theory

theoretical investigation of inclusive design and accessibility

2

theory

"...people who are physically disabled, people with sensory disabilities: both hearing and sight, people with learning disabilities, people with mental illnesses, elderly people, young children, people with heavy luggage, people with dexterity problems, people with neurological problems, women who are very pregnant, people who are distracted or concentrating on something else."

(Osman & Gibberd, 2000: 25)

2.1 Introduction

The need for inclusive design as the design generator for public architecture needs to be contextualised within the theoretical realm. In order to fully comprehend what accessibility and inclusive design means within architecture, a thorough understanding of it is necessary. This chapter aims to explain the existing literature on inclusive design and related topics. It will explain the background of the problem and the prevalence of it in the South African context. The last section will explain the influence of the investigation on the design approach and the concept of **unified design** as introduced by the author.

2.2 Inclusive Design in Pretoria

Statistical data estimates that 5 to 12% of all South African citizens are moderately to severely disabled (De Villiers, 1997: i). The amount of people with disabilities in Pretoria is 20 456 people, out of a total of 525 385 people, which translates to 4% of the population of Pretoria (StatsSA, 2011). The study area of Pretoria CBD has 792 people with disabilities out of a total of 24 758 people living in the CBD (ibid). See appendix 1.

It is important to state that disability refers to a wide range of disabilities and does not only refer to persons with physical disabilities that are confined to a wheelchair (De Villiers, 1997: 1, Imrie, 1996: 1).
The South African White Paper on an Integrated National Disability Strategy (De Villiers, 1997: 2) state the main reasons for the exclusion of persons with disabilities, are the following:

- Inequalities as a result of the apartheid system
- The social attitudes of society towards a (stereotyped) disabled person
- An unspecific legislative system

"The prevalence of disability increases drastically with the onset of old age" (De Villiers, 1997: 6). Age brings impairments which range over types of disabilities that exist. In terms of the ageing community there are 37 024 people living in Pretoria that are over the age of 65; which translates to 7% of the total population of Pretoria (StatsSA, 2011). See appendix 1.

2.3 Who are people with disabilities?

The common misnomer is that all disabled people are in wheelchairs. Statistically the largest group of disabled persons are those with mobility disabilities (walking aids, walkers and crutches), followed by hearing and visual disabilities. The result is that disability in the built environment is not at all a homogenous group. The elderly and in some cases persons with HIV can be seen as equally disabled (StatsSA, 2011). Refer to table 2.1 for a summary and comparison of disabilities in the five categories identified.

2.4 Models of disability

2.4.1 Medical Model

The medical model of disability is the historical way of thinking about disabilities. This model suggests that disabled persons are ill and different from what society had defined as 'normal' (De Villiers, 1997: v). The grounds for the failing of this model are the lack of consideration of the social needs of persons with disabilities. This mentality gave way to many pejorative attitudes towards persons with disabilities and their families. Generally these persons were institutionalised where they could be cared for by 'normal' persons (Holmes-Siedle, 1996: 5). The foundation of the medical model is that those with disabilities need to be feared, as they have some form of illness (ibid).

The main consequence of the medical model is that disabled persons are cut off from society. It is a denial of basic rights like political power, education, employment possibilities and shared interest activities. See illustration 2.1.

2.4.2 Social Model

The social model of disability is the current way of thinking about disabilities. This model dates from the early 1980's when various disability movements worked together to change the 'issue of disability' to an issue of human rights. This model's premise is that disabled persons are not ill and that they need not change, but that it is society that needs to adjust (De Villiers, 1997: v; Heap, Lorenzo & Thomas, 2009: 861). The social model not only advocates that disabled persons have the same rights as the rest of society, but also that it encompasses a lot more than just a societal change, including social, cultural and political rights.

