My Other Eyes that See,
My Other Ears that Hear

by
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A thesis
presented to the University of Waterloo
in fulfillment of the
thesis requirement for the degree of
Master of Architecture

Author's Declaration

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Abstract

Disability is a part of the human condition and has existed since the beginning of time, yet the vast majority of people with disabilities are still expected to live in a built environment designed for what society has designated as the human 'norm'. This has created a built world that is actually contributing to disablement. The past twenty years has seen many positive changes in terms of removing physical barriers to those with disabilities, in particular allowing wheelchair users much better access to buildings and participation in society. However, wheelchair users only represent a fraction of people with disabilities. Current standards of accessible design address only the direct barriers to participation, and do not attempt to understand the ways in which impairments change how people experience and use space, or the social implications of disability. Negative attitudes towards disability are one of the causes of disablement in our society, and changing them needs to be part of the solution.

Architecture has been used for millennia as a means of communicating with the masses because our surroundings can shape our perceptions of the world and how we understand it. This thesis explores the origins and nature of both disability and the service dogs that accompany a number of those with disabilities, and proposes possible approaches for designing for service dogs and people with disabilities that use the power of architecture as a language to transform the societal constructs surrounding disability.

Working dogs of all varieties are increasingly present in our built environment, from detection dogs to therapy dogs and potentially even to cancer detection dogs in the near future, and service dogs are increasingly becoming a part of the lives of people with disabilities. Trained to mitigate the so-called 'impairment effects' of a variety of disabilities including autism and epilepsy, these special dogs make invisible disabilities visible. As such, they are a key part of a broader architectural strategy of inclusiveness that aims to accommodate and facilitate the dog-human partnership and normalize the existence of disability in our society.

The thesis culminates in the design of a new service dog training facility for the Lions Foundation of Canada Dog Guides in Oakville, Ontario. This national organization trains six different kinds of service dogs, and trains future service dog handlers along with their new dogs at their Oakville site. As a source of one of the most symbiotic partnerships between human and dog, the thesis seeks to demonstrate how through inclusive design a building can essentially eliminate the disablement imposed by society and change our perceptions of disability and the role that architecture can play in these issues.

Acknowledgements

I must first thank my supervisor, Rick Haldenby, who supported this thesis right from the start, and whom I relied on for guidance when I was not sure which path to follow and encouragement whenever I had doubts. I have truly enjoyed the opportunity to work with you.

I also thank John McMinn, in particular for his contributions as studio instructor in the very first stages of this thesis, where he encouraged me to expand my horizons and look at the broader implications while staying true to my interests. His words stayed with me and significantly shaped how I approached the later work.

Thank you to Andrew Levitt, for his insights, commentary, and for his general support of this project.

My external reader, Barbara Miszkiel, was the perfect addition to my committee and I thank her for her valuable commentary during the defence.

Thank you to Val Rynnimeri, whose Ecosystems course gave me the opportunity to approach the research from a different angle.

I would also like to thank Sandy Turney for her willingness to help with this project, providing me with both information and access to Lions Foundation of Canada Dog Guides and Sam Hobbes for information related to the puppy program. I would also like to thank Diane Bergeron for taking the time to answer my questions.

The foster families and my fellow graduates from Lions Foundation of Canada Dog Guides have shown their support for this project in a number of ways and deserve thanks. A special thank you to those who participated in the survey, allowed me to share their stories, and contributed photos to this thesis.

Thank you to Sam, who listened to me while I talked out my thesis issues and offered advice, and for being a resource for any technical/formatting questions I had. Thank you to Justin, who volunteered himself as my editor, and brought any errors he found to my attention before there was no longer an opportunity to fix them. Thank you to Erin, for her support and interest in the project and all the conversations we had about it.

Thanks must also be given to Tilley; though she will never read this, she has been my constant companion for all of it and got me to leave the basement at least once per day.

And finally, thank you to my family for your love, patience, support, and the provision of meals in the final months.

For Tilley, my other ears that hear, because our journey together was the inspiration for this thesis

and

To the Lions Foundation of Canada Dog Guides and everyone who is involved in what they do

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Foreword

This thesis grew out of personal experience, as so many of them do. I was inspired by the process I underwent to obtain a Hearing Ear dog from the Lions Foundation of Canada Dog Guides, which involved nearly two weeks spent training at their facility in Oakville. It was such a life-changing experience: I went in alone, not sure what to expect, and emerged with an amazing canine partner and four new friends, strangers from different stages of life and different backgrounds who were connected by hearing loss and their decision to work with a dog guide. I wanted to do justice to that experience architecturally.

As time went on and I adjusted to navigating the world with a dog by my side, it became obvious that buildings could be much more inclusive to service dog teams. The stay at Lions Foundation of Canada had opened my eyes to all the amazing things service dogs could do to mitigate many different disabilities, yet this relationship was not being recognized or facilitated in design. In 2008, the Lions Foundation trained only four types of service dogs; now, in 2014, they train six different types. That still doesn't include every type of service dog that can be trained, nor does it include other types of working or support dogs that have jobs that involve helping humans in some way. A job that involves helping humans by extension generally means working in a human environment.

I was also very much aware, as I have been for a long time, of the narrow focus of accessibility in buildings. As a person with a severe hearing loss, I have long been frustrated by unhelpful amplification systems in theatres, unusable self-guided tour systems at museums and art galleries, overwhelming 'background' music in restaurants that succeeds in drowning out or muddling all conversation, and extremely poor acoustics in buildings that make it difficult to hear anything at all. It was clear to me that accessibility strategies had not taken into consideration the lived experience of disability: how people with disabilities see and use the built world.

I feel that building accessibility is often seen by architects as an inconvenience, something that limits design creativity, but is necessary and so we make sure to check the required boxes and do not give it any thought beyond that. Most architects rely on the minimum standards provided to them and assume that these will solve the problem of accessibility for people with disabilities. This sort of thinking is a symptom of a larger societal problem: a fear of what is different, that results in the stigmatization and marginalization of people with disabilities.

This thesis considers all of these issues. I have tried to respect the diversity of experience when it comes to disability in this text, and will point out that disability is highly individual and it is impossible to represent that breadth here. Instead, my goal is to encourage empathy and a desire to understand the world from the perspectives of people who may see it differently than we do. I hope that my readers will learn as much from this thesis as I did in writing it.

Introduction

"Let me offer as moral fable the short English film that ran on television quite some time ago, which shows an everyday world organized and built for human beings who are all in wheelchairs. Then the day comes when a man is born, able to stand on his own two legs. He bumps into the transoms of doorways, gets around with difficulty on ramps not meant for walking, and so on. Then a series of malformations of this kind appear. Specialized associations for remedial education, retraining, accessibility issues, are consequently created, of course without anyone thinking about changing the basic assumptions of this society of the legless."[1]

- Henri-Jacques Stiker, A History of Disability

"He is my other eyes that can see above the clouds; my other ears that hear above the winds. He is the part of me that can reach out into the sea. He has told me a thousand times over that I am his reason for being; by the way he rests against my leg; by the way he thumps his tail at my smallest smile; by the way he shows his hurt when I leave without taking him. (I think it makes him sick with worry when he is not along to care for me.) When I am wrong, he is delighted to forgive. When I am angry, he clowns to make me smile. When I am happy, he is joy unbounded. When I am a fool, he ignores it. When I succeed, he brags. Without him, I am only another man. With him, I am all-powerful. He is loyalty itself. He has taught me the meaning of devotion. With him, I know a secret comfort and a private peace. He has brought me understanding where before I was ignorant. His head on my knee can heal my human hurts. His presence by my side is protection against my fears of dark and unknown things. He has promised to wait for me... whenever... wherever – in case I need him. And I expect I will – as I always have. He is just my dog."

- Gene Hill, Tears and Laughter

Overcoming Disability

At its heart, our conception of disability comes from the way that we understand the world: through our physical surroundings, our language, mass media, and our personal experiences. We are born open-minded and non-judgmental, and it is our society that teaches us that some people are normal and others are not, and places value on these distinctions. To a child, all of humanity is equal. Disability is perceived by most people as a problem, an abnormality, a tragedy, or something that should be prevented. In the unfortunate case that it does happens, it is something that needs to be cured. A person with a disability is considered to be somehow less than a whole person, and we must put accommodations in place for them to succeed in the world.

This viewpoint evolved from medical, moral, and religious views of disability. The medical model is based on identifying a deficit within an individual, which, as Arie Rimmerman points out, "imposes on the person with the disability the main responsibility for his/her mainstreaming and integration into society."[2] The moral/religious model views disability as a personal tragedy, where the individual has been chosen by God to cope with this disability.[3] Even people with disabilities themselves may hold this view of being 'chosen', and take comfort in knowing that it is God's will.[4]

Both the medical and religious models fail to consider environmental and social barriers that can have a serious effect on the quality of life of people with disabilities.[5] Mike Oliver thought that disability "as a category can only be understood within the framework which suggests that it is culturally produced and socially structured."[6] The social model of disability considers disability to consist of environmental, structural, and attitudinal barriers which prevent people with disabilities from full inclusion.[7]

However, this fully social approach to disability is not entirely accurate either, since some disabilities, such as chronic pain, are internalized and individual. One could argue that there are aspects of every disability which are internalized, and so it becomes evident that the true model of disability is probably a hybrid of medical and social. However, even if changes to the physical environment will not directly help a person in chronic pain, the attitudinal shift that could occur as a result of such changes would at least be more accepting and respectful of individual limitations.

Architecture is a language of mass communication. Our surroundings can shape our perceptions of the world and how we understand it. Because the built environment is part of how we understand the world and our place in it, architecture has the power to effect massive change by normalizing the existence of disability and demonstrating the variance within humanity. Currently, the method of enacting change in the circumstances of those with disabilities is to provide them with legal protection. The problem is that people do not see the law as an experience of the world, but as a series of rules that must be followed in order to be a participant in it – and rules change the fundamental perceptions of no one.

Eventually, perceptions may change if the law results in changes to what people experience, but the whole process is reactionary. In the case of anti-discrimination laws, discrimination was a problem, so the law now prohibits it, but we still encounter discrimination because the law could not change the underlying cause in those who were prone to discriminate.

Architectural policy has, to some degree, already effected this kind of change. By requiring certain accessibility standards in buildings, people have become accustomed to them. The existence of a large, wheelchair-accessible stall in a public washroom has become part of the public expectation. It is now abnormal to be in a facility which does not have one. However, barrier-free architectural policy is still reactive and is only created in response to a need that forces change.

Accepting Service Dogs as Part of the Solution

Service dogs are becoming an increasing presence in our modern world. While working dogs are certainly not new, historically they worked as herders and hunting dogs, and therefore their presence in our physical built environment would have been limited. Nowadays, dogs have been integrated into our families and most of them live with us in our homes. They not only live in the country, but can live with their human partners in the city, riding the elevator in an apartment building and taking walks on city streets. Working dogs – service dogs in particular – have an even deeper integration into human life, as they accompany their handlers almost anywhere, providing safety and companionship in a world that is designed for a very specific type of human; one who fits society's definition of what a human being should look like, and one who is certainly not dependent on a dog.

The reality is that the presence of dogs in our buildings will probably only increase. Aside from their popularity as pets and companions – which in themselves create a demand for animal-specific architecture such as veterinary hospitals, animal shelters, rehabilitation centres, and play areas – the number of tasks they have been proven capable of performing to aid humans is only ever increasing. We have all heard of canine vision dogs, who assist their visually impaired humans in navigating the built environment; bomb-sniffing dogs who can lead their handlers to hidden explosives; rescue dogs who can find people who are lost or trapped; and maybe even service dogs who assist those with mobility impairments. Less commonly known, perhaps because many of them are more recent additions to the service dog roster, are hearing dogs who assist the deaf and hard-of-hearing; seizure response dogs who can help a person who is having a seizure; autism assistance dogs who can work wonders for children with autism; diabetic alert dogs who can alert a diabetic with hypoglycemic unawareness to sudden and life-threatening drops in blood sugar; psychiatric service dogs who are trained to calm someone who is having an anxiety attack; and even cancer-sniffing dogs, who are detecting a variety of early-stage cancers with amazingly high accuracy rates.

So how are these dogs being accommodated architecturally? For the most

Assistance dogs allowed

part, they are not. Currently, design for animals is really about designing for their human caregivers, and even that level of consideration is only for animal-specific programs such as animal shelters. Service dog handlers are left to their own devices to figure out how to navigate human-only buildings with a dog, and hope that current barrier-free requirements provide enough space to maneuver, even in situations where the handler has both a wheelchair and a dog. Play spaces for off-duty service dogs are virtually non-existent, and no architecture – animal-specific or not – seems to give any consideration to developing and maintaining the special bond between dog and human.

The Proposal

This thesis will look in depth at the history of the dog-human partnership and of human disability, and then attempt to understand how both dogs and people with disabilities experience the world, and by extension, the built environment, differently than the normative human. I will then try to identify a set of specific architectural ideas to accompany and or facilitate these experiences.

The culminating design proposal will seek to actively engage the user group in identifying and proposing barrier-free strategies for application in a service dog training facility. By designing specifically for a range of disabilities that can be mitigated by a service dog, the building would become a prototype for a universal community, attempting to remove the physical barriers created by the negative societal constructs surrounding disability.

Terminology

The term *service dogs*, or *assistance dogs*, is used in a broad sense to refer to all dogs that have a job assisting a person with a disability.

Working dogs may refer to the dogs that worked in traditional roles (still prevalent in some places), such as sheep herders or gun dogs, or it may refer to the dogs that work in modern jobs such as K-9 police officers and search-and-rescue.

Working breeds refers to dog breeds that were developed to suit the traditional roles of dogs (sheep herders, gun dogs, hunting dogs, etc.).

A *Canine Vision Dog (CVD)* is a dog that has been trained to assist a person who is blind or visually impaired.

A *Service Dog (SSD)* is a dog that has been trained to assist a person with a mobility impairment (usually combined with a medical disability) by fetching things, opening doors, and barking for help, among other tasks. Not to be confused with the general term *service dogs*.

A *Hearing Ear Dog (HED)* is a dog that has been trained to assist a person who is deaf or hard-of-hearing.

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A **Seizure Response Dog (SRD)** is a dog that has been trained to assist a person who is having a seizure by barking for help or activating an alert system.

An **Autism Assistance Dog (AAD)** is a dog that has been trained to assist a child with autism.

A **Diabetic Alert Dog (DAD)** is a dog that has been trained to alert a diabetic with hypoglycemic unawareness to sudden and life-threatening drops in blood sugar levels.

Illness refers to "a biomedical categorization."[8]

Impairment refers to "a functional limitation"[9] which could apply to "a limb, organism or mechanism of the body."[10] I avoid using this term in reference to the Deaf, deaf and hard-of-hearing populations, as the term is considered by many within these groups to be quite offensive.

Disability is a term that specifically refers to the social experience of having an **impairment** or an **illness**. It refers to "experiences of inequality due to physical and social barriers within society."[11]

Disablism, which may also be referred to as **ableism** "refers to the *social* imposition of *avoidable restrictions* on the life activities, aspirations and psycho-emotional well-being of people categorized as 'impaired' by those deemed 'normal'. Disablism is *social-relational* in character and constitutes a form of *social oppression* in contemporary society - alongside sexism, racism, ageism and homophobia. In addition to being enacted in person-to-person interactions, disablism may manifest itself in institutionalized and other socio-structural forms."[12]

Impairment effects is a term coined by Carol Thomas to describe "the *direct* and *unavoidable* impacts that impairments (physical, sensory, intellectual) have on individuals' embodied functioning in the social world. Impairments and impairment effects are always biosocial in character, and may occur at any stage in the life course."[13]

1   Stiker, Henri-Jacques. 1999. *A History of Disability*. Translated by William Say-ers. Ann Arbor: The University of Michigan Press, 10.

2   Rimmerman, Arie. 2013. *Social Inclusion of People with Disabilities: National and International Perspectives*. New York: Cambridge University Press, 28.

3   Ibid., 24.

4   Ibid., 25.

5   Ibid., 27.

6   Oliver, Mike. 1990. *The politics of disablement*. London: MacMillan, 22.

7   Rimmerman, Arie. 2013. *Social Inclusion of People with Disabilities: National and International Perspectives*. New York: Cambridge University Press, 32.

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The History of Disability

Before we can begin to contemplate future solutions for disability, it is important to understand the past. Disability has existed as long as humans have, but its perceived relationship to humanity has been constantly changing. I believe that the past has value in considering our next approaches, and so what follows is a brief history of disability, from antiquity to present day.

In Antiquity

In Athens, Sparta and early Rome, the practice for dealing with deformed infants was exposure. The births were considered to be both the result and the cause of divine anger and signified the possibility of misfortunes, so it was not seen as an execution but as a sacrifice to the gods.[1] The decision to expose an infant was usually made by the state, with the parents of the child having no say in the matter.[2] The rationalization for exposure is religious and it is only later that eugenics, first discussed by Plato and Aristotle,[3] enter the picture: the religious fear of condemnation by the gods evolved into a fear that mixing the blood of the deformed with the rest would threaten the continuation of the species.[4]

Aristotle and Plato were the first to mention eugenics, which was really a reflection the way Greek society functioned:

> "The Greeks viewed reality as consisting of physical, mental and social well-being, and separated the good from the beautiful and individual value from submission to the community. It was imperative that they accepted the idea of eugenics as a reflection of their views about the state, both referring to the city-state's need from healthy citizens to form an elite ruling class and army."[5]

By having a society that placed more valued on its able-bodied citizens by necessity of its structure, those that did not conform were by default considered less valuable.

It is important to note that disability in Greco-Roman antiquity had essentially two classifications: there were those who were deformed, and those who had a weakness or illness. Blindness, deafness, and intellectual disabilities were considered illnesses, but were not considered deformities: "sensory disruption was not connected with physical malformation."[6] In fact, the ancient Greeks held the belief that the blind "could develop exceptional sensory perception and insights. Aristotle thought that the blind remembered better, being released from having their faculty of memory engaged with objects of sight."[7] It was congenital malformation that was "the sole source of religious terror and the reason for fatal exclusion,"[8] particularly in Greek antiquity.

Though the Romans did marginalize people with disabilities and in earlier days practiced infanticide by exposure, they were also the first to offer legal support to people with disabilities:

> "Early Roman law protected the property rights of people with intellectual disabilities, offering them guardians to assist and manage their

The History of Disability

< Fig. 3.2 - This
Palma Giovanni
painting depicts
Jesus healing
the paralytic at
Bethesda

affairs. This important law authorised deaf people capable of speech to integrate into civic and social society. They could get married, own property and make decisions about their personal and economic life. Later Roman law was even more progressive as the Justinian code classified persons with disabilities according to the severity of their disability. This piece of legislation became the infrastructure of law in most European countries from the sixth to the eighteenth century."[9]

Judeo-Christian Views on Disability

In the Judeo-Christian tradition, suffering and infirmity were understood to be consequences of the Fall: mortal weaknesses were evidence of human separation from a perfect God. This principle is pictured most starkly in the Levitical Code given by Moses, where priests who were diseased or deformed were not allowed to make sacrifices at the Altar.[10] Because of their link to sin, they could not be considered to have a part in God:

> "Sin and defect deny the disabled a religious role, but they introduce an ethical and social imperative. The person who is so tried is not condemned, even if the religious signification that he bears dooms him to a very precise and circumscribed form of exclusion."[11]

From the beginning of his ministry, Jesus emphasized that he had come to heal the sick, blind, deaf, and oppressed both spiritually and physically,[12] reversing the effects of the Fall. He rejected the popular idea that disabilities were due to an individual's sins, or sin in that person's family history,[13] teaching instead that the weak and marginalized would be first in the Kingdom of Heaven.[14] Christ's parable of the Wedding Feast, representing the afterlife, identified the lame, the blind, and the weak as honoured guests.[15] His attitude encouraged a more compassionate response towards the disabled among the followers of the Christian faith.

The Middle Ages and the Renaissance

The view of disability during the Middle Ages is contradictory. Persons with disabilities were portrayed as "demons involved in witchcraft, but also as pitiful and in need of mercy and charitable services."[16] Reflecting their interpretation of Christianity and fear of monsters, "the most prevalent belief was that people with disabilities were supernatural, devils and witches. In this context, epilepsy, as well as psychotic episodes, was perceived as curable by exorcism and religious rituals."[17] Malformations were seen as a consequence of poor morals: if you did something wicked, you could end up that way too. The disabled were a warning against immoral behaviours.[18]

In synchrony with the demonization and fear of those with disabilities, churches arranged shelters for these people until they could be cured.[19] By the 12th century we began to see an organizational response to society's marginalized people in the form of quarantines for those with leprosy, and the 13th century saw

COUNTY INSANE ASYLUM.

Germany opening the first asylums.[20]   These institutions, however, had the true purpose of protecting the community, not the disabled individuals.[21]

The Renaissance was a rebirth that saw substantial change in the status of people with disabilities:

> "This progressive period shaped the relationship between humans, society and God, and called for the provision of special care for people with mental illness, epilepsy, and sensory impairments. However, institutional response reflected the values of the time and offered only segregated care, remote from society."[22]

In 1606, Francis Bacon published *The Advancement of Learning*, which contributed to the medicalization of disability and led to the "placement of people with intellectual and psychiatric disabilities in segregated institutional facilities."[23] Thus began the rise of institutionalization in Europe and North America.

The Rise of Institutionalization

The rising popularity of institutional care as solution for people with disabilities has roots in urbanization and manufacturing:[24]

> "Ancient Greece taught us that the economy played an important role in making the distinction between people with disabilities who could be self-sufficient and live and those who would be eliminated. In this context, pre-industrial and feudal times were agricultural and could accommodate people with disabilities. Industrialisation marginalised people with physical disabilities because they could not fit into the regulated factory production system."[25]

The general agreement is that the early motivations for institutional care were paternalistic, with the view that people with disabilities "could be educated if they were placed in the right environment."[26] Programs started to be provided in segregated institutional settings in the 19th century, including schools for the blind, the deaf, and those with intellectual disabilities.[27] In the US the emphasis was similarly on education,[28] while "Developments in Canada were influenced by trends in both England and the United States," though the 'educational phase' was mostly absent in Canada.[29]

In Canada, policy and asylums for both people with mental illnesses and intellectual disabilities were provincial responsibilities. However, asylums for people with intellectual disabilities were placed in more rural areas, "beyond the reaches of large Canadian urban centres."[30] The first and largest of these facilities was opened in Orillia in 1876. An article about the Orillia asylum in the Toronto Globe and Mail from March 1937 wrote that "few of the inmates have any direct contact with the outside world. They have ceased to be citizens and have lost the ordinary privileges of citizens, and unless they have faithful personal friends no one is interested in them individually."[31]

The History of Disability

WHAT WE PAY FOR THE FEEBLE-MINDED IN ONTARIO

1. For house rent, firing, furniture, food and clothes, medicine and medical attendance and nursing and care, while they do nothing for themselves.

Because they are maintained by night and day in hospitals, houses of refuge, refuges, orphanages, havens, rescue homes or by patriotic, benevolent, church and other societies, and municipalities and private persons, so that they shall not starve.

2. For the care of their children, largely illegitimate.

Because they have on average twice as many children as normal people.

3. For enforcement of law and order and the care of them in prisons, and the cost of trials and all other legal and judicial processes.

Because they are continually committing crimes over and over again.

4. For the consequences of their crimes.

Because they burn houses and barns, wreck railway trains, commit indecent assault and commit murder.

5. For the constant supervision of them in respectable homes.

Because it takes one good citizen's time to care for one mentally defective person in a home.

6. For the moral damage they do.

Because they harm and corrupt others with their evil ways, and are a temptation to others, and centres of immorality.

7. For the national and social unhappiness, degradation and deterioration they cause.

Because they bring into being unfit and foolish citizens, and thus pass on to coming generations the curse of Feeble-Mindedness.

8. For the loss of happy home-life, the great security of national and personal well-being.

Because the normal children are really deprived of the mother's care – she must give all her time

< Fig. 3.5 - Chart
from 1914 show-
ing the costs of
intellectual dis-
ability in Ontario

While institutionalization may have started out with the intention of educa-
tion, "Later in the nineteenth century…arguments became much more exclusion-
ary in tone."[32] Much was made of the 'social cost' of disability:

> "A rhetoric of cost and cost efficiency, expressed by state and medical
> authorities, provided a structure to how mental deficiency was per-
> ceived. Fluctuating between a polarity of worth and worthlessness,
> structured by cultural, moral and social judgements and related to the
> social dangers of pauperism, delinquency, drunkenness and criminal ac-
> tivity, the 'mentally deficient' and 'feebleminded' posed a problem that
> was largely economic. They were unproductive as a class, a disturbance
> to home conditions, and a burden to the public purse."[33]

This sort of rhetoric was the basis for the eugenics movement of the twentieth
century and one of the most disturbing periods in the history of disability.

The Modern Era and the Eugenics Movement

*"But disease, death, and monstrosity certainly come together at one point: in the
desire to kill. We should not hide from the fact that major disability, especially
mental, generates such an urge to make it disappear that it must be called by its
name."[34]*

- Henri-Jacques Stiker, A History of Disability

Eugenics is the idea of improving the gene pool of the human species. The
concept of eugenics had been around since the time of Ancient Greece, but never
had it been implemented with such widespread organization and effectiveness as
during the twentieth century. The rationale behind it was that impairments, and
the social, moral, and physical problems that they caused, were responsible for
contaminating the gene pool:

> "Strong, intelligent, useful families are becoming smaller and small-
> er. Irresponsible, diseased, defective parents, on the other hand, do not
> limit their families correspondingly. There can be but one result. That
> result is race degeneration."[35]

The solution, it was felt, had to be controlled breeding. The following is from a
'Report respecting feeble minded in Nova Scotia', which was submitted to the
Lieutenant Governor of Nova Scotia by the Provincial Secretary:

> "We may reasonably assume that this condition is responsible for a very
> considerable share of pauperism, illegitimacy, vice and crime which exist
> in our Province, and we are aware that the defect is one which is singu-
> larly prone to be transmitted from parent to child. It would therefore,
> seem reasonable that from the economic, as well as from the moral and
> sociological points of view, a strong effort should be made to limit the
> multiplication of this unfortunate class."[36]

The History of Disability

Mental defectives who are sterilized may marry and lead satisfactory lives.

Often they may become reasonably self-supporting if they are spared the responsibility of parenthood —

Selective Sterilization

also protects children

for no child should be born to subnormal parents — denied a fair, healthy start in life — or doomed from birth to a mental institution.

Täglich RM 5.50 koſtet den Staat ein Erbkranker

für RM 5.50 kann eine erbgeſunde Familie 1 Tag leben !

RM 5,50

RM 5,50

48

24

Intellectual disabilities (prostitutes were sometimes considered to fall into this category[37]), mental illness, and criminality were the primary focus of eugenics programs, and since it concerned reproductive matters, women were especially targeted.[38]

The most popular means of preventing "race degeneration"[39] and which had "the most widespread legal mandates in the United States, was eugenic sterilization. The first sterilization law was enacted in Indiana in 1907, and for twenty years another twelve states passed their own eugenics laws."[40] There were more than 65,000 forced sterilization surgeries in the United States from 1907 until at least 1979.[41]

In Canada, though there was much debate about it, forced sterilization laws were only implemented in two provinces. Forced sterilization was executed legally in Alberta from 1928 to 1982,[42] and for a similar period of time in British Columbia.[43] These laws were not seen as interfering with the rights of the individual because rights "carry with them the responsibilities of using these intelligently and in the interests of society as a whole. Mental defectives are incapable for the most part of exercising self-discipline in sexual matters."[44] Alberta's law resulted in the sterilization of 2800 people.[45]

The United States was regarded as being at "the forefront of the study and implementation of eugenics,"[46] and their forced sterilization programs became a partial basis for the eugenic policy of the Nazis:[47]

"Throughout the 12 years in which the Nazi party held power in Germany, National Socialists, political, civil, and medical authorities targeted individuals suffering from hereditary and congenital diseases, persons with disabilities, and institutionalized patients, for discrimination, anti-natal measures, and even for death."[48]

The Nazis implemented compulsory sterilization in 1933 for a variety of psychiatric, neurological, and physical conditions including bipolar disorder, hereditary epilepsy, intellectual disabilities, severe alcoholism, congenital blindness, congenital deafness, and serious physical deformity.[49] By the end of the Nazi regime, over 400,000 people were forcibly sterilized under this law.[50]

Hitler didn't stop there. The T4 Euthanasia Program was initiated in 1939, and was the "first campaign of mass murder" for the National Socialist regime:[51]

"'Defective' children were removed from their families and taken to 'hospitals', such as the Hartheim and Hadamar, 'euthanasia' killing centres where the exterminations were carried out. The program was expanded to include adults to prevent any 'deficient' member of the German 'master race' from breeding so they could not pass on their 'inferiority'."[52]

The extermination 'hospitals' contained the first gas chambers, built before the Holocaust. Most of the victims of these first gas chambers were adults and were

The History of Disability

60 000 RM

koftet diefer Erbkranke die Volksgemeinfchaft auf Lebenszeit

Volksgenoffe das ift auch Dein Geld

Lefen Sie

neues Volk

Die Monatshefte des Raffenpolitifchen Amtes der NSDAP

suffocated with carbon monoxide. Children were usually killed by lethal injec-
tion. Many patients marked for extermination were killed by starvation.[53] The tar-
gets of the T4 program were almost exclusively institutionalized patients:[54] people
with mental illness, intellectual disabilities, and severe physical disabilities. While
people with sensory disabilities such as blindness or deafness were not specific-
ally targeted, deaf individuals who were not capable of speech were sometimes
erroneously categorized as intellectually disabled and were murdered as well.[55]

The Nazi state attempt to conceal this program, but it soon became an open
secret.[56] Like the program of compulsory sterilization that preceded it, the T4
program was very unpopular with the general public. Churches and relatives of
victims also resisted, which slowed the killings and increased the secrecy of the
operation.[57] The program never completely stopped, however. As Dr. Patricia
Herber, a historian at the Center for Advanced Holocaust studies states:

"Employing drug overdose and lethal injection as a more covert means
of killing, the murderous machinery of Operation T4 continued to claim
victims at a number of custodial institutions throughout the Reich until
the arrival of Allied troops in the spring of 1945. In all, historians es-
timate that some 200,000 to 250,000 institutionalized mentally and
physically handicapped persons were murdered under the Euthanasia
Program and its corollaries between 1939 and 1945."[58]

Even there, it did not end. Because negative eugenics was normal policy and
common in many places during that time period, German authorities would not
consider forced sterilization a crime and so refused to compensate the victims of
sterilization for their suffering.[59]

Disability and Civil Rights

The latter half of the twentieth century saw significant changes in main-
stream attitudes towards people with disabilities in the United States. In the
1960s, the civil rights movement encouraged people with disabilities to organ-
ize themselves. In 1973 they were successful in getting a revised Rehabilitation
Act passed, which included civil rights language for people with disabilities.[60] The
Individuals with Disabilities Education Act, passed in 1990, "called for a free and
appropriate public education for every child with a disability to be delivered in the
least restrictive and most integrated environment appropriate."[61]

In 1990, the Americans with Disabilities Act (ADA) was enacted, which finally
granted people with disabilities broad civil rights. As Rimmerman states:

"This landmark federal antidiscrimination law ensured equal access to
employment opportunities and public accommodation for people with
disabilities. With this act, Congress identified the full participation, in-
clusion and integration of people with disabilities into society as a na-
tional goal."[62]

Countries such as the United Kingdom, Australia, Canada, and Israel followed

The History of Disability

THE MOST **FUNDAMENTAL RIGHT** OF **PEOPLE** WITH **DISABILITIES** IS "THE **RIGHT** TO **LIVE** IN THE **WORLD.**"

- Dr. Jacobus Tenbroek, National Federation of the Blind

DISABILITY RIGHTS OREGON

suit with their own anti-discrimination laws, but "there was a significant gap between the innovative legislation and the current values, environmental barriers and social welfare policies."[63]

The United Nations Convention on the Rights of Persons with Disabilities (UN CRPD) was a landmark international development that "[acknowledged] equality, dignity, autonomy, independence, accessibility and inclusion as the keys to ensuring that people with disabilities are able to fully realize equal citizenship in the world."[64] Since coming into force in May of 2008, it has become "one of the most ratified treaties in the human rights system,"[65] and will hopefully result in further improvements for people with disabilities worldwide.

Present Day and the Importance of Remembering

"The regulatory regime emerging within the Canadian state is perhaps best characterized as one of enforcing increased socio-spatial marginalization of the disabled (an apartheid ableism), disciplining the demands of the disabled upon state resources, and increasing employment incentives (for all those receiving state income support, including the disabled). This is an extremely ableist regulatory regime: providing special benefits for disabled persons able to secure and hold jobs, and prioritizing the well-being of able-bodied and relatively affluent citizens (e.g., through major tax cuts) over the needs of disadvantaged groups."[66]

- *Vera Chouinard,* Mind and Body Spaces: Geographies of Illness, Impairment and Disability

With the advent of advanced medicine, the nature of disability has changed from being something experienced by a select group of people to something that many or most people will experience in some form during their lifetimes. As Mike Bury states, "many conditions that were once acutely life-threatening have, under conditions of improved treatment, been transformed into chronic ones."[67] We also now live longer than ever before, which also results in a greater number of people experiencing disability:

> "It is generally accepted that Western modernity has been characterized by a considerably extended human lifespan accompanied by a growing prevalence of chronic, degenerative disorders; a 'compression of morbidity' in the fourth age; and a norm of slow as opposed to quick dying."[68]

This means that the existence of disability and how to overcome it will only take on more importance as time passes. As it affects more people, issues that once only affected a minority will start to impact greater numbers of people and there will be more and more calls for solutions. Disability issues will become mainstream human issues, as Simon Williams states:

> "...the simple fact [is] that we are, by virtue of our embodiment, biologically frail, vulnerable creatures - we age, experience varying levels of health, illness and disability across the life course and sooner or later

The History of Disability

Fig.2:
Percentage of officially disabled people in different societies (Source: EUROSTAT 2002)

Fig.3:
Demographic pyramid, Germany 2006
(Source: Destatis, 2006)

Fig.4.
Demographic pyramid, Germany 2040
(Source: Destatis, 2006)
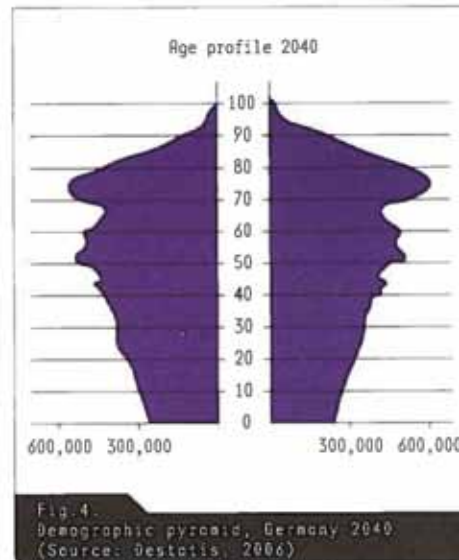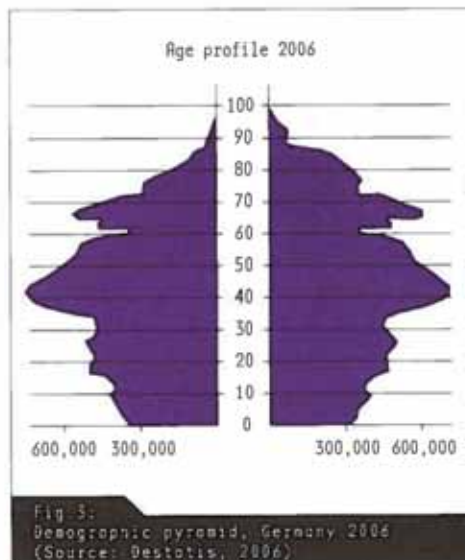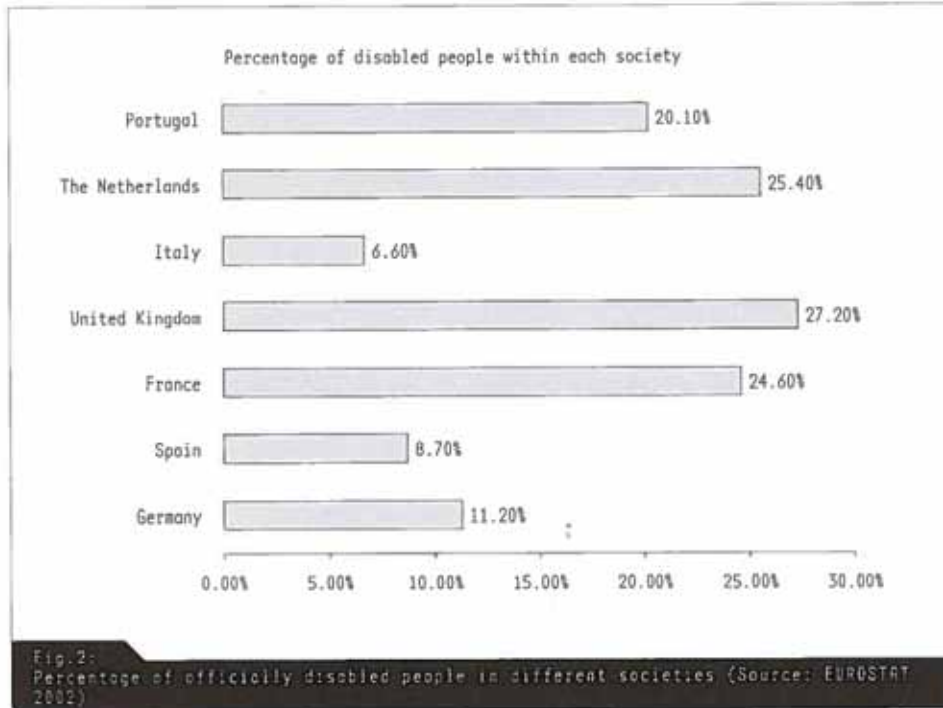
die. These material embodied facts in turn provide the ontological grounds for a universal theory of human rights based on notions of human vulnerability and the precariousness of social institutions."[69]

The Canadian regulatory regime that Vera Chouinard described in the introductory quote of this section will no longer be justifiable. Disability or impairment will no longer be considered a minority issue, but "a universal experience of humanity,"[70] as maintained by Irving Zola.

