

SOCIETY
Research Group



Evaluating the Impact of Home Modifications on the Quality of Life of Elderly Individuals with Disabilities

Improving the Lives of an Ageing Population

Jake Harris

UCA Canterbury
School of Architecture
2023/24

SOCIETY

Evaluating the Impact of Home Modifications on the Quality of Life of Elderly Individuals with Disabilities

Improving the Lives of an Ageing Population

Jake Harris

BA (Hons) Architecture (ARB/RIBA Part 1)
Stage 3 Research Thesis
Supervisor: Eva Tisnikar

UCA Canterbury
School of Architecture
2023/24

Abstract

Over the last several decades, the number of elderly people has been increasing over the age of 60 years. As people get older, the chances of developing a disability are greater than the odds of someone younger. There is a need to consider how housing can be future-proofed to accommodate for an increase in the elderly living longer lives. This Thesis aims to evaluate various aspects of disability both past and present, to gather ideas for how it can change the future of housing for people with disabilities and of the elderly. Research was conducted to explore historical aspects of disability, modern regulations, and approaches to inclusive design. Using Ethnographic research in the form of observations and experience in the context of my Grandparents, acted as a case study within the Thesis. The main point was that society is a big factor in the discrimination and bad quality of life of people with disabilities. The overall argument is for new houses to be future-proofed, keeping both the elderly and disabled comfortable in living more independent lives. While devices and equipment improve the architecture, for the user, their form of integration can alter the dynamics of Architectural Design.

Contents

Prologue:	04
Introduction:	11
Definitions: What is Disability and Impairment?:	11
Breaking the Stigma:	13
Consize Structure:	14
Tackling the Methodology:	14
Brief Chapter Breakdown:	15
Overview of Disability in Architecture:	16
Contextual Disability Statistics:	16
Five Principles of Inclusive Design:	20
Societal Views of Disability (Through the Lens of History):	21
Current Issues in Planning and Design:	24
DWELL Project:	26
Disability Devices in the Home:	27
Conclusion:	31
Bibliography:	32
List of Illustrations:	34

Prologue

My maternal Grandparents both suffer from differing forms of disabilities that removes their independence. Throughout my life, I have witnessed both Grandparent's capabilities diminish as incidents such as falls occur. Both my Mum and Uncle are placed in a position of first contact whenever there is something to be taken care of at their parent's house. With various and similar conditions, it brings about a set of measures that take place.

Grandma (Jill) suffers from Multiple sclerosis which affects her ability to walk and muscle strength. On a typical day, she is either bound to an armchair or a bed throughout. She lost the ability to walk with the aid of a walking frame, which has led her to this position. With a loss in independence, she requires two care workers to assist her in daily routine rituals over the course of four separate visits a day. In between the scheduled visits, Grandad (Michael) is left to carry out limited basic duties that revolve around Jill and household duties. She is still capable of doing tasks that involve her use of a tablet, such as doing a Tesco order.

Michael suffers from arthritis which affects his muscles when he tries to get up and move about. He can move around most of the house, apart from upstairs where his original bedroom resides. He takes his time walking as it can cause him discomfort if moving incorrectly. He utilises walking sticks and frames to assist him as they are scattered around the accessible areas of the house. A stair lift also is there to get him from the downstairs level to the front entrance level. This is where he can get to his current bedroom and bathroom.

The house that they live in is a split-level house so for them currently it has become challenging to adapt. The ground floor is the most active level as it includes the living room and kitchen. First floor is where the front door is located with the bathroom and a bedroom on either side. The top floor has a single and master bedroom that isn't occupied. The original functions of most of the rooms has disappeared and altered to the needs of Jill and Michael.

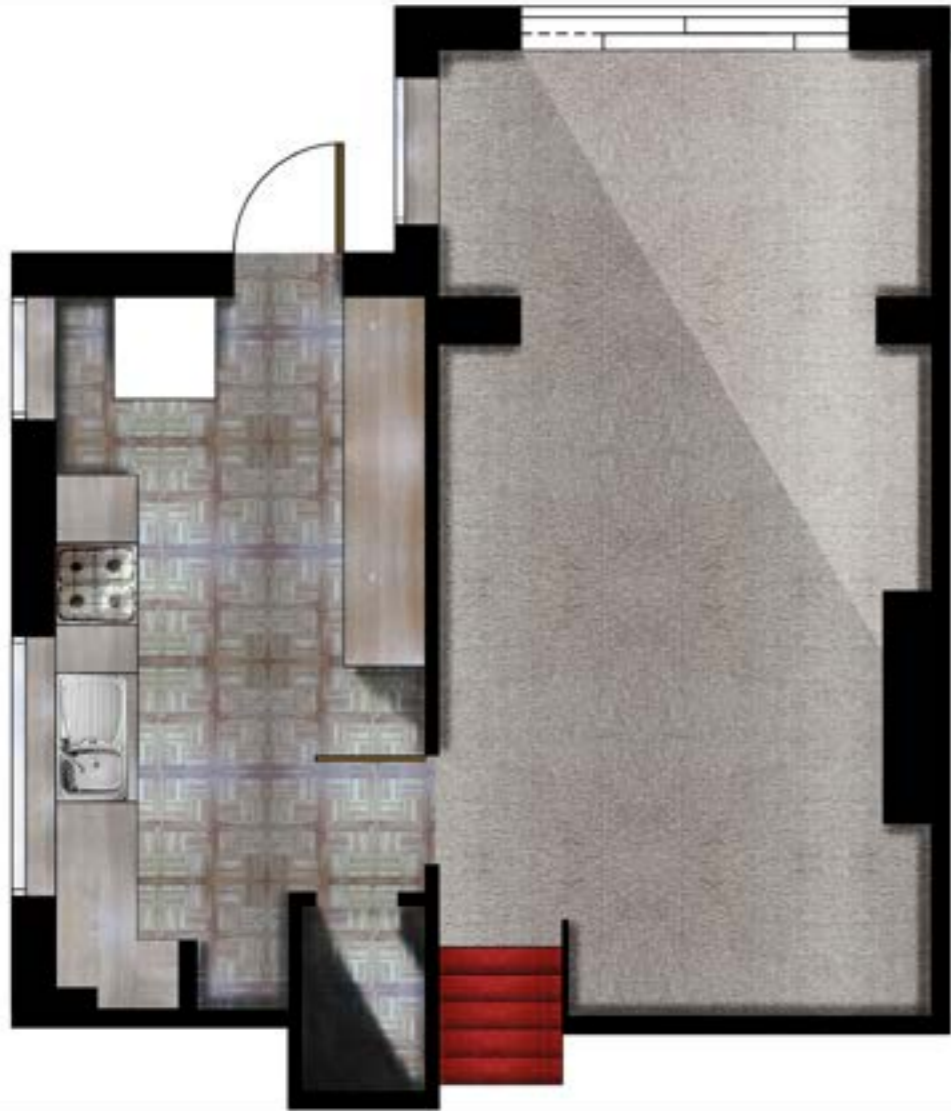
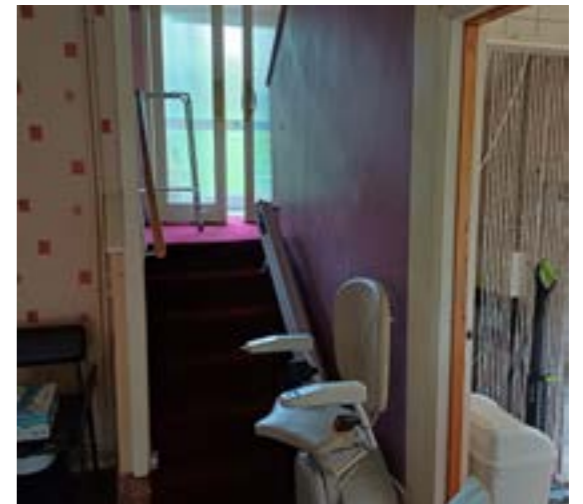