The consequence of the social model is a need for a large adaptation of the existing built environment and a big change in new developments; one that allows all persons to enjoy equal opportunities. This change has already led to many deinstitutionalisations, and the resultant community integration being more successful in caring or allowing for disabled persons (Schwarz & Brent, 1999: 6).
The significance of this model is the acknowledgement of the capabilities of disabled persons (De Villiers, 1997: 9). See illustration 2.1

2.5 The rise of Inclusive Environments

2.5.1 Barrier-free environment

Barrier-free is a concept that arose in the 1950's in European countries, Japan and the United States. Its core principle is the removal of barriers from the built environment (Fischer & Meuser, 2009: 11; Holmes-Siedle, 1996: 1). The rise of the barrier-free design paradigm arose after World War II, when many casualties from the war, were in need of specialised facilities for working and living (ibid). The term physically disabled was also first used during this period.

Even though specifically addressing the barriers in the built environment, the barrier-free concept was still separating in nature; it still had a 'special needs' approach. The focus was simply on the provision of equal opportunity for disabled persons to enjoy themselves in the same way non-disabled persons would (De Villiers, 1996: 30).

Architects and designers had to assume that "...he is designing for an 'unknown person'" (Fischer & Meuser, 2009: 16). The result was a more conscious approach to designing for disabilities. The barrier-free concept does however make no mention of the removal of attitudinal barriers in society and focussed mainly on people with mobility disabilities. See illustration 2.1

2.5.2 Universal Design

The term universal design was first used by architect Ron Mace in the United States of America. Ron Mace had polio as a child, leaving him wheelchair bound. He stated the purpose of universal design as the reduction of both the physical and attitudinal barriers that disabled persons experience. The result of universal design then, is an increased user group and a more integrated society (Imrie & Hall, 2001: 14).

A component to universal design is 'life-span design'. Life-span design refers to the design of environments that allow the occupant to stay within the architecture through various stages of his or her life (Adaptive environments, 2010).

A second component to universal design is based on human-centred design, design that has all persons and all things in consideration (Imrie & Hall, 2001: 17). According to Adaptive Environments (2010) there are seven principles that define what universal design is; the principles are the following:
- Equitable use
- Flexibility
- Intuitive use
- Tolerance for error
- Low (physical) effort
- Size and space in terms of approach
- Access to information

2.5.3 Inclusive Design

"It does not look for the lowest common denominator, nor does it attempt to reconcile the often conflicting needs of every possible minority group in society. Rather, by considering many varieties of special needs inclusive design tries to break down unnecessary barriers and exclusiveness." (Imrie & Hall, 2001: 18).

"There was a denial of disabled people's individuality and vitality" (Imrie & Hall, 2001: 28) and this was the reason for the development of the movements that were pro disabled persons' rights. This is key to the understanding of the aim of inclusive design. The aim of inclusive design is to include as many impairments and disabilities in the design process; specifically taking into consideration the individual needs of a wide variety of impairments, and how each impairment can be accommodated for. Diversity is, from the outset, the main focus (Folette Story, 2001: 10.15).

The core of inclusivity is then the change from an 'individual change' to 'societal change', it is a shift away from the specialness of disabled persons. It takes it to a next level whereby the individual assessment of the disabled and impaired person's needs are done and how these can then be accommodated in the built environment and product design (De Villiers, 1997: 79) See illustration 2.1.

2.5.4 Summary

An inclusive environment is an environment that caters for all people. It is the removal of physical (the environment) and social (attitudes) barriers within the built environment. Accessible components cannot be added but need to be an intrinsic part of the design approach.

