

Inclusive Design for a Barrier Free City – Case study of the City of Lincoln, UK

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Abstract

Using the city of Lincoln as a case study, this paper aims to discuss the importance of inclusive design and accessibility in the city, within the context of current global challenges. The relationship between theory and practice has become overwrought, meaning that a dearth of social relevance in design is rife. Practising architects often view theory as esoteric, whilst theorists seldom manifest their ideas into reality and build. With the division widening, this paper is written with aims to convince and encourage that there is real worth and importance in instigating concepts and solutions proposed in this paper, which are not only applicable to the city of Lincoln, but are adaptable and applicable to all cities. The global paradigm shift in population size, the explosion of urbanisation and widespread increased longevity urgently calls for change in urban design. This is not a subject to be ignored, but to be acted upon at once. Motivated by the vision of a barrier free world, this paper hopes to inspire the spirit needed to eradicate social inequities in urban design. The paper will conclude discussing the complex relationship between societal and spatial dynamics, asserting that segregation is produced through misinformed design.

Keywords

Inclusive design; accessible city; disability; mobility; social inequalities; urban design

Introduction and Background

Accessibility is a vital issue for every single inhabitant on earth, yet is only formed and moulded by a comparatively small fragment of us. Without accessibility, one cannot move from place to place and live a life as an independent being. One will not always have the option to travel freely at will and perhaps spontaneously throughout our surroundings. An inactive state of body; one without accessibility is limited in mobility and essentially imprisoned, bound and handicapped by their surroundings. To put it simply, an inaccessible world is not a desirable notion.

There are many different definitions of inclusive design, however, for the purpose of this paper the one defined by CABE will be used, "Inclusive design is about making places that everyone can use." [1] Commission for Architecture and the Built Environment (CABE, 2006).

Seamless transitions: open doors: welcoming, spacious public spaces, and spatial equality is all too often taken for granted by the able bodied. These things are considered by most as an obvious constant which always have and always will be there for them; a fact of life. Yet for physically disabled individuals accessibility is something at the forefront of their lives, needing to be painstakingly well-thought-out every single day of their life. This is because the built environment was not built for them. They were considered by the designers as anomalies. Therefore, they are known to have separate entrances and exits to buildings, and 'special needs', meaning they get treated differently and segregated from the 'normal' way of moving through a space.

The assumption that there is ever a standard 'normal' body type is a dangerous concept for designers and architects to take on, which will have taxing future consequences. The lack of inclusive urban design from architects and designers gone by is starting to become a noticeably wide spread problem in our urban landscapes. The 'anomalies' are gradually shifting into being the 'normal' users of the space. An unprecedented shift in the demographic of our population is dawning. Our urban fabric was not built for such a predicted influx of elderly and disabled users. The fundamental demographic changes occurring in the world right now are threatening to potentially decay and congest our cities, denying easy access to many.

Using the city of Lincoln as a case study, this paper aims to examine, discuss and propose solutions for this current and burning architectural issue both on the internal architectural space and the external urban context or the public realm. Amplifying the perspective of the disabled with interviews it will highlight the most pertinent accessibility issues and propose possible solutions.

Local and international disability discrimination acts and other forms of legislation shall be investigated, concluding that despite the legislation in place being theoretically correct; it is not always being applied in practice.

It is worth noting that this research is a continuous research work based on the work of a research study carried out at the Lincoln School of Architecture by a 3rd year Architecture student; one of the authors of this paper. Part of this work has also been published in the Berkeley essay competition 2013. [2] This paper uses a narrative analytical approach in analysing the case study city chosen for the sake of this research. Throughout this paper the term 'Physically disabled' will be referring to people in the city with mobility impairment-such as those who use crutches, canes, wheelchairs, mobility frames and mobility scooters. Other stakeholders include those who may not think of themselves as disabled, yet need the same accessibility features as those of physically disabled, such as parents with pushchairs. This is an umbrella term, also including inhabitants who have a disability causing lack of mobility such as arthritis, yet do not use a mobility aid. It may not always be possible to achieve full accessibility in the city, for conservation, economic or social reasons. However, it will always be possible to improve inaccessible areas with small enhancements which will improve the lives of every inhabitant. Rickert [3] argues that painting handrails a bright yellow on a bus or train especially benefits a passenger who is partially sighted, but it also benefits every passenger who wants to quickly find a way to hold on whilst entering the bus.

