

School of Media, Creative Arts and Social Inquiry

Faculty of Humanities

**Access, denizens and screens in urban space:
Locating disability through the Creative City to the Smart City**

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Doctor of Philosophy

of

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Declaration

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgment has been made.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

The research presented and reported in this thesis was conducted in accordance with the National Health and Medical Research Council National Statement on Ethical Conduct in Human Research (2007) – updated March 2014. The proposed research study received human research ethics approval from the Curtin University Human Research Ethics Committee (EC00262), Approval Number #HRE2017-0421.

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Abstract

This thesis analyses the role of the screen in defining disability in dominant urban discourses, and the increasing prosthetic role of the mobile urban screen (smartphone) as citizen interface. It argues that the urban screen has worked to define disability and accessibility, and the normate citizen. Specifically, the thesis investigates the intersection of disability and the Creative City and the Smart City – the dominant city planning, imaging and (re) development strategies globally over the last twenty years – in order to contextualise this analysis. This thesis has found that urban screens – and specifically the personal, mobile, citizen interface urban screen, the smartphone – have reignited a medical model of disability whilst also helping to shift and promote accessibility. While each chapter of this thesis has examined diverse and complex intersections between urban screens and disability, each has also consistently found different ways in which access continues to be inadequately interpreted and ill-defined. Thus, the aim, in part, for this thesis is that it aids in providing a critical understanding of contemporary urban accessibility and a reimagining of the social model in a mediated urban context.

This thesis is interdisciplinary in its approach and aim. It is informed by the ideas and literature from the fields of urban studies, disability studies, cultural studies, geography and new media studies. Specifically, it employs the analytical intersections offered by critical disability studies (CDS) and the emerging critical accessibility field. It draws on ideas and theories from each field, whilst also reflexively contextualising and intervening in ideologies of ability and normalised ways of thinking about the relationship between bodies and spaces.

As cities remain configured to and by ableist understandings, people with disabilities often experience a type of denizen identity – a category of membership and belonging outside of normative understandings of citizenship. This identity reveals the frictional and flexible relationship between rights as represented and rights as lived. Despite the presence of disability rights law in most countries, the manifestation of rights is fluid and uneven, evident in layered, mediated, public

urban space. Moreover, I argue that, within these mediated spaces, disability remains accommodated for, rather than a normalised part of city discourses.

This thesis argues for the intersection of critical accessibility, both in existing mediated urban spaces and experiences but also in future, utopian city discourses that inform city planning, management and imaging strategies. In doing so, it establishes how the intersections of each field can contribute to new ways of understanding the relationship between city discourse, screens and disability and, in turn, planning for inclusive cities.

It does so via two key methods. Firstly, using a discourse analysis of the configuration and definition of disability in the two most prominent city imaging strategies of the past two decades – Creative Cities and Smart Cities. Secondly, it examines the increasingly pivotal role of the screen in defining urban access. I track historical intersections between the screen and the citizen, working across urban screens to the personal screen of the smartphone. This thesis uses qualitative research in disability and new media studies to develop a critical, in-depth understanding of the relationship between screens and disability, and to destabilise assumptions of the normate citizen and the preferred user.

Acknowledgements

This thesis is dedicated to my daughters Anna and Eliza – one a baby when it began, and the other born half way through. You have been my inspiration, my distraction, my motivation and the most rewarding project of my life.

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Lastly, to all the individuals who have participated in the surveys, interviews and focus groups, thank you for your generosity and your time in sharing your perspectives and experiences with me. This thesis is for you and because of you.

Attribution

The following tables represent the contributions that resulted in collaborative publications which contributed to the thematic development, data and concepts that advanced the development of the thesis. While all work presented in the thesis is my own, parts of this work have also been published elsewhere in co-authored papers and chapters.

Smartphones, Disability and the Australian Experience of the COVID-19 Pandemic for People who are Blind and with Low Vision
Disability Studies Quarterly
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	Conception and Design	Acquisition of Data and Method	Analysis	Interpretation and Discussion	Editing	Total % contribution
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New cities, old prosthesis—Smart cities, smartphones and disability
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Smartphones and equal access for people who are blind or have low vision.
 2020. Curtin University <https://ccat.curtin.edu.au/events-and-conferences/acat-seminar-series-2/>

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Privacy and the Ethics of Disability Research: Changing Perceptions of Privacy and Smartphone Use
 Second International Handbook of Internet Research, eds. J. Husinger, L. Klastrop and M. Allen,
 New York: Springer. 2020. pp 413-429.

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Using Smartphone to navigate urban spaces: People with disabilities and the role of mobile technologies in three WA locations.
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Glossary

ADA	Americans with Disabilities Act
AR	Augmented reality
ARC	Australian Research Council
AT	Assistive technology
CDS	Critical disability studies
DAIP	Disability Action and Inclusion Plan
DAP	Disability Action Plan
ICT	Information and communication technologies
GPS	Global positioning system
STS	Science and technology studies
UNCRPD	United Nations Convention of the Right of Persons with Disabilities
UPIAS	Union of Physically Impaired Against Segregation
WA	Western Australia
WCAG	Web content accessibility guidelines

1. Introduction

This thesis offers a reflexive investigation of the relationship between screens and disability in the context of the prevalent urban discourses of the last two decades. Shifting from the Creative City, popularised by proponents such as Richard Florida and Charles Landry in the early 2000s, to the Smart City, the dominant urban paradigm of the last decade, the thesis examines how the screen has played a critical role in defining meanings of and access to urban space. It identifies that these urban discourses perpetuate understandings of the normate body, of “ideologies of ability”,¹ and the preferred citizen.

Utilising an interdisciplinary perspective, this thesis borrows from urban studies, disability studies, cultural studies, geography and new media studies. It employs the analytical approach of critical disability studies (CDS) and the critical accessibility field, to draw on important ideas and theories from each field, and to apply the mantra of CDS and critical access studies – to disrupt, contextualise and intervene in common sense and normalised ways of thinking about the relationship between bodies and spaces.² It does so at the site of the screen – both fixed and mobile – arguing that they are significant in the way that citizens are imagined in urban space. The smartphone is focused on as a pivotal screen that now mediates our experience of public space and performs the role of citizen interface. For people with disabilities, the smartphone is also increasingly positioned as both an accessibility tool and citizen interface, performing a complex prosthetic role. Moreover, this thesis identifies that, for people with disabilities,³ the screen also operates as a way of defining disability through (in)accessibility.

¹ Tobin Siebers, *Disability Theory* (Ann Arbor: University of Michigan Press, 2008), 8.

² Aimi Hamraie, *Building Access: Universal Design and the Politics of Disability* (Minneapolis: University of Minnesota, 2017).

³ This thesis uses the term ‘people with disabilities’ over ‘people with disability’ in recognition of the many people who experience more than one disability, and the layered experience of disability. See Chapter 8 for a more detailed discussion.

As cities remain configured to and by ableist understandings, people with disabilities experience a type of denizen identity – understood as both “[people] enjoying limited partial rights of citizenship”⁴ and also a category of membership and belonging outside of normative understandings of citizenship. This identity reveals the frictional and flexible relationship between rights as represented and rights as lived. Despite the presence of disability rights law in most countries, the manifestation of rights is fluid and uneven, evident in layered, mediated, public urban space. Moreover, the thesis argues that, within these mediated spaces, disability remains accommodated for rather than being a normalised part of city discourses.

This thesis argues for the intersection of critical accessibility, both in existing mediated urban spaces and experiences, and in the strategies and approaches to building/designing the utopian Smart City. In doing so, it establishes how the intersections of each field can contribute to new ways of both understanding the relationship between city discourse, screens and disability and, in turn, planning for inclusive cities. This is anchored against an analysis of the accessibility of fixed and mobile urban screens (Chapters 5, 6 and 7) and in the urban discourses which intersect with and inform the meaning, role and function of these screens. Thus, the dominant urban discourses of the past twenty years – the Creative City and the Smart City – offer context to the analysis of how accessibility and disability are defined and enacted in urban space. Acknowledging how city spaces are socially constructed is critical to understanding how access is also a constructed, performed and fluid process.

1.1. Defining accessibility

Accessibility is a readily deployed term used to convey whether a space, text or technology can be used, entered or understood. Of course, what it elucidates when used is a further series of questions – access for whom, to what degree, for what

⁴ B. S. Turner, “We Are All Denizens Now: On the Erosion of Citizenship,” *Citizenship Studies* 20, no. 6–7 (2016): 679–692, <https://doi.org/10.1080/13621025.2016.1191432>.

purpose? It is also envisioned as a goal, an outcome, an – ultimately positive – end result.⁵ The term is often tied to disability,⁶ whereby accessibility is configured as the result of the removal of societal barriers for people with disabilities, for example the inclusion of lifts where there was once stairs, closed captions on television for d/Deaf and hard of hearing audiences, or websites that can be read by screen readers for low vision or blind users.⁷ This broad definition is laden with social, historical and contextual connotations and knowledges of what constitutes disability and barriers rather than the processes by which both are defined.

There are several authors who have provided important critical engagement with the ways in which the meaning and manifestation of accessibility is constructed. For example, Lewthwaite, Sloan and Horton define accessibility “through the lens of user experience as: A core value, not an item on a checklist; a shared concern, not a delegated task; a creative challenge, not a challenge to creativity; an intrinsic quality, not a bolted-on fix; about people, not technology.”⁸ The critique of the checklist approach to accessibility is also articulated by Mingus who emphasises both the importance of questioning the intent behind access – “that we’re not just doing access for the sake of access, that we’re not just doing access for assimilation”⁹ – and the use of access as a tool rather than the end goal. This notion of a checklist approach to accessibility is considered throughout this thesis. Ellcessor emphasises the relational nature of access, whilst also identifying the importance of

⁵ Kelly Fritsch, ed., “Accessible,” in *Keywords for Radicals: The Contested Vocabulary of Late-Capitalist Struggle*, ed. Kelly Fritsch, Clare O’Connor and A. K. Thompson (Chico, CA: AK Press, 2016).

⁶ This relationship only gained traction from the 1950s onwards, connecting both to post-war strategies for disabled soldiers and broader civil rights movements, including disability rights. See Beth Williamson, *Accessible America* (New York: NYU Press, 2020).

⁷ Beth Williamson, “Access,” in *Key Words for Disability Studies*, ed. Rachel Adams, Benjamin Reiss and David Serlin (New York: NYU Press, 2015).

⁸ Sarah Lewthwaite, David Sloan and Sarah Horton, “A web for all: A manifesto for critical disability studies in accessibility and user experience design,” in *Manifesto for the future of Critical Disability Studies*, vol. 1, ed. Katie Ellis, Rosemarie Garland-Thomson, Mike Kent and Rachel Robertson (Oxon: Routledge, 2019), 130.

⁹ Mia Mingus, “Beyond access: Mia Mingus on disability justice,” interview by G. MacDougall. November 13, 2013, <https://equitableeducation.ca/2013/mia-mingus-disability-justice>.

understanding the history of the way in which access has been defined, namely tied to the politics of disability and, more recently, to a consumer choice, customisation and personalisation.¹⁰ Titchkosky likewise argues for a critical perspective, identifying that access is a “form of perception” and thus, rather than defining access, she argues it “should remain a space for questioning”.¹¹ Hamraie introduces the term access-knowledge to this body of critique, locating accessibility as a historical project of knowing and making access.¹² This thesis inserts critical accessibility approaches into the blended digital/physical spaces of the Creative City and Smart City in order to disrupt the perpetuating normative assumptions about bodies and space.

Several academics such as Brewer, Selfe and Yergeau¹³ and Titchkosky,¹⁴ who are central to the development of critical access theory, first identified problems of access in obvious sites of knowing-making, specifically academic environments. Their work helped to destabilise and promote a broader, reflexive understanding of access studies. For example, Brewer, Selfe and Yergeau identified that inaccessible texts, spaces and practices are ingrained in academic culture, making specific reference to the field of professional writing or composition studies. They highlight that, despite efforts to shift this culture, “our field too often remains attached to a vision of access that has more in common with helping the Other consume inaccessible texts than it does with radical transformation of the profession”.¹⁵ Likewise, motivated by the “presence and absence” of disability at the University of Toronto in 2010, Titchkosky explains the perception of access – and specifically the perception of access as ‘a

¹⁰ Elizabeth Elcessor, “Blurred Lines: Accessibility, disability and definitional limitations,” *First Monday* 20, no. 9 (2015) <https://firstmonday.org/article/view/6169/4904>.

¹¹ Tania Titchkosky. *The Question of Access: Disability, Space, Meaning* (Toronto: University of Toronto Press, 2011), 150.

¹² Hamraie, *Building Access*, 17.

¹³ Elizabeth Brewer, Cynthia Selfe and Melanie Yergeau, “Creating a Culture of Access in Composition Studies,” *Composition Studies* 42, no. 2 (2014): 151–154.

¹⁴ Titchkosky, *The Question of Access*.

¹⁵ Brewer, Selfe and Yergeau, “Creating a Culture of Access,” 153.

problem’ – is bound up in the ways it is spoken about, acted on, and resisted, resulting in a naturalising of the way disability is likewise defined.¹⁶

Therefore, this thesis draws on these critical intersections in accessibility studies, defining accessibility as a historical, creative, collaborative, cultural and social process of (re)locating different bodies in space. It identifies that accessibility is not only a process but an interaction between multiple entities – the designers, regulators, managers and citizens, with and without disabilities, of each space. Each chapter of this thesis unpacks different ways in which the meanings and manifestations of accessibility is created. Lastly, this definition of accessibility pushes back against the increasing individualisation of access,¹⁷ arguing that as access is socially constructed, it requires a social model of disability in order to reimagine it. Moreover, accessibility is clarified as sitting separate to – but entwined with – universal design and usability.

The notion of universal design was a set of principles created in 1997 by researchers at the University of North Carolina State, including Ronald Mace who is often heralded as a key author in its development.¹⁸ These principals are:

Equitable Use: The design is useful and marketable to people with diverse abilities.

Flexibility in Use: The design accommodates a wide range of individual preferences and abilities.

Simple and Intuitive Use: Use of the design is easy to understand, regardless of the user’s experience, knowledge, language skills, or current concentration level.

Perceptible Information: The design communicates necessary information effectively to the user, regardless of ambient conditions or the user’s sensory abilities.

¹⁶ Titchkosky, *The Question of Access*.

¹⁷ Kelly Fritsch, “Crippling Concepts: Accessibility,” *Review of Disability Studies: International Journal* 12, no. 4 (2016), <http://hdl.handle.net/10125/58677>.

¹⁸ Inger Marie Lid. “Universal Design and Disability: An Interdisciplinary Perspective,” *Disability and Rehabilitation* 46, no. 16 (2014): 1344–1349, <https://doi.org/10.3109/09638288.2014.931472>; Rob Imrie, “Universalism, Universal Design and Equitable Access to the Built Environment,” *Disability and Rehabilitation* 34, no. 10 (2012): 873–882, <https://doi.org/10.3109/09638288.2011.624250>.

Tolerance for Error: The design minimizes hazards and the adverse consequences of accidental or unintended actions.

Low Physical Effort: The design can be used efficiently and comfortably and with a minimum of fatigue.

Size and Space for Approach and Use: Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.¹⁹

These principals have mutated and changed over time. As Dolmage argues, it has “gone through what linguists call a ‘normalization’... from a verb to a noun”,²⁰ yet remains a significant part of access studies. Universal design became popular, in part, as a critical response to the checklist approach to accessibility and, as Dolmage offers, the way access evoked a static, end goal and an accommodation rather than a “way to move”, a space of multiple possibilities and a process.²¹

One of the issues of universal design is that while it holds the same goals as accessibility,²² its definition and orientation emphasises that the cause (and the resolution) to ‘inaccess’ lies in design. That is, if the principals of universal design are put in place and enacted, then accessibility is achieved. Yet universal design does not identify the two-way relationship in access, nor the user as a possible co-producer, and fails to connect with the historical, social and cultural knowledges that generate both ableism and exclusive spaces. I argue, that is focusing primarily on design, the user remains delegated to a denizen, rather than citizen role. As theorists and activists such as Ellcessor, Hamraie and Dolmage have queried, the use of universal design for neoliberal purposes strips the principles of disability rights:

¹⁹ The Centre for Universal Design. “Guidelines for Use of the Principles of Universal Design. North Carolina State University,” 1997.

https://projects.ncsu.edu/ncsu/design/cud/about_ud/docs/use_guidelines.pdf

²⁰ Jay Dolmage. *Academic Ableism* (Ann Arbor: University of Michigan Press, 2017), 115.

²¹ Dolmage, *Academic Ableism*.

²² Hans Persson, Henrik Ahman, Alexander Yngling and Jan Gulliksen. “Universal Design, Inclusive Design, Accessible Design, Design for All: Different Concepts – One Goal? On the Concept of Accessibility – Historical, Methodological and Philosophical Aspects,” *Universal Access Information Society* 14 (2015): 505–526, <http://doi.org/10.1007/s10209-014-0358-z>.

It is highly possible that a concept such as Universal Design [UD] could simply become a proxy system for demanding the flexibility of bodies, increasing the tenuousness of social and physical structures, rebranding our intellectual work, constantly moving the target for technological innovation as flows of information are made ever more proprietary, and placing the privilege of “design” in the hands of a narrowing and exponentially profiting few. More simply, what if we are being given (and we are giving to others) lofty and theoretical concepts like UD to distract us from much more simple realities? What if our debates about the most fair and equitable forms of inclusion are happening as real rights and opportunities get sucked away?²³

Yet this ‘corrupting’ of universal design is not a narrative confined to this term, nor does it necessarily signal a “disavowing of disability”²⁴ – the mainstreaming of accessibility has and continues to occur, both in response to shifting demographics, for example an ageing population, but also at the site of technological innovation. What has been designed as accessible technologies – from Graham Bell’s invention of the telephone for his deaf wife and mother, to speech recognition and voice command technology for people with mobility-based disabilities – were adapted, evolved and utilised en masse.

In response to critiques of limited definitions of and strategies for accessibility, other theorists highlighted the importance of emphasising usability over accessibility. For example, Powlik and Karshmer, focusing on the technologies in teaching and learning environments, identify that accessibility is often reduced to “getting one inside the door”, or abidance to accessibility regulations – for example Section 508 of the Rehabilitation Act in the US – but does not equate to a usable experience for people with disabilities.²⁵ This is often replicated in digitised high education environments almost two decades later, where the emphasis remains on accommodating students with disabilities, rather than providing accessible learning environments. An example

²³ Dolmage, *Academic Ableism*, 140.

²⁴ Hamraie, *Building Access*, 22.

²⁵ James Powlik and Arthur Karshmer, “When accessibility meets usability,” *Universal Access Information Society* 1 (2002): 212-222, <https://doi.org/10.1007/s10209-002-0020-z>.

of this is the lack of automatic captioning of video lectures, despite the technological capabilities to do so.²⁶

Other, aligned, approaches to those that emphasise ‘usability’ also emerged in the years following the development of universal design, including design for all, universal access and inclusive design, each employing parts of and different approaches to broader accessibility goals,²⁷ and emerging at historical moments, in specific disciplines, and preferred in different countries. For example, Keates argues that the universal access approach developed from the field of usability, and that different approaches emerged at this time in the late 1990s and early 2000s in different countries. As such, the term universal design is preferred in the US, whereas inclusive design is utilised mostly in the UK, and design for all is a more popular terminology in Europe.²⁸ Persson, Ahman, Yngling and Gulliksen likewise track the shifting iterations of accessibility approaches, but also caution the “wide variety of different concepts do lead to confusion, political struggles and lack of clarity about what is required to achieve these goals”.²⁹ However, as many of the critical accessibility theorists such as Ellcessor, Hamraie, Titchkosky and Fritsch have argued, constructing accessibility as a set, end goal is problematic.

This thesis argues that accessibility is at a conceptual crossroads and therefore aims to aid in its reimagining. In the last decade it has shifted drastically, impacted by a pervasive digital environment, increasing media convergence and a shifting of ‘firm’ boundaries between digital and non-digital space. As such, what was once classified as issues of digital accessibility – marked by the introduction of web content

²⁶ Mike Kent et al. “The case for captioned lectures in Australian higher education,” *Tech Trends*, 62 (2018): 158 – 165, <https://doi.org/10.1007/s11528-017-0225-x>

²⁷ Constantine Stephanidis, *The Universal Access Handbook* (Boca Raton: CRC Press, 2009).

²⁸ Simeon Keates, “When Universal Access is Not Quite Universal Enough: Case Studies and Lessons to be Learned,” *Universal Access in the Information Society*, 19 (2020): 133–144, <https://doi.org/10.1007/s10209-018-0636-2>.

²⁹ Persson et. al. “Universal Design, Inclusive Design”

accessibility guidelines (WCAG) principles and standards³⁰ – now blurs and blends with multiple technologies and urban space. The contemporary urban discourses of the last two decades, and specifically the emergence of the Smart City paradigm, have magnified this shift. There has also been an increasing tethering of accessibility to the concept of universal design, and therefore away from definitions of disability. As Ellcessor expresses, “there is something lost if ‘accessibility’ is folded into ‘universal design’ or is taken up as a part of creating broad appeal and usability for consumer markets.”³¹ As universal design becomes marketed as universally beneficial, as a mainstream innovation, and embedded in an emphasis on consumer choice, the politics, intent and history of access is diluted. For example, accessibility is grounded in a history of rehabilitation, interspersed with activist and advocacy rights-based approaches. Post-war attention to injured soldiers as potential ‘productive citizens’ ignited the discourse around access to the built form that continues to inform accessibility standards and guidelines today.³² Accessibility today is likewise prefaced on an understanding of what it means to be valid citizen, what type of citizen is recognised and preferenced in urban discourse, and for whom and how this ‘belonging’ is recognised. Running concurrent with the challenges to the meaning and manifestations of accessibility is an increased attention to digital inclusion, equality and rights, both academically and written into policy and legislation.³³ There has been extensive work on bridging the digital divide and ensuring accessible technology,³⁴ as well as attention to the ways in which new

³⁰ WCAG 2.0 was published December 2008 and developed by the Web Accessibility Initiative (WAI) and World Wide Web Consortium. <https://www.w3.org/WAI/standards-guidelines/wcag/>

³¹ Ellcessor, “Blurred lines”

³² Polly Welch and Chris Palames, “A Brief History of Disability Rights Legislation in the United States,” in *Strategies for Teaching Universal Design*, ed. Polly Welch (Boston: Adaptive Environments Centre, 1995); Hamraie, *Building Access*.

³³ Gerard Goggin, Katie Ellis and Wayne Hawkins, “Disability at the Centre for Inclusion: Assessing a New Moment for Technology and Rights,” *Communication, Research and Practice* 5, no. 3 (2019): 290–303, <https://doi.org/10.1080/22041451.2019.1641061>.

³⁴ For example, see Stefan Johansson, Jan Gulliksen and Catharina Gustavsson, “Disability Digital Divide: The Use of the Internet, Smartphones, Computers and Tablets Among People with

technology can work to both increase accessibility and exacerbate inequalities.³⁵ This thesis draws on much of this research, particularly in the area of accessibility and smartphones, but also in the intersection with the notion of the Smart City, as a way both to understand the diversity of experiences of disability, and to locate the process of accessibility in these experiences. It is evident in this field of research that disability is no longer a maligned and neglected topic in either science and technology fields, nor a broader discourse on technology and disability rights. However, there are still consistent gaps (of which two are outlined below) and absences that this thesis identifies and that frame each chapter.

The first significant gap in the current ‘knowledge of accessibility’ is the one between definitions of disability and approaches to access. As Goggin, Hollier and Hawkins state, there remains a “need to understand how internet technology interacts with the life worlds and dynamics of disability”.³⁶ Both understandings of disability and accessibility have historically evolved, with understandings of disability informing what access means. However, there is also a lag between evolving definitions of disability – and indeed its intersections with other identities such as race, gender and sexuality³⁷ – and the way new categories are interpreted and recognised in policy and in urban and digital space. For example, earlier renditions of accessibility were limited to physical disabilities, primarily mobility-based, and accessibility was often ‘achieved’ via wheelchair ramps or elevators. Today, definitions of disability have expanded and include many invisible and cognitive disabilities, yet accessibility policies and practices have yet to fully catch up to this definition.

Disabilities in Sweden,” *Universal Access in the Information Society* 20 (2020): 105–120, <https://doi.org/10.1007/s10209-020-00714-x>.

³⁵ Elizabeth Ellcessor, *Restricted Access* (New York: NYU Press, 2016).

³⁶ Gerard Goggin, Scott Hollier, and Wayne Hawkins, “Internet Accessibility and Disability Policy: Lessons for Digital Inclusion and Equality from Australia,” *Internet Policy Review* 6, no. 1 (2017). <https://doi.org/10.14763/2017.1.452>

³⁷ Hamraie. *Building Access*.

The second gap identified is the one acknowledged at the beginning of this section – a disconnect between digital, or screened, accessibility and the urban space in which these screens are used. While this thesis does not attempt to provide a succinct definition of accessibility, it does provide a contribution to critical accessibility and builds a case for collapsing the online/offline or digital/analogue boundaries commonly found in discourses of access. The arguments are also historically, socially and culturally restricted, contextualised in the representation of disability in city imaging discourses. Though Persson, Ahman, Yngling and Gulliksen put forward a persuasive argument as to why accessibility requires a clear definition and common understanding, this thesis posits that returning to the understanding of accessibility as a process, if not method, allows for continual, reflexive critique and responsive development. Ellcessor highlights that the “discursive flexibility of access”³⁸ allows it to also go unchallenged and critiqued; thus, approaching accessibility as a process aids in mitigating stagnant, rigid definitions based on defining or categorising difference whilst also maintaining a critique of the process to/of access itself.

Indeed, what is also increasingly detrimental to accessibility is the way it has become displaced, both linguistically and in practice. In undertaking research for this thesis, my accessibility questions were consistently moved between help desks, IT departments and support services who proclaimed the location of an accessibility issue to be ‘somewhere else’, but rarely located in their software, product or service. Likewise, a lack of accessibility was reduced to an individual deficiency – my browser or operating system was not up-to-date, or I had chosen the wrong one to use. In another instance, a service provider’s software was “so accessible” (designed to be able to be read by multiple types of screen reader software) that it became inaccessible:

Some screen readers read one label type, and some screen readers read another. As a result, to ensure universal screen reader compatibility, our [software] have

³⁸ Ellcessor. *Restricted Access*.

*the two different types of labels present, which means some screen readers will end up reading the question text twice.*³⁹

In all instances, inaccessibility was never resolved, despite multiple attempts and relocations, yet inaccessibility was always definable and locatable.

1.2. Writing as a non-disabled ally

Throughout this thesis I have approached accessibility from a reflexive position, both in theory and method, and therefore I acknowledge my role in the construction of the meaning of access. I mindfully employ the concept of disability allyship in writing this thesis – where “allyship is, in part, the practice of amplifying the voices and perspectives of marginalized groups and taking direct action and advocacy alongside members of those groups”.⁴⁰ However, while I believe in this concept and practice, I, like Abes and Zahneis cited above,⁴¹ will never be fully convinced I am not an imposter, nor doing enough for the disability community.

I am also aware that allyship works in part as means of justifying a position in which I ‘speak for others’. I have attempted to reconcile this problematic position by incorporating the voices and experiences of people with disabilities throughout this thesis, and have worked to extend my own current and future research methods to incorporate my own critique – that people with disabilities be employed as experts in the fields of accessibility and accessibility research. However, while the research conducted and discussed in this thesis has attempted to deconstruct assumptions around accessibility and disability, and incorporate people with disabilities as research participants, I acknowledge its limitations and deficiencies in not evoking the experience of disability as a position of expertise in all levels of research, from conception of the research question, to the design of the project, through to participation and the analysis and interpretations of results.

³⁹ Qualtrics Support services, email message to author, January 24, 2020.

⁴⁰ Elisa Abes and Megan Zahneis, “A Duo Ethnographic Exploration of Disability Ally Development,” *Disability Studies Quarterly* 40, no. 3 (2020), <https://dsq-sds.org/article/view/7038/5707>.

⁴¹ Abes and Zahneis, “A Duo Ethnographic Exploration”.

I also recognise that I write this thesis in the position of non-disabled privilege, and that my own identity limits and colours the extent to which I am able to understand the experiences of people with disabilities. I believe that while in part I am contributing to the best practice of disability studies – in seeking to shift how disability is positioned in society and to highlight the way it is constructed in discourse – I acknowledge the problematic nature of writing ‘about’ disability and the experiences of others.

I also acknowledge the diversity of experiences, not only of disability but also of disabled identity. While the thesis is interdisciplinary, it is narrow and exclusive in the disability categories it covers – largely vision-, hearing- and mobility-based disabilities – in its focus on a largely Australian perspective, and in its primary engagement with North American, European and British research. It does not utilise a considerable amount of important work from CDS on race, gender, sexuality and disability, nor achieve what many parts of CDS has achieved, which is for the margins to define the centre.⁴² Of course, one thesis cannot do everything, but I am aware that, in these limitations, I am contributing to the very thing this thesis critiques which is a lack of understanding of the importance of intradisability diversity and the varied and multiple experiences of disability. Furthermore, I have been reminded on several occasions through this research process that people with disabilities do not always perceive themselves as being disabled. This dis-identification is layered and complex, incorporating the intersectionality of disability – that is, how disability identity and experiences collide with other marginalised identities, individual lived experiences, and internalised ableism.⁴³

This thesis, and my interest in disability, has been coloured by my experience of being the child of a parent with disability. Yet, despite living with effects of polio the

⁴² Rosemarie Garland Thomson, “Integrating Disability, Transforming Feminist Theory,” *NWSA Journal* 14, no. 3 (2002): 1–32, <http://www.jstor.org/stable/4316922>.

⁴³ Fiona Kumari Campbell, *Contours of Ableism* (New York: Palgrave Macmillan, 2009).

majority of his life, and in a period of history in which ableism was almost entirely uncontested, my father rarely identified as a disabled man, commonly experiencing his own internalised ableism – in the emulation of ableist norms and in efforts to perform able-bodiedness through passing⁴⁴ – such as not wanting to be a bother, to be a burden, to ask for allowances. He is a vivid and central part of my childhood, but my recollections of him is not as a disabled father. This invisibility may be informed by the eyes of a child, or his internalised ableism, or a lived experience of other privileges – white, educated, middle class – or indeed a combination of all three. When we have spoken on disability, he has often reflected on the economics of disability – heightened by his profession as an economics teacher – and how his experience of polio as a child and adult has been heavily mitigated by a privileged financial and cultural position. What has consistently resonated with me in the experiences with my father, and in the writing this thesis, is the paradoxical way in which disability is defining yet does not define the individual. This complex, contradictory nature of the disabled experience is evident in the highly contested site of the language of disability.

1.3. Defining disability

The language and labels of disability have been contentious over many decades, influenced in part by the shifting perspectives of the social model of disability. While disability studies was wedded to the political intention to identify that society constructed disability, in doing so critics argued that the identity of disability was diminished. A cyclical argument began as to whether the term people with disability/ies diluted the existence and impact of impairment – with theorists, particularly British disability theorists such as Mike Oliver, preferring the term disabled people⁴⁵ – or whether it allowed for a person-first, thus identity-first, label;

⁴⁴ Fiona Kumari Campbell, “Disability Harms: Exploring Internalized Ableism,” in *Disability: Insights From Across Fields and Around the World*, vol. 1, ed. C. Marshall, E. Kendall and R. Gover 19–34 (Westport, CT: Praeger Press, 2009).

⁴⁵ Mike Oliver and Colin Barnes, “Disability Studies, Disabled People and the Struggle for Inclusion,” *British Journal of Sociology of Education* 31, no. 5 (2010): 4547–560,

this later perspective is likewise taken up in debates on language, identity and race. The language of disability is globally mapped, with specific countries preferring different terms – currently the UK predominantly uses an identity-first approach, such as disabled person, and is historically and culturally situated, while North America still formally uses a people-first approach as featured in the Americans with Disabilities Act (ADA) of 1990; however, there is growing opposition to this approach, exemplified by the #SayTheWord campaign.⁴⁶ In Australia, person-first language, for example people with disabilities, is used to emphasise the individual as a person rather than placing the identity of disabled first,⁴⁷ and to acknowledge the multiple identities that people have and that they may prioritise these over their experience of disability.

Disability theorists have themselves shifted the terminology used over time – Tom Shakespeare moves from using the term disabled people in the mid to late 1990s⁴⁸ to referring to people with disabilities *and* disabled people in 2013.⁴⁹ The debates on language continue to permeate through research on disability, with different preferences to labels emerging across both national and disciplinary lines. Moreover,

<https://doi.org/10.1080/01425692.2010.500088>; Mike Oliver, “The Social Model of Disability: Thirty Years on,” *Disability and Society* 28, no. 7 (2013): 1024–1026, <https://doi.org/10.1080/09687599.2013.818773>.

⁴⁶ Erin Andrews et al., “#SaytheWord: A Disability Culture Commentary on the Erasure of ‘Disability’,” *Rehabilitation Psychology* 64, no. 2 (2019): 111–118, <https://doi.org/10.1037/rep0000258>; Disabled Spectator. #Saytheword – *The Power of Language for Disability Identity*. April 24, 2016, <https://disabledspectator.com/saytheword-power-language-disability/>

⁴⁷ People with Disability Australia, “Identity-First Vs Person-First Language,” accessed February 2, 2021, <https://pwd.org.au/resources/disability-info/language-guide/identity-vs-person/>; Australian Federation of Disability Organisations, “Language Guide,” accessed February 2, 2021, <https://www.afdo.org.au/news/language-guide/>

⁴⁸ Tom Shakespeare, “Disability, Identity and Difference,” in *Exploring the Divide: Illness and Disability*, ed. Colin Barnes and Geoff Mercer, 94–113 (Leed: The Disability Press, 1996).

⁴⁹ Tom Shakespeare, “Nasty, Butish, and Short? On the Predicament of Disability and Embodiment”, in *Disability and the Good Human Life*, ed. J. E. Bickenbach, F. Felder and B. Schmitz, 93–112 (Cambridge: Cambridge University Press, 2013).

terminology continues to be bound up in the binary of models of disability. As one reviewer of an article I wrote while undertaking this thesis stated:

I'm a bit mystified at why someone who specifically identifies and advocates the social model continues to use the term 'people with disabilities'. Either it is the 'structures, attitudes and frameworks' that are disabling (social model) (as identified here) or people 'have' disabilities resulting from impairment (medical model), but to continue writing as if disability can [be] understood in both ways is a bit confusing.

But of course the language of disability is complex, because the experience of disability is varied, and can be both central to an individual identity and also be located outside of their identity – it is created by society's assumption of the normate body, and is a lived experience of impairment. Moreover, it can be embraced and disavowed by individuals with disabilities – some participants in the research undertaken for this thesis at times embracing and identifying with the term disabled while others clarifying that they did not see themselves as having a disability. However, to not speak of disability with a fear of not using the correct terminology is far more reductionist and harmful than label preferencing. Thus, the use of the term people with disabilities in this thesis is neither perfect, entirely representative of all individual preferences, nor depolitical, but a term that is historically situated in line with the United Nations Convention of the Right of Persons with Disabilities (UNCRPD). It is used thoughtfully and decisively to 'do the work' of CDS, namely to understand and critically interject in the way disability is created in society. As Meekosha and Shuttleworth identify, engagement is more important than struggles over fundamentally flawed terminologies that are mobilised differently at different moments in time.⁵⁰

While the case studies presented in this thesis focus on vision-, hearing- and mobility-based disabilities, the theoretical arguments extend beyond these broad categories.

⁵⁰ Helen Meekosha and Russell Shuttleworth, "What's So Critical About Critical Disability Studies?" *Australian Journal of Human Rights* 15, no. 1 (2009): 53, <https://doi.org/10.1080/1323238X.2009.11910861>

The thesis recognises, however, the limitation of the research in not extending case studies to include an in-depth analysis of experiences of other disabilities; however, future projects do include a broader consideration of a range of disabilities, for example the relationship between audio description and autism. Nevertheless, this thesis does emphasise the diversity of experiences of disability both within and across disability categories. Indeed, intradisability diversity – that is the range of experiences of disability within categories, impacted by both levels of impairment, e.g. from low vision to total blindness, and other socio-cultural factors – is a key theme across all chapters. Likewise, this thesis recognises the historical trajectory of disability definitions and classifications, from mobility-based definitions to a more expansive inclusion of ‘invisible disabilities’, the frictions between temporal and permanent disability, and the conflation with ageing. These are issues that appear throughout this thesis, and in the ways accessibility is defined.

In many ways, defining disability as both socially constructed and socially significant in 2021 feels redundant. It is neither a new nor unknown concept, a subject covered across decades of research, with an entrenched understanding of the problems of the medical model of disability, of national policies against disability discrimination, and of international conventions of the rights of people with disability, and reiterated on the statistical significance of disability – I have lost count of the articles on disability that open with versions of “an estimated 20% of the global population has a disability”. Yet defining disability is constantly required by scholars in and outside of disability studies, in part to dismantle engrained assumptions about what disability means and how society continues to create, restrict and determine access. The definition of accessibility is therefore entwined with the shifting and evolving definition of disability.

1.4. Methodology

The process of access-knowing⁵¹ is unpacked via several methodologies. This is an interdisciplinary thesis which employs a multimodal methodology. The overarching methodology, however, is what Hall describes as “critical disability theory”,⁵² a methodology that incorporates the unpacking of normative ideologies, and “involves scrutinizing not bodily or mental impairments but the social norms that define particular attributes as impairments”.⁵³ Within this, the thesis also employs discourse analysis, applied via a review of the literature and media framing of disability in the two most prominent city imaging strategies of the past two decades – the Creative City and the Smart City (see Chapters 3, 4 and 5). This discourse analysis is balanced with qualitative analysis (via interviews, surveys and focus groups) undertaken in research projects conducted as a research assistant whilst writing this thesis (see Chapters 6, 7 and 8). The research utilises content analysis of urban screen sites and policies (Chapter 5) and case study analysis of mobile screens, accessibility and gaming (Chapter 7). A multimodal approach has allowed a rich, layered and reflexive investigation into the relationship between screens, urban discourse and disability. The thesis is able to offer qualitative data and tangible research on the relationship between screens and disability (see Chapters 6 and 8) to accompany the theoretical arguments but also incorporates the voices and experiences of people with disabilities through interviews and focus groups. Moreover, it aims to offer a level of critical reflexivity, where the gaps, problems and omissions in this research and disability research more broadly – particularly in the

⁵¹ Aimi Hamraie, *Building Access: Universal Design and the Politics of Disability* (Minneapolis: University of Minnesota, 2017).

⁵² Melinda Hall, “Critical Disability Theory”, in *The Stanford Encyclopedia of Philosophy*, ed. Edward N. Zalta (2019) <https://plato.stanford.edu/archives/win2019/entries/disability-critical/>

⁵³ Julie Minich, “Enabling Whom? Critical Disability Studies Now,” *Lateral* 5, no. 1 (2016) <http://csalateral.org/issue/5-1/forum-alt-humanities-critical-disability-studies-now-minich/>

absence of full participatory action research⁵⁴ – are laid bare, with the intent that this will help to contribute to future reflexive and participatory disability research.

1.5. Projects and publications

A distinguishing feature of this thesis is the way in which it is anchored by the work I undertook as a research assistant in the years prior to commencing the thesis and throughout its duration. While this thesis is not by publication nor a hybrid thesis, almost every chapter contains parts of the publications I produced while working as on these projects. Specifically, the majority of the data analysed and discussed in this thesis can be attributed to the *Navigating Urban Spaces* project. This was a significant Curtin University project that I worked on for the duration of the thesis, spanning from a pilot project that investigated the use of smartphones by people with disabilities to navigate urban space, to the Australian Research Council (ARC)-funded expansion of this research, and a subsequent sister project focusing on the use of smartphones by people with low vision and blindness and the effect of the COVID-19 pandemic on these experiences. This project is discussed at length in Chapters 6 and 8, and elements are also integrated into Chapter 7.

This thesis is informed by and incorporates parts of five papers I was co-author on, and two research reports:

- Locke, Kathryn, and Tama Leaver. “Pokémon Go and Urban Accessibility.” In *Digital Gaming*, edited by Katie Ellis, Mike Kent and Tama Leaver. New York: Routledge, forthcoming.
- Locke, Kathryn, and Katie Ellis. “New Cities, Old Prosthesis – Smart Cities, Smartphones And Disability.” In *Vulnerable People and Digital Inclusion*:

⁵⁴ A model of research that strives for the empowerment of stigmatised and oppressed populations, and “the deliberate inclusion of members of the communities being studied in all phases of the research, from conceptualization and planning to sampling and data gathering activities, the analysis and interpretation of a study’s findings, and in the dissemination of results within the community that supplied the study opportunity and the data.” See Elizabeth Eckhardt and Jeane Anastas, “Research Methods with Disabled Populations,” *Journal of Social Work in Disability and Rehabilitation* 6, no. 1–2 (2007): 233–249, https://doi.org/10.1300/J198v06n01_13

Theoretical and Applied Perspectives, edited by Panayiota Tsatsou. Palgrave Macmillan, forthcoming.

- Locke, Kathryn, Katie Ellis, Leanne McRae, Mike Kent, and Gwyneth Peaty. “Developing Accessible Technologies for a Changing World: Understanding How People With Vision Impairment Use Smartphones.” *Disability and Society* forthcoming.
- Ellis, Katie, Mike Kent, Kathryn Locke, Leanne McRae, Duc Dau, and Gwyneth Peaty. “Smartphones, Disability and the Australian Experience of the COVID-19 Pandemic for People Who Are Blind and With Low Vision.” *Disability Studies Quarterly*, forthcoming.
- Locke, Kathryn, Katie Ellis, Mike Kent, Leanne McRae, and Gwyneth Peaty. “Smartphones and Equal Access for People Who Are Blind or Have Low Vision.” Curtin University, 2020, <https://ccat.curtin.edu.au/events-and-conferences/acat-seminar-series-2/>
- McRae, Leanne, Katie Ellis, Mike Kent, and Kathryn Locke. “Privacy and the Ethics of Disability Research: Changing Perceptions of Privacy and Smartphone Use.” In *Second International Handbook of Internet Research*, edited by Jeremy Hunsinger, Matthew Allen, and Lisbeth Klastrup, 413–429. London: Springer, 2019.
- Kent, Mike, Katie Ellis, Kathryn Locke, Scott Hollier, and Anne-Marie Denney. “Using Smartphones to Navigate Urban Spaces: People with Disabilities and the Role of Mobile Technologies in Three WA locations.” Curtin University, 2017, <https://espace.curtin.edu.au/handle/20.500.11937/70858>.

Working through the publication process on these papers has been an invaluable learning opportunity, and has allowed the generation of chapters for this thesis that have benefitted from the editing and peer-reviews that published work goes through. Moreover, utilising these previous research projects has resulted in a thesis that is reflexive in both form and content, providing a rich source of qualitative data to balance the theoretical arguments being made, but also becoming a point of

critical reflection and reflexivity on the problematic nature of disability research, and the ways in which it contributes to definitions of disability and accessibility.

1.6. Chapter outline

This thesis began with an introduction into the research question, approach and aims of this thesis. It also provided a discussion of the key terms and concepts addressed across each chapter. Specifically, the introduction defined accessibility, addressing the relationship between disability and accessibility, and the different concepts that have been used to resolve inaccessibility – from usability to inclusive and universal design. Throughout the thesis it is clarified that this critically engages with the way accessibility is both defined and approached, arguing for an understanding and application of accessibility as process. The introduction chapter also discussed the way disability is defined in the thesis, acknowledging my own position, the different language and labels used, and the politics and histories that have informed them. Finally, it provided an overview of the methodology, the publications that have informed and been incorporated into the thesis, and the layout of the thesis.

The rest of the thesis is divided into seven chapters, two of which provide a reflection on the key texts and ideas which have informed the subsequent chapters – the first half thus sets the theoretical scene for the analysis and case studies that follow in the second half. A theoretical approach is needed because it provides the critical, and social, historical and cultural understanding of how discourses and ‘ways of knowing’ are constructed. This corresponds with the absence of disability in almost all of the literature on the Creative City, thus the second half of the thesis focuses exclusively on applied examples and qualitative data on the relationship between disability, accessibility and the Smart City.

While this thesis, and the case studies and projects which provide the qualitative data that inform its analysis, is predominantly Australian, and specifically Western Australian (WA), based, the study also integrates one international case study into each chapter to balance this largely Australian-based perspective.

Chapter 2 – *Cities, bodies and disability theory* – explains the thesis’ roots, not only in the importance of the social model of disability to cities but also in the ways in which the ideas from CDS have built on and disrupted the important early work of disability studies. The chapter also explores the way the relationship between disability and place has been previously examined, with specific reference to the social construction of space and geographies of disability, the juncture between technology and disability and the ways in which urban spaces conjure understandings of disability and citizenship. In particular, the work in this chapter allows an explanation of the prioritising of the term denizen, explaining how the traditional rights, responsibilities and practices of the citizen are often reconfigured, or imagined, in different urban spaces and according to different urban paradigms. This is pertinent for explaining how the rights of people with disabilities are modified/interpreted and fluid.

Chapter 3 – *From Creative Cities to Smart Cities* – reviews the histories, definitions and representations of the ‘preferred user’ in the literature surrounding the Creative City and its successor, the Smart City. It also reflects on the ways in which both contemporary urban paradigms have defined disability, including how disability is – and is not – represented within them. This discussion is then taken up and extended on in subsequent chapters, with a focus on the ways disability is tethered to technology in the Smart City.

Chapter 4 – *The city prosthesis: Disability constructions in the Smart City* – introduces the concept of the narrative prosthesis to examine the way disability is used in the Smart City discourse. In reflecting on the absence of disability in the Creative City, this chapter provides a media representation analysis of the Smart City discourse exclusively, focusing on the way disability has appeared in media regarding the Smart City between 2014 and 2019. The chapter argues that disability operates in this context as a narrative prosthesis; the body – specifically the disabled body – is used as a metaphor for the paradigm’s capabilities. Moreover, disability is paired with technology to activate this metaphor; that is, disability is articulated as a

vulnerability, a frailty, yet something which is resolvable via technology, just like the Smart City which aims to alleviate urban problems through smart technology.

Chapter 5 – *Urban screens* – grounds the discussion of disability and urban space in the specific location of the screen. While the remaining chapters of the thesis revolve primarily around the mobile screen – the smartphone – this chapter focuses on the fixed urban screens as markers of cultural citizenship that mediated cities before, and after, the smartphone became central to these citizen–space interactions. This chapter also provides a focused example of the trajectory of the Creative to the Smart City, including a review of significant Australian urban screens, as well as Times Square and the UK-based ‘smart urban screen’ the Starling Crossing. This chapter argues that the urban screen works to construct understandings of the citizen and of accessibility via a review of both the accessibility of the urban screen and the public spaces in which they are located.

Chapter 6 – *Mobility and mobiles: [Smart] Cities and place navigation* – argues that the main way in which urban space is currently mediated is via the smartphone, and that this screen also permeates the Smart City discourse as the conduit between citizen and city. For people with disabilities this conduit role is reviewed as prosthetic, thereby introducing the premise of the smartphone ‘prosthesis’ and extending the discussion of narrative prosthesis made in Chapter 4. As discussed in Chapters 3 and 4, technology defines Smart City disabled denizens, thus the chapter investigates the accessibility of the smartphone prosthesis. The chapter evokes the case study of Sidewalk Toronto, as well as the research project I worked on in tandem with this thesis. The findings and qualitative data from the aforementioned *Navigating Urban Spaces* project is discussed, which investigated the ways in which people with disabilities – specifically vision-, hearing- and mobility-based – use smartphones to help them navigate in urban space. The intersection between the accessibility of the screen – in this case the smartphone – and urban space is considered.

Chapter 7 – *Pokémon Go and urban accessibility* – examines the relationship between disability, mobile technology and gaming, with a specific focus on the augmented reality (AR) game *Pokémon Go*. The chapter emphasises the merging of digital and urban access. It draws from one of the key findings of the *Navigating Urban Spaces* project and the associated findings in the preceding chapter that, while smartphones are an important accessibility tool for people with disabilities, they do not resolve the inaccessibility of urban space.

The example of *Pokémon Go* is used to explore this argument because it is an AR game, thus played in real world environments, blending the online gaming context with the offline environment. This chapter looks at the layered nature of access, within and outside of the game, and the issue of responsibility for access. It also explores options and opportunities to utilise gaming in an expanded understanding of disability, bodies and access in cities. Findings from interviews with players with disabilities highlight the central role of creative accessibility, a common theme that is taken up again in the final chapter.

Chapter 8 – *From analogue to digital cities: Smart technology and disability in a pandemic* – is the final chapter, and brings together the different arguments put forward throughout the thesis about the relationship between bodies, screens, disability and accessibility. The discussion is anchored by the results of interviews with the Australian blind community, revealing the frictional aspect of access, namely that the smartphone both produces and dismantles inequalities. The research was completed during the unique context of COVID-19, thus acknowledging this historically significant moment. It also was a moment which magnified the role of the screen in the experience of disability in a dramatic and rapid shift from the analogue to the digital city, whilst also challenging many of the values and assumptions of the Smart City.

Combined, these chapters map the process of access-knowing, tracking the different components, discourses and tensions that make up accessibility. This map is laid on

top of the tangible experiences of urban accessibility in shifting city spaces, identifying that access is translated through city discourses. As the Creative City and the Smart City have worked to define both city space and its preferred user, the disabled denizen has both been constructed by and helped to construct the meaning of accessible urban environments. These environments are thus reflexive spaces – where citizenship is played out and performed, but also where, via exclusion, delineation and inaccessibility, the non-normate body is defined and relegated to a denizen identity.

2. Cities, bodies and disability theory

2.1. Introduction

This thesis is about intersections, and primarily about the intersection of experiences of disability and cities, framed by the primary urban development paradigms of the last twenty years – Creative and Smart Cities. While the chapters that follow investigate these experiences, and the discourses and artifacts that mitigate them, they do so informed by a body of literature from disability studies, CDS and geographies of disability. Specifically, the thesis is concerned with the relationship between bodies, screens and the paradigms of urban space that inform their meaning. This thesis argues that urban discourses often present normative assumptions about bodies and space which align with the aims and purposes of the urban discourse, but in doing so diminishes the rights and identities of its citizens.

As this thesis is concerned with the intersection of experiences of disability and the city, it seems appropriate that the theoretical backdrop to this scholarly investigation likewise is located at intersections. Whilst not dismissing the sometimes contradictory or conflicting aspects of each field of study, I also recognise the value in each and the combined knowledge they bring to an understanding of experiences of disability in urban environments. As a scholar with cultural studies roots, interdisciplinary approaches to a subject were a favourite pastime. However, the arguments made and theories put forward are nevertheless based on a literary journey, which this chapter outlines.

This chapter does not attempt to be an exhaustive compilation of key disability theorists and approaches but rather offers a set of reflections on a theoretical journey taken in order to understand how and why disability remains on the periphery of, if not largely absent from, urban paradigms, and yet still entirely omnipresent. Lastly, these fields have, in combination, been crucial in informing theories of accessibility that are analysed, applied and unpacked throughout each chapter of this thesis.

2.2. Reflecting on the social model of disability

I prefix this section by stating this thesis is not formally aligned with either disability studies or CDS, and in part this is based on a personal and professional perspective that CDS is not the binary other to disability studies; in fact, as Meekosha and Shuttleworth identify, CDS is a “move away from the preoccupation with binary understandings”.⁵⁵ Instead, this thesis argues that CDS is an evolution, in some cases (but not all) a divergence, a maturing of the discipline of disability studies, and a field of study with critical awareness of its history and the conceptual frameworks from which it is based.⁵⁶

The politics of CDS is as complex and far reaching as the topics it covers – from queer theory, feminism, race and gender studies, post-colonialism and globalisation. Garland-Thompson frames CDS as “a correction to and expansion of” the ways in which disability was traditionally studied in the health sciences, and an interdisciplinary practice, “to consider it as a civil and human rights issue, a minority identity, a sociological formation, a historic community, a diversity group, and a category of critical analysis in culture and the arts.”⁵⁷ It is a field of study which not only critiques but uses the dynamic nature of disability and disability politics to query other practices, discourses and ways of knowing. As Goodley argues, it will “start with disability but never end with it: disability is the space from which to think through a host of political, theoretical and practical issues that are relevant to all”.⁵⁸ In this way, CDS could be framed not as a distinct subject area but as a methodology and a way of unpacking and critiquing the ways in which society normalises and excludes. Yet the value of the discipline(s) from which this methodology emerged, including

⁵⁵ Helen Meekosha and Russel Shuttleworth, “What’s So Critical About Critical Disability Studies,” *Australian Journal of Human Rights* 15, no. 1 (2009): 50, <https://doi.org/10.1080/1323238X.2009.11910861>

⁵⁶ Meekosha and Shuttleworth, “What’s So Critical About Critical Disability Studies”.

⁵⁷ Rosemarie Garland-Thompson, “Critical Disability Studies: A Knowledge Manifesto,” in *Manifestos for the Future of Critical Disability Studies*, vol 1, ed. Katie Ellis, Rosemarie Garland-Thomson, Mike Kent and Rachel Robertson (Oxon: Routledge, 2019), 11-19.