Most literature on inclusive design is not from local publications. It has to be stressed that the South African context did not take part in the movements mentioned above. However, the South African Constitution has developed in an appropriate manner to include disabled people (South Africa, 1996: [5]).The main reason being equality rather than the three movements discussed above. The Constitution did learn from the results of inclusivity and the social model. See illustration 2.1.
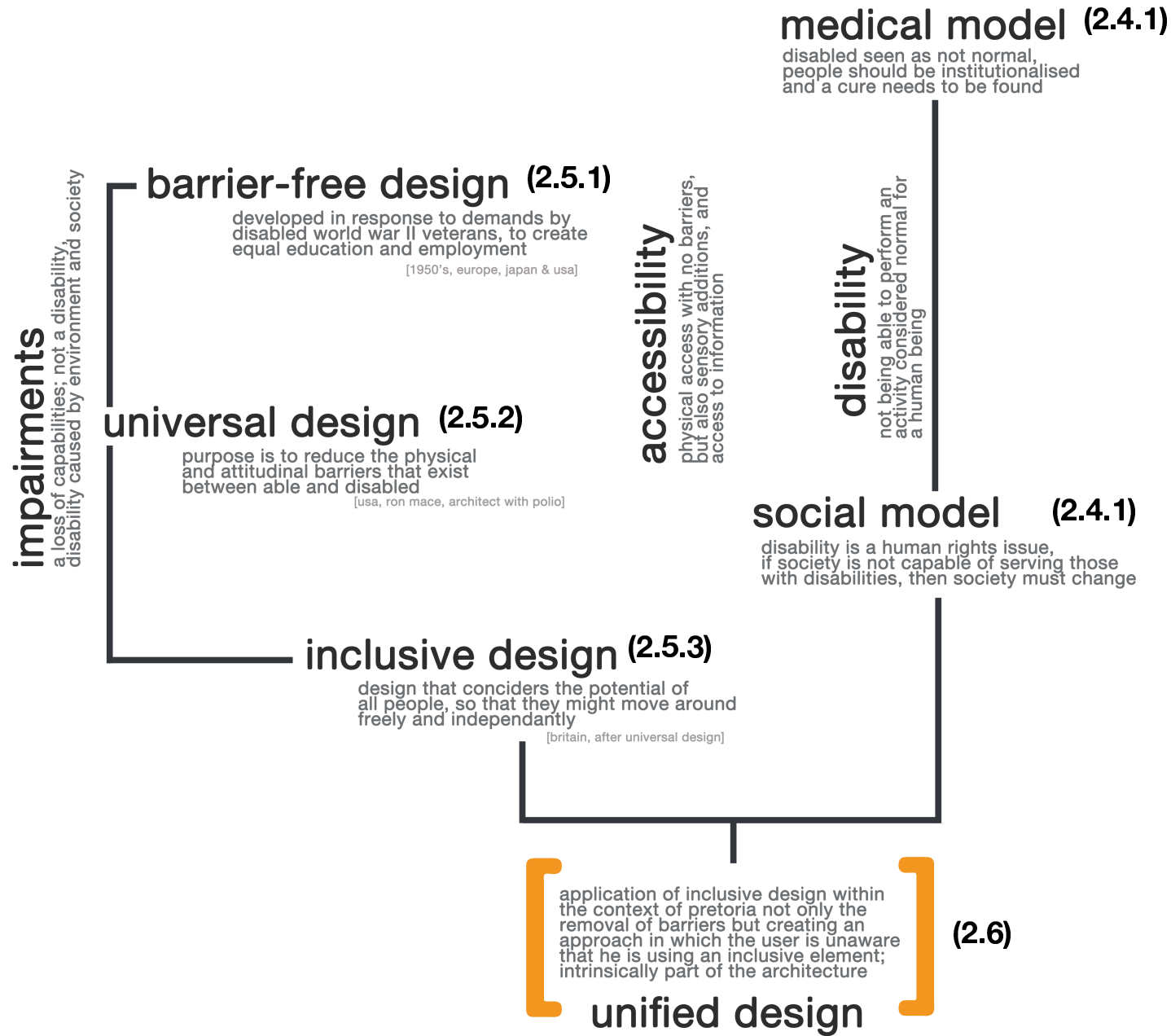
2.5.5 Inclusive Environments in South Africa

South Africa's social context is complex like most other countries (Heap, Lorenzo and Thomas, 2009: 858). Given this complex context, the importance of the constitution is devoted to the improvement of equality in the lives of all South African citizens, including disabled persons (ibid). Many amendments and new legislations were passed after democracy in 1994. Most of them aimed at the groups that had been oppressed prior to democracy; oppressed groups like black people, disabled persons and women (ibid).