Because of this new reality, and despite the atrocities committed in the name of eugenics during the twentieth century, it is perhaps surprising that our society has not abandoned those ideas. Eugenics is alive and well, and Western society continues to discuss "the merit of the 'new eugenics', and the promotion of genetic technologies to prevent the birth of babies with defects."[71] Rimmerman continues by saying that this "is perceived as progressive, sending a clear message that society has the power to do almost anything to eliminate the occurrence of disability. Preventing the breeding of the unfit has social consequences, as those who are born with a disability are perceived as failures and a social problem."[72] While it could be argued that the intent of genetic testing is not (or not always) eugenics, the outcome often is.[73] We walk a slippery slope when it comes to this, and would do well to remember what eugenics wrought even within the span of living memory. For that reason, Henri-Jacques Stiker believes it is better to acknowledge and accept the diversity of humanity rather than trying to impose ideas about what humanity ought to be:

"If we do not submit to this reality, the generator of differences, among which is disability, we will be imposing the law of the able, and then why not the law of the abler among the able, and finally why not the law of the ablest of all? After all, the eugenics movement was one of the bases of Nazism. The logic here is terrifying."[74]

With those ethical considerations in mind, and the increased prevalence of chronic illness and disability that is the outcome of advanced medicine, it is safe to say that disability will not be going away anytime soon. We should, however, take heart: "The literature is replete with tales of people who define positive changes such as becoming more appreciative of life, valuing relationships, gaining compassion and giving to others. Studies of chronic illness contain stories of loss, but they also include stories of hope, courage and transformation."[75] Society has long measured its growth in economical and technological terms, but perhaps it is time for us consider societal growth as a measure of compassion and our ability to grow empathically as well.

The History of Disability

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2   Ibid., 40.

3   Rimmerman, Arie. 2013. *Social Inclusion of People with Disabilities: National and International Perspectives*. New York: Cambridge University Press, 13.

4   Stiker, Henri-Jacques. 1999. *A History of Disability*. Translated by William Sayers. Ann Arbor: The University of Michigan Press, 40.

5   Rimmerman, Arie. 2013. *Social Inclusion of People with Disabilities: National and International Perspectives*. New York: Cambridge University Press, 13.

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7   Rimmerman, Arie. 2013. *Social Inclusion of People with Disabilities: National and International Perspectives*. New York: Cambridge University Press, 14.

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9   Rimmerman, Arie. 2013. *Social Inclusion of People with Disabilities: National and International Perspectives*. New York: Cambridge University Press, 14.

10   Leviticus 21:16-22:7

11   Stiker, Henri-Jacques. 1999. *A History of Disability*. Translated by William Sayers. Ann Arbor: The University of Michigan Press, 27.

12   Luke 4:18, Matthew 9:1-7, Matthew 11:4-6, Matthew 12:9-13

13   John 9

14   Luke 9:46-48, Matthew 18:1-4, Matthew 25:31-40

15   Luke 14:15-24

16   Rimmerman, Arie. 2013. *Social Inclusion of People with Disabilities: National and International Perspectives*. New York: Cambridge University Press, 14-15.

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21   Ibid.

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23   Ibid., 16.

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25   Ibid., 22.

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27   Rimmerman, Arie. 2013. *Social Inclusion of People with Disabilities: National and International Perspectives*. New York: Cambridge University Press, 16.

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29   Ibid., 73.

30   Ibid., 73.

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32   Park, Deborah C. and John Radford. 1999. "Rhetoric and Place in the 'Mental Deficiency' Asylum." In *Mind and Body Spaces: Geographies of Illness, Impairment and Disability*, edited by Ruth Butler and Hester Parr. New York: Routledge, 72.

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65   Ibid., 22.

66   Chouinard, Vera. 1999. "Body Politics: Disabled Women's Activism in Canada and Beyond." In *Mind and Body Spaces: Geographies of Illness, Impairment and Disability*, edited by Ruth Butler and Hester Parr. New York: Routledge, 289.

67   Bury, Mike. 2013. "Chronic Illness, Self-management and the Rhetoric of Empowerment." In *New Directions in the Sociology of Chronic and Disabling Conditions: Assaults on the Lifeworld*, edited by Graham Scrambler and Sasha Scrambler. London: Palgrave Macmillan, 161.

68   Scrambler, Graham and Sasha Scrambler. 2013. "Introduction: The Sociology of Chronic and Disabling Conditions; Assaults on the Lifeworld." In *New Directions in the Sociology of Chronic and Disabling Conditions: Assaults on the Lifeworld*, edited by Graham Scrambler and Sasha Scrambler. London: Palgrave Macmillan, 1.

69   Williams, Simon J. 2013. "The Biopolitics of Chronic Illness." In *New Directions in the Sociology of Chronic and Disabling Conditions: Assaults on the Lifeworld*, edited by Graham Scrambler and Sasha Scrambler. London: Palgrave Macmillan, 209.

70   Shakespeare, Tom and Nick Watson. 2013. "Beyond Models: Understanding the Complexity of Disabled People's Lives." In *New Directions in the Sociology of Chronic and Disabling Conditions: Assaults on the Lifeworld*, edited by Graham Scrambler and Sasha Scrambler. London: Palgrave Macmillan, 65.

71   Rimmerman, Arie. 2013. *Social Inclusion of People with Disabilities: National and International Perspectives*. New York: Cambridge University Press, 23.

72   Ibid.

73   Williams, Simon J. 2013. "The Biopolitics of Chronic Illness." In *New Directions in the Sociology of Chronic and Disabling Conditions: Assaults on the Lifeworld*, edited by Graham Scrambler and Sasha Scrambler. London: Palgrave Macmillan, 212.

74   Stiker, Henri-Jacques. 1999. *A History of Disability*. Translated by William Sayers. Ann Arbor: The University of Michigan Press, 13.

75   Charmaz, Kathy. 2013. "Studying the Experience of Chronic Illness through Grounded Theory." In *New Directions in the Sociology of Chronic and Disabling Conditions: Assaults on the Lifeworld*, edited by Graham Scrambler and Sasha Scrambler. London: Palgrave Macmillan, 27.

Models of Disability
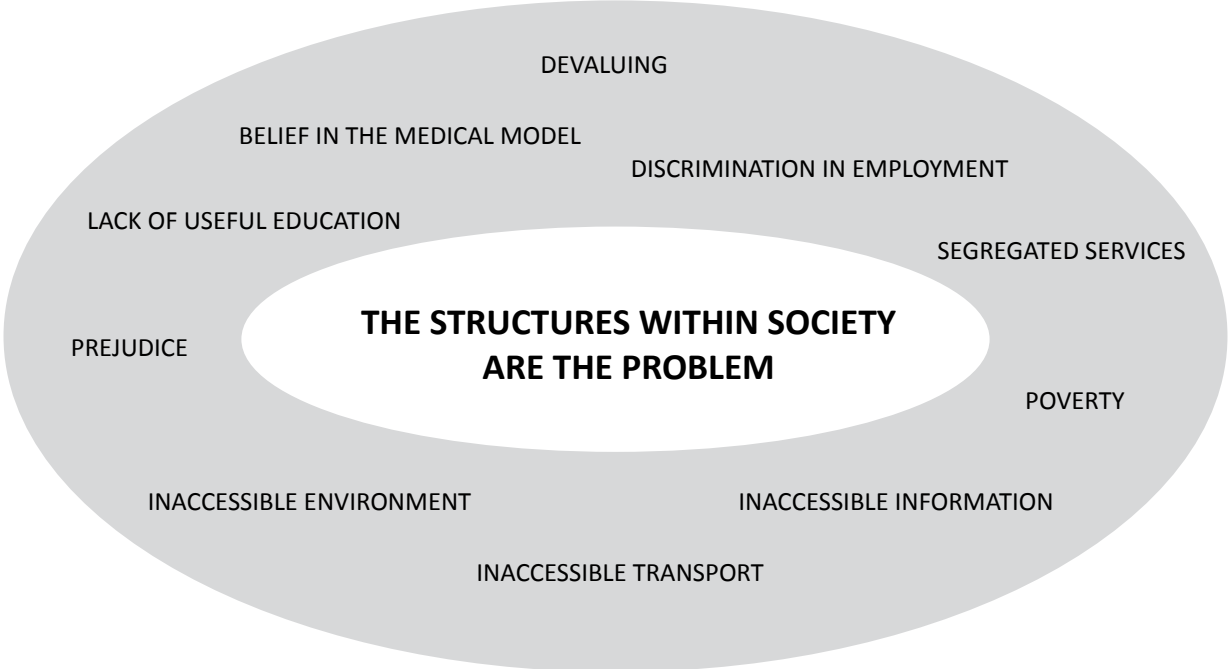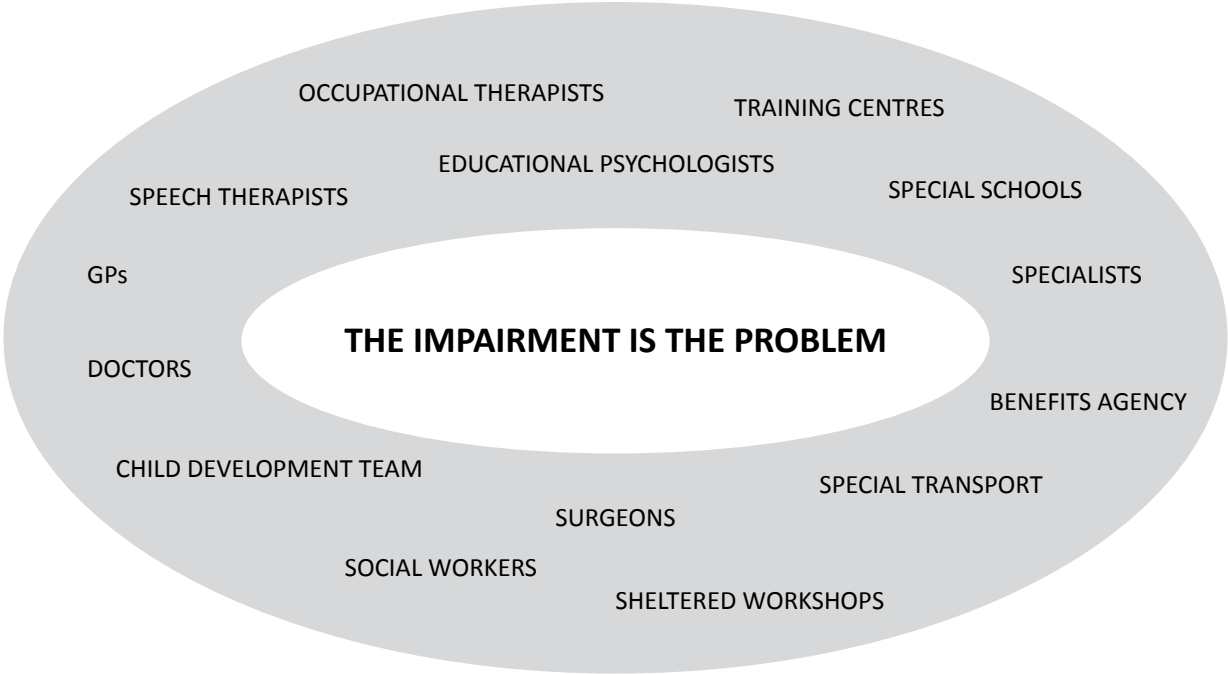
THE IMPAIRMENT IS THE PROBLEM

OCCUPATIONAL THERAPISTS

TRAINING CENTRES

EDUCATIONAL PSYCHOLOGISTS

SPEECH THERAPISTS

SPECIAL SCHOOLS

GPs

SPECIALISTS

DOCTORS

BENEFITS AGENCY

CHILD DEVELOPMENT TEAM

SPECIAL TRANSPORT

SURGEONS

SOCIAL WORKERS

SHELTERED WORKSHOPS

THE STRUCTURES WITHIN SOCIETY ARE THE PROBLEM

DEVALUING

BELIEF IN THE MEDICAL MODEL

DISCRIMINATION IN EMPLOYMENT

LACK OF USEFUL EDUCATION

SEGREGATED SERVICES

PREJUDICE

POVERTY

INACCESSIBLE ENVIRONMENT

INACCESSIBLE INFORMATION

INACCESSIBLE TRANSPORT

How we conceive of disability is an important component in understanding what we can do to try and overcome it. A variety of models have been developed in order to provide a framework to explain the limitations, effects, and structure of disability in society. The two most common frameworks are the medical model and the social model. These models provide two different but valuable perspectives, and both are important to understanding how we can attempt to move closer to a true conception of disability.

The Medical Model of Disability

"Indeed, in the age of biopower, medical discursive practices define normality and abnormality and exert a supreme disciplinary and regulatory force upon 'the body'."[1]

- Carol Thomas, "Medical Sociology and Disability Theory"

The medical model of disability begins with a conception of what constitutes a 'normal' person. Anything that falls outside of this baseline is then considered an abnormality or pathology, with the potential to be corrected or cured in order to meet the established baseline. According to Graham and Sasha Scrambler, the medical model of disability can be said to consist of "Systems of categorization and labelling rooted in deeply problematic norms of normality and normalization."[2] In its most extreme form, the medical model (as advocated by Talcott Parsons) posits that "both acute and chronic illness [pose] a serious destabilizing threat to society's equilibrium, representing a type of social pathology that should rightly be controlled and regulated by the medical profession."[3]

Because the disabled individual is considered to be a deviation from the norm, the onus is on him or her to change or improve him or herself, using assistive devices or medications or therapies, in order to fit into society.[4] This process is known as normalizing, and "when successful, it reduces the potential for stigmatizing responses from other people."[5] As Kathy Charmaz points out, however, "The concept of normalizing assumes a shared normative world in which the presence and actions of people who are defined as different become problematic. This collective view may, moreover, inform ill individuals' views and actions and thus may heighten their feelings of difference and devaluation."[6] Because of its focus on negative differences and the corresponding emphasis on an ideal 'norm', exclusively using the medical model as the authoritative framework for disability results in a devaluation of the person behind the disability.

The Social Model of Disability

"In the broadest sense, the social model of disability is about nothing more complicated than a clear focus on the economic, environmental and cultural barriers encountered by people who are viewed by others as having some form of impairment - whether physical, mental or intellectual. The barriers disabled people encounter include inaccessible education systems, working environments, inadequate disability benefits, discriminatory health and social services, inaccessible

Models of Disability

Office of Population, Censuses and Surveys	Mike Oliver
Can you tell me what is wrong with you?	Can you tell me what is wrong with society?
What complaint causes your difficulty in holding, gripping or turning things?	What defects in the design of everyday equipment like jars, bottles and tins causes you difficulty in holding, gripping or turning them?
Are your difficulties in understanding people mainly due to a hearing problem?	Are your difficulties in understanding people mainly due to their inability to communicate with you?
Do you have a scar, blemish or deformity which limits your daily activity?	Do other people's reactions to any scar, blemish or deformity you may have limit your activities?
Does your health problem or disability prevent you from going out as often or as far as you would like?	What is it about the local environment that makes it difficult for you to get about in your neighbourhood?
Does your health problem or disability make it difficult for you to travel by bus?	Are there any transport or financial problems which prevent you from going out as often or as far as you would like?
Does your present accommodation have any adaptations because of your health problem or disability?	Did the poor design of your house mean that you had to have it adapted to suit your needs?

Source: Oliver, 1990: 7–8.

The table compares and contrasts the medical and social perspectives of disability in terms of their identification of the determinants of disabled people's everyday living experiences. It compares the UK's Office of Population Censuses and Survey's (OPCS, 1987) medically-derived questions, about barriers to disabled people's participation in society, with alternate questions, composed by Oliver (1990), re-framed through the context of the social model of disability.

transport, houses and public buildings and amenities, and the devaluing of disabled people through negative images in the media - films, television, and newspapers."[7]

- Mike Oliver, "The Social Model in Action: If I Had a Hammer"

The social model of disability rejects the view that the significant problems that people with disabilities face in our society are the result of "individual functional inadequacies in an uncaring society,"[8] and has therefore attempted to "shift the focus of public debate on access away from the disabled body (and its supposed natural limits) towards the institutional policies and practices that shape urban environments in particular ways."[9] Rather than placing the responsibility for integration into mainstream society with those who have disabilities, the social model focuses on the ways in which society has contributed to disablement through discrimination and prejudice. It essentially suggests that disability itself is entirely a social construct. As Tom Shakespeare and Nick Watson describe, "The social model of disability is a very simple model. It argues that the disadvantage experienced by disabled people owes nothing to their individual impairment but is the result of a social organization which serves to exclude disabled people."[10]

The major flaw of the social model lies in its almost complete rejection of impairment effects.[11] Mike Bury points out that in recent years, "disability writers have emphasized the persistent and intrusive nature of bodily impairments and the limits of political or social action in dealing with them."[12] The most accessible, barrier-free building in the world would not change the disabling effects of severe chronic pain or seizures. The social model was originally developed by and for those with physical impairments,[13] and in its attempt to be taken seriously as a model for disability as a whole, it has "[produced] generalizations which seek to explain everything and, along the way, homogenize the diversity of disabled people's experience."[14] Thus, we must realize "that people with impairments are disabled by society as well as by their bodies."[15]

The Search for a More Accurate Model

Neither the medical model nor the social model are able to fully encompass the lived reality of disability. The medical model focuses on the body and its perceived deviations from an established norm, while the social model considers disability to be the result of societal barriers. However, as Shakespeare and Watson point out, "In practice, it is the interaction of individual bodies and social environments which produces disability."[16] Any true disability model must consider the impact of both the body and its environment. Liz Crow states that "As individuals, most of us simply cannot pretend with any conviction that our impairments are irrelevant because they influence every aspect of our lives. We must find a way to integrate them into our whole experience and identity for the sake of our physical and emotional well-being, and, subsequently, for our capacity to work against Disability."[17]

Shakespeare and Watson discuss the International Classification of Func-

< Fig. 4.3 - Conceiving of disability from a medical perspective versus social perspective

Models of Disability

INTERNATIONAL CLASSIFICATION OF FUNCTIONING (ICF)

Health condition
(disorder or disease)

```
                    Health condition
                   (disorder or disease)
                          ↑
        ┌─────────────────┼─────────────────┐
        ↓                 ↕                 ↓
  Body functions  ←→  Activities  ←→  Participation
  and structures
        ↑                 ↑                 ↑
        └────────┬────────┴─────────────────┘
                 │
        ┌────────┴────────┐
        ↓                 ↓
  Environmental      Personal
     factors          factors
```
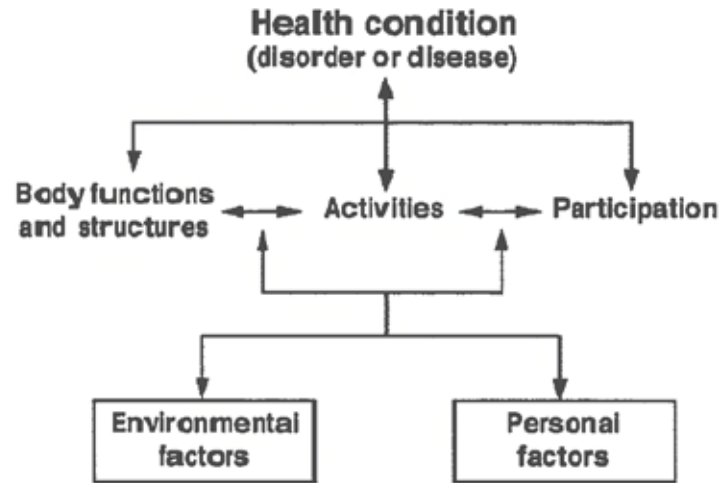
Medical	Social	Bio-social
Personal tragedy theory	Social oppression theory	Bio-social theory
Personal problem	Social problem	Personal/social problems
Individual treatment	Social action	Individual/social action
Medicalisation	Self-help	Medical/self-help
Professional dominance	Individual/collective responsibility	Collective responsibilities
Expertise	Experience	Expert/lay experiences
Individual identity	Collective identity	Individual/collective identities
Prejudice	Discrimination	Prejudice/discrimination
Care	Rights	Care combined with rights
Control	Choice	Control combined with choice
Policy	Politics	Political and policy change
Individual adjustment	Social change	Individual adjustment and social change

tioning, Disability and Health (ICFDH) as a starting point for a broader and more inclusive conceptualization of disability:

> "From an International Classification of Functioning, Disability and Health perspective, disability is the interrelation of health condition, personal factors (for example, coping style) and environmental factors (for example, architectural barriers, employment policy, stigma). Given this dynamic and multifactorial model there are a range of options for reducing levels of disability in individuals and in society. For example, combating prejudice and stigma directed towards people who are visibly impaired will reduce the extent to which they are disabled, just as creating accessible workplaces or broadcast media will benefit people with mobility or sensory impairments."[18]

While the ICFDH model has its limitations, particularly in the area of discriminating between temporary illness and long-term chronic illness or impairment, and the identity issues associated with each,[19] it is a much better and more accurate model for disability and for this thesis.

Models of Disability

1   Thomas, Carol. 2013. "Medical Sociology and Disability Theory." In *New Directions in the Sociology of Chronic and Disabling Conditions: Assaults on the Lifeworld*, edited by Graham Scrambler and Sasha Scrambler. London: Palgrave Macmillan, 40.

2   Scrambler, Graham and Sasha Scrambler. 2013. "Introduction: The Sociology of Chronic and Disabling Conditions; Assaults on the Lifeworld." In *New Directions in the Sociology of Chronic and Disabling Conditions: Assaults on the Lifeworld*, edited by Graham Scrambler and Sasha Scrambler. London: Palgrave Macmillan, 3.

3   Thomas, Carol. 2013. "Medical Sociology and Disability Theory." In *New Directions in the Sociology of Chronic and Disabling Conditions: Assaults on the Lifeworld*, edited by Graham Scrambler and Sasha Scrambler. London: Palgrave Macmillan, 39.

4   Rimmerman, Arie. 2013. *Social Inclusion of People with Disabilities: National and International Perspectives*. New York: Cambridge University Press, 28.

5   Charmaz, Kathy. 2013. "Studying the Experience of Chronic Illness through Grounded Theory." In *New Directions in the Sociology of Chronic and Disabling Conditions: Assaults on the Lifeworld*, edited by Graham Scrambler and Sasha Scrambler. London: Palgrave Macmillan, 23.

6   Ibid.

7   Oliver, Mike. 2004. "The Social Model in Action: If I Had a Hammer." In *Implementing the Social Model of Disability: Theory and Research*, edited by Colin Barnes and Geof Mercer. Leeds: The Disability Press, 21.

8   Gleeson, Brendan. 1999. "Can Technology Overcome the Disabling City?" In *Mind and Body Spaces: Geographies of Illness, Impairment and Disability*, edited by Ruth Butler and Hester Parr. New York: Routledge, 104.

9   Ibid.

10   Shakespeare, Tom and Nick Watson. 2013. "Beyond Models: Understanding the Complexity of Disabled People's Lives." In *New Directions in the Sociology of Chronic and Disabling Conditions: Assaults on the Lifeworld*, edited by Graham Scrambler and Sasha Scrambler. London: Palgrave Macmillan, 58.

11   Ibid., 59.

12   Bury, Mike. 2013. "Chronic Illness, Self-management and the Rhetoric of Empowerment." In *New Directions in the Sociology of Chronic and Disabling Conditions: Assaults on the Lifeworld*, edited by Graham Scrambler and Sasha Scrambler. London: Palgrave Macmillan, 166.

13   Shakespeare, Tom and Nick Watson. 2013. "Beyond Models: Understanding the Complexity of Disabled People's Lives." In *New Directions in the Sociology of Chronic and Disabling Conditions: Assaults on the Lifeworld*, edited by Graham Scrambler and Sasha

Scrambler. London: Palgrave Macmillan, 60.

14   Ibid., 61.

15   Ibid., 59.

16   Ibid., 62.

17   Crow, Liz. 1992. Renewing the Social Model of Disability. *Coalition*, July: 7.

18   Shakespeare, Tom and Nick Watson. 2013. "Beyond Models: Understanding the Complexity of Disabled People's Lives." In *New Directions in the Sociology of Chronic and Disabling Conditions: Assaults on the Lifeworld*, edited by Graham Scrambler and Sasha Scrambler. London: Palgrave Macmillan, 66.

19   Ibid., 67.

Disability in the Built Environment

The Principles of **Universal Design**

The design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design.

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

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

3 Simple and Intuitive Use
Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or education level.

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

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

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

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

Center for **Universal Design**

The Complexities of the Disability Issue with Regard to the Built Environment

Disability is an extremely complex issue, yet often people are led to believe that one solution is all that is needed to overcome it. This miraculous solution usually involves using adaptive technologies, which include everything from aids to universally accessible urban design, to allow people with disabilities to transcend "the social and economic constraints 'imposed' by their bodily impairments."[1]

The thought is that universal design and new aids "will progressively 'correct' for physical impairments and thereby turn the disabled person into a 'normal' citizen or worker."[2] Brendan Gleeson criticizes the design and building profession as being one such group that has "a rather uncritical faith in the power of such technologies to overcome the 'limitations of disabilities'."[3] Unfortunately, to focus on 'correcting' disability or an overenthusiastic belief in the power of assistive technologies is to ignore the other facets and underlying causes of disablement. As Gleeson states, "it is important to develop a critical appreciation of the limits of 'technological solutions'."[4]

Much of the furor surrounding universal design as a universal solution to disablement can be traced back to the social model of disability that was explained in the previous chapter. If disability is a social construct and the built environment is the resulting expression of our societal views, then of course it follows that removing the physical barriers in our built environment will eliminate disability. However, as discussed in the previous chapter, the social model is flawed – it provides an incomplete understanding of disability. As Hester Parr and Ruth Butler put it, the social model "lacks attention to different mind and body states."[5] Thus, universal design as a solution is an oversimplification that does not address the "dynamic social character" of space[6] or the "deeper material and ideological structures of discrimination."[7]

Tom Shakespeare and Nick Watson go so far as to say that while "Barrier-free enclaves are possible," a barrier-free world is not,[8] and that universal design is problematic because sometimes the different accommodations are incompatible with each other: "people with different impairments may require different solutions: blind people prefer steps, defined curbs and tactile paving, while wheelchair users need ramps, dropped curbs and smooth surfaces."[9] They conclude by saying that "While environments and services can and should be adapted wherever possible, there remains disadvantage associated with having many impairments which no amount of environmental change could entirely eliminate."[10]

It is still true that a part of any solution to the problem of disability is a rethinking of the built environment. After all, as Rob Imrie states, "One of the critical contexts for the perpetuation and reproduction of social inequalities is the built environment. For disabled people in particular, the built environment is often encountered as a series of hostile, exclusive and oppressive spaces."[11] The spaces we design still "project the dominant values of specific body-types, that is, the 'able-bodied'."[12] But we also need to look beyond the obvious physical barriers in the building environment at the underlying causes of disablement and whether

Disability in the Built Environment

the built environment can be used as a tool to overcome more than just physical access.

The Origins of Disability as a Devaluation of the Person, From a Historical-Geographical Perspective

The first question to ask is how disability originated. Not the historical origins of impairments, as discussed in Chapter 1, but in terms of the modern social experience of having such impairments, which is tied to the discriminatory form of the contemporary city. Brendan Gleeson has made a compelling case for the argument that disability originated at the same time as capitalist society, when "The rise of mechanized forms of production introduced productivity standards that assumed a 'normal' (namely, usually male and non-impaired) worker's body and devalued all others."[13] The fact is that "Changes in the organization of work from a rural based, cooperative system where individuals contributed what they could to the production process, to an urban, factory-based one organized around the individual wage labourer, had profound consequences."[14]

Under this system, economic value was attached to bodies, and bodies that were less able (or presumed to be less able) were less valuable simply because they were not considered to be as productive:

"The increasing social authority of the law of value meant the submission of peasant households to an abstract external force (market relations) which evaluated the worth of individual labour in terms of average productivity standards. From the first, this competitive, social evaluation of individual labour-power meant that 'slower', 'weaker' or more inflexible workers were devalued in terms of their potential for paid work. Physically impaired workers thus entered the first historical stage of capitalism handicapped by the devaluing logic of the law of value and competitive commodity relations."[15]
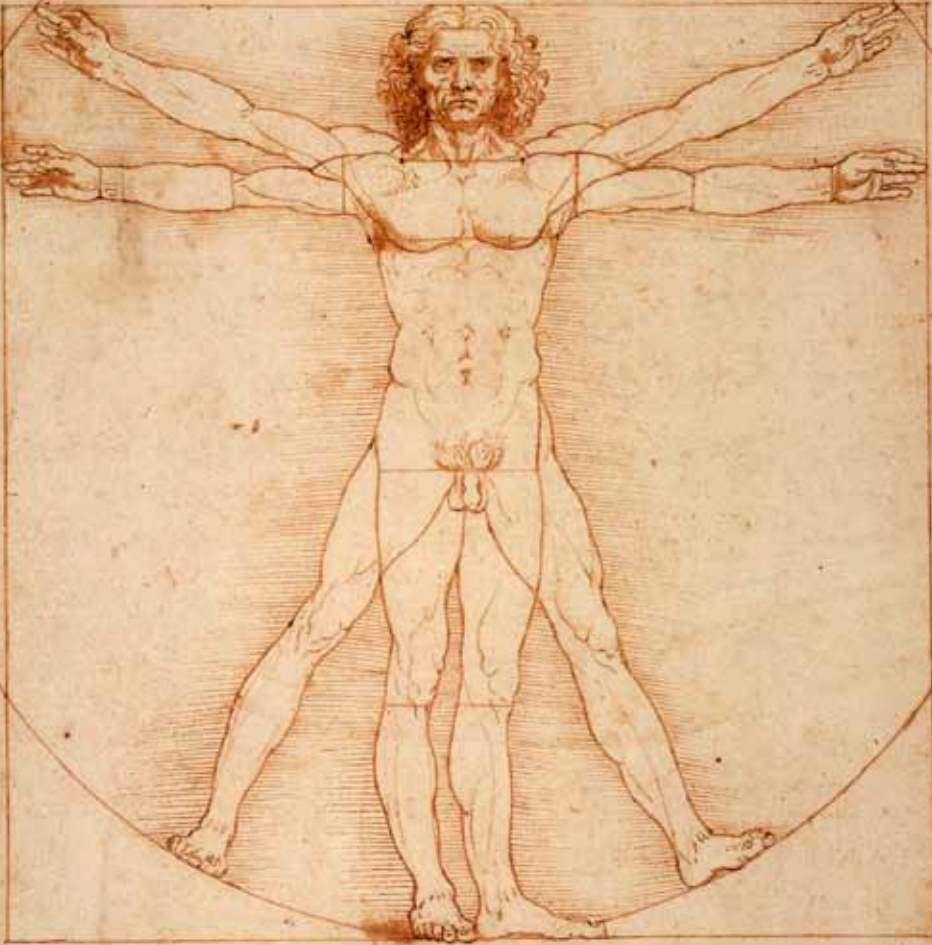
This led to disability being characterized not only by "political economic marginality (and even exploitation)" but also cultural devaluation[16] – people with disabilities were seen as lesser humans.

This mindset has followed us even into the twenty-first century, and has contributed to a serious poverty and unemployment problem among people with disabilities, as well as social barriers and stigma. In the United Kingdom, the unemployment rate for people with disabilities is around 50%, compared to 20% of the able-bodied population.[17] Correspondingly, 30% of people with disabilities live below the UK's 'relative poverty line' (a number equivalent to living on less than 60% of the median national income), compared to 16% of non-disabled people.[18] When the additional costs related to the impact of disability or illness are factored in (such as medical or assistive technology costs), more than half of people with disabilities live below that income line.[19] These unemployment and poverty statistics are similarly high in other developed countries.

