For Review:

Assigned Ethics Committee

VU Human Research Ethics Committee

Risk Level *(Enter 'High' or 'Low' or 'Neg')*

High

Students involved in conduct of project? *(Enter 'Yes' or 'No')*

yes

Date Accepted by Ethics Secretary

23/09/2015

For Finalisation:

Date Approved

29/02/2016

Approved Start Date for Project

29/02/2016

Approved End Date for Project

28/02/2018

Date Rejected

This question is not answered.

Date Withdrawn

This question is not answered.

Application Process Comments

This question is not answered.

[Office Use Only - Risk Assessment]

NEGLIGIBLE RISK INDICATORS
Applicant has responded YES to:

HIGH RISK INDICATORS
Applicant has responded YES to:

3.2.b. Does the research involve participants under the age of 18 years?

3.2.d. Does the research involve participants who have a cognitive impairment, intellectual disability or mental illness?

6.8. Does the research involve participants who are in dependent or unequal relationships with any member(s) of the research team or recruiting organisation/agency (e.g. counsellor/client, teacher/student, employer/employee)?

POSSIBLE HIGH RISK INDICATORS
Applicant has responded YES to:

LOW RISK INDICATOR
If no statements appear under the headings above, the applicant has not responded yes to any negligible or high risk indicators.

SECTION 1 - PROJECT OVERVIEW

General Details

1.1. **Ethics Category***

Human

1.2. **Project Title***

How do different spaces and technologies combine to affect the way young people with autism socialise and develop relationships at The Lab?

1.3. **Project Summary** (Include brief details of aims, methods and significance of the project in plain language. Maximum of 2000 characters)*

The aim of the project is to understand how differentiated spaces enable youth with high functioning autism to socialise and develop interpersonal and technology-assisted relationships at The Lab. The term 'differentiated spaces' is an original concept to recognise the individual spaces (identified in this project as physical, online and psychosocial) that impact the process of socialisation within an environment (Ng et al., 2015). It will be argued that the collective of differentiated spaces creates the unique environment at The Lab, a network of technology clubs for young people with high functioning autism, to enable its members to engage beyond the perceived limitations of their disability – mainly the perceived inability to socialise, communicate and develop meaningful relationships (Baron-Cohen, 2000).

This research will take a qualitative approach as it intends to uncover in-depth understanding about how differentiated spaces at The Lab affect its members. Using methods namely video ethnography, participant observation and online participatory ethnography, they hope to:
1) Answer specific questions about individual differentiated spaces and how each contributes to the process of socialisation within The Lab;
2) Create opportunities for young people with autism to construct their own narratives about their disability, with the aim both of enhancing young people's engagement in research, and allowing for their voices to be foregrounded within the research.
I position myself as both researcher and participant within this project in order to facilitate a sense of trust and familiarity with participants, and thereby to elicit their perspectives more effectively than via other research techniques.

This research is important as it will:
A) Uncover knowledge about how the use of differentiated spaces can improve social and learning environments for young people with autism;
B) Inform and contribute to the improvement of The Lab as a learning environment.

1.4. **Primary College or Institute for Application***

COLLEGE OF EDUCATION

Timeline and Funding

1.5. **Period for which ethical approval is sought.** *Note: ethical approval is automatically granted for a period of 2 years from the project commencement date.*
Project commencement date:*

● Immediately upon receiving ethical approval
○ Other date

1.6. **Date the data collection is expected to be completed:***

23/12/2016

1.7. **How will the research be funded?***

☐ External grant
☐ VU grant or funding
☑ Sponsor
☐ Other
☐ Unfunded

Sponsor details:*

Young and Well CRC - VU scholarship (Refer to attached policy)

1.8. **Is the research a collaborative effort with another organisation?***

● Yes
○ No

If YES, does the research need to undergo formal ethical review by the collaborating organisation's HREC?*

○ Yes
● No

SECTION 2 - PROJECT INVESTIGATORS

Investigators

2.1. **Please list all investigators associated with this project.**
The research team is the group of investigators accountable for the conduct of the project. Include details of the Primary Chief Investigator (primary contact for application), as well as all other Chief Investigators and Associate Investigators. *Student details will be requested separately.* Other staff (e.g. technicians) may perform tasks within the project although they are not necessarily investigators. They should be listed as "Other Staff" if appropriate.*

1	*ID Number*	E5015987
	Surname	SCHUTT
	Given Name	STEFAN
	Full Name	DR STEFAN SCHUTT
	College/Institute	O4103
	Email Address	stefan.schutt@vu.edu.au
	Role in project	Associate Investigator
	Direct contact number	+61399191618
	Mobile number (for emergency use only)	+61410387622
	Qualifications, experience and/or skills relevant to the project.	Dr Schutt is a co-founder of The Lab, and former chairman and current board member of the Lab Network, the not for profit company established to support and grow the Lab concept. He has been researching and writing about autism and technology in peer-reviewed publications since 2011. Dr Schutt is an experienced qualitative researcher with particular expertise in the social uses of digital technologies, and is a former teacher of digital media.
2	*ID Number*	E5102490
	Surname	CORCORAN
	Given Name	TIMOTHY
	Full Name	DR TIMOTHY CORCORAN
	College/Institute	O5104
	Email Address	Tim.Corcoran@vu.edu.au
	Role in project	Chief Investigator
	Primary contact for application? *Note: Although an application may have multiple Chief Investigators, only one CI may be nominated as the Primary Contact.* *For student projects, the Chief Investigator/Primary Contact must be the supervisor, not the student.*	Yes
	Direct contact number	+61399194057
	Mobile number (for emergency use only)	+61477428708
	Qualifications, experience and/or skills relevant to the project.	Dr Corcoran was employed as a school psychologist for 8 years and has direct experience in working in schools with students and teachers. This work included direct engagement with students with disabilities. He is also an experienced qualitative researcher having previously employed interviewing as a means to investigating social phenomenon. Over the course of both his professional practice and research activities, he successfully maintained confidentiality and ethical propriety.

Note: Please click the Question Help icon above for instructions on how to search for personnel and use this table.
Once an Investigator record has been added, click on the name in the table above to open the record and edit the information required.

If you are unable to find a personnel record in this system which must be added to your application, please use the Request to Add Personnel to Research Database form found on the Quest website.

Student Investigators

2.2. **Will any students be involved in the conduct of this project?***

● Yes
○ No

2.2.a. **If YES, is the project:***

● A STUDENT PROJECT for the degree in which the student is enrolled?
○ A STAFF PROJECT that involves a student(s) undertaking some part of the project?
○ Other

2.2.a.i. **If the research is a STUDENT PROJECT, at what level?***

PhD

* Has this project been approved by the Postgraduate Research Committee? (ie. during confirmation of candidature process)*

● Yes
○ No

2.2.b. **Please list all student investigators involved in this project.**
*Ensure the primary supervisor (not the student), has been marked as the Chief Investigator and primary contact for the application in Q.2.1.**

1	*Student ID*	S4520127
	Surname	Ng
	Given Name	Lye Ee (Rebecca)
	Full Name	MS Lye Ee (Rebecca) Ng
	College/Institute	O5102
	Email Address	lye.ng2@live.vu.edu.au
	Role in project	Student
	Direct contact number	0433511003
	Mobile number (for emergency use only)	0433511003
	Student's experience/qualifications relevant to the procedures and techniques to be used in the research and/or to working with the specific target population.	Master of Global Media Communication (University of Melbourne - Ethics application submitted for thesis), BA, Politics and Media Communication (University of Melbourne) In addition, the student researcher has been volunteering at The Lab since December 2013 and has interacted extensively with the specific target population.

Note: Please click the Question Help icon above for instructions on how to search for personnel and use this table.
Once a student's record has been added, click on the name in the table above to open the record and edit the information required.

If you are unable to find a personnel record in this system which must be added to your application, please use the Request to Add Personnel to Research Database form found on the Quest website.