Figure 1: Ground Floor Plan (2023)



Figure 2: - Kitchen (Left)
- Living Room (Right) (2023)



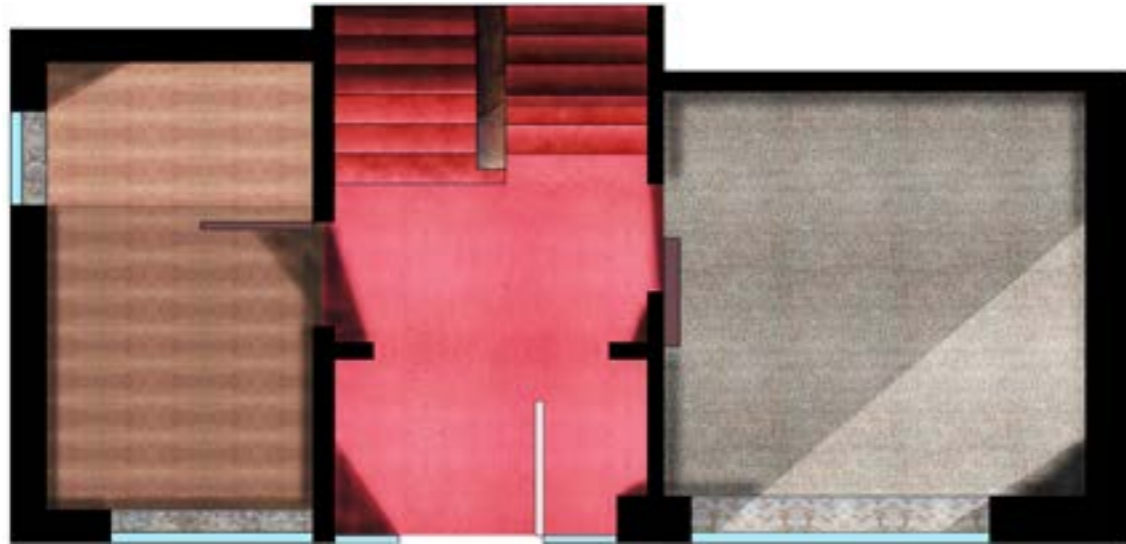


Figure 3: First Floor (2023)



Figure 4: - Entrance (Left)
- Bedroom & Bathroom (Right)
- Landing (Bottom Right) (2023)





Figure 5: Second Floor

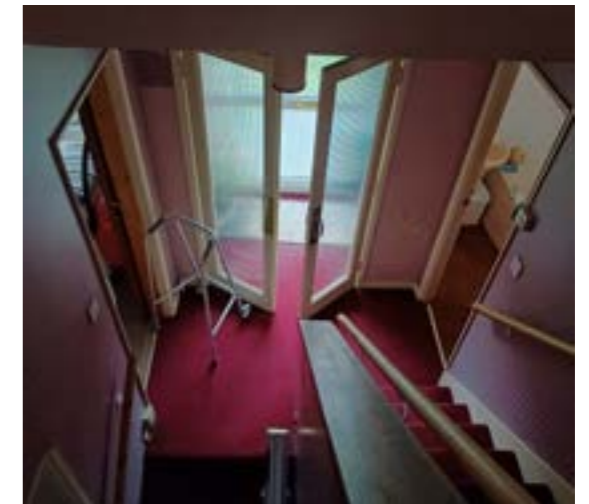


Figure 6: - Master Bedroom (Left)
 - Bedroom & Landing (Right)
 - View from Landing (Bottom Right) (2023)

Introduction

Definitions: What is Disability and Impairment?

Most likely, you know someone who has a disability that is either physical, mental or even both. According to the (UK Equality Act 2010), it states that 'A person has a disability if they have a physical or mental impairment, and the impairment has a substantial and long-term adverse effect on the person's ability to carry out normal day-to-day activities'. For clarity, an impairment is defined as 'a condition in which a part of a person's mind or body is damaged or is not working properly' (Collins, n.d.). With these terms established, disabilities can develop in multiple ways. One such way can be congenital where a disease or abnormality is present from birth, acquired from an illness or an injury. Sometimes disabilities develop over time with little warning of their emergence. However the disability emerges, it can create challenges for individuals which impact their quality of life. According to the Office for National Statistics (2022), disabled people aged between 16 and 64 had poorer ratings than non-disabled people on four personal well-being measures. Out of the four, anxiety had the greatest disparity. Also, disabled people were more likely to report feelings of loneliness 'often or always' at 15%. Evident data implies that those with a disability who have these feelings were made by society making them feel excluded and misunderstood. A separate survey conducted by the UK charity Scope (2018) found that out of 2,000 disabled people sampled, 49% of them said they felt excluded from society.

Average well-being ratings for disabled and non-disabled people, aged 16 to 64 years, UK, year ending June 2021

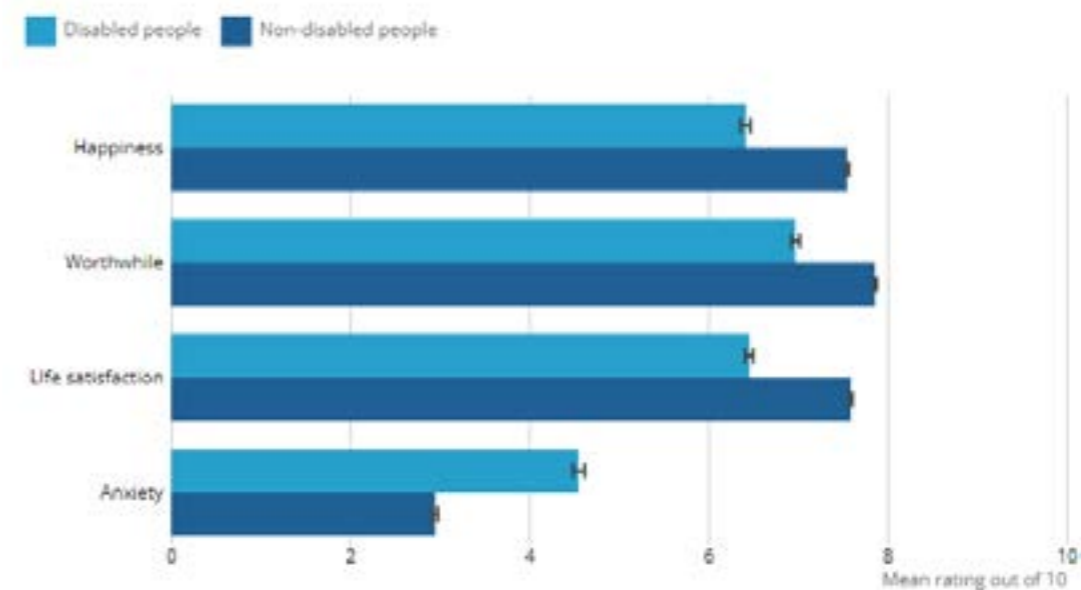


Figure 7: Well Being Chart (2022)