The impact of inaccessibility, and consequent isolation in public spaces on the social cohesion of a city, will be analysed, delving into the mechanics of the collective psyche of city inhabitants. Inspired by the architecture which has not yet manifested, the paper aims to ignite the spirit needed to eradicate social inequities and promote core principles of inclusive design in our towns and cities.

Albert Einstein once said: "If the facts don't fit the theory, change the facts". [4] This paper intends to suggest and provide solutions to the inaccessibility found in the city of Lincoln, which can be applicable to other cities around the world. It hopes to show how vital accessibility really is in the built environment, with a power that shapes *all* lives. Architects and designers have enormous power, responsibility and opportunity to remould the existing urban spaces into all inclusive accessible spaces, making our environments more pleasant and satisfying for all.

Lincoln and the population boom

Lincoln is considered one of the most historic cathedral cities of Europe, renowned for its vibrant fusion of old and new, is situated in the east midlands of England. People are attracted to the city's picturesque cobbled streets, which weave the city body together like capillaries, constricting the flow of people in places and allowing access via tangles of short cuts, in others. [2]

The population boom

Like other major cities in Europe, currently witnessing an unprecedented population boom, Lincolnshire Research Observatory have released figures stating that since 2010 Lincoln has seen a sharp decrease in deaths and a dramatic rise in births as depicted in Figure 1.[5] This correlation is unfolding on both a local and an international scale.

The World Health Organisation (WHO) [6] predicts that within the next five years, the number of adults aged sixty-five and over will outnumber all children under the age of five. By 2050, these older adults will outnumber all children under the age of fourteen. [5] The global population is rising at a rapid rate, raising questions about how the new third generation should be accommodated. Wylde *et al.*(1994) [7] suggests that as many as 90% of individuals may be architecturally disabled in some way or other at some point in their life.

The most dramatic changes are in the developing world. It is projected that there will be 400M Chinese 60+ by 2050, the same year that the entire Japanese population is expected to be no more than 69M.[6] In addition by 2030 the population aged over 65 will have doubled, whilst those aged over eighty years in age will have trebled. [8;9]. Urban populations are growing three times faster than overall populations and soon, 'three-quarters of the world's people will be city dwellers.' [10] All cities around the world need to prepare for the large influx of elderly inhabitants.

These alarming statistics need to be addressed by all architects and designers; spaces need to be created with capacities to comfortably contain larger crowds, as well as developing new design strategies aimed at all people, throughout all phases of the human life cycle, empowering everybody.

Births and deaths

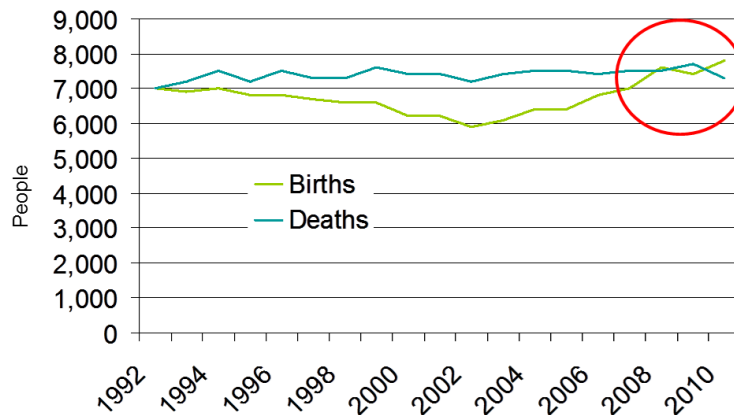


Figure 1: Lincolnshire's Births and deaths from 1992-2010

Increased longevity may not be such a cause for celebration; this worldwide phenomenon is symbiotic with disability. WHO calculates that 'two thirds of disabled people are over 60'. [6] These predictions show that there is an urging necessity for our urban environment to evolve at a rate which mirrors that of humanity.