⁵⁸ Dan Goodley, *Disability Studies: An Interdisciplinary Introduction* (London: Sage, 2011), 157.

disability studies, does not render these foundation disciplines as irrelevant. For example, CDS has evolved and diverged yet is still historically tied to and informed by disability studies. Thus, this thesis does not align directly with any of the specific sub-fields of CDS but incorporates elements of the diverse critical work that has emerged in the past two decades. Importantly, this thesis also returns to the key concepts of disability studies, with the intent to provide a perspective that reveals both intersections with the social model and critiques of a quiet reemergence of the medical model.

Thus, it would be remiss to not formally outline the social model of disability, and the work of the disability rights movement and disability studies in challenging and shifting entrenched perspectives on disability. Indeed, the recognition of the rights of people with disabilities may seem to be well established, yet this shift in history is less than fifty years old. Moreover, as several theorists have identified, “the global majority of disabled people are [still] excluded from the dominant disability discourse” that recognises disability rights and validates different types of bodies.⁵⁹

The social model of disability emerged in the 1970s in Britain via the Union of Physically Impaired Against Segregation (UPIAS), with the aim of “replacing segregated facilities with opportunities for people with impairments to participate fully in society, to live independently, to undertake productive work and to have full control over their own lives.”⁶⁰ Initially an activist group of individuals with disabilities, the UPIAS also began developing connections with universities, influencing and promoting disability politics and establishing what would become known as the social model of disability:

In our view, it is society which disables physically impaired people. Disability is something imposed on top of our impairments, by the way we are unnecessarily

⁵⁹ Meekosha and Shuttleworth, “What’s So Critical About Critical Disability Studies?”

⁶⁰ Tom Shakespeare, “The Social Model of Disability,” in *The Disability Studies Reader*, ed. Lennard J. Davis (New York: Routledge, 2006), 214.

*isolated and excluded from full participation in society. Disabled people are therefore an oppressed group in society.*⁶¹

The social model was critical at destabilising the normalised body (and how the disability category is socially constructed), challenging the individualisation and pathology of disability, promoting agency (that is, countering the construction of the disabled body as passive), and identifying the assumptions, attitudes and social institutions which generate exclusion.⁶² The social model therefore created a clear distinction between impairments that people have and the limits placed on them by society and, in this separation, defined disability as a social construction and oppression.⁶³

The social model was constructed as the alternative and response to what was a dominant medical model of disability, characterised by a focus on the individual's functional limitations and impairments, and the requirement for treatment or cure. The social model operated as a hegemonic challenge both to this dominant perspective – that positioned disability as a personal tragedy, biological deficiency and psychological trauma⁶⁴ – and to the exclusions and disadvantages experienced by people with disabilities in a world designed for a singular body type. In doing so, the social model identified that discrimination was created outside of the body, not within it. It was a rallying perspective, claiming a collective voice and identifying an

⁶¹ Vic Finklestein. *Attitudes and Disabled People* (New York: World Rehabilitation Fund, 1980), 22, <https://disability-studies.leed.ac.uk/wp-content/uploads/sites/40/library/finkelstein-attitudes.pdf>; Mike Oliver, "The Fundamental Principles of Disability," *Understanding Disability* (Basingstoke: MacMillan, 1996), 19-29.

⁶² Deborah Marks, "Models of Disability," *Disability and Rehabilitation* 19, no. 3 (1997): 85-91, <https://doi.org/10.3109/09638289709166831>.

⁶³ Finkelstei,. *Attitudes and Disabled People*, 8.

⁶⁴ Dan Goodley, "Dis/Entangling Critical Disability Studies," in *Culture, Theory and Disability: Encounters Between Disability Studies and Cultural Studies*, ed. Anne Waldschmidt, Hanjo Berressem and Moritz Ingwersen (Vrelag: transcript, 2017). <https://library.oapen.org/bitstream/handle/20.500.12657/31487/627653.pdf?sequence=1#page=82>

oppressed social group, providing a common cause and opportunity for unified disability activism.⁶⁵

As disability studies evolved, other distinct but overlapping fields of enquiry developed, including critiques of the limitations of the binary model of disabilities. From this, CDS emerged, breaking from and responding to disability studies on several key points. For example, it critiqued the British/North Americanisation and mono-cultural approach to disability (white disability studies),⁶⁶ and contributed feminist perspectives and queer interpretations. But, most pertinent to this thesis, and to the way in which the social and medical model of disability currently appears in contemporary urban discourse, was the critique of the disembodied social model.

In particular, CDS re-emphasised the role and place of embodiment and impairment. This critical perspective stressed the importance of acknowledging impairment and the body, not just the disabling of individuals by society. It posited an entwined, relational approach to disability, where the body was as important in experiences of disability as the society which conjured and normalised the able-bodied experience. In this critique, the definition of disability and the norms that define what is considered an impaired body were also examined – ageing and illness, for example, or the more universalistic approach to disability and the perspective that “everyone is only temporarily able-bodied”.⁶⁷ CDS was also important in recognising the diversity of disability (particularly at a time in which disability categories were

⁶⁵ Katie Ellis, Rosemarie Garland Thomson, Mike Kent and Rachel Robertson, eds., “Why Manifestos, Why Now?” in *Manifestos for the Future of Disability Studies* (London: Routledge, 2019).

⁶⁶ Sami Schalk, “Coming to Claim Crip: Disidentification With/in Disability Studies,” *Disability Studies Quarterly* 33, no. 2 (2013), <http://dsq-sds.org/article/view/3705>.

⁶⁷ Bill Hughes, “Being Disabled: Towards a Critical Social Ontology for Disability Studies,” *Disability and Society* 22, no. 7 (2007): 673-684, <https://doi.org/10.1080/09687590701659527>.

Also see, Tom Shakespeare and Nick Watson, “The Social Model of Disability: An Outdated Ideology?” *Research in Social Science and Disability* 2, no. 9 (2002): 9–28, [https://doi.org/10.1016/S1479-3547\(01\)80018-X](https://doi.org/10.1016/S1479-3547(01)80018-X).

expanding)⁶⁸ and the multiple identities held in addition to and beyond disability, thereby affecting again the experience of disability.

However, there are issues with this approach to destabilising ableism. For example, if being disabled “is an intrinsic feature of the human condition”, Bichenbach et al. argues it cannot form the basis of minority group status.⁶⁹ The thesis also touches on the neoliberal co-opting of accessibility in subsequent chapters and the risks of dislocating disability from the narrative of universal access. Yet this thesis argues that the fluidity of the label of disabled – a label or status most will experience, yet some may acquire only temporarily – does not reduce the political capacity or position of individuals who identify as disabled. Instead the thesis argues that the multitude of experiences of disability are integral to developing a critical understanding of access as not an end goal but a process in “inclusive world building” and understanding.⁷⁰

2.3. The relationship between disability and place: Geographies of disability

Indeed, it was my attempt to locate disability in the contemporary discourses of the city that led me towards a critical interpretation and reimagining of access and accessibility. The ways in which disability was conjured in space, how space and screens intersected with understandings of (normalised) bodies, and the ways in which meanings of place interacted with definitions of access were first introduced to me by contributions from the subdiscipline of geographies of disability:

Disability scholars, activists, and disabled people themselves always ‘got’ geography. There seems something deeply and essentially material about the encounter with space in the everyday lives of disabled people. To live, to be

⁶⁸ Kathy Boxall, “Revisiting the Foundations of (Critical) Disability Studies,” in *Manifestos for the Future of Critical Disability Studies*, ed. Katie Ellis, Rosemarie Garland-Thompson, Mike Kent and Rachel Robertson, 199-208 (London: Routledge, 2019).

⁶⁹ Jerome E. Bichenbach et al., “Models of Disablement, Universalism and The ICIDH,” *Social Science and Medicine* 48 (1999): 1173–1187.

⁷⁰ Rosemarie Garland-Thompson, “Building a World with Disability in it,” in *Culture, Theory and Disability: Encounters between Disability Studies and Cultural Studies*, ed. Anne Waldschmidt, Hanjo Berressem and Moritz Ingwersen, 51-62 (Vrelag: transcript, 2017).
<https://library.oapen.org/bitstream/handle/20.500.12657/31487/627653.pdf?sequence=1#page=82>

*embodied, is to occupy space and to experience, of necessity, its socially constructed forms as enabling and disabling objects, sites, and environments. This phenomenal reality seems never lost on disabled people.*⁷¹

Indeed, the field of study which has critically informed this thesis and thesis question emerged from geographies of disability. An initial task in researching this thesis was establishing how and where disability was located in discussions of the Creative City. As explored in the subsequent chapter, there was virtually no reference to disability in the Creative City; however, the fields of geography and urban studies did provide an important critique of the ways in which this city imaging strategy created exclusion. Importantly, this work looked at both how sites and spaces of city contribute to normative discourses and constructions of citizenship, and how the discourse of the Creative City informed the meaning and creation of specific city spaces.⁷²

From this work, I therefore expanded my reading to incorporate specific texts which explored the way meanings of space are created, but with specific intersections with disability and, as a result, I was introduced to the sub-discipline of geographies of disability. Starting with the work of Brendan Gleeson, and his own admission that, in his extensive career in the social sciences, experiences of disability remain “quartered to the margins of knowledge”,⁷³ this thesis tracks back to the moments where geography collided with disability studies. It was also an intersection which called to the aims of this thesis, and beyond, to provide both a critique and an

⁷¹ Brendan Gleeson, “Lost and Found in Space: The Geographical Imagination and Disability,” in *Foundations of Disability Studies*, ed. Matthew Wappett and Katrina Arndt (New York: Palgrave Macmillan, 2013), 78.

⁷² Deborah Leslie and John Paul Catungal, “Social Justice and the Creative City: Class, Gender and Inequalities,” *Geography Compass* 6, no. 3 (2012), <https://doi.org/10.1111/j.1749-8198.2011.00472.x>; Chris Gibson and Chris Brennan-Horley, “Goodbye Pram City: Beyond Inner-Outer Boundaries in Creative City Research,” *Urban Policy and Research* 24, no. 4 (2006): 455–471, <https://doi.org/10.1080/08111140601035275>; Ferenc Gyuris, “Urban Inequality: Approaches and Narratives,” in *Inequalities in Creative Cities*, ed. Ulrike Gerhard, Michael Hoelscher and David Wilson, 41-76 (New York: Palgrave Macmillan, 2016), <https://doi.org/10.1057/978-1-349-95115-4>; Heather McLean, “Digging into the Creative City: A Feminist Critique,” *Antipode* 46, no. 3 (2014): 669-690, <https://doi.org/10.1111/anti.12078>.

⁷³ Gleeson, “Lost and Found in Space”.

opportunity in which the benefits of preferencing disability in urban paradigms can be highlighted. As Gleeson articulated, disablement can be a place where power is created, enacted, and contemplated, just as it is a site of disempowerment and delimitation.⁷⁴

There are several key discussions that emerged from geographies of disability that frame this thesis. The first is the social construction of space.⁷⁵ This is not an idea exclusive to geographies of disability; indeed, the notion that space is socially, culturally, economically and politically defined is key to many fields of social enquiry. As Henri Lefebvre argued, space is a place of power and struggle over meaning.⁷⁶ Likewise, the social construction of space aligns closely with the social model of disability which underpins this thesis. Indeed, the two are not simply aligned ideologically, but the construction of disability is, in part, a product of the social construction of space – space can disempower, exclude and normalise certain bodies. In the mid to late 1990s, theorists such as Sibley,⁷⁷ Butler,⁷⁸ as well as Imrie⁷⁹ and Gleeson⁸⁰ were important in establishing the multiple ways that space was able to create, envisage and define certain types of citizens, offering direct and critical intersections with disability studies; at this time, geographies of disability emerged as a distinct, though small, field of study.⁸¹ The second wave of geography and disability extended this initial research, examining different types and experiences of

⁷⁴ Gleeson, “Lost and Found in Space”, 71.

⁷⁵ “The socialised model of space” (See Gleeson, “Lost and Found in Space,” 72).

⁷⁶ Henri Lefebvre, *The Production of Space*, trans. Donald Nicholson-Smith (London: Wiley-Blackwell, 1991).

⁷⁷ David Sibley, *Geographies of Exclusion* (New York: Routledge, 1995).

⁷⁸ Ruth Butler, “Bodies and Spaces: An Exploration of Disabled Peoples Experience of Public Space,” *Environment and Planning D: Society and Space* 15, no. 4 (1997): 411–433, <https://doi.org/10.1068/d150411>.

⁷⁹ Rob Imrie, *Disability and the City: An International Perspective* (London: Paul Chapman Publishing, 1996).

⁸⁰ Brendan Gleeson, *Geographies of Disability* (London: Routledge, 1998).

⁸¹ Rob Imrie and Chris Edwards, “The Geographies of Disability: Reflections on the Development of a Sub-Discipline,” *Geography Compass* 1, no. 3 (2007), <https://doi.org/10.1111/j.1749-8198.2007.00032.x>.

disability, engaging more in the politics of disability and offering ways in which spaces might become more enabling and inclusive.⁸²

Thus, the second way in which geographies of disability informs this thesis is via the emphasis on the lived, and embodied, experience of impairment. The work of geographers such as Massey,⁸³ who argued for a relational sense of space – spaces as made up of relations and, as such, always being “made, unmade, and remade” – are useful here. Imrie emphasised the way in which social (and indeed) disability identity are affected by and affect “spatial or geographical points of reference”,⁸⁴ breaking away from the theorising of disability through the two binary lenses of the medical or the social model. Likewise, a key argument of CDS that is deployed in this thesis is that disability theory should break away from the medical/social binary perspective in order to better incorporate the “interplay between the biological reality of physiological impairment, structural conditioning (i.e. enablement/constraints) and socio-cultural interaction/elaboration”.⁸⁵

Pertinently, studies in geography and disability have articulated the spatial experiences of disability as fluid, complex and diverse.⁸⁶ In the context of the Smart City, this is particularly important as moves are made to define what may be an inclusive space. Yet what defines a space as accessible and inclusive is fraught with non-relational assumptions, that is, assumptions about how, what and who the space will be used for. This thesis argues that this is also bound up in assumptions of

⁸² Vera Chouinard, Edward Hall and Robert Wilton, eds., *Towards Enabling Geographies*, second edition (Oxon: Routledge, 2016); Edward Hall and Robert Wilton, “Towards a Relational Geography of Disability,” *Progress in Human Geography* 41, no. 6 (2017): 727–744, <https://doi.org/10.1177/0309132516659705>.

⁸³ Doreen Massey, *For Space* (London: Sage, 2005).

⁸⁴ Imrie and Edwards, “The Geographies of Disability”.

⁸⁵ Tom Shakespeare, *Disability Rights and Wrongs Revisited* (London: Routledge, 2014), 73.

⁸⁶ Imrie and Edwards, “The Geographies of Disability”; Martin Jones, “Phase Space: Geography, Relational Thinking, and Beyond,” *Progress in Human Geography* 33, no. 4 (2009): 487–506, <https://doi.org/10.1177/0309132508101599>; Niall Smith, “Embodying Brainstorms: The Experiential Geographies of Living with Epilepsy,” *Social and Cultural Geography* 13, no. 4 (2012): 339–359, <https://doi.org/10.1080/14649365.2012.683806>.

citizenship and, indeed, dominant notions of abilities “within the ecosystem of neoliberalism”.⁸⁷

Thirdly, while geographers have been important to the examination of issues of accessibility and barriers in the built environment, geographies of disability have also played an important role in the critical analysis of the relationship between the body, space and technology. This includes the understanding of places as “encountered, performed and fluid”,⁸⁸ and relational theories of access. These arguments are reinforced throughout this thesis and through the practice of critical accessibility studies which propose access is a process or relationship between “people, technologies and design”.⁸⁹ This includes contributions to the deconstruction of technological determinism, both in the conjuring of technology as ‘alleviators’ of disability and as those that “privilege the movement of those considered to be productive bodies”.⁹⁰ The recognition of (particularly assistive) technologies as not “a neutral artefact or thing, but rather as a ‘limb-object’ or a constitutive part of the body and spatial practices”⁹¹ is an argument entwined throughout this thesis, and one that specifically informs the chapter on the smartphone as prosthesis.

However, while access to space has been integral to geographies of disability, there is a lack of theoretical enquiry into the definition of access (as discussed in the Introduction of this thesis). This is a critique which continues beyond the boundaries of geographies of disability, having been taken up by disability scholars such as

⁸⁷ Dan Goodley, *Dis/Ability Studies: Theorising Disablism and Ableism* (London: Routledge, 2014).

⁸⁸ Jones, “Phase space”

⁸⁹ Elizabeth Ellcessor, “Blurred Lines: Accessibility, Disability and Definitional Limitations,” *First Monday* 7, no. 9 (2015), <https://firstmonday.org/article/view/6169/4904>; Tania Titchkosky, *The Question of Access: Disability, Space, Meaning* (Toronto: University of Toronto Press, 2011).

⁹⁰ Mariela Gaete Reye, “Citizenship and the embodied practice of wheelchair use,” *Geoforum* 64 (2014), <https://doi.org/10.1016/j.geoforum.2014.09.010>.

⁹¹ Imrie and Edwards, “The geographies of disability”.

Hamraie and Ellcessor, most recently in response to shifting digital environments and technologies.⁹²

2.4. The juncture between technology and disability

This thesis is also positioned not simply at the juncture between geography, disability and CDS but between technology and disability, evoking important debates with science and technology studies (STS) and employing arguments from crip technoscience, specifically a critical interpretation of accessibility (detailed below). As this thesis consistently evokes the role of the smartphone as an integral prosthesis in the Smart City, the relationship between technology and disability must also be unpacked. A significant body of research can be found on the ‘alleviating’ potentials of smartphones for people with disabilities; however, this research has largely derived from the fields of STS, a field with a historically problematic imperative to fix.⁹³ Beyond the specific realm of STS, Reeve also identifies a broader “well documented history of how technology was problematically associated with normalisation, rehabilitation and cure”.⁹⁴ This continues through the body of research on the relationship between smartphones and disability.⁹⁵ The critical work that punctuates this field is acknowledged, particularly that which exposes the power structures and discourses at play between disability and new technology,⁹⁶ and the

⁹² Ellcessor, “Blurred lines”.

⁹³ “The moral imperative to fix” was an argument initially made by Colligan in 2004 in response to medical approaches to intersex individuals (Sumi Colligan, “Why the Intersexed Shouldn’t Be Fixed: Insights from Queer Theory and Disability Studies,” in *Gendering Disability*, ed. Bonnie Smith and Beth Hutchinson (New Brunswick: Rutgers University Press, 2004). However, the perspective that STS also emphasises – a ‘resolution’ to disability, and a focus on ‘fixing’ impairments – was later taken up in arguments from CDS. See Kelly Fritsch, “Desiring Disability Differently: Neoliberalism, Heterotopic Imagination and Intracorporeal Reconfigurations,” *Foucault Studies*, 19 (2015): 43-66; Dan Goodley, *Disability Studies: An Interdisciplinary Approach* (London: Sage, 2011).

⁹⁴ Donna Reeve, “Cyborgs, Cripples and Icrip: Reflections on the Contribution of Haraway to Disability Studies,” in *Disability and Social Theory*, ed. Dan Goodley, Bill Hughes and Lennard Davis (Palgrave Macmillan: London, 2012), 91.

⁹⁵ For an extensive overview of this research, see Chapter 6.

⁹⁶ Including work by Gerard Goggin and Katie Ellis (see for example, Gerard Goggin, “Disability, Mobiles, and Social Policy: New Modes of Communication and Governance,” in *Mobile Communication: Dimensions of Social Policy*, ed. James Katz, 259–272 (New Brunswick: Transaction Publishers, 2011); Gerard Goggin, “Disability and Haptic Mobile Media,” *New Media and Society* 19,

investigatory research that aims to extend and deepen the understanding of the relationship between smartphones and people with disabilities, including the research projects conducted throughout the duration of this thesis.⁹⁷ However, the predominant narrative “fails to identify the way in which [a medical discourse of disability] fundamentally shapes... analysis and taken-for-granted views of the disabled body”.⁹⁸ Therefore, much of the research on smartphones and disability is predicated on an assumption that the ableist environment can be resolved by apps and features, employed by people with disabilities to render their experiences less disabling. As a result, engagement with disability has tended to be focused on (individualised) technological solutions to accessibility issues, and frames the body with disabilities as non-normative and the technology as depolitical – “such fixes are understood as de facto goods, services for (supposedly) unfortunate disabled people, and ultimately depoliticized”.⁹⁹ Likewise, bodies with disabilities are commonly conceived of as the receivers of technology, rather than active participants in their development and use, and are often a key driver of and for technological change.

Crip technoscience, and related crip studies, have been especially important in presenting an alternative to this dominant narrative, challenging assumptions that disabled bodies ‘need to be fixed’, representing people with disabilities as experts and designers of their everyday life, and questioning the politics of studies of new

no. 10 (2017): 1563-1580, <https://doi.org/10.1177/1461444817717512>; Katie Ellis and Gerard Goggin, “Disability, Locative Media, and Complex Ubiquity,” in *Ubiquitous Computing, Complexity and Culture*, ed. Jay David Bolter et al., 272-287 (New York: Routledge, 2016).

⁹⁷ For example, see my published work on smartphones and navigating urban spaces (Katie Ellis et al., “Using Smartphone to Navigate Urban Spaces: People With Disabilities and the Role of Mobile Technologies in Three WA Locations,” Curtin, 2017, <https://espace.curtin.edu.au/handle/20.500.11937/70858>), and forthcoming publications on the experiences of smartphone use and people with low vision or blindness (Mike Kent et al., “Developing Accessible Technologies for a Changing World: Understanding how People with Vision Impairment use Smartphones,” *Disability and Society* (forthcoming)).

⁹⁸ Gerard Goggin and Chris Newall (2003), cited by Elizabeth Ellcessor, “Cyborg Hoaxes: Disability, Deception and Critical Studies of Digital Media,” *New Media and Society* 19, no. 11 (2016): 1761-1777, <https://doi.org/10.1177/1461444816642754>.

⁹⁹ Aimi Hamraie and Kelly Fritsch, “Crip Technoscience Manifesto,” *Catalyst* 5, no. 1 (2019), <https://catalystjournal.org/index.php/catalyst/article/view/29607/24772>

technology and disability and the processes involved in “knowing, making, and doing”.¹⁰⁰ In the latter, crip technoscience thus is an important tech-focused tool in a broader critical understanding of accessibility, questioning how ways of understanding access have come to be, how experiences of access and inaccess are often written out of dominant ways of making/designing accessibility, and how disability is centred as an object, rather than protagonist, in technological innovations.¹⁰¹ Thus, this thesis employs the mandate of crip technoscience as a methodology – “we refuse to treat access as an issue of technical compliance or rehabilitation, as a simple technological fix, or a checklist. Instead, we define access as collective, messy, experimental, frictional, and generative¹⁰² – in order to unpack the discourses and ways of knowing disability in the context of the Creative City and the Smart City.

A central concept at play in translating what access means, and to whom it is applied, is therefore bound up in the knowing-making of citizenship, and specifically to the conjuring of the disabled citizen at a local, urban level. As Waldschmidt and Sépulchre articulate, citizenship is integral to disability studies but remains an “ambivalent concept”.¹⁰³ The final section therefore of this literature journey is a discussion of the way the disabled citizen is constructed and understood in space, and specifically the way this understanding is via diluted and mutated versions of the citizen. The term denizen is mobilised in this thesis as a way of identifying the shift (from a rights-based approach to a consumer model, based on constructions of the preferred user) in manifestations of disability and accessibility in city discourses.

¹⁰⁰ Hamraie and Fritsch, “Crip Technoscience Manifesto”.

¹⁰¹ Hamraie and Fritsch, “Crip Technoscience Manifesto”.

¹⁰² Hamraie and Fritsch, “Crip Technoscience Manifesto”.

¹⁰³ Anne Waldschmidt and Marie Sépulchre, “Citizenship: Reflections On a Relevant but Ambivalent Concept for Persons with Disabilities,” *Disability and Society* 34, no. 3 (2019): 421–448, <https://doi.org/10.1080/09687599.2018.1543580>

2.5. Disability and the denizen

The term denizen has largely fallen out of favour in contemporary discussions of citizenship. It was more commonly used prior to the eighteenth century as a term for residents of a town or city.¹⁰⁴ As suggested by Turner, this version of citizenship recognised only the legal rights of the city resident. However, since this initial definition, denizen has been taken up in literature on immigration,¹⁰⁵ with theorists such as Hammar providing detailed depictions of this type of “alien resident”:

*A new status group has emerged, and members of this status group are not regular and plain foreign citizens anymore, but also not naturalised citizens of the receiving country. They are a group of alien residents that we will call denizens... The term denizen [is applied to] persons who are foreign citizens with a legal and permanent resident status.*¹⁰⁶

A third interpretation plays at the edges of both conceptions, perceiving the denizen as belonging to any sphere of governance such as shopping centres, university campus or parks. This version of denizenship is concerned with the mass “privatisation of public space”¹⁰⁷, and how this trend generates new categories of membership and belonging outside of normative understandings of citizenship. This thesis locates the denizen between these three definitions for the purpose of understanding the identity and status of disability in contemporary urban discourses.

Just as historical definitions situated the denizen in the city, so too is this geographical limitation evoked – the denizen is located in and understood according to urban space and urban governance. This association is important in recognising that the denizen identity breaks away from the traditional sets of assumptions, rights,

¹⁰⁴ B. S. Turner. “Citizenship Studies: A General Theory’, *Citizenship Studies* 1, no. 1 (1997): 5–8.

¹⁰⁵ Marc Schuilenburg, “Citizenship Revisited: Denizens and Margizens,” *Peace Review* 20, no. 3 (2008): 316, <https://doi.org/10.1080/10402650802330238>.

¹⁰⁶ Tomas Hammar, *Democracy and the Nation State* (Aldershot: Avebury, 1990), 13.

¹⁰⁷ Clifford Shearing and Phillip Stenning, “From the Panopticon to Disney World: The Development of Discipline,” in *Perspectives in Criminal Law: Essays in Honour of John L. J. Edwards*, ed. Anthony Doob and Edward Greenspan, 335–49 (Ontario: Canada Law Book, 1985), https://popcenter.asu.edu/sites/default/files/problems/crimes_against_tourists/PDFs/Shearing_Stenning_1997.pdf

responsibilities and practices that were established in the 1950s between the citizen and the nation state. It was at this time, in developed nations, that the idea of the modern citizen and their rights and responsibilities as members of a nation state were established. The thesis argues that the denizen's national citizenship is not put into play, and is therefore not recognised in Creative City and Smart City literature. Rather, the denizen's rights, responsibilities and practices are reconfigured (or imagined) to allow for the preferencing of their identity and role in the contemporary city. Therefore, denizenship is both a role played by and a role allocated to citizens in urban space.

T. H. Marshall was well known for his landmark definition of citizenship in the 1950s.¹⁰⁸ He argued that the citizen was defined by their civil, political and social rights; these three core elements have become widely accepted as forming the base of the definition of modern citizenship. All citizens were conceived of as equals and were entitled to both equal rights and the opportunity for equal participation in society, inclusive of legal, political, social and cultural participation. However, disability has played an unequal and problematic role in this definition. Historically, people with disabilities were overtly denied citizen rights, institutionalised and restricted from contributing to and within society, and disability theorists such as Oliver argue that this denial has extended overtime through lack of access and exclusion.¹⁰⁹ Meekosha and Dowse further detail the varying formal and informal ways in which being disabled diluted citizenship rights and increased social control – from restrictions on freedom in the care industry, to rights to reproduce and financial restrictions.¹¹⁰ While several of the examples of reduced rights have been legislated against, others have not (such as the forced sterilisation of women with intellectual

¹⁰⁸ T. H. Marshall, *Citizenship and Social Class* (Cambridge: Cambridge University Press, 1950).

¹⁰⁹ Ruth Lister, "Disability, Citizenship and Empowerment," *Disability, Handicap and Society* 8, no. 3 (1993): 329–334; Len Barton, "The struggle for citizenship: The case of disabled people," *Disability, Handicap and Society* 8, no. 3 (1993): 235–248, <https://doi.org/10.1080/02674649366780321>.

¹¹⁰ Helen Meekosha and Leanne Dowse. "Enabling Citizenship: Gender, Disability and Citizenship in Australia," *Feminist Review* 57 (1997): 49–72, <https://doi.org/10.1080/014177897339650>.

disabilities);¹¹¹ the recent Disability Royal Commission (ongoing) has found ongoing practices and policies that negate the full citizen rights of people with disabilities, resulting in significantly greater risk of violence and abuse, neglect during emergencies (including the COVID-19 pandemic), and over representation in the criminal justice system.¹¹² This work regarding the ways in which people with disabilities are denied fundamental human rights therefore blurs and challenges traditional understandings of citizenship.¹¹³ Yet, while this work is important, it also reveals a simplified, often problematic, definition of citizenship and does not seek to extend nor critique the discourse around what (and how) it means to be recognised as a citizen in different urban spaces.

In a scoping review on research on citizenship and disability (according to peer-reviewed literature in English from 1985–2015), Sépulchre found that 53% of the literature did not define citizenship, framing it as “self-explanatory”.¹¹⁴ The fluidity of the term was also largely unaddressed. The study also found that the contributions of people with disabilities were largely neglected (only addressed in 3% of articles), framing citizenship as top down and failing to recognise the participatory, interactive nature of practices of citizenship. Finally, the other finding that this thesis hopes to address is the limited engagement with practices of citizenship in public space

¹¹¹ “The Family Court of Australia has the power to order non-therapeutic sterilisation of children with disabilities provided that after the giving of evidence, the judge is satisfied that the operation is in the best interests of the child.” (Ron McCallum, “Research Report: The United Nations Convention on the Rights of Persons with Disabilities: An assessment of Australia’s level of compliance,” *Royal Commission into the Violence, Abuse and Neglect of People with Disability*, October 2020. <https://disability.royalcommission.gov.au/publications/united-nations-convention-rights-persons-disabilities-assessment-australias-level-compliance-research-report>.) This is despite international protests from the United Nations (The Committee on the Rights of Persons with Disabilities, *Concluding Observations on the Initial Report of Australia*, 10th session, UN Doc CRPD/C/AUS/co/1, 21 October 2013) regarding the practice as going against the UN Convention on the Rights of People with Disabilities.

¹¹² <https://disability.royalcommission.gov.au/news-and-media/media-releases?page=1>

¹¹³ Waldschmidt and Sépulchre, “Citizenship”.

¹¹⁴ Marie Sépulchre, “Research About Citizenship and Disability: A Scoping Review,” *Disability and Rehabilitation* 39, no. 10 (2017): 952, <https://doi.org/10.3109/09638288.2016.1172674>.

(determined in the literature to be only 3%) and via/involving technology (4%).¹¹⁵ As such, this thesis contributes to absences in the field on citizenship in disability by both adding to these voids and conceptualising the different ways it manifests (specifically addressing the ways in which citizens are represented and configured as denizens) that which Chouinard described as the disparity between rights as represented and rights as lived.¹¹⁶

While citizenship has always been an unstable category,¹¹⁷ the more dramatic shifts occurring through globalisation has further induced a questioning of this assumed relationship. As this thesis has proposed, there has been a rise in the central role of cities in a globalised world. The thesis argues that this destabilisation has been a major facilitator in the development of the Creative City and Smart City discourses and the desire of urban planners, city leaders and politicians to establish 'their' city in a global network. This shifting relationship has also had impacts upon the subsequent power (cultural, economic and political) of local institutions and actors, and has destabilised the linear relationship between citizen and nation. Vando argues that a "cosmopolitan" understanding of citizenship is also required, which acknowledges that cities, as sites of public spaces, encounters and informal and formal social groups, are thus significant spaces for the performance of a number of different types of citizenship.¹¹⁸

Though the traditional notion of citizenship may not have disappeared, the primary role of the city in defining spaces in which citizenship can be performed makes

¹¹⁵ Sépulchre, "Research About Citizenship and Disability," 952.

¹¹⁶ Vera Chouinard, "Legal Peripheries: Struggles Over Disabled Canadians' Places in Law, Society and Space," *The Canadian Geographer* 45, no. 1 (2001): 188, <https://doi.org/10.1111/j.1541-0064.2001.tb01184.x>.

¹¹⁷ Julia Eckert highlights that, "At no point in history did actual states conform to a single idea of the relationship between citizens and the state, neither in practice nor in theory; differential citizenship has always been the norm." (Julia Eckert, "Introduction: Subjects of Citizenship," *Citizenship Studies*, 15, no. 3–4 (2011): 309).

¹¹⁸ Alberto Vanolo, "Is there anybody out there? The place and role of citizens in tomorrow's smart cities," *Futures* 82 (2016): 26–36, <https://doi.org/10.1016/j.futures.2016.05.010>.

citizenship more dynamic and reflexive, “with citizens reinterpreting the basis of their collective life in new ways that correspond to their evolving need and ideals.”¹¹⁹ As a consequence of this, the denizen – the inhabitant of the city – will subject, and be subject, to changing preferences of their citizenry identity. For people with disabilities, this has resulted in shifting visibility and priority; in the urban space of the Creative City, people with disabilities were invisible, while in the Smart City disability is envisioned and reconstructed (and resolved) through the screen. Cresswell defines this as a “prosthetic citizenship”.¹²⁰

Tim Cresswell also theorises the denizen as a result of “changing geographies” and notions of citizenship. Importantly, he emphasises the role of the privatisation and digitisation of public space. Drawing on the work of the changing nature of citizenry by Saskia Sassen, Cresswell perceives the denizen as a “prosthetic citizen”. He writes:

*Issues of mobility lie at the heart of the process by which citizens and their other come to be defined and lived. Recognising the geographical constitution of the citizen means thinking about the citizen not as a self-sufficient individual body but as a prosthetic citizen who is a product of the assemblage of the body and the world.*¹²¹

Where this thesis differs from Cresswell’s argument is in his conjuring of people with disabilities as “shadow citizens”. In his argument, denizens are privileged inhabitants of multiple and divergent landscapes, whereas shadow citizens (“homeless people, non-white people (in majority white nations), travellers, gay people, lesbians and bisexuals, disabled people”)¹²² are legally citizens but do not benefit from many of the rights associated with that status. Chouniard also uses the term shadow citizenship to identify the uneven distribution of citizenship rights for disabled women, arguing that, despite liberal rights, agendas and laws, “rights as represented

¹¹⁹ Marisol Garcia, “Citizenship Practices and Urban Governance in European Cities,” *Urban Studies* 43, no. 4 (2006): 745, <https://www.jstor.org/stable/43197497>.

¹²⁰ Tim Cresswell, “The Prosthetic Citizen: New Geographies of Citizenship,” in *Political Power and Social Theory*, ed. Diane Davis and Julian Go, vol. 20 (Bingley: Emerald Group Publishing, 2003).

¹²¹ Cresswell, “The Prosthetic Citizen,” 25.

¹²² Cresswell, “The Prosthetic Citizen,” 268.

do not necessarily equate to rights as lived”.¹²³ However, while the thesis agrees with Chouinard’s depiction of legal rights as “slippery”, it also argues that the experience of disability is likewise unstable, nor always located at the periphery.

This thesis thus employs a broader understanding of the term denizen – an inhabitant of, or visitor in, space but without rights (acknowledged or experienced), and whose visibility and value is determined by the social construction of the space. The thesis argues that disability is not a fixed category of shadow citizen but rather the disabled denizen’s identity in the contemporary city discourses is fluid, made momentarily valid or visible. This position is pertinent to this thesis, whereby it is argued that the screen has both redefined disability and become a form of prosthesis by which disability can be ‘resolved’ in urban space.

Furthermore, as I finish this thesis, I have observed how the discourse around the rights of citizens in city space are particularly unstable, both for people with and without disabilities. The denizen, as a citizen without rights to the city, may be a significant by-product of pandemic regulations. Likewise, the shift to digital interactions relocates us all to “denizens of the internet”. As digital denizens, a different set of rights are evoked. The UNCRPD is often cited in research and policy on digital accessibility:

*On the fundamental issue of accessibility (Article 9), the Convention requires countries to identify and eliminate obstacles and barriers and ensure that persons with disabilities can access their environment, transportation, public facilities and services, and information and communications technologies.*¹²⁴

However, the way in which it is interpreted and implemented for digital technologies remains varied and deficient across the world.¹²⁵ Furthermore, these rights, as

¹²³ Chouinard, “Legal Peripheries,” 188.

¹²⁴ United Nations, *Convention on the Rights of Persons with Disabilities: In Brief*, accessed June 15, 2019. <https://www.un.org/development/desa/disabilities/convention-on-the-rights-of-persons-with-disabilities/the-convention-in-brief.html>

¹²⁵ Gerard Goggin, Scott Hollier, and Wayne Hawkins, “Internet Accessibility and Disability Policy: Lessons for Digital Inclusion and Equality From Australia,” *Internet Policy Review* 6, no. 1 (2017),

articulated by Waldschmidt and Sépulchre, will not necessarily align with definitions or practices of citizenship;¹²⁶ this is despite specific mention of access as pertaining to information and communication technologies (ICT).

There is a range of social, economic, political and cultural reasons for a limited interpretation (and indeed manifestation) of these rights; however, this thesis focuses on two specific issues – the understanding of access and the relationship between citizenship and digital access. The thesis argues that access is undermined by assumptions around what constitutes disability (for example, represented by the wheelchair), individualising of responsibility (the person with disability/ies is responsible for access), and a conflicting narrative that both emphasises the revolutionary capabilities of technology whilst also denying the importance of digital access to, and the accessibility of, screens. The social model of disability, which is also a rights-based model, was developed in a pre-digital era, and the translation of this model to digital environments, screens and technologies remains lacking.

The link between digital space and citizenship is well made by van Dijk,¹²⁷ Ragnedda¹²⁸ and Darcy et al.¹²⁹ All three researchers identify that digital inequalities, differences or limitations can undermine the capacity of an individual to fully access and participate in society. Ragnedda in particular emphasises that digital inequalities tend to both reflect existing differences and marginalisation in society (for example age, education or ethnicity) and further create inequality. Furthermore, digital inequalities, while related, are not akin to the digital divide – digital inequality

<https://doi.org/10.14763/2017.1.452>; Elizabeth Ellcessor, *Restricted Access: Media, Disability, and the Politics of Participation* (New York: New York University Press, 2016).

¹²⁶ Waldschmidt and Sépulchre, “Citizenship”.

¹²⁷ Jan van Dijk, *The Network Society: Social Aspects of the New Media* (Thousand Oaks, CA: Sage, 1999).

¹²⁸ Massimo Ragnedda, *The Third Digital Divide: A Weberian Approach to Digital Inequalities* (Abingdon: Routledge, 2017).

¹²⁹ Simon Darcy, Hilary Yerbury and Hazel Maxwell, “Disability Citizenship and Digital Capital: The Case of Engagement with Social Enterprise Telco,” *Information, Communication and Society* 22, no. 4 (2017): 538-553, <https://doi.org/10.1080/1369118X.2018.1548632>.

is generated by inaccessibility (which, as has already been detailed throughout this thesis, is a layered concept), inequalities in socio-economic capital, and literacy barriers, or a combination of these factors.¹³⁰ Recently, the Human Rights Commission project on *Human Rights and Technology* (initiated 2018) has reiterated the central role of new technology in defining inclusivity and equality, but in particular the pivotal function of accessibility to human rights.¹³¹

The smartphone is of focus in this thesis for three core reasons. The first is its important role as a mobile assistive device for people with disabilities, commonly used for its assistive technology (AT) capabilities beyond the home. Secondly, the smartphone exemplifies the converged, digital technology environment. Lastly, it remains the most popular and ubiquitous device for digital communication and information access globally.

2.6. Conclusion

In part, the intersection at which my initial interest in the geography of disability collided with the larger body of work from disability studies and, more recently, CDS, was at the assumption of citizenship. Concurrent to the marginalisation of studies of disability, there was a surge of interest across multiple disciplines in new city paradigms in the last twenty years regarding the ‘new societies’ that the turn of the century would herald. The Creative City and the Smart City, two prominent concepts at this time, also contributed to the neglect of critical considerations of disablement and the embodied experience of the cities in which they envisaged. As Edwards identified, there was a lack of engagement with people with disabilities and disability

¹³⁰ See Darcy, Yerbury and Maxwell, “Disability Citizenship and Digital Capital”; Ragnedda, *The Third Digital Divide*.

¹³¹ Australian Human Rights Commission, “Human Rights and Technology Issues Paper,” 2018, 36, <https://humanrights.gov.au/our-work/rights-and-freedoms/publications/human-rights-and-technology-issues-paper-2018>.

was absent in most urban regeneration policies.¹³² This thesis therefore questions for whom the popular paradigms of modern cities were designed, and which discourses they circulated on the good, productive citizen. The visibility (or indeed, invisibility) of the body in these cityscapes resonated with Bacchi and Beasley's claim that inhabitants with control over their bodies are regarded as citizens and "those reduced to their bodies are constituted as lesser citizens"¹³³ and with Hasting and Thomas' argument that embodied citizenship is socially created to exclude disabled bodies.¹³⁴

Within disability studies the way cities are created, designed and managed for certain types of bodies has always been central to the argument for a social model of disability; this thesis argues for a continued reference to the social model in the Smart City. Moreover, it argues that the identity of disability is recognised (and the rights of people with disabilities), and that these are not individualised or reduced to something that requires resolving. The Smart City emphasises what technology *can do* for both cities and citizens, but inclusivity should not equate to 'resolving' and fixing disability, eradicating abnormalities from our social presence and render them invisible¹³⁵; rather, the spaces of the city (digital and non-digital) should be accessible.

It is therefore the first aim of this thesis to locate the disabled citizen within the Creative City and the Smart City. This thesis proposes that it is not a citizen – in the traditional modern conceptualisations of the term – that is found in this discourse. Instead, the thesis argues that the contemporary urban discourses develop a set of normative assumptions about bodies and space. The consequence of framing

¹³² Claire Edwards, "Participative Urban Renewal? Disability, Community and Partnership in New Labour's Urban Policy," *Environment and Planning A: Economy and Space* 40, no. 7 (2008): 1664-1680, <https://doi.org/10.1068/a39199>.

¹³³ Carol Lee Bacchi and Chris Beasley, "Citizen Bodies: Is Embodied Citizenship a Contradiction in Terms?" *Critical Social Policy* 22, no. 3 (2002): 324-352, <https://doi.org/10.1177/02610183020220020801>.

¹³⁴ Julian Hastings and Huw Thomas, "Accessing the Nation: Disability, Political Inclusion and Built Form," *Urban Studies* 42, no. 3 (2006): 527-544, <https://www.jstor.org/stable/43198270>.

¹³⁵ Colligan, "Why the Intersexed Shouldn't Be Fixed," 48.

inhabitants as denizens, rather than citizens, is that rights and identities are deprioritised over the aims and purposes of the urban discourse.

3. From Creative Cities to Smart Cities: A literature review

3.1. Introduction

This chapter locates the disabled denizen in two of the most popular urban paradigms of the past twenty years, the Creative City and the Smart City, and the transition between them. The previous chapter untangled the complex theoretical relationship between disability – as imagined, contested, constructed – and the way the disabled denizen is configured in urban space. This chapter examines the relationship between disability and urban space from another perspective, recognising that disability is also created via specific urban discourses. Moreover, it aims to fill a void in the literature on contemporary city discourses and citizenship, identifying the way disability is located inside (or outside) of the Creative City and the Smart City. Thus this chapter explores the key ideas, theorists and proponents, and tangible manifestations of the Creative City and the Smart City, and the way they frame both the meaning and purpose of cities, and the citizens who should inhabit them. These dominant, contemporary urban discourses offer context to the analysis of how accessibility and disability are defined in urban space. In tracking the legacies and transitions from the Creative City to the Smart City, this thesis recognises consistencies and differences in how urban discourses represent disability and how, in layering meaning on urban space, they work to construct the normate citizen and the preferred user of the city.

This chapter begins with a focus on the Creative City, the time in which it emerged and was popularised, and how it shifted and evolved since its origins in the early 2000s. While this thesis is primarily focused on an Australian experience, it also recognises the global movement of the discourse, its origins in British and Australian policy, and particularly the impact of North American and British interpretations and proponents. The thesis then tracks the shifting social and economic factors and narratives that ignited a new urban paradigm in the Smart City, and the different ways this has been interpreted and critiqued, particularly in the last decade. The second half of the chapter reviews the ways in which the Creative City and the Smart

City connected with ideas of citizenship, disability and accessibility, noting the key junctures these urban discourses have with disability theory.

It should be noted that the initial aim of this thesis was to focus on the relationship between screens and disability in the context of the Creative City, which was an urban discourse I had previous research experience in. However, it became clear that this urban agenda was becoming less and less popular, and there was an obvious global shift towards a new paradigm, Smart Cities. Moreover, while disability was all but absent from the Creative City discourse, accessibility and inclusivity were overt components of the Smart City discourse. I argue that, the screen – particularly the mobile citizen interface of the smartphone – played a pivotal role in this new visibility.

One potential option for my thesis was to abandon that initial focus on the Creative City; however, I believe the transition from one urban discourse to another was perhaps even more important than what one singular paradigm revealed. While there were obvious distinguishing features of each discourse, there were also key fundamental connections – including instigating ‘urban noirs’¹³⁶ and the underlying neoliberal rhetoric. These consistencies were particularly pertinent in the location of disability in urban space – one of the key findings of this thesis was how fluid disability is in the social and cultural construction of urban space, the way it is made visible and invisible according (in part) to different discourses and, specifically, the way knowledges inform these discourses. Therefore, I have included both contexts of the Creative City and the Smart City in this thesis and, in doing so, argue that it is not simply spaces that create disability, but the knowledges, languages and urban frameworks that define the meaning of that space.

¹³⁶ Gyan Prakash, for example, notes the role of dystopian images, representations and narratives in contemporary discourses of urbanism. The dystopic ‘other’, exemplified in the form of economic, social and environmental decline, thus informs the utopian resolution or new urban discourse. See Gyan Prakash ed., *Noir Urbanisms* (Princeton: Princeton University Press, 2010).

Remaining contextually relevant also meant responding to the COVID-19 pandemic that emerged in 2020 which I argue has been pivotal in understanding the relationship between screens, disability and urban space – thus the last chapter of the thesis incorporates and analyses this moment. Indeed, while the Creative City has dispersed and diminished internationally, in part as a result of the global financial crisis, the Smart City too has been challenged and critiqued in the context of a global pandemic. These dominant urban discourses will continue to shift and mutate as larger economic and global forces influence urban life, however this thesis contributes a critical focus on the ways in which both the normative body and patterns of exclusion remain in these changing city paradigms.

3.2. The Creative City

The Creative City emerged in the late 1990s as a panacea for the “decaying urban centre”.¹³⁷ It was presented as an aspirational remedy, one which resolved the dystopian city narratives prevalent both within and outside of urban planning discourse at this time.¹³⁸ Contextually, these representations of ‘noir urbanisms’ reflected a time of post-industrialism, technological change (specifically the proliferation of mobile and internet medias), global environmental concerns, as well as changes to the global economic hierarchies. Theorists, planners and other proponents of the Creative City discourse billed it as a city with a “changed mind-

¹³⁷ Patricia Avery, “Born Again: From Dock Cities to Cities of Culture,” in *Tourism, Culture and Regeneration*, ed. Michel Smith (Oxfordshire: CABI, 2007); Brian Doucet, “Flagship Regeneration: Panacea or Urban Problem” (paper presented at the European Urban Research Association Conference: The Vital City, Glasgow, September 2007), http://glasgowsciencefestival.org.uk/media/media_47909_en.pdf; Andrew Tallon, *Urban Regeneration in the UK* (Oxon: Routledge, 2009); Peter Hall, “Creativity, Culture, Knowledge and the City,” *Built Environment* 30, no. 3 (2004): 256-258, <https://www.jstor.org/stable/23289460>; Norma Rantisis and Deborah Leslie, “Branding the Design Metropole: The Case of Montreal, Canada,” *Area* 38, no. 4 (2006): 364-376, <https://doi.org/10.1111/j.1475-4762.2006.00705.x>.

¹³⁸ Publications such as *The Endless City* (Ricky Burdett and Deyan Sudjic, *The Endless City* (London: Phaidon, 2007)) projected mass population movements to inner city areas, while urban theorists like Jane Jacobs depicted a *Dark Age Ahead* in her publication of the death and life of American cities (Jane Jacobs, *Dark Age Ahead* (New York: Vintage Books, 2004)).

set”¹³⁹ that approaches globalisation, post-industrialisation and urban social and economic degradation with strategies of imagination, sustainability and the harnessing of (a specific type of) human capital.

This Creative City was depicted as anchored by a flourishing arts and culture scene, as a space that exudes and actively pursues creativity in its business, urban planning and hospitality sectors.¹⁴⁰ The Creative City turns upon ideas and inventions, not bricks and mortar or dirty factories.¹⁴¹ It is a “space you want to be in, a place to be seen”¹⁴² that attracts the talented, diverse, innovative and discerning individual.¹⁴³ It is a global competitive city because of a uniqueness and strength in local character rather than a dominant business or industry.¹⁴⁴ It is vibrant,¹⁴⁵ branded¹⁴⁶ and desirable.¹⁴⁷ Yet it is also imaginary, invisible, and “did not exist”.¹⁴⁸ That is, while the Creative City had real implications and effects, and many cities claimed the title,¹⁴⁹ it was not locatable, a place one can visit.¹⁵⁰ As several theorists have identified, “it

¹³⁹ Charles Landry, “Lineages of the Creative City,” *Research Journal for Creative Cities* 1 (2006): 16

¹⁴⁰ Charles Landry, *The Creative City* (London: Demos, 2000).

¹⁴¹ Merijn Oudenampsen, “Back to the Future Of The Creative City: An Archaeological Approach to Amsterdam’s Creative Redevelopment,” in *MyCreativity Reader: A Critique of Creative Industries*, ed. Geert Lovink and Ned Rossiter, 167-177 (Amsterdam: Institute of Network Cultures, 2007).

¹⁴² Jina Tay, “Creative Cities,” in *Creative Industries*, ed. John Hartley (Malden: Blackwell, 2005), 220.

¹⁴³ Richard Florida, *Cities and the Creative Class* (New York: Routledge, 2005).

¹⁴⁴ Gert-Jan Hospers and Cees-Jan Pen, “A View on Creative Cities Beyond the Hype,” *Creativity and Innovation Management* 17, no. 4 (2007), 259-270, <https://doi.org/10.1111/j.1467-8691.2008.00498.x>

¹⁴⁵ Jane Jacobs, *The Economy of Cities* (New York: Random House, 1969); Charles Landry, *The Art of City Making* (London: Earthscan, 2006).

¹⁴⁶ Alberto Vanolo, “The Image of the Creative City: Some Reflections on Urban Branding in Turin,” *Cities* 25 (2008): 370-381, <https://doi.org/10.1016/j.cities.2008.08.001>; Can-Seng Ooi, “Reimagining Singapore as a Creative Nation: The Politics of Place Branding,” *Place Branding and Public Diplomacy* 4, no. 4 (2008): 287-303, <https://doi.org/10.1057/pb.2008.18>.

¹⁴⁷ Richard Florida, *Who’s Your City? How the Creative Economy is Making Where to Live the Most Important Decision of Your Life* (New York: Basic Books, 2008).

¹⁴⁸ Marianna D’Ovidio, *The Creative City Does Not Exist* (Milano: Ledizioni, 2016).

¹⁴⁹ Charles Landry stated in 2012 that over 100 cities called themselves a ‘Creative City’ (Charles Landry, *The Origins and the Futures of the Creative City* (London: Comedia, 2012)).

¹⁵⁰ This is notably distinguishable to the Smart City which, whilst still a broad urban discourse with multiple interpretations and depictions, has been created in ‘built-from-scratch’, greenfield Smart Cities.

is no simple task to indicate precisely what a creative city is”.¹⁵¹ Despite this, this chapter reviews the ways in which the Creative City was defined, reviewing the key literature, both at the time in which it emerged and was popularised, and how it shifted and evolved.

The Creative City discourse emerged as a response to multiple political, economic, social and cultural dialogues. Some theorists track it as a global movement; others perceive it as originating in specific local contexts. McGuigan, for example, argues that *Cool Britannia* and the rise of the Creative City discourse in the United Kingdom was the product of “a national hubris that reproduces Britain’s historical problem of coming to terms with its declining significance in the world”.¹⁵² Richard Florida perceives the creativity discourse as slowly coming into being since the 1950s as a product of largely economic forces.¹⁵³ Charles Landry locates the Creative City’s lineage in the late 1980s, originally in the form of an “aspirational idea”¹⁵⁴ which paralleled globalisation and the emergence of new information technologies and the digital economy, post-industrialisation. Landry argues that this global context “left many counties and cities flailing as they searched for new answers to creating a purpose for themselves and jobs, whilst their cities were physically locked into their past”.¹⁵⁵ As such, the discourse of the Creative City has multiple histories and meanings, depending on the context, the discipline or the institution in which it is being read.

Other theorists have grounded the Creative City paradigm in neoliberal ideology,¹⁵⁶ arguing that Creative City strategies essentially prioritise urban or regional profit,

¹⁵¹ Hospers and Pen, “A View on Creative Cities,” 261.

¹⁵² Jim McGuigan, “Cultural Policy in Cool Britannia: National Government and the Cultural Public Sphere,” *Media International Australia* 87 (1998).

¹⁵³ Richard Florida, *The Rise of the Creative Class* (New York: Basic Books, 2002), 44.

¹⁵⁴ Landry, “Lineages of the Creative City,” 16.

¹⁵⁵ Landry, “Lineages of the Creative City,” 16.