Proportion of people who feel lonely "often or always" by disability status, aged 16 years and over, England, year ending April 2014 to year ending March 2021



Figure 8: Loneliness Graph (2022)

Breaking the Stigma

Each disability is a unique personal experience, which can make it difficult to comprehend, especially for those who aren't subject to it. People's lived experience can help designers address the variety of needs that might be different from what has historically been accepted as the norm. Unfortunately, we are living in a society where it isn't easy to make changes to accommodate those with disabilities, to provide them with independence. In Jos Boy's book *Disability, Space, Architecture: A Reader* (2017), she includes a quote saying, 'disabled people have to be ingenious to live in societies that are by their design inaccessible' (Tobin Siebers, 2010, as cited in Jos Boys 2017, p. 2). Following up by commenting how 'disabled people are being treated as passive users of buildings and services'. Stating the reality that most disabled people don't get proper consideration when interacting in the built environment. They may have to be creative when navigating around barriers blocking their access. Putting this into context, the (Department for Work and Pensions' Family Resources Survey, 2023) estimated that 16 million people in the UK had a disability in the 2021/2022 financial year. This made a total of 24% of the population. Not having conversations about people's living experiences will only limit the understanding of the impairment. I use the word 'impairment' to highlight the aspect of the physical/mental attribute. By understanding the impairment and its limitations, it is capable to then proceed onto finding solutions to disability problems. A reoccurring issue that constantly arises relates to discrimination. Emerging from misconceptions and stigmas, they can tarnish the reputation of groups of individuals suffering from specific disabilities. Confronting them is a strong approach towards tackling the negativity that surrounds these groups, which would in turn attempt to alter the previous stereotypes and pave the way towards a more inclusive environment.

Two models view disability, both alluding to what it is defined by. The medical model says people are disabled by their impairment (Social Model vs Medical Model of Disability, 2014). It looks at something wrong with the person, not what they need. The social model says that disability is caused by the way society is organised. This looks to remove barriers and allow people to be more independent. Putting this into perspective, Sarah Jaquette Ray (2017) makes an argument regarding societal viewpoints. She talks about the differences between 'wild' and 'built' environments and brings up the point of people connecting with nature. Saying that society values people who can physically connect with nature and tends to overlook those with disabilities. Ray makes a positive remark that everyone has the right to enjoy nature, whatever their physical capabilities. Disabilities are not just related to someone's physical limitations but are also influenced by how society is organised, and how it allocates different resources to different people. Addressing that disability is caused by society's inability to accommodate people with impairments.

Concise Structure

This Thesis aims to set the scene on how disability has been perceived and acted upon through various fragments in time. It isn't the focus but to study how societies treated those who were disabled and what solutions had been devised to tackle certain predicaments. As this is the foundation for the rest of the Thesis, the preceding chapters shall hone in more closely around the notion of the elderly with disabilities, traversing through their homes.

The context behind this specific topic is in connection to my personal experience with my Grandparents. They both suffer from a form of mobility that affects their day-to-day life. By delving into this type of scenario, it can provide a framework that can gradually build on, by finding new methods and thinking to improve the quality of life for those struggling with simple tasks.

Tackling the Methodology

As the global population is getting older, the need and reliance on home improvements is crucial for keeping the elderly in a safer setting. This study is to take examples of equipment or house alterations and assess how effective they are at improving the quality of life of those who have utilised them. To enhance the credibility of the proposed solutions and suggestions, they will be placed into the theoretical application of my Grandparent's house.

By doing so, it will provide a more personal and individual take on the experiences they either had or could have. This assessment aims to provide the theoretical voice, backed up by placed measures and other views, for how disability devices have become parts of the architecture from a historical take. To add dimension, the home of my Grandparents will act as a case study to apply my research.

Overview of Disability in Architecture

Brief Chapter Breakdown

The goal of this Thesis is to break down all the proposed ideas and solutions, to produce strong evaluations in context with my Grandparent's house. From this, there will be discussions on home modifications to design constraints on existing dwellings. There I can argue for future designs of new houses to be more inclusive and address the needs of an aging population. To break this down into more focused assessments, the study will focus on the following:

- 'Identify issues and societal perceptions'
- 'Evaluate the issues and societal perceptions'
- 'Identify examples of disability solutions'
- 'Evaluate examples of disability solutions'
- 'Compare solutions to Grandparent's existing layout'
- 'Overall evaluation on suggested methods to improve quality of life for an ageing population'

From these objectives, they should answer the following questions:

- 'How much have societal perceptions changed over time?'
- 'What solutions already exist for people with disabilities?'
- 'Is it possible for elderly people with disabilities to remain in their homes with a good quality of life?'

The way this Thesis shall be structured aims to give the reader clear considerations of numerous methods of tackling disability in various contexts. The introduction chapter is to highlight the theme of disability and what aspects of it should be thought about and considered. Following this comes an overview of disability in Architecture. It aims to present society's views throughout moments in time and the hardships people face from them. From this perspective, it allows for arguments and views to challenge the lingering stigmas that may still occur. Subsequent chapters will be umbrellaed under the main theme of rooms throughout the home. In this context, it shall reflect a clear narrative of traversing through my Grandparent's home, evaluating each of them one by one. To finalise, the successive chapter will collect all the evaluated rooms, with their thoughts and suggestions, to come to a conclusive theoretical decision. The main question is 'How can we make housing more inclusive for an ageing population?'

Contextual Disability Statistics

According to the United Nations, it is estimated that 15% of the global population or about 1 billion individuals live with one or more disabilities (United Nations, s.d.). It continues to mention that people aged 60 and over, consist of more than 46% of them having disability. They project that by 2030, the number of people aged 60 and over will reach 1.4 billion people (Figure 9). By 2050 the number is estimated to reach 2.1 billion people.