Whilst battling physical obstructions, physically disabled people also become obstructions to the able-bodied public. If the pavements were widened, perhaps slow-walkers and disabled citizens would not be seen as causing an obstruction. This is not possible in the majority of pedestrianized areas of Lincoln, due to the characteristic narrow streets which are infringed by many historic and listed buildings. Pavements alongside roads, however, have the potential to be widened. A more frequent use of dropped curbs throughout the city will allow safe crossing of roads and mounting of pavements. The maintenance of pavements, removing all potholes, sudden dips, and obstructions, is essential for smooth and safe transitions. [2]

Steep hill and gradient issues

The architecture of Lincoln City tells of a vibrant and absorbing history. Divided across the foot and head of a hill, the Romans connected these two districts with Steep Hill. The Academy of Urbanism named it '*Britain's Great street*' in 2012 (BBC News Lincolnshire)[11], two-thousand year-old Steep Hill is well known for its difficulty in ascending and descending, boasting a one in seven gradient seen in Figure 2. [2] Physically disabled inhabitants struggle to access any further than the foot of Steep Hill, due to difficulties regarding the incline and the irregular cobbled surface.

Newly laid, flat cobble stones or level grouting applied to the existing cobblestones would alleviate this problem whilst maintaining and preserving the historic beauty of Lincoln. A more level surface under foot will improve transitions for everybody. Similar to the Sacre Coeur funicular railway which is in Paris, the installation of one in Lincoln would bind the two city levels seamlessly, whilst becoming an attraction in itself. This has been discussed to improve the accessibility of Steep Hill by the city council, but is as of yet just an idea. [2]



Figure 2: A daunting viewpoint from the bottom of Steep Hill, Lincoln, from a wheelchair user's perspective.

Navigating Lincoln's Internal Environment

Internal environments are equally as important as external environments. Lifchez [12] believes that architecture can be empowering, only if architects develop empathy. This quote rings true with physically disabled people being denied the use of the disabled toilet in the University of Lincoln's architecture building. The fact that the architect, Rick Mather, was designing according to poor minimum standards leaves us with the standing reality that the disabled toilet is too slim to manoeuvre a wheelchair inside and close the door. [2] This fact is disturbing when you think that this is a building constructed for future architects, who are expected to insure that their design interventions are designed inclusively to meet the needs of the diverse population. [13] Minimum standards need to be raised and laws need to be created to prevent faults such as this occurring. This lack of thought has violated articles included in the United Nations Convention on the Rights of Persons with Disabilities [14], whilst simultaneously breaching articles in The Charter of Fundamental Rights of the European Union (2000) [15], regarding, non-discrimination, human dignity and respect. Approved document M of the building regulations (2004) [16] Access to and use of buildings, states that there should be sufficient space for wheelchair manoeuvrability in entrances, and that the door should open outwards. There should be a 'clear wheelchair space of at least 750mm in front of the WC' [16]. These regulations have not been adhered to.

The consequences of not adhering to the guidelines, regulations and conventions can be found when observing users of the space. An interview with a physically disabled member of staff the Royal Institute of British Architects (RIBA) whose office is located on the second floor of the Lincoln School of Architecture building reveals how non-inclusive design has negatively impacted his daily life.

Using a powered wheelchair, he highlights that the weight of the doors throughout the building present themselves as stop signs to him. Due to fire safety precautions, the doors throughout the building are weighted and therefore slam rapidly after being opened. This often overlooked detail has meant that he has been made a

remote activated key fob which opens two of the most imperative doors to him; the door to his office and the door to the fire escape stairwell, which is the fire safety area. However, if he were to need to enter any other rooms in the building, perhaps a lecture theatre, he would have to depend on the help of others to let him in. He also comments that 'being caught in an airlock between two doors (present at the entrances and exits of the lecture theatres) is a common and horrible experience', so he tends to opt out of visiting lecture theatres, if he can. Feeling confined and unable to access places where your peers can causes inconvenience and should not be occurring in relatively new buildings. He concludes with: 'in an ideal world, all doors would be automatic, and lifts would be able to work in a fire so that disabled people can escape independently.'