¹⁵⁶ Jeffrey Zimmermann, “From Brew Town to Cool Town: Neoliberalism and the Creative City Development Strategy in Milwaukee,” *Cities* 25, no. 4 (2008): 230-242, <https://doi.org/10.1016/j.cities.2008.04.006>.

individualism and the free-market over, for example, social objectives. Indeed, in its definition, neoliberalism aligns with many of the mandates of the Creative City – neoliberalism, in its contemporary form (that is, post-1970) emphasises the role of the state in shaping strategic economic goals; traditional non-economic spaces are framed in economic terms (such as citizenship or political and cultural spaces), and competition is emphasised as the most valuable component of a city/state.¹⁵⁷

The relationship with neoliberalism is further emphasised by the political and geographical origins of the Creative City, specifically with Tony Blair's *Cool Britannia* policy and the formation of the Creative Industries Task Force in 1997.¹⁵⁸ When Tony Blair was elected in 1997, his party made the politically strategic move to simultaneously reinvent the British Labour Party and the stalling British economy via the branding strategy labelled *Cool Britannia*.¹⁵⁹ Described by Kate Oakley as a "time of optimism and hope",¹⁶⁰ *Cool Britannia* celebrated Britain's existing creative talent – symbolically marked by Blair's invitation to iconic musicians, designers and popstars to 10 Downing Street – and marked a movement towards a knowledge, information, and a new and creative economy. A pun on the patriotic song *Rule Britannia*, it was

¹⁵⁷ Alejandro Abraham-Hamanoiel et al., *Liberalism in Neoliberal Times* (New York: Goldsmith Press, 2017).

¹⁵⁸ Stuart Cunningham, "From Cultural to Creative Industries: Theory, Industry, and Policy Implications," *Media International Australia* 102, no. 1 (2002): 54–65; Stuart Cunningham, "The Evolving Creative Industries: From Original Assumptions to Contemporary Interpretations," (transcript of seminar, Brisbane, QUT, May 9, 2003), <https://eprints.qut.edu.au/4391/>; Lianne Gibson, "Creative Industries and Cultural Development – Still A Janus Face?" *Media International Australia Incorporating Culture and Policy*, no. 102 (2002): 25–43, <https://doi.org/10.1177/1329878X0210200105>; Paul Jeffcutt et al. "Creativity and Convergence in the Knowledge Economy – Reviewing Key Themes and Issues," *Culturelink*, Special Issue (2001) 9–18; Kate Oakley, "Not So Cool Britannia: The Role of the Creative Industries in Economic Development," *International Journal of Cultural Studies* 7, no. 1 (2004): 67–77, <https://doi.org/10.1177/1367877904040606>; Andrew Pratt, "Cultural Industries and Public Policy: An Oxymoron?" *International Journal of Cultural Policy* 11, no. 1 (2005): 31–34; William Uricchio, "Beyond The Great Divide: Collaborative Networks and the Challenges to Dominant Conceptions of Creative Industries," *International Journal of Cultural Studies* 7, no. 1 (2004): 79–90, <https://doi.org/10.1177/1367877904040607>.

¹⁵⁹ Peter van Ham, "Rise of the Brand State: The Postmodern Politics of Image and Reputation," *Foreign Affairs* 80, no. 5 (2001): 2–5, <https://www.jstor.org/stable/20050245>.

¹⁶⁰ Oakley, "Not So Cool Britannia," 69.

meant to mark a new era for Britain as a global hub and one with a successful economy of ideas and creativity.¹⁶¹ Politically, this strategy helped to distinguish Blair from 'old Labour' and its "left leaning old Labour values".¹⁶²

Economically, the rhetoric of *Cool Britannia* began to take shape in a variety of new policies and taskforces, including the formation of the Creative Industry Task Force. A focus on the development of the creative industries, as opposed to Britain's historical industrial base in manufacturing, saw thirteen key sectors signalled out as providing Britain with a new economy. Identified by their "origin in individual creativity, skill and talent", the development of these sectors were targeted for their potential for "wealth and job creation through the generation and exploitation of intellectual property",¹⁶³ namely advertising, architecture, arts and antique markets, crafts, design, designer fashion, film, interactive leisure software, music, television and radio, performing arts, publishing and software.¹⁶⁴ These were also areas that disability studies focused on as the sites of disability representation.¹⁶⁵

Within Australia, *Creative Nation*, launched by Paul Keating in 1994, similarly emphasised the economic opportunities in facilitating a creative and cultural industry. While not as high profile or influential as the creative industries policies that emerged from the UK, it was arguably the first.¹⁶⁶ *Creative Nation* framed Australian culture as separate and distinct to Britain's, and noted the central role of migrants, of cultural diversity and of Indigenous culture in Australian identity. However, as with the UK's *Cool Britannia*, whilst it was a cultural policy, it was also a decidedly

¹⁶¹ van Ham, "Rise of the Brand State".

¹⁶² Pratt, "Cultural Industries and Public Policy".

¹⁶³ Department of Culture, Media and Sport, United Kingdom, accessed February 12, 2006, http://www.culture.gov.uk/creative_industries/default.html.

¹⁶⁴ Department of Culture, Media and Sport, "Creative Industries Mapping Document," United Kingdom, 1998, accessed November 27, 2004. http://www.culture.gov.uk/cgi-bin/MsmGo.exe?grab_id=377&page_id=11735040&query=1998&hiword=1998+.

¹⁶⁵ Katie Ellis, *Disability and Digital Cultures* (New York: Routledge, 2019).

¹⁶⁶ Terry Flew, "Culture and Creative Industries in Australia," *Taiwanese Journal of WTO Studies* 18, no. 1 (2011): 1–23.

economic policy, framing the value of the creative and cultural industries distinctly in monetary terms.¹⁶⁷ However, the emphasis on the media industries and new technology was met with criticism, as “an overriding techno-utopian belief in high finance and technology as the ultimate panacea for what may ail our culture”.¹⁶⁸ The tension over what would define creativity, and debates over high and low culture, creativity versus technology would continue to permeate through both the Creative City discourse and into the Smart City of the mid 2000s.

Over the next decade the creative industries would become a popular model for economic growth strategies within developed countries across Europe, the United States, New Zealand, as well as throughout Asia, including Korea, Hong Kong, Malaysia, Taiwan and China. However, as the idea was transferred culturally and geographically, the boundaries and policy language of the creative industries changed according to the “alignment of their culture”¹⁶⁹ and to economic or geographic realities. Specifically, we would see a de-coupling of national cultural policy from its initial iteration and a shift towards localised creative place-making strategies. Essentially, the national creative industry development approach would become translated into an urban discourse.

It was in this movement – from the confines of national government offices into cities, academic departments and popular publications – that the Creative City paradigm flourished. It was not the ‘second wave’¹⁷⁰ of the creative industries, nor an alternative label for new economy theory. Instead, it became a specifically place-based paradigm which sought to join up this economic strategy with new ways of

¹⁶⁷ Cunningham, “From Cultural to Creative Industries”.

¹⁶⁸ John Conomos, “At the End of the Century: Creative Nation and the New Media Arts,” *Continuum* 9, no. 1 (1996): 118–129, <https://doi.org/10.1080/10304319609365694>.

¹⁶⁹ Terry Flew, “Beyond ad Hocery: Defining Creative Industries,” (paper presented at The Second International Conference on Cultural Policy Research: Cultural Studies, Cultural Theory, Cultural Policy, Wellington, January 23–26, 2002), 5.

¹⁷⁰ Angela McRobbie, “Clubs To Companies: Notes on the Decline of Political Culture in Speeded Up Creative Worlds”, *Cultural Studies* 16, no. 4 (2002): 516–531, <https://doi.org/10.1080/09502380210139098>.

understanding a city's role and identity in a globalised and competitive economic environment. The seamless way the Creative City brand moved between small locales, to cities, regions and nations, is an example of the flexible nature of this discourse which was used and moulded to 'fix' a variety of national goals and local conditions.

3.2.1. Critiques of the Creative City and its manifestations in urban space

Due in part to the utopian mantra that underpinned the Creative City, it was always going to be subject to critique. These were generally centred around the gap between the reality and rhetoric, the inadequacies within creative industry working conditions, and the marginalisation of the non-creative class. This section of the thesis, however, focuses on the critiques of the spatiality of the Creative City, and the way policies manifested in urban, and specifically public, space. The Creative City projects often manifested in public urban space via strategies to increase art and cultural content, but also through the control, commercialisation and often privatisation of these spaces. For example, efforts to develop the active public spaces of Federation (Fed) Square in Melbourne and Northbridge Plaza in Perth (as discussed in Chapter 5) saw both a demarcation of the purpose (and preferred user) of the site, and a shifting, blurred meaning of private, commercial and public space.

As the Creative City paradigm became a fixture within multiple governments' policy documents and urban strategies – in Australia, this was evident in almost all of the major and second tier cities – so did critiques on the way the discourse manifested in urban environments. Critics suggested that the discourse of the Creative City diluted the cultural, social and historical fabric of a city, and implemented traditional regeneration strategies that prioritised specific inhabitants (the creative class) whilst excluding others, justifying inequalities on economic development grounds.¹⁷¹ Kate

¹⁷¹ Toby Miller, "A View From a Fossil: The New Economy, Creativity and Consumption – Two or Three Things I Don't Believe In," *International Journal of Cultural Studies* 7, no. 1 (2004): 55–65, <https://doi.org/10.1177/1367877904040605>; Graeme Evans, "Hard-Branding the Cultural City: From

Oakley has expressed specific concerns with the use of what she calls the “cookie-cutter” approach in which cities use the same few ingredients to generate the Creative City brand with little regard for the social, cultural or economic specificities of place. Oakley identifies that:

It appears that everywhere need a university, some incubators and a ‘creative hub’, with or without a café, galleries and fancy shops. In an industrial economy, we had a framework for understanding regional differences; some places had steel or coal or shipbuilding, others traded or just moved money about like the City of London. We seem to have forgotten this in our rush to develop regional creative economies.¹⁷²

Oakley is among several theorists concerned that a vague and context-less model was being adopted by cities and localities without regard for their own specificities. Her views aligned with observations by theorists such as Atkinson and Easthope¹⁷³ who identify that the practice of the Creative City often incorporates gentrification of lower-cost neighbourhoods, social policing and control of urban spaces, and the displacement of welfare and other agendas such as housing affordability.

There have been many examples put forward of these problems associated with the manifestation of Creative City projects. In unpacking the disjuncture between Creative City policies or projects and the historical, cultural and social dynamics of a place, authors are able to reveal the tensions and patterns of exclusion that underpin the discourse. For example, Jakob uses the case study of the cultural and art tours run by Kolonie Wedding in Berlin to explain how a perceived successful cultural strategy operated as a veneer sitting on top of, but largely disconnected from, the

Prado to Prada,” *International Journal of Urban and Regional Research* 27, no. 2 (2003): 417–440, <https://doi.org/10.1111/1468-2427.00455>; Paul Chatterton, “Will the Real Creative City Please Stand Up?” *City* 4, no. 3 (2000): 390–397, <https://doi.org/10.1080/713657028>; Marion Roberts, “From ‘Creative City’ to ‘No-Go Areas’: The Expansion of the Night-Time Economy in British Town and City Centres,” *Cities* 23, no. 5 (2006): 331–338, <https://doi.org/10.1016/j.cities.2006.05.001>.

¹⁷² Kate Oakley, “Not So Cool Britannia,” 73.

¹⁷³ Rowland Atkinson and Hazel Easthope, “The Consequences of the Creative Class: The Pursuit of Creativity Strategies in Australia’s Cities,” *International Journal of Urban and Regional Research* 33, no. 1 (2009): 65–79, <https://doi.org/10.1111/j.1468-2427.2009.00837.x>.

community in which it was located. With the artists living outside of the art hub, commuting to the predominantly immigrant area only for staged exhibitions for tourists, Jakob states they “created a separate and elite socio-spatial enclave for themselves that is detached from the actual neighborhood in which they are located”.¹⁷⁴ The development of the project by a neighbourhood management organisation and a major real estate holder revealed that the intention of Kolonie Wedding was largely revitalisation and gentrification, aligning with one of the most consistent critiques of the Creative City.

Likewise, Wilson argues the discourse has manifested in “separate cities within a city”, using the locations and redevelopment experiences of Glasgow, UK and Cleveland, US.¹⁷⁵ Again, the author exposes the complex history, economic context and social fabric of the cities in order to reveal the jarring implantation of ‘glittery’, hyper-entrepreneurial creative redevelopment projects such as Cleveland’s Lake Erie waterfront which, in its design and its demolishing of high-rise public housing, businesses and cultural places both constructed the ‘ideal’ creative denizen and displaced the largely African–American community that lived there. Across the ocean, the regeneration of another waterfront, Glasgow’s Clyde Waterfront, also silently displaces and relocates immigrant communities and the unemployed into the isolated, distanced areas. These types of Creative City developments align with Gibson and Brennan-Horley’s depiction of “inner/outer zone binaries, where the boundaries of the Creative City are drawn between the central city space, the creative zone, and the outer suburban sprawl”.¹⁷⁶

¹⁷⁴ Doreen Jakob, “Constructing the Creative Neighbourhood: Hopes and Limitation of Creative City Policies in Berlin,” *City Culture and Society* 1, no. 4 (2010): 193–198, <https://doi.org/10.1016/j.ccs.2011.01.005>.

¹⁷⁵ David Wilson, ed., “Making Creative Cities in the Global West: The New Polarization and Ghettoization in Cleveland, USA, and Glasgow, UK,” in *Inequalities in Creative Cities*, edited by Ulrike Gerhard, Michael Hoelscher and David Wilson (New York: Pgrave Macmillan, 2016), 109.

¹⁷⁶ Chris Gibson and Chris Brennan-Horley, “Goodbye Pram City: Beyond Inner-Outer Boundaries in Creative City Research,” *Urban Policy and Research* 24, no. 4 (2006): 455–471, <https://doi.org/10.1080/08111140601035275>.

McLean adds another perspective to the patterns of (predominantly class-based) exclusion mapped out by authors such as Gibson and Brennan-Horley, Wilson and Jakob, identifying what has perhaps been less vocalised in critiques, the ways the Creative City also reproduce spaces of white privilege and heteronormativity.¹⁷⁷ While McLean uses the example of Creative City programming in Toronto to illustrate ways in which critical, feminist and queer artists were co-opted in projects “entrenching exclusion, accelerating displacement, and normalizing an individualistic and competitive understanding of culture”,¹⁷⁸ she also identifies practices of “creative troubling” and critiques by feminist activist artists in this process. McLean’s analysis is important to understanding how the Creative City discourse not only constructed the ideal, ‘creative’ citizen, and replicated other normative understandings of race, gender and bodies, but also ways in which these representations were challenged and exposed.

3.2.2. Departure of the Creative City

Critiques of the Creative City became particularly dominant during and after the global financial crisis of 2008. Not only were the regenerative capabilities of the paradigm undermined by the severity of the crash, particularly in the US, but the social displacing effects were magnified within this financial environment. As Oli Mould explains, the lack of creativity in the Creative City paradigm was more overt at the time of the global financial crisis, and the gentrifying and exclusionary components of the discourse became evident:

¹⁷⁷ Other contributions include Deborah Leslie and John Paul Catungal, “Social Justice and the Creative City: Class, Gender, and Racial Inequalities,” *Geography Compass* 6, no. 3 (2012): 111–122, <https://doi.org/10.1111/j.1749-8198.2011.00472.x>; Tiffany Muller Myrdahl, “Queerying Creative Cities,” in *Queerying Planning: Challenging Heteronormative Assumptions and Reframing Planning Practice*, ed. Petra L. Doan, 158–169 (Burlington: Ashgate, 2012); Brenda Parker, “Beyond the Class Act: Gender and Race in the Creative City Discourse,” in *Gender in an Urban World: Research in Urban Sociology*, ed. J. DeSena, 201–233 (Bingley: Jai Press/Emerald, 2008).

¹⁷⁸ Heather McLean, “Digging Into the Creative City: A Feminist Critique,” *Antipode* 46, no. 3 (2014): 669–690, <https://doi.org/10.1111/anti.12078>.

*The Creative City in all its various guise has engendered and crystallised long-standing and existing urban conditions of economic inequality, social exclusion, cultural desertification and disengagement, and in some cases, social and political unrest.*¹⁷⁹

Just as the financial crisis both highlighted and exacerbated existing disparity between the wealthy and the poor, it also highlighted the failings and limitations of the Creative City paradigm for both individuals and cities that were most affected by economic decline. Even Richard Florida – one of the most well-known US-based proponents of the Creative City, and specifically the creative class theory – responded with three publications addressing the key impacts that the financial crisis had on the Creative City discourse, namely urban segregation, poverty and “creative destruction”.¹⁸⁰

Therefore, a decade after it emerged as a popular panacea and strategy for urban decline, three key factors would signal the Creative City’s decline in popularity and eventual almost complete disappearance: the perceived inability of the Creative City paradigm to address the changing global pressures on cities (primarily economic); an increased awareness of ways in which the paradigm can facilitate exclusivity and social disparity; a proliferation of alternative (yet aligned) iterations (such as the Media City, Networked Cities,¹⁸¹ the Digitized/Digital City¹⁸²) that emphasise the increasing prominence of new and media technology; and the “increased convergence of mobile and pervasive media with urban space”.¹⁸³ These factors would combine to upend the Creative City, and the search began for a new utopian

¹⁷⁹ Oli Mould, *Urban Subversion* (New York: Routledge, 2015), 3.

¹⁸⁰ Richard Florida, *The Great Reset* (New York: Harper Collins, 2010); Richard Florida, *The Rise of the Creative Class Revisited* (New York: Basic Books, 2012); Richard Florida, *The New Urban Crisis* (New York: Basic Books, 2017).

¹⁸¹ Manuel Castells, *The Rise of the Networked Society*. 2nd edition (Oxford: Blackwell, 2000).

¹⁸² Charles Landry, *The Digitized City* (London: Comedia, 2016); Nicos Komninos, “Intelligent Cities: Towards Interactive and Global Innovation Environments,” *International Journal of Innovation and Regional Development* 1, no. 4 (2009), <https://doi.org/10.1504/IJIRD.2009.022726>.

¹⁸³ Maja Klausen, “Making Place in the Media City,” *Culture Unbound* 4 (2012): 559–577.

urban discourse. As a result, within the last ten years, the Smart City, defined and analysed in the subsequent section, has emerged as the dominant urban paradigm.

3.3. The Smart City

Since the mid 2000s, the Smart City has rapidly grown in popularity as a new planning and city management paradigm. It is characterised by the role of ICT in urban space and generally, though not always, involves the facilitation of data-led governance via the application of sensors, big data and the Internet of Things.¹⁸⁴ The origins of the Smart City are diverse and difficult to define, as is the discourse itself. Cugurullo, for example, explores a long lineage of interest in the role of and synergy between technological development and urban development, from *New Atlantis* of 1626, a novel written by Francis Bacon and published in 1626, depicting a utopian future, to the articulations of Los Angeles as a “computer city” in the 1970s and Singapore as an “intelligent island” in the 1980s.¹⁸⁵ Albino, Berardi and Dangelico state the term Smart City was first used in the 1990s.¹⁸⁶ However, the proliferation and popularisation of the discourse as an urban development strategy, and indeed the constructions of new, Smart Cities in greenfield sites only occurred from around 2008. This current version is presented – akin to the Creative City – as a remedy to or strategy for the economic, environmental and, to a lesser extent, social problems experienced in the modern city. While it offers place-based applications, the

¹⁸⁴ Hafeedh Chourabi, et al. “Understanding Smart Cities: An Integrative Framework,” (paper presented at the 45th Hawaii International Conference on System Sciences, IEEE, 2012), 2289–2297; Rudolf Giffinger et al., “Smart Cities: Ranking of European Medium-Sized Cities,” (Vienna, Austria: Centre of Regional Science (SRF), Vienna University of Technology, 2007), http://www.smart-cities.eu/download/smart_cities_final_report.pdf; David Toppeta, “The Smart City Vision: How Innovation and ICT Can Build Smart, ‘Livable’, Sustainable Cities,” The Innovation Knowledge Foundation, 2010. http://www.thinkinovation.org/file/research/23/en/Toppeta_Report_005_2010.pdf.

¹⁸⁵ Federico Cugurullo, “The Origin of the Smart City Imaginary,” in *The Routledge Companion to Urban Imaginaries*, ed. Christoph Linder and Miriam Meissner (Milton Park, Oxon: Routledge, 2019).

¹⁸⁶ Vito Albino, Umberto Berardi and Rosa Maria Dangelico, “Smart Cities: Definitions, Dimensions, Performance, and Initiatives,” *Journal of Urban Technology* 22, no. 1 (2015): 3–21, <https://doi.org/10.1080/10630732.2014.942092>.

discourse is not entwined with city identity, nor designed to articulate or reimagine the cultural and social fabric of a city in the way that the Creative City was.

While the Creative City never ‘existed’ but was elucidated via projects, urban developments and policies, the Smart City has, in some cases, manifested itself into actual cities – new, constructed Smart Cities have been built on greenfield spaces or reclaimed land, including Masdar City in Abu Dhabi¹⁸⁷, Songdo in South Korea¹⁸⁸, and Belmont in Arizona.¹⁸⁹ However, more often, the concept is applied in part, or via specific projects, through the application of smart technology to existing cities. These projects, or smart solutions to urban problems, range from autonomous self-driving vehicles to stream-lined waste management and disposal, data-visualisation maps, and smartphone integration.

The definition (and application) of the paradigm is as diverse as the Creative City, but variations extend more broadly, in part due to the variety of disciplines that have taken up and contributed to the discourse.¹⁹⁰ With ICT at the centre of most definitions, the concept is applied across disciplinary fields such as STS, engineering and computer sciences, as well as urban studies, architecture, sociology and other fields within the humanities. As is argued later in this thesis, the use of the Smart City in science and technology fields have impacted both the technology focus of the discourse, and the way the citizen of the Smart City is envisioned. Albino, Berardi and Dangelico argue, however, that the Smart City is not defined entirely by its technology, rather “the diffusion of ICT in cities has to improve the way every

¹⁸⁷ <https://masdar.ae/en/masdar-city>

¹⁸⁸ <https://newcities.org/cityquest-songdo-south-korea-conceptualized-ultimate-smart-sustainable-city/>

¹⁸⁹ <http://smartcityaz.com>

¹⁹⁰ Renata Paola Dameri, “Searching for Smart City definition: A comprehensive proposal,” *International Journal of Computers and Technology* 11, no. 5 (2013): 2544–2551, <https://doi.org/10.24297/ijct.v11i5.1142>; Robert Hollands, “Will the real smart city please stand up?,” *City* 12, no. 3 (2008): 303–320, <https://doi.org/10.1080/13604810802479126>.

subsystem operates, with the goal of enhancing the quality of life”.¹⁹¹ Critics, however, argue the discourse overemphasises technical solutions, is based on primarily top-down implementation and technocratic governance, accentuates corporatisation and privatisation, and reinforces social divides and inequalities, surveillance and privacy violations.¹⁹² The following paragraphs outline these critiques.

While an overarching theme within the Smart City discourse is the beneficial and revolutionary potential of new technology (albeit problematic in its basis in technological determinism), the central role of tech companies in the propagation of its mythology makes its relationship to understandings of governance and citizenship particularly unstable.¹⁹³ Unlike the Creative City proponents, the Smart City discourse is driven and disseminated primarily by ICT corporations. The newly built Smart Cities cited above exemplify the central role of the corporate in translating and constructing the Smart City – Masdar is a renewable energy company, Belmont is being funded by Microsoft, and Songdo was developed in partnership between Gale International, a real estate company, and POSCO Engineering and Construction. Other projects which were proposed – but eventually stagnated – included Sidewalk Toronto designed by Google/Alphabet and PlanIT Valley in Portugal proposed by Living PlanIT AG, a software development company. In these examples it is easy to identify the influence corporate, and particularly large ICT corporations, have on the design, function and lived experience of the city. Indeed, Chapter 6 outlines several

¹⁹¹ Vito Albino, Umberto Berardi and Rosa Maria Dangelico, “Smart Cities: Definitions, Dimensions, Performance, and Initiatives,” *Journal of Urban Technology* 22, no. 1 (2015): 3–21, <https://doi.org/10.1080/10630732.2014.942092>.

¹⁹² Tina Kempin Reuter, “Smart City Visions and Human Rights: Do They Go Together?” Carr Centre Paper Series, 2020, https://carrcenter.hks.harvard.edu/files/cchr/files/CCDP_006.pdf

¹⁹³ Andrés Luque-Ayala and Simon Marvin, “Developing a Critical Understanding of Smart Urbanism?” *Urban Studies* 52, no. 12 (2015): 2105–2116, <https://doi.org/10.1177/0042098015577319>; Adam Greenfield, *Against the Smart City* (New York: Do Projects, 2013); Ola Söderström, Till Paasche and Francis Klauser, “Smart Cities as Corporate Storytelling,” *City* 18, no. 3 (2014): 307–320, <https://doi.org/10.1080/13604813.2014.906716>; Alberto Vanolo “Smartmentality: The Smart City as Disciplinary Strategy,” *Urban Studies* 51, no. 5 (2014): 883–898, <https://doi.org/10.1177/0042098013494427>.

of the tensions that arose over the construction of Sidewalk Toronto and the ownership of citizen data by Google/Alphabet. Yet, as several critics have identified, the influence and power of companies, including Google, Facebook, IBM, Siemens, Alibaba and Cisco, are, perhaps less overtly, still increasing via a range of specific Smart City projects in multiple cities.¹⁹⁴ Indeed, the increasing power of ICT corporations affects not only the way urban data is gathered, managed and used but, as Mosco explains, also defines the parameters of the discourse itself.¹⁹⁵ The companies, as the new proponents of the Smart City, promote the technology that they create, control and sell as the most valuable component of the discourse and, likewise, what and for whom this technology should be used.

However, while many of the critics of the Smart City have focused on the emphasis on technology as ‘all resolving’, and lacking in citizen engagement and an understanding of social and cultural need, the discourse itself has pivoted to respond to this representation. Trencher argues that a “second version” of the Smart City emerged in response, one which is “framed as a decentralised, people-centric approach where smart technologies are employed as tools to tackle social problems, address resident need and foster collaborative participation”.¹⁹⁶ However, Cardullo and Kitchin¹⁹⁷ argue the latter, citizen-centric approach to the Smart City remains tokenistic, and in these attempts there lacks analysis of the conceptualisation of the citizen itself.

¹⁹⁴ Vincent Mosco, *The Smart City in a Digital World* (Bingley: Emerald, 2019); Greenfield, *Against the Smart City*; Jathan Sadowski and F. A. Pasquale, “The Spectrum of Control: A Social Theory of The Smart City,” *First Monday* 20, no. 7 (2015), <http://firstmonday.org/ojs/index.php/fm/article/view/5903/4660?curator=TechREDEF>.

¹⁹⁵ Mosco, *The Smart City in a Digital World*.

¹⁹⁶ Gregory Trencher, “Towards a Smart City 2.0: Empirical Evidence of Using Smartness as a Tool For Tackling Social Challenges,” *Technological Forecasting and Social Change* 142 (2019): 117.

¹⁹⁷ Paolo Cardullo and Rob Kitchin. “Being a ‘Citizen’ in the Smart City: Up and Down the Scaffold of Smart Citizen Participation in Dublin, Ireland,” *GeoJournal* 84 (2019): 1–13, <https://doi.org/10.1007/s10708-018-9845-8>.

To date, however, there has been minimal research on the way citizens are imagined and engaged by Smart City technologies, nor the way the model of citizenship has enacted within the discourse.¹⁹⁸ Thus, the ways in which the citizen is assumed, and the preferred user of the Smart City is discursively constructed, are central points for investigation in this thesis. As the latter part of this chapter articulates, regardless of the capacity of these approaches to incorporate the citizen in the discourse, the Smart City still identifies and engages citizens via technology – both their use of, need for, and identification by. As such, throughout this thesis, the prosthetic role of the smartphone as the citizen gateway and user interface to participation in the Smart City is unpacked.

Another critique offered is based on the intrusive surveillance and privacy violations of the Smart City. As Smart City technology operates to monitor and gather information on the environment in order for automated, digitised and adaptive systems to operate effectively, citizens become objects of “constant surveillance” and “data products”.¹⁹⁹ Thus, theorists such as Krivý, Sadowski and Pasquale argue that the discourse promotes a Deleuzian “society of control” where the constant tracking and surveillance of citizens (as and via data) is the modern mechanism of control.²⁰⁰ The Smart City discourse promotes, rationalises and normalises technology that tracks, surveils and invades for the purpose of urban efficiency and resolution of urban faults.²⁰¹

¹⁹⁸ Cardullo and Kitchin, “Being a ‘Citizen’ in the Smart City,” 2.

¹⁹⁹ Rob Kitchin, “The Ethics of Smart Cities and Urban Science,” *Philosophical Transactions of the Royal Society A* 374, no. 2083 (2016): 1–20, <https://doi.org/10.1098/rsta.2016.0115>; Jennifer Gabrys, “Programming Environments: Environmentality and Citizen Sensing in the Smart City,” *Environment and Planning D: Society and Space* 32, no. 1 (2014): 30–48, <https://doi.org/10.1068/d16812>.

²⁰⁰ Maroš Krivý, “Towards A Critique Of Cybernetic Urbanism: The Smart City And The Society Of Control,” *Planning Theory* 17 (2018), <https://doi.org/10.1177/1473095216645631>; Sadowski and Pasquale, “The Spectrum of Control”.

²⁰¹ Sadowski and Pasquale, “The Spectrum of Control”.

Consequently, the question around how the smart technology in these cities is controlled, and who is being controlled and for what purpose, becomes particularly important in the way accessibility is addressed in this new urban space. As discussed in Chapter 6, access – though not always access for people with disabilities – is commonly put forward as an achievement of the Smart City, yet the way accessibility is understood is important in disconnecting assumed relationships between bodies and technology in order for effective and inclusive citizenship to be achieved.

3.4. Connections between Creative and Smart City discourses

How and what aligns the Smart City with the Creative City has been debated, in part due to the definition of Smart Cities incorporating a “large spectrum of heterogeneous solutions and city programs, involving different types of technologies and aiming to reach a very large set of different and not well-defined goals”.²⁰² While some theorists and consultants depict the Smart City and Creative City as competing and distinct urban paradigms, others view them as entwined, neo-liberal urban agendas, only differing in their methodology.

Smart City imaginary is premised on a similar narrative about urban crises that the Creative City evoked, and both employ new urbanism principals. However, the resolution to these crises comes in a different form – there has been a distinct shift from creatives as ‘cure-alls’ in the Creative City, to the Smart City which spruiks technological salvation.²⁰³ That is, while the Creative City, in all its iterations, posited creative industries and the creative class as both drivers and consumers of regenerated urban space and economies, the Smart City looks to new technology and ICT companies to better manage and regenerate urban environments. Moreover, as Vanolo²⁰⁴ identifies, the trajectory of the Smart City is distinct from that of the

²⁰² Dameri, “Searching for Smart City Definition”.

²⁰³ Jathan Sadowski and Roy Bendor, “Selling Smartness: Corporate Narratives and the Smart City as a Sociotechnical Imaginary,” *Science, Technology and Human Values* 44, no. 3 (2018): 540–563, <https://doi.org/10.1177/0162243918806061>.

²⁰⁴ Alberto Vanolo, “Is There Anybody Out There? The Place and Role Of Citizens in Tomorrow’s Smart Cities,” *Futures* 82 (2016): 26–36, <https://doi.org/10.1016/j.futures.2016.05.010>.

Creative City. The latter was grounded in and developed from urban policies and was popularised and globalised by academics and pseudo-academics, whereas the Smart City has been primarily developed and perpetuated by a few multinational companies such as IBM and Cisco.

Hatuka et al.'s analysis of the similarities and differences between the Creative City and Smart City, however, identifies that there are few similarities between the discourses other than an underlying neoliberal value.²⁰⁵ They also identify that each concept remains abstract in nature, and yet are transformed in practice to concrete frameworks, projects and policies. Thus, while urban terms may be used interchangeably, sometimes in conjunction with one another and in broad ways, it is also useful to understand the consistencies and differences between them. The authors argue that while there have been numerous studies and policy papers that define different urban paradigms (from the Global City, to the Sustainable City, the Resilient City, the Creative City and the Smart City – the latter two being the most prominent and persistent in urban policy) there have been few that have looked at the differences and consistencies, and indeed the gaps and critiques that persist across each discourse. Included in their analysis is how residents (denizens) are perceived – both the Creative City and the Smart City rely on classed, neoliberal depictions of the citizen. While both offer citizen centric policies, these tend to typically follow neoliberal, paternalistic patterns, and remain disassociated from the rights of citizenship and authentic participation.²⁰⁶ This thesis also contributes to this comparative work, establishing an understanding of how the preferred citizen and the normative body is consistently constructed across the Creative City and Smart City discourse, what ideals persist and what change.

²⁰⁵ Tali Hatuka, et al., "The Political Premises of Contemporary Urban Concepts: The Global City, the Sustainable City, the Resilient City, the Creative City, and the Smart City," *Planning Theory and Practice* 19, no. 2 (2018): 160–179, <https://doi.org/10.1080/14649357.2018.1455216>.

²⁰⁶ Cardullo and Kitchin, "Being a 'Citizen' in the Smart City".

This thesis argues that while the citizen of the Creative City was overtly advertised for – via the Floridan call to attract the aforementioned ‘creative class’ – it was also specified through the construction of spaces of exclusion, such as the public square, as discussed in Chapter 5. In the Smart City, the citizen’s identity is minimised, resembling denizenship playing, as Vanolo argues, a subaltern role²⁰⁷ which is reduced in part to data sets but also to participation only through personal technological interfaces, specifically the smartphone. The following section thus investigates the different and consistent ways in which the disabled citizen is framed in discourses of the Creative City and the Smart City.

3.4.1. The Creative City and disability

What is evident in the review of literature on the Creative City and particularly the pro Creative City literature is that there is very little, if any, engagement with disability or disability politics. Across the key Creative City texts – written by proponents such as Richard Florida, Charles Landry, Charles Leadbeater or John Howkins – both disability and accessibility²⁰⁸ are absent. Even in the critiques of the Creative City and appraisals of the exclusivity of the paradigm, consideration of people with disabilities is rarely made, and reference to accessibility is confined to a brief sentence or acknowledgment. Exceptions include articles that examined the representation of disability in the creative industries (such as film or music), or in relation to innovation (which also aligns with the literature on technology and disability in the Smart City).²⁰⁹

Exclusion has certainly been discussed in response to the neoliberal ideology of the Creative City, including women, the service sector or immigrants²¹⁰ but, yet again,

²⁰⁷ Vanolo, “Is there anybody out there?”

²⁰⁸ Note, accessibility is referenced in several of Florida’s publication, but this version of accessibility is for “young creative workers”, rather than people with a disability.

²⁰⁹ Gerard Goggin, “Innovation and disability,” *M/C Journal* 11, no. 3 (2018), <https://doi.org/10.5204/mcj.56>.

²¹⁰ Leslie and Catungal, “Social Justice and the Creative City,”; Mary Donegan and Nichola Lowe, “Inequality in the Creative City: Is There Still a Place for ‘Old-Fashioned’ Institutions,” *Economic*

disability remains largely missing. When it is mentioned briefly, it is as a marker of diversity alongside, gender, ethnicity, sexuality, age or social class.²¹¹ Diversity (and indeed tolerance for diversity) was a key attribute of the Creative City, with Florida articulating and measuring this via a “melting pot index”, the percentage of the population that is foreign-born.²¹² However, while the framing of diversity as an important, valuable component was perhaps one of the more positive legacies of the Creative City discourse, several have critiqued the tokenistic, sanitised role of diversity. Luckman, Gibson and Lea, for example, use the example of Darwin’s promotion of the Creative City whilst maintaining an “Itinerant Strategy” that allowed for the removal of Aboriginal people – whose culture and creativity Darwin aimed to promote – who were living in the public spaces now demarcated as creative public space.²¹³ Whilst, again, the focus here is on race and ethnicity, rather than disability, the same demarcation of people with disabilities outside of/absent from the Creative City facilitates the inaccessibility of public space.

Central to the lack of disability in the Creative City is the way in which creative citizens were configured as a class defined by their work, and moreover as “hyper-mobile, active and flexible” workers.²¹⁴ In contrast, Barnes and Mercer identify that disability has generally been absent from theories of work, and people with disabilities have systematically been excluded from paid work.²¹⁵ The UN estimates that in “developing countries, 80% to 90% of persons with disabilities of working age are

Development Quarterly 22, no. 1 (2008): 46–62, <https://doi.org/10.1177/0891242407310722>; Parker, “Beyond the Class Act: Gender and race in the ‘Creative City’ Discourse,”

²¹¹ Keith Randle, Wing-Fai Leung and Juno Kurian, “Creating Difference: Overcoming Barriers to Diversity in UK Film and Television Employment,” 2007, <https://uhra.herts.ac.uk/handle/2299/4575>.

²¹² Florida, *The Creative Class*.

²¹³ Susan Luckman, Chris Gibson and Terrance Lea, “Mosquitos in the Mix: How Transferrable is Creative City Thinking?” *Singapore Journal of Tropical Geography* 30, no. 1 (2009): 70–85, <https://doi.org/10.1111/j.1467-9493.2008.00348.x>.

²¹⁴ Ulrike Gerhard, Michael Hoelscher and David Wilson eds., *Inequalities in Creative Cities: Issues Approaches, Comparisons* (New York: Palgrave MacMillan, 2013), 7.

²¹⁵ Chris Barnes and Geoff Mercer. “Disability, Work and Welfare: Challenging the Social Exclusion of Disabled People,” *Work, Employment and Society* 19, no. 3 (2005), <https://doi.org/10.1177/0950017005055669>.

unemployed, whereas in industrialized countries the figure is between 50% and 70%”,²¹⁶ while in the creative industries similar patterns of exclusion continue unchallenged.²¹⁷ Thus the disabled denizen was located both outside of Creative City spaces (via inaccessibility) and outside of the creative class.

3.4.2. The Smart City and disability

The intersection between the Smart City paradigm and disability is complex – some theorists have raised concerns about the way accessibility is defined and people with disabilities are integrated in the paradigm (including critiques of newly built Smart Cities, for example Sidewalk Toronto, discussed in Chapter 6),²¹⁸ and several research papers have also proposed a more inclusive version of the Smart City concept,²¹⁹ whilst the body of scholarly work that investigates disability in the Smart City paradigm offer the discourse as a contextual backdrop to accessibility technology or software.²²⁰ To date, however, there has been almost no engagement by disability

²¹⁶ United Nations, “Disability and Employment,” 2007, <https://www.un.org/development/desa/disabilities/resources/factsheet-on-persons-with-disabilities/disability-and-employment.html>.

²¹⁷ Irena Grugulis and Dimitrinka Stoyanova, “Social Capital and Networks in Film and TV: Jobs for the Boys?” *Organization Studies* 33, no. 10 (2012): 1311–1331, <https://doi.org/10.1177/0170840612453525>.

²¹⁸ Gerard Goggin, “Disability and Mobilities: Evening Up Social Futures,” *Mobilities* 11, no. 4 (2016): 533–541, <https://doi.org/10.1080/17450101.2016.1211821>; Tina Kempin Reuter, “Human Rights and The City: Including Marginalized Communities in Urban Development and Smart Cities,” *Journal of Human Rights* 18, no. 4 (2019): 382–402, <https://doi.org/10.1080/14754835.2019.1629887>; Nataša Rebernik, et al., “Measuring Disability Inclusion Performance in Cities Using Disability Inclusion Evaluation Tool (DIETool)” *Sustainability* 12, no. 4 (2020): 1378, <https://doi.org/10.3390/su12041378>; Alan-Miguel Valdez, Matthew Cook and Stephen Potter, “Roadmaps to Utopia: Tales of the Smart City,” *Urban Studies* 55, no. 15 (2018): 3385–3403, <https://doi.org/10.1177/0042098017747857>.

²¹⁹ Álvaro Oliveira, Margarida Campolargo, and Maria Martins, “Human Smart Cities: A Human-Centric Model Aiming at the Wellbeing and Quality of Life of Citizens,” (conference proceedings, eChallenges, Belfast, October 2014), 1–8; Nataša Rebernik, et al., “A Vision of a Smart City Addressing the Need of Disabled Citizens,” (presented at Accessibility 4.0. September, Malaga, 2018).; Raed Salha, et al., “Towards Smart, Sustainable, Accessible and Inclusive City for Persons with Disability by Taking into Account Checklists Tools,” *Journal of Geographic Information System* 12, no. 4 (2020): 348–371, <https://doi.org/10.4236/jgis.2020.124022>.

²²⁰ Alejandro García Ramirez et al., “Towards Human Smart Cities: Internet Of Things for Sensory Impaired Individuals,” *Computing* 99(1): 107–126, <https://doi.org/10.1007/s00607-016-0529-2>; João de Oliveira Neto, et al., “When Wearable Computing Meets Smart Cities: Assistive Technology

studies nor CDS on the Smart City's approach to disability – a search of both the dominant journals in this field, *Disabilities Studies Quarterly* and *Disability and Society*, herald only two results (collectively) on a search for the 'Smart City'. The literature that does seek to locate disability in the Smart City discourse has largely emerged from STS or computer technology fields, and is literature that is generally already invested in the problems of accessibility in urban space. The reason the Smart City is conjured in these examples is because of the emphasis on ICT and, in particular, sensor systems that can monitor and record human activity within urban space. Thus the role of the Smart City is therefore contextual in this research – a backdrop for proposed accessibility tools – rather than evoked as an accessible urban paradigm in and of itself.

For example, Mora et al.²²¹ evokes the Smart City in proposing a model for evaluating urban accessibility, with the objective of generating information on how accessible specific urban sites are. The proposed model uses the technology associated with the Smart City – monitoring tools, sensor-based ubiquitous computing, wireless communication technologies and a cloud-based application system. Essentially, the

Empowering Persons With Disabilities," *Smart Cities and Smart Spaces: Concepts, Methodologies, Tools, and Applications*, ed. Information Resources Management Association, IGI Global, 2019: 1356–1376, <http://doi:10.4018/978-1-5225-7030-1.ch060>; João de Oliveira Neto and S. Kofuji, "Inclusive Smart City: An Exploratory Study," *Lecture Notes in Computer Science*, 9738, ed. Margherita Antona and Constantine Stephanidis, 456–365 (New York: Springer Cham, 2016), https://doi.org/10.1007/978-3-319-40244-4_44; Raquel Perez-Delhoyo, et al., "Improving Urban Accessibility: A Methodology for Urban Dynamics Analysis in Smart, Sustainable and Inclusive Cities", *International Journal of Sustainable Planning* 12, no. 3 (2017): 357-367, <https://doi.org/10.2495/SDP-V12-N3-357-367>; Catia Prandi et al., "On the Need of Trustworthy Pérez Sensing and Crowdsourcing for Urban Accessibility in Smart City," *ACM Trans. Internet Technology* 18, no. 4 (2017), <https://doi.org/10.1145/3133327>; Higinio Mora et al., "A Comprehensive System for Monitoring Urban Accessibility in Smart Cities," *Sensors* 17, no. 8 (2017): 1834–1840, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5579805/>; Yuba Raj Panta et al., "Improving Accessibility for Mobility Impaired People in Smart City using Crowdsourcing," *Cybersecurity and Cyberforensics Conference (CCC)*, Melbourne, 2019, 47–55, <https://doi.org/10.1109/CCC.2019.00-10>; Zulqarnain Rashid et al., "Using Augmented Reality and Internet of Things to Improve Accessibility of People With Motor Disabilities in the Context of Smart Cities," *Future Generation Computer Systems*, 76 (2017): 248–261, <https://doi.org/10.1016/j.future.2016.11.030>.

²²¹ Mora, "A Comprehensive System for Monitoring Urban Accessibility".

model uses GPS (global positioning system) and RFID (radio frequency identification) to establish an individual's location based on receivers such as smartphones and tags. Data on the user's location and disability type is then collected via user input, and KAIs (key accessibility indicators) are established. These include patterns of movement (e.g. if people with disabilities use the same path as people without disabilities), and self-reporting on inaccessible routes and spaces.

This research exemplifies four consistent issues found across the literature that discusses disability in the context of the Smart City: static, limited definitions of access, a lack of definition of disability, minimal critical engagement with the Smart City, and a confluence of citizen as data. Specifically, the Smart City itself is only briefly discussed in this reviewed article. While it is alluded to that a Smart City is not necessarily an accessibility city, stating that “despite the growth of this field, there are still many issues to resolve,”²²² what makes it inaccessible is not discussed. The authors state that accessibility is a right of citizens, an “essential element of life quality”, but what defines citizenship is assumed. Disability is neither defined – it is also not clear what category of disability is addressed in the research – nor examined in the context of the Smart City discourse. Moreover, the monitoring of individual movements and the use of the data is an assumed, depoliticised and rendered as a neutral cooperative if not passive process. Thus, the project is designed to show that citizens are constructed as components, “citizen components,”²²³ identifiable via the user interface of their smartphone.

Indeed, as detailed in Chapters 6, 7 and 8 of this thesis, the smartphone is the primary focus of the analysis of the relationship between disability and the Smart City. While the smartphone is neither confined to the Smart City discourse, nor is the only component in the vast array of ICT that are utilised in Smart City projects and spaces, it is the primary user interface or citizen gateway used to both monitor and

²²² Mora, “A Comprehensive System for Monitoring Urban Accessibility,” 1835.

²²³ Mora, “A Comprehensive System for Monitoring Urban Accessibility,” 1842.

surveil, as well as participate in the city. Moreover, as Chapters 6 and 8 reveal, it is also a site which has now accumulated over a decade of studies into accessibility and thus can contribute a wealth of qualitative and quantitative data on the experiences of disability and smartphone use.

This work, and particularly the findings of the research projects which inform Chapters 6 and 8, aligns with another line of literature on the Smart City which offers an alternative contribution to the “critiques and the celebrations” – the various ways in which new urban technologies are used, negotiated and even subverted by citizens.²²⁴

3.5. Conclusion

This review of the Creative City and Smart City ultimately serves as a critique, an investigation into the way the discourses frame citizens and construct the preferred user of the city. However, this critique is offered with historical awareness and an appreciation that while the lived experiences and policies of the Creative City and the Smart City may perpetuate exclusions and normate urban design, the interest and investment in these paradigms come from genuine points of urban reflexivity, to rethink what the city is. The Creative City and the Smart City are both, at their core, a series of questions and considerations of how the city could and should respond to changing global and local conditions. I take on the words of John Hartely who, in reviewing a presentation I gave, said there would be something lost if we dismissed ideas such as the Creative City because of its flaws and did not recognise the achievements made. In fact, in drawing from the contributions that the Creative City discourse made, particularly in reviewing and reinscribing the meaning of public space, intersections and questions can be raised of the depolitical technological agendas of the Smart City.

²²⁴ Vanolo, “The Image of the Creative City”.

This chapter, and this thesis more broadly, aims to fill a void in literature that analyses consistencies in the way contemporary city discourses frame citizenship and, specifically, the way disability is located inside (or outside) of this frame. This work is important for tracking both the ways in which the normate body is perpetuated, and the ways patterns of exclusion are maintained, albeit in different ways. In doing so, it provides more complex, layered understandings of how these discourses continue to construct simplified and medical interpretations of disability. This chapter thus sets the scene for the critical work in subsequent chapters that examines case studies, as well as qualitative data, regarding the ways in which urban space is experienced by people with disabilities, how the screen increasing works to both construct and mediate these experiences, and the way city discourses frame these experiences.

4. Disability constructions in the Smart City: A narrative prosthesis

4.1. Introduction

Both the Creative City and the Smart City have operated in the last twenty years of urban planning as a utopian other – an alternative, a solution, to varying dystopian impacts on changing city scapes. These discourses of utopian cities, however, require depictions of the ‘unideal’ in order for them to not simply make sense but to reinforce existing knowledges. Finkelstein, the recognised father of the social model of disability,²²⁵ predicted that the ‘third phase’ of society (known as the Information Age) would see the shift in gaze move away from the body and back onto society.²²⁶ However, this thesis investigates how the city discourses of Creative Cities and Smart Cities, the cities of the Information Age, engage with disability whilst simultaneously using the disabled body as a metaphor for the paradigm’s capabilities, that is, to ‘resolve’ urban problems, including disability. It argues that both paradigms continue to rely on traditional discourses of disability and reductionist representations of disability.²²⁷ This chapter identifies a consistent tethering of disability to technology in an analysis of media coverage of the Smart City. However, it also concludes that whilst disability continues to play a prosthetic role in the Smart City discourse, it does so in a way that also presents an opportunity to rethink the way the meanings of urban space are created, how the normate body is imagined, and the form of the delineation between real and digital space.

In contrast, whilst some critical work emerged when the Creative City (and its proponents) were at their height of popularity, and specifically critical work on the

²²⁵ The social model of disability is defined in Chapter 2 of this thesis as an alternative response to the dominant medical model of disability (which focuses on the individual’s functional limitations and impairments, and the requirement for treatment or cure), presenting disability as a social construction.

²²⁶ Vic Finkelstein, *Attitudes and Disabled People* (New York: World Rehabilitation Fund Inc, 1980), 8, <https://disability-studies.leed.ac.uk/wp-content/uploads/sites/40/library/finkelstein-attitudes.pdf>; Katie Ellis and Mike Kent, *Disability and New Media* (New York: Routledge, 2011)

²²⁷ Gerard Goggin and Chris Newell, *Digital Disability* (Maryland: Rowan and Littlefield, 2003), 53.

exclusive nature of this city discourse,²²⁸ people with disabilities were largely unacknowledged and absent from Creative Cities. As articulated in Chapter 3, the Creative City perpetuated a “compulsory able-bodiedness”.²²⁹ As Tom Shakespeare argues, in doing so, this urban discourse maintains an unchallenged and normalised non-disabled identity. One purpose of this chapter, therefore, is to “deconstruct the normality which is to be assumed.”²³⁰ In an earlier publication, Shakespeare also highlights the way the Creative City’s lack of engagement with disability revealed a disjuncture between culture and disability more broadly.²³¹ Snyder and Mitchell might argue, despite their premise that general images of disability abound in history, in this context, in this city, that “disability’s absence proves evidence of a profound cultural repression to escape the reality of biological and cognitive differences”.²³²

More recently the Smart City paradigm has heralded a shift in the visibility of disability in urban planning paradigms. The majority of research and media coverage

²²⁸ For example: Rowland Atkinson and Hazel Easthope, “The Consequences of the Creative Class: The Pursuit of Creativity Strategies in Australia’s Cities,” *International Journal of Urban and Regional Research*, 33, no. 1 (2009): 65–79, <https://doi.org/10.1111/j.1468-2427.2009.00837.x>; Kate Oakley, “Not So Cool Britannia: The Role of the Creative Industries in Economic Development,” *International Journal of Cultural Studies* 7, no. 1 (2004): 67–77, <https://doi.org/10.1177/1367877904040606>; Marion Roberts, “From ‘Creative City’ to ‘No-Go Areas’: The Expansion of the Night-Time Economy in British Town and City Centres,” *Cities* 23, no. 5 (2006): 331–338, <https://doi.org/10.1016/j.cities.2006.05.001>; David Wilson, ed., “Making Creative Cities in the Global West: The New Polarization and Ghettoization in Cleveland, USA, and Glasgow, UK,” in *Inequalities in Creative Cities*, ed. Ulrike Gerhard, Michael Hoelscher and David Wilson (New York: Pgrave Macmillan, 2016).

²²⁹ Robert McRuer, “Compulsory Able-Bodiedness and Queer/Disabled Existence,” in *The Disability Studies Reader*, ed. Lennard Davis, 88–99 (New York: Routledge, 2006).

²³⁰ Tom Shakespeare, “Losing the Plot? Medical and Activist Discourses of Contemporary Genetics and Disability,” *Sociology of Health and Illness* 21, no. 5 (1999): 669–688, <https://doi.org/10.1111/1467-9566.00178>.

²³¹ Tom Shakespeare, “Cultural Representations of Disabled People: Dustbins for Disavowal,” *Disability and Society* 9, no. 3 (1994): 283–299, <https://doi.org/10.1080/09687599466780341>; Katie Ellis and Gerard Goggin, “Disability Media Participation: Opportunities, Obstacles and Politics,” *Media International Australia* 154 (2015): 78–88, <https://doi.org/10.1177/1329878X1515400111>.

²³² David Mitchell and Sharon Snyder, “Narrative Prosthesis,” in *The Disability Studies Reader*, ed. Lennard Davis (New York: Routledge, 2013), 208.

of disability within the paradigm of Smart Cities has focused on the opportunities that smart technology provides in increasing accessibility and inclusivity in urban space,²³³ thus also perpetuating the role of disability as “a crutch upon which literary narratives lean”.²³⁴ This thesis argues that, throughout history, and across urban paradigms, disability has almost always been constructed as a problem in need of a solution, and in the Smart City discourses it has again been evoked to illustrate how Smart Cities can resolve ‘anything’, including the disabled body. This chapter, therefore, queries whether the Smart City’s use of disability as a narrative prosthesis also confines disability to a “medical/body ability deficiency lens”,²³⁵ identifying deficient abilities and then proposing how certain robots/apps/smart tools can ‘fix’ or ‘normalise’ the individual. This chapter analyses the role of disability in this contemporary urban discourse – identifying that “disability is foundational to both cultural definition and the literary narratives that challenge normalising prescriptive ideals”²³⁶ – via a review of media representations of disability in articles on the Smart City. The thesis borrows methodology from Beth Haller and John Clogston to explain how media framing works to construct these representations, and reference the work of Michel Foucault to position media framing as integral to discourse creation.