Heap, Lorenzo and Thomas (2009: 857) state that the Constitution as it has been established, was written with the aid of the people that had been discriminated against. The shift that we (as South Africans) had to undergo was a shift from the 'I' to the 'we/us'. "South Africa is one of only a handful of countries to have included disability issues within their constitution" (ibid.).

The equality of disabled persons, merely the equal rights to the rights of the rest of the non-disabled persons (Heap, Lorenzo and Thomas, 2009: 858), have significantly impacted the way in which the workplace has treated them. The second place of impact is on the built environment. The impact of this on legislation is also apparent with the passing of Part S of the National Building Regulations (NBR); SANS 10400-S (Karusseit & Gibberd, 2009: 66).

Even though legislation is in place, the inclusivity in South Africa is not at the standard of Europe and the United States of America (Kotze, 2003: 376). Kotze (2003) conducted an access audit on Bloemfontein on a variety of public buildings, and concluded the following; it is clear from the audit that certain everyday factors that are unimportant to the able-bodied individual might spatially transfer people with disabilities (Kotze, 2003: 367). From Kotze's audit and his conclusions it is clear that Bloemfontein's status quo would be much the same in Pretoria and a study would in all probability yield similar results.

medical model (2.4.1)

disabled seen as not normal,
people should be institutionalised
and a cure needs to be found

barrier-free design (2.5.1)

developed in response to demands by
disabled world war II veterans, to create
equal education and employment

[1950's, europe, japan & usa]

impairments
a loss of capabilities; not a disability,
disability caused by environment and society

accessibility
physical access with no barriers,
but also sensory additions, and
access to information

disability
not being able to perform an
activity considered normal for
a human being

universal design (2.5.2)

purpose is to reduce the physical
and attitudinal barriers that exist
between able and disabled

[usa, ron mace, architect with polio]

social model (2.4.1)

disability is a human rights issue,
if society is not capable of serving those
with disabilities, then society must change

inclusive design (2.5.3)

design that conciders the potential of
all people, so that they might move around
freely and independantly

[britain, after universal design]

application of inclusive design within
the context of pretoria not only the
removal of barriers but creating an
approach in which the user is unaware
that he is using an inclusive element;
intrinsically part of the architecture

(2.6)

unified design

illus. 2.1. Diagram indicating the theoretical arguments' structure

2.6 Unified Design

"it appears highly likely that, in the next stage of development, manufacturers in 20 years time will no longer need to designate their products as 'barrier-free', because such a feature will long since have become standard." (Fischer & Meuser, 2009: 20).