What the historical-geographical perspective does is to expose "the inad-

equacy of relying *solely* upon environmental modification as a strategy for eradicating the deeply embedded social discrimination facing disabled people."[20] The problem is not only in physical access, but in the reasons behind *why* we have physical access issues in our built environment, which is a deeply ingrained social attitude of devaluing people with disabilities. This attitude is not only the cause of our discriminatory physical environment, but can also be attributed to the correlation between disability and high levels of unemployment:

> "Access regulations and inclusive building codes, where they can be successfully applied, may improve the employment chances of some disabled people. However, better building standards and new modes of mobility, will not *on their own* revalue the labour-power of all physically impaired people. They will not guarantee economic security and social acceptance for disabled people. Such strategies can reduce the friction of everyday life for disabled people, and must be defended for this, but they will not solve the dynamic socio-spatial oppression of disablement."[21]

Gleeson makes it clear that universal design must be part of a larger solution, and elaborates to say that "the resistance to access regulations and environmental modifications by public institutions and private development interests in Western countries attests to deep, and enduring, structures of disability discrimination which shape contemporary cities."[22] Governments are also failing to enforce or are less than rigorous in the enforcement of access legislation,[23] which means that building access legislation has not been entirely successful in preventing discriminatory design. With that being the case, Gleeson concludes that "It is impossible to imagine…that one dynamic of socio-spatial change – technology – can radically transform a deeply embedded social relation, such as disability."[24]

Ableism in Architecture

"Proportion is the commensuration of the various constituent parts with the whole. For no building can possess the attributes of composition...unless there exists that perfect conformation of parts which may be observed in a well formed human body."
- Vitruvius, 1960

The ableist origins of architecture go all the way back to Vitruvius and classical architecture that relied on the proportions of the ideal human form,[25] and remains evident in modern architecture, notably the work of Le Corbusier. Modernism was often characterized by a search "for universal laws of human habitation and behaviour"[26] and resulted in architects conceiving of the body "as somehow inert, passive, and pliable" and "a pre-given which permits its (geometric) proportions to define the possibilities of design and building form."[27]

Le Corbusier considered man to be a geometric animal, and he created a set of universal standards for his designs based on the geometry of the human form. These standards, however, were very narrow as they were based on an ideal of

< Fig. 5.6 - Leonardo da Vinci's famous Vitruvian Man, based on the ideal human proportions as laid out by Vitruvius

Disability in the Built Environment
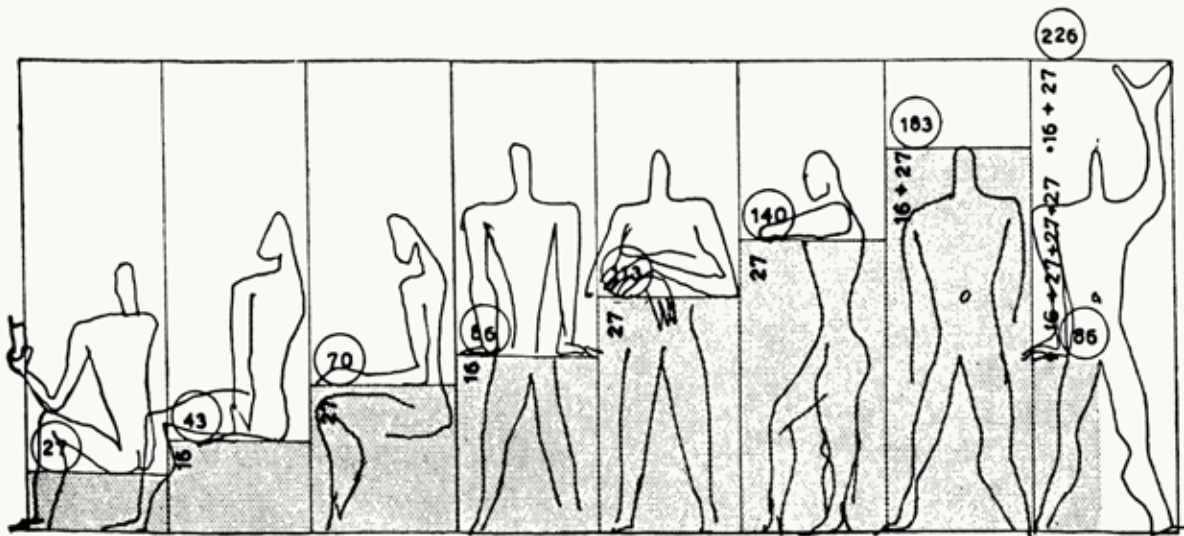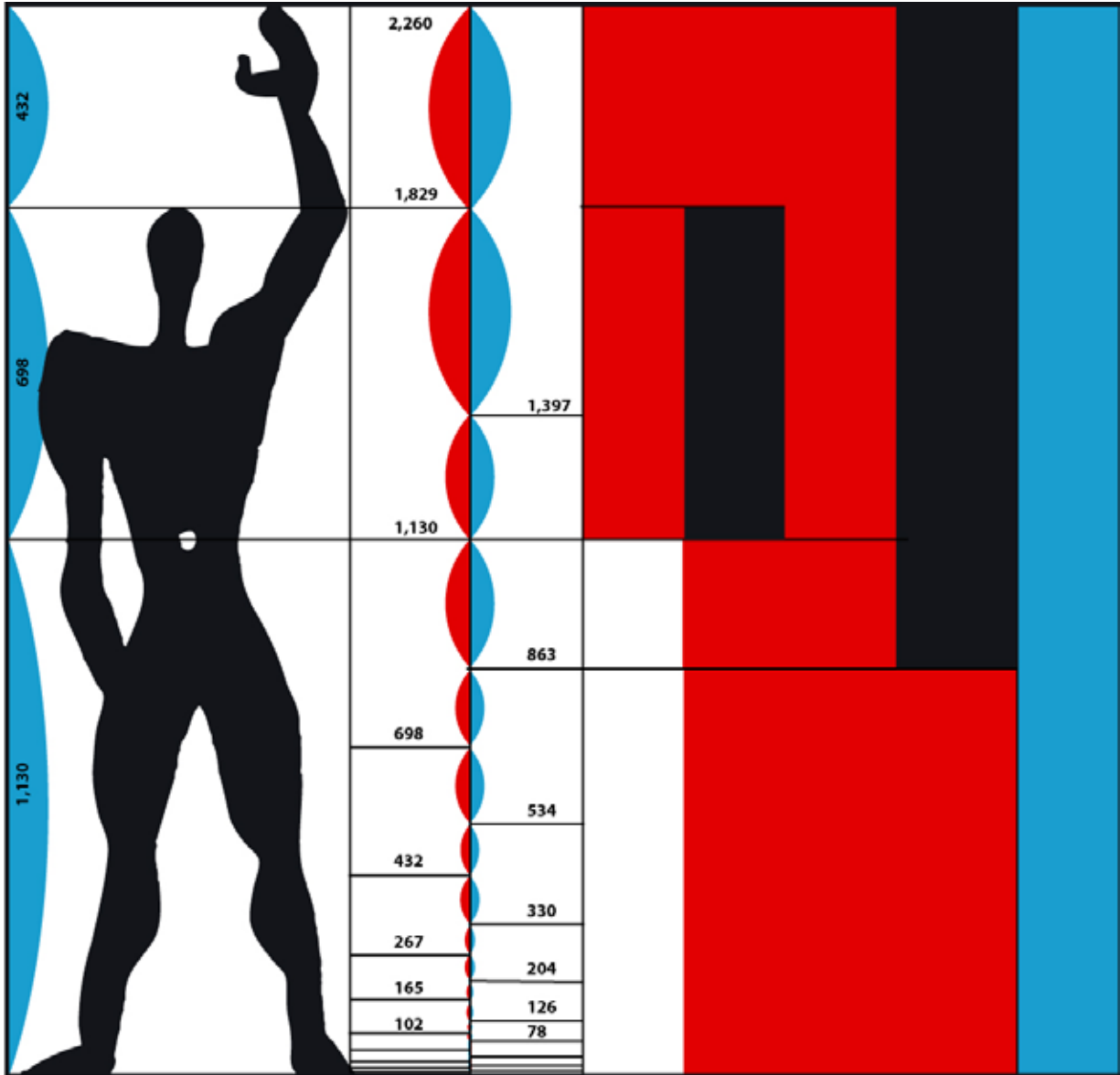
human form. As Le Corbusier himself wrote:

> "...to search for the human scale, for human function, is to define human needs. They are not very numerous; they are very similar for all mankind, since man has been made out of the same mould from the earliest times known to us...the whole machine is there, the structure, the nervous system, the arterial system, and this applies to every single one of us exactly and without exception."[28]

This essentially resulted in the extraction of the human body from the context of use. As Rob Imrie describes:

> "For Le Corbusier, then, the distillation of bodily essence was critical in developing systems of standards and measures which, in turn, were to be used in designing the built environment. In rejecting the individual sentient-object, Le Corbusier conceived of a world where the (standardized) measurements of the body would be critical in giving shape to the objects, decorations, and materials of everyday (human) use."[29]

The problem, according to Imrie, is that decontextual conception of the body leads to insensitve, decontextual design. There is an objectification of the body that happens, where spaces are designed on the premise of standard body sizes and shapes, but in reality, our bodies are not objects, they are our means of having a relation to objects.[30]

This hardly seems to have changed since Le Corbusier's time. Architects still design to a set of required and primarily numeric standards that are supposed to promote inclusion, but in reality, their "conceptions of bodies in space, such as, for example, those propagated by Le Corbusier, are connected to the estrangement of disabled bodies in the built environment."[31] For people with disabilities, this has meant "hostile and oppressive buildings and built environments, underpinned by self-serving ideas which have failed to challenge the hegemonic position of key actors within the wider design and buildings industries."[32]

Attempts at inclusion by following a set of standards are somewhat tokenistic, as the very act of following standards means that the design problems surrounding disability and accessibility are not being examined from a critical standpoint, and simply perpetuates the problems inherent in the standards. As Imrie states:

> "Where architectural practices consider the disabled body, they tend to by universalizing disability as singular and reducible to mobility or ambulant impairments, that is, to the wheelchair user. In this sense, disabled people are seen as a 'type'. Yet, this simultaneously disembodies the disabled person by potentially denying the intersections between the multiplicities of physical and/or mental impairments."[33]

< Fig. 5.8 - Modular dimensions based again on a standard, "ideal" form

I would even go so far as to say that architects do not design for people with disabilities at all, but only for their assistive technologies – the wheelchair in particular. Architecture has so far failed to consider the person behind the wheelchair

	Always (%)	Sometimes (%)	Rarely (%)	Never (%)
Vision impaired	44 (21)	86 (42)	44 (21)	14 (7)
Hard of hearing	25 (12)	71 (34)	58 (28)	29 (14)
Physical/mobility impaired	166 (80)	26 (13)	3 (1)	0 (0)
Learning difficulties	17 (8)	44 (21)	67 (32)	58 (28)

	Always (%)	Sometimes (%)	Rarely (%)	Never (%)
Colour contrasts	32 (15)	79 (38)	45 (22)	23 (12)
Accessible toilets	174 (84)	18 (9)	0 (0)	0 (0)
Induction loops	15 (7)	67 (32)	51 (25)	37 (18)
Tactile paving	39 (19)	91 (44)	30 (14)	18 (9)
Ramps	128 (62)	59 (29)	2 (1)	0 (0)
Lifts to all levels	89 (43)	78 (38)	15 (7)	2 (1)
Lighting	88 (43)	48 (23)	30 (14)	18 (9)
One entry point	48 (23)	81 (39)	22 (11)	10 (5)
Level entry/access	128 (62)	57 (28)	2 (1)	0 (0)

or behind the disability, and how their disability affects the way they actually use and navigate spaces.

The Role of the Architect

Architects have unfortunately been one of the enablers and accomplices of ableism in the built environment, contributing directly to the marginalization and oppression of people with disabilities in our society.[34] Much emphasis is placed on the 'art' of architecture, which can result in a lack of consideration when it comes to the user group. Imrie states that "architects need to confront the ideology of art over function and seek to privilege use over aesthetics or pretensions to poetics."[35] So much thought goes into what the space looks like, that the user group ends up conforming to the "ableist bodily conceptions [that] underpin architectural discourses and practices,"[36] and people with disabilities become simply a checklist of standards.

Imrie believes combating this issue requires a review of current architectural practices and theories and a commitment to reconnecting with social and economic concerns: "This might involve asking who architecture is for, in what ways, and with what effects, potentially sensitizing architects and their clients to the possibilities of architecture which is inclusive and emancipatory rather than exclusive and oppressive."[37] He also suggests that architects consider "the interactions between bodies/minds in the context of specific building use"[38] and ask questions with the aim of trying to understand the experience of the built environment from the perspective of people with different types of disabilities: "How do particular buildings and built environments feel to different types of disabled people? Indeed, how do disabled people's feelings interconnect with their bodies' experiences of movement and mobility in specific types of places?"[39] The answers to these questions will go a long way towards imparting empathy or at least the expression of a desire to understand, which is absolutely crucial, because the fact is "that decision-making continues to be dominated by able-bodied professionals"[40] who have no first-hand experience of disability themselves.

Part of rejecting the old ableist ideas means embracing the difference and diversity within humanity. Rather than trying to force assimilation, architects need to design in a way that works with people with disabilities rather than against them, "where multiple groups with different needs are empowered to participate in collective, democratic processes of decision-making about issues which affect their lives."[41] This idea is not unheard-of in architecture, but it does not happen often enough. The current practice is to allow disability advocate groups to provide input on new standards. The problem is that when following standards, we are not aware that there is a problem: the existence of standards gives the impression that the problem has been solved. Architects are used to finding creative solutions for problems, but cannot do that without actually understanding that there is a problem. They need to turn their attention "to the ways in which different people experience different forms of domination and oppression and how these processes are reproduced through what may be presented as 'impartial' structures of decision-making, unquestioned cultural norms or physical struc-

< Fig. 5.9 - For most people, and unmany archi-tects, accessibility continues to be associated mainly with wheelchairs

< Fig. 5.10 - How often architects consider different types of disabilities when designing buildings, from a 1998 survey of 207 architects

< Fig. 5.11 - How often architects implement certain design features in buildings, from a 1998 survey of 207 architects

tures as seemingly innocent as a 'normal' doorway."[42]

The Power of Language and Media

The use of language provides human societies with a means to classify and interpret the world around them. The Sapir-Whorf hypothesis theorizes that language does not exist only for communicating ideas and needs, but also as a shaping force that predisposes people to see the world in a certain way and guides their thinking and behavior.[43] The way language is used – the words that people have for things – can tell us a lot about a particular society: what is meaningful or important, what is not, cultural attitudes, and etcetera. Our language is an expression of our thoughts and attitudes.

Where it concerns disability, our language takes a negative, subtractive approach: you take a word like able or normal, and you add a *dis-* or an *im-* or an *ab-*, and that just about sums up our attitudes. *Dis*abled, *ab*normal, *im*paired. The devaluation of a whole group of people is enshrined in the very words we use to describe them. Sometimes the general population will take terms that were used to categorize disability by the medical profession and turn them into insults. Retarded, dumb, insane, crazy. These formerly neutral words then become laden with negative connotations and are hurled back at those with disabilities to remind them of their place in the world. Disability is a division between 'normal' and 'different' that exists in part because human language makes a distinction between the two. Language has that power.

The media is similarly powerful. Few would deny that the media is a form of communication "through which cultural ideas are produced and reproduced."[44] Different forms of media "have a significant part to play in shaping public opinion through what they construct and represent as reality."[45] Arie Rimmerman describes books as "powerful tools through which civilizations transform values and norms."[46] Television, news, and film have just as much, and in some cases more, influence. Jane Stables and Fiona Smith state that regardless of "one's position with regard to the power of the media to shape or affect attitudes, the various mass media can be seen as vehicles for transmitting and reinforcing attitudes which operate in the interests of dominant groups."[47]

With regards to disability, the media has consistently reinforced two principal stereotypes: evil and/or mentally ill villains (the "twisted mind in the twisted body"), and superheroes.[48] These are two extremes that fail to present the reality of the lived experience of life as a person with a disability. These representations fail to represent disability as simply part of a variable human condition, and highlight the distinction between 'them' and 'us'.

What the power of language and media shows us is the capability to reinforce, shape, and change our attitudes. Properly harnessed, it could be a valuable tool in changing attitudes about disability.

Disability in the Built Environment

< Fig. 5.16 - The Joker has had multiple origin stories, but the most common involves him falling into a vat of chemical waste, and the disfigurement that results causes him to go insane. In the Dark Knight movie trilogy, his "smile" is a result of large disfiguring scars

< Fig. 5.17 - Another Batman villain, Harvey Dent's disfigurement (by acid in the comic books and fire in the Dark Knight movie trilogy) also drives him to insanity, and he becomes the villain Two-face.

The Aims of this Thesis

I have described the complexity of the disability issue in the preceding pages. It would be naïve to assume that the limitations associated with it, the effects these limitations have on the human spirit, and the stigma of difference can be overcome in one neatly packaged solution. This thesis is not claiming to propose a solution that will solve all the problems of people with disabilities – as we have seen, there are many sides to the problem and the attitudes that are the origin of most disablement in our society are deeply entrenched. This thesis is concerned with architecture, and what architecture can contribute to a solution. It is not *the* solution. It is one component of a larger solution.

In *A History of Disability*, Henri-Jacques Stiker writes: "I simply believe that disability happens to humanity and that there are no grounds for conceiving of it as an aberration,"[49] and that in order to "prevent someone from imposing the law of the identical, from proclaiming his identity as unique, there is only one recourse beyond the ethical imperative, and that is to make it a part of our culture."[50] Social attitudes of people towards those with disabilities are an extremely important consideration in trying to make society more inclusive. There is nothing more exclusionary than judgment and stigma. As Hester Parr and Ruth Butler state:

"[...] social, cultural, economic, political and medical frameworks do have very real impacts and effects upon the different, impaired and ill body/mind, including how it is represented and perceived. Not only are social attitudes important in defining what is and is not accepted as 'normal'...but such boundary markers fuel and inform exclusionary actions from workplaces, night clubs, libraries, sex shops and myriad everyday spaces."[51]

The key is not to normalize people with disabilities so that they can pass as 'normal', the key is to normalize the existence of disability itself. It is simply a part and a reality of the human condition. There is support for this sort of idea from Rimmerman:

"[...] the first barrier is cultural conditioning, which relates to society's obsession with physical attractiveness....The second barrier is related to the notion that when people are confronted by something other than themselves, their initial response is one of discomfort and rejection. Therefore, it is important to reduce the sense of 'difference' between people with and without disabilities in order to facilitate acceptance."[52]

Such an attitude shift would be tremendous in improving social inclusion for people with disabilities. How then do we try and accomplish it?

I must disagree with those disability writers who believe that the built environment can offer us no more than an improvement in physical inclusion for people with disabilities. The built environment forms the backdrop of our lived
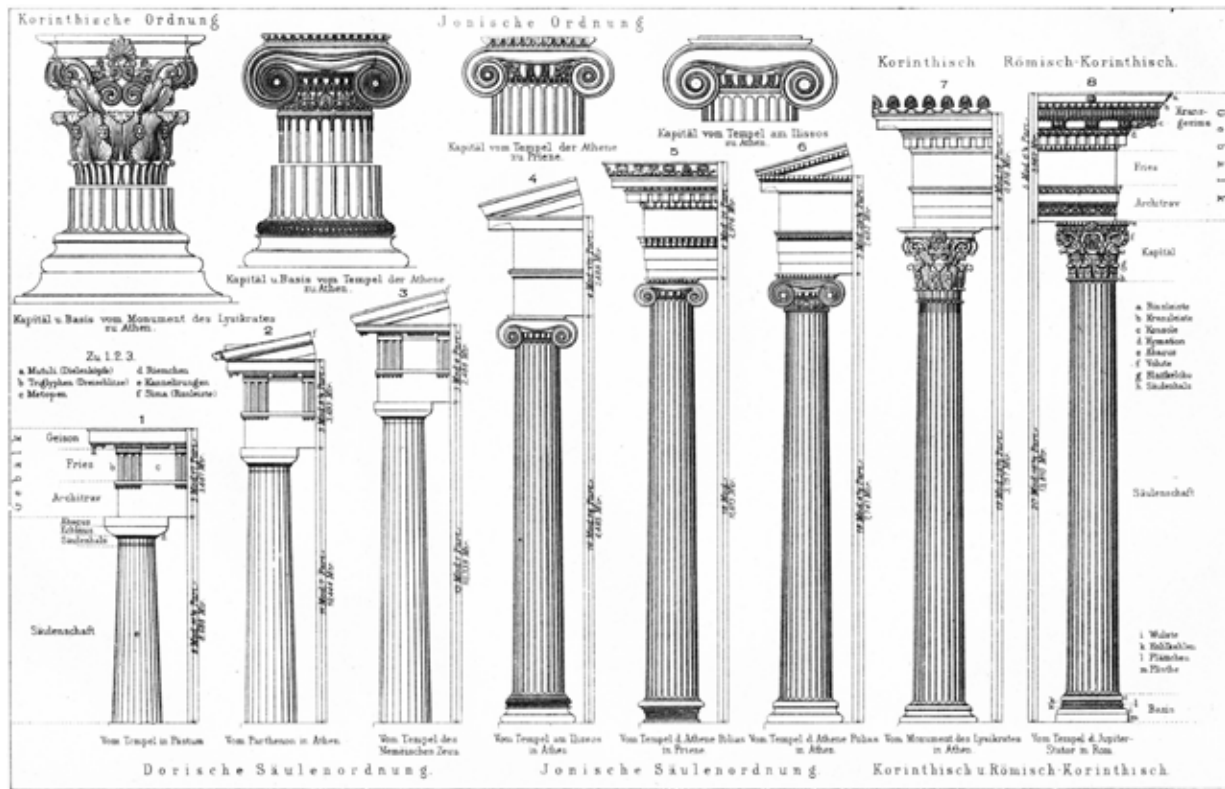
experience of the world. It is our universal language; a language that we see and use and participate in every day of our lives. The media manufactures a reality, but the built environment *is* reality, and it exerts tremendous influence on us even if we do not realize it. It is the structure of our worldview, and changing it changes how we understand the world and our place in it. Architecture is a language, a form of media. We can use it "as a socialization agent and as a tool for attitudinal change"[53] and normalize the existence and presence of disability in our society. As Rimmerman points out, "People's direct experience, combined with what they see, read and listen to, shapes the way they think and feel about people with disabilities."[54]

In addition, architecture is not normally considered to be a tool that can miti-gate the sometimes highly internalized impairment effects of disability. Yes, we can design to include assistive listening devices for the hard-of-hearing, but we cannot design to remove highly internalized feelings of isolation that many hard-of-hearing people experience. However, this thesis does propose design strat-egies for dealing with impairment effects by offering strategies for designing to accommodate service dogs. Accommodating service dogs acknowledges the re-ality of impairment effects in the lives of people with disabilities. It is impossible to design to reduce the disability level of a person with diabetes, but by designing to accommodate their Diabetic Alert dog, we are making the built environment more inclusive for that person.

Here, there is the opportunity to create one word for the human condition, and perhaps that change will be the catalyst necessary for people to start consid-ering that what the person walking down the street, the person with hearing aids, the person in the wheelchair, the person with a white cane, and the person with autism have in common is that they are all people.

1   Gleeson, Brendan. 1999. "Can Technology Overcome the Disabling City?" In *Mind and Body Spaces: Geographies of Illness, Impairment and Disability*, edited by Ruth Butler and Hester Parr. New York: Routledge, 98.

2   Ibid.

3   Ibid., 99.

4   Ibid., 99.

5   Parr, Hester and Ruth Butler. 1999. "New Geographies of Illness, Impairment and Disability." In *Mind and Body Spaces: Geographies of Illness, Impairment and Disability*, edited by Ruth Butler and Hester Parr. New York: Routledge, 7.

6   Gleeson, Brendan. 1999. "Can Technology Overcome the Disabling City?" In *Mind and Body Spaces: Geographies of Illness, Impairment and Disability*, edited by Ruth Butler and Hester Parr. New York: Routledge, 105.

7   Ibid.

8   Shakespeare, Tom and Nick Watson. 2013. "Beyond Models: Understanding the Complexity of Disabled People's Lives." In *New Directions in the Sociology of Chronic and Disabling Conditions: Assaults on the Lifeworld*, edited by Graham Scrambler and Sasha Scrambler. London: Palgrave Macmillan, 63.

9   Ibid.

10   Ibid.

11   Imrie, Rob. 1999. "The Body, Disability and Le Corbusier's Conception of the Radiant Environment." In *Mind and Body Spaces: Geographies of Illness, Impairment and Disability*, edited by Ruth Butler and Hester Parr. New York: Routledge, 25.

12   Ibid.

13   Gleeson, Brendan. 1999. "Can Technology Overcome the Disabling City?" In *Mind and Body Spaces: Geographies of Illness, Impairment and Disability*, edited by Ruth Butler and Hester Parr. New York: Routledge, 109.

14   Oliver, Mike. 1990. *The Politics of Disablement*. London: Macmillan, 27-8.

15   Gleeson, Brendan. 1999. "Can Technology Overcome the Disabling City?" In *Mind and Body Spaces: Geographies of Illness, Impairment and Disability*, edited by Ruth Butler and Hester Parr. New York: Routledge, 108.

16   Ibid., 99.

17   Rimmerman, Arie. 2013. *Social Inclusion of People with Disabilities: National*

and International Perspectives. New York: Cambridge University Press, 46.

18   Ibid.

19   Ibid.

20   Gleeson, Brendan. 1999. "Can Technology Overcome the Disabling City?" In *Mind and Body Spaces: Geographies of Illness, Impairment and Disability*, edited by Ruth Butler and Hester Parr. New York: Routledge, 110.

21   Ibid.

22   Ibid.

23   Ibid., 110-1.

24   Ibid., 114.

25   Imrie, Rob. 1999. "The Body, Disability and Le Corbusier's Conception of the Radiant Environment." In *Mind and Body Spaces: Geographies of Illness, Impairment and Disability*, edited by Ruth Butler and Hester Parr. New York: Routledge, 27.

26   Ibid., 26-7.

27   Ibid., 27.

28   Le Corbusier. 1925. *The Decorative Art of Today*. London: Architectural Press, 72.

29   Imrie, Rob. 1999. "The Body, Disability and Le Corbusier's Conception of the Radiant Environment." In *Mind and Body Spaces: Geographies of Illness, Impairment and Disability*, edited by Ruth Butler and Hester Parr. New York: Routledge, 33.

30   Ibid., 30.

31   Ibid., 38.

32   Ibid., 38.

33   Ibid., 42.

34   Ibid., 26.

35   Ibid., 40.

36   Ibid., 26.

37   Ibid., 41.

38   Ibid., 40.

39   Ibid., 40.

40   Gathorne-Hardy, Flora. 1999. "Accommodating Difference: Social Justice, Disability and the Design of Affordable Housing." In *Mind and Body Spaces: Geographies of Illness, Impairment and Disability*, edited by Ruth Butler and Hester Parr. New York: Routledge, 244.

41   Ibid., 240.

42   Ibid., 242.

43   Haviland, William A., et al. 2002. *Cultural Anthropology*. Toronto: Nelson Education Ltd, 108.

44   Crang, Mike. 1998. *Cultural Geography*. London: Routledge, 81.

45   Morrell, C. 1993. *Media Education: Representation and Reality - Part 2: Media Practice*. Exeter: University of Exeter, 53.

46   Rimmerman, Arie. 2013. *Social Inclusion of People with Disabilities: National and International Perspectives*. New York: Cambridge University Press, 55.

47   Stables, Jane and Fiona Smith. 1999. "'Caught in the Cinderella Trap': Narratives of Disabled Parents and Young Carers." In *Mind and Body Spaces: Geographies of Illness, Impairment and Disability*, edited by Ruth Butler and Hester Parr. New York: Routledge, 257.

48   Rimmerman, Arie. 2013. *Social Inclusion of People with Disabilities: National and International Perspectives*. New York: Cambridge University Press, 56-7.

49   Stiker, Henri-Jacques. 1999. *A History of Disability*. Translated by William Sayers. Ann Arbor: The University of Michigan Press, 12.

50   Ibid.

51   Parr, Hester and Ruth Butler. 1999. "New Geographies of Illness, Impairment and Disability." In *Mind and Body Spaces: Geographies of Illness, Impairment and Disability*, edited by Ruth Butler and Hester Parr. New York: Routledge, 21.

52   Rimmerman, Arie. 2013. *Social Inclusion of People with Disabilities: National and International Perspectives*. New York: Cambridge University Press, 150.

53   Ibid., 149.

54   Ibid., 158.

Understanding How Disability Affects the Experience of the Built World

The intention of this chapter is to attempt to understand at least to some degree the experience of different disabilities, especially as they pertain to the primary barriers encountered in the built environment. Knowing what causes disablement in the built environment then informs approaches and strategies for better inclusion of people with disabilities.

Blindness and Visual Impairment

Dr. Stanley Wainapel, a physician who is legally blind, tells us that we should "Think in terms of the functional consequences of vision loss."[1] While this is advice for vision care professionals, it could apply just as easily to architects. One must understand how a person with vision loss functions in order to determine what sort of environment would best facilitate that method of functioning, as opposed to hindering it. Humans are very visual creatures, and vision is our primary means of navigating the world. Blindness or visual impairment therefore has a significant impact on navigation in the built environment.

One of the differences in a blind or visually impaired person's approach to navigation is that it takes time and study. Dr. Wainapel says that "One of the most pervasive effects of my vision loss is the elimination of much of my spontaneity of movement. When you cannot see well, daily encounters with curbs, cars, doors, children, benches, stairs, and dim corridors become considerably more daunting and potentially hazardous."[2] Allowing extra time for orientation in new surroundings (counting steps, memorizing landmarks) is "cumbersome, time consuming, and not without anxiety,"[3] but it is a reality for many with significant vision loss. One of my anonymous survey respondents described the anxiety-inducing experience of going someplace for the first time:

> "Is the door left-opening or right-opening? Is the door revolving? What is on the other side of the door? Which direction do I go? How far do I go? Are there stairs? Is there an elevator? Which floor am I on? Where is the office that I am looking for? What is the layout of the office? Where are the chairs? Where is the receptionist? I prefer to have a sighted guide the first time I am entering an unknown building."[4]

This gives a good sense of how much there is to think about when going someplace new as a blind or visually impaired person.

There are a variety of tools available to help with navigation. The white cane and the Canine Vision dog are the most familiar to the general population. Another tool, less well-known, is echolocation. We normally associate echolocation with bats and dolphins, but humans can learn to use it too. Basically, the person must produce a sound (usually a sharp clicking sound by the tongue or wearing hard-soled shoes) or use a consistent environmental sound (such as dog tags jingling). The sound waves created will bounce off everything nearby and then return to the person's ears at a significantly reduced volume.[5] Humans are able to discern the direction that sound comes from because we are able to tell when sound reaches one ear before the other with a high degree of accuracy.[6] Two eyes

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Non-echolocator

Echolocation expert

"Visual" brain areas
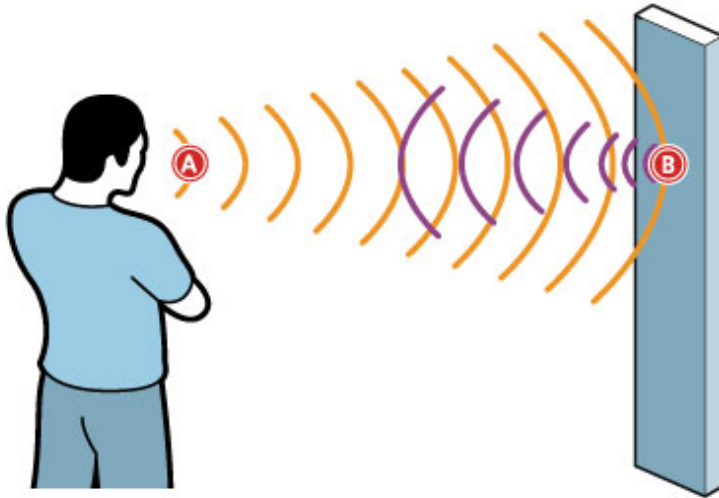
(A) The echolocator uses his tongue and mouth to create clicking sounds.

(B) Sound bounces off object. A practiced echolocator can identify objects around him by the echo, much like bats do.
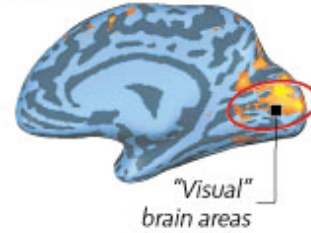
(C) Sounds are played back to participants later during MRI scan. These scans show activity in areas of the brain that normally process visual information.

give us depth perception; two ears give us aural depth perception: "This allows us, using only our ears, to build a detailed map of our surroundings."[7]

It can be stunningly effective, as illustrated by Daniel Kish, who is able to hike solo in the wilderness and go mountain biking: "He is so accomplished at echolocation that he's able to pedal his mountain bike through streets heavy with traffic and on precipitous dirt trails."[8] Kish's non-profit organization, World Access for the Blind, offers training in echolocation to other blind and visually impaired people, even without the support of any of the mainstream blind organizations in the United States.[9] Learning to echolocate as well as Kish is very challenging and can result in injuries, and some also "consider him 'disgraceful' for promoting behavior such as tongue clicking that could be seen as off-putting and abnormal."[10] Though it can result in incredible independence, the method is not without its weaknesses:

"Echolocation's chief liability is that it is not good at detecting holes in the ground, or small dropoffs, which a cane can do. There are also some figure-ground issues with echolocation – a park bench can 'disappear' when it's directly in front of a stone wall."[11]

For this, the white cane comes in handy, as "in essence, [it] increases the length of your arm by as much as five feet."[12] Dr. Wainapel says of the white cane that it "has been an instrument of liberation for me, allowing me a greater range of mobility than was possible without it, but the expanded mobility is purchased at the price of a good deal of misunderstanding and stigmatization."[13]

< Fig. 6.4 - Daniel
Kish, founder of
World Access for
the Blind, leads
students on a hik-
ing trip

I interviewed Diane Bergeron, the National Director of Government Relations and Advocacy at CNIB who has lived with significant vision loss for over forty years, about how she navigates the built world. When asked how common it was for the blind and visually impaired to use echolocation, she stated that "Most people who are blind do this even if it is instinctual and not deliberate."[14] She goes on to say that she "was never taught echolocation, but I use it simply through trial and error and paying attention when I navigate environments. Some people use a clicking sound that they make with their mouth, but I just use the sounds around me or the sound of my shoes or the dog's tags."[15]

All this can help us when determining approaches for trying to make the built environment as accessible as possible for those who are blind or visually impaired. In buildings, the key difficulties are in wayfinding and communication. Wayfinding information is most often visual, so to be accessible it must be provided in a way that incorporates two other senses – in this case, hearing and touch (feel).[16] One of my survey respondents said that the most helpful tool for her has been a map that has labels in Braille and where "you can feel where you are going in relation to where you are."[17] They feel that such maps should be available more often. For someone with low vision, they still have some usable vision, so the solution is to use high contrast between text and background on signage. Contrast should not be less than 70% gray on white, or white on 70% gray.[18] At decision-making points, signs should include Braille for the blind as part of a multi-sensory land-
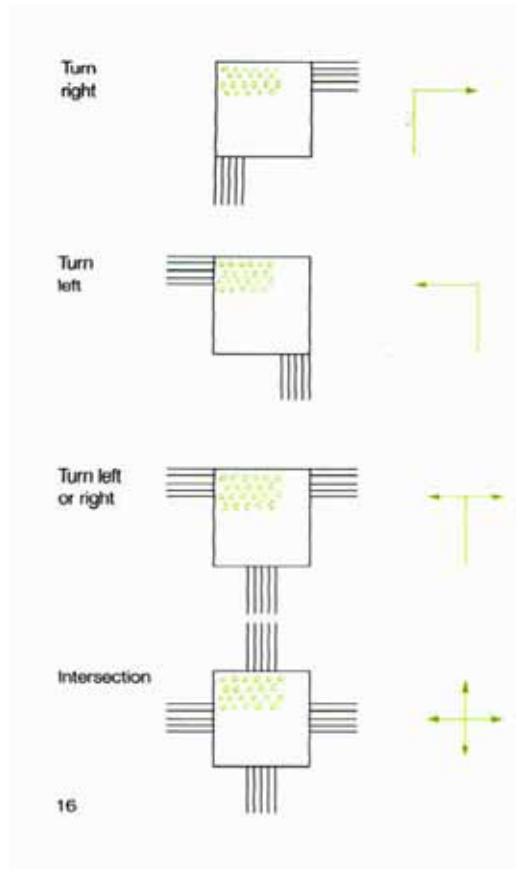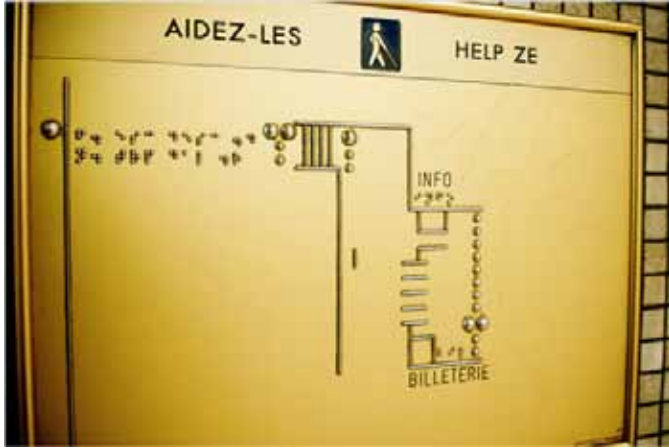
AIDEZ-LES · HELP ZE

INFO

BILLETERIE

ZUM EG

Turn right

Turn left

Turn left or right

Intersection

16

mark strategy,[19] though it should be noted that not everyone who is blind knows Braille, and that is an increasing trend given the availability of so much information in alternate format (audiobooks, for example). Another wayfinding cue that can be used involves placing odiferous plants in key locations to create an olfactory landmark.[20] Not all olfactory landmarks have to be deliberately placed: the smells that naturally waft from a coffee shop or a cafeteria will become part of a blind or visually impaired person's mental map. In elevators, floor levels should be announced as well as displayed.[21] Having a handrail along walls with raised symbols or Braille to indicate wayfinding information is also useful.[22]

Managing lighting to ensure that rooms are adequately and evenly illuminated, and eliminating direct and reflective glare aids in conversation eliminates distortion and disorientation, and reduces strain on the eyes.[23] Colour also needs to be considered: high contrast colours on floors are confusing for those with low vision,[24] though lower-contrast colours can be a helpful navigation tool, and using colour to differentiate furniture from walls is very useful in helping them navigate their environments.[25] This goes for doors and walls as well. Architects must also note that while use of the white cane will identify hazards at ground level quite easily, "any dangers at head or upper-body height must be marked by edging or similar at floor height."[26]

Architects should also take into account that "those who are blind strategically use sound in their wayfinding,"[27] and incorporate strategies that work with echolocation. Consistent sounds are useful in wayfinding[28] and can be used as part of a larger wayfinding strategy. Bergeron gives the example of a speaker that could "be set up near the corner of the room and once we know that we can use that sound to direct us."[29] But attention must also be paid to sounds that are positive and should be incorporated, versus sounds that are negative and should be eliminated. In his article "Configuring Space," where he discussed echolocation and design with Bergeron, Ron Wickman writes that the sound of automatic sliding doors is considered positive,[30] while "mezzanine space creates negative cavernous echoing sounds"[31] and should be avoided. In her interview with me, Bergeron also singles out round rooms and rooms that don't have straight walls as particularly problematic when using echolocation for wayfinding.[32] Straight hallways are also preferred.[33]

Manipulating the ceiling surface changes the sound information for someone who is using echolocation as a navigation tool.[34] A building entrance can be identified by an exterior canopy,[35] and an atrium by a higher ceiling. Thus, any ceiling height changes should be deliberate and done in an attempt to convey additional information about the space. Bergeron mentions also that a balance in material palette in needed: using too many hard materials that causes too much echoing in space is problematic, but carpet dims sound.[36]

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Though I suppose a brooch
is a sort of pin, so...

Deafness and Hearing Loss

While we may be primarily visual creatures, the vast majority of human communication is based on our ability to hear. This means that at its core, hearing loss is a communication disorder: it makes it extremely difficult to effectively communicate with other people, and results in feelings of exclusion and isolation. Sign languages emerged out of the need to communicate, and around those visual languages entire cultures developed. Arie Rimmerman states that this "view of deafness as a culture holds that children and adults who cannot hear are isolated from the mainstream because communication with hearing individuals will always be laborious."[37] Strategies like speechreading, where a deaf or hard-of-hearing person relies on lipreading, residual hearing, and guesswork to understand what people are saying, are labour-intensive and exhausting. It takes so much effort to speechread that it takes longer to actually process and understand what someone has said. Signed languages like American Sign Language (ASL) remove that difficulty by using the visual sense instead.