²³³ Alejandro García Ramirez et al., “Towards Human Smart Cities: Internet Of Things for Sensory Impaired Individuals,” *Computing* 99, no. 1 (2017): 107–126, <https://doi.org/10.1007/s00607-016-0529-2>; Raquel Perez-Delhoyo, et al., “Improving Urban Accessibility: A Methodology for Urban Dynamics Analysis in Smart, Sustainable and Inclusive Cities”, *International Journal of Sustainable Planning* 12, no. 3 (2017): 357–367, <https://doi.org/10.2495/SDP-V12-N3-357-367>; Catia Prandi et al., “On the Need of Trustworthy Pérez Sensing and Crowdsourcing for Urban Accessibility in Smart City,” *ACM Trans. Internet Technology* 18, no. 4 (2017), <https://doi.org/10.1145/3133327>; Higinio Mora et al., “A Comprehensive System for Monitoring Urban Accessibility in Smart Cities,” *Sensors* 17, no. 8 (2017): 1834–1840, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5579805/>.

²³⁴ David Mitchell and Sharon Snyder, *Narrative Prosthesis: Disability and the Dependencies of Discourse* (Michigan: University of Michigan Press, 2000), 225.

²³⁵ Sophya Yumakulov, Dean Yergens and Gregor Wolbring, “Imagery of Disabled People with Social Robotics Research,” in *Social Robotics*, ICSR 2012. Lecture Notes in Computer Science, vol 7621, ed. Shuzhi Sam Ge, et al., 169–177 (Berlin: Springer, 2012), https://doi.org/10.1007/978-3-642-34103-8_17.

²³⁶ Mitchell and Snyder, “Narrative Prosthesis,” 225.

This chapter begins with an outline of the narrative prosthesis, including critiques and alternative discussions, and how it is useful in the analysis of representations of disability in media texts on the Smart City. It then anchors this methodology in two important theories – discourse analysis and media framing – before outlining the parameters of my media representation analysis. The findings of this analysis are lastly discussed.

4.2. The narrative prosthesis

The narrative prosthesis was a concept developed by Sharon Snyder and David Mitchell in the publication *Narrative Prosthesis: Disability and the Dependencies of Discourse* (2000),²³⁷ and in the later *Narrative Prosthesis and the Materiality of Metaphor* in *The Disability Studies Reader* (2006)²³⁸ to explain the way in which disability is used throughout literature – and, as the thesis argues, contemporary media as well – both as a metaphor or narrative shorthand for difference, deviance and deficiency. For example, Mitchell and Snyder use the children’s book *The Steadfast Tin Soldier*, a fairy tale by Hans Christian Anderson, to show how difference is indicated via the presence of disability. When the child in the book receives a gift of tin soldiers, the anomaly, the exception from which the narrative develops, is the presence of one ‘disfigured’ tin soldier in a box of uniform, ‘normal’, soldiers. The representation of the disability of the soldier who is missing a leg thus is the prosthesis of the narrative, “the ‘lack’ calls the story into being”.²³⁹ Disability is thus used for its “representational power, disruptive potentiality and social critique”;²⁴⁰ it is a way in which writers make meaning and evoke tacit knowledge.

David Wills explored the term prosthesis five years earlier, in reflecting on his own father’s leg prosthesis, unpacking the dual operation of this artifice, “prosthesis is the

²³⁷ Mitchell and Snyder, *Narrative Prosthesis: Disability and the Dependencies of Discourse*.

²³⁸ David Mitchell and Sharon Snyder, “Narrative Prosthesis and the Materiality of Metaphor,” in *The Disability Studies Reader*, ed. Lennard Davis, 205-216 (New York: Routledge, 2006).

²³⁹ Mitchell and Snyder, *Narrative Prosthesis and the Materiality of Metaphor*, 210.

²⁴⁰ Mitchell and Snyder, *Narrative Prosthesis*, 17.

idea of that and at the same time the insistence on this instance”.²⁴¹ In doing so, Wills examines the meaning of wholeness, artificial and natural, and the way in which prosthesis also occurs in a “performative mode”.²⁴² This notion of performance – the role that disability plays in text, shifting in and out of the text itself to engage long-established discourses and knowledges – is important in considering why experiences and representations of disability inform one another.

Whilst Mitchell and Snyder focus their analysis on literary texts, and others have applied this framework to art, the thesis argues that an able-bodied normalcy is present in all discourses, including urban paradigms, planning, development and management. An important part of their theory is that the disability prosthesis works to “alleviate discomfort by removing the unsightly from view”.²⁴³ In the context of contemporary city paradigms, and specifically the Smart City, disability is not removed, but resolved. The experience of disability itself is resolvable, able to be alleviated via technology, but, further, performs a metaphorical role in representing any urban problem via ICT; for example, the Smart City claims to provide solutions to many issues, be they economic, environmental, urban design and/or social welfare.

The prosthesis metaphor, however, has another role in the Smart City paradigm, as it can be viewed as the technology which connects the individual, disabled or otherwise, with the city – this technology as prosthesis. This thesis primarily focuses on the role of the smartphone here as the conduit between the citizen and the tech of the Smart City. Richardson also highlights the ways in which mobiles affect the experience of bodies, claiming they are “tools which impact upon our body limits, shifting the variable boundaries of embodiment, and altering our sense of having a body”.²⁴⁴ The notion of the smartphone ‘as prosthesis’ is explored later in this thesis,

²⁴¹ David Wills, *Prosthesis* (Stanford, Calif.: Stanford University Press, 1995), 15.

²⁴² Wills, *Prosthesis*, 11.

²⁴³ Mitchell and Snyder, *Narrative Prosthesis*, 8.

²⁴⁴ Ingrid Richardson, “Pocket Technoscapes: The Bodily Incorporation of Mobile Media,” *Continuum* 21, no. 2 (2007): 207, <https://doi.org/10.1080/10304310701269057>.

but it is important to acknowledge here the multiple ways in which the prosthesis is conjured. As critics such as Sobchack and Jain identify, “prostheses are discursive frameworks”²⁴⁵ and “lived artefacts”²⁴⁶. Their work thus informs my deployment of prosthesis theory and its multiple functions in narratives as a metaphor, as technologies (and, specifically, technologies that intersect with disability), and as a concept at which understandings of disability, bodies and accessibility intersect.

Sobchack highlights the tensions between the prosthetic as a form of literary interpretation, as an object and as a lived-body experience. In particular, she is critical of the “metaphorical displacement of the prosthesis into other contexts (because of its analogical usefulness in pointing out certain vaguely specified structural and functional resemblance between ideas)”²⁴⁷ for, in doing so, the agency of the individual is replaced or trumped by the object. It is precisely this concern that, in the Smart City, the smartphone (as extensions of, tools for, and identifiers of the citizen) and its functions become more important, more valued, than the experiences and uses of the operator, that has propelled this chapter. Tucker refers to this problematic relationship between disability and technology as the technocapitalist disability rhetoric, where agency is attributed to technology rather than the individual.²⁴⁸

The preferencing of technology also inaccurately depoliticises the technological device, framing it as outside of social, economic and political structures from which it is developed and used. As Ellis and Kent identify, exclusion is often exacerbated via technology:

²⁴⁵ Sarah Jain, “The Prosthetic Imagination: Enabling and Disabling the Prosthesis Trope,” *Science, Technology and Human Values* 24, no. 1 (1999): 32.

²⁴⁶ Vivian Sobchack, “A Leg To Stand On: Prosthetics, Metaphor, and Materiality,” in *The Prosthetic Impulse: From A Posthuman Present To A Biocultural Future*, ed. Marquard Smith and Joanne Morra, 17–41 (Cambridge: MIT Press, 2006).

²⁴⁷ Sobchack, “A Leg To Stand On,” 24.

²⁴⁸ Bonnie Tucker, “Technocapitalist Disability Rhetoric: When Technology is Confused With Social Justice,” *Enculturation*, April 26, 2017, <http://enculturation.net/technocapitalist-disability-rhetoric>

*Technology is often presented as an automatic source of liberation; however, developments associated with Web 2.0 show that this is not always the case. The uneven interface of the virtual and the analogue indicate that this inclusion is far from an inevitable consequence of development.*²⁴⁹

It is the contradiction of the prosthesis that Jain likewise unpacks, how technology as prosthesis creates both a deficiency and an antidote to deficiency.²⁵⁰ Jain and Sobchack highlight the issues with the simplification of prosthesis as technology, where technology as an extension of the body does not take into account the social construction of abilities, the way certain bodies are “already dubbed as not fully whole”,²⁵¹ and how the term prosthesis assumes the disabled body need supplementation. The thesis thus employs the term prosthesis not unaware of the limitations of both metaphoric and literal readings (and indeed metonymical and synecdochical approaches),²⁵² instead using the term to offer a critique of both how representations of disability are used as a narrative prosthesis, and how the emphasis on smart tech as a form of prosthesis in the Smart City operates to “displace agency from human to artefact”.²⁵³

The relationship between disability and technology, and the way disability is used in the paradigm of the Smart City – and specifically in media representations of the Smart City – is important in recognising the cyclical way in which language informs discourses of disability. Foucault’s theory of discourse is thus utilised in the following section to explain how disability is used to convey meaning in city discourses.

²⁴⁹ Katie Ellis and Mike Kent, “Community Accessibility: Tweeters Take Responsibility for an Accessible Web 2.0,” *Fast Capitalism* 7, no. 1 (2010), http://www.uta.edu/huma/agger/fastcapitalism/7_1/elliskent71.html.

²⁵⁰ Jain, “The Prosthetic Imagination”.

²⁵¹ Jain, “The Prosthetic Imagination,” 32.

²⁵² Sobchack, “A Leg To Stand On,” 25.

²⁵³ Sobchack, “A Leg To Stand On,” 24.

4.2.1. The role of discourse analysis

Disabled bodies are thus deployed in city paradigms as evidence of their capabilities (to 'resolve' urban problems) whilst also reinforcing specific narratives or ideologies about disability itself.

*The treatment or deployment of 'deviant' or subversive bodies in texts that seek to assert heteronormative ideologies is, in effect, a way in which difference, or the threat of difference, is created so that normalcy can then be enforced or enacted.*²⁵⁴

This process can be understood by applying Michele Foucault's "rules of discourse".²⁵⁵ Discourse is understood as the continual interaction between language and practice. Terdiman defines discourses as:

*The complexes of signs and practices which organise social existence and social reproduction. In their structured material persistence, discourses are what give differential substance to membership in a social group or class or formation, which mediate an internal sense of belonging, an outward sense of otherness.*²⁵⁶

Foucault was important to disability studies in many ways, defining the body as a politicised space,²⁵⁷ and most pertinently to the way in which he questioned ideas of what is natural, normal and inevitable.²⁵⁸ His theory of discourse is pertinent to understanding how the language of a topic is generated via a relationship between the language and its practice.²⁵⁹ Foucault also argues that discourses are social – the words used, and their meanings, depend on where, when, who and how a concept is talked about. Foucault emphasised not simply the work of dominant discourses, but how they come into being – the formation of a discourse requires an active process

²⁵⁴ Shelley Tremain, "On the Subject of Impairment," in *Disability/Postmodernity: Embodying Disability Theory*, ed. Marian Corker and Tom Shakespeare (London: Continuum, 2002), 32.

²⁵⁵ Michel Foucault, "Orders of Discourse," *Social Science Information* 10, no. 7 (1971): 7-30; Stuart Hall (ed), *Representation: Cultural Representation and Signifying Practices* (London: Sage, 1997); Paul Rainbow (ed), *The Foucault Reader* (London: Penguin, 1991).

²⁵⁶ Richard Terdiman, *Discourse/Counter-Discourse* (Ithica: Cornell University Press, 1985), 54.

²⁵⁷ For examples, see Margrit Shildrick and Janet Price, "Breaking the Boundaries of the Body," *Body and Society* 2, no. 4 (1996): 93-113; Shelley Tremain, "On the Government of Disability," *Social Theory and Practice* 27, no. 4 (2001): 617-636; Shelley Tremain (ed.) *Foucault and the Government of Disability* (Ann Arbor: University of Michigan Press, 2005).

²⁵⁸ Tremain, *Foucault and the Government of Disability*.

²⁵⁹ Terdiman, *Discourse/Counter-Discourse*.

in which institutions put into play a concept, an idea.²⁶⁰ In Fairclough's reading of Foucault he stresses that discourse is shaped by a "recursive rather than unidirectional relationship between language and power".²⁶¹ He argues that discourses operate along historical and horizontal lineages – they are informed by other discourses, past and present. They are not formulated on eternal truth, but from other knowledges produced by other discursive formations. As Fairclough identifies, the formation of a discourse is not something that just happens; it involves institutions and actors putting into play a specific concept or idea:

*The essential insight in respect of the formation of objects is that the 'objects' of discourse are constituted and transformed in discourse according to the rules of some particular discursive formation, rather than existing independently and simply being referred to or talked about in a particular discourse.*²⁶²

An important part of this formation is the role of the institution, specifically media institutions, in the construction of discourse. This is significant to how and where the discourse is generated and popularised. In the same way that discourses are social, they are also historical. The historical location of disability is considered in relation to the way it is now conceptualised in the Smart City. This chapter therefore questions how seemingly new discourses borrow from old discourses in order for the former to achieve relevance and meaning. As Stuart Hall clarifies, knowledge gets "put to work, through certain technologies and strategies of application, in specific situations, historical contexts and historical regimes".²⁶³ Lastly, this chapter is concerned with how discourse excludes and, specifically, how it concerns itself with certain objects and privileges certain concepts at the expense of others. As McHoul and Grace explain, this function of discourse is used for both ruling in and ruling out ways of

²⁶⁰ Norman Fairclough, *Discourse and Social Change* (Cambridge: Polity Press, 1992).

²⁶¹ Fairclough, *Discourse and Social Change*.

²⁶² Fairclough, *Discourse and Social Change*, 41.

²⁶³ Stuart Hall (ed.), "The Work of Representation," in *Representation: Cultural Representation and Signifying Practices* (London: Sage, 1997), 49.

talking about a certain concept.²⁶⁴ Indeed, exclusion is overt in the Creative City – discursively, disability is omitted from media and policy. In the Smart City, disability is again framed as an excluded group, but in this recent city paradigm technology is presented as a resolution to this exclusion and the prosthesis which ‘permits’ people with disabilities into the utopian city.

4.2.2. The role of media framing

The representation of technology in this way – as a cure or remedy for experiences of disability – is not new, though, as Goggin and Newell argue, changes to telecommunications, as well as the convergence of media and digital technologies, have exaggerated “the constitution of the technology as liberatory for its projected users”:

People with disabilities are often valorized as a special case in point: technological solutions are held out for their potential to abolish or ameliorate the disability that is seen to lie within the individual. That the social and discursive shaping of technologies proceed via a promissory note that they will confer unalloyed benefits upon people with disabilities reveals a fundamentally flawed approach to disability.²⁶⁵

The most pertinent location for this representation can be found in news media. This location, as opposed to, for example, government policy documents or white papers, provides a publicly accessible narrative and source of representations which in turn generates a “circuit of culture”, of encoding and decoding meaning, within the framings offered by the media.²⁶⁶ As the analysis of media representations of disability and the Smart City found, the framing of disability is not simply encoded with meaning around disability, but also with specific ways of talking about new technology. This pairing works to reinforce the traditional discourses of disability.

²⁶⁴ Alex McHoul and Wendy Grace, *A Foucault Primer: Discourse, Power and the Subject* (Carlton: Melbourne University Press, 1993), 38.

²⁶⁵ Gerard Goggin and Christopher Newell, “Foucault on the Phone”, in *Foucault and the Government of Disability*, ed. by Shelley Tremain (University of Michigan Press, 2006), 263.

²⁶⁶ Paul du Gay et al. *Doing Cultural Studies: The Story of the Sony Walkman* (London: Sage, 1997).

The argument that technology ‘resolves’ disability is also considered by Haller et al.²⁶⁷ in an analysis of US and Canadian print media that discuss people with disabilities (specifically communication disabilities) and new technology (specifically, “Apple products, as well as other new tablet and smartphone technology, being used as communication devices”) between 2007 and 2012.²⁶⁸ Haller et al. identifies that while new technology is positioned as ‘changing’ the experience of disability, the stories themselves repeat old tropes and stereotypes, relying on entrenched, old media frames. This perspective is reiterated by scholars such as Bonnie Tucker²⁶⁹ who, in a similar analysis of Microsoft advertisements, argues that ableism is reinforced when technology is prioritised and valorised for its capacity to increase accessibility, whilst also representing disability as something to be fixed.

Haller et al.’s articulation of the way in which disability is framed in news stories about new technology derives from a legacy of framing theory whereby specific expectations are made (and read) “based on prior experience, against which new experiences are measured and interpreted”.²⁷⁰ Frames are socially and culturally constructed, yet are taken for granted as normal or natural, both in the construction of a news text and in the way they are read by the audience. In 1990 John Clogston argued, after an analysis of 363 news sources across 16 newspapers, that specific media frames were consistently used to represent disability.²⁷¹ He found that two key frames or models are used – a progressive model that is focused on disability as

²⁶⁷ Beth Haller et al., “iTechnology as Cure or iTechnology as Empowerment: What do North Americans News Media Report?” *Disability Studies Quarterly* 36, no. 1 (2016), <https://doi.org/10.18061/dsq.v36i1.3857>.

²⁶⁸ Whilst significant technological changes, and dialogues around these changes, have occurred in the last seven years, this study remains relevant in representing a ‘turning point’ in new technology and media discourse.

²⁶⁹ Tucker, “Technocapitalist Disability Rhetoric”.

²⁷⁰ Haller et al., “iTechnology as Cure”, citing Mary-Pat O’Malley (“Falling Between Frames: Institutional Discourse and Disability in Radio,” *Journal of Pragmatics* 41 (2009): 346-356)

²⁷¹ John Clogston, “Reporters’ attitudes toward and newspaper coverage of persons with disabilities,” unpublished doctoral dissertation (Michigan State University, 1991); John Clogston, “Disability Coverage in American Newspapers,” in *The Disabled, the Media and the Information Age*, ed. Jack Nelson (Westport: Greenwood Press, 1994), 45–53.

being located in society (a person is disabled by inaccessibility, for example), versus a traditional perspective which views disability as an individual dysfunction. In a progressive model people with disabilities are characterised as being disabled by the physical, social or occupational environment and the attitudes within it. In a traditional model, people with disabilities are represented as limited, less capable, deviant, or even less human. These frames are further delineated into five sub categories – two progressive (a minority/civil rights model and a cultural pluralism model) and three traditional (a social pathology or economic model, a medical model and a supercrip model) – and are analysed in conjunction with reporters' attitudes and experiences.

Haller, building on the work of Clogston,²⁷² identified a further three types of frames – the business model, the legal model and the consumer model (the first of which was identified as a 'traditional' representation and the latter two 'progressive' – therefore identifying a total of eight specific models that are utilised in the representation of disability.²⁷³ Haller argued that the introduction of significant legislation in the US (namely the ADA) had “shifted the disability paradigm,” acknowledging the full citizenship rights of people with disabilities, and subsequently affected the way media represented disability.²⁷⁴ Specifically, the expansion of models came from an analysis of news coverage of the ADA. As Haller notes, these models should be revisited and adapted over time to reflect the changing status of the disability community.²⁷⁵

²⁷² Clogston “Reporters’ attitudes”; John Clogston, *Disability Coverage in 16 Newspapers* (Louisville: Advocado Press, 1990); John Clogston. “A Theoretical Framework for Studying Media Portrayal of Persons With Disabilities,” (paper presented at the Annual Meeting of the Association for the Education in Journalism and Mass Communication, Washington, D.C, August 1989).

²⁷³ Beth Haller, “Rethinking Models of Media Representation of Disability,” *Disability Studies Quarterly* 15, no. 2 (1995); Beth Haller, *Representing Disability in an Ableist World: Essays on Mass Media* (Louisville, KY: Advocado Press, 2010).

²⁷⁴ Haller, “Rethinking Models of Media Representation of Disability,” 27.

²⁷⁵ Haller, “Rethinking Models of Media Representation of Disability”, 28.

Of the traditional representations of disability Clogston identified, the social pathology model is defined as framing people with disabilities as charity cases, requiring support via the state, and from society more broadly. Of note, this support is framed as a gift rather than a civil right. For example, Clogston explains how an article titled “Coma-victim’s husband starts head-injury fund” positions the individual with a disability as requiring donations, and as a passive victim, reliant on financial support and charity. The medical model also represents disability as illness, but in this frame the focus is on the individual’s dependency on health professionals, and here the physical aspects of the disability are central to the article. In these representations there is often a consistent narrative around ‘finding a cure’ or resolving the disability. Finally, the ‘supercrip’ model, where a person with disability/ies has overcome their impairment, is often used in conjunction with sporting coverage. Here the individual is still defined by the physical characteristics of their disability, but the focus shifts to their ability to overcome these physical ‘abnormalities’. For example, people with disabilities are applauded for their capacity to either ‘live a normal life’ despite their ailment, or for ‘superhuman’ feats such as participating in high-level sport. The business model (added by Haller as another, modern form of traditional media representations of disability) focuses on the cost of disability to society or businesses. The cost of accessibility, for example, is represented as excessive or victimising business owners. Haller cited that, at the time of the release of the ADA, articles commonly framed the legal requirements of the Act as being detrimental to business. For example, she cites new headlines such as “Disabilities Act closing popular meeting room”, and “Suburbs face challenge, costs of satisfying Disabilities Act”.²⁷⁶

In contrast, progressive models re-orientate the focus of articles away from the individual and back on to society. The minority/civil rights model represents people with disabilities as a specific community seeking civil rights. Here people with

²⁷⁶ Haller, “Rethinking Models of Media Representation of Disability”, 27.

disabilities are framed as legitimately seeking equality and political change, and there is a focus on activism and advocacy. The legal model (another representation Haller added to Clogston's progressive models) is typically deployed in news articles where disability rights are being fought in court but, in contrast to the minority/civil rights model, the representations tend to focus on individual legal cases. The consumer model positions people with disabilities as a new consumer group; this is the opposite to the business model. People with disabilities in these news stories are often heralded as a new or untapped consumer group, whereby increasing access in society is an economically beneficial strategy. In this model a common rationale presented is that increasing access will allow people with disabilities to gain employment, thus generate their own income and be less dependent on government services and pensions. Lastly, the cultural pluralism model is perceived to be in place when people with disabilities are represented no differently to non-disabled people. Haller et al. found that, in their analysis of 'iTechnology' and disability news, the most prevalent themes²⁷⁷ relied on the frames of the supercrip and the social pathology model. They also noted that disability was refined and represented via specific types, in this instance, children with autism. Lastly, and pertinently for this thesis, the technology, rather than the individual, was emphasised:

*The news media tended to give credit to the technology as enabling people to communicate rather than credit being given to people with disabilities who make the technology work.*²⁷⁸

This theme persistently carries through the news articles analysed in this chapter. Employing Haller et al.'s methodology, a qualitative analysis of news articles about Smart Cities and disability was undertaken. The stories were evaluated for themes

²⁷⁷ Theme 5. iTechnology is portrayed as allowing the person to "overcome" the disability or an aspect of the disability (57 stories); Theme 13. iTechnology is presented as replacing previous forms/attempts at communication (30 stories); Theme 15. People with disabilities are presented as needing separate services/education/programs rather than being included in the programs in which everyone participates (27 stories).

²⁷⁸ Haller et al., "iTechnology as Cure".

(using the eight frames of disability presented in their research), disabilities (which disabilities are mentioned), the role of technology, and the representation of the Smart City. The aim here is not just to analyse representations of disability within this urban paradigm, but to also develop an understanding of how the relationship between the representations of disability, technology and the city intersect to inform narratives of modern citizenship.

4.3. An analysis of news articles: disability in the Smart City

In an attempt to capture how media representations of disability work to reinforce old discourses within 'new' Smart City paradigms, I examined the first 30 news articles which were returned through a refined Google search of news articles containing the term 'smart city*' and 'disability*' (see Appendix 1). The parameters included the most relevant news articles between January 2014 and December 2019, and excluded articles that did not specifically discuss disability within the context of Smart Cities. The resulting articles came from a range of news outlets, from formal online news corporations such as *The Age*, online only newspapers and online newsletters, and from varying countries.

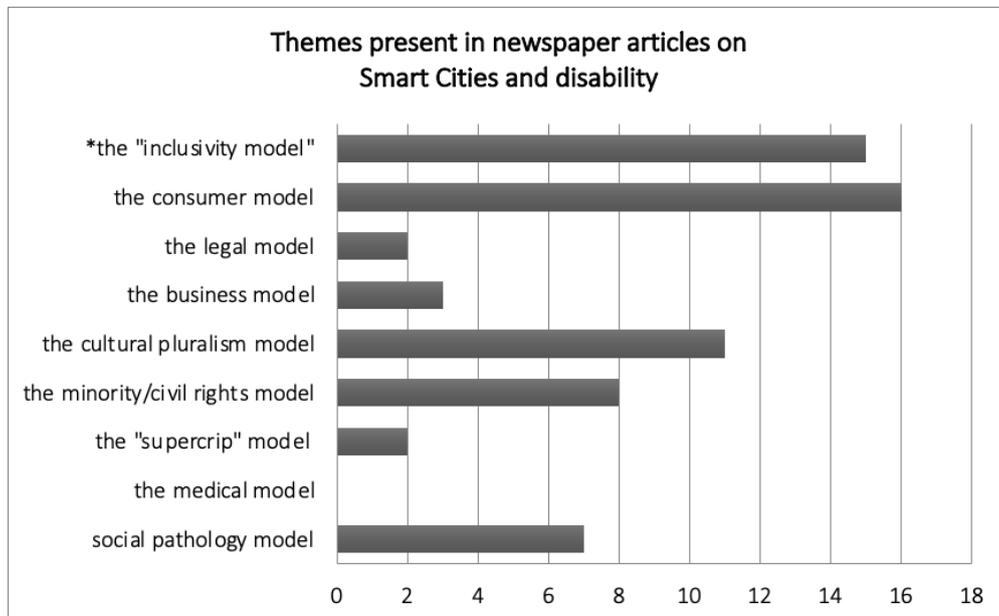


Figure 1. Themes present in newspaper articles on Smart Cities and disability

While there was a diverse range of the aforementioned models used in the news coverage (Figure 1), a point which is explored later in this section, the consistent tethering of disability to technology, and specifically the representation of technology as the remedy to disability, was the most significant outcome of this textual analysis. However, the way in which this connection was created varied – in two articles the supercrip model was evoked via technology, e.g. the person with a disability was able to ‘overcome’ their disabilities via smart tech. In the CNN article “The tech empowering disabled people in cities”, for example, technology – from wheelchairs that climb stairs to smart walking sticks – is positioned as alleviating or resolving disability. Specifically, the physical impairment, not the environment in which it is located, is the ‘problem’ which requires the tech solution. Also noteworthy in this article is that in two of the three images used, the people with a disability are wearing athletic clothing and partaking in sport such as a marathon. These athleticised representations also work to frame the article and mobilise the supercrip theme.²⁷⁹

In 27% of articles there was a clear demarcation of people with disabilities as a group which had the right to be included in society, thus the minority/civil rights model was utilised. In a *Forbes* article reviewing the Milton Keynes Smart City project,²⁸⁰ people with disabilities are only briefly mentioned as a special interest group which should be consulted and engaged with in order to ensure disability rights. However, in most other articles, people with disabilities were not framed as a minority group. Instead, the (growing) size and significance of this group was often highlighted, with multiple articles noting it was only getting bigger with an ageing population. Likewise, the

²⁷⁹ Ed Scott-Clark and Nell Lewis, “The Tech Empowering Disabled People in Cities,” *CNN*, May 31, 2019, <https://edition.cnn.com/2019/05/29/business/disability-technology-transport/index.html>.

²⁸⁰ Bernard Marr, “The Smart City of Milton Keynes: Using Sensors and Big Data to Improve Public Services,” *Forbes*, June 18, 2015, <https://www.forbes.com/sites/bernardmarr/2015/06/18/the-smart-city-of-milton-keynes-using-sensors-and-big-data-to-improve-public-services/#29cd21f528e1>.

elderly were often conflated with disability, as requiring similar accessibility requirements. For example, in *The Hindu* article “Digital push must be disability-inclusive”,²⁸¹ the author not only references the size of the disabled population (10% of India), but also the size of the aged population (a further 10%), establishing from the beginning of the article that the accessibility of ICT is required for both, associated groups. This is a pertinent point as it also demonstrates a shifting representation of disability beyond static medical definitions and instead as a more normalised life phase, and part of everyday life.

The majority of articles, however, framed people with disabilities as a consumer group (of smart technology), and that “making society accessible could be profitable to businesses and society in general”.²⁸² This profitability was expressed in multiple ways. In the *Financial Times* and the *Hindu Business Line*²⁸³ both the business and the consumer model were considered, cited as “the balance of costs and benefits of making infrastructure more accessible”.²⁸⁴ In the *InDaily* newspaper article “New ‘smart’ tram and bus stops to be installed around Adelaide” expenditure on accessible transport was justified as it would “mean they [people with disability/ies] will also be more easily connected to social, cultural and economic aspects of the community”.²⁸⁵ Lastly, the Smart Cities Dive website, in an interview with the Blind

²⁸¹ Javed Abidid, “Digital Push Must be Disability-Inclusive,” *The Hindu*, April 3, 2017, <https://www.thehindu.com/opinion/op-ed/digital-push-must-be-disability-inclusive/article17763248.ece>.

²⁸² Haller, “Rethinking Models of Media Representation of Disability”.

²⁸³ The Hindu Business Line, “Disabled people not to be left behind”, January 11, 2018, <https://www.thehindubusinessline.com/economy/disabled-people-not-to-be-left-behind-in-smart-cities/article9794091.ece>.

²⁸⁴ Robert Wright, “Rethinking Cities to Include Disabled People”, *The Financial Times*, June 5, 2019, <https://www.ft.com/content/e6625bda-5d33-11e9-840c-530737425559>.

²⁸⁵ Bension Slebert, “New Smart Tram and Bus Stops to be Installed Around Adelaide,” *InDaily*, March 29, 2019, <https://indaily.com.au/news/local/2019/03/29/new-smart-tram-and-bus-stops-to-be-installed-around-adelaide/>.

Institute of Technology founder Mike Hess, framed people with disabilities as both an untapped employment and a consumer group.²⁸⁶

Yet, despite the consistencies in representations of disability analysed in the media, it is also recognised that discourses are not static nor fixed, but rather:

*Complex and unstable processes whereby discourse can be both an instrument and an effect of power, but also a hindrance, a stumbling block, a point of resistance and a starting point for an opposing strategy.*²⁸⁷

Thus the way in which disability is evoked and represented in the Smart City, both in news media, policy and corporate contexts, has also been responsive to critiques. This can be seen overtly in the coverage of the *Smart Cities 4 All Toolkit* in seven of the thirty articles. The toolkit, designed by consulting group World Enabled and advocacy initiative The Global Initiative for Inclusive Information and Communication Technologies (financially supported by Microsoft), was constructed (and framed in media coverage) as a response to the ‘threat’ of increased digital divides occurring in Smart Cities for people with disabilities. It emphasises accessibility and inclusivity (via a “a step-by-step checklist of impactful actions”)²⁸⁸ in the development of Smart Cities and projects. The presence of this toolkit, and the subsequent media coverage of it, performs an important intersection in what Clogston articulated as traditional frames of disability, through challenging assumptions that Smart Cities are inclusive and accessible and increasing an awareness of the importance of ICT accessibility, the focus of the toolkit. However, as discussed in the introduction to this thesis and reiterated in subsequent chapters, accessibility checklists and toolkits often simplify access, stripping it of its relational aspect, instead offering it as an end goal. Moreover, the *Smart Cities 4 All Toolkit* locates access in design and in smart

²⁸⁶ Jason Plautz, “Can Smart Cities Work for the Visually Impaired?” *Smart Cities Dive*, September 26, 2018, <https://www.smartcitiesdive.com/news/can-smart-cities-work-for-the-visually-impaired/533188/>.

²⁸⁷ Michel Foucault, *The History of Sexuality: An Introduction*, vol. 1 (New York: Vintage Books, 1990), 101.

²⁸⁸ https://smartcities4all.org/SC4A_Toolkit_Overview_XT.php

technology, again separating it from the social, cultural and historical constructions of disability.

Indeed, critical intersections in dominant discourses do not reverse pervasive ways of talking about disability, yet it was evident in the analysis of representations of disability in the Smart City that “a point of resistance” had emerged, and a broader understanding of non-normative bodies – particularly in relation to smart technology – had begun. In comparison to the results of both Haller et al.’s 2016 and Clogston’s 1990 analyses of representations of disability, my analysis found both a broader representation of types of disability, and the emergence of a potentially new or alternative model. Noting in my analysis that the articles often did not clearly align with any one of Haller’s eight models of disability representation, and that most articles instead evoked different themes at different points, I looked for other consistencies instead amongst the results. Pertinently, the theme of inclusivity emerged as a consistent one – over half of all articles framed disability as an issue of inclusivity.

This inclusivity model, this chapter proposes, is distinct to the other eight models in Haller’s analysis for two reasons. Firstly, it presents disability as neither distinctively the product of society nor as solely a medical condition, prioritising instead experiences of disability. This perspective aligns with Tobin Siebers’ theory of complex embodiment²⁸⁹ in which he highlights the variety and differing of experiences of disability. Siebers argues that disability will contribute to social experience, and yet social experiences and structures help to construct disability.²⁹⁰ Secondly, this model places access (that is, inclusivity is achieved via access) at the forefront of the narrative. This narrative emphasises that people with disabilities are often excluded from society as the result of inaccessibility of services, ICT and the built environment. This model is therefore an important ‘point of resistance’ for

²⁸⁹ Complex embodiment is discussed in detail in Chapter 2 of this thesis.

²⁹⁰ Tobin Siebers, *Disability Theory* (Ann Arbor: University of Michigan Press, 2008).

disability policy and specifically design and city management policy, as it opens a discussion of what defines accessibility and how (and if) this achieves inclusivity.

As noted, in contrast to Haller’s analysis, my representations of types of disability were broad – vision loss and mobility-based disabilities (including people who used a wheelchair) were the more common representations appearing in 46% and 43% of articles respectively, and hearing loss was mentioned in 13%. Cognitive disabilities were mentioned in 23% of the articles analysed, and the same percentage of articles also mentioned ageing or the elderly as examples of disability. In 10% of articles no specific disability was mentioned and, interestingly, not speaking the local language, race, poverty and illiteracy were all discussed as factors which may be disabling. In contrast, Haller et al. found that the majority of articles she analysed represented disability in a limited and narrow way (in this instance, children with autism using iTechnology for educational purposes),²⁹¹ neglecting a broader representation of the disabled population.

In line with Clogston’s findings, representations of disability were more likely to be pluralist if the author experienced disability, or if the person they interviewed did. While Clogston’s research focused on whether a journalist’s co-worker had a disability, as opposed to whether they did themselves, these research parameters may be more reflective of the lack of reporters with disabilities in his study, and perhaps the lack of reporters with disabilities in total thirty years ago. In this chapter’s findings almost 30% of articles were either written by a person with a disability (self-disclosed in-text) or included an interview with someone who identified as having a disability. This suggests that Clogston’s final suggestion – for news outlets to hire more people with disabilities “whose stories are being told

²⁹¹ Haller et al., “iTechnology as Cure”

inadequately”, made off the back of the Kerner commission advice in 1965²⁹² – may have finally begun to be realised.

Overall, the findings of this media analysis suggest there is a clear continuation (or conflation) of technology as enabling, as ‘resolving disability’, and facilitating inclusion, mirroring Haller’s earlier findings. This aligns with Tucker’s analysis of the discursively influential role of tech companies in the Smart City as “discourse on technology and disability is framed by tech companies rather than disabled activists... suggest[ing] that well-designed, accessible technologies provided by corporations are *the solution* to disability”.²⁹³ While the articles themselves often appeared to show pluralistic representations of disability, the consistent theme and focus on technology as enabling also concurrently reduced representations back to traditional, medical models, whereby disability was still a fault or deviance that needed resolving. Yet the dual, almost paradoxical nature of these representations may allude to a point of resistance, or a starting point for an opposing strategy for which a different discourse of disability, specifically in Smart Cities, may be developing. As Cardullo and Kitchen summarised, Smart City initiatives are responding to critiques of being overly technocratic and, as a result, a more citizen-centric approach, including a dialogue of inclusivity, is being promoted.²⁹⁴ Likewise, Cowley, Joss and Dayot²⁹⁵ argue the Smart City has entered a new, second phase whereby policies have become (at least on paper) citizen-focused and people-centred. In their research the authors conclude that a more long-term analysis and

²⁹² Clogston, “Disability Coverage in American Newspapers,” 51, citing the National Advisory Commission on Civil Disorders (1968)

²⁹³ Bonnie Tucker, “Technocapitalist Disability Rhetoric: When Technology is Confused with Social Justice,” *Enculturation* April 26, 2017, <http://enculturation.net/technocapitalist-disability-rhetoric>.

²⁹⁴ Paolo Cardullo and Rob Kitchen, “Being a Citizen in the Smart City: Up and Down the Scaffold of Smart Citizen Participation in Dublin, Ireland,” *GeoJournal* 84 (2019): 1-13, <https://doi.org/10.1007/s10708-018-9845-8>.

²⁹⁵ Robert Cowley, Simon Joss and Youri Dayot, “The Smart City and its Publics: Insights From Across Six UK Cities,” *Urban Research and Practice* 11, no. 1 (2018): 53-77, <https://doi.org/10.1080/17535069.2017.1293150>.

application of the paradigm is required to determine whether Smart City practices will foster an evolved notion of “publicness”. They argue dominant socio-political institutions and economic actors and associated discourses remain as the structures in which Smart Cities are enacted, thus change is “incremental at best”. However, they also contend that there is space and opportunities within this paradigm in which public ownership, civic engagement, and the enabling of political participation through Smart City technology can form “the distinctive spatialities of the ‘smart public’”.²⁹⁶ Indeed, the prosthetic nature of the smart technology for people with disabilities, as discussed in Chapter 6, establishes both practical and discursive conduits for inaccessible city spaces, *if* access is critically considered. There lies an opportunity here, therefore, in the ways in which disability is reintroduced or visualised through technology to, in turn, rework or re-examine the relationship between disability, space, citizenship and technology.

4.4. Conclusion

While the findings from the media analysis of news articles on disability and Smart Cities found a consistent tethering of technology to disability, evoking the technology as prosthesis, the diversity of ways in which this connection was represented and the multiplicity of the models of disability that were utilised did not demonstrate a simplistic reversion to a medical model of disability. Instead, a more complex representation of disability emerges, one which reflects both the discursive and literal interpretations of technology as prosthesis. Further, as some theorists suggest, this may illustrate ways in which the discourse of the Smart City is responding to critical understandings of both publicness and disability.

The term prosthesis has a significant function in the Smart City as we enter a moment of city paradigms which constructs, performs and represents citizens via the medium of new technology. Thus, subsequent chapters of this thesis evoke the term prosthesis in another way, beyond the theory of the narrative prosthesis. As argued

²⁹⁶ Cowley, Joss and Dayot, “The Smart City and its Publics,” 72.

in Chapter 6, the smartphone becomes a conduit, or prosthesis, between the citizen and the city – allowing interaction, identification and validation in the city that monitors and provides access to those that have the technology that ‘speaks to’ the city’s technology. As such, this chapter returns to the concept of prosthesis in Chapter 6 to explain the role of the smartphone as “augmentations of our sensorium”²⁹⁷ and as devices which shift the relationship between body and the environment, and between actual and digital space. Campbell alludes to this recreation of citizens in a time of a “new kind of human subjectivity – intersubjectivity if you like – technological humans”.²⁹⁸ Indeed, the conflation of technology and humanness shifts the way we think about the boundaries of all bodies, disabled or otherwise, and about human ontologies. Though Sobchack and Janis warn of the reductionist tendencies when conflating technology (as prosthesis) and disability,²⁹⁹ there is also a discursive opportunity here to move away from both simplistic views of new, smart technology as either good or bad, and the notion of the disabled body as something that could be curable, that is via technology. Instead, the Smart City’s emphasis on the technological citizen might, as Shakespeare suggests, “let us deconstruct the normality-which-is-to-be assumed”.³⁰⁰ Indeed, the shifting visibility of disability in popular urban discourse itself suggests a destabilising of an understanding of the normate citizen.

The following chapter tracks the shifting ways that urban discourses have defined and framed disability, not just through media representations, but through the manifestation of the discourses in urban projects. Specifically, in the analysis of the ways that urban screens – an artifact of Creative City reimagining and regeneration strategies and a way in which performances of the civic were framed – are envisaged

²⁹⁷ Richardson, “Pocket Technoscapes,” 207.

²⁹⁸ Fiona Kumari Campbell, *Contours of Ableism* (Basingstoke: Palgrave, 2009), 45.

²⁹⁹ Sobchack. “A Leg To Stand On,”; Jain, “The Prosthetic Imagination”.

³⁰⁰ Tom Shakespeare, “Losing the Plot? Medical and Activist Discourses of Contemporary Genetics and Disability,” *Sociology of Health and Illness* 21, no. 5 (1999): 669–688, <https://doi.org/10.1111/1467-9566.00178>.

in urban space, and the ways in which their accessibility is defined, allows for an understanding of how the preferred user and normate citizen is constructed.

5. The urban screen

5.1. Introduction

Disability and screens, or digital media, have recently become a well researched topic, especially since the proliferation of the personal mobile screen, the smartphone.³⁰¹ The accessibility, usability and potentials of these mobile screens have been explored from multiple disciplines and fields (as detailed in the following Chapter 6). Yet, in the research that addresses disability and urban screens, the screen remains configured as a personal or individual device, located outside of conceptualisations of public space. In contrast, the role of the public screens in urban space has been significant in affecting the meaning of space – from the “technological sublime”,³⁰² to the commercialisation of public space, to the framing of a public square, and as a site for civic participation and cultural production. This chapter argues that the urban screen works to both define who is considered as a participant in and of public space, and the ways in which disability is constructed and experienced.

To date, the urban screen has been overlooked in studies of disability. As such, this chapter explores the idea that the ‘fixed’, public urban screen can also work to construct understandings of disability, the citizen and of accessibility. Indeed, Erkki Huhtamo argues that urban screens have not simply been overlooked in disability studies, but more generally in academia, but for similar reasons – the urban screen sits outside of dominant interior or private screen discourse:

³⁰¹ See for example, see Faye Ginsburg, “Disability in the Digital Age,” in *Digital Anthropology*, ed. Heather Horst and D. Miller, 101–126 (London: Berg, 2012); Gerard Goggin, “Disability and Haptic Mobile Media,” *New Media and Society* 19, no. 10 (2012): 1563–1580, <https://doi.org/10.1177/1461444817717512>; Gerard Goggin and Chris Newell, *Digital Disability*, (Maryland: Rowan and Littlefield, 2003); Katie Ellis, *Disability and Digital Cultures* (New York: Routledge, 2019); Katie Ellis and Gerard Goggin, “Disability, Locative Media, and Complex Ubiquity,” *Ubiquitous Computing, Complexity and Culture*, ed. Jay David Bolter et al., 272–287 (New York: Routledge, 2016).

³⁰² “The key role in the constitution of Utopia [is] reinscribed to new technology.” See David Morely, *Media Modernity and Technology* (Milton Park: Routledge, 2006), 235.

Public screens remain peripheral when it comes to media scholarship. Cinema and television studies, as well as ‘new media’ research, have largely ignored them. Most scholars of audiovisuality seem prone to look toward segregated and ‘interiorised’ (both psychologically and physically) experiences.³⁰³

This framing of screens as occurring within the personal/private realm runs parallel with the trajectory of research on disability and screens as, despite a focus on accessibility (or lack thereof), an individualised (rather than social) view of screens remains.³⁰⁴ For example, the screen is typically framed as rehabilitative³⁰⁵ or prosthetic.³⁰⁶

This chapter revisits the role of the urban screen, in part as a seminal feature of Creative City designs, where cultural and media space entwine and activate physical space. However, the diminishing influence of the large urban screen, especially in emerging Smart City discourse, is also pertinent to this chapter. As such, the thesis tracks the urban screen’s emergence, from a purely commercial artefact, to a marker of public culture and civic or community engagement, to its re-individualisation and invisibility in the Smart City. This chapter is therefore concerned with how these screens – as frames for how the city is experienced and citizenship is constructed – intersect with citizens with disabilities. In reviewing the evolution of urban screens, this chapter allows for an analysis of the way in which the understandings of citizenship and public space is mediated via the screen, specifically in terms of urban accessibility.

³⁰³ Erkki Huhtamo, “Messages on the Wall,” in *Urban Screens Reader*, ed. Scott McGuire, Meredith Martin and Sabine Niederer (Amsterdam: Institute of Network Cultures, 2009), 15.

³⁰⁴ The distinction to this norm is studies of television and disability (see Katie Ellis, *Disability and Digital Television Cultures: Representation, Access and Reception* (New York: Routledge, 2019)). However, I emphasise that the television screen, operating in the private realm, is distinct from urban screens (both large, fixed public screens, interactive screens and mobile screens) in the relationship with disability.

³⁰⁵ See Chapter 7, “gaming and disability literature that emphasises a ‘habilitation frame’”.

³⁰⁶ See Chapter 6, “as devices which shift the relationship between body and the environment, and between actual and digital space”.

The chapter begins with one of the first and certainly the most infamous urban screen sites, New York's Times Square, which provides a historical perspective on the role, function and evolution of the urban screen. From this notoriously commercial urban screen(s), it moves to a discussion of large public urban screens in Australia, highlighting two examples where the screen played a role in Creative City-based planning and public space construction – Perth's Northbridge Piazza and Melbourne's Federation (Fed) Square. In this review the accessibility of the screen is established, again highlighting the public/private tension of disability, and reviewing the role of closed captions and audio descriptions. Lastly, the chapter considers the way in which the urban screen is both reduced and reconstructed in the Smart City using the example of the Starling Crossing as a focal point.

Not only does this chapter examine different screens, it also examines their role from different perspectives and disciplinary approaches. This allows for an understanding of how urban screens – as architectural fixtures and part of the built city environment; as cultural artifacts and features of the Creative City's (and other new city paradigms) planning components; and as forms for civic engagement and facilitation – can affect experiences of disability in multiple ways. Furthermore, it mirrors the overall argument of the thesis that experiences of disability, and accessibility, should be approached from a multidisciplinary position, allowing for a critical understanding of access-knowing.

5.2. Defining the fixed urban screen as a marker of cultural citizenship

Urban screens include “screens of various scale – from the small handheld screens of mobile phones to the large screens dominating the streetscapes of global cities”.³⁰⁷ However, this chapter is concerned with the latter, and specifically with fixed, large screens positioned in central public places, squares or civic centres; later chapters in this thesis detail the role of the smartphone in the configuration of disability. While

³⁰⁷ Scott McGuire, Meredith Martin and Sabine Niederer (ed.), *Urban Screens Reader* (Amsterdam: Institute of Network Cultures, 2009), 9.

the thesis touches on their historical function and form, and current and future manifestations, these screens are broadly described as LED urban screens of the late 1990s onwards, symptomatic of what Scott McQuire refers to as the Media City.³⁰⁸

McQuire's 2008 publication is an integral text for understanding the complex role the urban screen plays in framing city experiences and understandings of citizenship. McQuire is less concerned with the screen as a site of representation, but rather as part of urban space; often analysing the urban screen as an architectural component of the city. The appearance of the screen in public – and specifically the movement of television outside of the private domain (the home) and into the public realm – was, as McQuire argues, both “the most visible and influential tendencies of contemporary urbanism”³⁰⁹ and a new format in which the public could be constructed. This is achieved in several ways – from a ‘colonisation’ of public space, to media art and performances promoting public agency, to providing a ‘hinge’ between private and public life.

Contextually, the publication is also pertinent, published at a time in which the Creative City was well established as a planning paradigm (forming part of a broader urban planning emphasis on regenerating urban centres), but also when smartphones (and thus what would become a second, personalised version of the urban screen) were introduced to the market. This timing, at an “in between phase”³¹⁰ where the personal smartphone had yet to become an omnipresent fixture of screened experiences of the city, but where interest in (and installation of) the urban screen had become a common inclusion in the physical construction of public space, influenced McQuire's focus on their potential in facilitating collective culture and public inclusion.

³⁰⁸ Scott McQuire, *The Media City* (London: Sage, 2008).

³⁰⁹ McQuire, *Media City*, 131.

³¹⁰ Martinjn de Waal, “Scott McQuire's The Media City,” *The Mobile City*, July 18, 2008, <http://themobilecity.nl/2008/07/18/scott-mcquires-the-media-city/>.

In the past ten years, and specifically since the proliferation of the smartphone, less attention has been paid to the role or prominence of the public urban screen. While they continue in the form of large, fixed, LED screens in public space, they have also expanded to encompass more interactive content³¹¹ (such as the responsive transport screen), or be responsive either to touch, gaming interfaces or via the user's own smartphone and apps. McQuire et al. argue that the interactive urban screen "offer[s] different opportunities for disseminating public culture and fostering civic engagement".³¹² Indeed, over time, the role of the screen has shifted, from representational to an urban artefact, and later as a site for "social potential" in the formation of a public sphere.³¹³

This social potential of the urban screen and its function in the demarcation and performance of public space is linked to the notion of cultural citizenship. Chapter 2 of this thesis explored the relationship between shifting understandings of citizens, specifically in the city context, and how this affects the visibility of and access to urban space for certain bodies. In this chapter, the concept of cultural citizenship is specifically employed to reveal how urban screens work to define boundaries of participation in public culture and civic engagement. While citizenship more broadly is tethered to the legal rights and obligations of a person within a state, cultural citizenship is explained by Turner as "the capacity to participate effectively, creatively and successfully within a national culture".³¹⁴ Thus, access to cultural sites and institutions frames this form of membership. As Turner posits, one of the problems of modern cultural citizenship is the premise that there exists a unified, homogenous

³¹¹ Scott McQuire et al., "Public Screens: From Display to Interaction," *International Journal of E-Planning Research* 1, no. 2 (2012): 22–43, <https://doi.org/10.4018/ijep.2012040102>.

³¹² McQuire et al. "Public Screens," 26.

³¹³ Mirjam Struppek, "The Social Potential of Urban Screens," *Visual Communication* 5, no. 2 (2006) 173–188, <https://doi.org/10.1177/1470357206065333>; Martin Tomitsch et al., "The Role of Digital Screens in Urban Life: New Opportunities for Placemaking," in *Citizen's Right to the Digital City*, ed. Marcus Foth, Martin Brynskov and Tim Ojala, 37–54 (Singapore: Springer, 2015).

³¹⁴ B. S. Turner. "Outline of a General Theory of Cultural Citizenship," in *Culture and Citizenship*, ed. Nick Stevenson, 11–32 (London: Sage, 2001), <https://doi.org/10.4135/9781446217665.n2>.

national culture. The diversity of forms of both cultural identities and expressions of these identities further compounds the fluidity of the term. Elsewhere, Pakulski has defined cultural citizenship as:

*[Involving] not only tolerance of diverse identities but also – and increasingly – claims to endignifying representation, normative accommodation and active cultivation of these identities and their symbolic correlates.*³¹⁵

This definition has been utilised by disability theorists to discuss ways in which the rights of citizenship intersect with representations of disability and inaccessibility in the built form. Without negating the complexity and breadth of debate around this concept, the primary focus of this chapter is to locate disability in a relationship “between city as space and citizenship as political, social and cultural practice”³¹⁶ at the site of the urban screen. Moreover, as this thesis resituates citizenship in a localised, urban context, this chapter is thus concerned with how people with disabilities are incorporated in cultural citizenship, but also how certain urban sites likewise reinforce what constitutes cultural citizenship in the inclusion or exclusion of the non-normative body.

5.3. The trajectory of the fixed urban screen

Screens have played an increasingly consistent, ubiquitous role in urban space, particularly since the mid 1990s – from early iterations and commercial advertising platforms, to sites for cultural engagement, through to the role of the urban screen in the central plaza (marking a transformation of public space) and, most recently, to a new emphasis on the personal screen (specifically the smartphone) in navigating and engaging with urban space. Yet, despite their consistency visibility, they have evoked little academic attention.³¹⁷ However, this thesis identifies that attention

³¹⁵ Jan Pakulski, “Cultural Citizenship,” *Citizenship Studies* 1, no. 1 (1997), 77, <https://doi.org/10.1080/13621029708420648>.

³¹⁶ Sergio Tamayo, “Spaces of Citizenship,” in *Performing Citizenship*, ed. Paula Hildebrandt et al., 127-145 (New York: Palgrave Macmillan, 2019), https://doi.org/10.1007/978-3-319-97502-3_9.

³¹⁷ “This neglect is an enigma. Screens are everywhere, and yet their specific history and function is rarely the subject of critical and empirical investigation.” Nikos Papastergiadis (ed.) et al.,

should be drawn back to the urban screen – in its multiple guises and forms – as well as the complex relationship between screens and citizen participation in urban environments.