The need to change the approach to architectural inclusivity is inevitable (Imrie, 1996: 2). Whether architects can be proactive in realising it remains the challenge. The design approach for the Opportunity Platform is a new approach; an approach that is exclusively inclusive and that results in unified design. Refer to Figure 3.2.
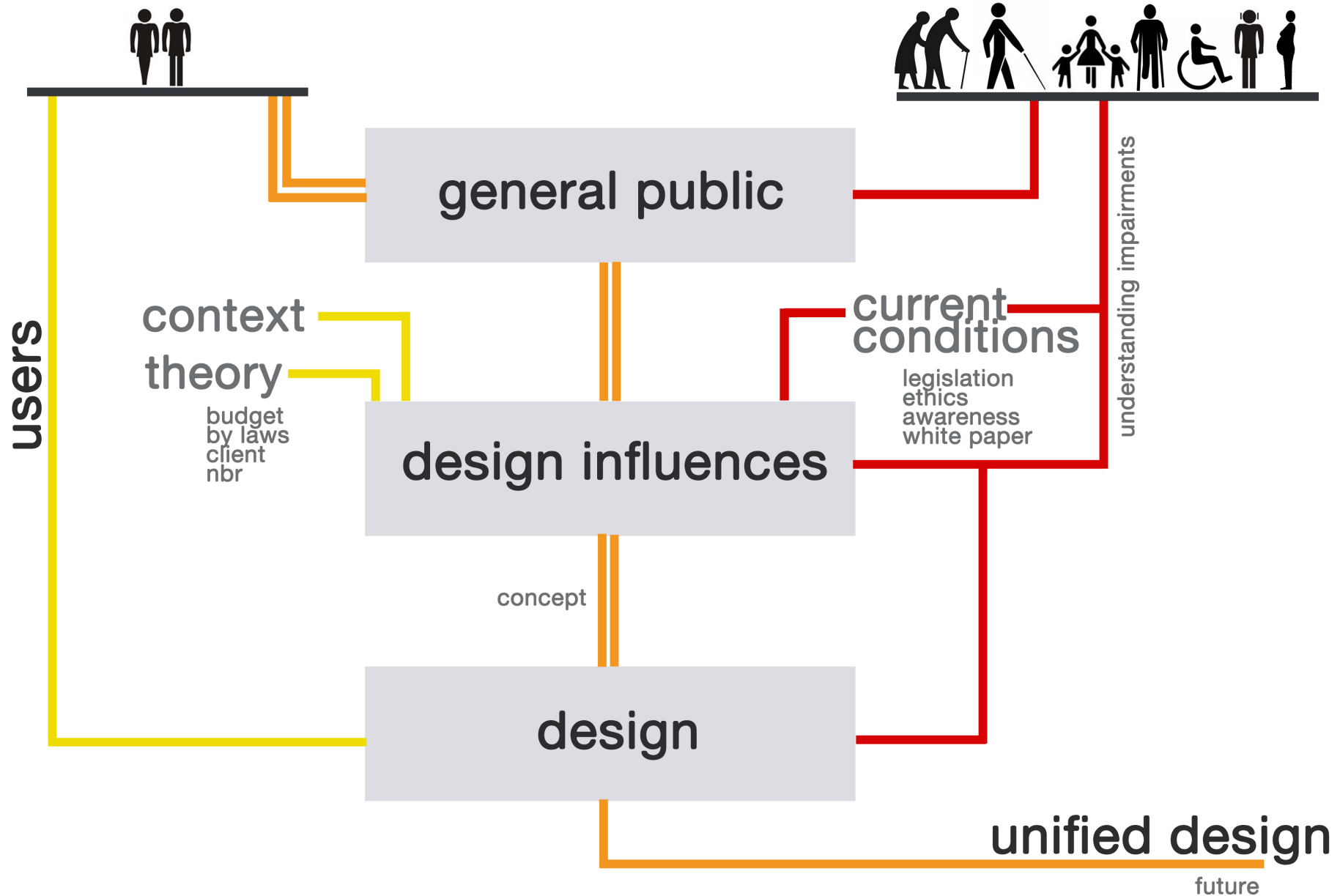
Astronomist Fred Hoyle (Lefebvre, 1991: 13) states that space is a product of energy Lefebvre makes use of this to define what he has called 'social space'. Social space is the product of social interaction, the energy of presence it defines actual space. Though he sees natural space as space, natural space is not social space until it is occupied by energy (Lefebvre, 1991: 30).

The class, and minority, struggles for representation in space, must take mass action and "take over" (Lefebvre, 1991: 56) the space they have been excluded from and change the condition of the social space. The "right to be different" (Lefebvre, 1991: 64) only has value if the difference(s) are based on real previous struggles; struggles of those who were different too, and managed to fight for presence within the social space that they were not allowed to be a part of, without having to change. This is the case with persons who are disabled (by circumstances; permanent or temporary); the fight for access is ongoing.