TABLE II.1. POPULATION AGED 60 YEARS OR OVER AND AGED 80 YEARS OR OVER FOR THE WORLD, DEVELOPMENT GROUPS, REGIONS AND INCOME GROUPS, 2000, 2015, 2030 AND 2050

	Persons aged 60 years or over (millions)				Percentage change		Distribution of older persons (percentage)			
	2000	2015	2030	2050	2000-2015	2015-2030	2000	2015	2030	2050
World	607.1	900.9	1402.4	2092.0	48.4	55.7	100.0	100.0	100.0	100.0
Development groups										
More developed regions	231.3	298.8	375.2	421.4	29.2	25.6	38.1	33.2	26.8	20.1
Less developed regions	375.7	602.1	1027.2	1670.5	60.3	70.6	61.9	66.8	73.2	79.9
Other less developed countries	341.9	550.1	938.7	1484.9	60.9	70.6	56.3	61.1	66.9	71.0
Least developed countries	33.9	52.1	88.5	185.6	53.8	70.0	5.6	5.8	6.3	8.9
Regions										
Africa	42.4	64.4	105.4	220.3	51.9	63.5	7.0	7.2	7.5	10.5
Asia	319.5	508.0	844.5	1293.7	59.0	66.3	52.6	56.4	60.2	61.8
Europe	147.3	176.5	217.2	242.0	19.8	23.1	24.3	19.6	15.5	11.6
Latin America and the Caribbean	42.7	70.9	121.0	200.0	66.1	70.6	7.0	7.9	8.6	9.6
Oceania	4.1	6.5	9.6	13.2	56.2	47.4	0.7	0.7	0.7	0.6
Northern America	51.0	74.6	104.8	122.7	46.4	40.5	8.4	8.3	7.5	5.9
Income groups										
High-income countries	230.8	309.7	408.9	483.1	34.2	32.0	38.0	34.4	29.2	23.1
Upper-middle-income countries	195.2	320.2	544.9	800.6	64.0	70.2	32.1	35.5	38.9	38.3
Lower-middle-income countries	159.7	237.5	393.9	692.5	48.8	65.9	26.3	26.4	28.1	33.1
Low-income countries	21.2	33.2	54.0	114.8	56.2	63.0	3.5	3.7	3.9	5.5

Figure 9: Population aged 60 or over across the world (2015)

In contrast, the World Population Ageing Report say that the number of people aged 80 and over is growing faster than the number of people aged 60 and over (United Nations, DESA Population Division, 2015). The projections for 2030 are 202 million people and by 2050, reaching 434 million people more than tripling the number from 2015 (Figure 10). With these statistics in mind, it is evident that the global population is ageing including the greater likelihood of developing disabilities.

	Persons aged 80 years or over (millions)				Percentage change		Distribution of oldest-old persons (percentage)			
	2000	2015	2030	2050	2000-2015	2015-2030	2000	2015	2030	2050
World	71.0	125.3	201.8	434.4	76.5	61.1	100.0	100.0	100.0	100.0
Development groups										
More developed regions	36.5	59.1	85.2	127.8	61.8	44.1	51.5	47.2	42.2	29.4
Less developed regions	34.4	66.2	116.6	306.7	92.1	76.3	48.5	52.8	57.8	70.6
Other less developed countries	32.0	61.4	108.2	285.9	91.6	76.3	45.1	49.0	53.6	65.8
Least developed countries	2.4	4.8	8.4	20.7	99.2	75.4	3.4	3.8	4.2	4.8
Regions										
Africa	3.0	5.7	9.3	22.2	85.7	64.3	4.3	4.5	4.6	5.1
Asia	30.9	60.0	103.7	255.7	94.0	73.0	43.6	47.9	51.4	58.8
Europe	21.2	34.6	46.1	71.0	63.0	33.2	29.9	27.6	22.8	16.4
Latin America and the Caribbean	5.1	10.3	18.7	44.8	101.4	81.4	7.2	8.2	9.3	10.3
Oceania	0.7	1.1	2.0	3.6	69.8	76.8	1.0	0.9	1.0	0.8
Northern America	10.0	13.6	22.0	37.2	36.1	61.7	14.1	10.9	10.9	8.6
Income groups										
High-income countries	37.0	60.9	90.9	145.4	64.5	49.3	52.2	48.6	45.0	33.5
Upper-middle-income countries	19.0	37.2	66.6	182.5	96.2	79.0	26.7	29.7	33.0	42.0
Lower-middle-income countries	13.5	24.4	39.3	94.8	80.9	61.1	19.0	19.5	19.5	21.8
Low-income countries	1.5	2.7	4.9	11.3	83.6	80.9	2.1	2.2	2.4	2.6

Figure 10: Population aged 80 or over across the world (2015)

With the UK having an estimated 16 million people with disabilities, the most frequently reported impairment type was mobility of 47% (House of Commons, 2023) (Figure 11). In terms of age and gender, it illustrated that there were more disabled women than men. Keeping in mind that not all disabilities are visible, mental health disabilities are included as well.

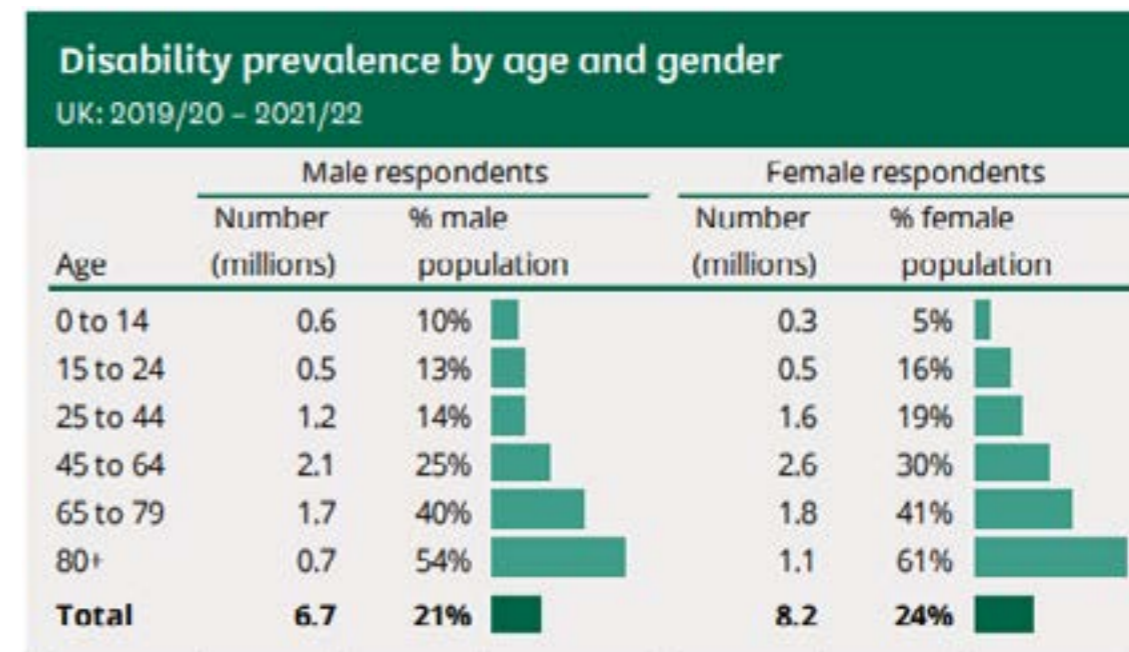


Figure 11: Disability prevalence by age and gender (2023)

Impairment type	Children	State		All ages
		Working age	Pension age	
Mobility	16%	43%	64%	47%
Stamina/breathing/fatigue	18%	34%	43%	35%
Mental health	30%	44%	13%	32%
Dexterity	9%	23%	35%	25%
Memory	10%	13%	13%	13%
Learning	26%	15%	8%	13%
Social/behavioural	50%	10%	2%	11%
Hearing*	5%	5%	16%	9%
Vision	5%	7%	13%	9%
Other	16%	20%	20%	20%

Figure 12: Impairment types reported by disabled people (2023)