Those who sign and consider themselves a part of this community are considered Deaf: the capitalization reflects a cultural identification and not a medically-established hearing loss. Someone who is has a audiologically-measured hearing loss would be considered deaf or hard-of-hearing, but not necessarily Deaf. A person who is Deaf and part of the Deaf community does not have a disability within their community: the visual mode of communication removes the disability. So when I refer to deafness or hearing loss as a disability, I am referring to the disablement that is imposed by the hearing world (and mainstream society), where the expectation is of an ability to hear. This expectation is reflected in our society's communication methods, including the use of sound for navigation, and alarm and danger signals.

Deafness is an invisible disability in that there are no external indications of a disability, and because of this it is often forgotten or dismissed as being merely an inconvenience rather than truly disabling. We need to be disabused of that notion. Consider that nearly all of our danger signals are aural: fire alarms, car horns, bicycle bells, whistle-blowing, house alarms. Consider also the information that is relayed verbally through speakers or televisions (without captioning): the morning announcements at school, the in-flight safety video on airplanes, a bus driver announcing the reasons for a delay, a pilot announcing a problem on the flight, anything that requires a telephone. All of this information is inaccessible to someone who is deaf or hard-of-hearing. In the past decade or so much progress has been made with making alarms accessible. Buildings are now required to have visual fire alarms. But like many accessibility features, older buildings are not required to update, and building code for house construction does not yet require visual fire alarms. As a result, deaf and hard-of-hearing individuals continue to be at higher risk for fire-related injury and death.[38]

The built environment, then, must focus on two things in order to promote accessibility for the deaf and hard-of-hearing: communication and safety.[39] Environment affects the success of speechreading tremendously. Background noise
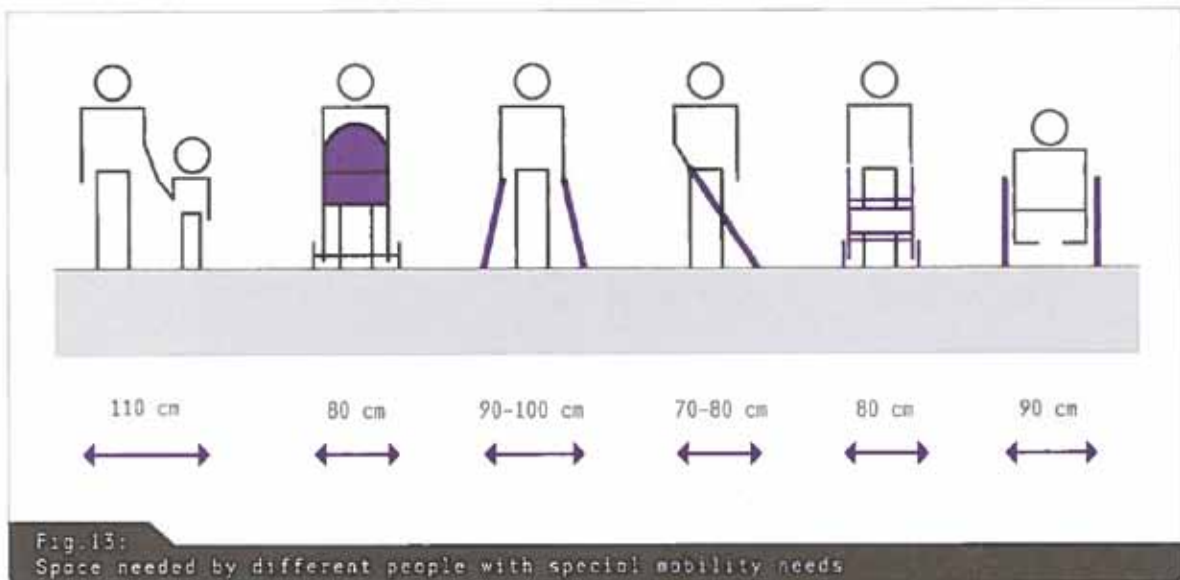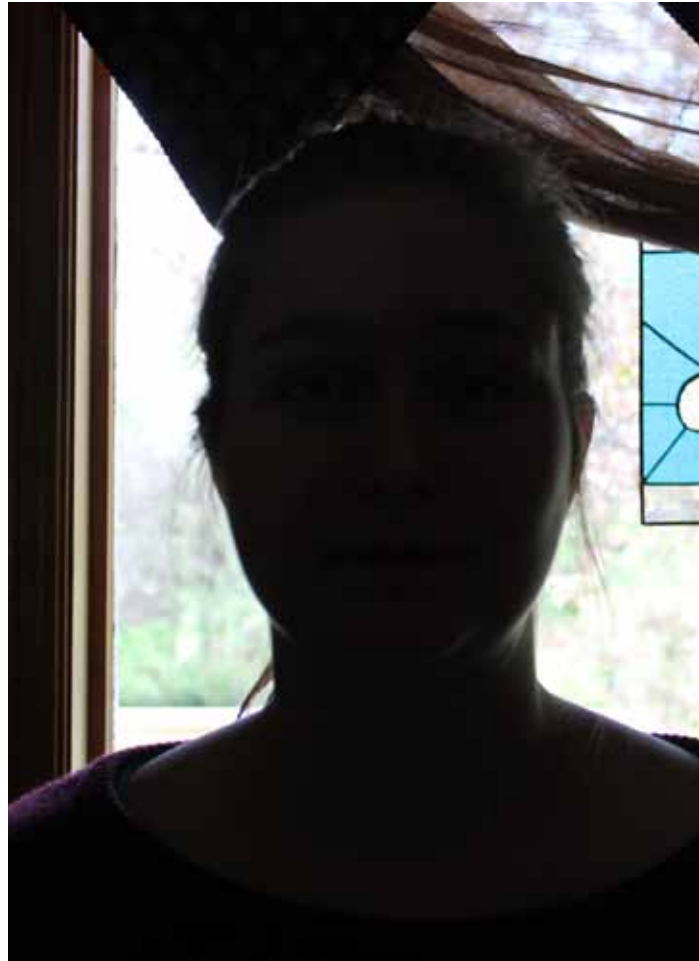
< Fig. 6.12 - Deaf
people converse
in American Sign
Language at Iowa
School for the
Deaf

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                                                    Experience of the Built World

Fig.13:
Space needed by different people with special mobility needs

is very difficult for hard-of-hearing people to block out, and so if it is present, it affects our ability to use residual hearing to solve part of the communication puzzle. Bad acoustical environments and poor noise control lead to aural fatigue from straining to hear.[40] One of my survey respondents was a university student who described frustrations with an older university campus building: "it is so noisy from pipes, fans, hard floors and walls that I've dropped classes and switched to others just to avoid that building."[41] Bad lighting or colour rendering can put a strain on the eyes from trying to decipher lips and facial cues, or signs for those who communicate using ASL. Good, even illumination that does not cast large shadows on people's faces is most conducive to good communication.[42] Direct glare can also cause difficulties,[43][44] because it is very hard to see someone's face if they have their back to a window. You always want the light to be on their faces. In a room where multiple hard-of-hearing people are trying to communicate, this can be difficult to achieve. Indirect lighting comes in handy here, as it would prevent anyone from being cast in shadow and therefore not understood. In addition, sociopetal seating arrangements are better than sociofugal ones because they allow us a direct line of sight to everyone involved in a conversation.[45][46]

Any audio information needs to be supplemented visually: in a classroom, whatever the teacher is saying should be transcribed, both to convey the information and to provide the student with a written record. It can be very difficult for a deaf person to multitask when one of the tasks is listening, so often notetakers are required. Those who are hard-of-hearing may prefer to amplify their own residual hearing: since usually speech is faster than typing, the written transcript will lag behind the speaker, which creates a strain. Audio induction loops are very handy for amplifying sound directly to hearing aids without requiring an FM receiver.[47] If this technology could be implemented in a class setting, that would be very useful. And of course, any information that indicates a threat to a person's well-being absolutely must be delivered to multiple senses. Fire alarms must be visual as well as aural,[48] otherwise the deaf or hard-of-hearing person is relying on secondary or tertiary reactions to alert them to danger. In situations where life could be at stake, that is simply not acceptable.

People who are deaf and hard-of-hearing tend to rely more on their visual sense, both for navigating and for safety. Something that might not normally be considered dangerous, such as a door, could be dangerous for someone who is unable to hear what is going on on the other side of the door. Sidelights or windows in the door provide lines of sight, allowing a deaf or hard-of-hearing person to see if someone is on the other side of the door. I cannot even say how often I find myself in front of a windowless door, worried that someone will push it open from the other side and hit me in the face. It has almost happened a few times. Lines of sight within the plan are helpful too, to allow deaf and hard-of-hearing people to see what is going on. The helpfulness of an open plan must be balanced with the need for good noise control, however.
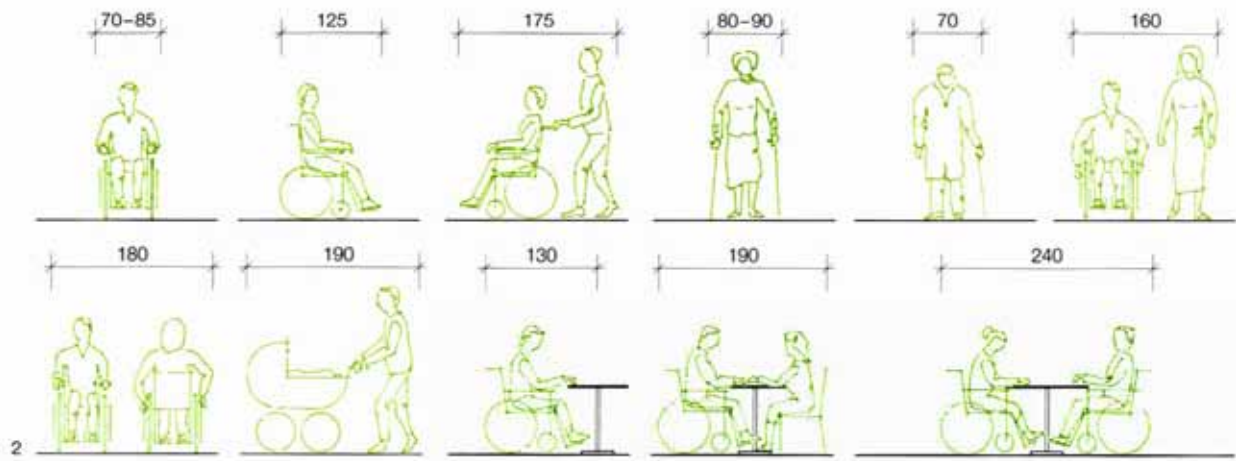
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Mobility Impairment

Current architectural design practices and codes where accessibility is concerned have focused almost entirely on making buildings wheelchair accessible. The problem with this approach is that it not only ignores other disabilities and other assistive technologies that are available for mobility impairments, it also ignores the impairments or circumstances (whether permanent or temporary) that resulted in wheelchair use in the first place. Mobility issues may come about as a result of age, accidents, illnesses, or functional deficiencies. Damage to the brain, spinal cord, muscular or skeletal systems, limbs or lack of limbs, or functioning of internal organs could all be causes of mobility impairments. Therefore, we are not only designing for a potential wheelchair, we are designing for movement coordination disorders, paralysis, muscular dystrophy, vertigo, and impairments to holding, posture, and walking functions.[49] In addition these people may also have vision or hearing problems, or epilepsy. The there are people who may have a mobility impairment only temporarily – a category which would include people with broken legs or sprained ankles. Mobility impairments are usually visible disabilities, which means that they are more easily perceived by the public.

There are many accommodations in place in buildings today for those with mobility impairments, specifically those who are required to use a wheelchair some or all of the time. Universal toilet rooms, minimum corridor widths, accessible washroom stalls, and ramps are all accommodations that have been put in place to allow those in wheelchairs to access buildings. Many of these items also directly or indirectly benefit those who do not have a mobility impairment – parents with young children and service dog users also benefit from universal toilet rooms and accessible washroom stalls.

The greatest barrier for people with mobility impairments is physical access, and so accessible strategies for them have the greatest impact on the appearance of our built environment. As a result, the presence of wheelchairs in particular has been normalized, and there is now significantly less stigma attached to using one. Since there is already so much that has been done to improve physical access and this has been enshrined in buildings codes, I will focus on the less obvious strategies that will continue to improve the quality of experience in buildings for those with mobility impairments.

Keeping circulation efficient and minimal, and eliminating potential tripping hazards like low tables, unsecured area rugs, and abrupt changes in the heights of floor finishes are beneficial to those with impaired mobility who do not use wheelchairs, but may use a walker, crutches, or a cane.[50] Planning furniture layouts so that those in wheelchairs can also join in social gatherings is especially important.[51] In addition, many of the strategies for lighting and colour which benefit the vision impaired also benefit the mobility impaired, whose disabilities may make them overly sensitive to pools of shadows, glare,[52] and particular usage of colours. They may also be sensitive to loud noises or disturbing sounds such as fire alarms, so good acoustics and noise control is also a must. The wall of hand dryers in Fig. 6.17 is an example of a universal design strategy that benefits

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What are the signs of Autism?

those with mobility impairments, as the hand dryers are placed at different levels, ensuring that a variety of people of different heights and reaches will be able to use them. Larger barrier-free push buttons that reach down to foot level enable someone without good upper-body mobility (or a service dog) to make contact with the button using their chair or foot.

Autism

According to the Autism Society Canada, autism "is a neurological disorder which causes developmental disability."[53] It affects cognitive function, and results in social and communication difficulties; behavioural problems such as repetitive behaviours and obsessive interests; and unusual sensory processing.[54] Individuals with autism have described the world as being "a mass of people, places and events which they struggle to make sense of, and which can cause them considerable anxiety."[55]

Autistic individuals are very routine-oriented and even small deviations from an established routine can be very stressful for them.[56] They also often respond in very unusual ways to sensory stimulation: either displaying a hypersensitivity or hyposensitivity to stimuli. Autism Canada says that "We are bombarded with thousands of sensations daily. Our ability to integrate these sensations by attending to the important ones and filtering out the non-essential input helps us to function efficiently. Without smooth functioning of this system, the individual is unable to accurately interpret his/her environment and respond and adapt."[57] Stress or sensory overload can cause people with autism to have what is known as a 'meltdown'. Some children with autism may not have any awareness of danger and will take risks that put them in harm's way, such as bolting, jumping from moving cars, or escaping from their home or school.[58]

In determining design approaches for autism, the key issues will be safety; creating low-arousal spaces that do not aggravate sensory issues; and simplicity and consistency in planning. In his paper "Designing environments for children and adults with ASD," architect Christopher Beaver discusses the importance of designing buildings that can withstand challenging behaviour and be easy to maintain while still feeling warm and welcoming.[59] Buildings should be designed with good acoustics in mind, and "Noisy spaces are to be avoided."[60] Mindful of the tendency of children with autism to try and escape via windows, Beaver proposes high level windows that are out of reach of children and can only be opened by adults.[61] He also recommends a radiant heating and cooling system, as it does not provide "inviting gaps behind them which are ideal for 'posting' a variety of objects such as clothes, toothbrushes, toys and so on."[62]

Lighting and colour are also important factors to consider. Flickering lights, particularly fluorescent lights, are very disturbing for people with autism and needs to be avoided.[63] Compact fluorescents are permissible with appropriate diffusers.[64] Lights with dimmers allow for flexibility in lighting levels, which is good in rooms for those who prefer to sleep with a light on and in common areas for "[encouraging] a sense of quiet as preparation for sleep."[65] Beaver does men-

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tion the fragility of dimmer mechanisms as problematic, but has no other solution as of yet.[66] He does not discuss colour in detail, except to say that "there are neutral colours, calming colours, disturbing and stimulating colours,"[67] and that it is a good idea to encourage people with autism to choose the colour of their own room from a selection of pre-approved colours.[68] The National Autistic Society elaborates by saying that "low arousal colours such as cream (not yellow or white) should be used for walls and patterned wallpaper should be avoided."[69]

In terms of planning, Oliver Heiss et al. in *Barrier-Free Design* recommend paying "particular attention to the need for easy, self-explanatory orientation and hence a 'legible' interior layout"[70] when designing for people with cognitive impairments. Beaver also champions a simple layout, and also says that "Easy recognition of spaces and rooms is essential and this can be determined by carpet colours and the way spaces flow from one to another."[71] He points to corridors as being the most difficult spaces, and says they should be avoided in favour of flexible circulation space that encourages invention and play: essentially the user-group develops their own use for this space.[72] Beaver has also found "that curved walls help some [autistic] children to move through the building as they like to follow the curve and avoid sudden corners."[73]

The addition of a sensory room in buildings that people with autism are likely to frequent should be strongly considered. A sensory room "is a distraction-free area combined with a selection of different equipment which can include: projection equipment; fibre optics; bubble tubes; mirror balls; pinspot and colour wheels; sound system to produce music; bean bags."[74] This room gives people with autism a place to retreat to so they can manage stress, anxiety, and or sensory overload.

Epilepsy and Diabetes

Both diabetes and epilepsy are quite internalized, and are characterized mostly by their impairment effects, which is why I have included them together here. Despite a lack of external indicators of disability, these chronic conditions have a significant impact on a person's life and identity. Kathy Charmaz describes the impact of illness on identity in different life stages:

"The biographical timing of illness influences the extent of its defined disruptiveness. Young adults often find that serious chronic illness disrupts, if not destroys, their life path and plans. It constitutes an assault on the self that threatens their lifeworld. If so, reconstruction of self means identity redirection. Young and middle-aged adults often make major identity changes after having attempted to enact their past identity goals but find that they cannot realize their preferred identities, and thus, move down their implicit identity hierarchy."[75]

While this battle is primarily internal, external factors can and do affect the quality of life of people living with diabetes and epilepsy. As Graham Scrambler et al. state, "negative cultural stereotypes, social stigma, family antagonism or over-

protectiveness, truncated social networks and diminished work opportunities, extending readily to the internalization of discriminatory attitudes and practices, have all been implicated in reduced well-being."[76] They found that when it comes to invisible disorders such as these, "Not only do biological mechanisms typically matter, but psychological mechanisms typically condition people's handling of biologically induced 'impairment effects' in socially induced contexts."[77]

According to Epilepsy Canada, epilepsy "is a physical condition characterized by sudden, brief changes in how the brain works. It is a symptom of a neurological disorder – a disorder that affects the brain and shows itself in the form of seizures."[78] Epilepsy can be inherited, but it can also be caused by congenital issues that are not inherited: angioma, anoxia, neurones damaged by physical trauma (either at birth or later in life),[79] intracranial surgery, brain tumours, infectious diseases, metabolic diseases, chronic alcoholism, or degenerative disorders. In 40-70% of cases, the etiology remains unknown.[80] Scrambler et al. state that epilepsy has indirect and direct effects:

> "Indirect effects embrace the stress induced by living with epilepsy (or other chronic conditions) and may be sufficient to explain anything from mild depression to paranoid delusions. Direct effects allude, for example, to neuropsychological-neurochemical mechanisms like those reflecting limbic system dysfunction. The temporal lobe, together with the limbic structures contained within it, is of known importance in the mediation of emotional and social behaviour. It is not surprising therefore that people with epilepsies originating in the temporal lobe show a high incidence of emotional disorders. The location of the epileptogenic focus, in other words, can exercise and unmediated bearing on psychological/psychiatric disorders."[81]

Epilepsy has also been associated with learning difficulties, changes in affect and personality, behavioural difficulties, and various psychiatric disorders. Seizures can be triggered by a variety of stimuli, including stress; flickering lights; emotions such as anger, fear, worry, etcetera; lack of sleep; and heat and or humidity.

Scrambler et al. conducted interviews with ten patients who had been diagnosed with epilepsy. They found that "Most acknowledged being affected by the nature and complexity of underlying biological processes, their symptoms, their personal decision-making and their relationships with family, peers, teachers, employers and others comprising their lifeworlds."[82] There was a general tendency to try and conceal their condition from the people around them, out of fear of prejudice and discrimination, though the quality of the relationship factored into the decision.[83] Seven of the interviewed epileptics reported that they'd encountered discrimination, which four of them attributed to "ignorance, popular misconceptions, fear or simple lack of concern."[84] This corresponds to one of my own survey respondents, who had encountered bystander apathy when they had seizures in public.[85] In Scrambler's interviews, "Reportage of lay ignorance was unanimous."[86]

From the Scrambler study, it was evident that the limitations associated with epilepsy emanated from biological, psychological, and social factors.[87] One respondent said that "It stops me being social and it has had a big impact that way...I wouldn't go out on my own...I wouldn't go away from home and I wouldn't go to big parties, unless it was close friends."[88] Another described losing their independence and being treated like a child due to their epilepsy.[89] Yet another said, "It has ruined my life...I hate it...I hate it. Everyone is scared and don't want to be with me, and they don't understand what I am going through all the time...I just say 'You don't understand, it's hard, it's awful': I can't drink, have fun...I hate it."[90]

Scrambler et al. concluded by pointing out that a great deal depends on social mechanisms, which "typically provide people with *contexts*, some of which prove decisive for epilepsy-related quality of life. Spontaneous reactions to a witnessed seizure can be pivotal in the long as well as the short term."[91] The quality of life for epileptics is very much tied to the responses and reactions of other people:

> "Both the exploratory study reported here and the published literature on living with epilepsy are replete with examples of how the real or imagined responses of others to a particular witnessed seizure or diagnostic disclosure fundamentally diminish their prospects for a decent job or career, a close relationship, personal equanimity, or even happiness."[92]

The story is similar for diabetics, who have a similarly invisible medical disability in which symptoms may exert themselves in public:

> "People with diabetes…may come to think of their bodies, if not themselves, in highly biomedicalized ways, including the monitoring of insulin levels and the avoidance or prevention of hypoglycaemic episodes or incidents."[93]

Like epileptics, diabetics also wrestle with the question of disclosure, and the extent to which it could stigmatize and exclude them. Mark Peyrot et al. interviewed a number of patients with diabetes, writing:

> "Many feel stigmatized and discriminated against; one said he was regarded as a 'freak'. Another patient said that he 'didn't want anybody's sympathy'. These patients feel that if they talk about their diabetes, 'sometimes people try to make a weakness out of it'. These patients avoid such displays in order to normalize their condition more completely."[94]

It is clear that the approach to accessibility that must be taken with regards to internalized, invisible disorders with occasional visible episodes is to focus on normalizing the existence of these conditions in order to reduce the stigma that surrounds them.

Because the disablement associated with diabetes and epilepsy is related to impairment effects and the subsequent stigmatization that accompanies them,

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the design approach will rely primarily on the strategies developed to accommodate service dogs (in this case, Seizure Response and Diabetic Alert dogs) to normalize the presence of these disabilities. There will also be a trickle-down effect from the design approaches to physical and sensory impairments. Epilepsy-specific design strategies would focus on eliminating the things in the built environment which can trigger seizures and the things which can cause injury in the event of a seizure. This would include avoidance of flashing lights (except in activated emergency alarm systems); creation of a pleasant and healthy interior that does not exacerbate stress or strong emotions and is not too hot or humid; and avoidance of clutter that could cause injury to someone falling.[95]

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The Origins of Us

"What could be more stunning than the idea that modern humans appeared at the same time as the first dogs? [...] At precisely this geological moment, some twelve thousand years ago, the human lost nearly 10 percent of its brain mass and, in the process, became the animal destined to build human civilizations, pyramids, and spacecraft. And as that new, smaller-brained but somehow smarter animal walked out of the swirling fog of time, it was not alone. It was accompanied by, of all things, a mutant wolf."

- Jon Franklin, The Wolf in the Parlor

The story of humans and dogs begins at least fifteen thousand years ago, and possibly more than twenty-five thousand years ago. Horticulture and agriculture had not been invented yet, and it was thousands of years before the domestication of cows, pigs, and sheep.[1] In the beginning, this relationship may have been only for hunting or protection, but by 14,000 years ago dogs were more than just our protectors – they were our companions, who lived with us and were buried with us.[2]

Today's dogs are the genetic descendants of the grey wolf, *Canis lupus*, and the first animal to ever be domesticated by humans, likely sometime between 15,000 and 25,000 years ago. At first glance, it may seem like wolves were an odd choice of companion, lacking compatibility with humans, but as Elizabeth Marshall Thomas points out in her book *The Social Lives of Dogs*, "No two animals could have been more similar than these carnivores and these primates."[3] They also possessed a number of characteristics that made them ideal candidates for domestication. Professor and expert in canine cognition Dr. Alexandra Horowitz states:

> "The [artificial selection] process favours a social animal who is behaviourally flexible, able to adjust its behaviour in different settings. Wolves are born into a pack, but only stay until they are a few years old: then they leave and find a mate, create a new pack, or join an already existing pack. This kind of flexibility to changing status and roles is well suited to dealing with the new social unit that includes humans. Within a pack or moving between packs, wolves would need to be attentive to the behaviour of packmates - just as dogs will need to be attentive to their keepers and sensitive to their behaviour."[4]

Not only are wolves social animals, as humans are, but they possess "the closest approximation to human morality we can find in nature,"[5] according to Dr. Wolfgang Schleidt, chair of animal ethology at the University of Vienna, in his article written with Dr. Michael D. Shalter. They also point out that "Wolves' ability to cooperate in a variety of situations, not only in well coordinated drives in the context of attacking prey, carrying items too heavy for any one individual, provisioning their own young but also other pack members, babysitting, etc., is rivaled only by that of humans societies."[6] Wolves will also give up their own lives in protection of the entire pack. [7]

The wolves that became dogs "were probably less hunters than scavengers, less dominant and smaller than alpha wolves, and tamer." [8] They were, "In sum, less wolfy. Thus, early in the development of ancient civilizations, thousands of years before domesticating any other animal, humans took this one animal with them inside the walls of their fledgling villages."[9]

The Story of Dog and Jackal

Jackal and Dog originally lived as kinsmen deep in the bush. When they passed by the villages of the Mbundu people, they smelled the rich odours of meat

cooking and saw men and women squatting around blazing fires. Jackal wanted fire for himself, so that he and Dog could also cook their meat. He therefore sent Dog into the village to fetch it.

When Dog arrived he ran up to a hut where a woman was scraping leftovers out of her cooking pot. She fed them to Dog and he found that they tasted good - and he realized that life in the village with food aplenty would be better than roaming the bush with Jackal, where most days hunger ruled. So Dog stayed put.

In the bush Jackal howled, as he does to this day, lamenting the fact that Dog had abandoned him and settled down with the villagers. Jackal never got fire, and now is frightened by it. He roams, hunting and scavenging, and has to eat his meat raw.

- Angolan Folk Tale[10]

The Tame Wolf

The Story of Dog and Jackal is one interpretation of how humans and dogs may have first converged. Surprisingly, or perhaps unsurprisingly given that myth has its basis in truth, modern science supports the belief that it was wolves that first approached humans and not the other way around. As anthrozoologist Dr. John Bradshaw writes, "With no prior experience in domestication, humans are unlikely to have deliberately begun the process of domesticating wolves; a much more probable scenario is that the wolves themselves started the process."[11] There are a variety of scenarios posited, and some of them do indeed involve food scraps or food waste[12] as the main attraction. The wolves would have been inclined to protect this new food source, and so the humans probably would have been warned when other dangerous predators were near, and it is also possible that the wolves would have driven off these other predators.[13] In her book The Social Lives of Dogs, Elizabeth Marshall Thomas states that "It would not have taken the people very long to see what the wolves had already seen - the benefits of a human-wolf alliance – and the future of the dog would have been assured."[14]

The ability to socialize with humans was a pre-requisite of domestication, rather than a consequence of it.[15] Wolves would have had to stay "near humans by choice, forming a reciprocal relationship"[16] in order for domestication to take place, and "In this way, an accidental natural selection of wolves who are less fearful of humans would have begun."[17] The need for a reciprocal relationship is evidenced by the keeping of 'pets' by hunter-gatherer societies, where the pets are just tame animals who were taken in as babies. They had no way of breeding them, so the 'pet' supply had to be replenished by young animals who were born in the wild and taken by humans. [18] A wolf cub, on the other hand, would have to be raised by humans and then remain in the village to raise its own young. [19]

One idea is that wolves may have first been drawn to human encampments by the large amount of waste, including food waste, produced by human communities.[20] Horowitz speculates on how the process may have proceeded from there:

The Origins of Us

"Over time, humans would tolerate the wolves, maybe taking a few pups in as pets, or, in leaner times, as meat. Generation by generation, the calmer wolves would have more success living on the edge of human society. Eventually, people would begin intentionally breeding those animals they particularly liked. This is the first step of domestication, a remaking of animals to our liking. With all species, this process typically occurs through a gradual association with humans, whereby successive generations become more and more tame and finally become distinct in behaviour and body from their wild ancestors. Domestication is thus preceded by a kind of inadvertent selection of animals who are nearby, useful, or pleasing, allowing them to loiter on the edges of human society. The next step in the process involves more intention. Those animals who are less useful or liked are abandoned, destroyed, or deterred from hanging about with us. In this way, we select those animals who more easily submit to our breeding of them. Finally, and most familiar, domestication involves breeding animals for specific characteristics."[21]

However scientifically grounded, exactly how domestication events went down is speculation. What is appears clear is that domestication events such as the one described by Horowitz occurred in some form or another at potentially many different locations.[22] Bradshaw describes the domestication process of the first dogs as a defining moment for wolves, pointing out that "If we set aside the artificial distinction of 'domestication' for a moment, we could say that the wolf has evolved into the dog, leaving behind a few, highly totemic vestiges of its past that hang on by a thread in the wild. Some wolves were able to take advantage of man's domination of the globe, and became dogs. Others were not, and stayed wolves."[23] He proceeds to point out that for all the research we have done on the grey wolf in the hopes of furthering our understanding of canine behaviour, today's wolves are "the descendants of the wildest of the wild, whereas today's dogs must be derived from a much more tameable sort of wolf, one that is no longer found in the wild and about which we know almost nothing."[24]

Wolf Pack Structure

For a long time, human knowledge of wolf packs came from observations of captive wolves. The traditional model was that wolves lived in a pack with an established linear hierarchy, with one ruling alpha pair who was the breeding pair.[25] The male alpha would occasionally have to fight other males to maintain his dominance over the pack. Horowitz points out that "With limited space a resources in small, enclosed pens, unrelated wolves self-organize, and a hierarchy of power results. The same might happen in any social species confined with little room."[26] With the modern ability to track wolves via GPS and a thirteen-year study of the wolves on Ellesmere Island done by Dr. L. David Mech, a very different picture of wolf society emerged. The image of the "hierarchical pack run by two tyrants, one male, one female" was replaced by "that of the harmonious family group, where, barring accidents, the younger adults in the family voluntarily assisted their parents in raising their younger brothers and sisters. Coercion was replaced by cooperation as the underlying principle."[27]
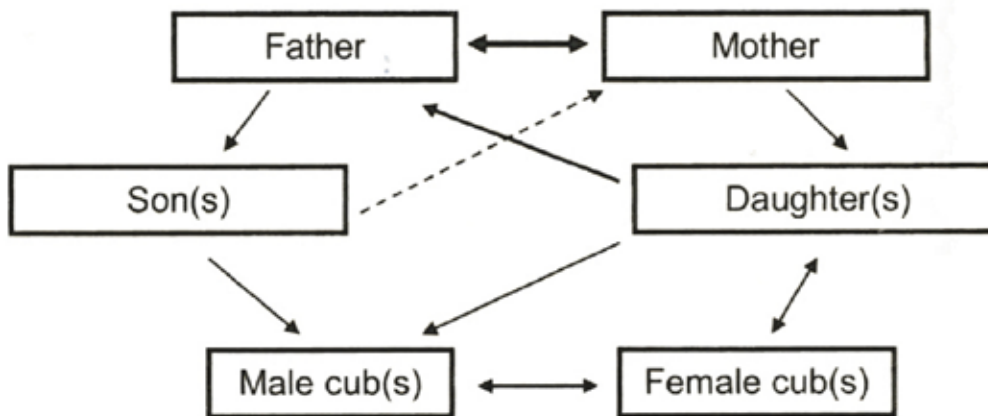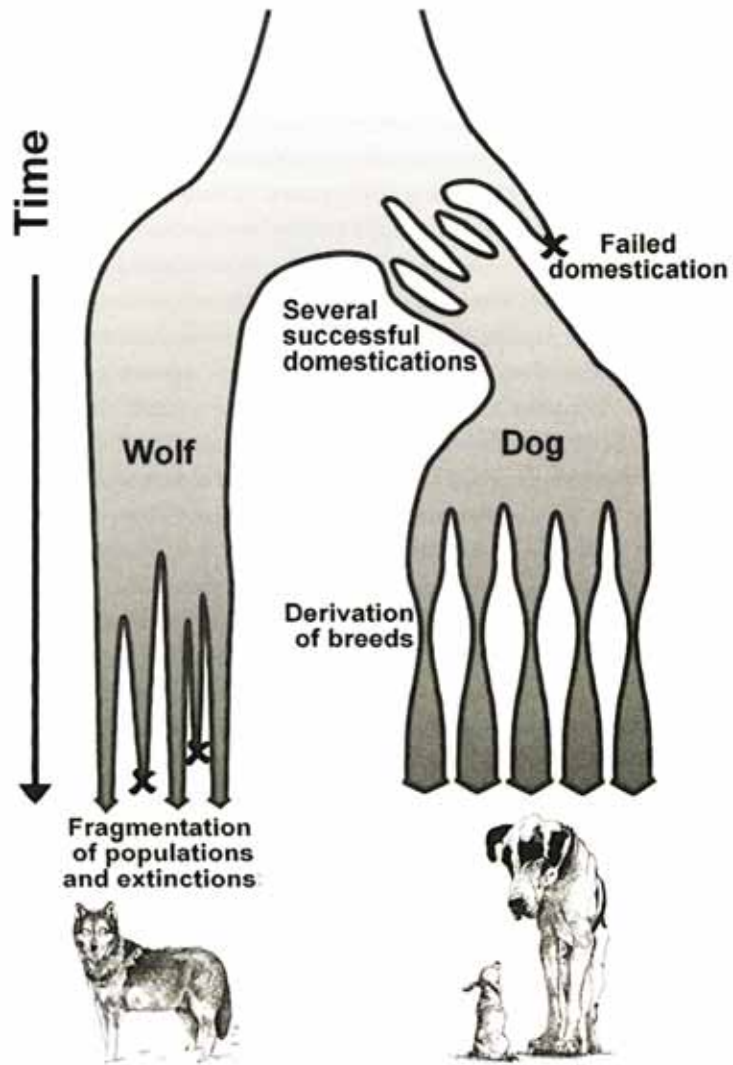
The Origins of Us

Time

Failed domestication

Several successful domestications

Wolf

Dog

Derivation of breeds

Fragmentation of populations and extinctions

Father ⟷ Mother

Son(s) ⟶ Daughter(s)

Male cub(s) ⟷ Female cub(s)

It is important to understand the nature of wolf packs, because in addition to their similarity to human family units, it informs "the social behaviour of wolves, and thus the behavioural inheritance of domestic dogs."[28] The pack starts as a pairing – a solitary male and a solitary female, who have likely both recently left a pack – and they raise a litter of cubs together. The young wolves may stay until they are fully grown, unless there is not enough food to sustain them.[29] Then, "Once they are experienced enough, they will participate fully in hunting, and thus a pack emerges. Often the younger members will still be part of the pack when the next litter of cubs is born and will help their parents to raise their brothers and sisters, bringing food back for them and babysitting them when the other members of the pack are out hunting. Contrary to many notions of wolf behaviour, cooperation, not dominance, seems to be the essence of the wolf pack."[30] It becomes clear that "The term 'alpha,' as applied to a parent wolf in a normal pack, thus doesn't describe much about the wolf's status beyond its role as a parent."[31]

The Story of the Brother-in-Law Who Was a Wolf

Many tribes tell the story of the man out hunting in the first age of the world, who was helped by a wolf who turned out to be his brother-in-law. Times were hard and the man found he was setting his snares in vain – but traps were the only weapons he had at his disposal in those days before the bow and arrow. Day after day he trudged through the deep snow to check them – his progress painful and slow, since nobody had yet invented snowshoes. The thought of his hungry wife and children, cold and miserable at home, drove him on – but despair was slowly sapping his will to continue.

Suddenly he came to a blazing fire, in whose cheery light he saw a stranger, tending a bubbling stew. He was Wolf, the man said, and he was actually the hunter's brother-in-law. This campfire and food were for him, his valued relative; here were several caribou Wolf had killed to feed and clothe his sister's family. Here too were some snowshoes to make the homeward trek easier. Greatest gift of all, however, was the bow and arrow he gave the man – now he could hunt not just rabbits but bigger game such as elk and caribou.

Joyfully the man thanked Wolf for his generosity, and they laughed and joked together deep into the night. At last, however, the hunter fell asleep exhausted. He awoke just in time to see a dark form slinking off into the morning mist: his benefactor and brother-in-law, a real wolf!