2.2.c. **What arrangements are in place for the supervision of student(s) when undertaking project activities?***

The student will be under the advice of her supervisors (the other investigators listed before) at all times throughout the research.

Involvement of Other Individuals/Organisations

2.3. **Will any individuals who are not members of the research team be involved in the conduct of this project?** (e.g., medical personnel involved in procedures, research contractors, teachers) *

● Yes
○ No

If other individuals who are not members of the research team are involved you must;

- Document the nature of their involvement
- Describe the processes that have been put in place to protect the confidentiality of participants and data. For example, the individual may be required to sign a confidentiality agreement. In this case a copy of the agreement should be attached to the Ethics Application.
- Provide details of any professional indemnity insurance held by the individual to protect against potential liabilities associated with their involvement in the research.

If the project is a collaborative effort with another organisation, the researcher must give details of any formal or informal agreements or contract. Arrangements with external organisations raise a number of issues including:

1. Which organisation owns the intellectual property
2. What data will the external organisation have access to and how will the security of the data and participants' confidentiality be ensured
3. Can the external organisation unduly influence the conduct of the research
4. Can the external organisation suppress the findings if they are unfavourable *[Refer Conflicts of Interest in Research, p3]*

You should also indicate whether approval is required from any other organisations involved. If so the process for gaining approval should be described and a copy of this approval must be attached to the Ethics Application.

If YES, provide details of their involvement and procedures in place to protect confidentiality of participants and data.*

While the research will not involve the mentors as participants or investigators, the mentors will be present as facilitators of The Lab as usual.

The role of the mentor is to facilitate activities at The Lab. They are mostly computer designers and developers who are appointed based on their technical expertise. Before their appointment as mentors, they are screened and informally interviewed by one of The Lab's general committee members to ensure their suitability. Prior to starting, they are given access to training in the form of a video which will provide them with information on how to conduct the sessions and what to do in the event that participants seem uncomfortable, anxious or withdrawn. They are given further support by The Lab network and other mentors through regular meetings and online forums. They are also required to apply for a working with children check and police check before commencing their work at The Lab.

In a typical session, mentors first help participants to set up their equipment (eg. Laptop, 3D printers and consoles). Throughout the session, the mentors roam around the room to ensure:
A) The young people are engaging with safe online content
B) The young people are receiving help in their IT-related interests (eg. Coding and gaming)
C) Members of The Lab connect with one another
D) No bullying occurs
The mentors are also the main contact person with parents and researchers during the sessions.

As previously mentioned, the mentors will not be participants or investigators of the research. I will be implementing and conducting the research activities. During the data collection phase, The Lab activities will continue as usual and the role of mentors in ensuring a safe environment for these young people will remain unchanged with or without the research activities.

As all research data belongs to the researcher, mentors will not have access to the data. Hence, they will not be allowed to share or distribute any research related information. If an issue arises (eg. Behavioural issues) that is similar to other problems that might come about facilitating normal Lab activities, mentors will be required to adhere to The Lab's code of conduct and confidentiality policy.

If YES, provide details of any professional indemnity insurance held by those individuals to protect against potential liabilities associated with their involvement in the research.*

All individuals involved who are not participants or researchers are protected against potential liabilities by contract with The Lab. Refer to the letter by The Lab for more details (Appendix).

SECTION 3 - NATURE OF THE PROJECT

Type of Project

3.1.a. **Is the project a pilot study?***

○ Yes
● No

3.1.b. **Is the project a part of a larger study?***

○ Yes
● No

3.1.c. **Is the project a quality assurance or evaluation project (e.g., related to teaching, health-care provision)?***

○ Yes
● No

3.1.d. **Does the research involve a clinical trial (of a substance, device, psychological or physical intervention)?***

○ Yes
● No

3.1.e. **Does the research involve the use of therapeutic/intervention techniques or procedures (non-clinical trial)?***

○ Yes
● No

Target Population

3.2.a. **Does the research focus on Australian Indigenous (Aboriginal and/or Torres Strait Islander) populations?***

○ Yes
● No

3.2.b. **Does the research involve participants under the age of 18 years?***

● Yes
○ No

"Supplement C - Research with children and young people under the age of 18 years" must be completed in Section 11 below.

3.2.c. **Does the research involve participants who are highly dependent on medical care?***

○ Yes
● No

3.2.d. **Does the research involve participants who have a cognitive impairment, intellectual disability or mental illness? ***

● Yes
○ No

"Supplement E - Research with cognitive impairment, intellectual disability or mental illness" must be completed in Section 11 below.

3.2.e. **Does the research involve participants in other countries?***

○ Yes
● No

3.2.f. **Does the research involve pregnant women (with a research focus on the pregnancy) and/or the foetus (in utero or ex utero) or foetal tissue?***

○ Yes
● No

3.2.g. **Does the research involve participants who are likely to be highly vulnerable due to any other reasons?***

○ Yes
● No

Intrusiveness of Project

3.3.a. **Does the research use physically intrusive techniques?***

○ Yes
● No

3.3.b. **Does the research cause discomfort in participants beyond normal levels of inconvenience?***

○ Yes
● No

3.3.c. **Does the research collect potentially sensitive data? (e.g., related to a sensitive topic or vulnerable group; personal health/medical information; sensitive organisational strategies)***

● Yes
○ No

3.3.d. **Does the research involve deception of participants?***

○ Yes
● No

3.3.e. **Does the research involve limited disclosure of information to participants?**

○ Yes
● No

3.3.f. **Does the research involve covert observation of participants?***

○ Yes
● No

3.3.g. **Does the research produce information that, if inadvertently made public, would be harmful to participants?***

○ Yes
● No

3.3.h. **Does the research involve accessing student academic records?***

○ Yes
● No

3.3.i. **Does the research involve human genetic or stem cell research?**

○ Yes
● No

3.3.j. **Does the research involve the use of ionising radiation?***

○ Yes
● No

3.3.k. **Does the research involve the collection of human tissue or fluids?***

○ Yes
● No

3.3.l. **Does the research involve any uploading, downloading or publishing on the internet?***

● Yes
○ No

3.3.m. **Does the research seek disclosure of information relating to illegal activities or is the research likely to lead to disclosure of information relating to illegal activities?***

○ Yes
● No

3.3.n. **Does the research involve procedures that may expose participants to civil, criminal or other legal proceedings?***

○ Yes
● No

3.3.o. **Does the research involve gaining access to medical/health related personal information from records of a Commonwealth or State department/agency or private health service provider?***

○ Yes
● No

3.3.p. **Does the research involve gaining access to personal information (not medical/health) from the records of a Commonwealth or State department/agency or private organisation?***

○ Yes
● No

SECTION 4 - PROJECT DESCRIPTION

General Information

Note: All fields have a maximum of 4000 characters (unless otherwise specified) in plain text only.
If supporting documentation needs to be provided for the following questions (images, graphs etc), please upload as referenced appendices in Section 11 - "Required Attachments" below.

4.1. **Aims of the project.** Provide a concise statement of the aims of the project (maximum 2000 characters in plain language).*

The overall aim of the project is to understand how differentiated spaces, as observed in The Lab, enable youth with high functioning autism to socialise and develop interpersonal and technology-assisted relationships. As mentioned in section 1.3, I will specifically be looking at three differentiated spaces within The Lab: physical, online and psychosocial (refer to Appendix F). These differentiated spaces each serve distinct purposes in the process of socialisation within The Lab, an environment that has technology embedded in its culture via hardware (eg. laptops), software (eg game creation programs) and online platforms for communicating and interacting. Hence, I have devised three specific aims with regards to these differentiated spaces, to understand:
1) how the unstructured physical space of The Lab enable youth with high functioning autism to socialise and develop interpersonal and technology-assisted relationships;
2) how the participatory (eg. blogging) and individualistic nature of online space affect the way youth with high functioning autism socialise and develop interpersonal and technology-assisted relationships at The Lab
3) how the unique perception of the social by youth with high functioning autism is mediated by technology, enabling them to socialise and develop interpersonal relationships.