People with hearing difficulties also struggle in the University of Lincoln's architecture building. The acoustics of the building mean that noises in the atrium echo loudly, often causing people with hearing aids to turn them off. This is a fault of the design and the non-sound absorbing materials chosen. Partially blind people are also known to struggle because the floor of the lift is completely black, which can cause distress, as some people cannot tell the difference between a black floor and no floor at all. This can be simply rectified by sticking brightly coloured or reflective stickers on the floor.

Another unheeded detail affecting the partially sighted is that the entire building has been painted white. Every floor seeming to appear the same as the next causes confusion amongst everybody. Colour coding floors would be a simple answer to clarify navigation throughout the building. All these often disregarded and non-inclusive design details have a huge accumulative impact on the smooth functioning of the building. In the event of a fire, these overlooked details could place people's lives in serious danger.

This is just one building in the city, which just so happens to serve as an excellent example of inaccessible and non-inclusive design. This building is not alone. Inaccessible design is a widespread issue across the globe, which needs to be eradicated.

Despite the imminent implementation of Part III of the Disability Discrimination Act (DDA, 1995) [17] that came into force in October 2004 and which, for the first time, directly addresses the design of physical features within the built environment that are a barrier to access, many commercial and public buildings are still not accessible for wheelchair users. [7] Regarding the city of Lincoln, many would agree with Hanson's statement. This could be due to the fact that old buildings have been built before these regulations came into place, and they do not state that existing buildings should be modified. Article 9, [15] '*Accessibility*', of the United Nations Convention on the Rights of Persons with Disabilities, states that: all parties shall take appropriate measures to ensure people with disabilities are treated equally to others. This includes 'the identification and elimination of obstacles and barriers to accessibility', as well as: 'developing and monitoring the implementation of minimum standards and guidelines for the accessibility of facilities and services open or provided to the public' [15] Despite being a constituent of the United Nations Convention, Lincoln has not met the terms of the convention.

Lincoln has also breached at least seven of the articles included in The Charter of Fundamental Rights of the European Union (2000), regarding, non-discrimination, human dignity and respect. It is perplexing how even after signing conventions stating otherwise, Lincoln is still creating and maintaining inaccessible spaces which alienate

disabled inhabitants. Lincoln as a city is not alone in this. The fact is that it is cheaper to serve poor access if no-one is going to be prosecuted. [2] This raises the question of whether the guidelines should become law; implementing a consistent universal design. Thus the city council will be obliged by law to answer the needs of their population. Almost every article of the conventions and charters set in place is highlighting areas which society currently struggles with and needs to address. "Until these problems are resolved, policy statements that emphasise the importance of an inclusive urban environment will be perceived by at least some members of society to be little more than empty platitudes." [7] In addition, ramp incline throughout the city is too steep and is something which needs to be addressed.

This is a statement to all designers and architects. Within a mere few hours of navigating Lincoln in a wheelchair, one's basic human rights have the potential to be breached more than once. Being denied the right to use a toilet as well as being unable to access a supermarket to buy food independently is simply unacceptable. [2] The threshold and dimensions of public disabled toilets in the city should strictly comply with regulations. The supermarket ramp's incline should be lessened, also complying with a strict code of practise, to fully integrate all users.

Participatory design

Talking to all users of the city is very important when designing for the community. Especially the physically disabled, who are comparatively hyper-sensitive to accessibility issues in the city and prove to hold the most enlightening perspectives. Participatory design involving an array of all types of people would accurately reflect the society's diverse needs, stunting the creation of new barriers. Disabled people need to be listened to by architects in order to lessen their handicap.