Before the urban screen, the notion that urban spaces both produced and communicated meaning were identified by theorists such as Kevin Lynch and Henri Lefebvre. Kevin Lynch (1960)³¹⁸ discussed how spaces in the city are read, comprising of identity, structure and meaning. Henri Lefebvre's ideas (originally published in 1974) are also important in considering the screen as a type of “production of space”³¹⁹ that facilitates urban space “both as a product of social practices and as their instrument, medium, and milieu”.³²⁰ In the following examples, we see how the location, design (including capabilities) and function of the screen inform both the meaning of the space (the large urban screen as a marker of the public square) and, equally, how these screens are products of contemporary urban discourses. The relationship between the smartphone and the user, for example, is increasingly informed by the digitisation of cities and of citizens.

It should also be noted here that the content and representations projected through the screen is another, significant component in understanding how screens produce and are produced by social practices. However, representations of disability on the screen are beyond the parameters of this thesis, and have been thoroughly explored elsewhere.³²¹ Instead, this chapter focuses on the screen as a cultural, social, political

“Introduction: Screen Cultures and Public Spaces,” in *Ambient Screens and Transnational Public Space* (Hong Kong: Hong Kong University Press, 2016), 12.

³¹⁸ Kevin Lynch, *The Image of the City* (Boston: MIT Press, 1960).

³¹⁹ Henri Lefebvre, *The Production of Space* (trans. Donald Nicholson-Smith) (Oxford: Blackwell, 1991).

³²⁰ Lefebvre, *The Production of Space*, 411.

³²¹ See for example, Colin Barnes, *Disabling Imagery and the Media*, 1992, <https://disability-studies.leed.ac.uk/wp-content/uploads/sites/40/library/Barnes-disabling-imagery.pdf>, and more recently, Katie Ellis, *Disability and Digital Television Cultures: Representation, Access, and Reception* (New York: Routledge, 2019).

and urban artefact, using the examples of New York's Times Square, Northbridge Plaza in Perth and Federation (Fed) Square in Melbourne.

5.3.1. Case study: A Screened Times Square, New York

One of the most globally recognised sites of urban screens is Times Square in New York. It is the location of thirty-seven LED screens, fixed to walls of commercial spaces within and surrounding Times Square. While this site is renowned for its largely commercial screens, it is significant for this purpose and for its history as one of the first sites of urban screens – Papastergiadis highlights the launch of *The New York Times* building at Times Square in 1928 which displayed news bulletins via the 'zipper', a 400 foot screen that was illuminated by almost 15,000 lightbulbs³²². In 1976 it became the first programmable urban screen with the capacity to show different types of content, from broadcast, to advertising, to art. By the 1990s, LED technology had matured to a point in which it became a cost-effective, viable, 24-hour screen; that is, it could be viewed effectively in daylight.

As a result, the urban screen proliferated, and Times Square exemplified this, moving media images dominating the famous streetscape. Initially a source of information and communication, the purpose and function of the Times Square screens have also evolved with both the technological evolutions – from LED, to architectural facades and building wraps, to the contemporary dynamic interfaces – and the shifting social-cultural dynamic of screened citizenship. Indeed, the urban screen changed the "social experience of urban space"³²³ – they did not simply represent events, but became a part of them; they defined the boundaries and purpose of space in their (predominantly commercial) content; they both signalled a demise of public space and facilitated cultural engagement.³²⁴ In the past ten years, this summary appears

³²² Nikos Papastergiadis (ed.), *Ambient Screens and Transnational Public Space* (Hong Kong: Hong Kong University Press, 2016).

³²³ Scott McQuire, "Immaterial Architectures: Urban Space and Electric Light, Space and Culture." *First Monday* 8, no. 2 (2005): 126–40, <https://doi.org/10.1177/1206331204266372>.

³²⁴ Papastergiadis (ed.), *Ambient Screens*; McQuire et al., "Public Screens".

antiquated, as the clear divisional lines between screen and audience, content and producer, digital and analogue space blur and entwine. However, tracking the shifting role of the urban screen *in situ* allows for reflexivity and critical interjection in ways in which screens define bodies and space.

The thesis argues that the evolution of the urban screen also parallels evolutions in the way accessibility is considered and configured – initial iterations lacked any engagement with or consideration of normalised bodies, and citizens were framed as able-bodied (typically white and male) consumer citizens. As the urban screen became bound up in expressions of publicness, some awareness of accessibility emerged, though typically in fragmented and simplistic ways.³²⁵ As Hamraie explains, accessibility (until recently) tended to standardise and simplify the disabled body and experience (e.g. the white, middle class, older man in a wheelchair).³²⁶ Alternative ways of watching a screen (such as via closed captions and audio descriptions) had been developed but were deployed in piecemeal, confined to small percentages of television broadcasts in the privacy of home.³²⁷ Today the emphasis has shifted once more, from accessible technology, to individual use of the screen as an AT to achieve accessibility. CDS theorists such as Elcessor and Hamraie have warned, this reatomises disability, and frames access through the lens of the medical model; disability is located within and becomes the responsibility of the individual. The following section provides qualitative data for this argument, identifying how and where accessibility is articulated in urban screens across Australia.

³²⁵ The case study of accessibility at Fed Square, and the evolving accessibility of the site, is exemplary of this.

³²⁶ Aimi Hamraie, *Building Access: Universal Design and the Politics of Disability* (Minneapolis: University of Minnesota Press, 2017).

³²⁷ Audio description, for example, while developed in the 1960s, has only emerged on (parts of) Australian television in the last two years. See B. J. Cronin and S. King, "The Development of the Descriptive Video Services," National Centre to Improve Practise in Special Education Through Technology, Media and Materials, 1998, <https://www2.edc.org/ncip/library/v&c/Cronin.html>; Gregory Downey, *Closed Captioning: Subtitling, Stenography, and the Digital Convergence of Text With Television* (Baltimore, MA: The John Hopkins University Press, 2008).

5.4. Access and Australian urban screens

Despite an increased awareness and implementation of accessibility features for screens, access remains relegated to the responsibility of the individual. This thesis identifies this at that urban screens remain largely inaccessible and provide inconsistent and incomplete interpretations of access. Between 2019 and 2020 the accessibility policies, interpretations and inclusions were reviewed for large urban screens across Australia. This component of the thesis looked specifically at the screens' provision of closed captions and audio description, whilst also reviewing accessibility policies at the screen site. Those reviewed include the screens at the Perth Cultural Centre (Perth, WA), the Northbridge Piazza (Perth, WA), Fed Square (Melbourne, Victoria), Harmony Square (Dandenong, Victoria), Bunjil Place (Melbourne, Victoria), The Concourse (Sydney, New South Wales), Darwin Waterfront (Darwin, Northern Territory), The Cube (Brisbane, Queensland), Bleenleigh Town Square (Logan, Queensland), and The Loop (Hobart, Tasmania). This review found a piecemeal approach to closed caption provision and an almost complete absence of audio description. This review considered how the screen was managed and programmed, how disability was configured and defined, if and how accessibility was framed and incorporated at the screen site, and the presence of a DAIP (Disability Action and Inclusion Plan). Private large screens (such as outdoor cinemas) were excluded from the analysis. Most screens were situated in public squares; however, not all were managed/owned by government bodies or local councils (see Table 1).

Despite the presence of accessibility policies at half of the screen sites, the accessibility of the actual screen was not prioritised. Closed captions were incorporated for four of the screens, but not consistently; rather their inclusion was dependent on the content source/producer. One screen coordinator expressed that the inclusion of captioning was "a lot more work, effort and cost". Other responses to accessibility information requests expressed that captioning was "provided if available" but was the responsibility of the content producers.

Table 1. Accessibility of Australian urban screens

Name and location	Management/ ownership	Site accessibility policy	Closed captions	Audio description
Perth Cultural Centre Screen – Perth CBD / Cultural Centre, WA	Perth Theatre Trust and City of Perth	Yes	Yes: some	No
Northbridge Piazza – Northbridge, WA	City of Perth	No	Yes: some	No
Fed Square – Melbourne, VIC	Fed Square Pty Ltd	Yes	No: hearing loop available for some events. “Unfortunately currently the films do not come with closed captions but we [are] working on a solution for future screenings”	No
Harmony Square – Dandenong, VIC	City of Greater Dandenong	No	Yes: some. Film festival events provide subtitles	No
Bunjil Place – Narre Warren, VIC	City of Casey	Yes	Yes: most. “Since November 2019 we have actively aimed to increase the captioning of all content on the Outdoor Screen”	No
The Concourse – Chatswood, NSW	Willoughby City Council	Yes	No	No
Darwin Waterfront – Darwin, NT	Darwin Waterfront Corporation	No	No	No
The Cube – Queensland University of Technology (QUT), Brisbane, QLD	QUT	Yes (university guidelines)	No	No (looking at adding)
Beenleigh Town Square – Logan, QLD	City of Logan	No	No: “investigating” hearing loops	No
The Loop – Hobart, TAS	City of Hobart	No	No	No

At other sites, hearing loops – which work in conjunction with hearing aids to improve sound quality – were noted as being “investigated” at Beenleigh Town Square, and were also available for limited events at Fed Square. At The Cube, closed captions were not considered as “the projects have been created without the requirement for audio cues or dialog. Text and image prompts are used primarily for engagement.” However, The Cube also classifies itself as “an interactive space that focuses on visual engagement” as justification for not offering audio description. Indeed, audio description was not incorporated in any of the urban screens.

While the results of the review suggest an ableist rendering of these screened spaces, the way in which disability was configured in the space was more complex, entwined with ways in which disability was defined, the way the screen was defined (Papastergiadis et al. propose three typologies of the large urban screen – public space broadcasting, civic partnership, and art),³²⁸ what constitutes performances of cultural citizenship and, importantly, the multifarious relationship between the way in which “the value of access is spoken of, acted upon [and also] resisted”.³²⁹

Though each urban screen lacked accessibility, considered and extensive accessibility plans denoted that the site was planned for inclusion. However, what, where and how accessibility was manifested varied greatly, not simply between sites but within them. Firstly, definitions of accessibility have always been bounded by definitions of disability which have changed and evolved over time. However, understandings of what constitutes access lags behind evolved understandings of disability, specifically beyond mobility-based conceptualisations. While hearing and vision based disabilities are both frequently occurring in the general population and have extensive histories of AT development, the ways in which deafness and blindness are incorporated in screen cultures is still fragmented and inconsistent. In addition, other ‘invisible’ disabilities, including cognitive and sensory disabilities, are becoming more

³²⁸ Papastergiadis et al., “Introduction: Screen Cultures and Public Spaces,” 19.

³²⁹ Tanya Titchkosky, *Question of Access* (Toronto: University of Toronto Press, 2011), x.

recognised categories of disability, yet have only very recently become incorporated and explored in the design of the built and online environment. Moreover, intradisability diversity – that is the range of experiences of disability within categories, impacted by both levels of impairment, e.g. from low vision to total blindness, and other socio-cultural factors – and the experience of multiple disabilities are rarely acknowledged in the access paradigm. As discussed in Chapter 2 of this thesis, these categories are historically, socially and politically constructed, and continue to be debated in the field of CDS.

Yet disability identity politics is not written in to disability inclusion plans for spaces, despite (and because of) an entrenched normate template in understandings of space and belief in the “mythic average user”.³³⁰ While in most public urban spaces and within disability inclusion plans the wheelchair symbol is prominent, and universally accessible toilets, ramps, lifts and wider doorways are written in to building and space design, other disabilities enter into accessibility considerations in far less consistent ways. Notably, while Braille signage, tactile ground surface indicators and audio tactile pedestrian crossings have become consistent markers of the accessibility of urban space, audio description on screens is far less prevalent, as the review of urban screens in Australia substantiated. In part, this is related to the ways in which accessibility is impacted by technological development and histories. Katie Ellis, Mike Kent and I have elsewhere argued that this absence is bound up in socio-cultural assumptions about disabled citizens and audiences, that “blind people don’t watch TV”.³³¹

Beyond the construction of the preferred user and assumptions of the normate body, the urban screen is also inserted into these (semi)public spaces with specific intent. The function of the screen varies between each example – informed by the history

³³⁰ Hamraie, *Building Access*.

³³¹ Katie Ellis, Mike Kent and Kathryn Locke, “The Preferred User: How Audio Description Could Change Understandings of Australian Television Audiences and Media Technology,” *Cultural Science Journal* 10, no. 1 (2018): 7–16, <https://doi.org/10.5334/csci.105>.

of the space, the established purpose of the screen, and the discourses that inform this purpose – notably, as discussed in the subsequent section, discourses of the Creative City and Smart City.

One of the most interesting observations in the screens reviewed is how the accessibility of the space varies significantly across the public square. This is most notable in sites such as Fed Square, Bunjil Place and the Perth Cultural Centre. All three sites have accessibility policies, two registered with registered DIAPs, which incorporate a range of accessibility feature and services; however, it should be noted that there are significant variances in the way disability is incorporated in these plans. For example, the Perth Cultural Centre which incorporates the urban screen is managed by the Perth Theatre Trust which also manages other cultural venues in the city, including multiple theatres and the Perth Concert Hall. While the Perth Theatre Trust details an accessibility plan, which includes the use of hearing loops, tactile tours, some captioned and audio described performances, as well as wheelchair accessible spaces, these inclusions do not extend outside of specific spaces such as the theatres. Thus, the urban screen sits outside of the accessibility policy.

This shifting of responsibility for accessibility, and fluidity in where and how access should be incorporated, is a common narrative, in both built and online spaces. The thesis argues that it also reveals a more entrenched problem of the medicalisation of disability in seemingly social model-based initiatives to increase access. Essentially, when accessibility is only partially incorporated, restricted to specific activities, spaces and indeed screens, it relegates disability as being the ‘problem’ of the individual:

*This is a fairly common ableist (and sexist) response, shifting responsibility for a disadvantage onto the disadvantaged group. It is often seen in simplistic demands that people change their desires, activities, and need rather than ask for social change.*³³²

³³² Elizabeth Ellcessor, “Blurred Lines: Accessibility, Disability and Definitional Limitations,” *First Monday* 20, no. 9 (2015), <https://firstmonday.org/article/view/6169/4904>.

In this instance, disability is acknowledged only in specific spaces, and the urban screen falls outside of this space. This is arguably a result of two key assumptions – the first is the way in which specific practices of cultural citizenship are validated more than others, that is, tied up in embedded notions of high and low culture; secondly, just as the responsibility for accessibility is often fluid, the audience and participants in the urban screen are not fixed and static, “[they are] mobile, there is ambient exposure, and there are contingent encounters.”³³³

The purpose and history of these public squares are important in understanding the ways in which citizenship and public participation were constructed and reinforced in the design of these sites. The following historical and cultural analysis of the Northbridge Piazza and Fed Square provide context to how urban screens define ability/disability and citizenship. These two case studies both represent urban screens which were erected as parts of Creative City strategies, and reflect the discourse imaging of the ideal, preferred citizen.

5.4.1. Case study: Northbridge Piazza, Perth

The Northbridge Piazza in Perth was constructed in 2008 and was designed as a “community space”, encompassing a community building, stage, green wall and large LED screen; it was completed in 2009. Julie Meehan designed the 3,500m² space. The screen itself is programmed by the City of Perth, which “aims to celebrate artistic and creative spirit in Northbridge and act as a provider of artistic expression and provide entertainment, arts, cultural, community, sporting and educational-based programming opportunities.”³³⁴ Examples of programming included creative projects such as an interactive ‘people’s screen’,³³⁵ film festivals, broadcasting of

³³³ Papastergiadis et al.. “Introduction: Screen Cultures and Public spaces,” 16.

³³⁴ <https://www.perth.wa.gov.au/living-community/community-facilities/northbridge-piazza-facilities>

³³⁵ Paul Sermon and Charlotte Gould, “Peoples Screen – Linked between Guangzhou Light Festival, China and Northbridge Piazza Perth, Australia from 15 to 29 November 2015,” 2016, <https://research.brighton.ac.uk/en/publications/peoples-screen-linked-between-guangzhou-light-festival-china-and->

culturally significant events such as the results of the same-sex marriage vote, as well as music and arts events.

The redevelopment of the Piazza and construction of the urban screen was a component of the Creative City plan for Perth. The Creative City was activated within the city and state bureaucracies, including the establishment of a Perth Creative Bureaucracy group combining policy advisors from the Department of Planning and Infrastructure, the City of Perth and LandCorp. However, the discourse was also maintained and propelled within the broader public sphere.

In the policies and strategies of the City of Perth since 2003, the language of the Creative City and the method of city envisioning has also been implicit; these were an active proponent of this city discourse. Not only were senior bureaucrats and councillors consistently involved in the Creative City circuit of experts and advisors in Perth, there were also dramatic strategic shifts in the Council and the administration over this period, and policies, strategies and visions for the city were rewritten and re-languaged along noticeably Creative City-esk terms of vibrancy, regeneration and creativity. This discourse is visible through a range of policy and strategic documentation, including the 2008 *City of Perth 2029 Vision and Four Year Strategic Plan*³³⁶ and several Creative City mapping projects.³³⁷

Included in the planning for the City of Perth were aims to both preserve and develop public spaces that engaged citizens and fostered cultural capital. Influenced by visiting experts such as Jan Gehl and Charles Landry, the design and construction of the Northbridge Piazza was undertaken to achieve this version of an active public

³³⁶ City of Perth, *City of Perth 2029 Vision and Four Year Strategic Plan*, 2018, <http://www.perth.wa.gov.au/documentdb/982.pdf>.

³³⁷ See City of Perth, "Perth Creative Industries – An Analysis," 2008, <http://www.perth.wa.gov.au/documentdb/617.pdf>; Jan Gehl, "Perth 2009 – Public Spaces Public Life," July 2009, <http://www.cityofperth.wa.gov.au/web/Council/Plans-and-Projects/Current-Plans-and-Studies/>.

space.³³⁸ Included in the design was a large urban screen which would be specifically programmed to encourage public participation. This location was significant for two reasons. Firstly, it was part of the Council's broader strategic plan to enliven the city centre; secondly, it was a tangible, design-led strategy to resolve long-held social tensions within Northbridge, and specifically the fostering of a safe and family-friendly environment at night.³³⁹ The Piazza, and the urban screen, therefore, were always premised on orchestrating a specific type of citizenship. This helped define how the space would and should be used, and by whom.

In interviews with coordinators and programmers of the site, accessibility was expressed as both expensive and complex, thus demarcating people with disabilities, specifically vision impairment and hearing loss, as outside of the intended audience or screen public. While accessibility for people with (specific) mobility disabilities was incorporated into the site, such as the inclusion of universally accessible toilets and a lift to the community centre building, the accessibility of the screen itself was inconsistent.³⁴⁰ Mirroring accessibility issues in Australian television, there is a lack of awareness of, or reluctance to incorporate, captions and/or audio description across different media platforms, and activist and advocacy groups are relied upon to highlight inaccessibility.³⁴¹ In the case of the inclusion of captions at screenings, interventions from the Access and Inclusion Advisory Group, and specific recommendations from representatives from the WA Deaf Society, eventually lead

³³⁸ City of Perth, *Northbridge Action Plan, 2003–2007*, October 2003, Perth City Council, Government of Western Australia, http://www.perth.wa.gov.au/html/pub03_php#northbridge_action; Richard Weller, "Public Perth," *Landscape Architecture Australia* 127 (2010): 36–40.

³³⁹ Kathryn Locke, "After Dark: Perth's Night Time Economy," in *Liverpool of the South Seas*, ed. Tara Brabazon (Perth, UWA Press, 2004).

³⁴⁰ This permeates through critiques of accessibility as being largely 'confined' to wheelchair access.

³⁴¹ Katie Ellis and Mike Kent, "Accessible Television: The New Frontier in Disability Media Studies Brings Together Industry Innovation, Government Legislation and Online Activism," *First Monday* 20, no. 9–7 (2015), <https://doi.org/10.5210/fm.v20i9.6170>.

to closed captions being included for most screenings.³⁴² However, this occurred after the screen had been operational for almost a decade, despite past screened films already having captioned content, and was not required for 'artistic content. Indeed, this discrepancy between the availability of accessible content, the capacity for technology to display the content, and the decision to 'turn on' access, continues across all forms of television.³⁴³ Closed captions were thus displayed on the screen incidentally and sporadically, only occurring when the content producer had provided a readable format. Moreover, the provision of captions for people with disabilities was only justified due to its applicability to other intended audiences such as people with English as a second language. The less mainstream accessibility feature of audio description was also marginalised, both through cost and technological complexity – “we would need a player that does two tracks. And the bulk of material we screen does not have audio description”.³⁴⁴ When audio description was available its use was unintentional – “we did accidentally play audio description once!”.³⁴⁵ Accessibility was, for this screen, never intentionally planned nor designed for, and thus also not accommodated in budgets. Titchkosky articulates this problematising of disability:

*Disability is not yet recognized as a present and important participant. Disability is apprehended as a problem for bureaucratic organisations and thus is in need of a bureaucratic solution.*³⁴⁶

Moreover, as evident in the reviews of accessibility policies at other urban screen sites, disability itself is restricted and redefined (equated to simplistic categories – an individual in a wheelchair), and diversity of disability, and indeed intradisability diversity, is negated and replaced with simple renderings of the intended audience.

³⁴² City of Perth, Council Minutes, October 2017, <https://www.perth.wa.gov.au/sites/default/files/documents/Minutes-%20AIAG%20-%20October%202017.pdf>.

³⁴³ Ellis, Kent and Locke, “The Preferred User”.

³⁴⁴ Email interview with author, April, 2018.

³⁴⁵ Email interview with author.

³⁴⁶ Titchkosky, *Question of Access*, 110.

Of course, the intended audience is likewise socially and historically constructed, in this case via the contest over the use and purpose of Northbridge itself, and is impacted by the rhetoric of the Creative City. As this thesis argues, urban discourses such as the Creative City work to construct understandings of the preferred citizen and, in doing so, often perpetuate understandings of the normate body.

The following case study of Fed Square also identifies ways in which accessibility of public space intersects with the meanings layered upon the space itself.

5.4.2. Case study: Federation (Fed) Square, Melbourne

Federation Square, or Fed Square, as it became known and was later rebranded in the process of the development of the space, began in 1998. It was opened as a civic precinct in 2002, consisting of a several layers of open spaces, shops and cafés, galleries, performance venues and the urban screen. It was an ambitious and expensive project, born off the back of Australia's first (national) Creative City strategy, *Creative Nation*, released in 1994.³⁴⁷ This 'creative turn', bolstered by the global interest in the Creative City paradigm, was critical in the design and funding of projects such as the aforementioned Northbridge Piazza project and Fed Square. However, in comparison to the Northbridge Piazza, a relatively small and localised urban screen project, and one driven by local council, Federation Square was designed as a flagship state project that would produce a large-scale, modern and internationally recognisable civic square. Melbourne had already invested significantly in the Creative City agenda, evident in the 1996 Arts policy, Melbourne 2030,³⁴⁸ and urban renewal projects such as the Docklands and the laneway

³⁴⁷ Audrey Yue, Scott McQuire and Nikos Papastergiadis. "Large Screens as Creative Clusters," *City, Culture and Society* 5, no. 3 (2014): 157–164, <https://doi.org/10.1016/j.ccs.2014.06.001>.

³⁴⁸ Victorian Government, "Melbourne 2030: Planning for sustainable growth," Melbourne, Australia, 2002. <https://www.planning.vic.gov.au/policy-and-strategy/planning-for-melbourne/melbournes-strategic-planning-history/melbourne-2030-planning-for-sustainable-growth>.

development strategies, all heavily influenced by the language (and consultant visitations) of Charles Landry and Richard Florida.³⁴⁹

There was a distinct emphasis on the 'civic' in the original design of and charter for Federation Square, managed by a private company Federation Square Pty Ltd which is owned by the state of Victoria. The civic and cultural charter articulated 'civic-ness', primarily in the site's capacity to attract and communicate to visitors. However, core foundations of citizenship – civil, political and social rights – were absent from the charter.

The underlying purpose of Federation Square as determined by the Government of Victoria and the City of Melbourne is to achieve specific cultural and civic objectives for Victoria:

- *to provide a stimulating, educational, comfortable and entertaining destination venue to Victorians, and to interstate and international visitors.*
- *to represent Melbourne as a leading city for the arts and for innovation and creativity in all forms of cultural expression.*
- *to communicate the City's leadership in contemporary ideas and expression.*
- *to provide a focal point for arts and cultural festivals and activities and important civic commemorations.*
- *to reflect Melbourne's cultural diversity in its overall operations and programming.*
- *to attract local, national and international visitors to Federation Square.*³⁵⁰

The key absence of citizenship in the charter is discussed by the community group Citizens for Melbourne who articulate public spaces are often and increasingly at the intersections of public and private interest and governance – “These privately-owned spaces look public on the surface, but citizens do not have the same rights in these

³⁴⁹ Rowland Atkinson and Hazel Easthope, “The Consequences of the Creative Class: The Pursuit of Creativity Strategies in Australia’s Cities,” *International Journal of Urban and Regional Research* 33, no. 1 (2009): 64-79, <https://doi.org/10.1111/j.1468-2427.2009.00837.x>.

³⁵⁰ The Federation Square Civic and Cultural Charter, 2013, <https://37b4ak10zpk61h36lw3vpuim-wpengine.netdna-ssl.com/wp-content/uploads/2019/08/Fed-Square-Civic-and-Cultural-Charter-with-Addendum-2013.pdf>.

spaces as they would have in public space.”³⁵¹ Elsewhere, Margaret Kohn posits the same problems in the site of the airport, often a place of private management but government ownership, and heavily regulated.³⁵² Levels of ‘publicness’ therefore compound the contested understanding and experience of citizenship in each specific context. For example, in emphasising ‘visitors’, civic and cultural charters for public spaces such as that used to guide Fed Square negate rights and responsibilities, and reconstruct the individual as a denizen.

Moreover, the lack of inclusion of participation – both in the construction of the charter and in its core values – preferenced the public as an audience rather than co-producers. It should be noted that this tendency is mirrored in designs for accessibility, where people with disabilities are omitted in the design process and conjured as passive rather than active participants in access, or as users of a space in specific and defined ways.³⁵³ In the research for this chapter, as an example, some aspects of the urban screen site were designed for accessibility, others (including the urban screen) were not, predicating how parts of the site would be used, and by whom.

The balance between commercial interests – specifically the intention the square ‘pays for itself’ – and the civic and cultural purpose has been raised in recent critiques and challenges to proposed development plans such as the now abandoned inclusion of an Apple store at the site.³⁵⁴ Citizens For Melbourne has also entered the debate, developing a ‘People’s Plan’ that calls for a review of both the civic and cultural

³⁵¹ Foreground, 2019, “Public Space Should Not be Managed as a Business,” April 9. <https://www.foreground.com.au/planning-policy/public-space-fed-square-apple/>

³⁵² Margaret Kohn, *Brave New Neighbourhoods: The Privatisation of Public Space* (New York: Routledge, 2004).

³⁵³ See Tichkovsky, *Question of Access*; Hamraie, *Building Access*.

³⁵⁴ Graeme Davidson, “For What Shall it Profit a City if it Loses its Civic Soul? A Plea to Preserve Melbourne’s Fed Square,” *The Conversation*, February 20, 2018. https://theconversation.com/for-what-shall-it-profit-a-city-if-it-loses-its-civic-soul-a-plea-to-preserve-melbournes-fed-square-92099?utm_source=twitterandutm_medium=twitterbuttonandmc_cid=4ff9942bf1andmc_eid=f8e8c75485; Foreground, “Public Space”.

charter, as well as the funding model, board structure and heritage management of the site.³⁵⁵ As a result of increasing criticism of the management of the site, and increasing financial concerns about its viability, a review of Federation Square was undertaken.³⁵⁶ One of the key outcomes of the review was the recommendation to develop a community-informed vision, and an emphasis on becoming more civic-minded. Further, a \$20 million investment by the Victorian government has been made to improve and increase its civic purpose – included in this is increased accessibility of the site.

This newly branded Fed Square was also designed to be inclusive, with ‘planned’ accessibility. However, accessibility has been made incrementally rather than via an initial accessible design. As Dale Sheppard, the accessibility consultant, identifies, when Fed Square was opened it received high levels of criticism on its inaccessibility – “when I began working with Fed Square disability complaints featured as one of the highest (if not the highest) reasons for complaint.”³⁵⁷ In the current DAP (Disability Action Plan), a page of thirty modifications, improvements and upgrades to access are listed from 2004–2015. This includes the establishment of an Accessibility Action Group. This group comprised of all Fed Square staff members, and one access consultant. One reading of the accessibility trajectory at Fed Square shows a piecemeal, retrofitting approach designed to accommodate rather than incorporate people with disabilities. However, it also reveals the contextual, historical and complex nature of accessibility. As has been discussed in this chapter, accessibility of and at urban screen sites is entwined with definitions of disability and understandings of intradisability diversity, of access-knowledge and, indeed, shifting

³⁵⁵ Citizens for Melbourne, “Peoples Plan for Fed Square,” 2012, <https://www.ourcityyoursquare.org/peoples-plan>.

³⁵⁶ Victorian Government, “Federation Square Review,” 2019, <https://engage.vic.gov.au/federation-square-review>.

³⁵⁷ Fed Square, “Accessibility at Fed Square with Dale Sheppard,” https://fedsquare.com/events/accessibility-at-fed-square-with-dale-sheppard?fbclid=IwAR2dRSAe0rMVVp9F1HgyJPRZZ_FFoMJcHhiZZrEb9BOqu90ioeVxeNfxjN4, accessed December 12, 2020.

approaches to design for access such as inclusive and universal design, and technological evolutions. For the urban screen, the rapid nature of technological change has increased the complexity of accessibility approaches.

The large urban screens discussed here were entwined with the specific social, cultural, architectural and historical dynamics of a specific site, and the discourse of the Creative City. However, the urban screen as it appears in the Smart City are mutating, multiplying and disengaging from set, definable public squares. Thus the last part of this chapter reviews a case study, the Starling Crossing, in which accessibility and the urban screen are highlighted from within the Smart City paradigm.

5.5. New iterations of the urban screen: The Smart City screen

However, the movement from the screen as marker of public space in the Creative City, to the emergence of the (non-mobile) urban screens as part of the Smart City paradigm has shifted the conversation around accessibility once again. In this final section of the chapter, the case study of the Starling Crossing is examined. While it functions as an urban screen, it is selected as being representative of the shift from the Creative City screen – which was cast as a distinguishing, central figure in the public square and facilitated civic engagement – to the Smart City screen which emphasised efficiency and mobility and which cast citizens as data denizens. The thesis argues that while the urban screens of the Creative City were entwined with notions of the cultural denizen, Smart City screens revolve around ‘functional and efficient’ citizens, but again disengage from traditional notions of citizenship. These screens do not demarcate a public square like the screens of the last three decades have. That is, though the large urban screens do still exist, and indeed are still frequently embedded in public space, their role, characteristics and relationship to the civic has shifted considerably, “functioning as nodes situated in relation to more

extensive media flows”.³⁵⁸

Indeed, the term ‘urban screen’ all but disappeared in both academic and popular discourse after 2010. Tomitsch et al., who provide one of the few academic discussions of urban screens in the last five years, explain that despite their proliferation, “the programs running on these screens still seem to be stuck in the cinematic model”³⁵⁹. Indeed, the civic and cultural purpose that were espoused on the urban screen of the ’90s and early 2000s has not appeared to evolve with the shifting technological, interactive and smart capabilities. Scott McQuire characterises the new urban screen as “geomedia” – defined by convergence, ubiquity, location-awareness and real-time feedback.³⁶⁰ A poignant part of McQuire’s theory of the contemporary urban screen is that they place a dual, paradoxical role – enabling emancipation from place, as well as being a key part of placemaking.³⁶¹

Indeed, what has perhaps more obviously replaced the large urban screen of the 1990s – as a media form that connects the citizen to the city in public space – is the smartphone. They map, define, interact and entertain us and our environments. The majority of this thesis recognises the central role this screen, the smartphone, plays in connecting the citizen to place, and the prosthetic way in which it likewise challenges and changes definitions of disability. However, this chapter aimed to find a comparative, contemporary, non-mobile screen from which to analyse how accessibility was being configured in the integrated and connected Smart City urban screen.

The urban screen of the Smart City is defined less by a timeline – though the Smart City emerged as a popular discourse at a point in time, that is, the past decade – and more so by its capacity to integrate and connect with urban environments through

³⁵⁸ Scott McQuire, *Geomedia: Networked Cities and the Future of Public Space* (Cambridge: Polity Press, 2016), 2.

³⁵⁹ Tomitsch et al., “The Role of Digital Screens in Urban Life”.

³⁶⁰ McQuire, *Geomedia*.

³⁶¹ McQuire, *Geomedia*, 6.

the Internet of Things. The ‘un-obviousness’ of the Smart City screen, therefore, is a key distinguishing feature, separating it from the large urban screens discussed this far in this chapter. As Caprotti explains, much of the literature on smart cities is based on the invisible:

*The broader smart city is essentially invisible and subtly integrated within the urban fabric, and is defined more by its practical invisibility than by its architectural, infrastructural, built or other form of visibility.*³⁶²

As many critics of the Smart City have highlighted, the characteristics of this urban development discourse – flows of data, networked communication technologies, automation and monitoring, surveillance, the Internet of Things and big data – are essentially hidden, and their effectiveness measured in part by how unobvious, and often unchallenged, they are.³⁶³ The concern in this section, then, is that the invisibility of the Smart City screens likewise camouflages or reduces the experience of disability and disabled identities. Indeed, the invisibility of the disabled individual has been a key concern of CDS; for example, Ghai argues experiences of disability are already rendered less visible as they are categorised outside normal, able-bodied experiences, but that this is accentuated when disability intersects with other normative discourses such as through gender, race and sexuality.³⁶⁴ Utopian visions of new technology (and smart cities) likewise extends the invisibility of disability, where the “problems of disability, inequality, and prejudice [are seen to] have technological solutions”.³⁶⁵

³⁶² Federico Caprotti, “Spaces of Visability in The Smart City: Flagship Urban Spaces and the Smart Urban Imaginary,” *Urban Studies* 56, no. 12 (2018): 2465–2479, <https://doi.org/10.1177/0042098018798597>.

³⁶³ Meryl Alper et al., “Reimagining the Good Life With Disability: Communication, New Technology, and Humane Connections,” in *Good Life*, ed. Helen Wang, 197–212 (New York: Peter Lang, 2015).

³⁶⁴ Anita Ghai, *(Dis)Embodied Form: Issues of Disabled Women* (New Delhi: Shakti Books, 2003).

³⁶⁵ Alper et al., “Reimagining the Good Life With Disability”.

5.5.1. Case study: The Starling Crossing, London

The Starling Crossing (STigmergic Adaptive Responsive LearnING Crossing),³⁶⁶ is not a traditional urban screen, instead exemplifying the ‘hidden screens’ of the Smart City. Whilst still a fixed, urban screen in public space, it is not cinematic, instead acting as an interactive pedestrian crossing. The tangible screen is placed as a layer on top of a road, thus the road itself becomes the screen, changing according to different times and situations, all in real time. Essentially the pedestrian crossing appears and disappears, according to the approach, speed and direction of the pedestrian, while also alerting traffic and cyclists to the pedestrian that is crossing the road. It works by using computer-controlled LED lights embedded in the screen/road which are designed to be able to support the weight of vehicles. The lights interact with cameras via a “neural network framework” and are programmed to respond according to movement across the screen surface and motion picked up by cameras.³⁶⁷ Designed by Umbrellium, the crossing’s prototype was located in South London in 2017. Umbrellium became an independent company in 2020, Starling Technologies Ltd, which is extending the trial in coalition with Colas, a road and transport construction company.

While the screen is designed to improve urban access more broadly, the connection to the concept of accessibility as a disability construct is not made. Indeed, the Smart City discourse often refers to and incorporates access as a goal, but not consistently in reference to accessibility for people with disabilities. Umbrellium’s creative director and founder clarified that the screen’s capability, accessibility or interactions with all bodies was limited in its prototype form:

The original Starling Crossing was built as a full-scale prototype rather than a complete solution, and did not in that iteration incorporate people with disabilities in its design process – this is different to the approach we would typically take with a project, but in this case we recognised from the start of the research that many of the issues that relate to ‘shared space’ urban design in general would apply

³⁶⁶ <https://www.starlingtech.co.uk>.

³⁶⁷ <https://www.starlingtech.co.uk>.

*here, and tackling those would need a specific and larger but quite different project, which was beyond our scope at that point.*³⁶⁸

How and if the crossing cameras detect non-normative bodies, wheelchair users as pedestrians, or how the lights may interfere with individuals with sensory disorders is a line of enquiry and critique levelled at the automated, AI-orientated approach of Smart City projects (for example, theorists have investigated the ethics of AI)³⁶⁹. Moreover, the Starling Crossing represents the broader narrative of the role of technology in mitigating the bodily experience of the city – that smart technology provides increasing inclusivity in urban space.³⁷⁰ Yet this assumption relies on a medical narrative of disability, as something which need to be resolved. Smart Cities, as is detailed in Chapter 7, perpetuate a narrative of technology as enabling, and thus as resolving disability. Furthermore, as Chandler argues, in smart cities the ideals of civic engagement are relocated to technical infrastructures and processes,³⁷¹ but reduces this engagement to passive use of, rather than active engagement with and in, the meaning of space.³⁷²

³⁶⁸ Email interview with author, February 9, 2021.

³⁶⁹ A. Millard Ball, "Pedestrians, Autonomous Vehicles, and Cities," *Journal of Planning Education and Research* 36, no. 2 (2016): 210–224; Leon R. Sütfeld et al., "Using Virtual Reality to Assess Ethical Decisions in Road Traffic Scenarios: Applicability of Value-of-Life-Based Models and Influences of Time Pressure," *Frontiers of Behavioural Neuroscience* 11 (2017), <https://doi.org/10.3389/fnbeh.2017.00122>.

³⁷⁰ Alejandro García Ramirez, et al. "Towards Human Smart Cities: Internet Of Things for Sensory Impaired Individuals," *Archives for Informatics and Numerical Computation* 99, no. 1 (2017): 107–126, <https://doi.org/10.1007/s00607-016-0529-2>; Raquel Perez-Delhoyo, et al. "Improving Urban Accessibility: A Methodology for Urban Dynamics Analysis in Smart, Sustainable and Inclusive Cities," *International Journal of Sustainable Planning* 12, no. 3 (2017): 357–367, <https://doi.org/10.2495/SDP-V12-N3-357-367>; Catia Prandi et al. "On the Need of Trustworthy Sensing and Crowdsourcing for Urban Accessibility in Smart City," *ACM Transactions on Internet Technology* 18, no. 1 (2017): 1–21, <https://doi.org/10.1145/3133327>; Higinio Mora et al. "A Comprehensive System for Monitoring Urban Accessibility in Smart Cities," *Sensors* 17, no. 8 (2017): 1834–1840, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5579805/>.

³⁷¹ Robert Chandler, *Dumb Cities: Spatial Media, Urban Communication, and the Right to the Smart City* (PhD diss., University of Pittsburg, 2020).

³⁷² What are the possibilities of interactive technologies delivering a new level of social engagement in architecture? (Mark Gracia, "Otherwise Engaged: New Projects in Interactive Design," *Architectural Design* 77, no. 4 (2007): 44–53, <https://doi.org/10.1002/ad.486>).

5.6. Conclusion

While this thesis has articulated that the notions of the civic, of public space, and of citizenship are fluid, these terms often appear in their idealised, utopic interpretation via designs of and plans for a public site such as Fed Square. Yet, in the implementation and experience of these ideals, the contested nature of the 'civic' is revealed. Thus, the urban screen works to both define who is considered as a participant in and of public space, and the ways in which disability is constructed and experienced. Whilst accessibility has become a part of the urban screen discourse, it is in limited, piecemeal approaches, influenced by the fabricated meanings of the space in which the screen is located and the urban discourses that inform these meanings. Moreover, as we have seen in the slow emergence of closed captions and audio description on Australian television, with each new technology, advocates have to start again to argue for accessibility³⁷³ and, for urban screens, with each new site. The accessibility of the urban screen therefore epitomises the way in which layers of normative discourses inform its meaning and use – definitions of disability (and access), the purposes of urban public space, and the role of the media in mediating citizenship all entwine at these sites.

³⁷³ Katie Ellis, Mike Kent and Kathryn Locke, "Indefinitely Beyond Our Reach: The Case for Elevating Audio Description to the Importance of Captions on Australian Television," *M/C Journal* 20, no. 3 (2017), <https://doi.org/10.5204/mcj/1261>.

6. Mobility and mobiles: [Smart] cities and place navigation

6.1. Introduction

This chapter expands on the exploration of the configuration of disability in the Smart City offered in Chapters 3 and 4 which identified that whilst the discourse recognised disability – as opposed to the Creative City in which disability was all but absent – it did so via a technological tether. That is, technology was utilised to mobilise the immobile but also to reinforce the value of the normate citizen. This chapter takes two key findings from the analysis of representations of disability in the Smart City discourse – the use of smartphones as a conduit between citizen and Smart City, and the challenge of datafication, privacy invasion and control of its ‘techno denizen’ – to establish the importance of critical accessibility approaches to the conflation of disability, technology and citizenship. It provides a focused analysis and qualitative data on the way the smartphone – the conduit between the citizen and the Smart City – mediates the experience of disability in urban space via the findings of the *Navigating Urban Space* research project. This project, which I was employed as a co-researcher on whilst writing this thesis, incorporated a pilot project funded by the WA Disability Services Commission and the 2016 Dr Louisa Alessandri Research Grant which investigated the use of smartphones as a navigational tool by people with disabilities in WA. The findings and analysis of this project is discussed and contextualised in the argument put forward in this chapter that smartphones, as citizen interfaces in the Smart City paradigm, work to define accessibility and disability. The latter part of the chapter examines the (ultimately unsuccessful) development of Sidewalk Toronto as a representation of the techno denizen critiques.

This chapter begins with a discussion of the mobile citizen as a marker of the normate body across city discourses, identifying that the Creative City assumed mobility, whilst the Smart City mobilised, identified and engaged the citizen through the user interface of the mobile, specifically, the smartphone. For people with disabilities, the smartphone is envisioned as a form of prosthesis – “a bodily prostheses embedded

in circuits of data exchange”³⁷⁴ – and a way to access the city. Identifying that the relationship between mobiles and disabilities have an extensive history, this chapter details some of the recent research on this relationship. Next, the chapter provides an overview of the *Navigating Urban Spaces* research project which investigated the way in which smartphones are used by people with disabilities to assist with place navigation.³⁷⁵ The outcomes and issues presented in the research are then explored utilising critical accessibility perspectives. Two specific findings from the focus groups within this research are highlighted – the socio-economic factors that disable individuals, and the ‘trade off’ of privacy for access. Returning to the Smart City, the chapter reveals ways in which this latter finding from the *Navigating Urban Spaces* project reappears in the built Smart Cities, via the case study of Sidewalk Toronto. This chapter argues that the Smart City paradigm continues to contain problematic assumptions about the experience of disability and accessibility, and therefore it provides a moment to reevaluate how accessibility is, and should be, defined.

6.2. Mobility and mobiles: The Creative City experience

As noted in Chapter 3 of this thesis, the investigation of the way disability and accessibility are configured in urban discourses began with an analysis of the Creative City, only to find that disability was absent. The Creative City imagined its citizens as embodying a specific, normative form. Disability was not only neglected, but mobility was further emphasised, both between and within cities.³⁷⁶ This was epitomised in the discussions of reimagining and regenerating the Perth CBD during the mid 2000s. When Charles Landry, one of the leading authors on the Creative City and advisor to

³⁷⁴ Gillian Rose et al., “Platform Urbanism, Smartphone Applications and Valuing Data in a Smart City,” *Transactions of the Institute of British Geographers* 46, no. 1 (2021): 59–72, <https://doi.org/10.1111/tran.12400>.

³⁷⁵ I was a co-researcher on the *Navigating Urban Spaces* project, conducting literature reviews, leading the regional focus groups and interviews, conducting data analysis and co-authoring the final report.

³⁷⁶ The creative class were mobile, creative elites, and Florida’s thesis argued that successful Creative Cities needed to be able to attract and retain the global creative class (Richard Florida, *The Rise of the Creative Class* (New York: Basic Books, 2002); Richard Florida, *Cities and the Creative Class* (New York: Routledge, 2005)).

many cities, was employed to help Perth to develop from a mining town to a Creative City, he commented on the inability to walk easily through the city and on the emphasis on cars over pedestrians.³⁷⁷ Visiting urban planner, Jan Gehl, similarly employed by the City of Perth to review the public spaces of this transitioning city, emphasised the importance of walkability for the future of the city. These reflections prompted the publication of a *Walkability Study* commissioned by the City of Perth to gauge how pedestrian friendly the city was which, in its title alone, presumed a particular embodiment and ability.³⁷⁸ What was notably absent from these three perspectives – which all emphasised the public use of city space – was multiple types of mobilities, variances in bodies, and the importance of access to the city for people with disabilities. So, while access to the Creative City was emphasised, the accessibility of the city was obscured. Gleeson has argued that the geography of cities and accessibility of space have always been prioritised by disability scholars,³⁷⁹ yet that the experiences and voices of those who are most excluded by inaccessible spaces goes notably unmentioned in Creative City discourse.

However, attention to urban accessibility has been recently reignited in the context of Smart Cities and, as such, is the discourse that propels this chapter. As discussed in Chapter 3, an array of literature has emerged that utilises the paradigm to both promote accessibility technology, and question and critique how accessible the Smart City is. In this literature, mobility within cities is again emphasised but, unlike the Creative City, it extends to include multiple types of bodies rather than exclude immobilities. In fact, as Rose et al. argues, many Smart City apps “facilitate corporeal mobility through urban space.”³⁸⁰ However, the article, and this thesis, also argue

³⁷⁷ Charles Landry, *Perth: Town or City?* (Perth: FORM, 2006).

³⁷⁸ City of Perth, “Walkability Study: Final Report,” (ARUP Pty Ltd: June 15, 2015), <https://engage.perth.wa.gov.au/8262/documents/34660>.

³⁷⁹ Brendan Gleeson, “The Geographical Imagination of Disability,” in *Foundations of Disability Studies*, ed. Matthew Wappett and Katrina Arndt (New York: Palgrave Macmillan, 2013).

³⁸⁰ Rose et al., “Platform Urbanism”.

that, in this emphasis on mobility, there is a revaluing and promotion of the normative body.

While in Chapter 5 the focus remained on fixed urban screens as a site in which urban discourses, space and accessibility collided, this chapter highlights that the smartphone now functions as a pivotal but mobile urban screen, mediating the experience of the city, and the engagement of the citizen. Moreover, this mobile urban screen also intersects with the practices of mobility, thus operating to mediate and mobilise citizen experiences of urban space.

6.3. Smartphones, disability and urban space: A prosthetic relationship in the Smart City

As articulated in Chapter 3 of this thesis, the Smart City emphasises the role of ICT in urban space and data-led governance via the application of sensors, big data and the Internet of Things.³⁸¹ Yet, despite the emphasis on ICT, there is little overt recognition of the central role of the smartphone as the user interface – or citizen gateway – to the way in which the citizen intersects with these systems of monitoring, automation and data-gathering. This role generates a type of “platform urbanism”,³⁸² where the device and its software mediate the experience of the city, the way the city recognises and identifies the citizen, and the level at which the citizen can engage with its urban space and systems. Rose et al. extends on this relational dimension, arguing that the smartphone and apps are also not “neutral” interfaces but instead, in design and data use, generate and perpetuate normative

³⁸¹ Hamed Chourabi et al. “Understanding Smart Cities: An Integrative Framework,” presented at 45th Hawaii International Conference on System Sciences (2012): 2289–2297; Rudolf Giffinger et al., “Smart Cities: Ranking of European Medium-Sized Cities,” Vienna, Austria: Centre of Regional Science (SRF), Vienna University of Technology, 2007, http://www.smart-cities.eu/download/smart_cities_final_report.pdf; David Toppeta, “The Smart City Vision: How Innovation and ICT Can Build Smart, “Livable”, Sustainable Cities,” The Innovation Knowledge Foundation, 2010, http://www.thinkinnovation.org/file/research/23/en/Toppeta_Report_005_2010.pdf.

³⁸² Sarah Barns, *Platform Urbanism* (Singapore: Springer, 2019); Rose et al., “Platform Urbanism”.

values.³⁸³ Thus, this chapter locates the disabled denizen in the Smart City at the site of the smartphone.

This chapter focuses on the role of the smartphone in the Smart City for two main reasons. Firstly, an extensive body of literature already exists that details the possibilities, and shortfalls, of mobiles for people with disabilities. It is important thus, both for this thesis but also for future research into the accessibility of Smart Cities, that this research is used to inform a broader understanding of the critical juncture of digital and spatial accessibility. Secondly, as previously noted, while definitions of Smart Cities focus on big data, sensors and the Internet of Things, the citizen of the Smart City is identified, surveilled and engaged through the user interface of the smartphone. This device and its software acts as a prosthesis – connecting the citizen with the city.

A broad definition of prosthesis is used here to incorporate more than its traditional definition as a limb replacement, but rather as an addition or augmentation, a device designed to make the body work better. The thesis also includes Medard Hilhorst's interpretation of prosthesis as bound up in place and meaning, not merely as an artefact nor substitute for a body part. Likewise, Hilhorst recognises the varying connotations of prosthetics, "to make a body more complete, to fill up what is lost or missing, to repair a deficient body, to restore normality."³⁸⁴ Therefore, while this argument refers to smartphones as performing a type of prosthetic role, it does not claim the smartphone to be a prosthesis but, rather, to both have a prosthetic nature and conjure a prosthetic imaginary.³⁸⁵ The framing of the smartphone as prosthesis

³⁸³ Rose et al., "Platform Urbanism".

³⁸⁴ Medard Hilhorst, "'Prosthetic Fit': On Personal Identity and the Value of Bodily Difference," *Medicine, Health Care, and Philosophy* 7, no. 3 (2004): 304, <https://doi.org/10.1007/s11019-004-5528-y>.

³⁸⁵ Anne Cranny-Francis, "From Extension to Engagement: Mapping the Imaginary of Wearable Technology," *Visual Communication* 7, no. 3 (2008), <https://doi.org/10.1177/1470357208092325>

is tied to previous work, particularly in the early 2000s, on cyborg culture.³⁸⁶ Such entwining of human and machine has been a common metaphor within popular culture and science fiction representations, but was also utilised in descriptions of the shifts in everyday life, describing the new ways people were using technology, and particularly the smartphone.³⁸⁷

The smartphone as a type of prosthesis then is not unique to people with disabilities – they use smartphones as an “extension of their minds and part of their selves”.³⁸⁸ However, in the intersection with recent attention in science and technology fields to provide accessibility features and apps, the smartphone is also evoked as a specific tool for people with disabilities. Moreover, as is explained in the following chapter (Chapter 7), the smartphone also operates to mediate and moderate representations and experiences of disability in an urban framework.

More than “augmentations of our sensorium”,³⁸⁹ the smartphone acts as a device which shifts the relationship between body and the environment, and between actual and digital space. Well before the popularisation of the Smart City concept, and indeed before the full capacities and everydayness of the smartphone, Richardson predicted how they would affect the reconfiguration, design and planning of urban space. Richardson also highlights the ways in which mobiles affect the experience of bodies, claiming they are “tools which impact upon our body limits, shifting the variable boundaries of embodiment, and altering our sense of having a body”.³⁹⁰ The smartphone is therefore an important focal point for the body of

³⁸⁶ Chris Gray, *Cyborg Citizen: Politics in the Posthuman Age* (New York: Routledge, 2001); Mark Hansen, *Bodies in Code: Interface with New Media* (New York: Routledge, 2006); Donna Haraway, *Simians, Cyborgs and Women* (London: Free Association, 1991).

³⁸⁷ Donna Reeve, “Cyborgs, Cripples and Icrip: Reflections on the Contribution of Haraway to Disability Studies,” in *Disability and Social Theory*, ed. Dan Goodley, Bill Hughes and Lennard Davis, 91–111 (London: Palgrave Macmillan, 2012).

³⁸⁸ Caroline Marchant and Stephanie O’Donohoe, “*Homo prostheticus?* Incorporeality and the Emerging Adult-Smartphone Assemblage,” *Information, Technology and People* 3, no. 2 (2019): 453

³⁸⁹ Ingrid Richardson, “Pocket Technoscapes: The Bodily Incorporation of Mobile Media,” *Continuum* 21, no. 2 (2007): 207, <https://doi.org/10.1080/10304310701269057>.

³⁹⁰ Richardson, “Pocket Technoscapes,” 207.

research that has investigated what the benefits and limitations are of the smartphone for people with disabilities, but also because it presents a tangible (rather than theoretical) space from which to engage with experiences of disability.

Both within and outside of the Smart City discourse, researchers have been exploring the multiple ways in which smartphones might affect how people with disabilities traverse the urban environment, from increasing independence to facilitating access to inaccessible urban spaces. For example, Natasha Saltes looks at the “embodied practices of mobility” or ways in which smartphones are used by people with disabilities as a way to gain or negotiate access to spaces.³⁹¹ Saltes argues that spaces that exclude are made porous or flexible via the use of the smartphone, but also that access incorporates multiple forms – access for information, for connectivity and for advocacy. The notion that access is not a singular concept or solution – typically manifesting in the inclusion of wider doorway or wheelchair ramps – is reflected in the variety of research, from multiple subject areas, that addresses the impact of the mobile on disability.

One particular focus has been on the socially empowering capacity of mobiles. Research by Söderström³⁹² and Naslund and Gardelli³⁹³ discusses the benefits and limitations of smartphones for increasing social access and inclusion, “revealing its twofold property as a mainstream technology simultaneously functioning as an

³⁹¹ Natasha Saltes, “Navigating Disabling Spaces: Challenging Ontological Norms and the Spatialization of Difference Through ‘Embodied Practices of Mobility,’” *Mobilities* 13, no. 1 (2018): 81–95, <https://doi.org/10.1080/17450101.2017.1333279>.