A large part of this research was conceived based on a transformative paradigm: a combination of social constructionist theories and advocacy (refer to appendix F). Together with the use of technology as part of embodying The Lab's culture, the use of interactive qualitative methods aim to create an optimum environment for these young people to engage in research, providing them with opportunities to construct their own narratives about autism. Through which, this study will help to develop understandings of environments that best bring forward these young people's unique qualities and skills, beyond the label of their "disability".

4.2. **Briefly describe the relevant background and rationale for the project in plain language.***

I came to The Lab initially as a potential volunteer in late 2013. I was deeply interested in working with young people with autism as my second cousin was diagnosed with autism at the age of eight. In Singapore, autism is a stigma because it labels children as disabled at a very young age. However, despite his different communicative pattern, my second cousin was a bright and cheerful child. I asked myself: Why were people so concerned with the diagnosis over the child's strengths?

The Lab is a technology club for youth with high functioning autism between ages 10 and 16. It is an unstructured learning environment for children who have a common interest in technology. Each session lasts for two hours and is facilitated by two young tech-savvy mentors. Once a week, members of The Lab bring their laptops into a spacious room, set them up where they feel comfortable and begin playing games or learn computing skills from the mentors at their own pace. Unlike a classroom, the physical space is unstructured whereby tables and chairs are set up based on weekly negotiations between the young people and the mentors. When I first walked into The Lab, I was surprised at the vibrancy of the young people and the space. It seemed as if academic and lay assumptions of about autism were unjust: people with autism can socialise if given the right environment, people and tools. (For a more detailed description of The Lab, refer to Appendix G)

An evaluation of The Lab by Donahoo and Steele (2013) suggests that, contrary to prevailing knowledge, young people with autism are able to socialise within this shared environment. One mitigating factor, under-researched in learning environments but largely attributed to the success of The Lab, is the utility of spaces. The unstructured physical and online spaces give Lab participants freedom to interact, learn and play at their own pace. Informed by these observations, my research aims to understand how physical, online and psychosocial spaces* enable young people with high-functioning autism* to socialise and develop interpersonal and technology-assisted relationships*. As Critical Disability Studies (CDS) aligns with my ontological perspective, it forms the theoretical basis to my research.

Autism research is often premised on the medical model – finding improved ways to diagnose, prevent and treat impairment (Baron-Cohen, 2000). However, critical disability studies implore us to rethink assumptions of dis/ableism to avoid the alienation of people with impairments and work toward a more inclusive society as medical narratives of disability imposes "restrictions of activity on people with impairments" (Goodley, 2014; Thomas, 2007, p.73). It largely aligns with the advocacy views of the transformative paradigm* where researchers hope to acknowledge the embodiment of impairments while simultaneously deconstruct the social norms that exclude people with disability (Chouinard et al., 2010).

CDS draws on a variety of political, theoretical and practical considerations to engage in arguments on the constructs of disablement (Goodley, 2014). One approach is CDS's intersection with spatial theories such as proxemics (Hall, 1974), spatial semiotics (Lim et al., 2012) and spatial justice (Soja, 2010) to understand how the set up of physical spaces for the purpose of labour (i.e. Work) disable people with impairments (Goodley, 2014). Another approach by CDS analyses how technology affects people with disability as it is an important aspect to identity construction (Campbell, 2009). Individuals with autism may rely on online technology as it enables them to interact without the nuances of physical communication (Davidson & Parr, 2010). The incorporation of technology is also an emerging trend within arts-based research due to its influence on people's lives today (Schutt et al., 2015).

*Definitions - Refer to Appendix F

4.3. Methodology and procedures

Include specific details relating to any measures, interventions, techniques, and/or equipment used in the research.
Provide step-by-step details of the procedures with particular reference to what participants will be asked to do.
Provide details separately for different phases or conditions of the research or, where appropriate, different participant groups.*

I will be deploying qualitative methods conducted in two stages over two consecutive school terms in 2016 to get an in-depth understanding of the research topic. Each stage aims to isolate the differentiated spaces and answer micro-research questions as proposed under “aims of research” (Refer to specific methods below).

Stage 1: Video Ethnography and Participant Observation (Term 1)
Aim: To understand how the unstructured physical space of The Lab and the unique perception of the social enable youth with high functioning autism to socialise and develop interpersonal and technology-assisted relationships

Justification: Video ethnography is the video recording of the stream of activity of subjects in their natural setting, in order to experience, interpret, and represent culture and society (Pink, 2007, p. 22). Apart from aiding the researcher in recording data, the process of video ethnography enables participants to present a specific and detailed narrative of their disability (Pink, 2013; Harris, 2016). While the presence of the video camera involuntarily affects the way participants react, it gives participants the opportunity to present their best qualities for the recorded material (Pink, 2013). Hence, not only the recorded conversations need to be analysed, the details from the aesthetics, the body language, etc. also need to be discussed. This is important to the research as it could potentially contradict the medical narrative and provide evidence as to how individuals with autism are able to socialise using different social cues (eg. eye contact), helping us understand how the elements within the physical space of The Lab enable that.

Participant observation on the other hand is useful in “obtain[ing] an insider view of some aspects of people’s everyday lives” (Willig, 2013, p. 33). Within the context of The Lab, these methods are employed to learn how the specific use of physical and psychosocial spaces enable socialisation among participants.

How: I will be conducting video ethnography and participant observation simultaneously at three different Labs located within Victoria. I will attend each site for one school-term (i.e. 10 sessions) and immerse myself in the culture of The Lab so as to effectively understand how participants socialise.

For video ethnography, I will record my interactions with two to three different participants every fortnight for fifteen minutes each to ensure that I cover all participants by the end of the term. After participants have settled into the Lab during the session, I will approach the selected participant, ask for permission to film his/her interactions, and place the camera in a static position on a non-obstructed table pointing the camera towards the participant who will be seated. I will then sit next to the participant and interact with him/her through Lab activities as per normal. The camera will not be moved for the duration of the interaction. After the first participant, I will approach the next participant and repeat the above procedures.

While I will draft a schedule for the filming, this will be semi-flexible to ensure that participants have a choice and are comfortable being filmed. This method is valuable as it will allow me to understand how participants socialise within the intimate physical space of The Lab. While most qualitative methods used in autism research have a very small sample (under 10 participants), The Lab environment gives me the opportunity to understand the diverse sociality of up to fifty participants, allowing me to capture the variety of social cues people with autism may have and create an alternate narrative of their socialisation.

When not video recording, I will be conducting participant observation each week throughout the term. I will be roaming around The Lab, speaking with participants and immersing myself in its culture. I will take notes at the end of each session and keep a diary of my observations for the term.

Use this textbox if additional room is required for Question 4.3.

This method is similarly used to understand the interactions within the physical space of The Lab. Rather than focusing on the individual, it will allow me to understand the broader group dynamics within The Lab.

At this stage of research, Lab activities will not be disrupted. My presence should be seen as an additional member to the room which commonly occurs on a weekly basis when new members or volunteers turn up. I do not require assistance from the mentors as I will be responsible for all research activities. The videos will be stored in a secure private networked drive accessible only to myself. I am looking to record approximately 15 to 20 hours of footage (1 hour x 5-6 sessions a term x 3 Labs). There will be no conflict of interest in terms of data ownership as I will be conducting all research activities in both stages myself.

Stage 2: Online Participatory Ethnography (Term 2)
Aim: To understand how the participatory and individualistic nature of online space affect the way youth with high functioning autism socialise and develop interpersonal and technology-assisted relationships at The Lab

Introduction: Online or "virtual ethnography" is an adaptive form of ethnography using digital tools within an online community (Williams, 2012, p. 294). "Participatory" refers to two different aspects of participation. Firstly, this online participatory ethnography will be conducted in a consultative process through weekly feedback sessions. Secondly, instead of studying an established online environment which is often the case in virtual ethnography (Williams, 2012, p. 294), participants will be requested to build this online environment. As there are several activities that run at The Lab each week, to entice participation, this research activity will be proposed as a competition which the young people enjoy from previous experience.