Elnokaly and Elseragy [18] states that if architects took a co-operative approach to design, including different stakeholders and the greater society in the design process then the city would be sustainable and appropriate to the needs of its citizens [18]. Participatory design, which originated in Scandinavian trade unions in the 1970's, creates user empowerment and democratisation, meeting the practical needs of all. Many local governments in other European cities do have a consultation process which requires public consultation to major changes in the built environment as in the case of the city of Barcelona [18]. However, the city council often holds overriding power. This constitutes as consultation design rather than participatory design. Lincoln could integrate participatory design in future urban strategies. Appropriate information in the city regarding accessibility should be made available in the public domain to unveil any false myths, leading to perceptions that the urban environment is unsafe. This can be greatly improved with local campaigning and media coverage.

Physical barriers versus psychological and social barriers

If one looks, they will notice all physical barriers throughout the city which could be resolved: poorly maintained pavements, isolated and unlit bus stops, a lack of public adequate seating and inadequate public toilet provision. However, throughout the city, one can find excellent crossing points, intersecting busy roads. Each is equipped with tactile, twisting and visual cues, not only beneficial to the deaf and blind but which are aides for everyone in the city to cross roads safely. Despite being a road safety design

standard throughout the United Kingdom (implemented by the Department of Transport) this still shows hope for the integration of further disability design features in the future.

The city by night presents an interesting altered perspective; disabled citizens are rarely seen out after dark. Their absence has a remarkable presence. The implementation of distinct bright signage throughout the city and well lit, clear and open spaces would improve the feeling of ease and safety. Dropped curbs, for example, are required for safe mounting and demounting of a curb for wheelchair users as well as improving the transition for everybody. Changes such as this will also show consideration for those with sensory or cognitive impairments. Health and safety is paramount. Disability hate crimes are reportedly on the rise, with '1,569 recorded disability hate crimes across England, Wales and Northern Ireland during 2010, an increase from 1,294 incidents occurring in 2009, according to figures published by the Association of Chief Police Officers.' [19] Scope [20] states that disabled people are often discriminated against, being 'regularly mocked, taunted, robbed, assaulted and harassed.' Yet disability hate crime remains largely invisible to the rest of society, frequently being ignored.

A poll carried out by the disability charity Scope in May 2011, found that half of the disabled people asked had experienced discrimination on either a daily or weekly basis. The figures are deplorable and further demonstrate society's absence of involvement and understanding in dealing with disabled individuals on a regular basis.

Psychological and social barriers

Physical architecture strongly influences the creation of the psychological architecture formed in our minds. Indirect physical segregation influences the way that separated individuals are perceived in society. 'Within a society individuals learn social attitudes from one another. Individual thoughts merge into a collective consciousness, displaying 'herd behaviour' at an unconscious level.' [2] Preconceptions against disabilities are often learnt through adopted social outlooks. Social media sites represent a live stream of visualised collective consciousness. Consequently, this type of media has great power to dissolve existing social barriers.

An analysis carried out by Lifchez [21] of a Louis Harris Poll identified that around 58% of abled bodied persons interviewed felt embarrassed and uncomfortable when in the presence of a person with a disability and 47% felt actual fear. These statistics further express the fact that encountering disabled citizens is not a common occurrence; perhaps, this is because of poor access acting as a barrier to public spaces, which have been designed by able bodied people, naively creating schisms which section off the disabled.

Research recently carried out by Cambridge University has discovered that 'Urban neighbourhoods with high deprivation, population density and inequality (are) found to have higher rates of schizophrenia.' [22] This is evidence that if the population density is not controlled, social inequalities will worsen, causing a negative psychological consequence amongst city dwellers. Physical spaces directly correlate with mental health issues, which have the potential to progress into physical disabilities. Segregation and isolation triggers mental instability amongst the excluded. Social and physical barriers are very closely linked.