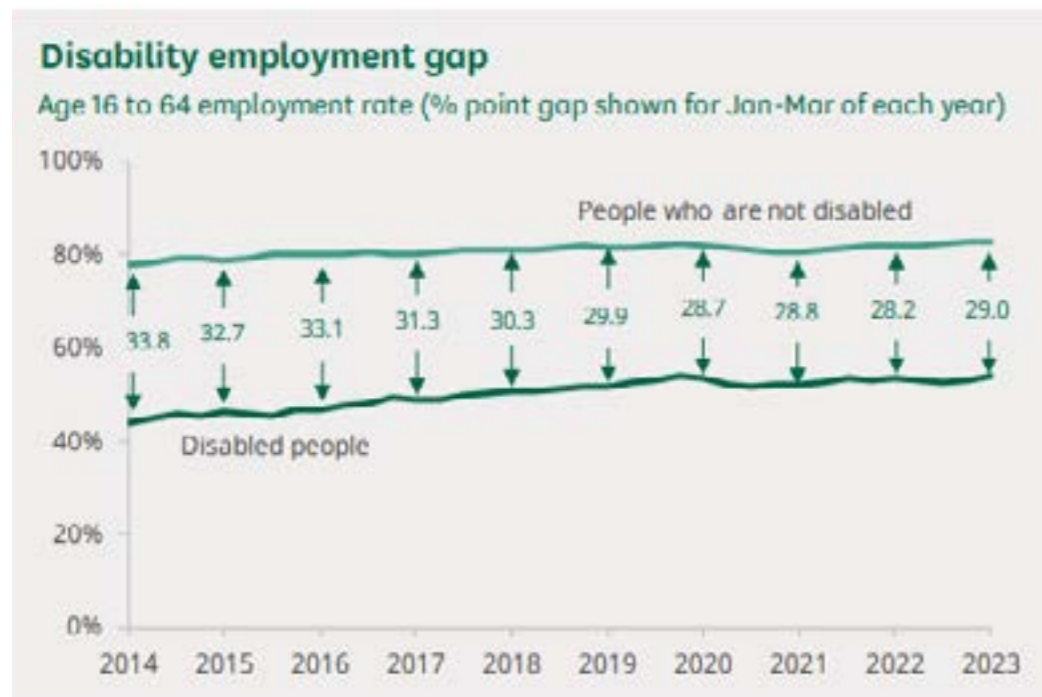


Figure 13: Disability employment gap (2023)

On the graph, from 2014 to 2020 there was a decrease in the employment gap. This suggests that there were efforts to increase the number of disabled people in work up until the COVID-19 pandemic. From this point, it slowly increases which could imply that there is a tendency to employ able-bodied people, to aid financial recovery.

Five Principles of Inclusive Design

It is important to be respectful when it comes to people who have difficulty making their way through life. We may never be able to truly understand what people must endure on a day-to-day basis but recognising the most evident aspects of being disabled can help progress towards an improved quality of life for them and their loved ones. To make this possible, we need to know what makes good inclusive design. Published by CABI (Commission for Architecture and the Built Environment, 2006), they listed principles of inclusive design that should be considered.

An overall point it makes states that design 'should always be judged by whether it achieves an inclusive environment. Design which does not do this is not good design' (CABI, 2006). They present the principles in five parts.

The first one mentions 'putting people at the heart of the design process'. Simply make spaces that involve as many people as possible and that they can use to create strong communities. A bottom line note they also include is to avoid steps, so it gives those using wheelchairs and pushchairs more appropriate access use.

The second point is acknowledging diversity and difference. Meeting as many people's needs as possible as it considers that everyone will experience limited mobility, whether it's a parent and young child or someone suffering from an injury. Not to mention preventing any form of disabling barriers for people with learning difficulties or visual impairment for example.

The third principle offers choice, not a single solution. It's about taking the needs of as many people as possible and giving everyone equal access.

The fourth is to provide flexibility in use. This is understanding how the space will be used so they can adapt to changing uses and demands.

The final principle is making buildings and environments convenient and enjoyable for everyone. This involves providing people with intellectual and emotional access, including signage, lighting, visual contrast and materials.

Meeting these minimum requirements allows designers to go further and make a better difference for everyone, leading the way to a more integrated approach to inclusive design.

Societal Views of Disability (Through the Lens of History)

Discrimination is not a new thing; it has always existed throughout many societies and cultures. Individuals may sometimes perceive it as acceptable to describe someone's behaviour or actions, assuming they are merely providing an observation. However, even this seemingly objective description may be considered insensitive towards the person in question. Often, the lack of understanding about the individual's experiences contributes to such insensitivity. The prevalent response in these situations tends to be the use of hate speech and the belittlement of those who do not meet the perceived 'standards' set by the aggressor. In this context, the term 'standards' refers to the criteria that the bully deems acceptable in their representation of others. An example of discrimination that people might not consider comes from a piece of Icelandic literature in the form of a saga. It is included in the book, edited by Hanna Björg Sigurjónsdóttir, which covers perceptions of disability in Iceland from settlement to 1936. Named *Gisla Saga*, it mentions a minor supporting character named Helgi Ingjaldsson who is described as "afglapi sem mestr mátti vera ok fífl" (the greatest idiot there could be and a fool) (Björg Sigurjónsdóttir, 2021). At one point, he is described as being tied to a stone and eating grass (Þórólfsson & Jónsson, 1943, as cited in Björg Sigurjónsdóttir, 2021, p. 17).

The mockery comes into play when an outlaw named Gísli Súrsson imitates Helgi's actions to evade his pursuers. This example shows that Helgi is placed in the social hierarchy of being inferior to the point of being borderline bestial (Higman 2021, p. 80–83, cited in Björg Sigurjónsdóttir, 2021, p. 17). A clear example of how a society deemed a man as being non-human purely on his mental impairment. This example of an Icelandic saga is used to discuss how discrimination is embedded in society via culture. It's something we are taught, not something we are born with.

A further example of how society considers something a disability takes us to the Middle Ages. In tracing the historical evolution of societal perceptions of disability, a profound transformation becomes apparent. The medieval understanding of disability intricately linked a woman's pregnancy to notions of femaleness and femininity, often viewed negatively due to its association with reproductive abilities. According to 'Disability in the Middle Ages' (Eyler, J.R, 2010), 'menopausal women were described as flawed in their ability to bear children', highlighting the prevalent belief that reproductive limitations equated to disability in that era. Similarly, the thirteenth-century text 'Heli Meidenhad' depicted pregnant women as physically restricted, with a 'swollen womb, sickly pallor, and leaking breasts', reinforcing the idea that pregnancy was received as a hindrance to daily life. This historical perspective underscores deeply ingrained attitudes that once categorised certain aspects of life as impairments.

However, as elucidated by Campbell's analysis of 'Hali Meidenhad,' where the text aimed to discourage young virgin women from marriage and heterosexual relationships (Campbell, 1992), the medieval perception of pregnancy as a disability is notably different from contemporary standards. In our modern context, pregnancy is no longer regarded as a disability, signalling a significant departure from historical norms, this shift reflects broader societal changes, emphasising a more inclusive and understanding approach to diverse experiences. The stark contrast between medieval beliefs, as depicted in Eyler's work, and contemporary attitudes highlights the dynamic nature of societal views on disability, illustrating how historical, social, and cultural contexts shape perceptions over time.