³⁹² Sylvia Söderström and B. Ytterhus, “The Use and Non-Use of Assistive Technologies from the World of Information and Communication Technology by Visually Impaired Young People: A Walk on the Tightrope of Peer Inclusion,” *Disability and Society* 25, no. 2 (2010): 303–315, <https://doi.org/10.1080/09687591003701215>; Sylvia Söderström, “Staying Safe While On The Move: Exploring Differences In Disabled And Non-Disabled Young People’s Perceptions Of The Mobile Phone’s Significance In Daily Life,” *Young* 19, no. 1 (2011): 91–109, <https://doi.org/10.1177/110330881001900106>.

³⁹³ Rebecka Näslund and Åsa Gardelli. “‘I Know, I Can, I Will Try’: Youths and Adults With Intellectual Disabilities in Sweden Using Information and Communication in Their Everyday Life,” *Disability and Society* 28, no. 1 (2012): 28–40, <https://doi.org/10.1080/09687599.2012.695528>

assistive technology”.³⁹⁴ Here, they emphasise the role of the smartphone as socially and culturally assistive. Of note, most research in this arena is focused on young people with disabilities’ use of smartphones. In these studies, smartphones and ICT more broadly are shown to provide people with disabilities personal development, safety, empowerment, agency, independence, participation and the maintenance and generation of social ties and support.³⁹⁵ The rise of smartphones has also had a significant impact on the social inclusion of people with disabilities – that is, this population uses mobile media in the same way as the non-disabled population.³⁹⁶ Interestingly, the socio-cultural value of smartphones is nevertheless largely neglected in Smart City discourse; instead, the mobile device is defined as a type of “functional and sensorial prosthesis”³⁹⁷ framed as AT that connects the individual to the city, but not to each other.

³⁹⁴ Söderstrom, “Staying Safe While on the Move,” 105.

³⁹⁵ Naslund and Gardelli, “‘I Know, I Can, I Will Try’”; Söderström and Ytterhus, “The Use and Non-Use of Assistive Technologies”; Söderström, “Staying safe while on the move”; Joyojeet Pal and Meera Lakshmanan, “Mobile Devices and Weak Ties: A Study of Vision Impairments and Workplace Access in Bangalore,” *Disability and Rehabilitation: Assistive Technology* 10, no. 4 (2013): 1–9, <https://doi.org/10.3109/17483107.2014.974224>; Ingunn Moser, “Disability and the Promises of Technology: Technology, Subjectivity and The Embodiment Within an Order of the Normal,” *Information, Communication and Society* 9, no. 3 (2006): 373–395, <https://doi.org/10.1080/13691180600751348>; Yoshiko Okuyama, “A Case Study of US Deaf Teens’ Text Messaging: Their Innovations and Adoption of Textisms,” *New Media and Society* 15, no. 8 (2013): 1224–1240, <https://doi.org/10.1177/1461444813480014>.

³⁹⁶ Saltes, “Navigating Disabling Spaces”; David McNaughton and Janice Light, “The iPad and Mobile Technology Revolution: Benefits and Challenges for Individuals Who Require Augmentative and Alternative Communication,” *Augmentative and Alternative Communication* 29, no. 2 (2013): 107–116, <https://doi.org/10.3109/07434618.2013.784930>.

³⁹⁷ Nick Srnicek, “Auxiliary Organs: An Ethics of the Extended Mind,” in *The Imaginary App*, ed. Paul Miller and Svitlana Matviyenko, 71–82 (London: MIT Press, 2014).

The smartphone as an AT³⁹⁸ or prosthesis³⁹⁹ is not unique to the Smart City discourse; this frame has been used to investigate the capacity of smartphones in mitigating the experience of disability from the origination of the smartphone itself. For example, Abbott et al. highlights their increasing role as AT in enabling learning.⁴⁰⁰ They identify smartphones in particular as challenging providers of and research into AT to move “away from being solely oriented around product evaluation and towards a user-centered approach”.⁴⁰¹ Likewise, Doughty identifies the breadth and depth of areas in which smartphones act as an AT – from health service delivery, education facilitation, accidents/incidents detection, personal communication aids, to mental health and wellbeing support.⁴⁰² While not focusing solely on people with disabilities – his analysis cites smartphone use as an AT which encompasses “a range of vulnerable groups” – Doughty frames the smartphone and its applications as a low cost and “boundless” extension of existing telecare/health services. Network limitations (including rural access), battery reliance and possible security weaknesses

³⁹⁸ Chris Abbott et al., “Emerging Issues and Current Trends in Assistive Technology Use 2007-2010: Practising, Assisting and Enabling Learning for All,” *Disability and Rehabilitation: Assistive Technology* 9, no. 6 (2014): 453–462, <https://doi.org/10.3109/17483107.2013.840862>; Kevin Doughty, “SPAS (Smart Phone Applications) – A New Form of Assistive Technology,” *Journal Of Assistive Technologies* 5, no. 2 (2011): 88–94, <https://doi.org/10.1108/17549451111149296>; Elizabeth Keating and Gene Mirus, “American Sign Language in Virtual Space: Interactions Between Deaf Users of Computer-Mediated Video Communication and the Impact of Technology on Language Practices,” *Language and Society* 32, no. 5 (2003): 693–714, <https://doi.org/10.1017/S0047404503325047>; Huiying Shen et al., “A Mobile Phone System to Find Cross Walks For Visually Impaired Pedestrians,” *Technology and Disability* 20, no. 3 (2008): 217–224; Sharon Livingstone-Lee, Ronald Skelton, and Nigel Livingston, “Transit Apps for People with Brain Injury and Other Cognitive Disabilities: The State Of The Art,” *Assistive Technology* 26, no. 4 (2014): 209–214, <https://doi.org/10.1080/10400435.2014.930076>; Claudio Palazzi, Lorenzo Teodori, Marco Rocchetti. “Path 2.0: A Participatory System for the Generation of Accessible Routes,” (presented at *010 IEEE International Conference on Multimedia and Expo*, 2010), 1707–1711, <https://doi.org/10.1109/ICME.2010.5583240>.

³⁹⁹ PJ Rey and Whitney Bosel, “The Web, Digital Prostheses, and Augmented Subjectivity,” in *Routledge Handbook of Science, Technology and Society*, ed. Daniel Kleinman and Kelly Moore, 173–188 (London: Routledge, 2014); Katie Ellis and Gerard Goggin, “Disability, Locative Media and Complex Ubiquity,” in *Ubiquitous Computing, Complexity and Culture*, ed. Jay David Bolter, 272–287 (London: Routledge, 2016).

⁴⁰⁰ Abbott et al., “Emerging Issues and Current Trends”.

⁴⁰¹ Abbott et al., “Emerging Issues and Current Trends,” 453.

⁴⁰² Doughty, “SPAs (smart phone applications)”.

are cited as some of the risks associated with the use of smartphones as an AT, ongoing issues which reoccur in associated literature and in the *Navigating Urban Spaces* project almost a decade later.

The configuration of the smartphone as an assistive device⁴⁰³ has been specifically examined in relation to their use as a navigational tool. The *Navigating Urban Spaces* research project, detailed later in this chapter, strove to contribute to this field of enquiry, examining how people with low vision or blindness, or mobility-based disabilities use their phones to help them navigate urban spaces.⁴⁰⁴ Shen et al.⁴⁰⁵ and Livingstone-Lee et al.⁴⁰⁶ also explore the role of the smartphone in the navigation, access and use of urban space, the former focusing on vision-based disabilities and the latter on those with cognitive disabilities or injuries. While Shen et al. proposed a system that operated on the pre-smartphone mobile phone, since then multiple apps and products have been created that utilise smartphone technology, and primarily the phone camera, to assist in space navigation for the blind, for example Ariel Object Detection, GeorgiePhone and ViaOptaDaily.

In conjunction with research into the capabilities of the smartphone as an assistive device, another body of research is concerned with how the design of the smartphone may inhibit its assistive potential or add another layer of inaccessibility to the experiences of people with disabilities.⁴⁰⁷ Recent critiques of the Smart City

⁴⁰³ Rosie Spinks, "The New Technologies Helping Visually Impaired People Navigate Cities," *The Guardian*, August 30, 2014, <http://www.theguardian.com/sustainable-business/2014/aug/29/new-technologies-visually-impaired-navigate-cities>.

⁴⁰⁴ Publications from this research project include: Mike Kent et al., "Using Smartphone to Navigate Urban Spaces: People with Disabilities and the Role of Mobile Technologies in Three WA Locations," Curtin, 2017, <https://espace.curtin.edu.au/handle/20.500.11937/70858>; Leanne McRae et al., "Privacy and the Ethics Of Disability Research: Changing Perceptions of Privacy and the Smartphone," in *Second Handbook of Internet Research*, ed. Jeremy Hunsinger, Matthew Allen, and Lisbeth Klastrop, 413–429 (London: Springer, 2019).

⁴⁰⁵ Shen, "A Mobile Phone System".

⁴⁰⁶ Livingstone-Lee, Skelton and Livingston, "Transit Apps for People with Brain Injury".

⁴⁰⁷ Anna Cavender et al. "MobileASL: Intelligibility of Sign Language Video Over Mobile Phones," *Disability and Rehabilitation: Assistive Technology* 3, no. 1–2 (2008): 93-105, <https://doi.org/10.1080/17483100701343475>; Chiu Hsiao-Ping et al. "Essential Need and Requirements of Mobile Phones for the Deaf," *Assistive Technology* 22, no. 3 (2010): 172–185,

have likewise taken this approach, providing alternative models that respond to the potential increased digital divide caused by inaccessible technology for people with disabilities.⁴⁰⁸ Limitations of and issues with the ease of use, specifically for blind and d/Deaf users, is reflected in the research into more accessible mobile design, the use of universal design principles, and specific adjustments required for use by those with specific or multiple disabilities. Ornella and Buisine identify that the universal design of mobiles should not be specialised for one particular population but be suitable for most users.⁴⁰⁹ However, for this principle to be applied to mobile and mobile application design, research has tended to focus on the current use (and limitations of) by people with specific types of disabilities, primarily those with vision and hearing loss. Cavender et al. examine the potentials and current limitations of video sign language communication,⁴¹⁰ whereas Park et al. focus on voice over and typing functions of iPhones for the blind.⁴¹¹ Additionally, there has been research into the design of smartphones (thus touchscreen technology) for people with motor disabilities, specifically hand and finger; see Godinho et al.⁴¹²

While this research is important, it remains focused on specific, rather than the diversity of needs and limitations. Park et al. further recognise that while companies have programming guidelines that address accessibility issues, developers and

<https://doi.org/10.1080/10400435.2010.483652>; Ornella Plos and Stephanie Buisine, "Universal Design for Mobile Phones: A Case Study," *CHI EA '06: CHI '06 Extended Abstracts on Human Factors in Computing Systems* (New York: Association for Computing Machinery, 2006); Kyudong Park, Taedong Goh, and Hyo-Jeong So, "Toward Accessible Mobile Application Design: Developing Mobile Application Accessibility Guidelines for People with Visual Impairment," *Proceedings of HCI Korea 2015* (Seoul: Hanbit Media Inc, 2015): 31–38; Rui Godinho et al., "Improving Accessibility of Mobile Devices with EasyWrite," *Behaviour and Information Technology* 34, no. 2 (2015): 135–150, <https://doi.org/10.1080/0144929X.2014.981584>; Tonya Smith-Jackson, Maury Nussbaum and Aaron Mooney, "Accessible Cell Phone Design: Development and Application of a Need Analysis Framework," *Disability and Rehabilitation* 25, no. 10 (2003): 549–560, <https://doi.org/10.1080/0963828031000071732>.

⁴⁰⁸ Smart Cities for All Toolkit, <https://smartcities4all.org>.

⁴⁰⁹ Plos and Buisine, "Universal Design for Mobile Phones".

⁴¹⁰ Cavender, "MobileASL".

⁴¹¹ Park, Taedong, and So, "Toward Accessible Mobile Application Design".

⁴¹² Godinho et al., "Improving Accessibility of Mobile Devices".

designers are not always aware of such guidelines,⁴¹³ and that there exists no international set of standards and guidelines for accessibility. Indeed, as discussed in the introduction to this thesis, just as there lacks international standards of accessibility, there lacks overarching consensus on what accessibility – nor universal or inclusive design – incorporates.⁴¹⁴

Across the studies that have been outlined here, there is a consistent acknowledgement of the limitations of current research in this field. For example, greater diversity or variation of disabilities needed to be incorporated to understand the range and breadth of mobile use by people with disabilities. The sample groups in the studies outlined often did not represent *all* disabilities, whereas “previous research has been criticized for collapsing differing types of impairments into a single homogeneous category.”⁴¹⁵ Indeed, issues with the diversity of participants represented in research on people with disability and mobile/smartphone use were not confined to definitions of disability, but a lack of awareness of intradisability diversity. For example, Kane et al.⁴¹⁶ and Naftali and Findalater’s⁴¹⁷ earlier research acknowledged age and socio-economic status were particularly relevant factors influencing the use of mobiles generally, as well as for people with disabilities. More recently, Naftali and Findalater’s research also found the fluency/literacy in and

⁴¹³ Park, Taedong, and So, “Toward Accessible Mobile Application Design,” 31.

⁴¹⁴ Hans Persson et al., “Universal Design, Inclusive Design, Accessible Design, Design For All: Different Concepts, One Goal? On the Concept of Accessibility, Historical, Methodological and Philosophical Aspects,” *Access in the Information Society* 14, no. 4 (2015): 505–526, <https://doi.org/10.1007/s10209-014-0358-z>.

⁴¹⁵ Arul Chib and Qiaolei Jiang, “Investigating Modern-Day Talaria: Mobile and the Mobility-Impaired in Singapore,” *Journal of Computer-Mediated Communication* 19, no. 3 (2014): 695–711, <https://doi.org/10.1111/jcc4.12070>.

⁴¹⁶ Shaun Kane et al., “Freedom to Roam: A Study of Mobile Device Adoption and Accessibility for People with Visual and Motor Disabilities,” presented at *ASSETS* (Pittsburg, October 25–28, 2009), <https://faculty.washington.edu/wobbrock/pubs/assets-09.pdf>.

⁴¹⁷ Maia Naftali and Leah Findalater. “Accessibility in Context: Understanding the Truly Mobile Experience of Smartphone Users with Motor Impairments,” presented at *ASSETS* (Rochester, NY, October 20–22, 2014), <https://faculty.washington.edu/leahkf/pubs/ASSETS2014-naftali.pdf>

regular use of smartphones varied greatly across participants.⁴¹⁸ My research into smartphone use by people with vision based disabilities in 2020 reaffirmed these earlier findings – that while uptake of smartphones had increased overall for this disability group, there was a broad range of levels of engagement and mobile literacy.⁴¹⁹ Chib and Jiang emphasise that the ideal of mobile technology as empowering people with disabilities should be balanced with the inequalities that the mobile can accentuate, and the impact of intradisability diversity on these differing experiences.⁴²⁰

In addition, in part due to the relative recency of the proliferation and speed of technological evolutions in smartphone use, the impact on smartphone technology for people with disabilities remains under researched, yet it is almost consistently positioned in a positive, prosthetic frame. What literature exists expands across two main research areas – the design of mobiles/mobile technology for people with disabilities (or application of universal design principles), and the mobile as a socially empowering device. Research on the relationship between smartphones and (predominantly physical) disabilities is concentrated on how they may aid those with visual and/or hearing disabilities.⁴²¹ However, the benefits of smartphones as both an AT and to maintain or establish social networks intersect with statistics/research (e.g. PEW Research Center) that suggest people with disabilities have less access to smartphones and other ICT. Indeed, there exists a significant body of critiques that

⁴¹⁸ As discussed in Chapter 8, Ellcessor’s concept of cultural accessibility is important here in recognizing variations in access (Elizabeth Ellcessor, “Blurred Lines: Accessibility, Disability and Definitional Limitation,” *First Monday* 20, no. 9 (2015))

⁴¹⁹ Kathryn Locke et al., “Smartphones And Equal Access For People Who Are Blind Or Have Low Vision,” Curtin University, 2020, <https://ccat.curtin.edu.au/events-and-conferences/acat-seminar-series-2/>

⁴²⁰ Chib and Jiang, “Investigating Modern-Day Talaria”

⁴²¹ While physical disabilities are prioritised in most research on disabilities and smartphones, there is growing research on the relationship between smartphones and their benefits for people with intellectual and developmental disabilities.

highlights the digital divide, exacerbation of existing power differentials, and the socially disabling impact of mobile technology for people with disabilities.⁴²²

Chib and Jiang provide perhaps the most comprehensive review of the existing literature on the relationship between ICT, smartphones included, and their benefits. They argue that there exists a relatively uncritical approach to these benefits. In particular, they question the biomedical approach underlying this uncritical research and the premise that physical (and mental) impairments can be overcome by utilising a technology substitution:

*The ideology of liberation from the impaired body proposes that disabled people can carry out an independent life with a mobile phone (Abascal and Civit, 2000), with the device portrayed as an assistant to carry out hitherto unattainable functions (Bertini and Kimani, 2003)... Paradoxically, the medical paradigm, thus stated, strips the disabled individual of agency, placing the onus of the transformation firmly on the technology.*⁴²³

⁴²² Alison Adam and David Kreps, "Web Accessibility: A Digital Divide for the Disabled?" in *Social Inclusion: Societal and Organizational Implications for Information Systems*, ed. E. M. Trauth et al. Transactions of IFIP 8.2, 208 (Springer, 2006); David Kreps and Alison Adam, *Advances in Universal Web Design* (IGI Global, October 2006), <https://doi.org/10.4018/978-1-59904-096-7.ch002>; Jennifer Cole et al., "GimpGirl Grows Up: Women with Disabilities Redefining and Reclaiming Community," *New Media and Society* 13, no. 7 (2011): 1161–1179; Paul Baker and Christine Bellorde, "Factors Influencing Adoption of Wireless Technologies: Key Policy Issues, Barriers and Opportunities for People with Disabilities," *Information Technology and Disabilities* 9, no. 2 (2003), <http://itd.athenpro.org/volume9/number2/baker.html>; Gerard Goggin, "Disability, Mobiles, and Social Policy: New Modes of Communication and Governance," in *Mobile Communication: Dimensions of Social Policy*, ed. James Katz, 259–272 (New Brunswick: Transaction Publishers); Ingunn Moser, "Disability and the Promises of Technology: Technology, Subjectivity and the Embodiment Within an Order of the Normal," *Information, Communication and Society* 9, no. 3 (2006): 373–395, <https://doi.org/10.1080/13691180600751348>; Robert Pedlow, Devva Kasnitz, and Russell Shuttleworth, "Barriers to the Adoption of Cell Phone for Older People with Impairments in the USA," *Technology and Disability* 22, no. 3 (2010): 147–158, <https://doi.org/10.3233/TAD-2010-0298>; Fran Vicary and Miriam Gomez, "From Inclusive Accessibility to Exclusionary Complexity: The Communications Technologies Trajectory," *Intellectual Disability Australasia* 33, no. 4 (2012), <https://search.informit.org/doi/10.3316/informit.259205819187696>; Toan Nguyen et al., "Telecommunications Access – Matching Available Technologies to People with Physical Disabilities," *Australasian Physical and Engineering Sciences in Medicine* 29, no. 1 (2006), 87–97, <https://doi.org/10.3316/informit.456712165722905>; Stephen MacDonald and John Clayton, "Back to the Future, Disability and the Digital Divide," *Disability and Society* 28, no. 5 (2013): 702–718, <https://doi.org/10.1080/09687599.2012.732538>.

⁴²³ Chib and Jiang, "Investigating Modern-Day Talaria," 698.

While recognising the existence of more critical work,⁴²⁴ they highlight the potential of smartphones/mobiles in creating social dependencies, security risks and further intensification of socio-political and economic gaps, not unlike similar research into the risks associated with smartphones for people without disabilities. Goggin further emphasises the need for more critical discussion of the communication–social policy nexus.⁴²⁵ Other research has emphasised the distinction between the acquisition and use of smartphones/mobiles by people with intellectual and developmental disabilities, in particular, but not exclusively, arguing that an underutilisation of these technologies across the population remains.⁴²⁶ Here, the complexity of technology and socio-cultural expectation of use creates new disabling barriers and levels of exclusion. It is therefore integral to return to this research in order to establish historical context and informed approaches in Smart City projects.

6.4. Smart technology and disability in urban spaces: The *Navigating Urban Spaces* project

Understanding the relationship between new technology, specifically smartphones, and disability was a core aim of the *Navigating Urban Spaces* project. The project aimed to review the research on disability and smartphones, gauge how people with disabilities used smartphones (via focus groups and interviews), specifically, how/if they used smartphones for navigation, and what additional or ‘ideal’ smartphone features/apps would aid in place navigation. In doing so, it hoped to discover how effective smartphones were in mitigating accessibility issues and enabling (both socially and in navigation) the experience of urban space for people with disabilities.

Using Smart Phones to Navigate Urban Spaces was a project funded by the WA Disability Services Commission and the 2016 Dr Louisa Alessandri Research Grant,

⁴²⁴ Cole et al., “GimpGirl Grows Up”; Goggin, “Disability, Mobiles, and Social Policy”.

⁴²⁵ Goggin, “Disability, Mobiles, and Social Policy”.

⁴²⁶ Emily Tanis et al., “Self Report Computer-Based Survey of Technology Use by People with Intellectual and Developmental Disabilities,” *Intellectual and Developmental Disabilities* 50, no. 1 (2012): 53–68, <https://doi.org/10.1352/1934-9556-50.1.53>; Vicary and Gomez, “From Inclusive Accessibility to Exclusionary Complexity”.

and further supported by the School of Media, Culture and the Creative Arts at Curtin University. In this project, people with vision impairment and wheelchair users were considered for this study in three WA locations – metropolitan Perth, the Curtin University Bentley campus and the regional city of Bunbury. Focus groups and one-on-one interviews with participants were used to ascertain how and what they used their smartphones for, the benefits (and disadvantages) of their smartphone, and what they would like their smartphone to do. The project also initially proposed to use an app designed to track how participants used their smartphones; however, as will be discussed later, this component was abandoned due to a lack of participant uptake. Finally, the *Navigating Urban Spaces* project aimed to highlight the arguments made around concurrent Smart City critiques.⁴²⁷

In the focus groups and interviews participants revealed what the previous research had already established – that smartphones are an important part of people with disabilities' everyday lives, and are important for social identity and independence. They used their smartphones to access a number of apps, websites and features including Google Maps, banking technology, Snap Send Solve, Health Direct, SMS, Facebook, Messenger, Twitter, web browsers and GPS technology. Smartphones were further identified as an important navigational tool, with participants utilising built-in GPS functionality, mapping applications, web searches for (and about) locations, environmental monitoring (e.g. weather apps), digital assistants (e.g. Siri), screen readers and optical character and image recognition apps.

Distinctions were found between wheelchair users and people with low vision or blindness – a broader range of accessibility apps and built-in functions such as screen readers and image recognition apps were utilised by low vision or blind users,

⁴²⁷ See for example, Thatcher's article on data colonisation, and Sadowski and Pasquale's critique of surveillance. Jim Thatcher, David O'Sullivan, and Dillon Mahmoudi, "Data Colonisation Through Accumulation by Dispossession: New Metaphors for Daily Data," *Environment and Planning* 34, no. 6 (2016): 990-1006, <https://doi.org/10.1177/02637758166633195>; Jathan Sadowski and F. A. Pasquale, "The Spectrum of Control: A Social Theory of the Smart City," *First Monday* 20, no. 7 (2015), <http://firstmonday.org/ojs/index.php/fm/article/view/5903/4660?curator=TechREDEF>.

whereas wheelchair users were more reliant on GPS functions, route-finding applications and digital assistants. The reliance on and trust of these navigational tools varied however; participants expressed problems with GPS accuracy, a lack of use indoors, and an absence of up-to-date environmental information, e.g. a broken pavement. Furthermore, people with vision impairment had generally less confidence in GPS functions and often required support workers or family and friends to help them to set up and use the phone initially. The role of the support worker as a mediator and educator of smartphone capabilities was also evident in new users compared to more experienced users, though support workers were not always confident with their capacity in this role. Whilst the smartphone had, for some, reduced a reliance on support workers (as digital assistant functionality can now facilitate their practices more independently), for others it had increased and shifted the importance of their role. Regional and city participants also differed in how their smartphone facilitated navigation, with regional participants unlikely to use public transport apps (due to the lack of services), and GPS accuracy being diminished due to network range limitations.

Overall, while the use of smartphones to navigate urban spaces was deemed essential by all participants, there are a number of issues and a wish list for potential future technological developments. For wheelchair users this wish list included: more information on the accessibility of urban spaces such as topographical information about slopes, accessible buildings and wheelchair-specific access paths; indoor GPS functionality; and easier access to current information – resources such as the toilet map and Access WA are not produced as apps yet, and using the information on a website through a smartphone is less convenient. For people with low vision or blindness, this wish list included: regular update of useful apps (certain apps such as the Guide Dogs NSW/ACT and devices like the Captain are not being updated, meaning that once-useful options cannot be used any longer); and the reduction in the cost of apps (a number of useful apps such as Blind Square and KNFB Reader are

expensive compared to other apps which can make it challenging for some people to purchase the best access solution).⁴²⁸

The discussion of navigating urban spaces often came back to the inaccessibility of spaces themselves – either through inaccessible design, temporary faults (e.g. road works), or maintenance faults (e.g. potholes). These environmental dimensions were also not typically included in mapping software used. Of note, the use of smartphones for navigation was entwined with notions of trust and safety, with vision impaired participants articulating that while they might feel confident navigating their phone, they felt less confident using their phone for navigation. The accuracy of the GPS function was discussed at length, specifically in relation to the inability to use it indoors and the diminished accuracy of digital maps in regional areas. Identified issues included navigation app accuracy (whether this be outdated GPS information or a lack of proximity accuracy), a lack of awareness of ‘good’ available accessibility apps (and changes to accessibility features of smartphones), and inaccessibility of spaces more generally. The cost associated both with data use and accessibility apps – which are consistently higher than ‘non’ accessible navigation apps – was also a regular issue. Likewise, the need for people with a disability to have consistent and affordable Wi-Fi connections was noted.

The findings from this project support the theory that smartphones have become an important accessibility tool for people with mobility and vision impairments. But they also reveal that accessibility is neither a one size fits all consideration – people with different disabilities not only had different accessibility requirements but also addressed inaccessibility in distinctive and diverse ways. Furthermore, despite all the supposed accessibility features and functions of the smartphone, the technology could only alleviate the inaccessibility of urban spaces in limited ways. The socio-economics of disability, specifically the increased cost of living with a disability,

⁴²⁸ Mike Oliver, “The Politics of Disablement,” *Critical Social Policy* 4 (1984): 21–33; Hester Parr and Ruth Butler (ed.), *Mind and Body, Spaces* (New York: Routledge, 1999).

continued to impact participants' ability to affect technology use – of note, this was in a sample group that had already purchased a smartphone, and did not account for those who could not afford one.

Lastly, despite the benefits of smartphones for people with disabilities, participants revealed concerns about how their smartphone use also undermined their privacy and security. This particular finding was an important, if unexpected, outcome of this research. It was also an issue expressed in two ways – both within focus groups discussions (in particular in relation to social media use) and in the reluctance of participants to use a proposed app designed for this research project. As such, the methodology for the project was adjusted to reflect the expressions and concerns of participants. The app we had initially proposed to use would allow researchers to monitor participants' smartphone use and how this intersected with their experiences of their environment. What the app would capture, how the data would be used and stored, and the exclusive use of the data by the researchers were all clearly explained to potential participants, yet there remained a general reluctance to use the app due to privacy concerns.

Privacy concerns are currently a significant and topical issue experienced by most individuals engaged in any variety of digital engagement. The complexity of the privacy/information transaction and the ambiguity surrounding how personal information is gathered, used and stored by digital companies has resulted in digital data security becoming a global issue.⁴²⁹ Furthermore, people who already engage in privacy management on a daily basis most keenly feel the value of privacy –and the need to navigate the complexity of privacy/access 'transactions':

⁴²⁹ Sarah Moore et al., "Consent Processes for Mobile App Mediated Research: Systematic Review," *JMIR Mhealth Uhealth* 5, no. 8 (2017): 4–7, <https://doi.org/10.2196/mhealth.7014>; Jan van Dijk, "'You Have One identity': Performing the Self on Facebook and LinkedIn," *Media, Culture and Society* 35, no. 2 (2013): 206, <https://doi.org/10.1177/0163443712468605>.

*People with disabilities are sometimes treated as nonpersons and sometimes like 'open persons' (Goffman 1963, 126; Cahill and Eggleston 1994, 304) that can be approached by anyone at any time.*⁴³⁰

As such, for people with disabilities, the visibility of some disabilities, the surrendering of personal privacy to obtain assistance, and the importance of the relationship between privacy and independence⁴³¹ accentuates the value of and desire to protect personal privacy.

What the results of our study found was that while all participants used a smartphone, the way in which they used it and the extent to which it aided in place navigation was incredibly varied. While the discourse of the Smart City assumes that smart technology, and smartphones, will connect and integrate all bodies, the barriers to accessibility often remain outside of any design consideration. The cost of access – from smart devices to network access – and the education or awareness of smart device capabilities can significantly affect their capacity to alleviate both social and physical isolation. Furthermore, as the case study of Sidewalk Toronto reveals, while accessibility may be considered in the design of a Smart City via the smartphone as citizen interface, it often comes at the cost of the relinquishing of autonomy and privacy.

6.4.1. Case study: Sidewalk Toronto

This Smart City project, at Port Lands on the waterfront of the city of Toronto, was initially presented as a highly accessible urban space. In the design phase, Sidewalk Toronto (as it was dubbed) was described as “a new type of place that combines the best in urban design with the latest in digital technology to address some of the biggest challenges facing cities, including energy use, housing affordability, and

⁴³⁰ David Wästerfors, “Required to be Creative: Everyday Ways for Dealing with Inaccessibility,” *Disability and Society* 36, no. 2 (2021): 265–285, <https://doi.org/10.1080/09687599.2020.1720610>.

⁴³¹ Klaus Hoeyer, “The Role of Privacy and Informed Consent in Danish and Swedish Biobank Practices: Exploring Donor Perspectives,” *Medical Law International* 10, no. 4 (2010): 269–285, <https://doi.org/10.1177/096853321001000402>.

transportation.”⁴³² The developers also promoted a large public engagement component, including public talks, roundtables, neighbourhood meetings, workshops, pop-up stations, reference panels, design jams, civic labs, a free summer kids’ camp, a fellows program, and a small grants program. This public engagement includes the development of an Accessibility Plan via multiple public workshops and in partnership with accessibility organisations, including the Canadian National Institute for the Blind as well as smart accessibility companies Access Now,⁴³³ Hyperlight Systems⁴³⁴ and Key2Access⁴³⁵. In February 2019 they put forward a draft of Accessibility Principals⁴³⁶ which emphasised co-development and co-design, engaging public and the accessibility community through events and roundtables. However, despite the appearance of inclusion and emphasis on accessibility, Sidewalk Toronto could never be fully analysed or critiqued beyond the conceptual stage, as it was aborted in 2020.

The general principles of the concept plan included to: enable experiences that were not possible before; do “nothing about us without us”; make infrastructure simple, durable, reliable and easily maintainable; design predictable, intuitive experiences; be future proof by default; make the accessible path the most convenient, delightful path; prioritise end-to-end accessibility; and prioritise autonomy first.⁴³⁷ Further physical and digital accessibility principals were also drafted. These accessibility principles evoked the language of universal design,⁴³⁸ thus emphasising that the

⁴³² Sidewalk Toronto, “Vision” <https://sidewalktoronto.ca>.

⁴³³ Specifically creates hands-free elevators and gates. They market themselves as “Industry Leading Solutions for Accessibility and Smart City Tech” <http://www.hyperlight.systems>.

⁴³⁴ *Accessnow* is an accessibility mapping app using crowdsourcing to allow feedback on the accessibility of a location <http://accessnow.me/about/>.

⁴³⁵ Designed an app and a smart receiver for pedestrians activating crossing buttons. Also marketed as a “smart city solution” (<https://key2access.com>).

⁴³⁶ Sidewalk Labs, “Draft 1: Accessibility Principals,” 2018 <https://sidewalktoronto.ca/wp-content/uploads/2019/01/Draft-1-Accessibility-Principles.pdf>.

⁴³⁷ Sidewalk Labs, “Draft 1,” 16.

⁴³⁸ The Centre for Universal Design, *Guidelines for Use of the Principles of Universal Design* (North Carolina State University, 1997), https://projects.ncsu.edu/ncsu/design/cud/about_ud/docs/use_guidelines.pdf.

cause (and the resolution) to inaccess lay in design. However, the complexity of the experience and process of access – specifically the intersection between access, privacy and control – became a pertinent point of critique to the attempts to present (and design) Sidewalk Toronto as an inclusive Smart City. Soon after the tender was won, questions were raised over the transparency of the relationship between the developer, the “urban innovation company” Sidewalks Lab, and Waterfront Toronto (the public authority partnered on the project), the gentrification of the area and displacement of existing residents,⁴³⁹ and overarching privacy concerns.

The most persistent critique of the plan itself is based on the politics of big data and specifically the capacity for a large global company – Sidewalks Lab is owned by Alphabet, the parent company of Google – to monitor, gather and control information on the citizens of the Smart City. Indeed, the role of a private data-orientated company in designing Sidewalk Toronto has brought into question what Smart City citizens exchange in return for the technology that characterises this urban paradigm. As Carr and Hesse explain, Smart Cities have reignited old debates around data ownership and control:

*The circulation of data around the globe invokes questions about who owns and regulates them when stored and processed in remote geographic locations. This uncertainty is also not new. But scholars are more and more concerned about the implications of data-driven markets, algorithmic capitalism, and algorithmic governance.*⁴⁴⁰

In the case of Sidewalk Toronto – or Google City as it has become labelled by critics – the purpose and origin of Smart Cities is questioned. They argue that the discourse of the Smart City has been manifested and propelled by the tech companies that are

⁴³⁹ Constance Carr and Markus Hesse, “When Alphabet Inc. Plans Toronto’s Waterfront: New Post-political Modes of Urban Governance,” *Urban Planning* 5, no. 1 (2020), <https://doi.org/10.17645/up.v5i1.2519>.

⁴⁴⁰ Constance Carr and Markus Hesse, “Some Notes on Smart Cities and the Corporatization of Governance,” paper presented at the *International Symposium on the Emergence of the Smart City* (Luxemburg, March 6, 2019).

most to gain from the value of “surveillance capitalism”.⁴⁴¹ In extracting “personal and environmental data as an economic resource”⁴⁴² the resident is therefore reconfigured as a commodity rather than a citizen.

As a result of these concerns, the #BlockSidewalk group⁴⁴³ was formed as a group of key detractors, made up of residents, City Councillors, academics, and city planners (including Saadia Muzaffar who was initially a member of the project’s advisory panel). Another consultant on the initial project, privacy expert Dr Ann Cavoukian, had also quit after learning that third parties would be able to access information from the city. Furthermore, the Canadian Civil Liberties Association is also suing the government over the project on the basis that it was “inappropriate for a firm like Google to design privacy policies to govern city neighbourhoods, and comprehensive data collection online is harming individuals and groups”.⁴⁴⁴

This awareness of the transactions involved in the relinquishing of data (and privacy) in such a scenario is perhaps most acute for individuals with a disability. As McRae et al. explain, “people with disabilities consistently engage in privacy management in their daily lives as they encounter professionals, friends and strangers who press up against the privacy barriers that able-bodied people take for granted.”⁴⁴⁵ Thus, the forfeiting of privacy rights via/in exchange for the use of new technology can become a further (and often unwelcome) trade. The ambiguity surrounding consent, private data security (such as the sale of data to third parties), and passive surveillance have become significant issues for the way both people with and without disabilities

⁴⁴¹ Shoshana Zuboff, *The Age of Surveillance Capitalism* (London: Profile Books, 2019).

⁴⁴² T. F. Tierney, “Toronto’s Smart City: Everyday Life or Google Life,” *Architecture, Media, Politics, Society* 15, no. 1 (2019), https://www.scienceopen.com/document_file/301a59b4-1612-474b-ae50-a7e94e74d9a9/ScienceOpen/AMPS%2015.1.pdf.

⁴⁴³ <https://www.blocksidewalk.ca>

⁴⁴⁴ Jane Wakefield, “The Google City that has Angered Toronto,” *BBC News*, May 18, 2019, <https://www.bbc.com/news/technology-47815344>.

⁴⁴⁵ McRae et al., “Privacy and the ethics of disability research”.

participate with new media and smart technology⁴⁴⁶ and, in the case of Sidewalk Toronto, have also impacted the response to this Smart City development. Whilst the Smart City of Sidewalk Toronto promoted its understanding and application of accessibility, it did not define accessibility as a process, as relational, nor bound up in politics of disability. Specifically, in order to gain access to the Smart City, people with (and without) disabilities had to allow the city access to them. Note that, after this chapter was completed, Sidewalks Lab released a statement that the Toronto development would be abandoned. Citing economic uncertainty and “sustained unpredictabilities stemming from the coronavirus pandemic”,⁴⁴⁷ the Quayside project was deemed no longer financially viable.

6.5. Conclusion

While the paradigm of the Smart City incorporates accessibility more than previous city discourses and planning approaches such as the Creative City, it still remains ableist,⁴⁴⁸ with technology defining the experience of urban space and the experience of disability:

In their drive to promote the city, proponents of new urban mobilities deploy the rhetoric of liberty, security and sustainability while the actual government policies supported by this rhetoric entail systematic contradictions that confine human bodies in relative stasis, differentiate populations based on their profitability and legitimate pervasive forms of surveillance.⁴⁴⁹

In much of the literature on the Smart City, considerations of people with disabilities are confined to appropriations of the technology that characterise the paradigm.

⁴⁴⁶ Bart Clusters, “Click Here to Consent Forever: Expiry Dates for Informed Consent,” *Big Data and Society* 3, no. 1 (2016), <https://doi.org/10.1177/2053951715624935>; Susan Barnes, “A Privacy Paradox: Social Networking in the United States,” *First Monday* 11, no. 9 (2006), <http://firstmonday.org/ojs/index.php/fm/article/view/1394/1312>.

⁴⁴⁷ Cecco Leyland, “Google Affiliate Sidewalks Labs Abruptly Abandons Toronto Smart City Project,” *The Guardian*, May 8, 2020, <https://www.theguardian.com/technology/2020/may/07/google-sidewalk-labs-toronto-smart-city-abandoned>.

⁴⁴⁸ Chamee Yang, “The Paradox of Urban Mobility and the Spatialization of Technological Utopia,” in *Intelligent Infrastructure: Zipcars, Invisible Networks and Urban Transformation*, ed. T. F. Tierney (Charlottesville: University of Virginia Press, 2017), 186–208.

⁴⁴⁹ Yang, “The Paradox of Urban Mobility,” 204.

Furthermore, disability is still rarely addressed as a mainstream topic; instead, it is located in the work of those who already facilitate accessibility. Therefore, accessibility is an add on layer not built into the discourse, and is often a layer that addresses a limited definition of accessibility. This chapter argues that accessibility requires a broader definition, involving accessibility of experiences, participation and production of space, of access between spaces – and between Smart Cities. The complex relationship between smartphone and disability is specifically contextualised in the findings of the *Navigating Urban Spaces* research project which highlighted the diversity of experiences of disability and the layered, relational nature of accessibility. Access should also be considered as a point of transaction – in the Smart City this perspective becomes more prominent as the paradigm (both in theory and in practice) entails that the city also has access to bodies and their data.

While the language of the Smart City appears to recognise multiple mobilities and non-normative bodies, the role of the smartphone as citizen gateway is often constructed as a prosthetic device and, moreover, as one which resolves any immobility rather than engages with critical accessibility. Furthermore, as the case study of Sidewalk Toronto reveals, the definition of citizenship in the Smart City is vague, morphing into representations of denizens. Participation in and access to this city requires the investment in or relinquishing of privacy and data. This privacy–access transaction has impacted the never-to-be-realised Sidewalk Toronto project, generating a significant opponent base. The importance of privacy – and privacy protection – for people with disabilities has been established as a pertinent issue, also affecting our own research into and uptake of relevant accessibility tools and applications. But, perhaps most significantly, as the opponents to the Sidewalk Toronto project express, it is important to recognise that while the Smart City may indeed be more accessible, it can reduce the citizen to a commodity, a body of data, and thus the person with a disability back to being defined by their body rather than citizens and occupants, participants and producers of space.

7. Pokémon Go and urban accessibility

7.1. Introduction

The previous chapter identified the prosthetic role the smartphone has taken for people with disabilities, whilst accounting for the complexity and contradictions in this framing of technology as ‘resolving’ disability. In the Smart City, as articulated in Chapters 3 and 4, disability is consistently tethered to technology; however, this relationship is not typically contested. This chapter further probes the contradictory nature of this assumed relationship and the complexity of accessibility in the mediated urban space of the Smart City, using the specific case study of the ways that people with disabilities experience the AR game Pokémon Go. This case study is particularly useful for this thesis, revealing experiences of mediated urban space that emphasise mobility, but also as one where the meaning of and engagement with public space is reignited.

Current research and commentary on people with disabilities’ experience of Pokémon Go and other AR mobile games have focused on either inaccessibility (specifically for people with mobility-based disabilities) or the opportunity these games provide as a learning tool (specifically for people with intellectual disabilities and autism). This chapter reviews this commentary, arguing the nature of this game – located both within and outside of the mediated format of gaming – allows for an extended understanding of access. As Elcessor has discussed, the definition of accessibility has become blurred in the contemporary media context.⁴⁵⁰ This chapter expands on this discussion by questioning how accessibility in the new media environment operates and extends to non-media spaces. In particular, utilising the social model of disability,⁴⁵¹ this chapter considers how AR mobile games such as Pokémon Go can reveal exclusions in ‘real’ urban space, and highlight the “possibility

⁴⁵⁰ Elizabeth Elcessor, “Blurred Lines: Accessibility, Disability and Definitional Limitations,” *First Monday* 20, no. 9 (2015), <https://firstmonday.org/article/view/6169/4904>.

⁴⁵¹ Vic Finklestein, *Attitudes and Disabled People* (New York: World Rehabilitation Fund, 1980).

or concept of access rather than the substantive reality”.⁴⁵² The chapter uses interviews with players with disabilities to discuss the process of access. These case studies were provided by players who had commented on their experience as players with disabilities on the Reddit forum “Pokémon Go for people with disabilities”. The ‘responsibility’ of access is identified as a significant impediment in digital accessibility dialogues, and the performance of Pokémon Go in both a gaming and non-gaming environment presents an important challenge to this reductionist tendency.

Lastly, this chapter offers tangible methods for deconstructing or extending accessibility debates in digital environments. By connecting with theories of ‘playful’ urban space, and with research being undertaken at the University of Bologna by Catia Prandi et al.,⁴⁵³ this chapter builds on the research that has identified accessibility opportunities in the technology of the Smart City. It considers how future mobile games which similarly utilise mapping could be a critical accessibility tool harnessed to facilitate both accessible gaming opportunities and understandings of accessible urban space, whilst destabilising assumptions of the normate body in digital and urban space.

7.2. Pokémon Go, accessibility, and the social model

Pokémon Go emerged on the gaming scene in 2016 and quickly became a highly successful and popular gaming phenomenon. Though not the first, it is largely accredited as being the most significant location-based AR mobile game, one which

⁴⁵² Nancy Hansen, “Review: The Question of Access: Disability, Space, Meaning,” *Disability and Society* 27, no. 4 (2012): 588–590, <https://doi.org/10.1080/09687599.2012.674769>.

⁴⁵³ Catia Prandi et al., “Fighting Exclusion: A Multimedia Mobile App with Zombies and Maps as a Medium for Civic Engagement and Design,” *Multimedia Tools and Applications* 76, no. 4 (2015): 4951–4979; Catia Prandi et al. “From Gamification to Pervasive Game in Mapping Urban Accessibility,” Presented at Proceedings of the *11th Biannual Conference on Italian SIGCHI* (Rome, Italy, September 2015), 28–30; Catia Prandi et al., “Mapping Urban Accessibility: Gamifying the Citizens’ Experience,” *EAI Endorsed Transactions on Ambient Systems* 2, no. 8 (2015): 1–12; Paola Salomoni et al. “Crowdsourcing Urban Accessibility,” presented at Proceedings of the *11th Biannual Conference on Italian SIGCHI* (Rome, September 28–30, 2015).

essentially brought this game type into the mainstream. It was created in a collaboration between games developer Niantic, video game company Nintendo and The Pokémon Company, and is based on the Japanese fictional characters pokémon or pocket monsters. Pokémon was originally a game developed for the Nintendo Game Boy in the mid 1990s and went on to become a multi-media franchise. Pokémon Go has been a significant part of this franchise, both monetarily and in terms of its global reach. In its first month it set a world record when it grossed \$US206 million and had recorded 130 million downloads. By the end of 2018, it had been downloaded over a billion times, earned over \$3 billion in revenue; at its peak it attracted 28.5 million players and had been played in over 120 countries.

Unlike traditional online games which tend to be played in the private space of the home, Pokémon Go, as an AR, location-based game, is played in a real world environment but with some augmented or computer-generated elements. Players use mobile devices, generally smartphones, to find and ‘capture’ Pokémon creatures. These creatures can also be trained and used to fight other creatures. The GPS on the mobile device is used to locate the Pokémon which are ‘placed’ in real, public spaces across the globe. This intersection between gaming environments and the real world has become a defining feature of both the game’s popularity and the debates and discussions that ensued. For example, the game was applauded for its promotion of physical activity⁴⁵⁴ which contrasted one of the persistent critiques of gaming in general as a sedentary pastime. Yet the shift from private to public realm also came with concerns about safety and security and, in the height of its popularity, players were constructed as a public nuisance. Sensational stories tended to monopolise public discourse – from armed robberies, disrespectful behaviour at war memorials

⁴⁵⁴ Madina Khamzina et al., “Impact of Pokémon Go on Physical Activity: A Systematic Review and Meta-Analysis,” *American Journal of Preventive Medicine* 58, no. 2 (2020): 270–282, <https://doi.org/10.1016/j.amepre.2019.09.005>

or other significant public spaces, and players themselves becoming injured or being hit by cars.⁴⁵⁵

In addition, performing in a hybrid space ultimately challenged both the representation of the digital game itself (it was no longer simply an artefact within private space), and the representation and production of urban space more broadly. For example, theorists explored the way in which players connected in real spaces, forming a sense of belonging and reigniting what was once perceived as the diminished importance of local community.⁴⁵⁶ Others queried how the digital layers, and our technological prosthesis used to engage them, further constituted opportunities for another/multiple versions of urban space. As Hjorth and Richardson summarise, the “cultural moment” of Pokémon Go offers a format for playful resistance and local forms of subversion.⁴⁵⁷ The primary focus of this chapter is therefore to examine the way in which this text, or cultural moment, aligns with the Smart City discourse, both in the digitalisation of space and in the construction of its preferred user. Thus, Pokémon Go challenges our understanding of the binarised digital versus real space and, in doing so, also contests how and by whom it is accessed.

Furthermore, because of the very physical nature of the game – that is, requiring players to get to specific locations in order to play – Pokémon Go is an interesting case study for disability studies theorists, raising issues of accessibility that discussions of traditional gaming in private space have not. Yet it is also a problematic

⁴⁵⁵ Justin Grandinetti and Charles Ecenbarger, “Imagine Pokémon in the “Real” World: A Deleuzian Approach to Pokémon GO and Augmented Reality,” *Critical Studies in Media Communication* 35, no. 5 (2020): 440–454, <https://doi.org/10.1080/15295036.2018.1512751>.

⁴⁵⁶ Kati Alha et al., “Why do People Play Location-Based Augmented Reality Games: A Study on Pokémon GO,” *Computers in Human Behaviour*, 93 (2019): 114–122, <https://doi.org/10.1016/j.chb.2018.12.008>; Kellie Vella et al., “A Sense of Belonging: Pokémon GO and Social Connectedness,” *Games and Culture* 14, no. 6 (2019): 583–603, <https://doi.org/10.1177/1555412017719973>.

⁴⁵⁷ Larissa Hjorth and Ingrid Richardson, “Pokémon Go: Mobile Media Play, Place-Making and the Digital Wayfarer,” *Mobile Media and Communication* 5, no. 1 (2017): 3–14, <https://doi.org/10.1177/2050157916680015>.

space for the discussion of responsibility for accessibility. Whilst the social model of disability places disability as socially constructed, and thus accessibility as a social responsibility,⁴⁵⁸ in practice accessibility is something which is allocated and relocated. For example, accessibility has shifted from being a moral requirement to a legal one. Likewise, it is allocated to departments, companies (or outside of a company's obligations), or back to the individual themselves. The accessibility issues with Pokémon Go exemplify the problems of accessibility in practice, especially in the Smart City environment where technology is positioned to 'resolve' both inaccessibility and disability.

Indeed, as discussed above, as a game which entails players being physically in the environment in which the AR game takes place, the bodily requirements of the player are emphasised in a way that they are not in other games. Indeed, disability and gaming are often associated with a level of disembodiment, or delineation between "synthetic" and "real" bodies,⁴⁵⁹ particularly in games that involve avatars. Thus, the experience (and discussion) of disability in this particular game is unique. As a result, although the accessibility of, or within, games have been critiqued by theorists such as Yuan et al., Heron, or Powers et al., the accessibility of Pokémon Go reframes the discussion, shifting it beyond the confines of the game itself and into the broader realm of urban accessibility.⁴⁶⁰

⁴⁵⁸ Oliver clarifies here that the social model is a "practical tool" (rather than a theory or idea) as it demonstrates the "problems disabled people face are the result of social oppression and exclusion, not their individual deficits". It places the moral responsibility on society to remove the burdens which have been imposed and to enable disabled people to participate (in Tom Shakespeare, "The Social Model of Disability," *The Disability Studies Reader*, ed. Lennard Davis, 5th edition (New York: Routledge, 2017), 198.

⁴⁵⁹ Edward Castronova, *Synthetic Worlds: The Business and Culture of Online Games* (Chicago: University of Chicago Press, 2005).

⁴⁶⁰ Michael Heron, "Inaccessible Through Oversight: The Need for Inclusive Game Design," *Computer Games Journal* 1, no. 1 (2012): 29–38, <http://create.canterbury.ac.uk/10727/>; George Powers, Vinh Nguyen, and Lex Frieden, "Video Game Accessibility: A Legal Approach," *Disability Studies Quarterly* 35, no. 1 (2015), <http://dsq-sds.org/article/view/4513/3833>; Bei Yuan, Eelke Folmer, and Frederick Harris Jr., "Game Accessibility: A Survey," *Universal Access in the Information Society* 10, no. 1 (2011): 81–100, <https://link.springer.com/article/10.1007%2Fs10209-010-0189-5>.

The accessibility of the playing environments in Pokémon Go, namely various urban (and suburban) spaces, has been scrutinised publicly. Disability activists and commentators such as Dr Michael Peckitt,⁴⁶¹ The Mighty, AbleGamers and AbilityNet have all highlighted a range of accessibility issues. Likewise, media coverage of Pokémon Go and disability has focused on the limitations the game places on people with physical disabilities, specifically people with mobility-based disabilities.⁴⁶² Discussions on Reddit, gaming forums and Tumblr also reiterate these concerns:

*And it's not "a few people", there are a significant number of disabled persons in the world. The only way to catch Pokémon in Pokémon Go is to travel. By foot. If your [sic] in a car, it will limit the number of Pokémon you find and any you do find you'll be past before you have a chance to enter the encounter. It doesn't count anything over a certain speed for hatching eggs. There's no way to trade Pokémon in game. Again, the only way to play his game is to be able bodied and to walk, a lot.*⁴⁶³

In the game there is therefore a reiterated valuing of normative mobility, a value which has consistently appeared across urban discourses.⁴⁶⁴ However, there remains a lack of critique, including from disability theorists, on both the inaccessibility within and outside of AR games and the ways in which the preferred user is consistently constructed. As Pokémon Go illustrates, this normative user moves beyond the boundaries of the game, apparent in the mobility narrative of the urban spaces.

⁴⁶¹ Michael Peckitt, "Pokémon Go and Disability," *Accessible Japan* (blog), 2016, <https://www.accessible-japan.com/pokemon-go-disability/>.

⁴⁶² Julia Alexander, "Pokémon Go Player with Disabilities Want Better Accessibility Options," *Polygon*, July 18, 2016, <https://www.polygon.com/2016/7/18/12214664/pokemon-go-players-with-physical-disabilities-want-better>; Cecilia D'Anastasio, "Pokémon Go can be Depressing for People with Physical Disabilities," *Kotaku*, July 14, 2016, <https://www.kotaku.com.au/2016/07/pokmongois-depressing-for-fans-with-physical-disabilities/>; Selena Larson, "How Pokémon Go is Creating a Barrier for Gamers with Disabilities," *The Daily Dot*, July 13, 2016, <https://www.dailydot.com/debug/pokemon-go-disabilities-problematic/>.

⁴⁶³ jpcguy89 (Reddit user), "Pokemon Go for People with Disabilities," Reddit, July 7, 2016, https://www.reddit.com/r/pokemongo/comments/4ro1mm/pokemon_go_for_people_with_disabilities/.