- Inuit Folk Tale[32]

The Story of the Boy Who Was Taken by Wolves

An Inuit couple had a baby boy, the joy of his father and mother. But so fine a boy was he that he was coveted by wolves: they determined not to be denied him. One afternoon, therefore, a he-wolf slipped out of his skin and approached the boy's parents, appearing to them in the form of a naked man. As his wife looked on, the wolf-man suggested that they too should undress. He sang a strange
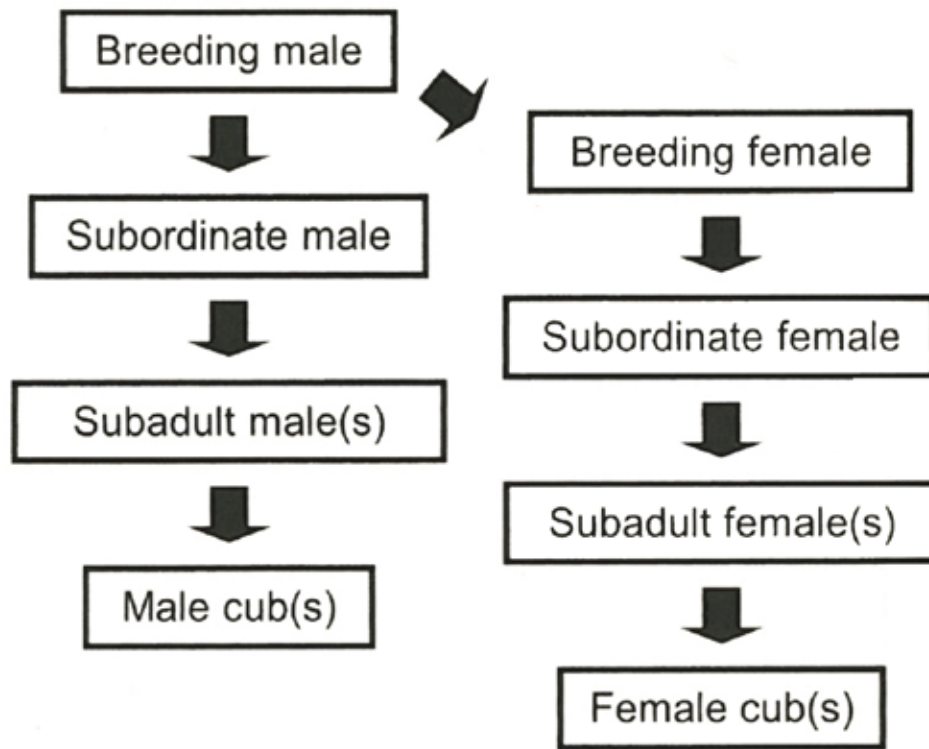
The Origins of Us

song, and before they knew it they were naked and dancing. They were jerked back to startled consciousness, however, when the wolf abruptly ceased his spell; his wolf-wife had the child and it was time for him to run off and join her.

Seeing the big grey wolf loping away, the horrified couple turned as one to look for their son: they saw his empty cradle, and at once knew what had happened. Resolving to track their child's abductors down, they armed themselves, each with a bow. They would need to bring down both male and female wolf in an instant if they were to ensure the boy's safety. All day they searched, until suddenly they stumbled upon a rocky ravine in which the wolves were playing with their little 'boy cub.' Waiting till the strange family slept, the man and woman let loose their arrows: both wolves were killed – but so too was the sleeping child. So tightly had the she-wolf been holding him in her love that a single shaft had pierced both bodies right through. Dutifully, the boy's parents bore their dead son off home for burial.

- Inuit Folk Tale[33]

The Theory of Co-Evolution

< Fig. 7.7 - A wolf family

The Story of the Brother-in-Law Who Was a Wolf and the Story of the Boy Who Was Taken by Wolves serve to illustrate the perception of wolves in mythology. It is interesting to note the very deep connection and similarities to humans. Though the two stories above are from Inuit mythology, such examples also exist in other parts of the world. The she-wolf from the foundation myth of Rome, who nursed the human twins Romulus and Remus, is an excellent example. Despite the lack of physical similarities between humans and dogs, there are so many behavioural and moral similarities that some scientists are now theorizing that dogs and humans co-evolved – that we domesticated each other, and we evolved together to be companions. According to Schleidt and Shalter, "From a biologist's vantage point, the intertwining process between hominization and canization makes sense only if viewed as coevolution."[34] We are the only two animals in existence who consistently form friendships with other species, an ability we probably developed in tandem and as a result of our successful relationship with each other. We taught each other affection, perhaps even love, trust, devotion, empathy, curiosity, and desire to be near other species,[35] and in doing so created a bond that is unparalleled in nature.[36] As Bradshaw states, "For ten thousand years or more, as the purposes for which dogs were valued changed and proliferated, dogs have coexisted and coevolved with us. Essentially, they domesticated us as much as we domesticated them."[37]

Even the term 'domestication' becomes problematic, considering that our "association with dogs predates the construction of permanent houses by thousands of years. Is it not absurd to talk about the 'domestication' of dogs by humans who had not yet any permanent domiciles ('domus')?"[38] More to the point is that dogs and their wolf ancestors accompanied us in our long journey towards becoming human, in the modern sense of the word, as Bradshaw points out: "Indeed over the same span of many thousands of years, we have changed almost as

The Origins of Us

much as dogs have. The dog's history is bound up in our transition from hunter-gatherer to modern city-dweller, and its roles have changed during that time as well."[39] In the course of our long association with dogs, we have changed significantly, and it is more likely that dogs changed us than that we simply changed ourselves. Schleidt and Shalter state that "The impact of wolves' ethics on our own may well equal or even exceed that of our effect on wolves' changes in their becoming dogs in terms of their general appearance or specific behavioural traits."[40]

In the absence of historical evidence, humans look at chimpanzees, our closest relatives, for clues about the foundations of our moral behaviour. [41] Schleidt and Shalter describe it thusly:

> "The life of chimpanzees, especially their sociality, as revealed by the pioneering work of Jane Goodall and others, appears as a frightful caricature of human egoism. Even in their maternal behaviour warmth and affection are apparently reduced to nursing and the occasional comforting hug; cooperation among group members is limited to occasional hunting episodes, or the persecution of a competitor, always aimed for one's own advantage and executed with Machiavellian shrewdness. The first insight we get from chimpanzee society is: 'We have come a long way'. The high morality we claim as a species, however, is a very thin veneer on the old ape, and our newspapers are full of stories that reflect more chimpanzee than human ethics."[42]

Wolves, on the other hand, demonstrate cooperation that rivals what can be found in human societies. Given that similar cooperation is observed in other closely related canids, "it is reasonable to assume that canid sociality and cooperativeness are old traits in terms of evolution, predating human sociality and cooperativeness by millions of years."[43] In short, it is dogs who may have shaped us into something that is recognizably human: "They helped to teach us, or at the very least reinforced, how to love, to empathize, to trust, to play (as adults, not just as children), to apologize – even, in certain ways, how to communicate."[44]

< Fig. 7.8 - The she-wolf from the foundation story of Rome, nursing Romulus and Remus

< Fig. 7.9 - While they may be our closest genetic relatives, human morality is much more similar to that of wolves

The Origins of Us

1   Masson, Jeffrey Moussaieff. 2010. The Dog Who Couldn't Stop Loving: How Dogs Have Captured Our Hearts for Thousands of Years. New York: HarperCollins Publishers, 39.

2   Bradshaw, John. 2011. Dog Sense: How the New Science of Dog Behaviour Can Make You a Better Friend to Your Pet. New York: Basic Books, 36.

3   Thomas, Elizabeth M. 2000. The Social Lives of Dogs: The Grace of Canine Company. New York: Pocket Books, 124.

4   Horowitz, Alexandra. 2009. Inside of a Dog: What Dogs See, Smell, and Know. New York: Scribner, 41.

5   Schleidt, Wolfgang M., and Michael D. Shalter. 2003. Co-evolution of Humans and Canids: An Alternative View of Dog Domestication: Homo Homini Lupis? Evolution and Cognition 9(1): 58.

6   Ibid.

7   Masson, Jeffrey Moussaieff. 2010. The Dog Who Couldn't Stop Loving: How Dogs Have Captured Our Hearts for Thousands of Years. New York: HarperCollins Publishers, 52-53.

8   Horowitz, Alexandra. 2009. Inside of a Dog: What Dogs See, Smell, and Know. New York: Scribner, 40.

9   Ibid.

10   Allan, Tony, editor. 2009. Myths of the World: The Illustrated Treasury of the World's Greatest Stories. New York: Sterling Publishing Company, 289.

11   Bradshaw, John. 2011. Dog Sense: How the New Science of Dog Behaviour Can Make You a Better Friend to Your Pet. New York: Basic Books, 46.

12   Horowitz, Alexandra. 2009. Inside of a Dog: What Dogs See, Smell, and Know. New York: Scribner, 39.

13   Thomas, Elizabeth M. 2000. The Social Lives of Dogs: The Grace of Canine Company. New York: Pocket Books, 125.

14   Ibid.

15   Bradshaw, John. 2011. Dog Sense: How the New Science of Dog Behaviour Can Make You a Better Friend to Your Pet. New York: Basic Books, 52.

16   Ibid., 50.

17   Horowitz, Alexandra. 2009. Inside of a Dog: What Dogs See, Smell, and Know.

New York: Scribner, 39.

18   Bradshaw, John. 2011. Dog Sense: How the New Science of Dog Behaviour Can Make You a Better Friend to Your Pet. New York: Basic Books, 50.

19   Ibid.

20   Horowitz, Alexandra. 2009. Inside of a Dog: What Dogs See, Smell, and Know. New York: Scribner, 39.

21   Ibid.

22   Bradshaw, John. 2011. Dog Sense: How the New Science of Dog Behaviour Can Make You a Better Friend to Your Pet. New York: Basic Books, 33.

23   Ibid., 14.

24   Ibid., 27.

25   Horowitz, Alexandra. 2009. Inside of a Dog: What Dogs See, Smell, and Know. New York: Scribner, 58.

26   Ibid.

27   Bradshaw, John. 2011. Dog Sense: How the New Science of Dog Behaviour Can Make You a Better Friend to Your Pet. New York: Basic Books, 18-19.

28   Ibid., 16.

29   Ibid., 16.

30   Ibid., 16.

31   Ibid., 23.

32   Allan, Tony, editor. 2009. *Myths of the World: The Illustrated Treasury of the World's Greatest Stories*. New York: Sterling Publishing Company, 212.

33   Ibid.

34   Schleidt, Wolfgang M., and Michael D. Shalter. 2003. Co-evolution of Humans and Canids: An Alternative View of Dog Domestication: Homo Homini Lupis? Evolution and Cognition 9(1): 66.

35   Masson, Jeffrey Moussaieff. 2010. The Dog Who Couldn't Stop Loving: How Dogs Have Captured Our Hearts for Thousands of Years. New York: HarperCollins Publishers, 52.

36   Ibid., 51.

37   Bradshaw, John. 2011. Dog Sense: How the New Science of Dog Behaviour Can Make You a Better Friend to Your Pet. New York: Basic Books, 30.

38   Schleidt, Wolfgang M., and Michael D. Shalter. 2003. Co-evolution of Humans and Canids: An Alternative View of Dog Domestication: Homo Homini Lupis? Evolution and Cognition 9(1): 65.

39   Bradshaw, John. 2011. Dog Sense: How the New Science of Dog Behaviour Can Make You a Better Friend to Your Pet. New York: Basic Books, 44.

40   Schleidt, Wolfgang M., and Michael D. Shalter. 2003. Co-evolution of Humans and Canids: An Alternative View of Dog Domestication: Homo Homini Lupis? Evolution and Cognition 9(1): 58.

41   Ibid.

42   Ibid.

43   Ibid.

44   Masson, Jeffrey Moussaieff. 2010. The Dog Who Couldn't Stop Loving: How Dogs Have Captured Our Hearts for Thousands of Years. New York: HarperCollins Publishers, 70.

The World According to Dog

"We have already seen that it is smelly; that it is well peopled with people. On further consideration, we can add: it is close to the ground; it is lickable. It either fits in the mouth or it doesn't, it is in the moment. It is full of details, fleeting, and fast. It is written all over their faces. It is probably nothing like what it is to be us." [1]

-Alexandra Horowitz, *Inside of a Dog*

While dogs may be similar creatures to humans in many ways, it would be a mistake to assume that their experience of the world is anything like ours. While our similarities brought us together in the first place and ensure our compatibility as companions, it is our differences which have made our relationship a symbiotic one. Professor and expert in canine cognition Dr. Alexandra Horowitz describes in her book *Inside of a Dog* how the same object can be perceived differently by different animals:

> "To a human a rose is a certain kind of flower, a gift between lovers, and a thing of beauty. To the beetle, a rose is perhaps an entire territory, with places to hide, hunt, and lay eggs. [...] As it turns out, to the dog, a rose is neither a thing of beauty nor a world unto itself. A rose is undistinguished from the rest of the plant matter surrounding it - unless it has been urinated upon by another dog, stepped on by another animal, or handled by the dog's owner. Then it gains vivid interest, and becomes far more significant to the dog than even the well-presented rose is to us."[2]

The human construction of the world is a visual one – we experience the physical world primarily through our sense of sight. Dogs, on the other hand, construct their world around their excellent sense of smell. Anthrozoologist Dr. John Bradshaw writes in his book *Dog Sense* that "the version of the world as perceived by mankind is rather atypical – even among mammals in general. Humans have highly refined colour vision, reasonable night vision, average hearing, and an utterly puny sense of smell. Dogs, by contrast, have poor colour vision, good night vision, excellent hearing, and a very sensitive and sophisticated sense of smell."[3] Our sensory differences alone would ensure that dogs experience the world from a very different point of view.

Horowitz points out that in addition to sensory perception, we also experience the world in terms of how our physiology allows us to interact with objects and how other objects act upon us:

> "The dog defines the world by the ways that he can *act* upon the world. In this scheme, things are grouped by how they are manipulated (chewed, eaten, moved, sat upon, rolled in). A ball, a pen, a teddy bear, and a shoe are equivalent: all are objects that one can get one's mouth around. Likewise, some things - brushes, towels, other dogs - act on them." [4]

In addition to objects, spaces also hold different meaning to dogs than they do to humans. We have assigned names or functions to certain rooms and objects, but dogs experience spaces at a different scale than we do, and the functions that they ascribe to these spaces and objects is naturally different:

> "Rooms have a parallel life in the dog's world, with areas that quietly collect smells (invisible detritus in the crook of the wall and floor), fertile areas from which objects and odors come (closets, windows), and sit-

olfactory pathlines
respiratory pathlines
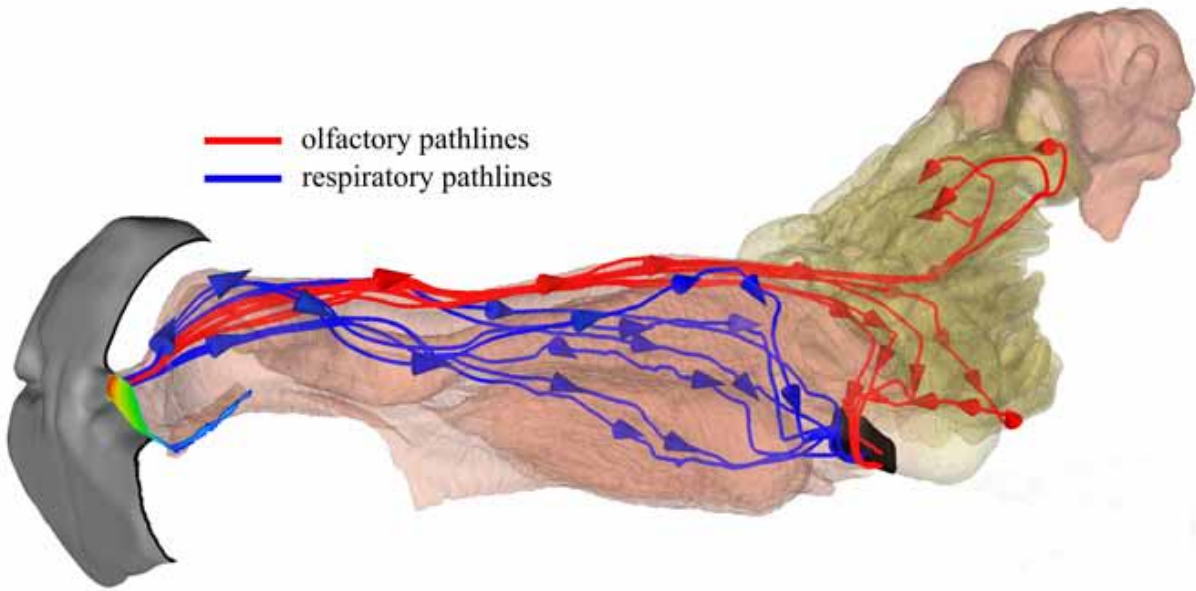
ting areas where you or your identifying perfume might be found. Out-
side, they do not so much notice *buildings:* too big; not able to be acted
on; not meaningful. But the building's *corner*, as well as lampposts and
fireplugs, wears a new identity each encounter, with news of other dog
passerby."[5]

< Fig. 8.1 - Tilley's
long nose

A kitchen, for example, is a name we have for a space of food preparation and
possibly may also be considered a social space. A dog will understand this room,
or rather the parts of it where food collects (between the oven and the counter,
next to the garbage bin) as having a food tone. All of this indicates that the world
according to humans must be a very different place than the world according to
dogs.

Smell

*"Imagine if each detail of our visual world were matched by a corresponding
smell. Each petal on a rose may be distinct, having been visited by insects leaving
pollen footprints from faraway flowers. What is to us just a single stem actually
holds a record of who held it, and when. A burst of chemicals marks where a leaf
was torn. The flesh of the petals, plump with moisture compared to that of the
leaf, holds a different odor besides. The fold of a leaf has a smell; so does a dew-
drop on a thorn. And time is in those details: while we can see one of the petals
drying and browning, the dog can smell this process of decay and aging. Imagine
smelling every minute visual detail. That might be the experience of a rose to a
dog." [6]*

-Alexandra Horowitz, *Inside of a Dog*

The human sense of smell, especially when compared with the olfactory abil-
ities of dogs, is very weak indeed. Horowitz illustrates the comparison by stating
that "we might notice if our coffee's been sweetened with a teaspoon of sugar;
a dog can detect a teaspoon of sugar diluted in a million gallons of water: two
Olympic-sized pools full."[7] It seems that we exchanged an excellent nose for tri-
colour vision at about the same time on our evolutionary timeline.[8] Nevertheless,
smell can be quite a powerful trigger for memories – perhaps even more powerful
than any of our other senses in this respect. While we may take it for granted on
a daily basis, its absence would be felt if we were unlucky enough to lose it, espe-
cially given the close association of smell and taste.

Powerful as the olfactory sense is in dogs, it is not the same as having keen vi-
sion. The mechanics of smell and vision are completely different because odours
don't act the same way light does – they're far more unpredictable.[9] As Bradshaw
illustrates, "to understand what a dog experiences, imagine opening a food cup-
board and not being able to tell instantly whether something you were looking
for was on a shelf inside, in a rack on the back of the door, or on the work surface
beneath."[10] This is why dogs will often look for visible indicators of interesting
odours and may try to leave their own odours in more obvious places.[11]

< Fig. 8.2 - Illus-
trating hat hap-
pens when a dog
breathes in

The World According to Dog

The Dog's View

The Human's View

700   600   500   400
Wavelength (nm)

140°
170°   170°

60°
150°   150°
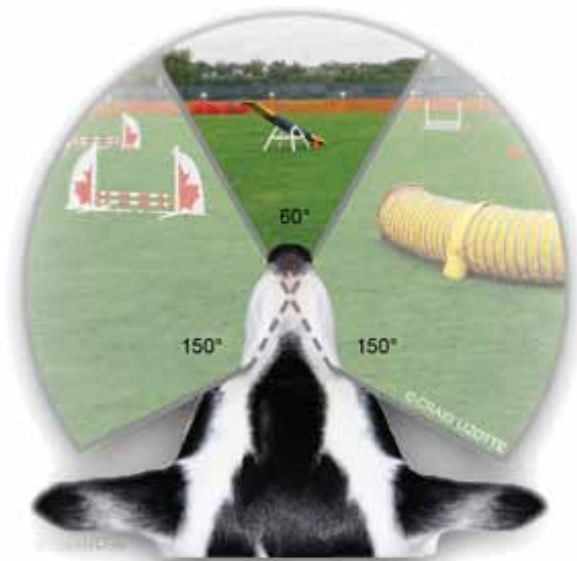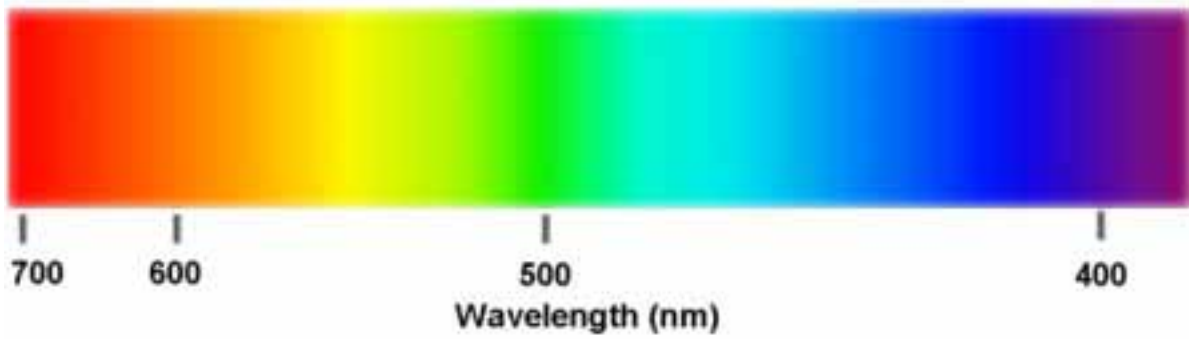
Unlike vision, smell is affected by time and also indicates the passage of time. Odours grow faint and disappear, and new odours are carried on the wind. If the dog stops sniffing, the world of smells vanishes.[12] Horowitz describes the nature of time within the olfactory sense:

> "The dogs' olfactory window of what is 'present' is larger than our visual one, including not just the scene currently happening, but also a snatch of the just-happened and the up-ahead. The present has a shadow of the past and a ring of the future in it. In this way, olfaction is also a manipulator of time, for time is changed when represented by a succession of odors. Smells have a lifetime: they move and they expire. For a dog, the world is in flux: it waves and shimmers in front of his nose. And he must keep sniffing – as if we had to repeatedly look at and attend to the world for a constant image to remain on our retinae and in our minds – for the world to be continually apparent to him."[13]

It is also amazing and surprising to us just what a keen sense of smell can do. Dogs can be and have been trained to detect cancer by the chemical smells that are produced by cancerous cells. Their accuracy rates are astounding: "In one study, they only missed on 14 out of 1,272 attempts. In another small study with two dogs, they sniffed out a melanoma nearly every time. The latest studies show trained dogs can detect cancers of the skin, breast, bladder, and lungs at high rates."[14]

Sight

"Given how dogs see, how do they apply their visual ability? Cleverly: they look at us. Once a dog has opened up his eyes to us, a remarkable thing happens. He starts gazing at us. Dogs see us, but the differences in their vision also seem to allow them to see things about us that even we do not see. Soon it seems they are looking straight into our minds."[15]

- Alexandra Horowitz, *Inside of a Dog*

Dog vision is not so different from ours: for the most part, they see the same things as we do, just with less detail.[16] Their night vision is superior[17] to ours, but their colour vision is inferior. Dogs are not colour blind,[18] but like most mammals, they only have photoreceptors that allow them to perceive the colours blue-violet and yellowish-green.[19] They are unable to tell the difference between red and orange or orange and yellow, and they perceive turquoise as grey.[20]

While humans have a 180-degree field of vision, a dog's can range from 240[21] to 270[22] degrees. Dogs with longer noses, such as retriever breeds, have difficulty seeing things right in front of them, but have better panoramic, high-quality vision. This makes them quite skilled at detecting movement without shifting their gaze. Dogs with shorter noses, such as pugs, have better focus in front of their faces.[23]
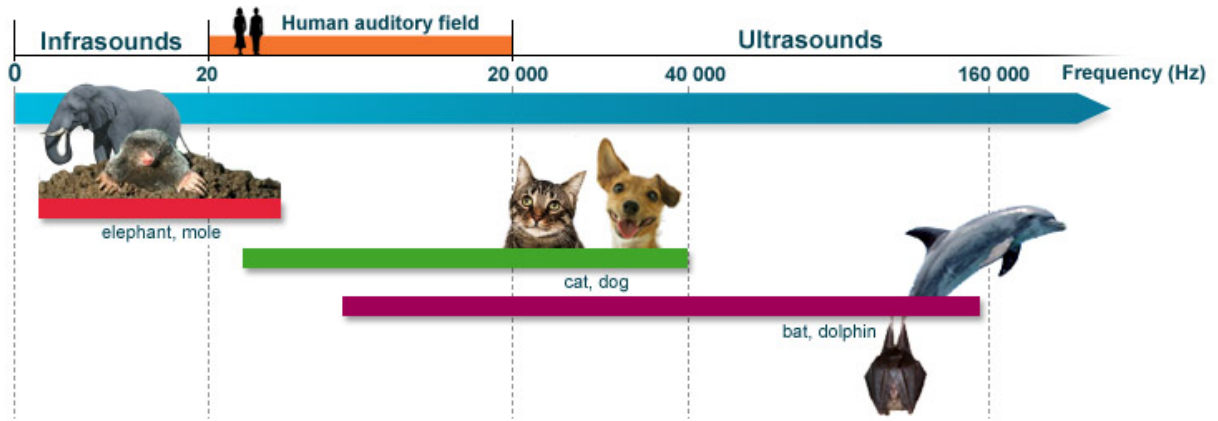
The World According to Dog

Infrasounds — Human auditory field — Ultrasounds

| 0 | 20 | 20 000 | 40 000 | 160 000 | Frequency (Hz) |

elephant, mole

cat, dog

bat, dolphin

Dogs see the world exactly as it is. They "are much more struck by what they actually see, the immediate details, than what they expect to see." [24] They will notice details that we humans are capable of seeing, but do not notice because our brains fill in the blanks in our gestalt vision with what we expect to see, not what we are actually seeing. [25] Because they also have a higher flicker-fusion rate than humans, they also see more of the world than we do: [26] "they see the interstices between our moments. We must always seem a little slow. Our responses to the world are a split second behind the dogs'."[27] This explains their ability to know our intentions before we even act on them, which to us seems like they are reading our thoughts, when in reality they simply see the miniscule movements that lead up to our actions before we are even aware of making them.

Hearing

"Without prominent ears ourselves, we can envy dogs' proud ears. They come in a dazzling array of equally adorable variants: extremely long and lobular; small, soft, and perked; folding gracefully alongside the face. Dogs' ears may be mobile or rigid, triangular or rounded, floppy or upright. In most dogs, the pinna – the outer, visible part of the ear – rotates to better open a channel from the sound source to the inner ear." [28]

-Alexandra Horowitz, *Inside of a Dog*

The human range of hearing is from 20 hertz to 20 kilohertz.[29] Dog hearing is about four times more sensitive than ours: [30] their hearing can detect sounds up to 45 kilohertz.[31] This means that dogs are capable of hearing sounds at a much higher frequency than we can, and because all humans are deaf to ultrasound and cannot judge the quantity or volume of these sounds in our environment, we could be subjecting dogs to damaging noise levels due to our unawareness.[32] "Noises that contain a lot of high-frequency sound, such as the banging of metal gates or the scrape of metal buckets on concrete floors"[33] probably cause a lot of discomfort to dogs.

Their ability to locate the origin of a sound is imprecise, even compared to our hearing. Like us, to best hear a sound they must actively listen, which is "first apparent in the familiar tilt of the head, to direct the ears slightly toward the sound source, or in radar-dish adjustments of the pinnae. Instead of being used to 'see' the source of the sound, their auditory sense seems to serve an ancillary function: helping dogs find the general direction of a sound, at which point they can turn on a more acute sense, like olfaction or even vision, to investigate further."[34] This is why, in training a dog to respond to a noise and lead to the source, the location of the source must be consistent. The dog will remember the location of the source, rather than having to try and determine the directionality of the sound.

Human hearing is average when compared to the hearing of other species, but the main purpose of our auditory sense is to facilitate communication using speech. Our hearing, therefore, is most attuned to the sounds used in speech.[35]

The World According to Dog

Play-bow

Dogs, having an overall greater range of hearing, are certainly able to hear all the sounds made by human speech,[36] and are also "nearly as good as we are at detecting a change of pitch – relevant, say, for understanding statements, which end in a low pitch, versus questions, which in English end in a raised pitch."[37] A dog can therefore infer different meanings from different pitches, based on previous experience with our following actions.[38] A question, posed in a higher-pitched voice and combined with looking at the dog, and the dog most certainly understands that you are talking to her.[39] Cocking her ears towards you and cocking her head to the side, she even seems to be trying to understand *what* you are saying.

Social Lives

"The dog laugh is a breathy exhalation that sounds like an excited burst of panting. We could call it social panting: it is a pant only heard when dogs are playing or trying to get someone to play with them. Dogs don't seem to laugh to themselves, off sitting in the corner of the room, recollecting how that tawny dog in the park outsmarted her human this morning. Instead, dogs laugh when interacting socially."[40]

-Alexandra Horowitz, Inside of a Dog

Dogs, like humans, are extremely social animals. For them, play is an elaborate social interaction that involves coordination, taking turns, and sometimes handicapping themselves so that they are playing on the same level as their playmate.[41] An adult dog will not play the same way with a puppy as she would with another full-grown dog. Dog play also involves a series of signals that are used to communicate that their intentions are social and not aggressive. These play signals, used to initiate play, include the play bow, where the rests on her forelegs with her rump in the air and tail wagging; a shortened version of the bow called a play slap; the open mouth display, with mouth opened but no baring of teeth; and a bobbing of the head with the mouth opened, called a head bow; or even quick bursts of panting.[42] They use these signals to communicate intentionally and to a dog that is looking at them – a display which possibly demonstrates a rudimentary theory of mind.[43] Regardless, the line between play and aggression is drawn only with play signals. As Horowitz observed:

> "[...] play signals are reliably used to begin and to continue play with others. They are a social requirement, not just a social nicety. Dogs typically play together rambunctiously and at a breakneck pace. Since they are doing all manner of actions that could easily be misinterpreted – biting each other on the face, mounting from behind or fore, tackling the legs out from under another dog – the playfulness of their actions has to be manifest. If you fail to signal before biting, jumping on, hip-slamming, and standing over your playmate, you are not in fact playing; you are assaulting him. A bout wherein only one participant thinks it's play is no longer playful."[44]

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< Fig. 8.9 - Black
poodle puppy
playbows, signal-
ling a desire to
play to the yellow
lab puppy

Horowitz also noted that the "dogs who violated the implicit rules for attention-getting and play-signaling – simply barging in on others' play without following the proper, mindful procedures, say – were shunned as playmates."[45]

Outside of play, dogs use scent marking for long distance communication.[46] A scent-mark which has the purpose of communication can last for several days: "messages can be left for recipients to pick up at some undetermined moment in the future, obviating any necessity for actual meetings to take place."[47] These messages are transmitted through urine, and while "scientists still do not know precisely what message is contained in each urine mark,"[48] it does seem "highly likely that dogs' urine carries an odor that is unique to each individual – one that can be memorized by others."[49] When dogs do meet, they greet by sniffing each other's rear ends, which Bradshaw suggests is evidence that dogs are forming links between the appearance and scent of other dogs:[50] that "it's likely that they memorize the odours of all the dogs they meet and then compare these with all the indirect information that they get from sniffing scent-marks while they're out on walks."[51]

Why Dogs Are Not Wolves

"The dog is a member of a human social group; its natural environment, among people and other dogs."[52]

< Fig. 8.10 (lower
left) - Two yellow
labs play chase

< Fig. 8.11 (lower
right) - Manny the
Seizure Response
Dog leaves a
scent-mark on a
tree in front of
the Capitol build-
ing

-Alexandra Horowitz, *Inside of a Dog*

While dogs may have emerged genetically from wolves, the domestication process changed the way dogs think and act to the point where it actually becomes detrimental to consider the dog as if it were merely a tame wolf.[53] In fact, Horowitz points out that the very reason why dogs are able to successfully live with humans in their homes is *because* they are not wolves.[54] They are two fundamentally different creatures: the wolf lives with others of its kind and is wary of humans, while the dog's primary attachments are formed with humans,[55] even in the presence of other dogs.[56]

Socially, wolves, dogs, and humans are similar – this is how the dog came to be in the first place. Horowitz writes that "what domestic dogs do seem to have inherited from wolves is the sociality of a pack: an interest in being around others. Indeed, dogs are social opportunists. They are attuned to the actions of others, and humans turned out to be very good animals to attune to."[57] But "there are differences in social organization: dogs do not form true packs; rather, they scavenge or hunt small prey individually or in parallel. Though they don't hunt cooperatively, they are cooperative: bird dogs and assistance dogs, for instance, learn to act in synchrony with their owners."[58]

The key difference between wolves and dogs can probably be best illustrated by the way in which each of them solve problems. Dogs use humans as sources of information,[59] whereas wolves will solve their own problems through trial and error.[60] In cognitive tests, wolves at first appear to outperform dogs, but as Horo-

witz illustrates, this is only because the tests failed to consider the different methods by which wolves and dogs solve problems:

> "If we revisit some of the problem-solving tests on which wolves performed so much better than dogs, we now see that the dogs' poor performance can there too be explained by their inclination to look to humans. Tested on their ability to, say, get a bit of food in a well-closed container, wolves keep trying and trying, and if the test is not rigged they eventually succeed through trial and error. Dogs, by contrast, tend to go at the container only until it appears that it won't easily be opened. Then they look at any person in the room and begin a variety of attention-getting and solicitation behaviours until the person relents and helps them get into the box."[61]

Dogs are very clever at using us to help solve their problems, but not so great at solving problems when humans aren't around.[62]

Consider also the way in which dogs look at us: they make eye contact.[63] A familiar dog will even return your gaze for an extended amount of time. Wolves, on the other hand, avoid eye contact.[64] Horowitz points out that "In both species, eye contact can be a threat: to stare is to assert authority. So too is it with humans."[65] And yet, we will gaze each other in the eyes, not out of a desire to assert authority or aggression, but out of fondness.[66]

< Fig. 8.12 - Danielle and Trigger share a moment

1   Horowitz, Alexandra. 2009. *Inside of a Dog: What Dogs See, Smell, and Know*. New York: Scribner, 243.

2   Ibid., 22.

3   Bradshaw, John. 2011. *Dog Sense: How the New Science of Dog Behaviour Can Make You a Better Friend to Your Pet*. New York: Basic Books, 228.

4   Horowitz, Alexandra. 2009. *Inside of a Dog: What Dogs See, Smell, and Know*. New York: Scribner, 248.

5   Ibid.

6   Ibid., 72.

7   Ibid., 72.

8   Bradshaw, John. 2011. *Dog Sense: How the New Science of Dog Behaviour Can Make You a Better Friend to Your Pet*. New York: Basic Books, 228.

9   Ibid., 234.

10   Ibid., 235.

11   Ibid., 235.

12   Horowitz, Alexandra. 2009. *Inside of a Dog: What Dogs See, Smell, and Know*. New York: Scribner, 254.

13   Ibid., 255.

14   Ibid., 82.

15   Ibid., 137.

16   Bradshaw, John. 2011. *Dog Sense: How the New Science of Dog Behaviour Can Make You a Better Friend to Your Pet*. New York: Basic Books, 229.

17   Ibid., 231.

18   Horowitz, Alexandra. 2009. *Inside of a Dog: What Dogs See, Smell, and Know*. New York: Scribner, 128.

19   Bradshaw, John. 2011. *Dog Sense: How the New Science of Dog Behaviour Can Make You a Better Friend to Your Pet*. New York: Basic Books, 230.

20   Ibid.

21   Ibid.

22   Horowitz, Alexandra. 2009. *Inside of a Dog: What Dogs See, Smell, and Know*. New York: Scribner, 124.

23   Ibid., 127.

24   Ibid., 137.

25   Ibid., 135.

26   Ibid., 131.

27   Ibid., 132.

28   Ibid., 92.

29   Ibid., 93.

30   Bradshaw, John. 2011. *Dog Sense: How the New Science of Dog Behaviour Can Make You a Better Friend to Your Pet*. New York: Basic Books, 232.

31   Horowitz, Alexandra. 2009. *Inside of a Dog: What Dogs See, Smell, and Know*. New York: Scribner, 93.

32   Bradshaw, John. 2011. *Dog Sense: How the New Science of Dog Behaviour Can Make You a Better Friend to Your Pet*. New York: Basic Books, 232.

33   Ibid.

34   Horowitz, Alexandra. 2009. *Inside of a Dog: What Dogs See, Smell, and Know*. New York: Scribner, 98.

35   Ibid., 93-94.

36   Ibid., 93-94.

37   Ibid., 93-94.

38   Ibid., 96.

39   Ibid., 95-96.

40   Ibid., 103-104.

41   Ibid., 197.

42   Ibid., 201.

43   Ibid., 203-204.

44   Ibid., 200.

45   Ibid., 204.

46   Bradshaw, John. 2011. *Dog Sense: How the New Science of Dog Behaviour Can Make You a Better Friend to Your Pet*. New York: Basic Books, 246.