Lefebvre (1991) equates these struggles to an unification of the "dissociated elements", a removal of the barriers that exist in the presence of the battle. This unification can be applied specifically to the inclusivity of architecture. The way in which designers have in the past (and many still continue to, especially in South Africa) addressed inclusivity is not adequate. It can then be said that the existing codes and legislation are the start of the change, however one must be careful when comparing codes with practice.

Unified design to the built environment is an approach to architecture from the standpoint of equality. It is the way in which space to space transitions are dealt with. This approach aims to make inclusive design such an intrinsic part of the architecture that there is no awareness of it. Though the access is executed so as to include as many impaired people as possible; no exclusive disabled features are added. See illustration 2.1.

The person with the disability receives no 'special attention' due to the fact that he or she does not need it, because unified design is the foundation of the architecture. The proposed process is that of a regressive-progressive (Lefebvre, 1991: 65) manner that can alter approaches to new developments and at the same time adjust the existing neighbouring built fabric to conform to this new standard of unification. "Everyone benefits from an accessible environment to one degree or another."(Ballantyne, 1983: 3).

users

general public

context
theory

budget
by laws
client
nbr

design influences

concept

current
conditions

legislation
ethics
awareness
white paper

understanding impairments

design

unified design

future

illus. 2.2. Diagram indicating the conventional approach (double line) and the additional considerations added

	IMPAIRMENTS	BARRIERS	DESIGN AIDS	PROMINENT ASPECTS
BLIND visually impaired	limited field of vision	monotone environments	contrast; floor, ceiling, walls	monotone environments
	short sightedness	inconsistent stairs/ ramps	strategic open plan; noise association	strategic open plan; noise association
	central vision loss	overlit areas	logical layout; easy navigation	logical layout; easy navigation
	cant read small text	lack of legible signage	large font and braille signage	lack of legible signage
	complete loss of vision	intrusive elements, slippery surfaces	railings and navigation tools	railings
WHEEL CHAIR mobility disability	mobility constraints	steap and long ramp lengths	ramped access	ramped access
	not able to navigate steps	stairs and step environments	open plan; wider circulation	stairs and step environments
	not able to use standard w/c	can't reach high up	logical layout; easy navigation	both side railings and landing
	confined to chair position	uneven surfaces and bumps	accessible w/c	accessible w/c
	paralysed body functions	intrusive elements	both side railings and landings	intrusive elements
PREGNANT mother and child	mobility constraints	stairs and step environments	ramped access; low tread stairs	ramped access; low tread stairs
	not able to navigate steps	steap and long ramp lengths	open plan; wider circulation	open plan; wider circulation
	divided attention	complicated layout	logical layout; easy navigation	railings, landings and seating
	gets tired	lack of adequate landings	baby change rooms & feeding	lack of adequate landings
	can't stand for long periods	intrusive elements	railings, landings and seating	intrusive elements
ELDERLY ageing	mobility constraints	stairs and step environments	ramped access; low tread stairs	stairs and step environments
	difficulty in navigating steps	overlit areas	seating and shorter distances	seating and shorter distances
	hard of hearing; loss of sight	complicated layout	logical layout; easy navigation	
	gets tired	lack of adequate landings	contrast planes; legible signage	lack of adequate landings
	can't stand for long periods	intrusive elements, sliipery surface	railings, landings and seating	railings, landings and seating
DEAF hard of hearing	hearing difficulty	noisy areas	compartmentalising of sounds	noisy areas
	communication barriers	getting lost	signage for navigation	signage for navigation
	unable to hear alarms	difficulty in emergency situations	visual communication of emergencies	
	balance problems	uneven surfaces and bumps	hearing aids and awareness under occupants	uneven surfaces and bumps
	sign language difficulties	intrusive elements	railings and landings	railings and landings

◉ COMMON FACTORS   ▨ MOST IMPORTANT

table 2.1 Assessment of users' needs, most important highlighted and common factors indicated

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