⁴⁶⁴ See Chapter 6, and Gillian Rose et al., "Platform Urbanism, Smartphone Applications and Valuing Data in a Smart City," *Transactions of the Institute of British Geographers* 46, no. 1 (2021): 59–72, <https://doi.org/10.1111/tran.12400>.

In addition, academic engagement with the lack of accessibility of this popular game has been minimal, despite the prevalence of literature recently focused on the relationship between new mobile media and disability. The little research that does exist on disability and Pokémon Go has, instead, explored the role of AR games such as this as a learning tool for people with developmental disabilities or autism. Martín-Sabarís and Brossy-Scaringi⁴⁶⁵ found AR experiences for people with Down syndrome are “useful for moving around public spaces, which enables autonomy” and “were helpful in maintaining attention, acquiring information and long-term memory”. Research by Walker et al. builds on a broader body of work that has argued that AR games can be used as an educational tool for students with autism and intellectual disabilities, enhancing engagement and learning.⁴⁶⁶

Whilst this perspective is in line with current research into the positive benefits of mobile technology for people with disabilities, Wästerfors and Hansson⁴⁶⁷ are critical of this tendency in gaming and disability literature that emphasises a “habilitation frame”, that is, the way gaming can be used to improve and train, or as a tool for, young people with disabilities. “The element of ‘fun in games’, as Goffman calls it, is essentially disregarded or subordinated by therapeutical purposes” and “tends to reproduce a narrow image of disability, youth and gaming”.⁴⁶⁸ Instead, they emphasise the social and cultural aspects of gaming for young people and people with disabilities. Moreover, scholars such as Finklestein⁴⁶⁹ and Oliver⁴⁷⁰ have

⁴⁶⁵ Rosa Martín-Sabarís and Gerard Brossy-Scaringi, “Augmented Reality for Learning in People with Down Syndrome: An Exploratory Study,” *Revista Latina de Comunicación Social* 72 (2017): 737–750, <https://doi.org/10.4185/RLCS-2017-1189-39en>.

⁴⁶⁶ Zachary Walker, Don McMahon, Kara Rosenblatt and Tracy Arner, “Beyond Pokémon: Augmented Reality is a Universal Design for Learning Tool,” *SAGE Open* 7, no. 4 (2017): 1–8, <https://doi.org/10.1177/2158244017737815>.

⁴⁶⁷ David Wästerfors and Kristofer Hansson, “Taking Ownership of Gaming and Disability,” *Journal of Youth Studies* 20, no. 9 (2021): 1143–1160, <https://doi.org/10.1080/13676261.2017.1313969>.

⁴⁶⁸ Wästerfors and Hansson, “Taking ownership of gaming and disability,” 1144.

⁴⁶⁹ Finklestein, *Attitudes and Disabled People*.

⁴⁷⁰ Mike Oliver, *The Politics of Disablement* (Basingstoke: Macmillan, 1990).

critiqued views of disability as an inherent individual problem, and thus one which can be readdressed using specific techniques or tools such as the smartphone. Indeed, the social model of disability redefines the problem of disability as being located in social processes and constructions such as inflexible social policies, prejudicial attitudes, and inaccessible public space. Therefore, this chapter argues that Pokémon Go and other AR mobile games are poignant social and cultural artefacts that can be analysed for what they reveal about accessibility in contemporary urban space.

7.3. The process and responsibility of access in urban space

As detailed in the introduction of this thesis, accessibility is a complex concept, and is often ill-defined. Ellcessor provides an important discussion of the “blurriness” of accessibility.⁴⁷¹ In her research she tracks both the historical legacy of the term accessibility and the ways in which shifting definitions, particularly in a digital media context, have both progressed and constrained accessibility aims. The prioritisation of access as a universal goal,⁴⁷² a part of consumer choice, not one tethered to disability, has potential implications in how disability is also defined and what experiences of disability are given both visibility and voice.

These questions are also embroiled in the distinctions made between accessibility, universal design and usability. While accessibility is the most commonly used term to discuss the design and distribution of goods, services, environments and information so that they may be used by people with disabilities (and this term is also consistently employed in this thesis), usability and universal design have also been used to describe this aim, at different points in time and for distinct reasons. For example, some researchers argue that usability is less stigmatising and more process-orientated,⁴⁷³ others are concerned that the disengagement with disability that the

⁴⁷¹ Ellcessor, “Blurred Lines”.

⁴⁷² Katie Ellis and Mike Kent, *Disability and New Media* (New York: Routledge, 2011).

⁴⁷³ Susanne Iwarsson and Agneta Ståhl, “Accessibility, Usability and Universal Design,” *Disability and Rehabilitation* 25, no. 2 (2003): 57–66, <https://doi.org/10.1080/dre.25.2.57.66>.

term usability offers (in appealing to broader audiences) may undermine the importance of disability identity, disability politics and civil rights.⁴⁷⁴ Concurrently, the term universal design is often critiqued as “reductive and functionalist”⁴⁷⁵ and having a lack of connection with legal protections and rights.⁴⁷⁶

The previous chapter referred to the individualisation of accessibility and, while this is used in reference to the shifting of responsibility for accessibility from companies, organisations or government to the individual with a disability, it is also an important concept from which to explore how and what the individual does to deal with inaccessibility. David Wästerfors details the shared and tailored methods utilised by people with disabilities to mitigate inaccessibility. Pertinently, he notes that, despite the various promises and policies for creating universal access, accessibility is often placed in direct competition with other social aims and norms:

*Norms of equality are easily outcompeted by other norms – e.g. efficiency, economy, safety, speed, aesthetics, the protection of cultural heritage – so that accessibility is celebrated in society at large but marginalized or temporarily forgotten in many everyday situations.*⁴⁷⁷

Furthermore, Wästerfors highlights the “plastic” nature of accessibility, affected by specific circumstances, individual projects, tactics, interpretations and impairments. Employing ethnographic “go-alongs”, he and his research team tracked the experiences for thirty participants, revealing not just creative and ‘folk’ methods of accessibility, but also “strained creativity, situated in the tension between formal promises and modest results”⁴⁷⁸. An example of this was the need for one participant who uses a wheelchair to request assistance from shop staff for the final part of his shopping, taking items out of his trolley, and his expression of frustration towards

⁴⁷⁴ Ellcessor, “Blurred Lines”.

⁴⁷⁵ Rob Imrie, “Universalism, Universal Design and Equitable Access to the Built Environment,” *Disability and Rehabilitation* 34, no. 10 (2012): 873-882, <https://doi.org/10.3109/09638288.2011.624250>.

⁴⁷⁶ Ellcessor, “Blurred Lines”.

⁴⁷⁷ Wästerfors, “Required to be Creative”.

⁴⁷⁸ Wästerfors, “Required to be Creative”.

the shopping centre that he was therefore not able to shop by himself. This tension can be seen in the game Pokémon Go, with many players with disabilities requiring help, or piggybacking, to acquire accessibility. The game also highlights broader tensions between the structures and rules of the game and the experiences of disability on the border of real and game environments.

7.4. Creative, community and collaborative accessibility: Workarounds to Pokémon Go

One of the ways that players with disabilities addressed both physical limitations and any accessibility issues involved in playing was through the role of ‘spoofing’ or the use of emulators; this involves using a third party software to falsify your location, thus allowing a player to avoid needing to tangibly be in the required location. Indeed, several forum discussions, such as on Reddit, were set up to detail how people with a range of disabilities, including vision- and mobility-based disabilities, could still play the game without having to travel to the PokéStops. For example, one user responding to a post about how Pokémon Go could be played by a user who, experiencing vision and hand mobility disabilities, was not able to drive, explained:

Hey, I have both vision and joint problems. My boyfriend, while able-bodied, doesn't have a phone that can run it, but he's been using a program called Bluestacks which allows you to run phone apps from your computer. You basically click instead of tapping, and use another app called FakeGPS to move around. If you don't mind playing entirely from your computer, you could probably use this method. Here's a tutorial for how to set it up: <http://mspoweruser.com/play-pokemon-go-windows-pc/>⁴⁷⁹

These forum discussions and workarounds are exemplary of what Branham and Kane refer to as “collaborative accessibility”,⁴⁸⁰ whereby people with disabilities take active roles in co-creating an accessible environment. Kent and Ellis also describe this

⁴⁷⁹ u/SleptThroughFajr (Reddit user), “Pokemon Go for people with disabilities,” Reddit, 2018, https://www.reddit.com/r/pokemongo/comments/4ro1mm/pokemon_go_for_people_with_disabilities/.

⁴⁸⁰ Stacy Branham and Shaun Kane, “Collaborative Accessibility: How Blind and Sighted Companions Co-Create Accessible Home Spaces,” in *Proceedings of the ACM SIGCHI Conference on Human Factors in Computing Systems* (Seoul, Korea, April 18–23, 2015).

process as “community accessibility”.⁴⁸¹ However, this practice, while allowing for a level of accessibility that was not provided by the game developer itself, resulted in players becoming blocked or banned from the game. Using an emulator, that is falsifying one’s GPS location, was classified as cheating by Niantic.⁴⁸² In doing so, Niantic clearly defined the preferred user of the game.

Niantic never formally responded to the critique, other than via broad tweets stating “we continue to add new resources to accommodate everyone. Thank you for your patience” (9 July 2016).⁴⁸³ Some additional accessibility features and additions were then added, perhaps in response to feedback on the lack of accessibility of the game, with Niantic offering an update which measures distance (rather than simply steps) for wheelchair users if they are using an Apple Watch.⁴⁸⁴ Other bloggers cited in-game inclusions (e.g. ‘incense’ which are rewards which make the Pokémon come to you) which could be loosely considered as attempting to make the game accessible. However, most of the tips and hacks posted by accessibility bloggers involved participants finding their own workarounds. Again, accessibility here becomes individualised rather than a social responsibility.⁴⁸⁵

⁴⁸¹ Mike Kent and Katie Ellis, “Community Accessibility: Tweeters Take Responsibility for an Accessible Web 2.0,” *Fast Capitalism* 7, no. 1 (2010), http://www.uta.edu/huma/agger/fastcapitalism/7_1/elliskent71.html.

⁴⁸² Leif Johnson, “Pokémon Go Anti-Cheating Tactics Prevent Disabled People From Playing,” *Motherboard*, September 15, 2016, https://motherboard.vice.com/en_us/article/9a3n8e/pokemon-go-disabled-ban.

⁴⁸³ @PokemonGoapp, July 10, 2016, Twitter, <https://twitter.com/pokemongoapp/status/751829642999373824>.

⁴⁸⁴ Christian Gaca, “Niantic Adds Support for Wheelchairs in Pokémon Go,” *Game Reactor*, January 30, 2017, <https://www.gamereactor.eu/news/501543/Niantic+adds+support+for+wheelchairs+in+Pokemon+Go/>.

⁴⁸⁵ Robin Christopherson, “Switching on Pokémon Go for Disabled Gamers,” AbilityNet, August. 11, 2016, <https://www.abilitynet.org.uk/news-blogs/switching-pokemon-go-disabled-gamers>; TheSilphRoad (Reddit user), “Pokémon Go for People with Disabilities,” Reddit, 2018, https://www.reddit.com/r/TheSilphRoad/comments/6e3snn/people_with_physical_disabilities_any_reason_to/.

The following case studies, which expanded on the *Navigating Urban Spaces* project in providing perspectives of ‘navigation’ within both the game and urban space, illustrate the layered process of generating accessibility for players with disabilities. The two reflections on the experience of playing Pokémon Go with a disability were offered via email interviews in late 2019 with players who had posted previously about their experience in the Reddit forum Pokémon Go for People With Disabilities. Of ten users contacted, four replied, two of whom offered detailed responses to questions about their location, disability, use of AT and gaming preferences. The interview questions also asked specifically about why and how they play Pokémon Go, if their disability affected the way they play, and what experiences they had in playing the game in real urban space. In both examples, the creative, community and collaborative processes of accessibility were highlighted in the strategies used to mitigate both the constructed preferred user of the game and the normative citizen of the urban space in which it was played.

7.4.1. Case study: Margaux, Canada⁴⁸⁶

Margaux is 25 and lives in Quebec with her boyfriend. She has cerebral palsy and uses a cane. Both her and her boyfriend are avid Pokémon Go players, and Margaux also plays games such as The Sims 4, Animal Crossing and Mario Kart. She talks about these games as “sandbox games – you have no specific goal, and can do whatever you want without any specific restrictions. You can progress at the game the way you want and I’m a sore loser so I don’t get angry if something goes wrong”. She plays most days, for an hour or two. Margaux began playing Pokémon Go about a year ago and it became beneficial for her in multiple ways, allowing her to discover the city she had just moved to and increasing spatial orientation. But the game was not fully accessible to her as “It lacks ‘physically disabled’ options that can make some aspects

⁴⁸⁶ The names of interview participants have been changed to protect individual identities.

of the game difficult to enjoy, such as egg hatching, buddy candy, adventure sync rewards, special evolutions (Feebas... ugh), pokestop [sic] spins streaks”.

Furthermore, weather, specifically the Canadian winter, and particular Pokémon Go events which required a lot of moving around, limited her ability to participate. This required her to develop creative and collaborative accessibility strategies, from playing a different type of Pokémon Go (PokéCar), or using a wheelchair and asking her boyfriend to push her, or the “sock trick”, where her phone is placed in his sock when he is playing. But collaborative accessibility also affects the relationship she has with her boyfriend and his capacity to play. As he expressed:

Sometimes it's hard to keep up. I want to grind at my pace or faster, get more catches, but can't because I'm carrying her over. Go-tcha does the work while I drive. Misses many shinies. She has low stamina and balance. She has to sit somewhere every 15 minutes. During that time I try to grind at my pace. Sometimes I feel kind of cheap to leave her right there.

This reflection is what Wästerfors labels the “micro-politics” of accessibility.⁴⁸⁷ Here inaccessibility is a dynamic part of Margaux’s relationship. Though Margaux articulated the inaccessibility of the game to the developer (as well as to friends and via forums such as Reddit), the resolution to (or acceptance of) exclusion was returned to Margaux. Indeed, Niantic’s response to Margaux’s feedback was simply that accessibility was not a part of the game nor their design decisions:

Pokémon GO is an augmented reality game where it requires to interact with real world objects. We don't currently have plans to make the game accessible to physically handicapped people. Thank you for your feedback – it will help us to enhance your gameplay experience.

As Margaux’s boyfriend commented, it was a response that essentially said “sorry, but we don’t care”. Moreover, it demonstrated that, despite the presence of organisational policies for accessibility, anti-discrimination acts, UN conventions,

⁴⁸⁷ Wästerfors, “Required to be Creative,” citing Robert Emerson, *Everyday Troubles: The Micro-Politics of Interpersonal Conflict* (Chicago, IL: The University of Chicago Press, 2015).

public campaigns and advocacy, accessibility in practice remains an optional extra, or one which is allocated and relocated.

7.4.2. Case study: Susan, The Netherlands⁴⁸⁸

Susan is 38 and lives in Rotterdam. Due to failed back surgery her mobility is limited and she has strength loss in her hands. She uses a wheelchair, mobility scooter, walking frame or crutches, depending on the location and distance she has to travel. She has always enjoyed games, especially role-playing games, but has been unable to play these as often as a result of her weakening hand strength. She has been playing Pokémon Go for four years, and cites the strong local community and outdoor interaction as the main reasons why she enjoys playing. Despite accessibility issues, she is able to play the game with her disabilities by adjusting her gaming approach. For example, the repetitive tapping during Raids and Battles mean these aspects are inaccessible to her, but using a Go-tcha and limiting game play to under an hour allows her to keep playing. She hasn't complained about these experiences, managing the inaccessibility herself and "lowering expectations – I can play the game well enough".

These case studies not only provide qualitative insights into the lived experience of screened urban space, but they do so at a socio-cultural site, in this instance, an AR game. This site is significant as an intersection between the individual experience of urban environments, and frames citizen participation and interaction within the meanings of city space. The players experiences show processes of creative and collaborative accessibility, and proactive engagement with the structures which create inaccess. However, they also reveal how the social and cultural perceptions of accessibility, and what is perceived as 'accessible enough', continue to inform experiences and understandings of disability.

⁴⁸⁸ The names of interview participants have been changed to protect individual identities.

7.5. Learning from the Pokémon Go experience: Accessing public space digitally

Whilst Pokémon Go was criticised for excluding people with disabilities, the emphasis of this critique was unique in that the exclusion was beyond the boundaries of the game, that is, via inaccessible spaces. Therefore, from this critique there is both an opportunity to reframe and broaden accessibility discussions, recognising the intersections between digital (in this instance, gaming) and real world environments, but also to reignite a discourse on continued exclusivity and barriers in urban space. AR mobile games allow for new meanings and experiences of spatial landscapes, and new understandings of accessibility and inclusivity in places. In the context of the Smart City, this is particularly valuable in adding depth and complexity to the current way accessibility is configured in the discourse, that is, moving beyond access as being individual and/or achieved via technology.

Some researchers have attempted to capture this experience directly from people with disabilities' smartphone use and/or their experiences navigating urban environments. For example, Taylor and Jozefowicz provide a focused analysis via an extensive empirical study in Poland of people with disabilities' experiences – specifically in relation to access and mobility – of urban space for recreation and leisure.⁴⁸⁹ Other, earlier quantitative research include: Matthews, Beale, Pictone and Briggs' study and GPS mapping of wheelchair users in Northhamptonshire, UK;⁴⁹⁰ Casas' study using GIS mapping which tracked access for people with disabilities via a 'one-day travel diary' across the Buffalo-Niagara region in New York;⁴⁹¹ and, more recently, as discussed in the previous chapter, the *Navigating Urban Spaces*

⁴⁸⁹ Zbigniew Taylor and Iwona Jozefowicz, "Intra-Urban Daily Mobility of Disabled People for Recreational and Leisure Purposes," *Journal of Transport Geography* 24 (2012): 155–172, <https://doi.org/10.1016/j.jtrangeo.2011.12.008>.

⁴⁹⁰ Hugh Matthews et al., "Modelling Access with GIS in Urban Systems (MAGUS): Capturing the Experiences of Wheelchair Users," *Area* 35, no. 1 (2003): 34–35, <https://www.jstor.org/stable/20004287>.

⁴⁹¹ Irene Casas, "Social Exclusion and the Disabled: An Accessibility Approach," *The Professional Geographer* 59, no. 4 (2007): 463–477, <https://doi.org/10.1111/j.1467-9272.2007.00635.x>.

project.⁴⁹² Consistently, across each of these studies, participants found urban spaces were not only often inaccessible, but that the emphasis remained on the individual to achieve or mitigate these access issues. Increasingly, and particularly in the Smart City, smartphones are being utilised as an accessibility tool to improve these experiences of urban space yet, as previous chapters have argued, this role often neglects the constructed, performed and fluid process of access.

There are, however, also accessibility projects that utilise smartphone apps and mapping systems to move beyond singular, tech-orientated interpretations of access such as those that aim to highlight, track and detail inaccessible spaces. Projects such as *Megafone* aim to capture these experiences of urban space by both people with disabilities and other people marginalised within society through the use of mobile phone technology. The Megafone app was designed with the aim of creating a location-based taxonomy of obstacles, barriers and “incivilities” as well as points of accessibility.⁴⁹³ The project, first started in Barcelona by artist Antoni Abad, now captures experiences across urban centres globally.⁴⁹⁴ As detailed in the previous chapter, other apps and prototypes have also been developed to facilitate the use of the smartphone as an AT for the purpose of increasing the accessibility of urban spaces. These apps aim to provide either accessibility information (e.g. AXS Map, WheelMate and AccessNow), object identification for people with low vision or blindness (e.g. BeMyEyes and TapTap See), and/or accessible paths or navigation (e.g. NotNav or WheelyApp). However, as both Chapters 5 and 8 detail, the role of these apps in the everyday lives of people with disabilities varies significantly. As such, rather than resolving inaccessibility, their varied uptake and success is

⁴⁹² Mike Kent et al., “Using Smartphones to Navigate Urban Spaces: People with Disabilities and the Role of Mobile Technologies in Three WA Locations,” Curtin University of Technology, 2017, <http://hdl.handle.net/20.500.11937/70858>.

⁴⁹³ Katie Ellis and Gerard Goggin, “Disability, Locative Media and Complex Ubiquity,” in *Ubiquitous Computing, Complexity and Culture*, ed. Ulrick Ekman et al., 272–286 (New York: Routledge, 2016).

⁴⁹⁴ <http://mia.mobilities.ca/megafone/>

reflective of both the diversity of disability (and intradisability diversity) and the multiple layers and components which cumulate in the process of accessibility.

Indeed, as the creators of accessibility apps concur, their success has been varied, with urban space information, or geospatial data, a specifically limiting factor. This is, in part, due to normative spatial arrangements – mapping software is constructed according to the mobile user (bikes, ‘normate’ pedestrians, cars and public transport), and landscapes are depicted as fixed and stable. Information about the accessibility of an environment – whether a footpath is broken, a curb is steep, the presence of potholes or the incline of a hill, all key factors in urban access, as highlighted in focus group responses in Chapter 5 – is not provided via GPS mapping software (e.g. Google Maps or Apple Maps) and thus accessibility apps that aim to provide this information typically require input from either people with disabilities or the broader public. Crowdsourcing information has a variety of limitations, one being the motivation of a user to contribute the provision of information. This is even more so as the opportunity for gaming to intersect with garnering public contribution to accessibility information offers a potential remedy to this issue. Pokémon Go, and other AR mobile games, offer opportunities for environmental feedback and the garnering of geospatial data, while also offering an opportunity to re-examine the relationship between bodies, technology and the built environment.

7.6. Alternative interpretations of Pokémon Go: Opportunities and gamification in disability studies

Whilst Pokémon Go was generally criticised for excluding people with disabilities, the emphasis on this critique was exclusion via inaccessible spaces. Thus, while it was argued that people with disabilities were excluded as many of the PokéStops were inaccessible, it could be argued that the onus on accessibility should be redirected to those responsible for the space itself. This argument is in keeping with Imrie’s findings that approaches to accessibility (specifically through universal design) have focused on the inclusive capabilities of technology but have shifted away from

continued exclusivity and barriers in urban space.⁴⁹⁵ As argued in the introduction to this thesis, both the definition and orientation of universal design emphasises that the cause (and the resolution) to inaccessibility lies in design, negating the relational aspect of the process of accessibility.

AR, and specifically AR mobile games, require a relational engagement with space and, as users become co-producers, allow for new meanings and experiences of spatial landscapes. Therefore, they also pose an opportunity to reappropriate an inaccessible space, applying understandings of accessibility and inclusivity in places and urban discourses. Liao and Humphrey's work is useful here,⁴⁹⁶ making the distinction between space and place in relation to AR and mobile technology:

*We adopt Harrison and Dourish's (1996) definition that "space is the opportunity; place is the (understood) reality" (p. 69). Space can be thought of as the more abstract term that describes the broader three-dimensional (3D) realm in which we live, whereas place is more socially constructed.*⁴⁹⁷

Pokémon Go creates layered content onto spaces that players can then engage and interact with, affecting the use of space but also their broader relationship with the meanings of these spaces. Thus, via the game, new places, or senses of place, are formed. Returning to Vella et al., this "sense of place, or sense of belonging [to space], can in turn facilitate social ties and engagement with local communities".⁴⁹⁸ For players with disabilities, the game-facilitated engagement with spaces unknown or less visited can ignite accessibility issues, but also locates the body – indeed all bodies – as citizens who have rights to belong to and participate in all public spaces.

This conceptualisation of space and place has also informed literature on and projects for "playable cities". The term originated in 2012 with a series of projects

⁴⁹⁵ Imrie, "Universalism, universal design and equitable access"

⁴⁹⁶ Tony Liao and Lee Humphreys, "Layar-ed Places: Using Mobile Augmented Reality to Tactically Reengage, Reproduce, and Appropriately Public Space," *New Media and Society* 17, no. 9 (2015): 1418–1435, <https://doi.org/10.1177/1461444814527734>.

⁴⁹⁷ Liao and Humphreys, "Layar-ed Places," 1420.

⁴⁹⁸ Vella et al., "A Sense of Belonging".

designed by cultural organisation Watershed in Bristol, UK. Aiming to “connect people with their cities and cultures through urban play”, the projects combined smart technology, such as apps on smartphones and AR and gaming technology, with live art in order to facilitate feedback, engagement and expressions of citizenship.⁴⁹⁹ Likewise, researchers such as Nijholt have recently explored notions of playfulness and the “playableness” of urban space.⁵⁰⁰ Troy Innocent argues that this particular juncture of play and urban space emerged as a pushback on the technology-focused, and indeed technological determinism underlying the Smart City paradigm.⁵⁰¹ Play emphasises flexibility of spaces, their uses and meanings, and prioritises citizen engagement with spaces, whereas critics of Smart Cities identified control, surveillance and the erosion of true, public space as underpinning this paradigm. In part due to this critique, recent publications (or indeed iterations) of the Smart City have emphasised citizenship, participatory culture and the co-creation of cities and spaces.⁵⁰² The premise that digital games, and particularly AR mobile games, can play a pivotal role in this co-creation is explored in part one of Nijholt’s edited collection. For example, Wolff et al. explore how gamification can be used to facilitate citizen feedback on their city and on urban science,⁵⁰³ and Bedo uses urban game design to research urban experience, showing how the gameplay builds a “shared expert knowledge” that can then be used in co-designing.⁵⁰⁴ In line with Jenkin’s theories, the playable city is premised on the role and representation of the citizen as a

⁴⁹⁹ <https://www.playablecity.com/projects/>

⁵⁰⁰ Anton Nijholt (ed), *Playable Cities: Gaming Media and Social Effects* (Singapore: Springer, 2017).

⁵⁰¹ Troy Innocent, “Playable Cities Now,” 2019, http://www.digra.org/wp-content/uploads/digital-library/DiGRA_2019_paper_215.pdf.

⁵⁰² Body Cohen, “The Three Generations of the Smart City,” *Fast Company*, October 8, 2015, <https://www.fastcompany.com/3047795/the-3-generations-of-smart-cities>.

⁵⁰³ Annika Wolf et al., “Engaging with the Smart City Through Urban Data Games,” in *Playable Cities: Gaming Media and Social Effects*, ed. Anton Nijholt, 47–66 (Singapore: Springer, 2017), https://doi.org/10.1007/978-981-10-1962-3_3.

⁵⁰⁴ Viktor Bedö, “Size and Shape of the Playing Field: Research Through Game Design Approach,” in *Playable Cities: Gaming Media and Social Effects*, ed. Anton Nijholt, 67–86 (Singapore: Springer, 2017), https://doi.org/10.1007/978-981-10-1962-3_4.

producer (of the city and its meaning) not simply as a consumer.⁵⁰⁵ A such, AR mobile games, such as Pokémon Go, could offer users with (and without) disabilities a new way to engage in urban spaces and respond to inaccessible spaces, “enabling a digital recreation of [the] physical [space]”.⁵⁰⁶

Indeed, gamification has become a valuable model for obtaining geospatial information not currently available in popular online mapping applications. It could thus be argued that AR games have the potential to capture players’ feedback on and experiences in urban spaces. Several researchers from the Department of Computer Science and Engineering at the University of Bologna, Italy have developed a critical body of work that explores the relationship between gaming (and gamification), smartphones and urban accessibility. From the development of an accessibility mapping application mPass – “a system designed to collect data about urban and architectural accessibility and to provide users with personalized paths, computed on the basis of their preferences and need”⁵⁰⁷ – researchers investigated its limitations, and potential resolutions, in the ability to gather enough information via crowdsourcing. In keeping with other findings from Comai et al.,⁵⁰⁸ in their review of existing city accessibility apps and prototypes, the researchers recognised that the amount of data required for an app such as this to work successfully was dependent of “critical mass engagement”, and it was often difficult to generate motivation for this mass collection of data.⁵⁰⁹ They resolved that gamification of mPass (that is, the use of games or game elements to increase motivation in performing certain tasks) was a useful strategy to increase motivation in the broader community (in particular, beyond people with disabilities), to contribute urban accessibility data, and to ensure

⁵⁰⁵ Henry Jenkins, *Convergence Culture* (New York: NYU Press, 2006).

⁵⁰⁶ Liao and Humphreys, “Layar-ed Places,” 1420.

⁵⁰⁷ Catia Prandi, Paolo Salomoni and Silvia Mirri, “mPASS: Integrating People Sensing and Crowdsourcing to Map Urban Accessibility,” *2014 IEEE 11th Consumer Communications and Networking Conference (CCNC)* (Las Vegas, NV, 2014), 591–595.

⁵⁰⁸ Sara Comai et al., “Mapping City Accessibility: Review and Analysis,” *Studies in Health Technology and Informatics* 217 (2015): 325–331, <https://doi.org/10.3233/978-1-61499-566-1-325>.

⁵⁰⁹ Prandi, “From Gamification To Pervasive Game”.

trustworthiness of data.⁵¹⁰ In doing so, they developed two location-based games that encouraged players to report accessibility barriers, obtaining points or vouchers for reporting inaccessible places or accessibility features. The increase in reporting and motivation to report on urban inaccessibility increased significantly via the gamification of the mPass system.⁵¹¹

This reporting of inaccessibility in (and outside) of games already happens in unmapped, informal ways. Players post on forums, social media and in-game groups. However, the capacity to quantify and visualise this data is rarely available. Using the game's maps – developed using both Ingress mapping data, Google Maps and, more recently, the crowdsourced OpenStreetsMap and the GPS function of players' phones – the opportunity for player feedback on environments in Pokémon Go and other AR mobile games is there. This harnessing of the engaged community of game players to provide accessibility feedback would not only allow for important data to be gathered about the experience of disability in urban space, but also facilitate a move away from ableist approaches to both game and urban design. Moreover, this type of engaged 'smart citizenry' is an important intersection in a Smart City discourse in which the preferred user is a receiver of, rather than a co-creator in, smart technology.

7.7. Conclusion

Pokémon Go is an important case study beyond limited readings of gaming and disability in a habitual frame in its ability to highlight the complexity of accessibility, namely that accessibility is not singular or relegated to within or outside of technology, but that the two are interrelated and affect each other. Further, it reveals that accessibility is often achievable and identifiable, but requires multiple parties – in this case both game developers and those that manage, design and regulate public space – to recognise its value. As the case studies reveal, access was

⁵¹⁰ Prandi, "Mapping Urban Accessibility".

⁵¹¹ Prandi, "Mapping Urban Accessibility".

achieved (in part) via creative and collaborative accessibility that pushed back against both the inaccessibility of spaces and the construction of the preferred user of the game. The chapter continues the work of Chapters 5 and 6 in identifying the way mediated urban space emphasises mobility and normative citizens, but also adds to this previous analysis in highlighting (and offering continued opportunities for) ways in which the Smart City denizen may extend and expand its role, contributing to the meaning of and engagement with public space.

As this chapter was written, a new AR mobile game was being released by Niantic – Harry Potter: Wizards Unite. The game, created from the Harry Potter franchise and launched in June 2019, was based largely on the successful format of Pokémon Go. As such, there was an assumption in the playing community that the game would address the limitations and critiques levelled at its predecessor, yet the inaccessibility issues that surrounded Pokémon Go were not only replicated but exceeded in Wizards Unite. The game has had compatibility issues with the accessibility options for most smartphones, dexterity and vision requirements limit the capacity to complete ‘portkeys’, the speed required to play (e.g. walking pace) limits those who use cars or motorised wheelchairs and scooters, and the inaccessibility at the location of ‘inns’ (the equivalent of PokéStops) further limits players with disabilities.⁵¹² A change petition to Niantic to make the game accessible was started after its launch and has received almost 400 signatures. However, despite the experiences of inaccessibility in Pokémon Go, and this feedback and critiques, the game format remains rigidly tied to ableism and, pertinently, to the dichotomy of ‘inside’ and ‘outside’ games.

⁵¹² Henry Sung, “Harry Potter: Wizards Unite’s Lack of Accessibility is Turning Us Into Muggles,” *TNW News*, August 15, 2019, <https://thenextweb.com/gaming/2019/08/15/harry-potter-wizards-unites-lack-of-accessibility-is-turning-us-into-muggles/>; Harry Potter: Wizards Unite Hub (Facebook), “Cheating is not okay...,” August 20, 2019, https://www.facebook.com/wizardsunitehub/posts/1196038913938068?comment_id=1196087737266519&reply_comment_id=1196089637266329; Craeft. “I feel bad...,” Harry Potter Wizards Unite (Community), July 14, 2019, <https://community.harrypotterwizardsunite.com/en/discussion/850/i-feel-bad>.

Returning to Ellcessor's contribution to critical accessibility, she argues for both an understanding of the history of accessibility, but also a shift beyond a focus on definitions:

*Instead of defining disability, access, or accessibility, it is more useful to think in terms of relations between people, technologies, and design.*⁵¹³

Moreover, and what has become pertinent in this study of Pokémon Go, Ellcessor presents the concept of cultural accessibility, "a kind of participatory, open process that combines the best elements of coalitional politics with the possibilities for collaboration that characterise digital media spaces and technologies".⁵¹⁴ The complex relationship between players, accessibility (in and outside of the game) and socio-cultural contexts exemplifies an informal version of this cultural accessibility. Yet, in order to shift this cultural accessibility beyond individual experiences of creativity and collaboration, an extended and critical understanding of access (including how access is creatively attained) need to be recognised. In part, this also requires consistent attention to the social construction of disability. In the following chapter, the way accessibility is simplified in the Smart City discourse is shown to be a consequence of continued medicalised representations of disability and the preferencing of the technological citizen.

⁵¹³ Ellcessor, "Blurred Lines".

⁵¹⁴ Ellcessor, *Restricted Access*, 263.

8. From analogue to digital cities: Smart technology and disability in a pandemic

8.1. Introduction

This thesis has exposed the ways in which urban screens – fixed and mobile – have contributed to understandings of the citizen, of access to the city, and of disability in the eras of Creative Cities and Smart Cities. This final chapter of the thesis adds a further contextual layer to the analysis of the ways in which the screen operates in contemporary urban discourses to construct and perpetuate understandings of the normate body and the preferred citizen. As I entered the last year of writing this PhD, both the discourse of the Smart City and the experience of the analogue city were fundamentally disrupted by COVID-19. This chapter therefore identifies how the experience of the pandemic added to but also challenged constructed understandings of both the citizen and accessibility. Building on the findings from Chapters 4, 5 and 6 – each of which examine different ways screens mediate the experience of urban space – this chapter analyses the experience of the smartphone as citizen interface by people with low vision or blindness in Australia in March 2020.

For people with disabilities, the issue of digital access came to the fore during the COVID-19 pandemic as technology became central to both maintaining social interactions and accessing the city.⁵¹⁵ The spread of COVID-19 across almost all countries by mid-2020 resulted in the closure and redefinition of public space, and what it meant to be able to access the city. Moreover, it has revealed both the constructed and frictional nature of the process of accessibility. Therefore, this chapter at the end of this thesis examines the new impetus on digital spaces, platforms and technologies, and how these intersect with experiences of disability. Utilising crip technoscience as a critical tool, this chapter investigates whether an emphasis on digital space over physical space also changes the relevance and

⁵¹⁵ Elisabeth Beaunoyer, Sophie Dupéré, and Matthieu J. Guitton, “COVID-19 and Digital Inequalities: Reciprocal Impacts and Mitigation Strategies,” *Computers and Human Behaviour* 111 (2020), <https://doi.org/10.1016/j.chb.2020.106424>.

understanding of the Smart City. Crip technoscience utilises CDS to unpack and question the assumptions around technology, accessibility and the normate body. Thus, this chapter revisits the Smart City discourse in the contextual moment of the pandemic in order to challenge and contest the knowledges around disability and smart technology.

This chapter begins by reflecting on the impact of COVID-19 on the discourse of Smart Cities, primarily from an Australian experience and perspective, with a particular focus on how social distancing, city lockdowns and travel restrictions have increased the use of and reliance on digital space over analogue urban space. The Australian experience of COVID-19 has been unique and, in comparison to many other countries, a far less significant health emergency. Thus, while not negating the health impacts of COVID-19 on people with disabilities globally, this chapter focuses on the shifts the pandemic-elicited restrictions created in the digital experience of everyday life in Australia. This chapter argues that, for people with disabilities, this digital pivot revealed both the complexity of disabled experiences in the context of a Smart City, and accessibility as a historical project of knowing and making access. Smart technology and digitisation of urban space might have offered some remedies to inaccessible aspects of the analogue city, yet they also highlighted digital inequalities, the diversity of the disabled experience, the ways in which inaccessibility works across both digital and analogue interfaces, and the critical ways in which people with disability engage and negotiate with inaccess.

The second part of this chapter details the findings of the latter part of the *Navigating Urban Spaces* project (described in Chapter 5) and discusses the findings of interviews with a sample of participants to establish the impact of COVID-19 on smartphone use. This sample was taken from a large survey of people who are blind or have low vision which asked participants about how and what they use their

smartphone for.⁵¹⁶ This survey was conducted at the very beginning of the global pandemic, in February 2020, at which point Australians were largely unaffected. As such, I reinterviewed a sample of the survey participants in late March to ask how their use of smartphones had changed during the initial experience of COVID-19 in Australia. These insights, though limited to one technology for one category of disability, add to an increasingly important dialogue about both access to the digital environmental as a fundamental right of citizens, and the limits and exclusions experienced by people with a disability. Furthermore, it allows for insights into the way smart technologies intersect with but also work to define disability. While many Smart City policies and narratives appeared to be reinforced in the onset of the COVID-19 pandemic, as discussed in the final section of this chapter, the unstable relationship between identity, autonomy and the denizen of the Smart City was again raised in the rejection, if not critical response to, contact tracing apps. At this poignant moment pre- and during the COVID-19 pandemic, the results of the survey and interviews reveal that a more reflexive understanding of accessibility is required in order to deconstruct entrenched understandings of the preferred user and the normate citizen.

Finally, this chapter examines the creative uses of smartphones (highlighted in the follow-up interviews with participants), and the use of smartphones to hack, create and innovate accessibility. The field of crip technoscience is again utilised here, examining the use of the smartphone by people with disabilities as both a site of innovation and, in the current COVID climate, an opportunity to review accessibility (and the politics of disability) as a precondition of future Smart City aims and developments.

⁵¹⁶ Kathryn Locke et al., "Smartphones And Equal Access For People Who Are Blind Or Have Low Vision," Curtin University, 2020, <https://ccat.curtin.edu.au/events-and-conferences/acat-seminar-series-2/>

8.2. The effect of COVID-19 on denizens with disabilities

Chapter 4 of this thesis investigated the urban screen as a critical juncture where media space and physical space combine. It also tracked important points or historical moments in the transition from analogue to digital, and smart, cities. Of course, the analogue city still continued despite the increasing presence and types of urban screens. Public space was mediated, but still fully operational, if not promoted and popularised as an integral site for the performance of citizenship. However, the emergence and spread of COVID-19 in 2020 has resulted in a dramatic shift away from public urban space and ignited renewed prominence of the idea of a digital city mediated by screens⁵¹⁷ as digital space shifts from “amenity to necessity”.⁵¹⁸ The global mass movement out of public spaces, or any space in which people gather, and an immobility of populations have significantly affected the way cities are spatially envisaged across almost all sectors. From urban planning and architecture, public transport, community engagement programs, and throughout most urban industries, the way citizens interact with the city is being both temporarily and, in some cases, permanently altered. As a result, the relevance of the way we work, live and move in cities are being questioned – is physical engagement necessary? Can it be replicated in a digital setting? How adaptable and capable are work/life structures when faced with change? And, indeed, how important or valuable were past ways of being in cities, of third places and public space?

⁵¹⁷ The concept of the digital city emerged in the 1990s, as the internet became a part of everyday life. For a discussion of the distinctions and similarities between the two discourses, see Renata Paola Dameri and Annalisa Cocchia, “Smart City and Digital City: Twenty Years of Terminology Evolution,” 2011, <https://pdfs.semanticscholar.org/69fd/59f703bba95cd16aa4842297e1c6ee4c0d4f.pdf>. Also see Alessandro Aurigi, *Making the Digital City: The Early Shaping of Urban Internet Space* (Aldershot: Ashgate, 2005). Likewise, Ash, Kitchin and Leszczynski discuss the ways in which urban space is produced through and by digital technologies (James Ash, Rob Kitchin and Agnieszka Leszczynski, “Digital Turn, Digital Geographies?” *Progress in Human Geography* 42, no. 1 (2016): 25–43, <https://doi.org/10.1177/0309132516664800>).

⁵¹⁸ Beaunoyer, Dupre and Guitton, “COVID-19 and Digital Inequalities”.

Wolfgang Munchau in the *Financial Times* argued that the COVID lockdown “marked the moment the world finally abandoned the analogue age”, as the digital compilation and use of information displaces many of its analogue equivalents.⁵¹⁹ Low and Smart question whether “we can have sociality without public space” and if digital communities can create authentic global villages.⁵²⁰ Refuting this perspective, Andrew Wilkens responded to the article, arguing that our new digital habits were instead temporary masks “that we easily and enthusiastically removed when allowed” and that the frames of the city – essential and medical workers, organisations and structures – remained and emphasised their critical, analogue function in cities.⁵²¹ In *The Guardian*, an article written by Alex Hern and Julia Wong, both technology writers, similarly emphasised the value of the analogue and the local – rather than believing that the digital life had surpassed the analogue, they expressed that COVID-19 had “laid bare” the limitations of the digital city.⁵²²

For people with disabilities, the COVID-19 pandemic has been one of paradoxes. The dramatic digital shift provided options, services and flexibility the analogue city did not, but also revealed the complexity of the experience of digital accessibility. Moreover, it has further challenged normalised ways of thinking about the relationship between bodies and spaces. The sudden introduction of nationwide restrictions in Australia in March 2020 meant that technological and digital accommodations were instigated rapidly, and the mobile, normate body usually valued and prioritised across urban discourses became less essential.

⁵¹⁹ Wolfgang Munchau, “Covid-19 Will Finally Mark the End of the Analogue Age,” *Financial Times*, July 12, 2020, <https://www.ft.com/content/b13ff98d-ffc-4cfc-a853-3ba2cb75e717>

⁵²⁰ SETHA LOW AND ALAN SMART, “Thoughts About Public Space During Covid-19 Pandemic,” *City and Society* (2020), <https://anthrosource.onlinelibrary.wiley.com/doi/pdfdirect/10.1111/ciso.12260>

⁵²¹ Andre Wilkens, “Letter: Virus is Not the End of the ‘Analogue’ Era,” *Financial Times*, July 17, 2020, <https://www.ft.com/content/33f4459c-9f9b-4558-9bf1-0f9b21cb6297>.

⁵²² Alex Hern and Julia Carrie Wong, “Covid-19 and Technology: ‘This Time Has Shown Me That Analogue Life Has its Advantages,’” *The Guardian*, July 27, 2020, <https://www.theguardian.com/membership/2020/jul/26/covid-19-and-technology-this-time-has-shown-me-that-analogue-life-has-its-advantages>.

Though welcomed by people with disabilities, the digital changes were accompanied by reflections that previously sought online content and accommodations to work remotely have often been denied or deemed too difficult.⁵²³ Writer and activist Adele Aria writes in a blog post in March 2020:

*As my health and mobility has deteriorated, technological advances have changed the sense of connection and availability of alternatives. It is also somewhat galling to observe how quickly many of the systems that have denied access and inclusion to the disabled community have pivoted, almost overnight, to accommodate the pandemic demands for isolation and alternative arrangements. For those of us who are privileged to access functioning internet and computers, whether through a mobile device or PC, there is more out there that we can connect with than has been previously available.*⁵²⁴

She argues that, during the pandemic, digital technology has helped further access and inclusion, potentially enhancing connection and decreasing the isolation that many people with disabilities have experienced as a way of life. However, as she notes, access to the digital city is an assumed rather than given part of everyday life. In reality, for many people with disabilities, access is layered, comprised of the challenges regarding the physical access to digital devices and internet connections, as well as the accessibility of these devices, their software and online content. Viki Chinn, who is profoundly deaf, captures this experience, reflecting on the “pros and cons” of working remotely from home:

Working from home full time is a whole new ball game. One that has pros and cons, one that poses challenges that can make me feel like giving it all up on some days yet on others makes even the smallest of wins feel like the greatest of achievements. Adapting to new technologies, many of which fail abysmally on the accessibility front, dealing with technical hiccups whilst struggling to access the information needed to resolve them quickly, experiencing extreme screen fatigue

⁵²³ Katie Ellis, “Remote Digital Access to Work and Life is a Human Right, Don’t Forget the Disability Community When Quarantine is Lifted,” *The Australian Sociological Association. Critical Disability Studies* (blog), April 24, 2020, https://www.tasa.org.au/content.aspx?page_id=2507andclub_id=671860anditem_id=2172.

⁵²⁴ Adele Aria, “Cave Time,” Adele Purrsted (blog), March 16, 2020, <https://www.adelepurrsted.com/2020/03/cave-time/>.

*and increased screen exposure... have all exacerbated an already difficult situation.*⁵²⁵

As Goggin and Ellis further explain, COVID-19 regulations rendered many everyday lived experiences of disability as the new normal, including working from home, limited access to public space, and reliance on digital participation. Yet an ableist rhetoric in response to the pandemic also exacerbated existing inequalities across multiple sectors, from health, emergency planning and socio-economic policies.⁵²⁶ For example, in the Disability Royal Commission report on the *Experiences of People with Disability During the Ongoing COVID-19 Pandemic* found “the experiences of people with disability during the COVID-19 pandemic lays bare uncomfortable truths about systemic inequality in Australia”⁵²⁷ and issued twenty-two recommendations to address the neglect of people with disabilities particularly in the early stages of the pandemic. For example, The Australian Federal Government’s emergency response plan did not incorporate people with a disability, people with disabilities and representative organisations were not consulted in the early stages of the pandemic, and there was a lack of both personal protective equipment and health supplies for people with disabilities and the disability workforce.⁵²⁸

Beaunoyer, Dupre and Guitton further argue that COVID-19 exacerbates digital inequalities,⁵²⁹ in part as analogue options are removed and replaced with (often inaccessible) digital services, communications and information. Scott Hollier identifies that the reliance on a digital way of life thus also emphasises that “there is

⁵²⁵ Viki Chinn, “When the Adjustments Need Adjustments: Managing the COVID-19 Work From Home Challenges as a Disabled Colleague and Individual,” *London School of Economics Blog*, July 8, 2020, <https://blogs.lse.ac.uk/careers/2020/07/08/when-the-adjustments-need-adjustments/>.

⁵²⁶ Gerard Goggin and Katie Ellis, “Disability Communication and Life Itself in the COVID 19 Pandemic,” *Health Sociology Review* 29, no. 2 (2020): 168-176, <https://doi.org/10.1080/14461242.2020.1784020>.

⁵²⁷ Disability Royal Commission, “Report – Public Hearing 5: Experiences of People With Disability During the Ongoing COVID-19 Pandemic,” November 30, 2020, 109, <https://disability.royalcommission.gov.au/publications/report-public-hearing-5-experiences-people-disability-during-ongoing-covid-19-pandemic>.

⁵²⁸ Disability Royal Commission, “Report – Public Hearing 5”.

⁵²⁹ Beaunoyer, Dupre, and Guitton, “COVID-19 and Digital Inequalities”.

little argument now, especially considering our reliance on the Internet during COVID-19, that access to online content is not just essential but a fundamental human right.”⁵³⁰ Thus, if COVID-19 marks the final departure of the analogue city, and validates the dominance of the digital city, there is an opportunity to both increase broader citizen participation by increasing the normalisation of accessibility whilst also recognising existing digital inequalities.

8.3. The effect of the pandemic on the Smart City

The emphasis that COVID-19 brought on digital space, digital communications and digital services has, in many ways, reinvigorated interest in the Smart City discourse. Sharifi and Khavarian-Gamsir⁵³¹ identified that the Smart City was a key thematic category in academic discussions of the effect of the pandemic on cities in the first eight months since the beginning of the outbreak in January 2020. However, as this chapter outlines, the pandemic and digitisation of public space did not automatically correlate to a broad acceptance of all aspects of the Smart City narrative as it found itself impacted by global economic downturns and renewed criticisms of the reduction of privacy and “datafication”⁵³² of citizens.

As commentators across multiple media sources identified, one of the first impacts of the pandemic was a collapse of many of the pillars of globalisation and a rise in nationalist sentiment.⁵³³ As the pandemic grew, city/region approaches and

⁵³⁰ Scott Hollier, “Accessibility, Independence and Dignity,” *Hopkins Centre*, Moderator’s Corner. November 17, 2020, <https://www.hopkinscentre.edu.au/news-view/accessibility-independence-and-dignity-244>

⁵³¹ Ayyoob Sharifi and Amir Reza Khavarian-Gamsir, “The COVID-19 Pandemic: Impacts on Cities and Major Lessons for Urban Planning, Design, and Management,” *Science of Total Environment* 749 (2020), <https://doi.org/10.1016/j.scitotenv.2020.142391>.

⁵³² Michiel de Lange, Karre Synnes, and Garald Leindecker, “Smart Citizens in the Hackable City: On the Datafication, Playfulness, and Making of Urban Public Spaces Through Digital Art,” in *CyberParks – The Interface Between People, Places and Technology*, Lecture Notes in Computer Science, vol. 11380, ed. C. Smaniotto Costa (New York: Springer, Cham: 2019), https://doi.org/10.1007/978-3-030-13417-4_13.

⁵³³ Peter Enderwick and Peter Buckley, “Rising Regionalization: Will the Post-COVID-19 World See a Retreat From Globalization?” 2020, https://unctad.org/system/files/official-document/diaeia2020d2a5_en.pdf.

boundaries were prioritised. In Australia in particular, there was also a renewed emphasis on city/region as the dispersed nature of Australian cities allowed for parochial policies and strategies to trump national ones. WA, in particular, essentially detached itself from the country, closing the borders to those outside of WA. At the peak of community transmission, the government of WA also divided the state and controlled movement between the ten regions, creating clear divides between Perth city and rural and regional areas. This method was also employed in Victoria during its second wave. Other countries, such as the US, have likewise seen an emphasis on regional/city boundaries. On the other hand, the initial spread of COVID-19 primarily in cities saw a shift away from crowded urban centres, though the role of the city as a key mechanism in the spread of the pandemic shifted as the spread likewise extended into regional areas. Fitjar⁵³⁴ identified that the perceived strength and appeal of the city, particularly large urban centres – those with high levels of connectivity to global networks and density of both people and industry – rapidly became perceived as the most vulnerable, and thus unappealing, places in a pandemic.

As such, discussion papers and journal articles have begun to unpack the ramifications of COVID-19 on cities and public space,⁵³⁵ and several key concepts emerge consistently – the transformative nature of the COVID-19 pandemic on the relationship between bodies and space, and the central but problematic⁵³⁶ role of

⁵³⁴ Rune Dahl Fitjar, "Covid-19 Has Turned Cities' Greatest Assets Into Disadvantages," *London School of Economics Blog*, May 13, 2020, <https://blogs.lse.ac.uk/covid19/2020/05/13/covid-19-has-turned-cities-main-economic-assets-into-their-worst-enemies/>.

⁵³⁵ Lloyd Alter, "Urban Design After the Coronavirus," *Treehugger* (blog), April 8, 2020, <https://www.treehugger.com/urban-design>; Jordi Honey-Rosés et al., "The impact of COVID-19 on Public Space: An Early Review of the Emerging Questions – Design, Perceptions and Inequities," *Cities and Health*, Special issue: COVID, <https://doi.org/10.1080/23748834.2020.1780074>; Richard Florida, "We'll Need to Reopen Our Cities. But Not Without Making Changes First," *CityLab*, March 2020, <https://www.citylab.com/equity/2020/03/coronavirus>; Seth Lowe and Alan Smart, "Thoughts About Public Space During Covid-19 Pandemic," *City and Society* <https://doi.org/10.1111/ciso.12260>; Jan Gehl, "Public Space, Public Life and COVID-19," 2020, <https://covid19.gehlpeople.com/>; Sharifi and Khavarian-Gamsir, "The COVID-19 Pandemic".

⁵³⁶ For example, the dominance of tech giants and intensification of inequality (Lowe and Smart, "Thoughts About Public Space During Covid-19 Pandemic").

technology in this transformation. Surveillance, contact tracing and digital permits have all become central strategies in most countries' public health management approach and, despite public and academic concern about their growing prevalence over the past decade, COVID-19 was seen to legitimise their widespread implementation.⁵³⁷

The use of contact tracing apps as a means of tracking and recording citizen movements (and therefore possible exposure to COVID-19), was one of the most overt ways Smart City approaches were accelerated by the pandemic while also exemplifying the contested nature of the paradigm. Arguments abounded in many countries utilising this approach about the tracing apps' effectiveness at controlling infection rates, the lack of public trust around tracing technology and use of personal data,⁵³⁸ and the reliability or accuracy of the technology such as Bluetooth capabilities.⁵³⁹ Attempts to convince the general population of the benefits and security of the apps – including a shift from a centralised approach (where data is gathered by the government) to a decentralised method (data is stored on the individual device), as was undertaken in the UK – have still failed to see a broad use of the app. In December 2020, the UK tracing app had been downloaded

⁵³⁷ Honey-Rosés et al., "The Impact of COVID-19 on Public Space"

⁵³⁸ This distrust of being digitally traced, despite embedded tracing in many popular social media apps, was also evident in the *Navigating Urban Spaces* project, detailed in Chapter 6, in which participants rejected the proposed app that would track and record their experiences of urban space.