47   Ibid.

48   Ibid., 247.

49   Ibid., 247.

50   Ibid., 249.

51   Ibid., 249.

52   Horowitz, Alexandra. 2009. *Inside of a Dog: What Dogs See, Smell, and Know*. New York: Scribner, 43.

53   Bradshaw, John. 2011. *Dog Sense: How the New Science of Dog Behaviour Can Make You a Better Friend to Your Pet*. New York: Basic Books, xxii.

54   Horowitz, Alexandra. 2009. *Inside of a Dog: What Dogs See, Smell, and Know*. New York: Scribner, 56-57.

55   Bradshaw, John. 2011. *Dog Sense: How the New Science of Dog Behaviour Can Make You a Better Friend to Your Pet*. New York: Basic Books, 278.

56   Ibid., 144-145.

57   Horowitz, Alexandra. 2009. *Inside of a Dog: What Dogs See, Smell, and Know*. New York: Scribner, 59.

58   Ibid., 43.

59   Ibid., 181.

60   Ibid., 180.

61   Ibid., 180.

62   Ibid., 181.

63   Ibid., 45.

64   Ibid., 45.

65   Ibid., 45.

66   Ibid., 47.

The Interspecies Partnership

"She interpreted the world through acting on it, by seeing others act, by being shown, and by acting with me on the world - promoted into being a good member of the family. And the more time we spent together, the more she became who she was, and the more we were intertwined."[1]

- Alexandra Horowitz, Inside of a Dog

Since the beginning of our partnership, humans and dogs have grown ever closer. What started out as a mutually beneficial relationship has turned into an emotionally symbiotic partnership. As Dr. Alexandra Horowitz writes, "Human companionship has become dogs' motivational meat"[2] – and so too do we find canine companionship emotionally satisfying. Horowitz describes living with a dog as "a long process of becoming mutually familiar."[3] More poetically, but just as accurately, Jeffrey Moussaieff Masson writes that "Having a dog is like falling in love, except that it usually does not take as long to fall in love with a dog as it does with a human."[4] It is hard to scientifically and objectively break down and identify the components that serve to bond us to a dog, because love is not an objective emotion. Somehow, our two species have transcended the bounds of communication that each of us are limited to and established a satisfying companionship with each other.

Dogs now occupy a mostly companionship role, and their place in our lives is no longer tied to their usefulness. The reverse is also true. However, we continue to find new roles for them in our ever-changing world, and some of these roles are truly symbiotic: the person with a disability and their service dog are reliant on each other for reasons that go beyond companionship, though that is certainly part of their role. As Dr. John Bradshaw states:

> "Dogs provide mankind with many benefits. Not only do they continue to work for us in the old, traditional ways, but we are continually finding new roles for them – tasks for which their agility, intelligence, and ability to interact with the world are superior to our own. They also bring us the psychological benefits of companionship, providing relationships that complement those we have with members of our own species. Moreover, if we understand them properly, they can provide us with a fascinating glimpse into a different world, physically the same but perceived through different senses."[5]

It is here that we encounter a shortage of factual information, for "Science is quite intentionally not looking at the very feature that is most important to dog owners: the feel of the relationship between person and dog. That feel is made up of daily affirmations and gestures, coordinated activities, shared silence."[6]

Our relationship is not that of a superior being lording it over an inferior creature. With the barrage of television shows and books showcasing dominance and control as the only way to keep a dog in line, some of us have forgotten, or perhaps were never aware, that our origins were as a partnership of equals. Dr. Wolfgang Schleidt and Dr. Michael Shalter describe our anthropocentrism as finding "comfort in our cherished belief to *be fruitful, multiply, replenish the earth, and subdue it…to have dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth*. In other words, instead of seeing ourselves as part of the complex system of nature, we continue to pretend to be the very crown of creation."[7] Dominance theory is based on the erroneous knowledge of wolf pack structure that came from the study of captive wolves. As was established in Chapter 5, it is now known that wolf packs are in

SIGNALS
featuring Tano the pitbull

www.doggiedrawings.net

fact family units, and that the 'alphas' or pack leaders are actually the parents. With that in mind, Temple Grandin proposes an alternative interpretation of 'alpha' as it applies in interspecies families:

> "What dogs probably need isn't a substitute pack leader but a substitute parent. I say that because genetically dogs are juvenile wolves, and young wolves live with their parents and siblings. During evolution dogs went through a process called pedomorphosis, which means that dog puppies stop developing earlier than wolf cubs do. It's a kind of arrested development. That's why dogs – especially purebred dogs – look less 'wolfy' than real wolves....Dog owners do need to be the leader, but not because a dog will become the alpha if they don't. Dog owners need to be the leader the same way parents do. Good parents set limits and teach their kids how to behave nicely, and that's exactly what dogs need, too. Dogs have to learn good manners and their owners have to teach them. When dogs don't have good human parents, they get crazy and out of control and take over the house in the same way an undisciplined, spoiled child gets crazy and out of control and takes over the house. It probably doesn't matter whether you think of yourself as the alpha or as the mom or dad so long as you raise your dog right. And because a dog never grows up mentally, you have to keep on being a good parent and setting limits even after you dog is grown up physically."[8]

All that is required is a slight shift in thinking; a reinterpretation of the alpha or pack leader as a parent, even in a family unit consisting of humans and dogs.

Communication with Humans

"What is surprising is that dogs, so much less humanlike than these primates, are so much better at realizing what is behind our gaze, how to use it to get information or to their advantage. Dogs can see us as our primate cousins cannot."[9]

- Alexandra Horowitz, Inside of a Dog

For animals who do not share a language with us, dogs are remarkably good at understanding us and at conveying information to us. While "the research with dogs suggests that they do understand language – to a limited degree," it is important to remember that language "is a product of culture," and that "dogs are participants in that culture on a very different level."[10] Dogs place more importance on the sound of what we say them than what we are actually saying: "High-pitched sounds are naturally interesting to dogs,"[11] which is why they "respond with alacrity to baby talk – partially because it distinguishes speech that is directed *at* them from the rest of the continuous yammering above their heads."[12]

Their ability to understand us so well comes from their observation skills. Schleidt and Shalter point out that "contrary to the popular belief that canids are specialized in sniffing and have limited eyesight, they are constantly watch-

< Fig. 9.1 - Lupo the cocker spaniel was included in this portrait of the Royal Family, which makes it clear that he is considered a member of the family unit

< Fig. 9.2 - Dogs mainly communicate with humans through body langage

I HAVE A DREAM

MARTIN LUTHER KING

THE MARCH ON WASHINGTON

FOR JOBS AND FREEDOM

< Fig. 9.3 - Seizure
Response dog
Manny follows his
handler Hasting's
pointing finger

ing each other. A dog knows not only who is who but also who is where and who is doing what."[13] These observational skills are applied also to great effect on humans. Horowitz refers to dogs as being "anthropologists among us,"[14] and says that "What makes dogs good anthropologists is that they are so attuned to humans: they notice what is typical, and what is different. And, just as crucially, they don't become inured to us, as we do – nor do they grow up to be us."[15] They are very sensitive to our movements and can determine our intentions from behaviour and context.[16] Horowitz states that "Dogs use their sensory skills in combination with their attention to us. Without their interest in our attention, they would not perceive the subtle differences in our strides and body postures and stress levels as important bits of information. It allows them to predict us and to reveal us."[17]

This attentiveness is pleasing to us. We would probably not like dogs to the extent that we do if they were not so constantly interested in us:

"Being known and predicted by our dogs is no small part of our fondness for them. If you have ever experienced an infant's first smile at you as you approach, you know the thrill of being recognized. [...] [Dogs] observe a meaningful part of our interaction with each other - our attention, our focus, our gaze; the result is not that they can read our minds but that they recognize us and anticipate us. It makes the infant human; it makes the dog vaguely human, too."[18]

Dogs are so attuned to us that they are able to glean specific information from our gestures: they can follow a pointing finger, and even follow a gaze, which is "simply a point done without hands."[19] When tested, dogs have outperformed chimps at following gazes.[20]

This language of gazes and attention is both a form of communication and a learning tool for dogs, as explained by Horowitz:

"The dog learns, through you, the kinds of things that are important to you - and that you want to be important to him. We are all domesticated too: inculcated with our culture's mores, with how to be human, with how to behave with others. This is facilitated by language, but spoken language is not necessary to achieve it. Instead we need to be alert to what the dog is perceiving and to make our perceptions clear to him."[21]

There are a number of methods dogs use to convey information to humans. Most researchers are in agreement that barking is one such method. As Horowitz states, "Given the relative scarcity of barking in wolves, some theorize that dogs have developed a more elaborate barking language precisely in order to communicate with humans."[22] Like baby cries, different barks have different meanings.[23] At its core, barking is an attention-getting behaviour, but there are many variations of barking that have a primary purpose other than to draw attention.[24] Some barks are purely to get attention, others warn of danger or speak of fear, some are used as greetings or in play. Dogs may bark when they are confused or

lonely, in distress or discomfort, or when they are feeling anxious.[25] Horowitz says that "of the sounds dogs make, barks come closest to speech sounds. The dog's bark is, like the phonemes of speech, produced by vibrations in the vocal folds and air flowing along the folds and through the mouth cavity."[26]

Body language is probably the dog's most important communication tool, and one which many humans will understand to at least some degree. Not having the ability to speak, "The dog uses his body expressively: communication writ through movement. Even the moments between interactions are marked by movement: as when a dog does a full-body shake, his skin twisting over his frame, to indicate his finishing one activity and moving on to another."[27] Much information is contained in the way a dog holds its tail, and whether and how the tail is being wagged. Happiness is not the only emotion conveyed by a wagging tail: wagging can also be used as a threat, to indicate tentative interest, or anxiety. Tail height also matters, and can range from high (conveying confidence, excitement, or aggression) to low (indicating depression, stress, or anxiety).[28]

Acclimatization to Humans

[2930]*"Dogs are not born friendly to humans…Dogs are born to* become *friendly toward people, but this happens only if they meet friendly people while they're still tiny puppies."*[31]

- *John Bradshaw,* Dog Sense

Puppies generally spend the first seven to nine weeks of their life with their mother and littermates before starting their lives with their human family. However, even before going to live with a human family, the puppies need to start being exposed to people and man-made environments starting from when they are approximately four weeks old, and continuing for several months. As anthrozoologist Dr. John Bradshaw states, "Domestication has not adapted dogs to human environments; it has merely given them the means to adapt. Exposure to both people and man-made environments must occur in a gentle and gradual way to enable them to learn how to cope."[32] Exposure to any non-dogs during the critical period of social learning will cause dogs to form "an attachment to and preference for these species over others, often trumping any predatory or fearful drive we might expect them to feel." [33]

Humans must be careful to make sure that the dog's range of experience is not too narrow: they need to have encounters with a variety of types of two-legged animals or they will default to fear and anxiety upon meeting certain kinds of people.[34] This means both men and women; people wearing different styles of clothing; men with beards and men without; people who walk with a limp; people who use a wheelchair. [35] Children often appear quite different than adults to dogs, as they are smaller and can behave very differently, so exposure to different children is also important.

With the right acclimatization, however, dogs will become quite adaptable

The Interspecies Partnership

and flexible, and have the experience they need to adjust to changes in their own lives. As Bradshaw writes, "the need for a human attachment figure seems to be unusually powerful in the domestic dog,"[36] and "For many dogs, the owner will be a constant feature of their lives from the middle of the socialization period onward. However, others will be forced, through changes in circumstances, to alter their primary attachments on several occasions during their lifetime. Thus, in addition to the capacity to accept both humans as well as dogs as social partners, domestication has given dogs the social flexibility sufficient to form new 'familial' ties at almost any time in their lives."[37] This is especially important for working dogs like police dogs and service dogs, who must be able to adjust to having a foster family, trainers, and one or more handlers enter their lives in succession.

< Fig. 9.6 - Very young puppies receive visitors to socialize them to a variety of different people

< Fig. 9.7 - A Future Dog Guide gets some cuddles

The Dog-Human Bond

There are four components to a strong bond that can be encouraged by design strategies: touch, eye contact, the greeting ritual, and play. To these, Horowitz adds a fifth, timing, saying that "the pace of our interactions with each other is part of what can make them succeed or fail."[38]

Touch

For humans, being able to touch gives us a sense of emotional closeness. Horowitz states that "Dogs and humans share this innate drive for contact."[39] Dogs will bump against us when they walk, push their nose into our hands, lie on our feet while we work. When they play together, dogs will "regularly run into any observing owners nearby, using them as living bumpers defining their playing field."[40] In return, dogs will allow themselves to be touched by us, to their credit, since "we find them touchable: furry and soft, right under dangling fingertips and often wearing their neoteny to greatly cute result."[41]

The positive effects of animals on humans are well documented, and in many cases the benefits are tied to the petting of stroking of an animal. Petting a dog can reduce stress, can lower blood pressure, and calm a racing heart.[42] In many cases, we have nearly the same effect on dogs.[43]

Horowitz concludes, arguably to the agreement of all, that "It is hard to imagine knowing a dog but not touching him – or being touched by him. To be nudged by a dog's noise is a pleasure unmatched."[44] This "touch of an animal goes far beyond the mere stimulation of nerves in the skin;"[45] it is an important part of our shared bond.

Eye Contact

Eye contact is one of the most important aspects of the bond for humans, as this is an important part of how we communicate with other humans, and "the fact that dogs will look us in the eyes allows us to treat them as a little more human. We apply to them the implicit rules that accompany human conversations."[46] Human language is more than just words, it is also in the body language that accompanies what we say. Eye contact is a gesture that symbolizes attentive-

ness and interest, and it is perhaps this, in conjunction with touch, that allows us to feel as strongly for dogs as we do:

> "Though they have developed some aversion to staring too long at eyes, dogs seem predisposed to inspect our faces for information, for reassurance, for guidance. Not only is this pleasing to us – there is a certain satisfaction in gazing deep into a dog's eyes gazing back at you – it is also perfectly suited to getting along with humans. We [as humans] not only avoid eye contact with strangers, we rely on eye contact with intimates. There is information in a furtive glance; a gaze mutually held feels profound. Eye contact between people is essential to normal communication. Hence a dog's ability to find and gaze at our eyes may have been one of the first steps in the domestication of dogs: we chose those that looked at us."[47]

We respond well to dogs gazing at us, "and our bond with them is thereby strengthened."[48]

The Greeting Ritual

< Fig. 9.8 - Autism Assistance dog Viper makes eye contact with his girl Kate

< Fig. 9.9 - Julie is reunited with her former foster puppy Wish at an open house

The greeting ritual is the moment of reunification after separation. Horowitz writes that "this celebration of encountering one another serves as recognition and acknowledgment."[49] It is important to realize that the greeting ritual cannot occur without time apart, and the separation strengthens the bond and is healthy for the relationship. Even in a service dog partnership, it is wise to set aside even a brief period of time for separation, to try and prevent separation anxiety from occurring in the event that the handler does have to be apart from the dog for reasons beyond their control, such as a hospitalization.

The moment of reunification is one of joy at seeing each other again, but it also serves to reinforce to the dog that the human will return to them, and vice versa, which in turn strengthens their bond.

Interspecies Play

The previous chapter explained the importance of play for dogs and how it is used as a means of communication. Play is a very interesting aspect of the dog's experience of the world, because "they play more than other canids, including wolves. And they play into adulthood, which is rare for most playing animals, including humans. Although we ritualize play into team sports and solo video game marathons, as sober adults we rarely spontaneously blindside and tackle our friends, tag them and run, or make faces at each other." [50]

Dogs are excellent communicators when it comes to play, and perhaps this, in conjunction with their unbridled joy for this activity, is why they are sometimes successful engaging even members of other species in their games. The media is full of stories of dogs playing with bears,[51] a dog who is best friends with an elephant,[52] and a cheetah and an Anatolian Shepherd who are the best of friends.[53]

< Fig. 9.10 - Brittany catches up with her former foster puppy West at his graduation. This moment is bittersweet: it is rewarding to meet the person they will help, but it is also goodbye

< Fig. 9.11 - David plays with foster puppy Darla

While the media coverage is deceptive, since in reality those sorts of friendships are rare, in other species (with the exception of humans, of course), interspecies friendships are virtually unheard of. More commonly observed are the friendships that can develop between domestic pets, such as the family dog and cat.

Dogs play very differently with a person than they do with other dogs, and indeed even the "capacity of dogs to engage in play with humans is particularly surprising given the sophistication of dog's communication with other dogs during play."[54] Anyone who has watched dogs play has probably noticed that after playing together for a bit, if there are toys around, each dog will take a toy and go play with it on their own for a bit, before eventually returning to play with each other again.[55] However, when playing with a person, the dog doesn't care if there are other toys lying about, they keep on bringing one toy back to the person and invite them to throw or tug it.[56] As Bradshaw observed, "When the play-partner is a person...the important thing is the social contact that the game produces."[ ] He concluded that "the boundless appetite that most dogs seem to have for games with their owners, and even with people they don't know so well, must be due to the strength of their attachment to mankind in general."[ ]

For a human to share play with a dog is to engage with a dog using their primary medium of socialization. Playing together regularly serves to create and maintain a bond between human and dog, as we are interacting with them on their level. Play can incorporate all the other components of a strong bond, and so providing opportunities to play with humans becomes a very important part of the facilitating the bonding process between our two species.

The Interspecies Partnership

1   Horowitz, Alexandra. 2009. Inside of a Dog: What Dogs See, Smell, and Know. New York: Scribner, 65.

2   Ibid., 64.

3   Ibid., 63.

4   Masson, Jeffrey Moussaieff. 2010. The Dog Who Couldn't Stop Loving: How Dogs Have Captured Our Hearts for Thousands of Years. New York: HarperCollins Publishers, 183.

5   Bradshaw, John. 2011. *Dog Sense: How the New Science of Dog Behaviour Can Make You a Better Friend to Your Pet*. New York: Basic Books, 277.

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7   Schleidt, Wolfgang M., and Michael D. Shalter. 2003. Co-evolution of Humans and Canids: An Alternative View of Dog Domestication: Homo Homini Lupis? *Evolution and Cognition* 9(1): 63.

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10   Ibid., 94-95.

11   Ibid., 96.

12   Ibid., 96.

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15   Ibid., 163.

16   Ibid., 167.

17   Ibid., 166.

18   Ibid., 173.

19   Ibid., 150-151.

20   Ibid., 150-151.

21   Ibid., 64.

22   Ibid., 105.

23   Ibid., 106-107.

24   Ibid.107.

25   Ibid., 107.

26   Ibid., 105.

27   Ibid., 113.

28   Ibid., 112.

29   Bradshaw, John. 2011. Dog Sense: How the New Science of Dog Behaviour Can Make You a Better Friend to Your Pet. New York: Basic Books, 122.

30   Ibid.

31   Horowitz, Alexandra. 2009. Inside of a Dog: What Dogs See, Smell, and Know. New York: Scribner, 42-43.

32   Bradshaw, John. 2011. Dog Sense: How the New Science of Dog Behaviour Can Make You a Better Friend to Your Pet. New York: Basic Books, 130.

33   Ibid.

34   ▯▯Ibid., 145.

35   Ibid., 145.

36   Horowitz, Alexandra. 2009. Inside of a Dog: What Dogs See, Smell, and Know. New York: Scribner, 266.

37   Ibid., 267.

38   Ibid., 269.

39   Ibid., 269.

40   Ibid., 279.

41   Ibid., 279.

42   Ibid., 271.

43   Ibid., 266.

44   Ibid., 149.

45   Ibid., 47.

46   Ibid., 148.

47   Ibid., 266.

48   Ibid., 198.

49   Emery, David. "Polar Bear and Huskies at Play – Analysis." Accessed September 21, 2013. http://urbanlegends.about.com/od/animalkingdom/a/polar_bear.htm.

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53   Ibid., 205.

54   Ibid., 205.

55   Ibid., 205.

56   Ibid., 207.

The Evolution of Us

"Watch the parade of leashed dog-person twosomes along a city street. Despite small diversions, they are dancing in masterful synchrony, traveling together- er. *Working dogs are trained to heighten their sensitivity to the dance. Blind people and their guide dogs take turns initiating movement, completing each other."*[1]

- Alexandra Horowitz, Inside of a Dog

Until just over one hundred years ago, most dogs were working dogs, and the breeds were suited to the work that they did – they were bred for a specific working purpose. 'Working dog' in the original sense of the word included dogs bred for herding, guarding, tracking and hunting. Most dogs now never work at all, and though many breeds have adapted, others have not.[2] Dr. John Bradshaw writes that "Among dogs who do not work, many of the skills for which they were originally bred become redundant – or worse – in their companionship role."[3] Dr. Alexandra Horowitz elaborates, explaining that the pet dogs of today "live in circumscribed, urban environments and are expected to be simultaneously better behaved than the average human child and as self-reliant as an adult. As if these new obligations were not enough, many dogs still manifest the adaptations that suited them to their original functions – traits that we now demand they cast away as if they had never existed. The collie who herds sheep is the shepherd's best friend; the pet collie who tries to herd children and chases bicycles is an owner's nightmare."[4]

To prevent destructive behaviour in working breeds of dogs with no tasks – who can suffer from agitation, restlessness and boredom – these dogs need to be given the opportunity to use their innate tendencies in some way:[5] "This is the great science behind 'tossing a ball': a retriever is made happy just to do it, over and over. He is fulfilling his capability."[6] Horowitz suggests that there is surely more to "their world than Gary Larson's *Far Side* comics suggest: eat, walk, and fetch. But he is on to something, insofar as these are organizing elements of their interaction with us: we circumscribe the dog's world to a small set of activities. Working dogs seem miraculously responsive and focused compared to city pets. It is not that they are innately more responsive or focused, but that their owners have added to their vocabularies types of things to do."[7] Some humans may consider the use of service dogs, police dogs or bomb-sniffing dogs to be a form of slavery, but service dogs are almost always working breeds of dogs, and assisting a person with a disability or apprehending a suspect is something that allows them to satisfy their drive to work. Jeffrey Moussaieff Masson states:

> "Dogs obviously did not evolve to lead the blind, and nothing like this exists in the natural behavioural repertoire of wolves. But dogs do it, and they do not seem to do it with bad grace. [...] We can only guess what goes through a dog's mind when he or she is leading a blind person or performing some other service useful to humans. But it seems to me one explanation for why they allow themselves to be trained to do these things is the long relation we have with them. Thousands and thousands of years have resulted in this trust, this unique partnership."[8]

While the skills for working dog tasks may not be observable in the natural behavioural repertoire of wolves or dogs, if one breaks down the skills of a working dog into individual tasks as trainers must do in order to teach these tasks, you begin to see familiar and even natural dog behaviours that have simply been given a modified purpose.

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Types of Working Dogs

Modern-day working dogs are trained to work in a range of different fields. Many of these jobs take advantage of the dog's incredible sense of smell, but above all, it is our ability to form close bonds with dogs that make them so effective in helping us.

Dogs have been trained for a variety of jobs within the armed forces, border services, and police services. Detection dogs are trained to detect illicit substances by smell, ranging from cocaine to ecstasy to alcohol, and are also able to sniff out drug paraphernalia.[9] Bomb-sniffing dogs are trained to detect approximately twenty different vapours produced by various types of explosives, including TNT, PETN, and RDX.[10] ATS K9 Detection, a company which trains police dogs, says that often the dogs are able to perform this task more effectively than machines that are designed for the same purpose.[11] Accelerant dogs can be brought in after a suspicious fire to determine whether accelerants were used to cause the fire.[12] Cadaver dogs are trained to detect decomposing corpses. Patrol dogs are able to chase down and apprehend fleeing criminals more effectively than humans, and even the presence of the patrol dog can prevent a situation from escalating to a physical confrontation.[13] A patrol dog may also be trained to detect drugs,[14] and others may be trained to specifically detect landmines.[15] Dogs have also been employed for a long time within the military. The US military, which used roughly 4000 working dogs during the Vietnam War, had around 2500 military working dogs at the height of the Afghanistan and Iraq wars,[16] with more than 500 of them deployed somewhere in the world at any one time.[17]

Therapy dogs visit hospitals and nursing homes and provide comfort and stress relief to residents. Recently, some universities have started bringing in therapy dogs around exam time to help relieve stress in students. Some therapy dogs, called reading dogs, work in libraries helping develop literacy skills in children.[18]

With recent studies showing that dogs have incredible accuracy rates in detecting cancer,[19] more and more are being trained for this purpose in the hopes of soon receiving approval to start using these dogs as a cancer screening tool.[20]

Probably the most familiar type of working dog is the service dog or assistance dog, trained to assist people with disabilities with everyday tasks. The types of disabilities that dogs can be trained to assist with continues to grow, and the list now includes not only blindness, deafness, and mobility impairments, but also autism, epilepsy, diabetes, and psychiatric issues such as Post Traumatic Stress Disorder.[21] This thesis focuses more specifically on service dogs, but many of the design strategies that emerge from this research can also be applied to spaces for other types of modern working dogs.

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^ Fig. 10.3 (top) - Spencer, a bomb-sniffing dog, and his handler Corporal Frederick of the Wayne County Airport Police on patrol at the Detroit Metropolitan Airport
^ Fig. 10.4 (above) - Therapy dog Molly visits retired technical sergeant Gene Mohr in hospital

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^ Fig. 10.5 (top) - Ohlin picks out cancerous tumours from among the scents in different buckets, under the supervision of trainer Jonathan Ball at the University of Pennsylvania Working Dog Center
^ Fig. 10.6 (above) - Rafiki is a service dog who has been trained to assist a mobility-impaired handler

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**TRAINING A SIMPLE BEHAVIOUR:
THE "SIT" COMMAND**
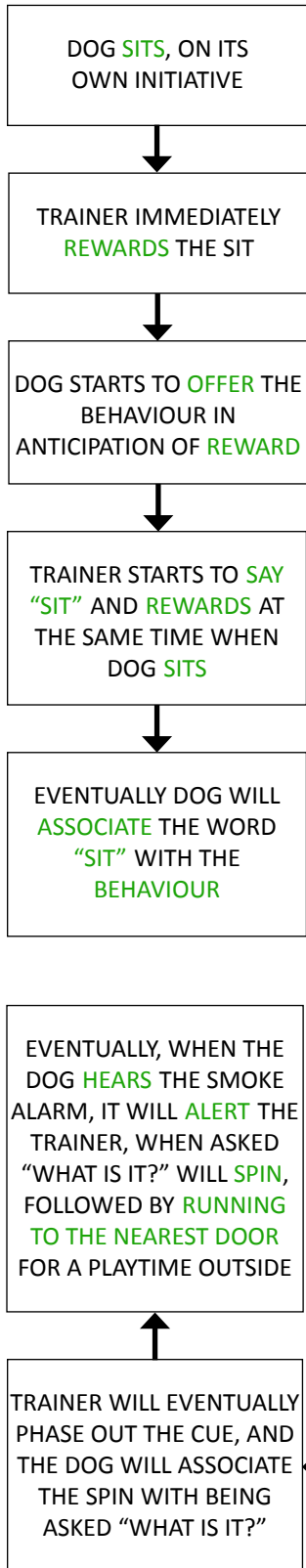
**SHAPING A COMPLEX BEHAVIOUR:
RESPONSE TO THE SMOKE ALARM**

DOG SITS, ON ITS
OWN INITIATIVE

↓

TRAINER IMMEDIATELY
REWARDS THE SIT

↓

DOG STARTS TO OFFER THE
BEHAVIOUR IN
ANTICIPATION OF REWARD

↓

TRAINER STARTS TO SAY
"SIT" AND REWARDS AT
THE SAME TIME WHEN
DOG SITS

↓

EVENTUALLY DOG WILL
ASSOCIATE THE WORD
"SIT" WITH THE
BEHAVIOUR

EVENTUALLY, WHEN THE
DOG HEARS THE SMOKE
ALARM, IT WILL ALERT THE
TRAINER, WHEN ASKED
"WHAT IS IT?" WILL SPIN,
FOLLOWED BY RUNNING
TO THE NEAREST DOOR
FOR A PLAYTIME OUTSIDE

↑

TRAINER WILL EVENTUALLY
PHASE OUT THE CUE, AND
THE DOG WILL ASSOCIATE
THE SPIN WITH BEING
ASKED "WHAT IS IT?"

DOG ALERTS, ON ITS
OWN INITIATIVE

TRAINER CUES ALERT
BY TAPPING ON LEG
OR PLACING DOG'S
PAW ON THEIR LEG

DOG WATCHES
ANOTHER DOG OFFER THE
ALERT, IMITATES IT

↓

TRAINER IMMEDIATELY
REWARDS THE ALERT

↓

DOG STARTS TO OFFER THE
BEHAVIOUR IN
ANTICIPATION OF REWARD

↓

TRAINER SETS OFF SMOKE
ALARM AND CUES THE
ALERT, THEN REWARDS
THE DOG

↓

EVENTUALLY DOG ASSOCI-
ATES THE SOUND OF THE
ALARM WITH THE ALERT

↓

TRAINER SETS OFF SMOKE
ALARM, DOG ALERTS, AND
TRAINER CUES THE SPIN,
THEN REWARDS THE DOG
WITH OUTSIDE PLAYTIME

TRAINER BEGINS
TRAINING A SPIN
BY LURING DOG IN
CIRCLES USING TREAT

↓

TRAINER IMMEDIATELY
REWARDS THE SPIN

↓

TRAINER EVENTUALLY
REPLACES THE LURE WITH
A CUE, REWARDS THE SPIN
WHILE
ASKING, "WHAT IS IT?
WHAT IS IT?"

Training Service Dogs

"...in training a dog you must reward only those behaviours you desire the dog to repeat endlessly."[22]

- Alexandra Horowitz, Inside of a Dog

Service dog training "makes much fuller use of dogs' cognitive abilities"[23] than basic obedience training does, but both operate "on the principle of *associative learning*."[24] With associative learning, the dog learns to associate a specific behaviour with a reward. The reward could be praise, food, attention, or a toy, depending on what motivates the individual dog.[25] It is a type of problem solving – figuring out what needs to be done in order to obtain the reward: "Once a problem is solved - a hidden treat is unearthed, an unjustly closed door is opened - with or without a person's help, the dog is quickly able to apply that same means to solve it again and again. He has identified a state of affairs, fashioned a response, and realized the connection between that problem and that solution."[26] Dogs are very skilled at forming associations between events,[27] and this skill is used to our advantage in training. As Horowitz writes, "Good training comes from understanding the mind of a dog – what he perceives and what motivates him."[28]

To train the complex skills required for service work, trainers will break down the desired end-result into manageable pieces that can be learned individually, and then once each piece has been mastered, string them together to form one task. The basis of the deconstructed pieces can sometimes be found in natural dog behaviours, although it should be kept in mind that a natural dog behaviour may or may not be a natural wolf behaviour. Attention-getting behaviours "are behaviours that are sufficient to change the focus of someone else's attention, by stepping into his visual field, making a discernible noise, or making contact."[29] A natural part of a dog's communication repertoire, attention-getting behaviours can become contact alerts in the sound work of a Hearing Ear dog or a bark for help by a Seizure Response dog. Dogs are also capable not only of following points, but of pointing themselves with a gaze, a behaviour that "consists of a lot of attention-getters (such as barking), followed, critically, by looking back and forth between the owner and the location of the treat. In other words, pointing with that gaze – showing."[30] To be useful in service work, this usually has to be reshaped into a physical point, with the dog leading the handler to, say, the source of a sound (and therefore a reward). The tugging behaviour that dogs use during play also finds a place in service work, as a means of opening doors and refrigerators.

In addition to their specific task-based training, service dogs must also complete public access training, where they learn appropriate behaviour for public outings and how to contend with situations that pet dogs do not have to deal with, such as riding escalators and taking public transit. Because of the standard of behaviour required and the complexities of the task-based training, failure rates can be high. There are a number of factors that can disqualify a dog from service work: the fact is that not all dogs are cut out to be service dogs. In addi-

< Fig. 10.7 - Service dog trainers use a reward-based system to shape desirable behaviours in a way that leads to the dogs being able to complete various tasks. A reward can be a food reward, verbal and or physical praise, or playtime - anything the dog enjoys and that is strong enough to be an incentive. Undesirable behaviours are simply ignored

INHERENT TRAITS	SHAPING OF INHERENT TRAITS		END BEHAVIOUR
ATTENTION-SEEKIING BEHAVIOUR	REWARD ATTENTION-SEEKING BEHAVIOUR	REWARD ATTENTION-SEEKING BEHAVIOUR IN RESPONSE TO CERTAIN STIMULI	DOG WILL ALERT HANDLER TO CERTAIN STIMULI, SUCH AS SOUNDS OR LOW BLOOD SUGAR
TUG'O'WAR	REWARD TUGGING BEHAVIOUR	ASSOCIATE COMMAND WITH THE TUGGING	DOG TUGS ON TUGS ATTACHED TO DOORS, CUPBOARDS, ETC. TO OPEN THEM
INTELLIGENCE	HANDLER LEARNS TO TRUST DOG AND HOW TO INTERPRET DOG'S SIGNALS IN RELATION TO HANDLER'S FEELINGS/ BEHAVIOUR	REWARD DOG'S SIGNALS	INTELLIGENT DISOBEDIENCE
PHYSICAL AFFECTION	ENCOURAGE AFFECTION BY REWARDING DOG WHENEVER THEY CHOOSE TO SEEK PETTING OR LIE AGAINST HANDLER	ENCOURAGE A SPECIFIC POSITIONING WHEN DISPLAYING AFFECTION	DOG WILL PERFORM DEEP PRESSURE THERAPY AND PROVIDE REASSURANCE IN RESPONSE TO ANXIETY
CONFIDENCE IN NORMAL SITUATIONS	GAMES DESIGNED TO BOOST CONFIDENCE	BUILD A RELATIONSHIP WITH THE DOG	CONFIDENT ENOUGH TO WORK IN PUBLIC DESPITE HANDLER ANXIETY OR PANIC

tion, not all dogs want to be service dogs – a dog that does not want to work will be disqualified and adopted out as a pet.

How the World According to Dog Manifests in Service Dog Training

Training dogs is all about teaching them what is acceptable and convenient for humans. In the case of service dogs, it is crucial for the dog to understand a certain amount of the human worldview, or what Horowitz calls the 'umwelt', so that they have a filter through which to recognize what is important to or poses a threat to their handler. Horowitz gives an excellent explanation of how this applies in the case of a blind person and Canine Vision dog:

> "Though our visual worlds overlap, dogs attach different meanings to the objects seen. A Seeing Eye dog must be taught the umwelt of the human: the objects that are important to the blind person, not those of interest to the dog. [...] What is a curb to a dog? With persistence, dogs can be taught, but most dogs simply do not *see* a curb: it is not that the curb is invisible, but that it lacks any important meaning to them. The surface below their feet may be rough or soft, slippery or rocky, it may hold the scent of dogs or of men; but the distinction between the sidewalk and the street is a human distinction. A curb is but a slight variation in altitude of the hardened mass with which we cover the dirt, which only has a meaning to those who concern themselves with such concepts as *roads, pedestrians,* and *traffic*. The guide dog must learn the importance of the curb to his companion. He must learn the significance of a speeding car, a mailbox, other people approaching, a doorknob. And he will: he may begin to associate the curb with the distinctive striping of a crosswalk, with the dark, smelly rain gutter that run along them, or with the change in brightness from the concrete to the asphalt. Dogs are much better at learning about things that are important to us in our visual world than we seem to be in understanding theirs."[31]

So in addition to training the dogs in various tasks, the trainers must also assign meaning to those tasks, so that the dogs understand what will be important and what will not be important to their handlers.

A Note On Service Dog Breeds

Even though we are most familiar with Labrador Retrievers as service dogs, technically, any breed of dog can be trained as a service dog. What matters more for selection is health, temperament, and the suitability of the dog breed for the work they need to do: a Chihuahua, for instance, is not a suitable mobility dog, but there are plenty of them that work as Hearing Ear dogs. Some organizations will rescue dogs from shelters to train as service dogs,[32] which may be any breed at all, and owner-trained Hearing Ear dogs are often Chihuahuas or other toy breeds, but again could be any breed at all depending on the owner's preference.

The most familiar kinds of service dogs worldwide, however, do all have something in common: they have a working history. Most of them were originally bred as gun or water dogs – hunting dogs sent to retrieve fowl that had been shot

< Fig. 10.8 - Process of how an inherent trait is shaped into a desireable behaviour.