How: Prior to data collection, I will set-up the game space, Minecraft* – a 3D sandbox simulation used extensively in education and by people with autism - in consultation with mentors at The Lab (See Appendix C on Minecraft).

During the term:
A) Participants of the research will be given access to the game space during The Lab sessions. Before they enter the space each time, they will be required to give consent via an electronic tick box.
B) They can engage in free form alteration of the space based on the theme or complete set tasks – these tasks are optional and serve as helpful guides (eg. "Build a transport system").
C) These sessions will be recorded via a screen recording programme on my computer.
D) I will gather feedback of the gameplay session by talking to a few participants each week. These will be recorded in a diary after the session.

The theme of the competition will be 'My Learning and Education' as participants of The Lab can easily draw from their experiences at school or The Lab. The aim of the competition is to build the most creative landscape that illustrates the theme. After introducing the competition and explaining the rules in week one, participants will have the second till the ninth week of the term to complete their submission. The judges will deliberate and present the prizes in week 10. All participants will receive a prize for participation with three outstanding awards given out to the most creative and illustrative projects of each Lab. Prizes will be obtained through sponsorship. The mentors and myself will act as judges for the competition. As competitions are regularly held at The Lab with participants and parents giving positive feedback, I do not foresee disruption to the running of The Lab sessions that will cause members any discomfort. I have also modelled this competition on previous competitions which members of The Lab are familiar with.

The screen recordings and notes will be similarly stored in a secure password-protected drive.

*As this research is driven by the interest of the participants, Minecraft may be replaced

Data Collection

4.4. **Indicate all types of data to be collected.***

☐ Questionnaire / survey responses*
☐ Individual interview responses*
☑ Other data
☐ Group interview or focus group responses*
☑ Participant observations
☐ Blood or tissue samples
☐ Physiological measures
☐ Biomechanical measures
☐ Accessed health / medical records or data
☐ Accessed student academic records or data
☐ Archival data

Other data, give details:*

I will also be collecting data through creative video ethnography where I will be filming my interactions at The Lab within the sessions every fortnight for a period of 1 school term (approx. 10 to 12 weeks).

I will also be conducting online participatory ethnography where the researcher, together with the participants, will collaboratively alter a game space. These sessions will be screencasted (as a form of data) from the perspective of the researcher to capture the interactions within each session.

4.5. **Does the research only include the collection of anonymous and non-sensitive data (e.g. online survey, observational data) that poses no foreseeable risks or discomfort to participants?** *Any foreseeable risk must be no more than inconvenience.**

○ Yes
● No

4.6. **Does the research only include the use of non-identifiable and non-sensitive data from an existing database? (e.g., data mining).**
*Such data should pose no foreseeable risks or discomfort to individuals whose information is contained in the database, or to individuals/organisations responsible for the database.**

○ Yes
● No

4.7. **Does the research involve photographing or video recording of participants?***

● Yes
○ No

4.7.a. Will the identification of participants, either directly or indirectly, be made available in the public domain at any time during or after the research? e.g. In the reporting of research or in any display/presentation (audio or visual) of the research?*

○ Yes
● No

4.7.b. Provide details of both aspects of collecting this data and it being made available.*

All data is strictly confidential and will only be discussed as part of my dissertation.

4.8. **Who will be collecting the data?** (give details for all types of data collected and all persons involved)*

The student investigator - Lye Ee Ng, will be responsible for collecting all data.

4.9. **Where will the data be collected?** (give details for all types of data collected and all locations)*

All data will be collected at 3 different Labs located in Victoria - Reservior, Frankston and Footscray. The Lab is a network of technology clubs for youth with high-functioning autism (Refer to Appendix G for more information on The Lab).

4.10. **How will the data be analysed?** (give details for all types of data collected)*

All data will be transcribed and analysed using a Foucauldian discourse analysis (FDA) looking at "language and its role in the constitution of social and psychological life" (Willig, 2013, p. 130). I will be specifically be taking a six-stage approach within FDA to analyse the data (Willig, 2013, p. 129-142). These six stages include identifying discursive objects and constructions, locating discursive constructions within wider discourses, understanding action oriented around discourses, analysing subject positions, determining relationship between discourse and practice, and finally, exploring subjectivity within discourses.

For video ethnography and participant observation, the student researcher will take notes during the sessions, transcribe the videos where necessary and proceed to analyse the data using FDA.

For online participatory ethnography, there will be a consultation process which will take place throughout the data collection phase. I will interact with the participants during The Lab sessions to get feedback and thoughts about the virtual world they having been creating/changing. The researcher will take notes during these sessions which will act as data and feedback of their online interaction which will help answer part of the research question (eg. How does the online space enable socialisation? To what extent? What is the quality of interaction online? Does it build relationships?). The consultation process will also enable the researcher to set more appropriate and interest-based tasks for the participants as part of the competition. Data collected from this consultative process will similarly be analysed using the Foucauldian discourse analysis.

4.11. **Who will have access to the data collected?** (give details of all persons who will have access to the data)*

The student researcher, Lye Ee Ng, will have full access to the data. The primary and associate investigators will also have full access to the data if requested from the student researcher.

4.12. **Will individuals or organisations external to the research team have access to any data collected?***

○ Yes
● No

SECTION 5 - PARTICIPANTS

Participant Group Details

5.1. **Provide details of all distinct participant groups below.**
Please be as precise as possible, if specific details have not been determined you must indicate that they are approximate.

Group 1
Details of specific participant population:*

Youth between ages 10 and 16 with self-identified/diagnosed high-functioning autism enrolled at The Lab. I will specifically be engaging with three Labs across Melbourne: Reservoir, Frankston and Footscray.

Each Lab site hosts about 15 to 20 young people. Hence, I will have a total of approximately 40 potential participants. From previous research experience (Donahoo and Steele, 2013), participation rate has usually been 90 percent and above (36 participants). While the minimum number of participants needed to take part in the research is ten, I anticipate to have the same number of participants for my project as with previous research projects.

Number of participants: *

40 potential participants, 36 anticipated number of participants and a minimum of 10 participants

Age range of participants:*

10 to 16

Source of participants:*

The Lab network - a VU affiliated organisation which manages after-school technology clubs for young people with high-functioning autism and Asperger's syndrome around Australia. There are currently 15 Lab sites nationwide. Each site is self-contained (i.e. have their own set-up, mentors, games) and I will be visiting three sites in Melbourne as stated above. However, the research does not intend to compare across the Labs and has chosen three different sites to get a sizable sample that is within the limits of the project (Refer to Appendix G for more information on The Lab).

*Record details for additional group? (Group 2)**

○ Yes
● No

Participant Selection

5.2. **Provide a rationale for the sample size.***

As the mentors have different skills and the physical spaces of The Labs vary from one site to another, over time, each Lab has been observed as having developed its own culture. Having visited a number of Labs myself and interacted with the young people as a potential volunteer at the beginning, I found that the activities within The Lab differed based on the layout and size of the physical space (eg. larger spaces encouraged movement) and the interests of the young people as well as those of the mentors. Hence, part of my research would be interested in understanding how a combination of differentiated spaces using similar principles set out by The Lab (eg. Unstructured physical space) affect socialisation and relationships within the environment.

As each Lab has different cultures and environments, I have decided to work with three Labs to provide varied viewpoints. These Lab sessions have been chosen based on how established they are (Reservoir has just started up, Frankston is establishing itself and Footscray is the longest-running session) as the researcher hopes to see if familiarity changes the level of socialisation within The Labs, and also for practical travelling limitations.

In addition, most research in this area (arts-based autism research) have largely involved small groups of participants. Given the opportunity and convenience set-up by The Lab network, this research hopes to involve a sizeable number of participants with autism to provide varied viewpoints within this area of research.