⁵³⁹ Stephen Snyder, "How Do Contact Tracing Apps Around the World Compare?" *The World*, May 27, 2020, <https://www.pri.org/stories/2020-05-27/how-do-contact-tracing-apps-around-world-compare>; Vinh Thong Ta, John Dempsey and Max Eiza, "England's New Contact Tracing App Fixes Privacy Problems – Whether it Will Work is Another Matter," *The Conversation*, August 18, 2020. <https://theconversation.com/englands-new-contact-tracing-app-fixes-privacy-problems-whether-it-will-work-is-another-matter-144617>; Melvyn Zhang, Aloysius Chow and Helen Smith, "COVID-19 Contact-Tracing Apps: Analysis of the Readability of Privacy Policies," *Journal of Medical Internet Research Publications* 22, no. 12 (2020), <https://www.jmir.org/2020/12/e21572>; Michael Parker et al., "Ethics of Instantaneous Contact Tracing Using Mobile Phone Apps in the Control of the COVID-19 Pandemic," *Journal of Medical Ethics* 46, no. 7 (2020): 427–431, <http://dx.doi.org/10.1136/medethics-2020-106314>.

21.08 million times, equating to an uptake by 35.5% of the population.⁵⁴⁰ In comparison, Australia's centralised government tracing app, COVIDSafe, has been downloaded 7.3 million times, reflective of 28.7% of the population. Apple and Google have also released contact tracing systems which, while contentious in their own right, do not collect personal and GPS data that other, centralised apps created by governments have. The discourses around privacy, surveillance and control that have emerged from the launch of these apps have intersected with, and in some ways undermined, Smart City narratives, revealing a clear push-back against 'control creep' and the invasion of surveillance technology in everyday life. As discussed in Chapter 5, these themes are also pertinent to the intersection of CDS in this discourse. As Honey-Rosés et al. reflect, COVID-19 might therefore offer an opportunity to challenge the dominant assumptions around the techno denizen within the city discourse of the Smart City, and "reimagine and plan cities" along more equitable and inclusive lines.⁵⁴¹ A critical understanding of both disability and accessibility is therefore an important theoretical tool and interruption in the perpetuation of the normate citizen.

8.4. Crip technoscience: A critical response to Smart City solutions

The Smart City is problematic as a "techno-utopian" narrative⁵⁴² which generates policies and urban strategies that present technological solutions that mask, and often exaggerate, existing inequalities, or are detached from the experiences and perspectives of its citizens. If the Smart City premised organisation and technology as remedies to the challenges of the modern city, COVID-19 identified the failings and instabilities of this proposed solution. Moreover, in the synopsis of the

⁵⁴⁰ UK Government, *Weekly statistics for NHS test and trace (England): 24 December to 30 December, 2020*, <https://www.gov.uk/government/publications/nhs-test-and-trace-england-statistics-24-december-to-30-december/weekly-statistics-for-nhs-test-and-trace-england-24-december-to-30-december>.

⁵⁴¹ Honey-Rosés et al., "The Impact of COVID-19 on Public Space",

⁵⁴² Alan Wiig, "IBM's Smart City as Techno-Utopian Policy Mobility," *City 19* (2015): 258–273, <https://doi.org/10.1080/13604813.2015.1016275>.

interviews of blind and low vision smartphone users during COVID-19 (discussed in the following section), individual innovation and adaptation were highlighted as integral to their management of and adaptation to this urban crisis. The importance of disability insights, interventions and inclusion in a broader discussion of digital developments and inclusion are increasingly valuable. This is in line with critiques of the Smart City which preference an empowered and participatory citizenship as central to reversing techno-dominant and corporate-driven approaches to urban developments. Smart citizenry, it is argued, is the prioritisation of bottom-up and local innovative strategies rather than top-down projects, “focusing on people – not technology – as the primary actors”.⁵⁴³ Crip technoscience is therefore a useful concept in understanding the premise of smart citizenry as reflexive, critical and relational relationships between people, cities and (particularly personal) digital technology.

Crip technoscience emphasises the individual and diverse use of and intersection with technology, and is a “relational practice”⁵⁴⁴. Importantly, crip technoscience works against the dominant narrative of designing for people with disabilities as passive recipients, instead emphasising design with and by people with disabilities.⁵⁴⁵ It also critically unpacks and politicises accessibility, and the relationship between disability and technology as being fluid and political.⁵⁴⁶ This chapter therefore borrows from the field of crip technoscience as, while the relationship between people with disabilities and smartphones may not always involve an act of hacking

⁵⁴³ Drew Hemment and Anthony Townsend, “Smart Citizens,” 2013, https://futureeverything.org/wp-content/uploads/2013/08/SmartCitizens—FutureEverything_.pdf; Igor Calzada and Cristobal Cobo, “Unplugging: Deconstructing the Smart City,” *Journal of Urban Technology* 22, no. 1 (2015): 23–43, <https://doi.org/10.1080/10630732.2014.971535>.

⁵⁴⁴ See Alison Kaffer, *Feminist Queer Crip* (Indiana: IUP, 2013) “disability as a political site that is ever-changing and always in relation to other people, environments, and attitudes”.

⁵⁴⁵ Aimi Hamraie, “Critical Access Studies,” Youtube, <https://www.youtube.com/watch?v=uCL-EtS2F5k>.

⁵⁴⁶ Aimi Hamraie and Kelly Fritsch, “Crip Technoscience Manifesto,” *Catalyst: Feminism, Theory, Technoscience*, 5, no. 1 (2019): 1–34, <https://catalystjournal.org/index.php/catalyst/article/view/29607/24772>.

and designing as a form of disability activism or politics, the concept provides a critical insertion in dominant narratives of technology and disability. Furthermore, whilst crip technoscience emphasises disability (and technoscientific) activism and critical design, in this chapter it is used to also consider the everyday and mundane intersections between smart technology and the user as both a site of and for reflexive accessibility.

8.5. *Navigating Urban spaces: Capturing the dynamic between smartphones, pandemics and disability*

This process of accessibility in the wake of the COVID-19 pandemic was explored in the final component of the *Navigating Urban Spaces* project. Having previously established the complex and multifaceted ways in which people used smartphones to navigate urban space (discussed in Chapter 5), the final stage of the project aimed to accumulate a large data set which would quantify some of the findings from the initial focus groups and interviews, but also develop a broader understanding of the impact of inter-disability diversity on accessibility, and specifically on smartphone use. In the context of both the Smart City discourse and exacerbated by COVID-19, understanding access as a process and the complexity of the disability experience was critical to interrupting assumptions around the preferred, normative user.

In February 2020, just prior to COVID-19 accelerating as a health crisis in Australia, and in conjunction with Vision Australia, I designed and implemented a survey to establish the extent of the uptake and use of smartphones in the Australian blind community. The results revealed complex relational factors that impacted perspectives on and uses of digital technology. Of the 845 participants that completed the survey, 79% owned a smartphone. This showed a 365% growth in smartphone use by low vision or blind people in less than five years when compared with a similar 2015 survey conducted by Vision Australia which found 16.7% of clients used a smartphone. However, the survey results found there was a significant range in the way the smartphone was used, and whether accessibility apps or built-in assistive features were utilised. The diversity of disability was pertinent to the

findings, with age, variation or level of vision impairment, and length of time participants had experienced vision loss, all impacting the role the smartphone played in their everyday life.

The significance of these relational factors, and indeed the complexity of accessibility, became particularly overt as the survey concluded and COVID-19 (and subsequent social distancing regulations) surfaced in Australia. This poignant moment in which digital interactions replaced physical ones prompted a spontaneous extension of the research project to incorporate post-survey interviews with a sample of participants about how the pandemic had affected their smartphone use. The following details the context in which the interviews were conducted (that is, the specific Australian experience of the pandemic in March 2020) and the post-survey interview results and discussion.

8.5.1. The Australian context and experience of COVID-19

A large island continent with a geographically dispersed population clustered around the coast, Australia was in a unique position at the onset of the COVID-19 pandemic, marked as 25 January 2020 with the first confirmed case. After a long dry summer, marred by the most extensive bush fires the country had experienced for decades, the emergence of cases of COVID-19 came at a time characterised by both disaster fatigue and increased nationalism. As international travellers, notably from cruise ships, became the first recorded cases of COVID-19 in the country, federal and state governments began implementing restrictions on travellers entering Australia. The breach of quarantine restrictions at Sydney Harbour in the case of the *Ruby Princess* cruise ship preceded the closure of Australia's border to all non-resident international travellers and bans on Australians leaving the country. Border controls were not the only feature of the Australian Government's strategy in the *Australian Health Sector Emergency Response Plan for Novel Coronavirus*, incorporating extensive contact tracing, self-isolation and enforced isolation regulations. As a result, the experience of COVID-19 in Australia became both geographically and

politically segmented – each state or territory determining their own border controls and movements of citizens and internationals. It was this capacity to control borders that ultimately affected the ability for Australia to manage and contain the spread of COVID-19, therefore enabling the pursuit of an elimination strategy.

In March 2020, the experience of the pandemic regulations was most widely felt in the closure of schools, shops and restaurants, work-from-home mandates, restrictions on gatherings, and state-wide lockdowns. It was at this moment, when the broader community began adapting to the regulations that ensued in Australia as a result of the COVID-19 pandemic, that our surveys took place. For people with disabilities in Australia, the experience of the pandemic-led restrictions and regulations were distinct from other parts of the world in which health risks and concerns were far more acute. This is reflected in the responses in the follow-up interviews conducted at the end of the survey in May 2020.

8.5.2. Smartphone use by people with low vision or blindness: Interview results

The COVID-19 pandemic emerged in Australia as the initial survey was being finalised. The survey results revealed complex relational factors that impacted perspectives on and uses of digital technology. I responded to the COVID-19 ‘moment’, and a shifting dynamic between disability and digital space, by extending the parameters of the research. The project was adapted to incorporate post-survey interviews with a sample of participants in order to capture how this global health emergency changed the way our participants used their smartphone, as well as to garner broader perspectives on the effect of COVID-19 on their everyday lives. These interviews revealed reflexive and creative use of these citizen interfaces when faced with the digitising of the city and services, and highlighted the significance of geography, not simply the distinctions between countries, but between urban and regional residents (as also discussed in Chapter 6). The interviews also prefaced a more complex discussion around the role of contact tracing and apps, privacy, validity and vulnerability. This discourse is important for ensuring support for the disability

community pre- and post-global health emergencies, but also offer a valuable exemplar for understanding the relationship between digital inclusion, social equality and accessibility. Moreover, the individuals and their diverse use of and intersection with technology, align with the principles of crip technoscience which locates accessibility as a relational practice.

The interviews were conducted with a small sample of thirteen individuals across Australia who had completed the initial survey and indicated they would be willing to participate in further research. Interviewees were asked (either via phone or email) eight questions about their smartphone use during the COVID-19 pandemic. Questions explored if and how their use had changed due to individual health concerns, regulations around social distancing, and increased isolation via stay at home mandates. The semi-structured interviews were conducted with participants over a one-week period at the end of May 2020. The age range of participants was 23–83 year-olds, all but one of whom owned a smartphone; the cohort were from different cities and towns across Australia.

Overall, smartphone use increased for all but one participant (who did not own a smartphone) from when the COVID-19 pandemic appeared in Australia. For most participants, the types of uses did not differ significantly as can be seen from these three responses:

I always did use social media to connect with many friends and family and that didn't change, other than, I did use it more often.

I've used it a lot more. It was very helpful as I was working from home.

I used my phone for a lot of different things before Covid, so I guess I generally just use it more. In particular, I used Teams and shopped more online.

Conversely, for people who were newly blind, or undergoing life changes, the COVID-19 pandemic had a more broad-ranging impact on the way they used their phones. For these individuals, different functions, apps and combined online/offline strategies were employed to adjust to social distancing regulations and the inability to use face-to-face services:

I'm newly blind, or have been for less than a year. I was going to get assessments, voice readers... but this was halted or attempted over zoom. And zoom was really challenging and hard for this.

I had just received my guide dog and we weren't able to finish training, and then the trainer couldn't come because of Covid. I used my smartphone to help finish the training.

For others, isolation was seen as an opportunity to use their smartphone for more leisure-based purposes such as reading or watching television and videos:

I was connected to it 12 hours a day! A lot of streaming tv/entertainment purposes.

I used the Vision Australia library a lot.

I used it for reading as I had more time.

Another participant noted, however, that other leisure practices, such as playing games on a smartphone, were limited for people with low vision (as discussed in Chapter 6 in reference to Pokémon Go), with COVID-19 highlighting that inaccessibility in areas had become more prominent at a time in which we had become more reliant on digital platforms.

Across all participants who used smartphones, there was an increase in the use of and reliance on communication apps and features such as Zoom, social media and various messaging apps. Zoom, Skype and Teams were utilised more in professional contexts (such as for people working at home), with several participants noting that learning how to use these apps was a challenging and frustrating process. Interestingly, despite accessibility barriers, most expressed that they would use the apps they adopted during COVID-19 again:

I will use YouTube more, not Zoom which I don't really like... its messy and you have to be very proficient to use it... I prefer Skype.

Learning how to set up Zoom meetings was difficult... but I will use Zoom again.

The context in which individuals became reliant on digital platforms thus both magnified accessibility issues, and “fostered active and self-directed relationships”⁵⁴⁷ with digital media. Difficulties with setting up and using communication apps were also not always perceived as issues with the accessibility of the app itself – for example, participants who used an app such as Zoom or Microsoft Teams often stated it was “easier” using programs on their computer. As Robinson explains:

*As inhabitants of a material world that can be inaccessible to them, individuals who live with physical impairments sometimes must choose between two options: wait for someone to address disabling circumstances or find alternative ways to do the things they want and need to do in life.*⁵⁴⁸

Moreover, over half of the participants interviewed saw the shifts in increased use of smartphones and related technology during the pandemic would illicit a cultural shift and continue beyond the alleviation of social distancing restrictions:

Our workplace is using Teams a lot more and I think they will continue to do this. I will use the note taking app and online shopping from Woolworths. And I'll try and get a new, better phone. I assume I will use Zoom etc, as I think people will be working from home more, the office culture is changing anyway regardless of my vision.

These responses highlighted how the context of the COVID-19 pandemic was perceived as being an opportunity to alleviate some barriers and challenges for people with (and without) disabilities such as (long campaigned for)⁵⁴⁹ flexible and digital working arrangements. This aligns with arguments made throughout this thesis that access is a social, cultural and historical construction (and is created or impeded accordingly), and not located simply within a technology.

⁵⁴⁷ Elizabeth Ellcessor, “Digital Media Accessibility”, in *The Routledge Companion to Disability and Media*, ed. Katie Ellis, Gergard Goggin, Beth Haller and Rachel Curtis, 306–315 (New York: Routledge, 2019).

⁵⁴⁸ Jerry Robinson, “Individuals with Physical Impairments as Life Hackers”, in *The Routledge Companion to Disability and Media*, ed. Katie Ellis, Gerard Goggin, Beth Haller and Rachel Curtis (New York: Routledge, 2019), 306.

⁵⁴⁹ Ellis, “Remote Digital Access to Work and Life is a Human Right”; Ashley Shew, “Let Covid-19 Expand Awareness of Disability Tech,” *Nature*, 2020, https://www.nature.com/articles/d41586-020-01312-w?fbclid=IwAR0H12va-aif5EtbulsH7DZb2p_NKv2OAmActyzoCbAKXCE1k3RsOYcMbpw.

The cost associated with increased smartphone and associated technology use was varied; while many did not identify a direct increase, other participants experienced a financial impact through increased internet use, cost-per-minute services such as Aira (an app that connects sighted professionals as visual aids for blind and low vision users), or a reliance on support workers, taxis and tech support. However, it should be noted that the interviews did not ask a question about the financial impact of COVID-19 on participants more broadly, with the question only pertaining to increased costs related to smartphone use. As Ellis and Goggin have noted, the pandemic was likely to have exacerbated economic inequalities for people with disabilities⁵⁵⁰ who already experience a higher cost of living yet experience greater socio-economic barriers and disparities.

Smartphones were also used creatively to circumnavigate the restrictions that COVID-19 brought on people's everyday lives. Creative uses include everyday hacks, actorobject interventions and workarounds implemented to make technology usable. "Life-hacking", as explained by Jerry Robinson, "allow[s] people to deal with the obstacles they encounter in a specific context through their skilled use of artifacts and environmental affordances"⁵⁵¹ and thus involves modified or non-prescribed uses of the smartphone:

My support walker would come and video the walks [with my new guide dog], I would send the videos to the trainer, and we would later call to discuss how things were going.

I took photos of my disability card, which allowed people to come and take me for a walk, and not be stopped by the police for breaking the rules.

Participants often used a combination of informal and formal strategies for mitigating COVID-19 regulations and an increased (and not always temporary, such as Telehealth) digitisation of services or relationships. The alternatives put forward by our participants were never framed as 'creative' or 'innovative' approaches to an

⁵⁵⁰ Goggin and Ellis, "Disability Communication and Life Itself in the COVID 19 Pandemic".

⁵⁵¹ Robinson, "Individuals With Physical Impairments as Life Hackers".

inaccessible technology, rather they were explained as everyday, mundane, ordinary discoveries, and often reluctant remedies to an accessibility challenge. Chinn describes this experience of fragmented technological access as a process of “piecing together.... It’s like being asked to complete a jigsaw with most of the pieces missing”⁵⁵². For some participants the smartphone provided a creative remedy to a problem: one participant, when health assessments were delayed due to COVID-19, began using Google Keep to record information because it is backlit which he could use with a magnifying glass; another used their smartphone video to replace a face-to-face training activity. These tactics, described by Wästerfors as “piggybacking”, involve the use of features not explicitly designed for people with disabilities as an AT.⁵⁵³ Ellis notes that, in turn, many specialised AT innovations have become important mainstream everyday devices.⁵⁵⁴

However, for other participants the smartphone was not a remedy for but a source of exclusion, to which creative approaches and life hacks had to be applied. When everyone was using Zoom or Skype for meetings no longer able to be held offline, one participant learned to recognise the patterns for each app in order to navigate across small icons and links his magnifier did not reach. Many participants also noted the use of others (either family, friends or paid professionals) as important actors in mitigating the challenges of using new or inaccessible smartphone apps. For example, five participants noted that partners/family members were used to set up, modify or download apps to their smartphone, evoking a type of everyday creative accessibility or “life hack”⁵⁵⁵. The impetus that COVID-19 had on people (with or without low vision) to expand their smartphone use emphasised the ways in which

⁵⁵² Chinn, “When the Adjustments Need Adjustments”.

⁵⁵³ David Wästerfors. “Required to be Creative: Everyday Ways For Dealing With Inaccessibility,” *Disability and Society* 36, no. 2 (2021), <https://doi.org/10.1080/09687599.2020.1720610>.

⁵⁵⁴ Katie Ellis, *Disability and Digital Television Cultures: Representation, Access, and Reception* (New York: Routledge, 2019).

⁵⁵⁵ Robinson, “Individuals with Physical Impairments as Life Hackers”.

the device places people “in situationally disabled conditions”⁵⁵⁶ where an understanding of access changes across contexts (e.g. pre-, during and post-pandemic), disabilities and individual purpose and intent.

The smartphone during COVID-19 thus epitomised a type of disability paradox, both providing a solution to the restrictions brought about by the health emergency, and creating a source of exclusion, frustration and inaccess. Goggin and Ellis explain that this paradox of experiences peppers the different ways disability has been addressed and experienced, highlighting clear structural exclusion and yet a normalising of many of challenges people with a disability face, prior to and post-pandemic.⁵⁵⁷

The Australian experience of the COVID-19 pandemic provides some unique insights into how people perceived the health concerns/threat, experienced isolation, and interacted with the social distancing regulations. Though infection rates in Australia rapidly increased for a brief time, the spread of the virus was relatively contained, and was experienced very differently in each state. For example, in WA, the initial spread of COVID-19 and rapid rise in infections in mid-March elicited a state of emergency, and a series of restrictions (including school closures, regional and ‘hard’ state border closures and limits on social gatherings) by the state government. However, by the time of the interviews in late May, there were no cases of local transmission, most restrictions had been lifted (other than the state border closure) and the fear of infection for many people was both brief and relatively localised, primarily to city centres. In comparison, after concluding the interviews, there was a significant increase in rates of infections in Victoria in late June 2020 which would likely have affected the perceptions and experiences of people responding to the interview questions. Instead, most of the people interviewed in May were not overly concerned about the impact of COVID-19 on their own health as they believed they had a statistically insignificant chance of contracting the virus. Many expressed that

⁵⁵⁶ Ellcessor, “Blurred Lines”.

⁵⁵⁷ Goggin and Ellis, “Disability Communication and Life Itself in the COVID 19 Pandemic”.

the threat of the virus was minimal in their area and did not affect everyday practices significantly:

I wasn't as worried as my area wasn't affected/there weren't cases near me. I used hand sanitiser etc more, just for peace of mind.

I didn't really avoid touching things or going places, I just washed my hands more.

My human guide/support worker still worked we just took more precautions. However where I live there was very few cases so I wasn't as concerned.

This feeling of being unaffected by the pandemic was also reiterated in the response to the question about whether they had downloaded the government's COVIDSafe app. The significance of geography, not simply the distinctions between countries, but between urban and regional residents, was evident in the responses of participants. In the interviews, participants often noted, unprompted, if they lived in a rural or regional area in reference to the impact of COVID-19 on changes to their everyday lives or to their uptake of the COVIDSafe app. Several participants did not believe the app was relevant to them as they either lived in a rural/remote area, and did not travel beyond their local area nor use public facilities often. Furthermore, most participants expressed some scepticism about the app, both its effectiveness and the way their privacy/data would be used:

I didn't download the App because, of the adverse reports on it's [sic] tracking capability, particularly on iPhones. If I had felt confident it would do what was intended, I would have been more than likely to have installed it.

I did [download it]. I felt it was socially responsible. Not many people I know have it. They don't trust the government, the amazon cloud, whatever.

I didn't get it. I wasn't sure where my information would end up.

I downloaded the app, but then I took it off, my wife was concerned about privacy.

Other participants stated that the app was not accessible to them:

When it was first downloaded onto my phone there was only one button that was unidentifiable.

I tried but it was quite difficult.

I did download it, but my son had to do it for me.

The responses from people interviewed about the effect on their smartphone use during the COVID-19 pandemic identified that the role of this everyday device is amplified in a health emergency context. The smartphone is used more, but not always in new ways. When participants did attempt to learn a new function or app, the process was often difficult and exacerbated by inaccessibility yet, once mastered, the new app was appreciated and embraced.

The limitations and inaccessibility of the device for different individuals is also magnified when alternative support structures are removed, exacerbating isolation and disconnection. Blind and low vision users employ creative and adaptive techniques, combining technology and human support, to remove accessibility barriers and limitations imposed in a health emergency setting. A lack of uptake and scepticism of the role of the government-led COVIDSafe app mirrors findings on the broader community's perspective,⁵⁵⁸ but may also be influenced by findings in previous research that there is increased privacy concerns and management for people with disabilities.⁵⁵⁹

8.5.3. Discussion

The core aim of the *Navigating Urban Spaces* research project was to gain a deeper understanding of the use of smartphone technology by people with low vision and blindness as a specific response to the predominant approach (particularly in the field of STS) in research on the relationship between disability and digital technology use which tends to be technology-led, focused on the role of the device in the tech–user relationship.⁵⁶⁰ Examples of this in the specific research area of vision loss and

⁵⁵⁸ Lucy Simko et al., "COVID-19 Contact Tracing and Privacy: Studying Opinion and Preferences," 2020, <https://seclab.cs.washington.edu/covid19>; Matt Burgess, "Just How Anonymous is the NHS Covid-19 Contact Tracing App?" *WIRED UK*, May, 2020, <https://www.wired.co.uk/article/nhs-covid-app-data-anonymous>.

⁵⁵⁹ Leanne McRae, et al. "Privacy and the Ethics of Disability Research: Changing Perceptions of Privacy and Smartphone Use," in *Second Handbook of Internet Research*, ed. Jeremy Hunsinger, Lisbeth Klastrup and Matthew Allen, 413–429 (New York: Springer, 2019).

⁵⁶⁰ This is also the approach taken in other studies I have conducted as a member of the Digital Inclusion and Media Access research team at Curtin University (see both Chapter 6 and Chapter 7).

smartphones includes studies of the ways in which the smartphone can provide a wayfinding system for blind users,⁵⁶¹ be used as an object sensor,⁵⁶² or interact with adapted tactile maps.⁵⁶³ Research on smartphone capabilities is often framed by an accessibility discourse – where an app or technological development may be able to alleviate inaccessibility – but the interpretation of accessibility is reduced and simplified rather than critically interpreted as a multifaceted relationship between bodies, cultures and technologies.⁵⁶⁴ Utilising the theory of crip technoscience, which emphasises the individual and diverse use of and intersection with technology, this chapter argues that a static understanding of accessibility – rather than the reflexive and user-orientated definition preferred in crip technoscience – continues to hinder opportunities to create accessible cities, smart or otherwise.

The results of the survey and interviews depict what has been often highlighted in critical accessibility studies – that access is neither one dimensional nor achievable when the definition of both disability and impairment is reduced to fixed, simplified categories. The results instead show how accessibility is entwined with age, health, impacts of impairment, geographical location and economics of disability:

*Disability in its diversity and intersectionality offers many insights as well as practical, design, conceptual, and policy ideas, for rethinking digital inclusion to meet the new challenges of emerging technologies and their social coordinates.*⁵⁶⁵

⁵⁶¹ M. C. Rodriguez-Sanchez et al., “Accessible Smartphones For Blind Users: A Case Study For a Wayfinding System,” *Expert Systems with Applications* 41, no. 16 (2014): 7210–7222. <https://doi.org/10.1016/j.eswa.2014.05.031>.

⁵⁶² En Peng et al., “A Smartphone-Based Obstacle Sensor For the Visually Impaired,” in *Ubiquitous Intelligence and Computing*, UIC 2010, Lecture Notes in Computer Science, vol 6406, ed. Zhiwen Yu et al., 590–604 (Berlin, Heidelberg: Springer, 2010), https://doi.org/10.1007/978-3-642-16355-5_45.

⁵⁶³ Timo Götzelmann, “Interactive Tactile Maps for Blind People Using Smartphones? Integrated Cameras,” presented at *International Conference On Interactive Tabletops And Surfaces*, ACM (2017): 381–385.

⁵⁶⁴ Gerard Goggin, Katie Ellis, and Wayne Hawkins, “Disability at the Centre Of Digital Inclusion: Assessing a New Moment in Technology and Rights,” *Communication Research and Practice* 5, no. 3 (2019): 290–303, <https://doi.org/10.1080/22041451.2019.1641061>; Ellcessor, “Blurred lines”.

⁵⁶⁵ Gerard Goggin and Kuansong Zhuang, “Disability as Smart Equality: Inclusive Technology in a Digitally Advanced Nation,” in *Digital Inclusion: Enhancing Vulnerable People’s Social Inclusion and Welfare?* ed. Panayiota Tsatsou (London: Palgrave, 2021).

The diverse experiences of disability – even within similar disability categories such as vision impairment – require an equally diverse and broad understanding of how accessibility is designed for and achieved. In the field of digital technology, access is also layered, affected by (at least) three components of use – device, software and content.

While the broad uptake of the smartphone by the blind community demonstrates one level of access is being achieved (evident in the 79% of survey participants who used a smartphone), three further tiers of accessibility were identified – the use of the device (indicated by the breadth of use), activation of its various accessibility features, and further extension of its capabilities through accessibility app uptake. Furthermore, the accessibility of the technology itself is highly influenced by cultural accessibility, “not merely technical access, but [the] cultural relevancies, affective experiences, and shared interests and need”.⁵⁶⁶ Thus socio-cultural context (from the Smart City discourse to the COVID-19 pandemic) will shift and impact cultural accessibility.

The COVID-19 pandemic further laid bare the impact of context and of socio-historical processes on access. What was deemed economically unsound or logistically impossible became not simply possible (and possible relatively instantaneously) but widespread digital practices. The context of COVID-19 did not, however, shift the definition or experience of disability, but rather shifted the parameters of able-bodiedness. Thus, the changes and allowances made to accessibility in the digital environment were instigated by the disabling nature of the pandemic, and not a changed social awareness or critical understanding of access. Indeed, throughout this project, the digital experiences of people with disabilities magnified the instabilities and issues of equality in the emphasis on digital space.

⁵⁶⁶ Ellcessor, “Blurred Lines”.

These reflections are important in providing a critical review of both accessibility in general but also as part of the Smart City narrative.

8.6. Conclusion

The results of an extensive survey of the blind community in Australia in 2020 revealed a complex relationship with the citizen interface of the Smart City, the smartphone, yet that, when these experiences intersected with a global pandemic and a digitisation of urban space, understandings of the preferred user and the normate citizen were further disrupted. While the smartphone has rapidly become an everyday device for people with disabilities, the breadth of variance of use and dispersed interactions with accessible apps and features demonstrates the problematic assumptions around accessibility and “common sense notion of people with disabilities inherently benefiting from new technologies”⁵⁶⁷. Moreover, the response to the COVID-19 pandemic in follow-up interviews provided further insights into fluid and political relationship between disability, technology and accessibility. Responses depicted the frictional aspect of accessibility; the smartphone could in this context “both produce and dismantle”⁵⁶⁸ inequalities. As Hamraie highlights, many of the new requirements to operate in a Smart City were both being used by people with disabilities, and also being denied by ableist structures, well before the COVID-19 pandemic.

As this thesis goes to print, a year on from the beginning of the pandemic, the effect of COVID-19 on ableism and the way society builds for disability rather than for ability may be more significant than this chapter initially assumed. Anecdotal evidence of long-term effects of COVID-19 on many of the 30 million people who have contracted

⁵⁶⁷ Gerard Goggin and Chris Newell, *Digital Disability: The Social Construction of Disability in New Media* (Rowman and Littlefield, 2003), xvi.

⁵⁶⁸ Hamraie and Fritsch, “Crip Technoscience Manifesto,” 3.

the disease may be the “mass disabling event”⁵⁶⁹ that upends long-held perceptions of both disability as a minority experience and of the normate body.

⁵⁶⁹ Fiona Lowenstein and Hannah Davis, “Long Covid is Not Rare. It’s a Health Crisis,” *New York Times*, March 17, 2021, <https://www.nytimes.com/2021/03/17/opinion/long-covid.html>; Ling Mao et al., “Neurological Manifestations of Hospitalised Patients With Coronavirus Disease 2019 in Wuhan, China,” *JAMA Neurol* 77, no. 6 (2020): 683-690, <https://doi.org/10.1001/jamaneurol.2020.1127>; Pavithra Mohan, “I Feel Devastated: COVID-19 Long-Haulers Fight For Understanding From Employers,” *Fast Company*, 24 September, 2020, <https://www.fastcompany.com/90553145/i-feel-devastated-covid-19-long-haulers-fight-for-understanding-from-employers>.

9. Conclusion

This thesis investigated the relationship between screens and disability in the context of the dominant contemporary urban discourses of the Creative City and the Smart City. It questioned how the screen worked to define both urban space and who is recognised as a valid and valued denizen of this space. As the body of research grew, it became apparent that the Smart City was defining the embodied experience of space in dramatic ways, specifically through the citizen interface of the smartphone. Whilst the smartphone is not confined to the Smart City discourse, it takes on an increasingly pivotal role as citizen interface. Moreover, for people with disabilities, it is framed as prosthesis, working to define and engage disability and accessibility. While the Creative City became less relevant as the thesis developed, particularly regarding the lack of engagement with disability across its literature, it remained integral to track the way entwined understandings of citizens and spatial meanings and values both change and persist over time, and across urban discourses. Highlighting the importance of context, and shifting perceptions of accessibility, the final chapter of the thesis also recognised the impact of the COVID-19 pandemic both on iterations of the Smart City and on access to the city.

This was thus a reflexive thesis in multiple ways, responding to changing contexts and popularity of urban discourses and methodology. This thesis used CDS theories, qualitative research and case studies to analyse both the topic (screens and disability in urban space) and the research into the accessibility of screens. I acknowledged and critiqued my own contributions in this qualitative research to the way accessibility has and continues to be defined, contributing to the process of access-knowing. This thesis recognised its own limitations in the way disability research is undertaken, noting the invisibility of many people with disabilities in research agendas and data

gathering,⁵⁷⁰ and the importance of interdisciplinary approaches in providing critically reflexive work.

In detailing my findings, I also emphasised that this thesis is not conclusive, but hopefully the beginning of a broader movement to insert CDS, and specifically critical accessibility approaches, across the fields which define and implement urban strategies, development, management and planning now and in the future.

Chapter 2 of the thesis provided a theoretical discussion of bodies and cities and the ways in which disability has been framed, represented and examined. The chapter identified the pivotal role that the social model of disability has taken in challenging the responsibility and location of disability as social and cultural. However, it also argued that despite the work across multiple fields – from disability studies, to CDS, to geographies of disability – an individualisation of disability persists and is maintained in urban discourses via the perception of the normate citizen.

While who and what the ideal citizen is shifts over time, the normate body persists. Non-normative bodies are both written out (as in the Creative City) and recalibrated and resolved in (Smart City) urban discourses through interpretations of access. In Chapter 3, the insistence of normate bodies can be tracked across the last two decades of utopian urban discourses. How disability is configured and defined in these discourses is significant, as the Creative City and Smart City were not confined to a utopian narrative but have manifested in cities across the world and changed the way urban spaces are constructed. These two discourses were focused on in the thesis because of their tangible impact.

As the Creative City began to disappear from urban narratives and media representations of future city strategies, the Smart City significantly increased in popularity and impact across multiple fields beyond urban development,

⁵⁷⁰ Elizabeth Eckhardt and Jenaie Anastas, "Research Methods with Disabled Populations," *Journal of Social Work in Disability and Rehabilitation* 6, no. 1–2 (2007): 233–249, https://doi.org/10.1300/J198v06n01_13.

management and planning. The tech-dominant feature of the Smart City allowed it to resonate and permeate multiple fields of enquiry, including science and technology studies invested in accessibility. As a result, disability went from being an invisible constituent of modern urban discourse to a recognised citizen. However, in tracking the representation of disability in media coverage of the Smart City in Chapter 4 of this thesis, it was established that representation of disability was acutely and consistently tethered to technology. Via a media framing analysis, it was revealed that disability was more visible, but it was still located outside of the perception of the normate citizen. Indeed, it was mobilised in the Smart City discourse as a narrative prosthesis, as a problem in need of a solution that the Smart City can resolve.

This resolution of disability has been predominantly constructed at the site of the screen. This thesis thus focused on an analysis of the relationship between screens and urban discourses, predominantly in an Australian context, for the purpose of refining the scope, but also because the screen has increasingly become a citizen interface and conduit between urban discourse and citizen engagement. These screens work to define who and what citizenship entails, demoting the non-normative, less-preferred user as a type of denizen identity. While the latter half of the thesis focused on the smartphone as a mobile urban screen that mediates urban experiences, Chapter 5 also identified ways in which the fixed urban screen that punctuated Creative City representations of public squares also worked to define the normate citizen through (in)accessibility. These fixed urban screens, situated in public squares for the purpose of promoting and fostering a type of mediated civic engagement, would be the prelude to the prominence of the personal, mobile urban screen which now not only mediates our experience of urban space but, for people with disabilities, plays a prosthetic role.

Chapters 6, 7 and 8 of the thesis focused exclusively on the role of the smartphone in the Smart City, in the recognition that this is a pivotal location in which disability, accessibility and citizen engagement with the city is being constructed. As such, it is

also the most significant site at which to inject critical accessibility theory. Each of these chapters approach this role from a different direction, applying a different lens to the use of the smartphone as a citizen interface with the city and a prosthesis in the experience of disability. In Chapter 6, I identify that the smartphone now mediates our experience of public space, and in the Smart City it is framed as performing the role of citizen interface. For people with disabilities, the smartphone is also increasingly positioned as both an accessibility tool and citizen interface, performing a complex prosthetic role. This complex role is contextualised in the findings of the *Navigating Urban Spaces* research project which highlighted the diversity of experiences of disability and the layered, relational nature of accessibility. Importantly, this chapter challenges and problematises the ways in which the smartphone as prosthesis reinforces medical models of disability and confines experiences of disability to appropriations of the technology that characterise the paradigm. Chapter 7 once again examines the complexity of the relationship between accessibility and mediated urban space through the case study of Pokémon Go. In highlighting the experience of disability within and outside of the augmented reality game, the process of access is exposed as layered across urban space, socio-cultural constructions of the mobile body, and technological and corporate understandings of access. The dismissal of disability in Pokémon Go also challenges many of the assumptions of the Smart City, thus the chapter presents it as an opportunity to intervene in the way in which both the meanings of space and of disability are constructed. Chapter 8 likewise utilises a particular moment – the emergence of COVID-19 in Australia – to highlight and critically examine the assumptions around digital access citizenship and disability. This final chapter, which contextualised the analysis and arguments put forward in the thesis in the experiences of smartphones for people with low vision and blindness at the beginning of the global pandemic, emphasised that the relationship between urban screens, disability and citizenship has never been more pertinent. Each of these latter chapters offer an opportunity to provide qualitative data to support the theoretical arguments made in the first half of the thesis, specifically that the diversity of

disability is overlooked and the process of access, especially in the complex digital/analogue experience (that epitomised the Smart City experience), should be emphasised over the design and end goal of accessibility.

9.1. Findings

While I began this thesis assuming that understandings and interpretations of disability, particularly in the discourses of the Creative and Smart City, impacted the accessibility of urban space, in the examination of both fixed and mobile urban screens I have recognised that understandings and manifestations of accessibility are likewise working to define disability. Moreover, I argue that these screens work to define what is considered a preferred user of the screen and the spatially defined normate citizen.

This thesis makes an original contribution to knowledge through the analysis of the role of the screen in dominant urban discourses to the way disability and accessibility are defined, and the increasing prosthetic role of the mobile urban screen (smartphone) as citizen interface. It contributes to research literature on several fronts – with the aim to represent and promote an interdisciplinary approach to accessibility, it aims to thus contribute a CDS approach to urban studies and science and technology fields, and introduce contemporary urban studies topics to the broader disability studies realm. This thesis was designed to fill gaps or simplified approaches across multiple fields. While I have categorised and identified my key findings and contributions to resolving these gaps under three broad categories, it should be noted that these findings are not disparate but are entwined and inform one another.

9.1.1. Reflexive, contextualised critical accessibility

Specifically, this thesis contributes to an extension of understanding of accessibility which remains limited beyond a small number of specific CDS theorists. Despite the work of theorists such as Elizabeth Ellcessor and Aimi Hamraie, there is a lack of reflexivity and contextualisation in the understanding and manifestations of access

for people with disabilities, particularly beyond the CDS field, and specifically in the increasingly interwoven digital and analogue urban space. Every chapter of this thesis highlights different ways in which access continues to be inadequately interpreted and ill-defined. I argue that access is undermined by assumptions around what constitutes disability (which has shifted significantly over time), an individualising of responsibility (the person with disability/ies is responsible for access), an inadequate and inaccurate division between digital and analogue experiences of space, and a conflicting narrative that both emphasises the revolutionary capabilities of technology whilst also denying the importance of digital access to and the accessibility of screens. The social model of disability, which is also a rights-based model, was developed in a pre-digital era, and the translation of this model to digital environments, screens and technologies remains lacking. My aim, in part, for this thesis is that it aids in bridging this gap – reimagining a critical interpretation of the social model in a screened urban context.

9.1.2. Ideologies of ability in an accessibility frame

Another finding of this thesis is the continuance of a medical model of disability in the manifestation of mediated citizenship. Research on and discussions of the relationship between screens, disability and cities reignites a medical model of disability and an “ideology of ability”,⁵⁷¹ whilst also helping to shift and promote accessibility. While contemporary urban discourses, such as the Smart City, appear more inclusive and considered than previous popular paradigms, they revolve around the premise that technology can resolve disability, negating and veiling the premise of the social model of disability – that disability manifests and is defined by the society which excludes and omits via the prioritisation of the normal body:

A consequence of the valorisation of mobile bodies in the apps’ environment of expected use is that bodies that do not enact this disposition towards rational mobility are rendered as a problem that has to be fixed. That is, if app interaction assumes mobile bodies, a body that is not mobile become “constantly problematic.

⁵⁷¹ Tobin Siebers, *Disability Theory* (Ann Arbor: University of Michigan Press, 2008), 8.

It does not fit with the standardized environments that allow agency to flow without constant interruption (Moser, 2006, 384)".⁵⁷²

This aligns with Kafer's argument that we perceive technologically-enabled futures as spaces without disability, that "the value of a future that includes disabled people goes unrecognized, while the value of a disability-free future is seen as self-evident".⁵⁷³ Thus while the appearance of disability in the Smart City (as opposed to the disappearance of disability in the Creative City), and the use of disability as a narrative prosthesis and an individual condition that need resolving via apps and interfaces shows that ideologies of ability persist despite an amplified attention to access.

This argument draws on Alan Foley and Beth Ferri's conclusions that understanding the relationship between disability, access and technology is critical to intervening in the continual perpetuation of the normalised body:

Rather than designing technology around impairment or relying on a retrofit model, we argue that people's relationship to technology must be understood in a larger social, historical and cultural context.⁵⁷⁴

A significant hurdle (and resolution) to achieving a reflexive understanding of accessibility and disability is located in the way we conduct disability research. In an attempt to increase technological accessibility, research in this field commonly compartmentalises and minimises the broader contexts, discourses and 'ways of knowing' that both define access and disability. While this thesis contributes to this resolution in a small part – providing an understanding of how city discourses construct accessibility via the capturing of various experiences of screens in urban space – my intent is that future research is fundamentally shaped by the lived

⁵⁷² Gillian Rose et al., "Platform Urbanism, Smartphone Applications and Valuing Data in a Smart City," *Transactions of the Institute of British Geographers* 46, no. 1 (2008): 59–72, <https://doi.org/10.1111/tran.12400>.

⁵⁷³ Alison Kafer, *Feminist, Queer, Crip* (Bloomington, IN: Indiana University Press, 2013), 3.

⁵⁷⁴ Alan Foley and Beth Ferri, "Technology For People, Not Disabilities: Ensuring Access and Inclusion," *Journal of Research in Special Education Needs* 12, no. 4 (2012), <https://doi.org/10.1111/j.1471-3802.2011.01230.x>.

experience of disability. Moreover, that this research not only incorporates disabled voice and reflections but elevates the experience of disability as a position of expertise⁵⁷⁵ in all levels of research, from conception through to implementation. This not only mitigates the fundamental problem of speaking for others, regardless of disability allyship,⁵⁷⁶ but also in reducing and simplifying the diversity of the disabled experience.

9.1.3. Diversity of disabled experiences and intradisability diversity

Diversity within, and intersectional aspects of, disability categories tend to be minimised in the research and design of digital technology⁵⁷⁷ despite contemporary accounts and theories of disability.⁵⁷⁸ Further, this research often solely captures those who are already engaged users. For example, existing accounts of the digital experiences of people with disabilities often omit those who have chosen to be digital-free,⁵⁷⁹ thus the voices of those who do not use citizen interfaces such as smartphones, can be neglected both in academic research and product development. Reflecting on the recruiting process throughout the *Navigating Urban Spaces* research project, many potential participants who did not use a smartphone believed they did not have the capacity to use one, or used it in a limited manner (for example, just for phone calls), and therefore felt their responses were not of value and, as such, either did not complete the survey or skipped most questions. Thus,

⁵⁷⁵ Aimi Hamraie and Kelly Fritsch, "Crip Technoscience Manifesto," *Catalyst* 5, no. 1 (2019), <https://catalystjournal.org/index.php/catalyst/article/view/29607/24772>.

⁵⁷⁶ Elisa Abes and Megan Zahneis, "A Duo Ethnographic Exploration of Disability Ally Development," *Disability Studies Quarterly* 40, no. 3 (2020), <https://dsq-sds.org/article/view/7038/5707>.

⁵⁷⁷ Gisela Reyes-Cruz, Joel Fischer and Stuart Reeves, "Reframing Disability as Competency: Unpacking Everyday Technology Practices of People with Visual Impairments," in *Conference on Human Factors in Computing Systems* (ACM, 2020), 1–13.

⁵⁷⁸ Gerard Goggin, "Disability and Digital Inequalities: Rethinking Digital Divides with Disability Theory," 2016, <https://ses.library.usyd.edu.au/bitstream/handle/2123/15844/2017GogginDisability%26digitaldivide.pdf>.

⁵⁷⁹ Panayiota Tsatsou, "Digital Inclusion of People With Disabilities: A Qualitative Study of Intra-Disability Diversity in the Digital Realm," *Behaviour and Information Technology* 39, no. 9 (2020): 995–1010, <https://doi.org/10.1080/0144929X.2019.1636136>.

despite the intention to accurately capture intradisability diversity, in losing these voices and experiences in research, the ways in which digital inequality manifests becomes reduced and simplified. That is, only the experiences of those who already have access are the ones who comment on accessibility. This is compounded by “a lack of systematic participation of people with disabilities in design, implementation, or consideration of emerging digital inclusion issues”.⁵⁸⁰

My research across chapters found that assumptions about how and what participants could use their smartphone for significantly affected use, and these assumptions were in turn affected by cultural accessibility, including (but not limited to) the availability of information about smartphone use for people with low vision and blindness, education or support for training in smartphone use, communication of the capacity of smartphone accessibility features and apps, and the applicability of accessibility features and apps to the lived experiences of people with low vision or blindness, specifically “intentional and unintentional need and wants”.⁵⁸¹ The assumptions within the Smart City about what citizen need and wants involve thus perpetuate a techno-deterministic approach⁵⁸² while at the same time also simplifying and reducing the preferred user.

9.2. Opportunities

Despite the intention of this thesis to locate problems and gaps in existing literature on disability, several chapters also highlight potential opportunities in the increased popularity and visibility of discussion of access, particularly motivated by or via the Smart City discourse. Indeed, evoking a crip technoscience perspective, the results of

⁵⁸⁰ Gerard Goggin, Katie Ellis and Wayne Hawkins, “Disability at the Centre of Digital Inclusion: Assessing a New Moment in Technology and Rights.” *Communication Research and Practice* 5, no. 3 (2019): 290–303, <https://doi.org/10.1080/22041451.2019.1641061>.

⁵⁸¹ G. Reyes-Cruz et al., “Reframing Disability as Competency: Unpacking Everyday Technology Practices of People With Disabilities,” in *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems (CHI '20)* (Association for Computing Machinery, New York, 2020), 1–13, <https://doi.org/10.1145/3313831.3376767>.

⁵⁸² Alberto Vanolo, “Is There Anybody Out There? The Place and Role of Citizens in Tomorrow’s Smart Cities,” *Futures*, 82 (2016): 26–36 <https://doi.org/10.1016/j.futures.2016.05.010>.

the case studies, interviews and surveys highlighted in this thesis demonstrated the importance of creative accessibility in mitigating experiences of disability.⁵⁸³ Furthermore, increased attention to digital and smart accessibility has offered “possibilities of action, of choice and ultimately... the conditions for the exercise of freedom.”⁵⁸⁴ Halperin’s statement here is pertinent to thinking about the way the pivot to digital access also holds opportunities to reignite a discussion of rights that perhaps had become mutated and diminished in analogue urban spaces. The discussion of access to the Smart City indicates an awareness of other bodies, mobilities and citizens and “norms without producing effects of normalization”.⁵⁸⁵ The promotion of the smartphone as citizen interface for people with and without disabilities, and the shifting value and manifestation of urban public space (especially in a post-COVID-19 world), therefore also provides an opportunity to rethink and challenge the reality of the normate body, and the delineation between real and digital space.

⁵⁸³ David Wästerfors, “Required To Be Creative: Everyday Ways for Dealing with Inaccessibility,” *Disability and Society* 36, no. 2 (2021), <https://doi.org/10.1080/09687599.2020.1720610>; Jerry Robinson, “Individuals with Physical Impairments as Life Hackers”, in *The Routledge Companion to Disability and Media*, ed. Katie Ellis et al., 306-315 (New York: Routledge, 2019).

⁵⁸⁴ David Halperin, *Saint Foucault: Towards a Gay Hagiography* (New York: Oxford UP, 1995).

⁵⁸⁵ Halperin, *Saint Foucault*, 109.

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Appendix

List of media sources

Name of article	Source	URL
<i>Empowering vulnerable citizens in smart cities</i>	Smart Cities World	https://www.smartcitiesworld.net/special-reports/special-reports/empowering-vulnerable-citizens-in-smart-cities
<i>Smart cities could be lousy to live in if you have a disability</i>	MIT Technology Review	https://www.technologyreview.com/s/612712/smart-cities-could-be-lousy-if-you-have-a-disability/
<i>A Smart City is an accessible city</i>	<i>The Atlantic</i>	https://www.theatlantic.com/technology/archive/2018/11/city-apps-help-and-hinder-disability/574963/
<i>What would a truly disabled-accessible city look like?</i>	<i>The Guardian</i>	https://www.theguardian.com/cities/2018/feb/14/what-disability-accessible-city-look-like
<i>Inclusive Smart Cities needed for the disabled</i>	Head Stuff	https://www.headstuff.org/topical/science/inclusive-smart-cities/
<i>The tech empowering disabled people in cities</i>	CNN	https://edition.cnn.com/2019/05/29/business/disability-technology-transport/index.html
<i>The partnerships enabling disabled city residents to better explore their surroundings</i>	Smart Cities Dive	https://www.smartcitiesdive.com/news/the-partnerships-enabling-disabled-city-residents-to-better-explore-their-surroundings/519029/
<i>A smart city means an inclusive city</i>	Youris.com	http://www.youris.com/health/disabled/a-smart-city-means-an-inclusive-city.kl
<i>How a 'Smart' public transit system can better serve riders with disabilities</i>	CityLab	https://www.citylab.com/transportation/2016/09/rewiring-public-transit-to-better-serve-riders-with-disabilities-nsf-ibeacons/501065/
<i>Smart cities could give the visually impaired a new outlook on urban life</i>	The Conversation	https://theconversation.com/smart-cities-could-give-the-visually-impaired-a-new-outlook-on-urban-life-123478
<i>Are smart cities failing the disabled and elderly?</i>	Cities Today	https://cities-today.com/are-smart-cities-failing-the-disabled-and-elderly/
<i>Disabled people not to be left behind in smart cities</i>	The Hindu Business Line	https://www.thehindubusinessline.com/economy/disabled-people-not-to-be-left-behind-in-smart-cities/article9794091.ece
<i>Rethinking cities to include disabled people</i>	<i>Financial Times</i>	https://www.ft.com/content/e6625bda-5d33-11e9-840c-530737425559

<i>The future Melbourne street is coming faster than you think</i>	<i>The Age</i>	https://www.theage.com.au/national/victoria/the-future-is-coming-faster-than-you-think-20190518-p51oqx.html
<i>Bendigo looks to make city more accessible for people with disabilities</i>	<i>Bendigo Advertiser</i>	https://www.bendigoadvertiser.com.au/story/4911998/creating-change/
<i>As more cities implement smart technology, experts call for inclusivity</i>	Governing	https://www.governing.com/topics/transportation-infrastructure/gt-smart-cities-need-to-be-inclusive.html
<i>Can smart cities work for the visually impaired?</i>	Smart Cities Dive	https://www.smartcitiesdive.com/news/can-smart-cities-work-for-the-visually-impaired/533188/
<i>Working towards a disabled-friendly India</i>	The Hindu Business Line	https://www.thehindubusinessline.com/opinion/working-towards-a-disabled-friendly-india/article25040700.ece
<i>Smart Cities NYC '17: Microsoft's deep dive into smart city tech</i>	Tech Republic	https://www.techrepublic.com/article/smart-cities-nyc-17-microsofts-deep-dive-into-smart-city-tech/
<i>Digital push must be disability-inclusive</i>	<i>The Hindu</i>	https://www.thehindu.com/opinion/op-ed/digital-push-must-be-disability-inclusive/article17763248.ece
<i>Smart cities make room for the visually impaired</i>	World Economic Forum	https://www.weforum.org/agenda/2019/09/smart-cities-visually-impaired-new-outlook-urban-life/
<i>10 technologies for accessible, affordable cities</i>	ArchDaily	https://www.archdaily.com/923441/10-technologies-for-accessible-affordable-cities
<i>Designing for 'everyone' is not the path to an inclusive smart city</i>	Information Age	https://www.information-age.com/inclusive-smart-city-123474406/
<i>Driverless shuttle and 'smart bus stop' trial launches in SA</i>	Computer World	https://www.computerworld.com.au/article/656439/driverless-shuttle-smart-bus-stop-trial-launches-sa/
<i>'Google pilots' making Wollongong a safer place for wheelchair users</i>	<i>Illawarra Mercury</i>	https://www.illawarramercury.com.au/story/5614088/google-pilots-making-wollongong-a-safer-place-for-wheelchair-users/
<i>Smart Cities hold key to sustainable development</i>	Inter Press Service	http://www.ipsnews.net/2019/04/smart-cities-hold-key-sustainable-development/
<i>New 'smart' tram and bus stops to be installed around Adelaide</i>	InDaily	https://indaily.com.au/news/local/2019/03/29/new-smart-tram-and-bus-stops-to-be-installed-around-adelaide/

<i>The Smart City of Milton Keynes: Using sensors and big data to improve public services</i>	Forbes	https://www.forbes.com/sites/bernardmarr/2015/06/18/the-smart-city-of-milton-keynes-using-sensors-and-big-data-to-improve-public-services/#1ccbf93628e1
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