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WOLFLIKE
- Shiba inu
- Chow chow
- Akita
- Alaskan malamute
- Basenji
- Chinese shar-pei
- Siberian husky
- Afghan hound
- Saluki
- Tibetan terrier
- Lhasa apso
- Samoyed
- Pekingese
- Shih tzu

HERDERS
- Irish wolfhound
- Saint Bernard
- Greyhound
- Belgian sheepdog
- Belgian Tervuren
- Borzoi
- Collie
- Shetland sheepdog
- Pug
- Whippet
- Standard poodle
- Bichon frise
- Keeshond
- Manchester terrier
- Norwegian elkhound
- Kuvasz
- Great Dane
- Welsh springer spaniel
- Komondor
- Doberman pinscher
- Standard schnauzer
- Italian greyhound
- Old English sheepdog
- American water spaniel
- Miniature schnauzer
- Australian terrier
- English cocker spaniel
- Irish setter
- West Highland white terrier
- Pointer
- Basset hound
- Cavalier King Charles spaniel
- Giant schnauzer

HUNTERS
- Pharaoh hound
- Golden retriever
- Beagle
- Bloodhound
- Airedale terrier
- Cocker spaniel
- American hairless terrier
- Chesapeake Bay retriever
- Cairn terrier
- Portuguese water dog
- German shorthaired pointer
- Border collie
- Bedlington terrier
- Clumber spaniel
- Ibizan hound
- Rhodesian ridgeback
- Dachshund
- Australian shepherd
- Chihuahua
- Kerry blue terrier
- Schipperke
- Irish terrier
- Flat-coated retriever
- Soft-coated wheaten terrier
- Pomeranian
- Labrador retriever
- Perro de presa canario
- Rottweiler
- Bullmastiff
- Newfoundland
- German shepherd

MASTIFFLIKE
- French bulldog
- Miniature bull terrier
- Bulldog
- Boxer
- Mastiff
- Bernese mountain dog
- Greater Swiss mountain dog

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down. There is no factual connection at this point as to why gun dogs are so often used as service dogs, but given their success in this role, it is plausible that there is a connection. Sam Hobbes, a puppy program staff member in the service dog breeding program at Dog Guides Canada, speculates that their success may be due to the ability to work with their handler and not be bothered by loud noises and other distractions.[33]

Service Dog Training Models

There are several common models for training service dogs.

The first is known as owner-training, where a person with a disability selects a dog based on the tasks that they need to do, perhaps with the assistance of a trainer or dog breeder, and then will work in conjunction with a professional dog trainer to teach the dog these skills. An experienced owner-trainer, or one who has a prior background in training dogs, may opt to train the dog themselves without the assistance of a trainer.[34] Sometimes there is no real selection process: a pet dog may just start performing alerts of its own accord that the owner eventually connects to symptoms of a medical or psychiatric condition. The advantage of owner-training is that the dog and the tasks it performs are customized to the handler, which is particularly important for someone who has multiple disabilities or whose disability does not fit neatly into a commonly accepted category. Owner-trainers also appreciate the flexibility they have in terms of dog breeds: they may choose a breed that fits with their sensibilities.

There are several disadvantages to owner-training, however. The first is that a suitable service dog prospect must be selected from among dogs that have not been specifically bred for service work. Most independent breeders are following the breed standards set out by the American Kennel Club (AKC), which are primarily appearance-based. Some owner-trainers may opt to train a rescue dog or a pet dog they already own. However, with dogs not specifically bred for service work, there is a higher likelihood that the prospect will not be able to learn all the required skills and will 'wash out' (fail training). Pet dogs or rescues who already have more training (such as for therapy work) are less likely to wash out because they already have some experience with higher-level training. A washed out dog can be kept by the owner as a pet, but a person can only manage so many dogs, and those with disabilities may have additional physical and financial limitations. It can be quite emotionally difficult to rehome a dog that you've been training for months or even years, but owner-trainers still have to hold their dogs to that high standard of behaviour and be prepared to wash out a dog that just isn't able to manage it. Secondly, there is sometimes reluctance to accept owner-trained dogs as legitimate service dogs, since there is no set standard governing them,[35] though this is less of a disadvantage in the United States, where service dogs have more protection under the law than in Canada. Certainly, some owner-trainers may take advantage of that, but many of them are very conscientious individuals with extremely high standards for their dog's training. Owner-training is quite prevalent in the United States, due to long waiting lists, the costliness of 'program dogs', and the protection afforded to them by the Americans with Disabilities Act

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< Fig. 10.10 - Medical Alert dog Oliver is a papillon, which is a toy breed that most people wouldn't traditionally associate with service work. Oliver started off as a rescue from a puppy mill and was owner-trained after he started alerting of his own accord to symptoms of his owner's Multiple Sclerosis. His transition to service dog was made easier by the fact that he was already a Canine Good Citizen

< Fig. 10.11 - Vests for puppies-in-training drying on the clothesline. These vests are given to foster families (also known as puppy raisers) so that they can acclimatize their foster puppy to wearing one

(ADA). It exists, but at a smaller scale in Canada, but some provinces such as Alberta have legislation that prevents owner-training.[36]

The second is a domiciliary service dog training facility that trains all its dogs at a specific location, and then a trainer and the dog to work with the client in their home for a period of time. The handler spends no time at the actual training facility.[37] These types of schools may have an in-house breeding program that breeds puppies specifically for the programs they have, which boosts the overall success rate for the dogs.[38] A school with a breeding program will have a network of puppy raisers, or foster families, who raise the dogs for the first 12-18 months of their lives, before they are called back for training.[39] They will then spend from 4-8 months learning program-specific tasks.[40] The final leg of training, where the dog and the new handler spend time training together, is done in the handler's home.[41][42] In some cases, these schools will only place service dogs within a restricted geographical area and in this case may hold regular classes at their site, but the new handlers do not reside on site for any amount of time. The advantages are that the client does not have to spend time away from home to train with their new dog. The one-on-one training provides opportunities for customization, and the focus is completely on the handler and integrating the dog into the handler's everyday life.[43] Drawbacks are that with training being done with one client at a time, the school is not producing graduates as efficiently and the demand for service dogs may be much higher than what this type of school can provide.

The last service dog training model is the residential service dog training school. These vary in what programs (types of service dogs) they offer and geographical region that they serve. Many will have an in-house breeding program.[44][45][46] These breeding programs generally stick to the breeds that have established themselves as successful service dogs: Labrador Retrievers, Golden Retrievers, German Shepherds, Standard Poodles, Miniature Poodles, and crosses between these breeds.[47][48][49] After being raised by a foster family for the first 12-18 months, the dog will be recalled to start training in a specific program.[50][51] Once a dog has been trained in program-specific tasks, it will be matched with a human handler who will live on-site from two to four weeks while they learn to work with the dog.[52][53]

The advantage of residential training schools is that they are able to graduate a large number of service dog teams,[54][55] usually larger than other training models, so they are able to provide a higher number of service dogs to those who need them. Having the human client stay at the facility allows one or two trainers to work with a group of clients together rather than individual clients consecutively, and also allows the client to focus on the training rather than having to worry about the minutiae of everyday life. As a result of their breeding programs, their dogs may have a higher overall success rate. Sometimes, the school will retain ownership of the dogs throughout their working lives, so a dog that is not working out will be taken back and rehomed by the school, either as a pet[56] or another person's service dog. In this way they are also able to make sure that the dogs are being well looked after by their handlers. Disadvantages are that with such

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a large-scale operation and clear-cut programs, it becomes difficult to customize the dog's training to the needs of an individual client (though it can still be done). Despite high numbers of graduates, waiting lists can be long,[57] and at some schools (particularly in the U.S.) the individual must pay or help fundraise the approximately $25,000 it costs to train their service dog.

It is important to note that while a dog from a training facility may be considered more 'legitimate', training facilities are not necessarily held to any standards either. Some schools are accredited by Assistance Dogs International (ADI) and or the International Guide Dog Federation (IDGF), which are overseeing bodies that have established standards for the training of service dogs. Organizations must be non-profit in order to be accredited by ADI or IDGF, so for-profit training schools would not even qualify, but those schools that are accredited do have to meet standards.

There are currently seventeen accredited service dog training facilities that serve Canadians, some of which are located within the United States. Within Canada, there are ten accredited facilities: five of them are accredited by the ADI, one by the IGDF, and four are accredited by both.[58][59] The majority have in-house breeding programs and have some sort of residential training program, though some use a domiciliary training model. Most of these facilities serve a limited geographical area and do not work nationally.[60][61] In comparison, the U.S. has 95 ADI-accredited programs.[62]

< Fig. 10.12 - A class of dogs from National Service Dog practice some of their skills near the Cambridge Centre mall in Cambridge, Ontario

< Fig. 10.13 - Lions Foundation of Canada Dog Guides in Oakville is a residential training school that contains client rooms, classrooms, a dining area, as well as kennels and administrative functions

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The Makings of a Team

TRAITS NECESSARY FOR CONSIDERATION AS SERVICE DOG

PHYSICALLY SOUND	INTERESTED IN PEOPLE
BIDDABLE	ATTENTIVE TO HANDLER
GOOD TEMPERAMENT	CONFIDENT IN NORMAL SITUATIONS
NO AGGRESSION & LOW PREY DRIVE	GREAT GENETIC HISTORY
GREAT HEALTH	NOT EASILY DISTRACTED
INTELLIGENT	ADAPTABLE
ENJOYS WORKING	
NOT OVERLY SENSITIVE TO SOUNDS OR OTHER STIMULI	
TOLERANT OF HANDLING	
MODERATE ENERGY LEVEL	
CURIOUS	

DISQUALIFIERS

POOR HEALTH:
- EYE PROBLEMS
- CARDIAC PROBLEMS

AT RISK FOR BREED-SPE-CIFIC HEALTH ISSUES:
- HIP/ELBOW DYSPLASIA
- EXERCISE-INDUCED COLLAPSE
- SEVERE SKIN ALLERGIES

AGGRESSIVE (TOWARDS PEOPLE OR DOGS)

NO DESIRE TO WORK

STRONG PREY DRIVE

APPEARANCE

IRRELEVANT TRAITS

MOBILITY-SPECIFIC TRAITS

PREFERABLY DRY-MOUTHED

CALM

LARGE SIZE

AUTISM ASSISTANCE-SPECIFIC TRAIT

LARGE SIZE

< Fig. 11.1 - Traits
that are bred for
and not bred for
in service dogs

The Lions Foundation of Canada Dog Guides, also known as Dog Guides Canada, is the largest service dog training school in Canada,[1] and is accredited by both the ADI and the IGDF.[2] Using the residential model, they place service dogs with people across Canada at no cost to the recipient.[3] They operate more programs than any other school in Canada: a total of six.[4]

Lions Foundation of Canada Dog Guides began with a desire by Lions Clubs across Canada to start a national project for Canadians with visual impairments. Their Canine Vision Canada program to place CVDs with blind and visually impaired Canadians was established in 1985.[5] In 1988, they started the Hearing Ear program,[6] and in 1991 the Service (formerly Special Skills) program.[7] The school operated with these three programs until 2001, when Seizure Response became a distinct program, after previously being a part of the Special Skills program.[8] In 2009, an Autism Assistance program was introduced,[9] and in November of 2013 the Diabetic Alert program graduated its first class.[10]

Dog Guides Canada has graduated more than 2000 teams,[11] 749 of which are currently active,[12] and for the past two years has been graduating about 150 new teams per year.[13]

The Beginnings of a Future Dog Guide

The whelping of future dog guide pups is the culmination of a breeding program focused on producing viable future service dogs. For likely the majority of non-service dog breeders, the priority is on conformation to the breed standard, which focuses primarily on appearance.[14] Health and temperament are secondary considerations. Sam Hobbes, a puppy program staff member in Dog Guides Canada's puppy program, says that "For us and most assistance dog breeding programs, good health and temperament are our primary focus, and appearance is a (very) minor consideration."[15]

Most breeds are susceptible to certain health issues, which may be exacerbated by breeding purely for appearance. It is very important in breeding service dogs to try "to eliminate any health issues that would either prevent a dog from working safely, could shorten their working life, or could result in extra costs for their graduate." Serious health issues such as elbow or hip dysplasia, eye problems, exercise-induced collapse in labs, and cardiac problems as well as lack of physical soundness are avoided,[16] as the presence of any of these issues would immediately disqualify a dog from service training. Significant skin allergies are also grounds for disqualification, but allergies do not usually become apparent until the dog is between one and three years old, by which point the dog has usually already gone through training and graduated.[17]

Temperament is also a very important consideration in service dogs. They should be intelligent, confident, eager to work, responsive, show an ability to adapt easily to new situations, to recover quickly if startled, not easily distracted, and be biddable and willing to work with a handler.[18] They must not show any aggression to people or other dogs, or show a strong prey drive, as a strong desire to

^ Fig. 11.2 (above) - A black lab breeding dog for Dog Guides Canada, with her new puppies

< Fig. 11.3 (left) - A purebred black lab puppy with brindle markings, an example of breeding for health and temperament rather than appearance

> Fig. 11.4 (adjacent, top) - Future Dog Guide Kane at band rehearsal

> Fig. 11.5 (adjacent, lower left) - Future Dog Guide Picasso learns how to ride the escalator

> Fig. 11.6 (adjacent, lower right) - Future Dog Guide Wish and another puppy-in-training from a different organization attend class at University of Guelph

The Makings of a Team

chase things could be very dangerous to the human handler.[19] In terms of energy level, Hobbes says that "We are typically looking for dogs with a moderate energy level – able to get up and go when needed, but also able to settle down quietly at times."[20]

These health and temperament traits are common to all six programs, and so many of the dogs produced would be capable of success in multiple programs.[21] Currently the only program-specific requirement is size: Canine Vision dogs, Service dogs, and Autism Assistance dogs all need to be larger because of the tasks these programs require, while smaller dogs are often preferred for the Hearing Ear and Seizure Response programs.[22]

Dog Guides Canada breeds Labrador Retrievers, Golden Retrievers, Standard Poodles, Miniature Poodles, and crosses between these breeds. Recently they have started breeding Flat Coat Retrievers as well. According to Hobbes, these dogs that are specifically bred for service work have a success rate of around 65-70%, with Labrador Retrievers being slightly more successful than other breeds, and the most successful type of dog at Dog Guides Canada is a Labrador Retriever-Golden Retriever crossbreed.[23] Sometimes private breeders will donate dogs to the school, and these have a success rate of less than 50%.[24]

Once whelped, the puppies spend approximately their first year of life with a volunteer foster family, where they start learning the basics of what they will need to know to become successful dog guides. This will include socialization, where the dog becomes acclimatized to a variety of different types of humans, as described in Chapter 7, but goes further than this, as the puppies must become familiar with the human built environment.[25] As Hobbes says, "Our goal is that by the time the puppy returns for training they are able to focus on their work without being fearful or distracted by the environment around them."[26] They will also learn good manners – how to behave both in the home and out in public, what behaviours are and aren't acceptable in a working dog – and basic obedience, which are commands like sit, down, come, etc.[27] The foster families are supported by the puppy program staff throughout the process:

> "Foster families are given a puppy manual with basic guidelines, and also attend puppy classes and individual visits with puppy staff about once a month during the time they have the puppy. These classes/visits are an opportunity to assess the puppy's progress, introduce age-appropriate behaviours and exercises, and troubleshoot any challenges the puppy is having."[28]

Once a program is ready to start training a new group of dogs, the oldest dogs still in foster homes would be looked at and the ones that are felt could be successful in that program are recalled. Demand factors into the decision more than any particular aptitude demonstrated by the puppy, but some dogs may have demonstrated a behaviour or shyness that might present an issue in one program but not another, and this will be considered. If it turns out the dog does not do very well in the program, that does not necessarily mean the end of their

^ Fig. 11.9 (top left) - Dime is quite comfortable with car rides
^ Fig. 11.10 (top right) - Future Dog Guide Langley learns to walk nicely on a leash
^ Fig. 11.11 (bottom left) - Future Dog Guide Picasso gets acclimated to chickens
^ Fig. 11.12 (bottom right) - Future Dog Guide Darla goes to class at University of Guelph

^ Fig. 11.13 (top left) - Future Dog Guide Picasso takes public transit
^ Fig. 11.14 (top right) - Future Dog Guide Kane meets a plastic money collection dog at the grocery store
^ Fig. 11.15 (bottom) - Future Dog Guide Picasso and a sibling take a nap on the glass floor at Ripley's Aquarium

The Makings of a Team

journey to becoming a service dog; as Hobbes writes, "If a dog isn't doing well in a certain program, or the trainer feels they would be better suited for another program, they can very easily 'switch majors' into a different program. This is one of the advantages of having 6 programs under one roof – it gives the dogs an opportunity to find the best fit for them, rather than being automatically released if they aren't right for one of our programs."[29]

The dog that is recalled then leaves its first family and goes to live in the kennels while a trainer works with the dog for four to six months, teaching them the program-specific tasks that they will need to help their future handler. This transition can cause some stress, but a variety of factors, which probably include the breeds used, traits bred for, and perhaps even the way the dogs are trained serves to minimize this.[30] The dogs-in-training that live in the kennels get cuddles, lots of exercise (walks and free runs), crate time, positive training sessions, have toys to play with in the kennel, Kuranda beds to lie on, and music to listen to.[31] In addition, the dogs are not placed in kennels alone: each of them is matched with a kennel buddy or two for companionship.[32] Hobbes notes that "Dogs that do show some kennel stress may have the option to go home to a sitter or with a staff member on weekends and/or evenings," although in some cases, this back-and-forth only serves to cause more stress, and that "Dogs that are truly stressed by these transitions (and not able to get over it despite our best efforts), would be career changed from our program."[33]

< Fig. 11.17 -
Future dog guide
Adi is recalled
into training to
become a Hearing
Ear dog.

Once the dog is ready, they will be matched with a handler based on lifestyle and compatibility, and will then learn to work with that specific handler (and vice versa) when the handler comes to stay at the school.

The Journey of a Dog Guide Handler

While the dogs are working their way through training, the handler is also going through a process to determine if they are a suitable candidate for a dog guide. This begins with the future handler making the decision that a dog guide would be a good fit for them: whether a dog guide would help them, and whether they can accommodate and look after a dog. After making this decision, they will have to fill out an application, and have their doctor fill out forms as well.[34] If they have a job and or rent their living place, they must get their employer and or landlord to sign forms indicating that they are aware that the person will be getting a service dog.[35]

After the application has been sent in, the organization contacts the potential handler to set up a home visit, where a trainer meets the applicant in person and at their home, and assesses whether the applicant would make a suitable handler and whether their living space is appropriate for a dog. The trainer will also use this opportunity to get to know the applicant, so that if the applicant is approved, they will be able to match them with a dog that suits their lifestyle. Sometime after the home visit, the applicant will receive a communication saying that they've been approved for a dog guide, and have been placed on the waiting list.
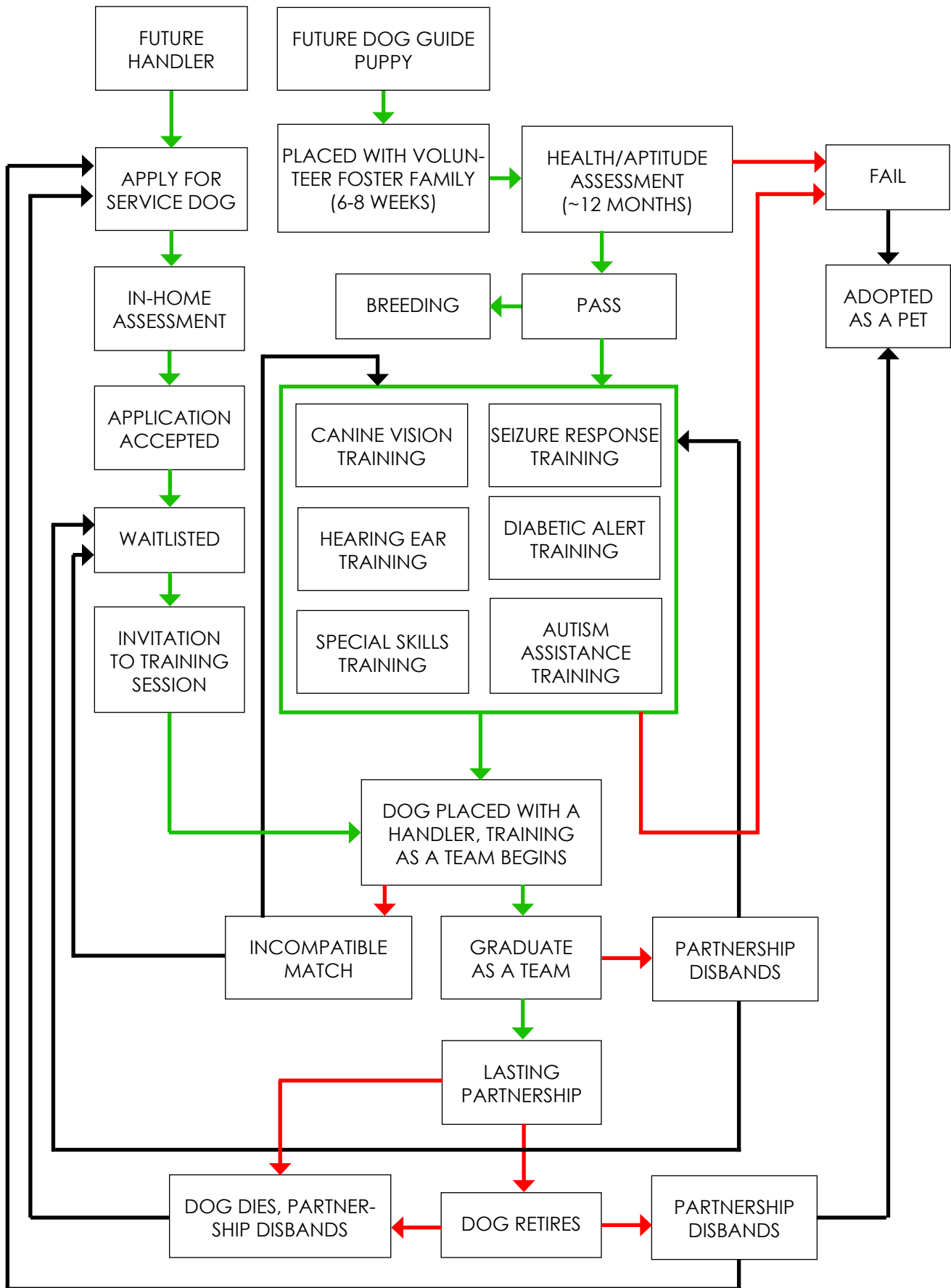
The Makings of a Team

The waiting time depends on the program and the current demand for that program – it could be a matter of months or a matter of years. The wait is longer for a first-time handler, since handlers who are reapplying go to the top of the waiting list. Eventually, the future handler is contacted by the school saying that they have been matched with a dog and offering them a place in a training class.

Canine Vision

The most familiar type of service dog is a Canine Vision dog (CVD), also known as guide dogs. These dogs are paired with a blind or visually impaired handler to help them navigate the physical environment outside the home.[36] The composition of a Canine Vision dog includes genetic traits and behaviours, general obedience training and acclimatization, and advanced, task-based training specific to Canine Vision dogs. The Canine Vision dog must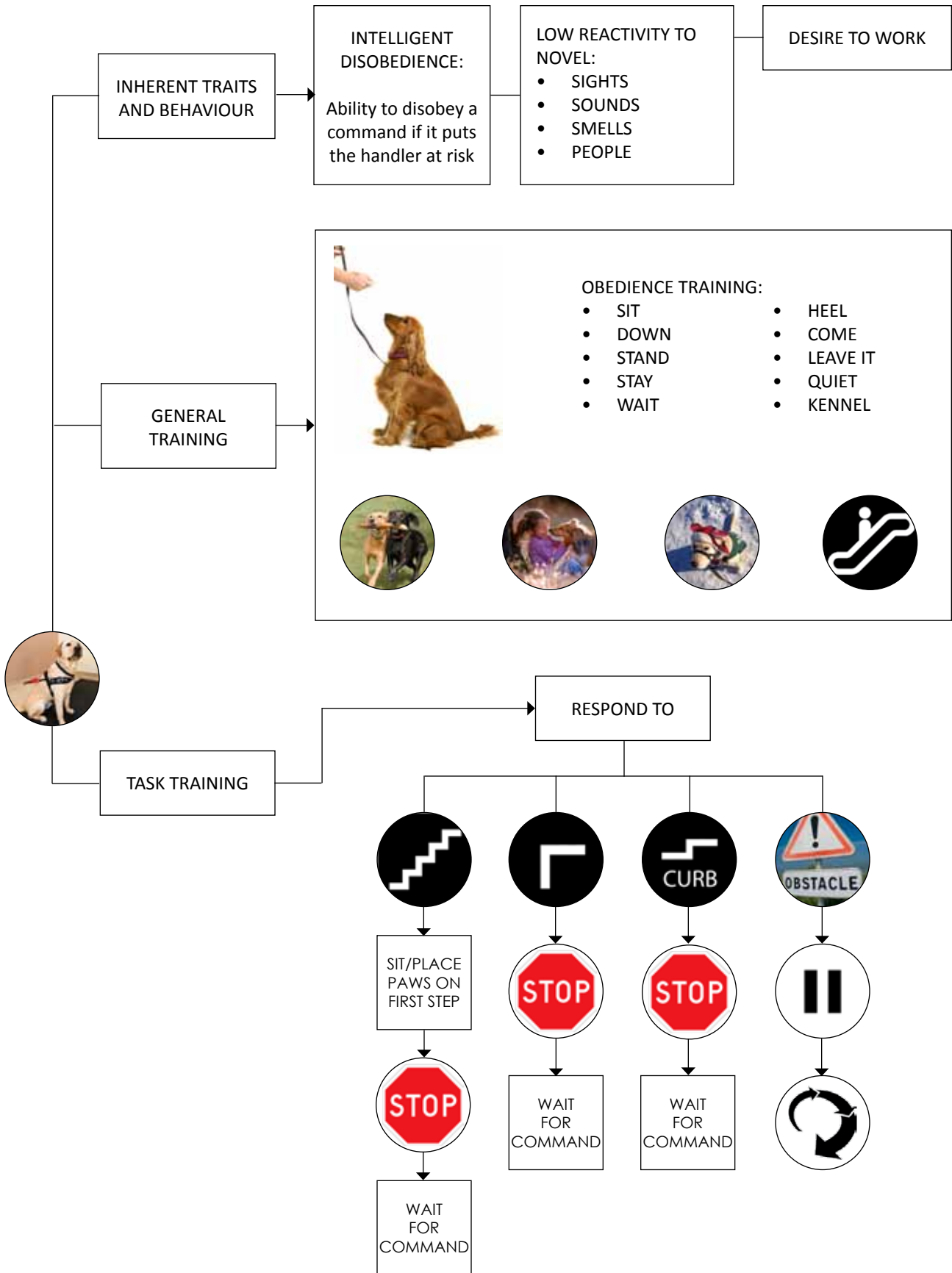 learn to recognize corners, curbs, stairs, and obstacles,[37] including obstacles at the handler's eye level, and respond appropriately, as well as obeying handler commands, and being capable of intelligent disobedience – that is, making the decision to disobey a command if it puts the handler in danger.   As Bradshaw puts it, "[38][39]the usefulness of guide dogs depends on their ability to 'think outside the box,' to use their canid brain to predict what is going to happen next in the ever-changing environment with which their owners are interacting – a skill possibly derived from the wild canids' ability to predict their prey's next move."[40] The human handler must know where they are going and how to get there, but the dog will make sure they know when to step on or off a curb, when to cross a street, and when to avoid objects in their path of travel, including obstacles at head-height like branches. As a method for getting the attention of their visually impaired handlers, who can't see their eyes, "Guide dogs [will] use 'sonorous mouth licking' – audible slurps" – when needed.[41]

Because of the prevalence of this type of service dog, many people will assume that any service dog is a Canine Vision dog, and if you are clearly not blind they will assume you are training the dog to be a Canine Vision dog. Canine Vision dogs are usually larger dogs, as they need to be able to withstand the force of a sharp tug if they were to stop suddenly to avoid a danger. The residential stay for prospective handlers in this program is four weeks, the longest of any program.

Canine Vision dogs can usually be identified by the harness with an attached rigid or telescopic handle that they wear.

The following story was written by a Canine Vision handler and describes the effect their dog has had on their life:

As long as I can remember, a dog has always lived with me and been my walking companion, my confidante and the one who loves me unconditionally. Eighteen months ago when the ophthalmologist reported that I would likely lose all my eyesight, I pondered how I would still be able to go for long walks with my family, work as an ordained United Church minister and enjoy my life as much as possible. The answer was pretty quick in coming…I needed another dog…a dog guide.

The Makings of a Team

INHERENT TRAITS AND BEHAVIOUR → INTELLIGENT DISOBEDIENCE:

Ability to disobey a command if it puts the handler at risk

LOW REACTIVITY TO NOVEL:
- SIGHTS
- SOUNDS
- SMELLS
- PEOPLE

DESIRE TO WORK

GENERAL TRAINING →

OBEDIENCE TRAINING:
- SIT
- DOWN
- STAND
- STAY
- WAIT
- HEEL
- COME
- LEAVE IT
- QUIET
- KENNEL

TASK TRAINING → RESPOND TO

SIT/PLACE PAWS ON FIRST STEP

STOP

WAIT FOR COMMAND

STOP

WAIT FOR COMMAND

CURB

STOP

WAIT FOR COMMAND

OBSTACLE

Fisher, a fabulous, flat-coated retriever entered my life in May of 2013. I remember vividly sitting in the outdoor play area at the Lions Foundation in Oakville and being told that one of the dogs that came out to play would be the breed of dog we would be receiving. Arriving on the scene were a lot of labs, a couple of poodles and this gorgeous, black, bouncing ball of fun….a flat coated retriever. I think all three of us in the vision dog guide class were stunned by the graceful gallop and fun-loving attitude this dog portrayed. Indeed we were to be blessed with flat coated retrievers! Then the hard work began as we trained to learn how to be with our dog guides. This was an emotional time for me and I am grateful to the nurturing I received from my trainers who were encouraging despite the doubts, fears, tears and ultimately, the joys.

Upon graduating, Fisher and I returned home to Bright's Grove, Ontario, with instructions to take it easy for the first week or so. However, ministry is completely unpredictable and in that first week Fisher accompanied me as I planned a funeral, presided at a funeral, presided at a wedding, interred a young man's ashes and led Sunday worship. He hit the ground running and has never looked back! He is awesome.

Fisher loves to walk. Daily we meet up with a big black lab, Henry, and his owner and together ponder life's mysteries and solve life's problems along the shoreline of Lake Huron. Then it's time to get to work. As I work on the computer, Fisher reminds me that he needs attention every now and again with a nudge of his wet nose. He listens to the sermons I am preparing for Sunday and usually approves! Fisher greets the congregation at the door of the church, knows his spot to stay in while the service is happening and is ready to say, "have a great week" as people leave the church. He helps to serve communion, has welcomed a new baby in baptism and will be singing in his first Christmas cantata this weekend. Fisher visits with people in the hospital and senior's residences where he is a compassionate presence. He attends meetings with great patience and happily hops into the cars of friends and church members who play the role of my awesome chauffeurs. He has been welcomed and is now an integral part of the small rural congregation that I serve at Shiloh-Inwood United Church.

I am also an artist and although I have had to leave watercolour painting and stained glass behind, I have found another love….ceramics: creating vessels that I can feel. Fisher attends a weekly ceramic class and easily became used to the noise of the pottery wheels. I did discover him one day quietly munching away with a mouthful of clay! Last week we were very excited as our first ceramic pots with braille on them came out of the final firing kiln. As far as I know, there are no other ceramic artists making pots with braille on them! Fisher also does an amazing "downward dog" at yoga, but prefers the "final relaxation" part of the class where he has been known to quietly snore. Fisher was a good host to ten lovely ladies at my Book Club's Annual Christmas Potluck where he thought he should be able to share the baked brie with cranberries!

One challenge that Fisher and I have encountered is walking in the neighbourhood where our family has lived for the past twenty five years. People know

< Fig. 11.19 - Diagram showing the composition of a Canine Vision dog. Note that this diagram may not include every task and command used by a Canine Vision team.

The Makings of a Team

us well, yet are not completely aware of my vision loss. Currently I have 20% vision in my right eye and none in my left. The challenge has been to educate our friends and acquaintances about how to be with a dog guide, that I am not "training" Fisher, that he is "working" when we are out and about. This is difficult because Fisher is cute and friendly and people want to touch him, talk to him and generally play with him as if he were our previous pet dog. It has now been six months since Fisher came home and we are all still learning and working together. We are very fortunate in that we live in a small community where part of our regular routine is to go to the Post Office and the grocery store. Fisher is welcomed in both places, greeted by name and then we are left to do what we need to do. Fisher still eyes the meat counter longingly, but his will power is pretty amazing as he walks on by. People are more ready to say "hi" to me, to greet Fisher with a "what a good boy" and we can chat while allowing Fisher to do his job.
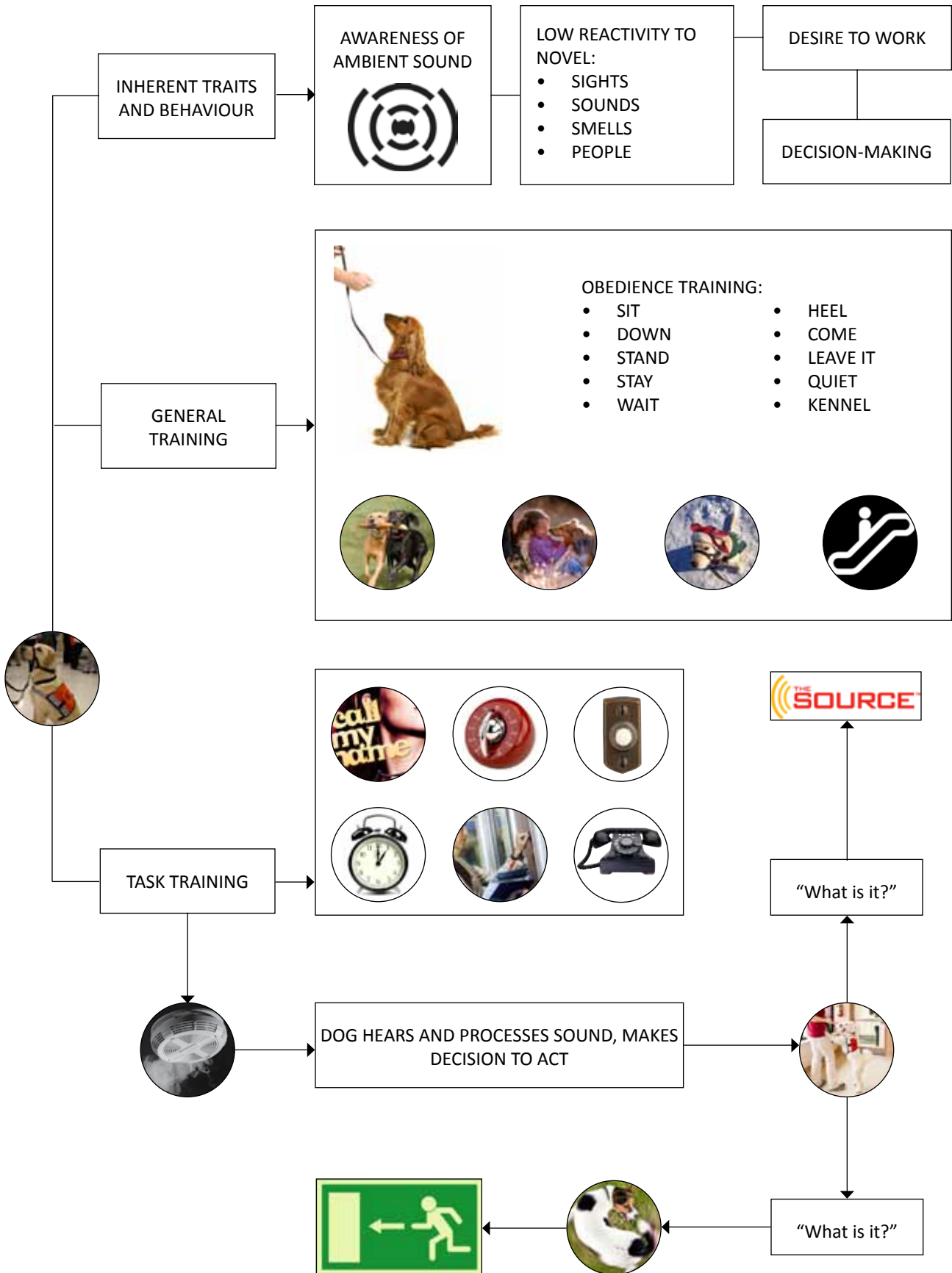
I have heard people say that they trust their dog guide implicitly, and usually there is a story that accompanies that statement. I do trust Fisher and there is a story! One day we were just starting out on our morning walk. This is when Fisher can be distracted by all the good morning smells of other dogs that have walked by, and he was certainly enjoying them this day. We arrived at a street we needed to cross and I asked him for a "forward," then a "hup-up," then both together because his four feet were planted firmly and he was not budging a bit. Just as I was thinking about correcting him, a car whizzed by. It must have been a hybrid because there was no motor sound at all, yet it was moving quickly. Fisher knew what he was doing and this was a tremendous lesson to me about his ability to see danger far away and to protect me. The bigger lesson was that he is to be trusted at all times.

I am grateful for the work of the Lions Foundation, for the foster family who cared for Fisher as a puppy, for the sponsors who financed his training and my stay in Oakville, for the trainers and their compassion and knowledge, for the other members of my class. Fisher is an amazing dog who is part of our family, part of my work at the church community that I serve and part of the Bright's Grove community. I look forward to more adventures with him, especially as we head to England in 2014 to visit with our middle daughter who studying there. I have always believed life is to be lived to the fullest and it is Fisher who helps me to do this. What a blessing!