5.3. **Does the project include any specific participant selection and/or exclusion criteria beyond those described above in Question 5.1?***

○ Yes
● No

5.4. **Will there be a formal screening process for participants in the project?** (e.g. medical/mental/health screening)*

○ Yes
● No

5.5. **Does the research involve participants who have specific cultural needs or sensitivities?** (e.g., in relation to the provision of informed consent, language, procedural details)*

● Yes
○ No

If YES, provide details of the arrangements in place for managing those needs.*

Participants will be briefed as a group during one of The Lab sessions prior to data collection. They will be handed out a simplified plain language statement and a consent form (Appendix A and B) which they will be required to sign and return to the researcher within two weeks after the briefing. As they are youth with autism, the researcher will also try to engage them in through injecting an element of fun to reduce any stress that may arise from being researched. This may be from using props or multimedia content - similar to those they may be working on during the video ethnography sessions for example - to encourage them to participate within the research, learn skills and have more fun during The Lab sessions. The researcher will also prepare a short questionnaire/checklist (Appendix E) which she will use to gauge her participant's capacity to understand and participate within the research. Through a question and answer style, the researcher will test if participants are fully aware of their expected involvement before proceeding with the research. The researcher will approach all potential participants with the questionnaire either singularly or as a group, depending on how comfortable each participant feels about speaking with the researcher.

5.6.a. **Does the research involve a participant population whose principal language is not English?***

○ Yes
● No

5.6.b. **Will documentation about the research (e.g., Information to Participants form and Consent form, questionnaires) be translated into a language other than English?***

○ Yes
● No

SECTION 6 - RECRUITMENT OF PARTICIPANTS

Recruitment and Informed Consent

6.1. **Will individuals other than members of the research team be involved in the recruitment of participants?***

○ Yes
● No

6.2. **How will potential participants be approached and informed about the research and how will they notify the investigators of their interest in participating?**
Attach copies of the "Information to Participants Involved in Research" form and any flyers or other advertising material to be used in the research in Section 11 - "Required Attachments" below.

They will be briefed as a group during one of The Lab sessions and handed out a plain language statement (suitable for their age group) and consent form (Appendix A and B). As these participants are under 18, their parents will also be encouraged to attend a separate briefing session held in a different room during one of The Lab sessions. Regardless of attendance, all parents of potential participants will receive a plain language statement detailing the project and a consent form (Appendix A and B). In addition, for online participatory ethnography, participants will need to agree to the terms and conditions before entering the game space. During this time, they will be reminded of their participation in this research.

In addition, participants will be required to answer a short, verbal questionnaire conducted by the student researcher to gauge their capacity to understand and participate in the research (Appendix E). These verbal questionnaires may be conducted one-on-one or as a group, depending on how comfortable each participant feels about speaking with the researcher. From this questionnaire, the researcher may choose to not include the participant from her research even with written consent. However, participation will only be considered if signed consent forms from both parents and participants are received. A brochure with easy-to-read, bite-size information will also be handed out to participants to help them understand the research through visuals (Appendix D).

Due to the long period of data collection, I have also provided opportunities for participants to give ongoing consent. In stage one, participants will be asked by the researcher if they give consent to be filmed. This will be a verbal consent given over the camera at the beginning of the recording session. Participants may also request to withdraw parts of the video including themselves at any point in time during data collection phase.

In stage two, as briefly mentioned above, participants will have to enter their consent through a tick box every time they enter the game space. To avoid common skipping of the actual message (by clicking without reading), randomised questions such as “What is the theme of this competition” or “What is the purpose of this activity” will be set for participants to answer before they give consent.

6.3. **Will potential participants be given time to consider and discuss their involvement in the project with others (e.g. family) before being requested to provide consent?***

● Yes
○ No

6.4. **How will informed consent be obtained from participants?***

☑ Participants be required to sign an informed consent form
☐ Consent will be implied e.g. by return of completed questionnaire
☐ Verbal consent will be obtained and recorded (audio, visual or electronic)
☐ Other

Attach copies of Consent Forms to be used in the research in Section 11 - "Required Attachments" below.

6.5. **Provide procedural details for obtaining informed consent:***

As mentioned in 6.2, potential participants will be briefed as a group during one of The Lab sessions in term 1 of 2016 – based on school terms. They will be handed out 2 sets of plain language statements and consent forms after this session - one set for themselves and the other for their parents (Appendix A and B). They will be required to sign and return the consent forms two weeks before the start of 2016, term 2. In addition, I will also be using a Risk Assessment Questionnaire (Appendix E) to assess if the participants comprehend my role and research at The Lab. Finally, bite-size information will be handed to them in the form of a brochure to help them visualise and understand the research better.

Should members of The Lab decide not to participate in the research at the beginning but hope to take part in research activities at some point, they may sign a release form (Appendix A) on the day showing that they have consented to being filmed and recorded for the purpose of research. The consent form (Appendix A) also allows them to tick the activities they do not want to take part in (ie. Video ethnography, participant observation or online participatory ethnography). All participants/non-participants may withdraw from the research project at any time by informing the student researcher or the mentors. Parents may also withdraw their child from the research should they feel that the research is negatively impacting the participants.

As mentioned in section 6.2, measures have been put in place to ensure that participants are able to give on-going consent in both stages of the research.

6.6. **Will you be seeking consent in order to contact participants in the future for related research participation and/or use participants' data for related research purposes?***

○ Yes
● No

Competing Interests

6.7. **Will any dual relationship or conflict of interest exist between any researcher and potential or actual participants?** (e.g., a member of the research team is also a colleague or friend of potential participants)*

○ Yes
● No

6.8. **Does the research involve participants who are in dependent or unequal relationships with any member(s) of the research team or recruiting organisation/agency (e.g. counsellor/client, teacher/student, employer/employee)?***

● Yes
○ No

What is the nature of the dependent or unequal relationship?*

While the mentors are not involved in the research as participants or investigators, they will be facilitating activities at The Lab concurrently with the research. There is an unequal relationship between mentors and the members of The Lab as the former has a huge influence on what these young people do during the sessions. Hence, members of The Lab may not be able to distinguish research activities from The Lab activities due to the presence of the mentors. However, it should be emphasised that the issue of voluntary consent applies to all activities at The Lab and the research activities are no different.

What measures will be taken to ensure that participants' voluntary consent is not compromised by the relationship?*

As the mentors will not be directly interacting with the participants about the research activities, their relationship will not compromise voluntary consent directly. Rather, it is the presence of the mentors continually facilitating The Lab sessions that may confuse participants between The Lab activities and research activities. Unlike The Lab activities, I will personally be asking participants for ongoing consent (refer to section 6.2). While I have positioned myself as a participant of The Lab, I will also distinguish myself from the mentors by establishing my role as a researcher at the beginning of each interaction with participants by asking for their consent if I am filming them or getting feedback from them about the game space in stage 2 of the data collection phase.

What procedures are in place to ensure that the dependent or unequal relationship does not disadvantage or prejudice any participants?*

As the mentors will not be directly interacting with the participants about the research activities, their relationship will not disadvantage or prejudice any participants. Similar to other Lab activities, the mentors and I will constantly ask participants what they want to do or what they do not want to do to ensure they are not involuntarily participating in the research. For non-participants who wish to be part of the research activities at any stage, they may sign a release form to inform them about their involvement in the research. As previously mentioned, participants may also choose to opt out from research activities they do not wish to participate in at the beginning of the project (via the consent forms) or at any time of the research by informing the researcher or the mentors.

6.9. **Will you be offering reimbursement or any form of incentive to participants (e.g., payment, voucher, free treatment) which are not part of the research procedures?***

○ Yes
● No

6.10. **Is approval required from an external organisation?** (e.g., for recruitment of participants, data collection, use of premises)*

● Yes
○ No

If YES, provide information relating to procedures for obtaining approval from the organisation(s) and attach evidence of approval in Section 11 - "Required Attachments" below.*

Prior to the ethics application, The Lab has already given consent for the researcher to recruit participants and use the premises for data collection. No further approval is required as specified in the the letter provided by The Lab (refer to Appendix H).