Current Issues in Planning and Design



Figure 14: A Paralytic woman being transported along the street in a wheel-chair (1821)

The woman in this lithograph is shown to be pulled along by a man through a busy London Street. The depiction of a disabled woman being transported in a modified wheelbarrow reflects the historical prevalence of such makeshift devices. French artist Théodore Géricault visited London in 1819 and witnessed this site among the urban poor (Guffey, E., 2017). The artwork highlights societal misfits, with onlookers casting pitiful and fearful glances, often marginalising the disabled. The disabled woman's predicament is shown as a product of both societal marginalisation and an environment not suited for her impairment. This scene also captures the bustling nature of London's streets, depicting the challenges faced by the disabled and those caring for them.

The concepts of a wheeled chair and a wheelchair may lead to thoughts about what other pieces of furniture can utilise wheels. Well, beds with wheels have appeared in ancient Greek and Chinese art (Kamenetz, 1969: 8, cited in Guffey, E., 2017) indicating a history of mobility aids beyond traditional chairs. Another method of mobility is through canes, crutches and walking sticks. They have existed since ancient Egypt and were widely utilised for various types of mobility needs (Loebl and Nunn, 1997 cited in Guffey, E., 2017). These aids were more suited for navigating uneven terrain, unlike wheeled devices that required a smooth surface. Historical environments, shaped by rough terrains and uneven surfaces, were better suited for the use of canes, crutches and walking sticks. Even in modern cities, the infrastructure poses challenges for wheelchair users, given the vastness of uneven surfaces and obstacles. Adapting to the built environment is evident in the latter examples but there are clear examples of inconsiderate design that doesn't account for those who struggle to travel through places that shouldn't be difficult. It is society's responsibility to make everyone, no matter how able they are, feel a sense of care and support that looks out for all so discrimination will begin to fade.

Finding a house that fits people's needs and desires can become increasingly difficult when looking at houses that are already existing. With an ageing population, better thinking is required when considering the possible situations that may occur to people. People make houses their homes to provide themselves with a place of belonging and familiarity. When situated for x-amount years, families can grow attachments to their homes and feel as if they should never leave them. The risk that lies with this is potentially acquiring a disability, a reduction of household numbers and even alterations of the public built environment outside the house. Changes like these can off-kilter an individual's quality of life as it is unplanned. Spoken about, but not majorly acted on, is the idea of future-proofing houses to allow as many solutions as possible. I believe having the thought of accommodating for inconveniences and alterations makes living easier, for those adapting to their new way of life. Alluding to my Grandparents, the layout of their split-level house was fine for them when they first moved in and raised my Mum and Uncle. As Jill received her MS diagnosis and Michael with his mobility problems, there was a slow decline in their quality of life. Aging and having disabilities make it difficult for them to get out of the house so they are unable to get outside independently.

Accessible Housing (Imrie, R, 2005), talks about the nature of housing quality for disabled people and how it could be resolved. An early point it makes states that 'most dwellings are designed and constructed as 'types' with standard fixtures and fittings' (2005, p. 13). Making the point of a default house that is designed around an able-bodied person, is suitable for a disabled person because it is assumed that they can make their way around. It continues to raise the point of building codes and regulations tending to focus on physical design solutions and not addressing the complex needs of individuals. Additionally, the report Building for Equality: Disability and the Built Environment, (House of Commons, 2017), include the NPPF's (National Planning Policy Framework) definition of inclusive design as 'designing the built environment, including buildings and their surrounding spaces, to ensure that they can be accessed and used by everyone' (2017, p. 19). However, they respond to the definition with views from other parties. The Design Council stated, 'inclusivity is insufficiently considered in the early stages of development and design' (2017, p. 20). Ann Skippers, Director of Ann Skippers Planning, quoted 'good design is itself recognised within the planning system, accessibility was not always considered integral to that concept' (2017, p. 21).

DWELL Project

Based on both responses, they're jabbing at the lack of human considerations that are applied to housing. This aspect should be brainstormed in the concept stage to minimise failures or missed opportunities. A simple concept for inclusive design is being levelled down to the bare minimum, where the Government put 'the ability to visit a house is the current mandatory minimum' (2017, p. 4). Surprisingly it followed 'in order to adopt a higher standard, a local authority currently has to prove that there are enough disabled people already living in the area to warrant building homes that are, or could be made, accessible' (2017, p. 4). This shouldn't be standard as those disabled living independently or with others of similar status would be not entitled to such a development, which is discrimination.

The Building Regulations 2010 Document M contains legal requirements and guidance for various aspects of 'Access to and use of buildings'. It takes the needs of the disabled and aims to facilitate them with the implementations that they require to gain greater access. With it, comes good features that make the journey to a more inclusive built environment. As it is a legal requirement, there is the assurance that the planning permission will ensure that the minimum standards are met. It aims to enhance the safety of the disabled by providing features such as ramps, handrails, and accessible bathroom facilities.

However, limitations that exist create challenges and potential situations for those requesting living adjustments. Implementing the requirements in Document M may lead to additional costs such as ramps and wider doorways. Accessible features may require specialised materials and construction methods. One main issue that would be common in dwellings is retrofitting existing buildings, as they may be limited in space and/or might not be cost-effective. Also, it can be complex as there may need to be a deep understanding of the guidelines, perhaps due to the lack of expert advice.

When relating Document M to the Plan of Work 2020, it can be puzzling to implement accessibility applications within the structure. That there is a framework that implies where and how it should be considered but there isn't any direct guidance to say what should be properly thought about. As well, when a project gets to Stage 7 the company may not think to assess the performance of the building to close the feedback loop (Mudd, 2021). Perhaps that is a large reason why dwellings and public buildings may not meet fully the needs of those disabled, as they haven't taken feedback from those occupying or using them.

"Considering what we want, what's the best of our own homes and what we would want to take with us, I think this made me realise for myself, what's important in my life."

DWELL Project participant, 2016



Figure 15: Open-plan apartment interior (2016)

Based in Sheffield, this project aimed to create better quality housing with older people in mind. The use of a participatory approach with residents in Sheffield, using their input to help propose a new set of houses. Allowing them in the design process made them feel excited and empowered especially when thinking of their ideal home. According to one of the residents (Cpanel Dwell To Be Deleted, 2016), they said 'considering what we want, what's the best of our own homes and what we would want to take with us, I think this made me realise for myself, what's important in my life'. When designing, they wanted to make it, so they weren't institutionalising people by not making assumptions about everyone being the same and having the same set of needs as they age. Giving brief control to those wanting to live a more comfortable life allows for a more engaging and positive spirit for the residents.

Disability Devices in the Home

Introducing devices and equipment that improve the quality of life for disabled people, creates opportunities to reflect on what is valued and cherished. They make significant differences, even if it is something as simple as adding a handlebar on the side of a wall. If housing should go towards the future-proofing direction, then giving considerations for implementing them without being too obvious is key. As it could make people too self-conscious about their circumstances. To reach that point, achieving practical and accessible objectives needs to be fulfilled.