Dr James Kirkbride of the University of Cambridge, who was lead author of the study, said: "The fact that inequity is linked to a diagnosis of schizophrenia is particularly striking. Inequalities in many Western societies are acute and rising, especially in our current economic crisis. We need to understand that our mental health is not merely a biological phenomenon, but is much more a product of how people make sense of their world. And this, in turn, is affected by social, economic and political decisions." [22]

One notes undulating reactions from able bodied strangers, when observing disabled citizens in the heart of Lincoln. They swerve from being completely ignored, to being paid unnaturally full amounts of attention, perhaps, because there is no comfortable middle ground of awareness. Swinging from two extremes illustrates how uncomfortable and inexperienced this society is in encountering people with physical disabilities which supports the argument by Lifchez (1987) [21]. This unspoken barrier can be gradually removed with social activism and campaigning. More importantly, architecture has an absolutely essential role to play in breaking these stigmas down. Our built environment interventions should be sympathetic to the needs of older people and people with disabilities. If physical barriers are broken down, then the social barriers will quickly follow suit. Once our city is built for everybody then prejudices will vanish. [2]

Designing for the 'normal' body

Up until recently, designers failed to accept wider scopes of body difference, placing the burden on the individual to 'adapt the 'abnormal' body to an environment that appeared to have evolved 'naturally' to suit 'normal' people. The solution was to design for 'special needs', thus perpetuating the distinction between mainstream society and minority groups.' [23] This segregation feeds stigmas and preconceptions that disabled people are different from the rest of society. Lawton (1974) [24] argues that the built environment can restrict accessibility options for older people. Lawton describes that 'environmental pressure' causes mal consequences on people's lives. He believes environmental pressure may render the older person more vulnerable, or more docile and accepting of environmental constraints that are induced by the necessity of dealing with environments built for younger and more able bodies.

'Handicap' is described as 'the reverse of disability'. [23] This is because it is describing disability caused by the environment, rather than one's body. It is significant to understand that 'all of us, to some degree, are handicapped, that is, none of us can control all aspects of the environments we encounter or move freely into any setting.' [23] Yet it is for the good of the entire population that the city is as accessible as possible, that the environment causes minimum amount of obstructions possible. This is suggesting that with intelligent architectural design of the built environment, one can lessen an individual's perceived disability, removing all social and physical barriers present.

Conclusion

Our world is in a constant state of change; therefore our cities must mirror, adapt and accommodate in sync with these changes. In the search of reasonable advancement in accessible design in Lincoln, incremental yet considerable investment of effort is required from all. Incremental development will mean the whole will be broken into short-term commitments and realistic expectations; the gradual offering of local ideas for local planning challenges, leading to the public good of the city.

We are all potential or actual victims of architectural and accessibility discrimination as a result of conventional building design. Therefore, cities require a heightened social awareness, expanding the boundaries of understanding, engaging citizens; realising the collective need for a more inclusive city. Once the people have addressed a widespread need, the needs will naturally begin to be met. The creation of one united, barrier-free and fully integrated space will mean that disabled citizens will no longer be unknown or rarely seen. Therefore social qualms will quickly disappear. Prejudices will only vanish once the city is built for all and is therefore accessible by all. In order for this to happen building codes, international, and local conventions all need to be strengthened and adhered to. A more accessible city will benefit everybody. The second step includes attaining political backing in order to strengthen the legislation and to make sure the theory is applied in practise. Raising awareness and knowledge within a society, as a political tool, informing stakeholders on concepts proposed for accessible spaces for all.

Lincoln and the rest of the world can look to Asian cities such as those in Japan for inspiration on what is currently being done to solve the same problem in different parts of the world. Perhaps the implementation of more readily available knowledge in the city and campaigning methods to highlight these issues is necessary.

“Barrier – free” is a theme which needs to be paid more attention by designers and architects. It is not a utopian dream to hope for an equal society, with no discrimination. We have come a long way; but we still have a very long way to go. Hence, it is now evident more than ever that the expectation that architects will design inclusively is now high on the global agenda. We need non-discriminatory designs that will facilitate security, access, equality and dignity to all, regardless of physical or mental ability. Lincoln’s beauty and history should be there for all to enjoy and appreciate. Everybody deserves equal access, within a society willing to devote enough thought and resources to ensure that disabled bodies can enjoy a normal and fulfilling life. Concomitantly, the root cause of social exclusion will be eradicated.

Finally, in the words of Mahatma Ghandi; ‘A Nation’s greatness is measured by how it treats its weakest members.’[25]

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