SECTION 7 - RISKS ASSOCIATED WITH THE RESEARCH

Physical Risks

7.1.a. **Are there any PHYSICAL RISKS beyond the normal experience of everyday life, in either the short or long term, from participation in the research?***

○ Yes
● No

Psychological Risks

7.1.b. **Are there any PSYCHOLOGICAL RISKS beyond the normal experience of everyday life, in either the short or long term, from participation in the research?***

● Yes
○ No

High probability risks:*

NA

Low probability risks:*

Stage 1:
Participants may not want to be filmed or spoken to during the session. Being approached or filmed may lead to discomfort where participants may begin to feel anxious. In certain instances, participants under immense stress have been known to become withdrawn and visibly anxious. They may also tell you verbally they are uncomfortable with your presence – in which case mentors or any individuals (including the researcher) are advised to leave the young person alone. However, this is a low probability risk as it occurs rarely at The Lab. Most occurrences have happened when members were first introduced to The Lab. More importantly, mentors have been trained in case of any anxiety related issues. Strategies may include – 1) reassuring the young person, 2) leaving the young person alone and checking on him/her once in a while to see if he/she is comfortable conversing, or 3) requesting for the parents to be around for the time being until the young person feels ready to be alone. Participants who do not want to be filmed or observed for the day can also inform the student researcher or mentors during the session. As the physical space of The Lab is unstructured, they may also choose to move away from the cameras or student researcher at any time of the session.

Stage 2:
Participants may not want to give feedback about their sessions. They may feel discomfort if the student researcher approaches them.

Participants who do not wish to speak with me can tell her so or inform the mentors. I will also observe the behaviour of the participant before approaching them to ensure they are not feeling anxious.

How will the risk(s) be minimised?*

Stage 1:
Participants who do not want to be filmed or observed for the day can inform the student researcher or mentors during the session. As the physical space of The Lab is unstructured, they may also choose to move away from the camera or student researcher at any time of the session.

Stage 2:
Participants who do not wish to speak with the student researcher can tell her so or inform the mentors. The student researcher will also observe the behaviour of the participant before approaching them to ensure they are not in distress.

How will these risks be managed if an adverse event where to happen?*

In an unlikely event of a participant becoming highly anxious, all data collection will be halted until the student researcher has discussed the matter with the mentors and her supervisors (the primary and associate investigators listed in this form), and planned a strategy for mitigating future psychological risks. However, within the five years since the start of The Lab, there have only been two or three incidences that occurred when these participants first attended The Lab. Hence, I will not be engaging with newer members of The Lab until they feel ready to participate in the research activities (eg. If they tell me or the mentors they want to be part of the research) as part of a precaution.

Social Risks

7.1.c. **Are there any SOCIAL RISKS beyond the normal experience of everyday life, in either the short or long term, from participation in the research.** (e.g., possible inadvertent public disclosure of personal details or sensitive information)*

● Yes
○ No

High probability risks:*

NA

Low probability risks:*

Participants may feel excluded from The Lab.

Stage 1:
Some members of The Lab may not have consented to participating in the research. However, they may still want to interact with me. In this case, I will record their interactions but will make a note that these are non-participating members of The Lab. In this case, their data will not be used or quoted. Rather, they will be used together with other data collected to give an overview of The Lab.

As the physical space of The Lab is unstructured, members who do not want to participate on certain weeks may choose to sit in a different spot away from the periphery of the researcher or inform any mentors or the researcher about his/her intention.

Stage 2:
Participants may not want to join in the game play each week but are pressured by their peers into doing so – particularly with the introduction of group prizes. If they choose not to participate, they may feel excluded. In addition, within the game space, participants may be competitive and sabotage what others have created which is a form of cyber bullying and exclusion.

Participants may speak with the mentors or myself if they do not want to participate in a session. They may then be free to do other Lab activities or given optional tasks unrelated to the research. I will also monitor the space to ensure that players are not sabotaging others. In an unlikely event that this happens, the student researcher will shut down the game play for the session until these issues are resolved.

How will the risk(s) be minimised?*

Stage 1:
As the physical space of The Lab is unstructured, participants who do not want to participate on certain weeks may choose to sit in a different spot away from the periphery of the researcher.

Stage 2:
Participants may speak with the mentors or student researcher if they do not want to participate in a session. They may then be free to do other Lab activities or given optional tasks unrelated to the research. The student researcher will also monitor the space to ensure that players are not sabotaging others. If it were to happen, the student researcher will shut down the game play for the session until these issues are resolved.

How will these risks be managed if an adverse event where to happen?*

If an adverse event were to happen, all data collection will be halted immediately until further notice. The researcher will discuss the problem with the mentors and her supervisors (the primary and associate investigators listed in this application) and come up with a strategy to mitigate future risks before continuing with the data collection. Based on previous experiences of The Lab, these incidences are highly unlikely as mentors have been well-trained to mitigate such situations before they become adverse.

Other Risks

7.2. **Does the research involve any risks to the researchers?***

○ Yes
● No

7.3. **Does the research involve any risks to individuals who are not part of the research, such as a participant's family member(s) or social community (e.g., effects of biographical or autobiographical research)?***

● Yes
○ No

If YES, provide details and describe strategies in place to minimise and manage those risks.*

As some participants of The Lab may not have consented to the participation of the research, they may also be susceptible to social and psychological risks stated under section 7.1b and c. These risks are similarly mitigated through similar solutions stated under section 7.1b and c.

7.4. **Are there any legal issues or legal risks associated with any aspect of the research that require specific consideration (i.e., are significant or out of the ordinary), including those related to:**

- participation in the research,
- the aims and nature of the research,
- research methodology and procedures, and/or
- the outcomes of the research?

*

○ Yes
● No

7.5. **Risk-Benefit Statement:**
Please give your assessment of how the potential benefits to the participants or contributions to the general body of knowledge would outweigh the risks. *Even if the risk is negligible, the research must bring some benefit to be ethical.**

Although there might be social risks involved in this research as mentioned in the section before, there are potential benefits that outweigh these risks. For the participants, the creative video ethnography section of this research is to encourage them to learn a skill (i.e. video production and editing) and have fun during The Lab sessions. On a broader scale, this research hopes to give a voice to the participants to discuss their dis/ability, the assumptions that surround their so-called limitations and the frustrations or happiness they may feel socialising out of and within The Lab.

From a research perspective, the overarching research paradigm and methodology presents three potential contributions to knowledge. Firstly, it will further research in fields of critical disability and autism studies by challenging traditional notions of dis/ableism and normativity (further discussed in the next section) through giving autistic youth a voice in research and its processes (see methodology section) and presenting alternate realities, focused on the issue of sociality, that contrast the privileged reality constructed for and by neurotypicals outlined within critical disability studies (Goodley, 2013; Mertens, 2015, p. 31-32). Secondly, it will also contribute to critical disability studies through its specific focus on autism which would “remov[e] barriers for people with particular types of impairment but [maintain] that the problem lies in the attitudes to and barriers all people with impairments face” (Mallet & Runswick-Cole, 2015, p. 125). Thirdly, it will present alternative qualitative research methods that will enable researchers to more effectively work with autistic youth.

From a societal perspective, the research advocates for recognising autistic individuals as equally abled. The researcher will build relationships with participants and consult their views throughout the research process to present an understanding of people with autism as unique rather than disabled, based on witnessing their patterns of socialisation. It hopes to inform policy makers of how the utility of differentiated spaces, with the aid of technology, may benefit the socialisation and learning of not just autistic youth but other marginalised youth groups.

This research believes that the potential benefits to participants and contributions to knowledge outweigh the social risks which can be mitigated through careful planning and supervision.

SECTION 8 - DATA PROTECTION AND ACCESS

Data Protection

8.1. **Indicate how the data, materials and records will be kept to protect the confidentiality/privacy of the identities of participants and their data, including all hardcopies, electronic files and forms.** *See help for definitions.**

○ Data and records will be entirely anonymous
○ Data and records will be coded and non-identifiable
○ Data and records will be coded and re-identifiable
● Some or all of the retained data and records will include personally identifying information
○ Other

8.2. **Who will be responsible for the security of and access to confidential data and records, including consent forms, collected in the course of the research?***

The student researcher, Lye Ee Ng.