A common device that is typically utilised is the wheelchair, where it should be capable of manoeuvring through various areas. The number of transformations it's gone through demonstrates what barriers people were aiming to overcome. In 1655 German clockmaker Stephan Farfler built his mobility aid after a broken back incident as a child, at the age of 22 (Nias, 2019). Utilising his expertise the wheelchair comprised of three wheels on a chassis, with one front wheel geared up with cranks and cogwheels that could turn. Further developments, such as in 1783 by John Dawson, created the 'Bath Chair' made up of two large wheels at the back and a small pivoting wheel at the front. This would require the aid of someone to push behind them. Starting to resonate with modern wheelchairs, the Model 8 was the first folding wheelchair built in the 1950s by Harry Jennings and Herbert Everest (Nias, 2019). Being able to be folded up, lightweight and able to be manoeuvred by the patient or an assistant levelled up the capabilities that provide the patient with independence or valued external aid. As this form of wheelchair is still used, and likely to alter, there should be acknowledgement of someone using it, so discomfort physically and mentally won't occur. Thinking ahead to provide smoother surfaces or wider doorframes would change the dynamic of a house however it eradicates the struggle of getting one through a house. So, if my grandma were to be transported in one from outside into the living room, getting round corners and being obstructed shouldn't be a thing, as it would have been acknowledged that it would happen.



Figure 16: Model 8 Wheelchair (1958)

It can be difficult to transition from a wheelchair into a bed as the standard is for an able-bodied person to climb into it. Being at a set height, uncomfortable for any hand placements if climbing presents the obstruction of someone having a good night's rest. Before implementation into homes, hospital beds transformed the needs and care of patients experiencing varying problems, mainly related to physical injuries. Between 1815 and 1825 Britain implemented adjustable rails using a mechanical crank moving rails up and down (MED +, 2019). A simple concept but it helps those in bed feel safe from slipping out. Willis D. Gatch 1909 invented the three-segment adjustable bed which we see today (MED +, 2019). 1961 saw the introduction of a basic bed controller, enabling easier control for easing patients. Eventually by 1983 hospital beds (an electric bed) were first introduced for home settings, making it easier for people to rest while in the comfort of their homes. Adding and enhancing multiple functionalities makes, originally hard tasks, more bearable for the disabled person and others tending to them. They are great pieces of technology as their integration into the home setting provides certainty that users can manoeuvre around it with little difficulty. Jill utilises one as it assists her when sitting up and getting into position to be transported to wherever she needs to go.



Figure 17: Hospitable bed at home (2021)

I know from experience and observation that traversing the stairs can be tricky for someone with limited mobility. A handrail can help in some cases but most times it doesn't provide the energy for some. This is why the stair lift was invented, to help people with health issues or even weight troubles. The earliest known concept of a stairlift was utilised by Henry VIII where he used a block and tackle system (WP Newsify, 2023) to move up and down stairs. A later variant was to assist King George IV which included a steam-powered chairlift that was only a personal one. The closest one to modern versions today was invented by C. C. Crispen in the 1920s. This version used a motorised chair that followed a rail track along stairs, mounted on stair treads (WP Newsify, 2023). The most noticeable change with this variation is the style and materials used to enhance the functionality of the stairlift and enhance the experience for the user with folded armrests, controls on armrests and the ability to swivel the seat around to reduce the need for twisting. Stairlifts are a great piece of equipment that fits well with disability architecture as they can provide those with access to the levels in their home that were unobtainable without one. One aspect that can be an issue in terms of space is the limited amount of walking room when able-bodied people need to get past them while walking up the stairs. It's not a major problem but there could be an adaption to the stairlift that could fold in on itself more, to allow increased passage in case of an important situation when stair width is essential.



Figure 18: Poster for the 1920s 'Stairway Elevator' (2021)

As many other devices can contribute towards disability architecture, it felt right to highlight these three appliances as they tend to alter the dynamic of the home. Other devices most certainly help those with more critical or more attentive needs but as a broader lens, the three can be adapted to a range of needs and implemented according to where it's needed in the dwelling. Evaluating these devices best fits within the context of my grandparents as they utilise them one way or the other. The wheelchair fits both of their circumstances to transport them from house to outside, with some precautions in place such as removable metal ramps over door ledges. An issue with doing this is either where to put the precautions or how to change the preexisting layout to make access safer. Hospital beds as an aid make tending to the user easier, safer, and more practical by moving the bed or changing settings to configure the correct way of getting in and out of bed. While Jill uses the bed in the living room, it does make getting from bed to armchair easier and more convenient however it's not something that she wanted to resort to.

Thinking for this type of scenario should be implemented into the designer's consultations so it eliminates the client's self-consciousness about having to live in that way. Dwellings should be made with a user in mind, not a standard able-bodied example. Allowing for as many types of people can make accessibility more inclusive in homes and public buildings. Making people feel relaxed and have self-respect leads to improved quality of life and new possibilities in design, focusing on futureproofing. A stairlift shouldn't have to be hidden in the sense of not being visible but an attempt to make it not stand out, for example complimenting the surrounding context. Michael uses it to get to the bathroom and the bedroom, but it can be obstructing for others to get past it. As their house wasn't designed for disability adapting, that type of device should take priority for him, sacrificing the space for others to get around.

Conclusion

Disability is something that should be implemented into all aspects of the built environment. Dismissing those needs and basic rights of access reflects society's ignorance and it should not be tolerated. Thinking that disability is a low priority needs to change as the world population is ageing for longer. Altering our approach enables us to accommodate people with a wide set of needs both severe and not so. Throughout history, societies gloss over those not able-bodied as their contribution to everyone was deemed little or nothing. Implying that they were ashamed of them as they didn't meet their expectations with others. Doing this restricts the level of innovation in house design, keeping to a template of an able-bodied individual. The DWELL Project used the residents of Sheffield to contribute to what their ideal home looked like and to envision how layouts can change for a downsizing house.

Exploring iterations of some disability devices provides glances to what the issues experienced by people during that period. Carrying those forward shows patterns and innovation for further improvements in the quality of life of the elderly as well as disabled people. Comparing issues and proposals with my grandparents helps to put into perspective how these decisions and devices helped shape the architecture of their home, from being an able-bodied house to an adapted home. While it can be difficult to fully adapt existing homes, there is still time to better consider how houses can be designed, to facilitate both disabled people and an ageing population. Otherwise, the problem of discrimination will continue to persist.

Bibliography

+ M. (s.d.) [No title]. At: <https://www.medplushealth.ca/blog/the-history-of-the-hospital-beds-and-their-development/> (Accessed 07/01/2024).

Access to and use of buildings: Approved Document M (2015) At: <https://www.gov.uk/government/publications/access-to-and-use-of-buildings-approved-document-m> (Accessed 04/01/2024).

Ageing and disability (s.d.) At: <https://www.un.org/development/desa/disabilities/disability-and-ageing.html> (Accessed 30/10/2023).

Björg Sigurjónsdóttir, J. G. (2021) *Understanding Disability Throughout History*. (1st Edition) (s.l.): Routledge.

CBP-9602.pdf (s.d.) At: <https://researchbriefings.files.parliament.uk/documents/CBP-9602/CBP-9602.pdf>

Davey, J. (s.d.) 'aGeinG in PLace': The views OF OLDER hOMe owners on maintenance, renOVati on anD aDaPtati on. At: <https://msd.govt.nz/documents/about-msd-and-our-work/publications-resources/journals-and-magazines/social-policy-journal/sp-j27/27-pages128-141.pdf> (Accessed 02/10/2023).

Deleted, C. D. T. (2016) DWELL: A participatory approach to designing housing and neighbourhoods for later life use. At: <https://www.youtube.com/watch?v=Mcflotddgi4> (Accessed 05/01/2024).

Equality Act 2010, c. 6 Available at <https://www.legislation.gov.uk/ukpga/2010/15/section/6> (Accessed 28/10/2023).

Eyler, J. R. (2010) 'Disability in the Middle Ages : Reconsiderations and Reverberations' At: <https://ebookcentral.proquest.com/lib/ucreative-ebooks/reader.action?docID=513937>

Gissen, D. (2023) 'The Architecture of Disability : Buildings, Cities, and Landscapes Beyond Access' At: <https://ebookcentral.proquest.com/lib/ucreative-ebooks/reader.action?docID=29441831&ppg=13&pq-origsite=summon>

Guffey, E. (2017) *Designing Disability : Symbols, Space, and Society*. London, UNITED KINGDOM: Bloomsbury Publishing Plc.

IMPAIRMENT definition and meaning (s.d.) At: <https://www.collinsdictionary.com/dictionary/english/impairment> (Accessed 28/10/2023).

Imrie, R. (2005) *Accessible Housing*. (1st Edition) (s.l.): Routledge.

Kirk-Wade, E. (s.d.) UK disability statistics: Prevalence and life experiences. At: <https://commonslibrary.parliament.uk/research-briefings/cbp-9602/> (Accessed 02/01/2024).

Mudd, A. (2021) RIBA Plan of Work. At: https://www.youtube.com/watch?v=xD-g825uu_hc (Accessed 05/01/2024).

Nias, K. (s.d.) History of the Wheelchair - Science Museum Blog. At: <https://blog.sciencemuseum.org.uk/history-of-the-wheelchair/> (Accessed 07/01/2024).

Outcomes for disabled people in the UK - Office for National Statistics (2022) At: <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/disability/articles/outcomesfordisabledpeopleintheuk/2021> (Accessed 02/01/2024).

Ray, S. J., Sibara, J. and Alaimo, S. (2017) *Disability Studies and the Environmental Humanities : Toward an Eco-Crip Theory*. Lincoln, UNITED STATES: Nebraska.

Saltoğlu, S. and Öksüz, A. A. (2016) 'The Concept of Disability' in Architecture as a Power and Ideology Problem' In: *ICONARP International Journal of Architecture and Planning* 4 (1) pp.49–61.

Smith, C and Dixon, S, (2018) 'independent-confident-connected-report.pdf'

Social Model vs Medical Model of disability (2014) At: <https://www.disabilitynottinghamshire.org.uk/index.php/about/social-model-vs-medical-model-of-disability/> (Accessed 02/01/2024).

Stairlifts - Brief history and modern-day usage (2023) At: <https://wpnewsify.com/blog/stairlifts-brief-history-and-modern-day-usage/> (Accessed 07/01/2024).

Taylor & Francis Group (s.d.) At: <https://www.taylorfrancis.com/pdfviewer/> (Accessed 03/10/2023).

The History Of The Wheelchair (2017) At: <https://www.pbconversions.co.uk/the-history-of-the-wheelchair-2/> (Accessed 07/01/2024).

the-principles-of-inclusive-design.pdf (s.d.) At: <https://www.designcouncil.org.uk/file-admin/uploads/dc/Documents/the-principles-of-inclusive-design.pdf>

WPA2015_Report.pdf (s.d.) At: https://www.un.org/en/development/desa/population/publications/pdf/ageing/WPA2015_Report.pdf

List of Illustrations

Figure 1. Harris, J (2023) *Ground Floor Plan*. [Plan] In possession of: the author: Canterbury

Figure 2. Harris, J (2023) *Ground Floor Photographs*. [Photographs] In possession of: the author: Canterbury

Figure 3. Harris, J (2023) *First Floor Plan*. [Plan] In possession of: the author: Canterbury

Figure 4. Harris, J (2023) *First Floor Photographs*. [Photographs] In possession of: the author: Canterbury

Figure 5. Harris, J (2023) *Second Floor Plan*. [Plan] In possession of: the author: Canterbury

Figure 6. Harris, J (2023) *Second Floor Photographs*. [Photographs] In possession of: the author: Canterbury

Figure 7. Outcomes for disabled people in the UK - Office for National Statistics (2022) *Well Being Chart*. [Chart] At: <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/disability/articles/outcomesfordisabledpeopleintheuk/2021> (Accessed 02/01/2024).

Figure 8. Outcomes for disabled people in the UK - Office for National Statistics (2022) *Loneliness Graph*. [Graph] At: <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/disability/articles/outcomesfordisabledpeopleintheuk/2021> (Accessed 02/01/2024).

Figure 9. WPA2015_Report.pdf (s.d.) *Population aged 60 or over across the world*. [Table] At: https://www.un.org/en/development/desa/population/publications/pdf/ageing/WPA2015_Report.pdf

Figure 10. WPA2015_Report.pdf (s.d.) *Population aged 80 or over across the world*. [Table] At: https://www.un.org/en/development/desa/population/publications/pdf/ageing/WPA2015_Report.pdf

Figure 11. CBP-9602.pdf (s.d.) *Disability prevalence by age and gender*. [Chart] At: <https://researchbriefings.files.parliament.uk/documents/CBP-9602/CBP-9602.pdf>

Figure 12. CBP-9602.pdf (s.d.) *Impairment types reported by disabled people*. [Table] At: <https://researchbriefings.files.parliament.uk/documents/CBP-9602/CBP-9602.pdf>

Figure 13. CBP-9602.pdf (s.d.) *Disability pay gap*. [Graph] At: <https://researchbriefings.files.parliament.uk/documents/CBP-9602/CBP-9602.pdf>

Figure 14. *A paralyzed woman being transported along the street in a wheelchair*. Lithograph by Théodore Géricault, 1821 (s.d.) At: <https://wellcomecollection.org/works/n9ctw3k4> (Accessed 07/01/2024).

Figure 15. Park, A (2016) *Open-plan apartment interior*. [Photograph] 'DWEELL_DesigningWithDownsizers.pdf'

Figure 16. Nias, K. (s.d.) History of the Wheelchair - Science Museum Blog. *Model 8 Wheelchair*. [Photograph] At: <https://blog.sciencemuseum.org.uk/history-of-the-wheelchair/> (Accessed 07/01/2024).

Figure 17. How to Choose the Best Medical Beds for Home (s.d.) *Hospitable bed at home*. [Photograph] At: <https://gomobilityonline.com/blogs/news/how-to-choose-the-best-medical-beds-for-home> (Accessed 07/01/2024).

Figure 18. Robinson, A. (s.d.) A Stairlift History. *Poster for the 1920s 'Stairway Elevator'*. At: <https://lovestairlifts.co.uk/history-stairlift/> (Accessed 09/01/2024).

SOCIETY

BA (Hons) Architecture (ARB/RIBA Part 1)
Stage 3 Research Thesis

Author: Jake Harris

Supervisor: Eva Tisnikar

UCA Canterbury, 2023/24

University for the Creative Arts
Canterbury School of Architecture
New Dover Road
Canterbury
Kent CT1 3AN
United Kingdom

uca.ac.uk
csauca.com