8.3. **Where will data, materials and records be stored during and after completion of the project?** Provide full details of the location for all types of data.
Note: The VU Research Storage provides secure digital storage and long term retention for research project data including graduate research projects.

During the project:*

VU Research Storage, password secured disk drive

Upon completion:*

VU research storage

8.4. **Indicate the minimum period for which data will be retained.** See help for definitions.*

○ Indefinitely
○ 5 years post publication
● 7 years post publication
○ 15 years post publication
○ 25 years after date of birth of participants
○ Other

8.5. **Who will be responsible for re-evaluating the data/materials after the retention period and considering a further retention period for some or all of the data/materials?***

The student researcher or the primary and associate investigators.

8.6. **Will you transfer your data or materials to a managed archive or repository during the project, after the project, or after the retention period? Which discipline specific or institutional archives will be considered?**
*Note: Some funding agencies and publishers may require lodgement with an archive or repository. Retain a copy at VU where possible.**

All data or materials will be archived at VU, in a secure office at the college of education using password protected computers (for digital files) and securely locked cabinets (for material products such as notes and transcripts). In addition, The Lab organisation may request to archive the data for future research references. However, as stated in the scholarship contract, only published data or data approved by the researcher for archiving will allowed. Any republication or circulation of this data will also require permission from the researcher. Refer to the letter from The Lab for more information.

8.7. **When further retention of data and materials is no longer required, responsible disposal methods should be adopted. Disposal software should also be adopted if digital software, computer hardware, disks or storage media are reused or retired. What methods of appropriate disposal or destruction will be employed?**
*Note: Personal, sensitive or confidential information, both digital and hardcopy, will require secure destruction or disposal. For other materials you may need to refer to the Hazardous Materials Policy, Animal Ethics Standard Operating Procedures, or the Ethics and Biosafety site found on the VU Office for Research website. **

All digital media will be deleted from the storage system and hardcopies of consent forms will be disposed via VU disposal system.

SECTION 9 - DISSEMINATION/PUBLICATION OF RESEARCH RESULTS

Publication Details

9.1. **Indicate how the results of this research will be reported or published.***

☑ Thesis
☑ Journal article(s)
☑ Book
☐ Research report to collaborating organisations
☑ Conference presentation(s)
☐ Recorded performance
☐ Other

9.2. **Will any contractual agreement exist between the researchers and a third party that will restrict publication of the research findings?***

○ Yes
● No

9.3. **Are there any other restrictions on publications or reports resulting from this project?***

○ Yes
● No

SECTION 10 - OTHER DETAILS

Comments

10.1. **In your opinion, are there any other ethical issues involved in the research?***

○ Yes
● No

10.2. **Additional information and comments to support this application:**

This question is not answered.

SECTION 11 - DOCUMENTS, ATTACHMENTS AND SUPPLEMENTARY FORMS

Supplement C - Research with children and young people under the age of 18 years

You have indicated in Question 3.2.b. that the research involves participants under the age of 18 years.

Applicants are requested to refer to the NHMRC National Statement Chapter 4.2 when completing this form.

Note: The term 'guardian' used in this form refers to a non-parental primary care giver, or organisation/agency or other person who is entrusted by law with the care and management of a child or young person.

1.1. **The research involves:***

● Only participants who are under the age of 18 years
○ Adult participants as well as participants who are under the age of 18 years

1.2. **Indicate the age range(s) of all participant groups in the research:**
Young participants (under 18 years):*

10 to 16 years

2. **Will parental/guardian consent be obtained?***

● Yes
○ No

Research in which parental/guardian consent IS obtained
NOTE: Young participants should co-sign Parental/Guardian consent form to indicate that they have been informed about the research and agree to participate.

2.a. Provide procedural details as to how parent(s)/guardian will be informed about the research and provide consent for their son/daughter to participate.*

As these participants are under 18, their parents will also be encouraged to attend a separate briefing session held in a different room during one of The Lab sessions. Regardless of attendance, all parents of potential participants will receive a plain language statement detailing the project and a consent form. Participation will only be considered if signed consent forms from both parents and participants are received.

2.b. Provide procedural details as to how the young participants will be informed about the research.*

They will be briefed as a group during one of The Lab sessions and handed out a plain language statement (suitable for their age group), bite-size information/visual brochure and consent form. In addition, for online participatory ethnography, participants will need to agree to the terms and conditions before entering the game space. During this time, they will be reminded of their participation in this research.

In addition, participants will be required to answer a short, verbal questionnaire conducted by the student researcher to gauge their capacity to understand and participate in the research. These verbal questionnaires may be conducted one-on-one or as a group, depending on how comfortable each participant feels about speaking with the researcher. From this questionnaire, the researcher may choose to not include the participant from her research even with written consent. However, participation will only be considered if signed consent forms from both parents and participants are received.

3. **Are there any additional RISKS, in either the short or long term, to young participants?** (e.g., due to increased vulnerability, limited capacity to understand their involvement in the research, and/or factors relating to parental/guardian knowledge of their participation)*

○ Yes
● No

4. **Other comments relevant to this section of the application:**

This question is not answered.

5. **I confirm that there is no reason to believe that participation in the research is contrary to a child's or young person's best interest.***

● Yes
○ No

Supplement E - Research with cognitive impairment, intellectual disability or mental illness

<u>You have indicated in Question 3.2.d. that the research involves participants who have a cognitive impairment, intellectual disability or mental illness.</u>

Applicants are required to complete this section if:

- **the research involves participants whose ability to provide voluntary, informed consent may be compromised because of cognitive impairment, intellectual disability or mental illness;**

OR

- **the research involves participants who, because of cognitive impairment, intellectual disability or mental illness, may be more vulnerable to various forms of discomfort and stress than the general population.**

Applicants are requested to refer to the NHMRC National Statement Chapter 4.5 when completing this form.

1.1. **The research involves participants who have:***

☑ Cognitive impairment
☐ Intellectual disability
☐ Mental illness
☐ Other

1.2. **Provide details of the specific impairment, disability and/or illness:***

Participants have self-identified or are diagnosed with high-functioning autism or Asperger's Syndrome. While The Lab has specified that its services are for young people with high functioning autism or Asperger's Syndrome, it does not require parents who sign their children up for the programme to provide formal verification (ie. Doctor's letter). Instead, it asks parents to describe their children's wellbeing, behaviour and what their interests are to ensure that these young people are a good fit for The Lab's programme. Hence, while most young people at The Lab are diagnosed with autism based on the engagements staff members, mentors or myself have had with parents, there have been instances where parents have noticed particular symptoms their children displayed that were similar to the diagnosis of autism but have yet to get their children formally diagnosed. There have also been instances where the diagnosis were inconclusive as different doctors provided different diagnosis. In some cases, one sibling was formally diagnosed and the other was not as the parents could identify the similarities in behaviour between the siblings and did not feel the need to put their other child through the long process of getting diagnosed. I have therefore included the term self-identified autism to ensure that this group of non-diagnosed participants are reflected in the research.

2.1. **Will informed consent be obtained directly from the participant?***

● Yes
○ No

If YES, provide details of how participant capacity to provide voluntary, informed consent will be assessed and monitored during the course of the research.*

(As per supplement C) They will be briefed as a group during one of The Lab sessions and handed out a plain language statement (suitable for their age group), brochure and consent form. In addition, for online participatory ethnography, participants will need to agree to the terms and conditions before entering the game space. During this time, they will be reminded of their participation in this research.

In addition, participants will be required to answer a short, verbal questionnaire conducted by the student researcher to gauge their capacity to understand and participate in the research. These verbal questionnaires may be conducted one-on-one or as a group, depending on how comfortable each participant feels about speaking with the researcher. From this questionnaire, the researcher may choose to not include the participant from her research even with written consent. However, participation will only be considered if signed consent forms from both parents and participants are received.

Should participants wish to withdraw at any point in time, they may do so through the student researcher or the mentors. They may also speak with their parents who can then withdraw them from the research at any point. In addition, if members of The Lab want to take part in the activities but do not wish to participate for the full period of the research, they may do so by signing a release form each time they feel comfortable being filmed or filming others (stage 2). However, they would need to sign the consent form to get access to the game space mentioned in stage 3.

2.2. **What process is in place to determine participant wishes about what should happen in the case that participant capacity to provide informed consent changes or is lost during the course of the research?***

During the research process, if participants do not wish to participate further or show signs of isolation from the research, they may request to withdraw their participation at any time. The researcher or mentors may approach a participant to assess his/her continuation to participate if they feel that the participant is withdrawing him/herself without informing them. Parents may also withdraw their child from the research process at any time if they feel that the research is affecting their child in any way.

3. **Will a third party person provide informed consent on behalf of the participant(s)?** (May be in addition to consent from participant)*

○ Yes
● No

4. **Is it likely that participants' cognitive impairment, intellectual disability and/or mental illness will increase their susceptibility to discomfort or distress (within the context of the proposed research)?***

● Yes
○ No

If YES, what procedures will be in place to minimise this discomfort/distress? (NS 4.5.2)*

As The Lab is largely unstructured in programme and space, the participants may choose to temporarily withdraw themselves from the research by moving away from the researcher. In addition, the researcher will spend time prior to the data collection phase to get to know and build relationships with her participants to minimise distress due to unfamiliarity during the research process. In addition, the creative video ethnography will be pitched as a skill that participants can learn while the online participatory ethnography will be pitched as a gameplay, aligning the research with the goals of The Lab: to learn technological skills and have fun.

5. **Do any of the researchers have a dual role or relationship with any potential and/or actual participants or with a third party who will provide consent?***

○ Yes
● No

6. **Other comments relevant to this section of the application:**

This question is not answered.

Required Attachments

The following documentation must be attached to your application:

- Scanned copy of the Declaration Form for External Investigators (if applicable)

- Copy of the '**Information to Participants Involved in Research**' form *(Please use the templates provided on the Human Research Ethics website)*

- Copy of Consent Forms to be used in the research *(Please use the templates provided on the Human Research Ethics website)*

- Any flyers or other advertising material to be used in the research

- Evidence of approval for research from external organisation

11. **Please attach each of the items specifically listed above as well as any other supporting documentation.**
All documentation must be accurately titled and referenced to within the body of your application where appropriate (i.e. "Appendix A - Declaration Form", "Appendix F - Risk Factor Assessment Questionnaire", etc.). Please limit file types to .doc, .docx, .xls, .xlsx, .pdf, or small-medium images (ie, .gif, .jpg).*

Description	Reference	Soft copy	Hard copy
Consent Form	Appendix A_Consent forms.docx	✓	
Information to Participants Involved in Research	Appendix B_InformationSheet.docx	✓	
Declaration Form for External Investigators	letter of support_Ng.pdf	✓	
Reference List	References_Ethics.docx	✓	
Advertising Material (flyers etc.)	Appendix C D E F G_Minecraft, Brochure, Questionnaire, Definitions, The Lab.docx	✓	
Meeting notes with Kitty	Meeting notes with Kitty.docx	✓	
Responses to Ethics Committee	Response to ethics_NgFINAL.docx	✓	

Note: Please click the Question Help icon above for instructions on how to upload documents and use this table.

If you are certain that you do not need to supply a Consent Form or Information to Participants Involved in Research (both of which are mandatory), please tick Hard Copy and type 'N/A' in the Reference field.

SECTION 12 - SUBMISSION DETAILS

Declaration

I / we, the undersigned, declare the following:

- I / we accept responsibility for the conduct of the research project detailed above in accordance with:
  a. the principles outlined in the National Statement on Ethical Conduct in Human Research (2007);
  b. the protocols and procedures as approved by the HREC;
  c. relevant legislation and regulations.
- I / we will ensure that HREC approval is sought using the Changes to the Research Project process outlined on the Human Research Ethics website if:
  a. proposing to implement change to the research project;
  b. changes to the research team are required.
- I / we have read the National Statement on Ethical Conduct in Human Research prior to completing this form.
- I / we certify that all members of the research team involved the research project hold the appropriate qualifications, experience, skills and training necessary to undertake their roles.
- I / we will provide Annual / Final reports to the approving HREC within 12 months of approval or upon completion of the project if earlier than 12 months.
- I / we understand and agree that research documents and/or records and data may be subject to inspection by the VUHREC, Ethics Secretary, or an independent body for audit and monitoring purposes.
- I / we understand that information relating to this research, and about the investigators, will be held by the VU Office for Research. This information will be used for reporting purposes only and managed according to the principles established in the Privacy Act 1988 (Cth) and relevant laws in the States and Territories of Australia.

*

1	*Staff/Student ID*	E5015987
	Full Name	DR STEFAN SCHUTT
	Role in project	Associate Investigator
	Personnel Type	Internal
	Sign Declaration? *By clicking the checkbox below, you are agreeing to conduct the research project in accordance with the above declaration.*	Yes
	Date Signed	11/09/2015
2	*Staff/Student ID*	S4520127
	Full Name	MS Lye Ee (Rebecca) Ng
	Role in project	Student
	Personnel Type	Student
	Sign Declaration? *By clicking the checkbox below, you are agreeing to conduct the research project in accordance with the above declaration.*	Yes
	Date Signed	22/02/2016
3	*Staff/Student ID*	E5102490
	Full Name	DR TIMOTHY CORCORAN
	Role in project	Chief Investigator
	Personnel Type	Internal
	Sign Declaration? *By clicking the checkbox below, you are agreeing to conduct the research project in accordance with the above declaration.*	Yes
	Date Signed	22/02/2016

Note: Please click on your name in the table above to complete your declaration; or click on the name of an External Investigator to acknowledge that their declaration has been supplied.

Declaration Instructions and Information

- A digital signature must be supplied by each and every member of the research team using the declaration table above.
- The 'Needs Signature' icon ☐ shows which records you are responsible for signing.
- Physical signatures are not required for VU staff and students in applications using form version v.13-07.
- External Investigators do not have access to Quest. The Chief Investigator must supply a completed physical declaration on their behalf by following the steps below:
    1. Send the person a copy of the full application form (including any attachments), as well as the **Declaration Form for External Investigators** document.
    2. Once returned, attach the signed *External Investigator Declaration Form* document in 'Section 11 - Required Attachments'.
    3. Enter into the External Investigator's record in the above declaration table and mark the checkbox to indicate these steps have been completed, include the date you have done so.
    The 'sighted by' field will automatically populate with your name. *(Only the Chief Investigator will have permission to complete this step.)*
- The application cannot be submitted until all members of the research team have logged in and completed this declaration.

Finalise Application

Reminders

- All applications must be sighted and approved by all members of the research team and any relevant parties. Please ensure each member of the research team has completed their declaration in *'Section 12 - Declaration'* above, including any declaration forms supplied on behalf of External Investigators. *Applications will not be reviewed without appropriate authorisation.*
- It is strongly recommended that you save a PDF version of your application before submitting as you will lose access to the electronic record while it undergoes formal review.
- **You are reminded that your project may not commence without formal written approval from the appropriate Human Research Ethics Committee.**

Ready to Submit?

- * Once the form is complete and all documents are attached, **click on the *'Action'* tab** above the left-hand form navigation, then **click *'Submit Application'*** to forward the application to the Ethics Secretary to be reviewed and assigned to a Committee meeting.
- You will receive an automatic email notification from Quest when your application has been successfully submitted.
- *Note: Only a Chief Investigator is able to submit an application for ethical approval. The Chief Investigator who is marked as the primary contact for this application is:*

DR TIMOTHY CORCORAN