- Susan Woodhouse, CVC recipient[42]

Hearing Ear

Hearing Ear dogs (HEDs) are invaluable to their deaf or hard-of-hearing handlers as they are trained to alert to common household sounds such as kitchen timers and alarm clocks. They will also alert to people ringing the doorbell or knocking at the door, and their handler's name being called. Their most valuable service, however, is alerting to the smoke alarm, which many deaf and hard-of-hearing people can't hear, particularly at night. The composition of a Hearing Ear dog includes genetic traits and behaviours, general obedience training and

The Makings of a Team

INHERENT TRAITS AND BEHAVIOUR

AWARENESS OF AMBIENT SOUND

LOW REACTIVITY TO NOVEL:
- SIGHTS
- SOUNDS
- SMELLS
- PEOPLE

DESIRE TO WORK

DECISION-MAKING

GENERAL TRAINING

OBEDIENCE TRAINING:
- SIT
- DOWN
- STAND
- STAY
- WAIT
- HEEL
- COME
- LEAVE IT
- QUIET
- KENNEL

TASK TRAINING

THE SOURCE

"What is it?"

DOG HEARS AND PROCESSES SOUND, MAKES DECISION TO ACT

"What is it?"

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acclimatization, and advanced, task-based training specific to Hearing Ear dogs. They must learn to recognize and process specific sounds and then actively make the decision to alert the handler by making physical contact and bring them to the source of the sound.[43] In addition, they should have an inherent awareness and curiosity about ambient sounds so that the handler can increase their environmental awareness of sound by observing the dog.

Most of a Hearing Ear dog's work takes place in the home, but they are granted public access as they naturally help make their handler more aware of sounds around them, such as sirens, and cars and people coming up from behind. Smaller dogs are generally preferred for Hearing Ear dogs, since their alerting behaviour requires them to make physical contact. The residential stay for a prospective handler in this program is two weeks.

In my survey of service dog handlers, Hearing Ear dog recipients cited a variety of reasons for why they chose a dog over available technological options. Most did not trust the reliability of technology.[44] One mentioned that Hearing Ear dogs are more responsive and alert to surroundings than a technological alternative.[45] They also found dogs to be more transportable.[46] Nearly all mentioned companionship as a factor in their decision.[47] Another respondent said that their dog helped relieve the isolation that people who are deaf or hard-of-hearing often experience.[48]

The recognized colour for a Hearing Ear dog in many countries is orange – they may have orange leashes and collars, orange vests, or both. However, not all Hearing Ear dogs will wear orange, especially since the trend is a move away from using colours that specifically identify the particular disability.

The following two stories describe the impact of having a Hearing Ear dog on the lives of two different handlers:
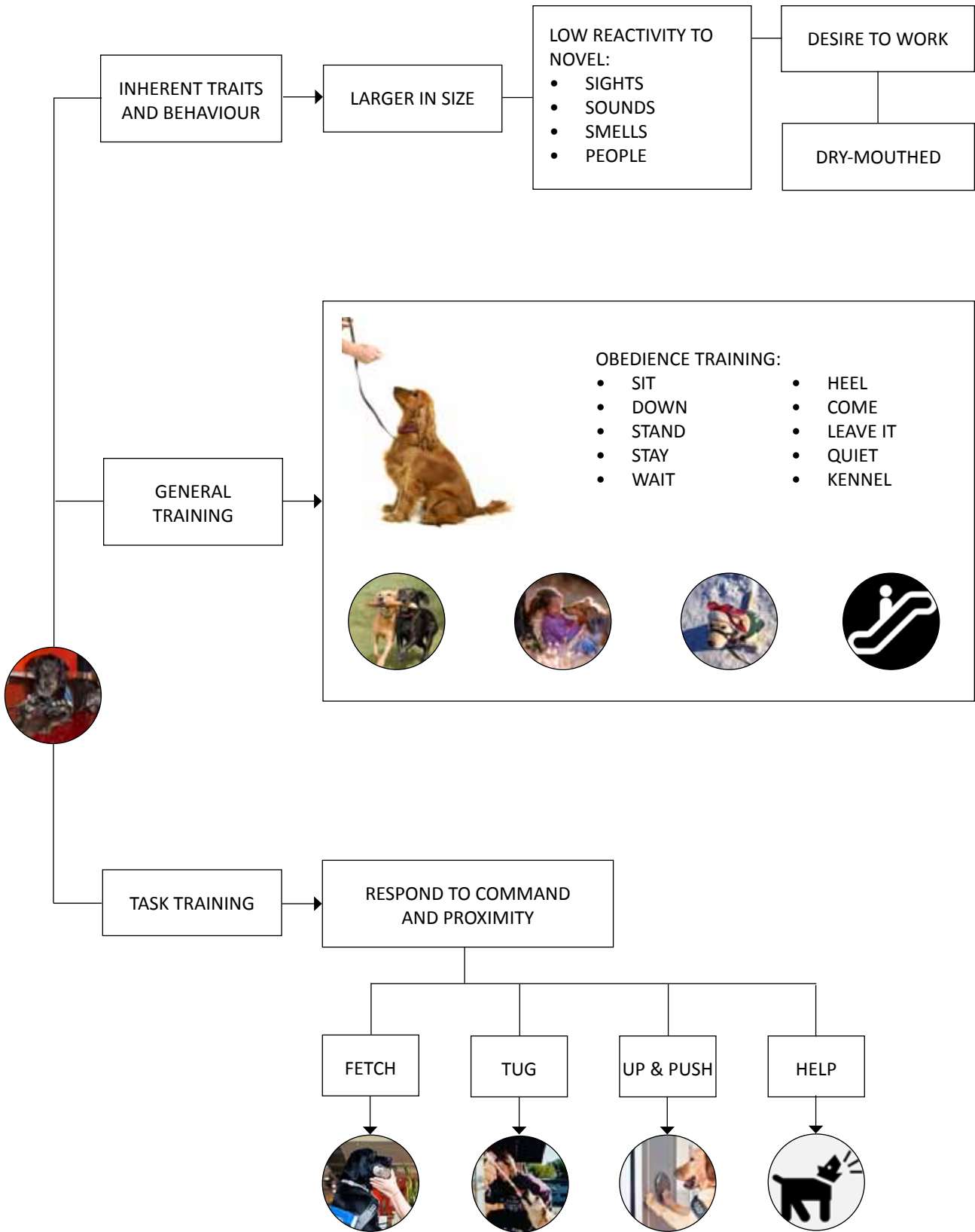
I felt that although the technology is available that it is not always reliable. I do have some pieces that help out but the security and comfort I feel having my guide dog with me is something that cannot be provided through machines. She is not only my dog guide, she is my companion and teammate, makes things easier and makes me calmer to have her around. When I applied I knew I would get a sense of security and comfort from having a guide dog, but there are no words to express how much she does provide these things for me.

< Fig. 9.22 - Diagram showing the composition of a Hearing Ear dog. Note that this diagram may not include every task and command used by a Hearing Ear team.

In public she is also a notice to people in regards to my hearing. As many do not see the hearing aids or know that I cannot hear them, she helps people understand that I do have this limitation. I have found that because of this people are more accepting and I've had more positive interactions with society.[49]

- Anonymous HED recipient

I can now stay alone with confidence that I will be safe. I used to worry that if I slept I would not hear the fire alarm, door or an emergency phone call. Living in the country without close neighbours made me nervous if I was alone. Having my

The Makings of a Team

INHERENT TRAITS AND BEHAVIOUR → LARGER IN SIZE → LOW REACTIVITY TO NOVEL:
- SIGHTS
- SOUNDS
- SMELLS
- PEOPLE

→ DESIRE TO WORK

DRY-MOUTHED

GENERAL TRAINING →

OBEDIENCE TRAINING:
- SIT
- DOWN
- STAND
- STAY
- WAIT

- HEEL
- COME
- LEAVE IT
- QUIET
- KENNEL

TASK TRAINING → RESPOND TO COMMAND AND PROXIMITY

FETCH

TUG

UP & PUSH

HELP

HED has made me much more relaxed and comfortable to be alone. Also, having Moxi also lets others know that I may not hear them if they speak to me. I used to be very embarrassed when people thought I was ignoring them because I didn't respond. Now that they can see Moxi's vest they can see that there is a disability.[50]

- Dianne Saunders, HED recipient

Service (Mobility)

There are also dogs that will help with tasks that are difficult or impossible for people with mobility impairments. Often, but not always, these handlers are in wheelchairs, and their capabilities may vary greatly: some may have good mobility of their arms and upper body, others may have extremely limited upper and lower body mobility. The composition of a Service Dog (SSD) includes genetic traits and behaviours, general obedience training and acclimatization, and advanced, task-based training specific to Service dogs. The Service dog is trained to pick up dropped items off the floor, open doors by pushing the barrier-free push button or tugging on a rope attached to a door handle, open dryers, open fridges, remove items from the washer, dryer or fridge, and bark for help.[51] Some can untie shoelaces and remove their handler's socks as well.

These dogs may also help their handlers with things such as getting into bed or undressing, and so they are generally large, solid dogs. Because the dog is always fetching things, it is best if the dog is dry-mouthed and does not drool much. The residential stay for a prospective Service dog handler is three weeks.

Other than a human personal attendant, there are not a lot of options that can perform the tasks that a Service dog does. One survey respondent emphasized companionship, saying, "I love the companionship I receive as well as the assistance."[52]
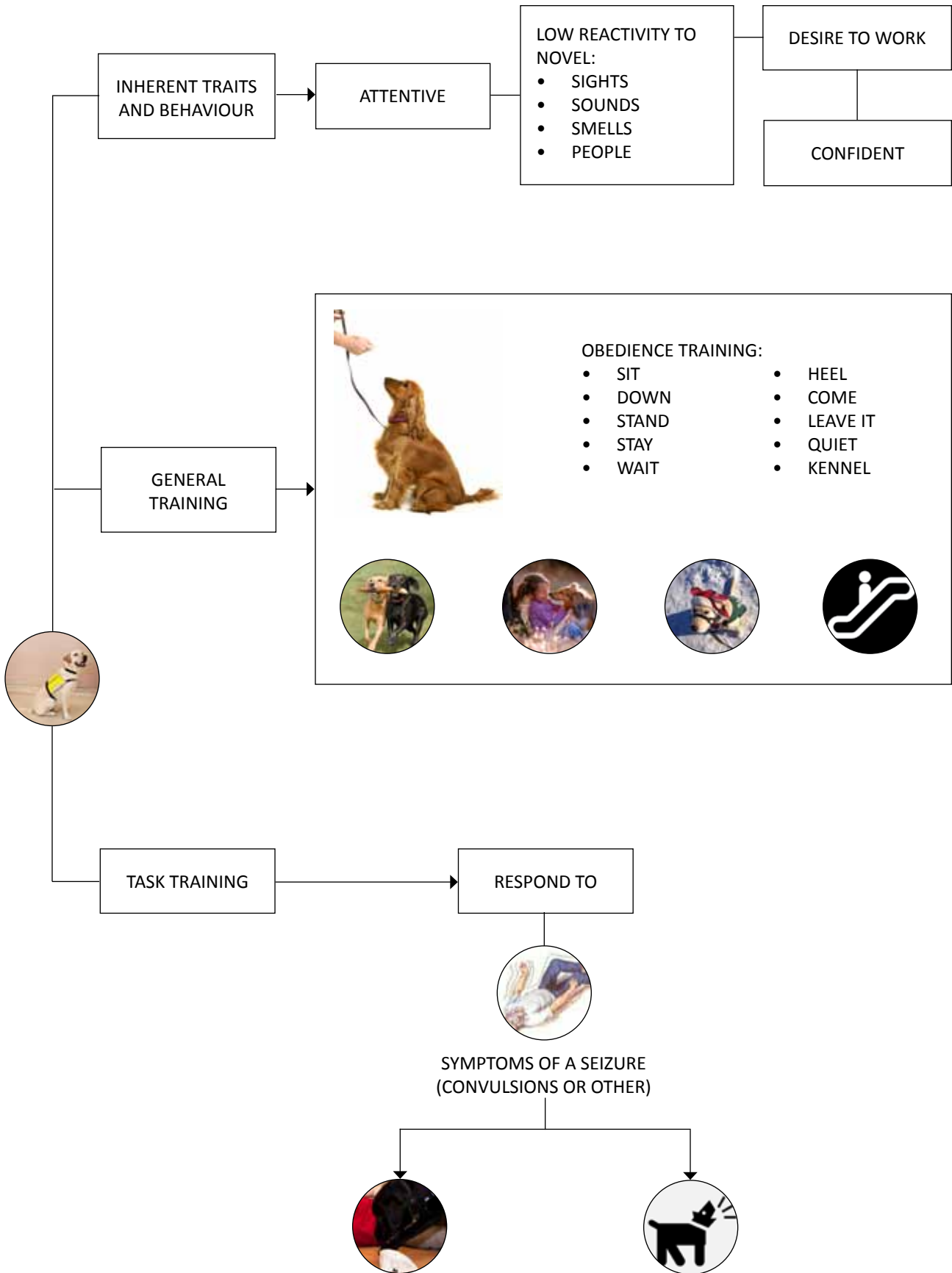
Service dogs generally wear a harness with a leash, but there is no standard vest colour.

Seizure Response

Seizure Response dogs (SRDs) are trained to respond when their handler has a seizure. The composition of a Seizure Response dog includes genetic traits and behaviours, general obedience training and acclimatization, and advanced, task-based training specific to SRDs. They must learn to recognize the symptoms associated with epileptic seizures (which may or may not include convulsions, depending on the types of seizures the handler has), and react by either barking for help or activating an alert system.[53]

Some dogs are actually able to alert to oncoming seizures: "These special dogs have a gift or a talent for recognizing the onset of a seizure in humans, warning a sufferer by herding the person to a safe place (a chair, a couch) and standing by to make certain he or she does not self-injure during the seizure."[54] These dogs are called Seizure Alert dogs, and are not the same as Seiz-

< Fig. 9.23 - Diagram showing the composition of a Service dog. Note that this diagram may not include every task and command used by a Service team.

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INHERENT TRAITS AND BEHAVIOUR → ATTENTIVE → LOW REACTIVITY TO NOVEL:
- SIGHTS
- SOUNDS
- SMELLS
- PEOPLE

DESIRE TO WORK

CONFIDENT

GENERAL TRAINING →

OBEDIENCE TRAINING:
- SIT
- DOWN
- STAND
- STAY
- WAIT

- HEEL
- COME
- LEAVE IT
- QUIET
- KENNEL

TASK TRAINING → RESPOND TO

SYMPTOMS OF A SEIZURE
(CONVULSIONS OR OTHER)

ure Response dogs. Horowitz states:

> "Provocatively, dogs who live in homes with epileptics seem to be mod-
> erately good predictors of seizures. Two studies report that dogs licked
> the person's face or hands, whimpered, stood nearby, or moved pro-
> tectively – in one case sitting *on* a child, and in another blocking a child's
> access to stairs – before seizures. If this is true, there may be olfactory,
> visual, or some other invisible (to us) cues that the dogs used. But as
> the data come from 'self-report' – family questionnaires rather than
> data gathered more objectively – more evidence is needed. We can,
> however, pause in admiration of the possibility of such a skill."[55]

Whatever it is that Seizure Alert dogs see in a human about to have a seizure, they
become quite intent on letting the human know about it, and will continue their
alerting behaviour even when told off or reprimanded for doing so by a person
who does not understand what the dog is trying to say.[56] This is intelligent dis-
obedience at work again.[57] Due to the lack of scientific evidence on how exactly
some dogs are able to detect oncoming seizures, it is not considered by most ex-
perts to be a skill that can be trained, so at this time only Seizure Response dogs
can be actively trained to help those who experience seizures. However, some
trained Seizure Response dogs will demonstrate an ability to do seizure alerts.

On the survey I distributed to service dog handlers, one Seizure Response
handler said that prior to receiving her dog, "When I was out and about in public
and had a seizure, there was a lot of bystander apathy."[58] Receiving a service dog
curbed this apathy because people have been less likely to ignore a barking dog.[59]
Their dog has also allowed them to live independently, which was not possible
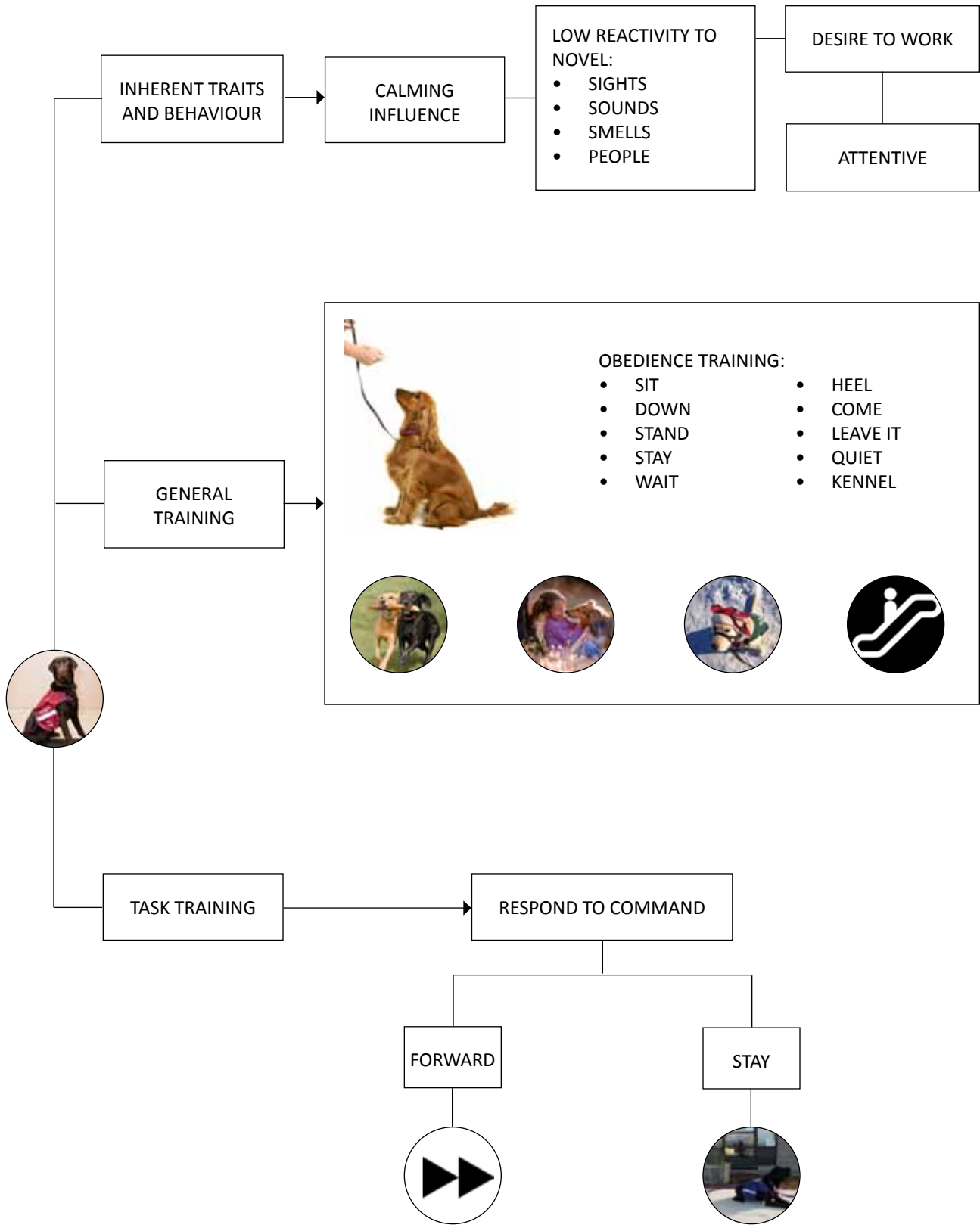before.[60]

The residential stay for a prospective handler in this program is three weeks.
There is no universally recognized colour for the vests of SRDs.

Autism Assistance

Autism Assistance dogs (AADs) are usually only placed with children.[61] They
are taught to respond to a command to stay and not move if the autistic child tries
to bolt, thus preventing injury to the child. In general, the dog must be attentive
and loving to their child and exert a calming influence in anxiety-inducing situa-
tions.[62] An Autism Assistance dog can also be trained to alert the child's parents
when child wakes up in the night.[63] Having a special canine friend also generally
helps children with autism make progress socially and emotionally. Horowitz de-
scribes the effect that a dog can have on a child with autism:

> "Just as for the physically impaired dogs can act as eyes, ears, and feet,
> so also do they act as readers of human behaviour for some autistic in-
> dividuals. Persons with any kind of autism spectrum disorder are united
> by their shared inability to understand the expressions, emotions, and
> perspectives of other people. As the neurologist Oliver Sacks describes,

< Fig. 9.24 - Dia-
gram showing the
composition of a
Seizure Response
dog. Note that
this diagram may
not include every
task and com-
mand used by a
Seizure Response
team.

The Makings of a Team

INHERENT TRAITS AND BEHAVIOUR → CALMING INFLUENCE →

LOW REACTIVITY TO NOVEL:
- SIGHTS
- SOUNDS
- SMELLS
- PEOPLE

DESIRE TO WORK

ATTENTIVE

GENERAL TRAINING →

OBEDIENCE TRAINING:
- SIT
- DOWN
- STAND
- STAY
- WAIT
- HEEL
- COME
- LEAVE IT
- QUIET
- KENNEL

TASK TRAINING → RESPOND TO COMMAND

FORWARD

STAY

for an autistic person who keeps dogs, the dogs may seem to be human-mind-readers. While an autistic person cannot parse a brow furrowed with concern, or interpret the rising tone indicating someone's fright or worry, the dog is sensitive to the mind-set behind them."[64]

The parents are very involved with this type of service dog, and indeed it is a parent who attends the two weeks of residential training at the school. There are usually two leashes: one which the parent holds, and the other is held by or attached to the child. The composition of an AAD includes genetic traits and behaviours, general obedience training and acclimatization, and advanced, task-based training specific to AADs.

These dogs can really have a tremendous impact on the quality of life for an autistic child and their family, but so far the general public seems to be unaware of both how life is affected by autism and the benefits of an Autism Assistance dog. The story below was shared with other Lions Foundation of Canada Dog Guides graduates and I have been given permission to share it here as well. It provides a powerful illustration of life before and after an Autism Assistance Dog:

Before our daughter received her first Autism Assistance Dog Guide three years ago, she was very withdrawn...very self-injurious to herself, would hide under tables and chairs when people visited, conversation was Pokémon oriented only, she jumped out of our vehicle in motion or not (she had been hit by a car because of this), she walked off the edge of a pool and could not swim...thank goodness we were right there for it all...but, shows how fast they are. She also snuck out the house in the middle of the night and was found 4 hours later hypothermic despite having alarms on our doors! Before, her self confidence levels were extremely low and at the age of 9 had even asked what suicide was. Kate did not start speaking till age of 7, toilet training was a nightmare at the age of 9.

Then we applied...at age 9 Kate received Elroy, her first service dog. The first night the dog was in the house Kate stayed in HER bed and in HER ROOM. Within the first week she was calmer...our house was calmer, people were starting to visit and Kate would retreat to the floor with Elroy, NOT under a table or chair. Within 3 weeks Kate was slowly taken off sleeping pills and STILL stayed in her room at night and started to actually sleep. Which made her day time moods much better. Within 3 months, no more jumping out the car EVERYDAY...we still did have to work on it. Her wandering at malls from us ceased to exist anymore...and just the presence alone of the dog also kept her brother near as he too has autism and would wander. Now, everyone wanted to walk near the dog.

In the beginning we thought people were nuts asking us to bring a dog into our chaos. That VERY quickly all changed when we saw the connection!

Then tragedy struck. One morning Kate came and got me as Elroy was shaking...He was having a very severe form of canine epilepsy and he had to be put to sleep as his seizures were unstoppable. EVERYONE was ripped apart even though it had been only 3 short months as a team. We as a family sat down and discussed

< Fig. 9.25 - Diagram showing the composition of a Autism Assistance dog. Note that this diagram may not include every task and command used by a Autism Assistance team.

The Makings of a Team

if we wanted to put our child through this loss again. We were uncertain...if it was coincidence that she improved...or the dog that helped...EVERYTHING was going so fast!

We broke the news to Kate that her forever friend was not coming back but would be with her in her heart forever. Well, this was hard for her to understand. Every morning she would get up and say "feed Elroy, Elroy go pee"... and we would again explain. The 4th day of this she realized that he was not coming back...and SHE TOTALLY regressed that week. She put her head through a window...bolting out the house reappeared, she stopped talking, she was messing her pants again, school was a no-go, and life once again was terror every moment with the self abuse.

We reapplied and quickly received VIPER!!!!! We were unsure how she was going to react as Viper also was a black lab like Elroy. When I brought Viper home to her she opened the door hugged him very gingerly and asked "Elroy?" I said "no, honey Elroy is resting now, but he sent Viper to be your friend now." And things flew off without a hitch. Within 2 weeks we started seeing the Kate we knew when Elroy was around. In the first 6 months we've seen nothing but improvements!!

Now, Kate just turned 13, and she is a straight-A student in junior high. Mainstream, with adaptations. She has won 1st place in the regional science Olympics, the finals to the heritage fair competition....and received certificates from a school club that spends time with veterans, sends care packages to soldiers injured or serving away...We are still working on getting the dog in school but, it is coming.

She has gotten involved in theater, sang in a singing competition and won 3rd place, 2 years in a row...LESS medications as she looks for Viper now when upset, YES we still do have many of meltdowns but this always be a struggle for Kate. They are less intense with Viper at her side. No more bolting – SHE TRIES – but doesn't get far!!! Thank you Viper!!
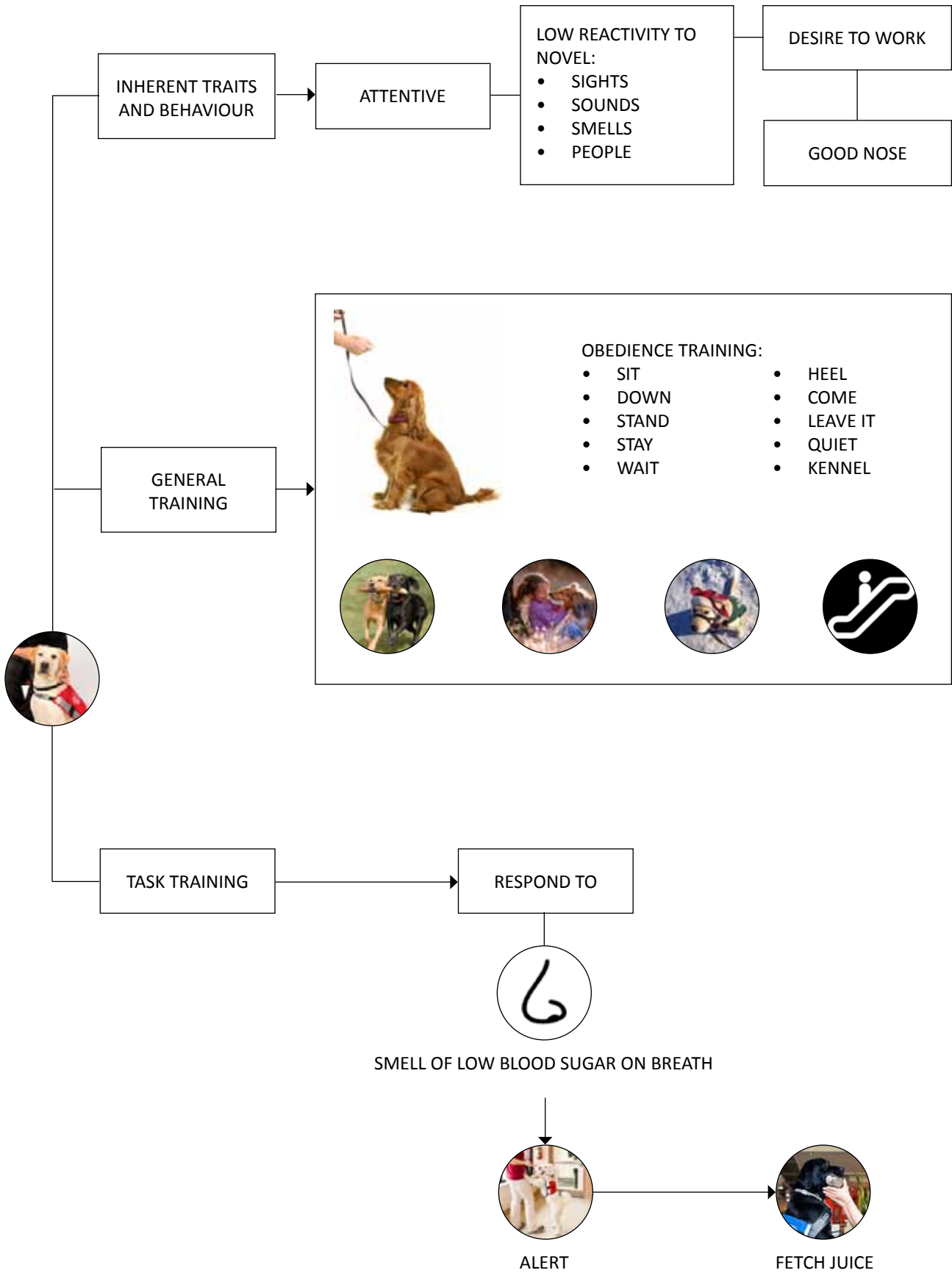
Just the other day she entered a Youth Ambassador award program for youth 10-14 years old and WON!!!! She will now represent the youth of our area at the World Junior Hockey Challenge which will AIR live on the sports network next week...Keep an eye out for her. She will be doing a puck drop...and will be acknowledged for all the hard work and dedication for volunteer hours she has put in...on live TV during the world challenge.

I strongly believe without the Dog Guides program, NONE of this would be happening!!! Wow, she has come so far!

- Ann Harrington (mother of AAD recipient Kate)

Diabetic Alert

Diabetic Alert dogs (DADs) are trained to alert to low blood sugar levels in their handlers, to prevent them from going into diabetic shock. They are able to "do this by reacting to changes in the owner's odour (although minute changes

INHERENT TRAITS AND BEHAVIOUR → ATTENTIVE → LOW REACTIVITY TO NOVEL:
- SIGHTS
- SOUNDS
- SMELLS
- PEOPLE

DESIRE TO WORK

GOOD NOSE

GENERAL TRAINING →

OBEDIENCE TRAINING:
- SIT
- DOWN
- STAND
- STAY
- WAIT

- HEEL
- COME
- LEAVE IT
- QUIET
- KENNEL

TASK TRAINING → RESPOND TO

SMELL OF LOW BLOOD SUGAR ON BREATH

ALERT

FETCH JUICE

in 'body-language,' undetectable to human observers, may also be part of the cue)."□ Those who benefit from a Diabetic Alert dog are people who have Type 1 diabetes with hypoglycemic unawareness – this means that they are unaware of sudden drops in their blood sugar levels which could cause loss of consciousness or even death. The Diabetic Alert dog is able to detect these changes and can alert the handler as soon as it happens, and bring them juice to raise their blood sugar levels.

This program is new at Lions Foundation of Canada Dog Guides as of 2013.

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2	Dog Guides Canada. "Accreditations." Accessed March 7, 2014. http://www.dogguides.com/accreditations.html.

3	Dog Guides Canada. "About Us." Accessed March 7, 2014. http://www.dogguides.com/about.html.

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54   Masson, Jeffrey Moussaieff. 2010. *The Dog Who Couldn't Stop Loving: How Dogs have Captured our Hearts for Thousands of Years*. New York: HarperCollins, 165-167

55   Ibid.

56   Unpublished Study by Author. "The Experience of Disability in the Built Environment." Web-survey conducted in March 2014.

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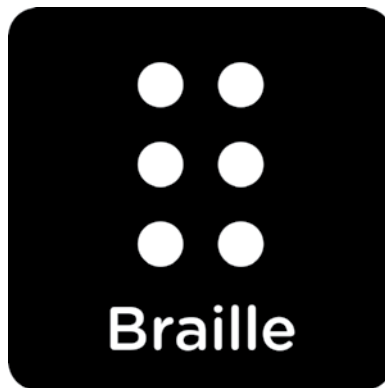59   Dog Guides Canada. "Autism Assistance." Accessed March 7, 2014. http://www.dogguides.com/autism.html.

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62	Horowitz, Alexandra. 2009. *Inside of a Dog: What Dogs See, Smell, and Know*. New York: Scribner, 162.

63	Originally shared with members of the Graduates of Lions Foundation of Canada Dog Guides Facebook group, slightly revised version shared here with the permission of Ann Harrington.

64	Bradshaw, John. 2011. *Dog Sense: How the New Science of Dog Behaviour Can Make You a Better Friend to Your Pet*. New York: Basic Books, 250.

Design Approaches to Include Working Dogs

Braille

Toilet

Play

The foundation of any dog-human relationship, especially important for an effective service dog team, is the bond between the dog and the human. One of the purposes of residential training is to nurture the beginnings of that bond in an environment where the handler can focus on the dog with minimal distractions. Interventions designed with the components of the dog-human bond in mind could be used to help grow the bond. We must also consider the expanding role of working dogs in our built environment, as well as their basic needs: food, water, exercise, and play. As we discover new jobs for dogs to do, we will also need to find ways to accommodate their needs within our buildings. Some buildings like airports are already responding to these needs with indoor relief areas for dogs. Since that strategy is already being implemented, I will not discuss it here, other than to say that indoor or outdoor designated relief areas would be a beneficial addition to many buildings, particularly those in urban areas where it can be extremely difficult to find a suitable location to relieve a dog.

For the purposes of this chapter, the use of the word 'working dog' does not include dogs that work in traditional roles (herding, hunting), but refers to dogs who work in the human's built environment, which are mentioned in Chapter 8: police dogs, bomb-sniffing dogs, service dogs, cancer-sniffing dogs, etc.

Signage

According to the Book of Codes, signage is "a collection of symbols capable of communicating information in a graphic language as an alternative to written words."[1] The signage that we use in our built environments uses a language of often universally recognized symbols to communicate specific information to user groups. This language forms part of how we experience the built environment and our schema for what the world should look like. As such, it could be a powerful tool to help shift our views on what is 'normal' and what is not.

An excellent example of a schema-altering symbol is that of the wheelchair. This internationally recognized symbol represents barrier-free access, and its presence has helped normalize wheelchairs and to some degree mobility impairments in general. Originally designed to only indicate barrier-free access for those in wheelchairs, this symbol has come to represent accessibility as a whole. The symbol itself and the architectural language it describes have become an accepted and even ordinary part of our built environment.

It is problematic to use the accessibility symbol as an umbrella symbol for everything that relates to disability and access, especially since a service dog is such a visible and obvious mitigation tool (much like the wheelchair). While service dog handlers consider their dogs to be a tool in the same category as a wheelchair or a white cane, for the general population, considering a service dog to be essentially the same as a wheelchair is not an obvious comparison. The accessibility symbol is also generally a symbol that refers to the person with the disability, not whatever medical devices they may use. Despite serving a specific purpose, service dogs are living, breathing animals and have needs that wheelchairs do not. Adding service dogs to the language of signage symbols would be a

way of including a working dog presence in buildings even when one isn't actually there. Used with enough frequency and over a long enough period of time that it becomes "learned and culturally recognizable,"[2] it would serve to normalize the presence of working dogs in our buildings and adjust the schemas of the general population where service dogs are concerned.

There is currently no universal symbol for service dogs, and it is rare to see any service dog symbol used in Canada, except as a small sticker sometimes present on the front door of a Walmart or grocery store. Service dog signage (and dog-related signage in general) appears to be used more frequently and more prominently in countries such as Holland. Figures 12.13 to 12.15 are examples of dog-specific signage seen in Holland.

Figures 12.9 to 12.12 illustrate how we could add service dogs to the language of signage. These signs would be used in the identification of some of the strategies described in the following text which respond to the needs of working dogs: watering stations, play areas, and relief areas. The designs use the combination of a familiar word with an easily-identified pictogram to identify different working dog areas. In the case of the watering station signage, the existing pictogram for drinking water is incorporated. The use of white figures on a field of blue relates back to the accessibility sign. The service dog pictogram is one of many that are used; the dog is identified as a service dog by the harness it wears. The pictogram for a regular dog does not show a harness.

Watering Stations

Currently, service dog handlers must carry a dog water bottle or a collapsible dish to use to give their dogs water while in public. With increasing numbers of working dogs, some buildings should consider incorporating dog water fountains along with the human equivalents. This has been done outdoors in some public parks, such as Alamo Square Park in San Francisco, so the idea is not new. It is probably an unnecessary feature in many buildings, but would be useful in buildings which would see working dogs relatively frequently, such as hospitals, airports, schools, and perhaps police stations and border crossings.

Grooming Stations

Grooming a dog strengthens the dog-human bond through touch. A dedicated grooming area with built-in grooming surfaces of varying heights to accommodate different breeds and sizes of dogs will emphasize the importance of this activity to the bonding process. For dogs who do not especially like being groomed, this area can also be used for petting and neck scratching – any activities that promote touch between dog and handler. This set up may also encourage eye contact.
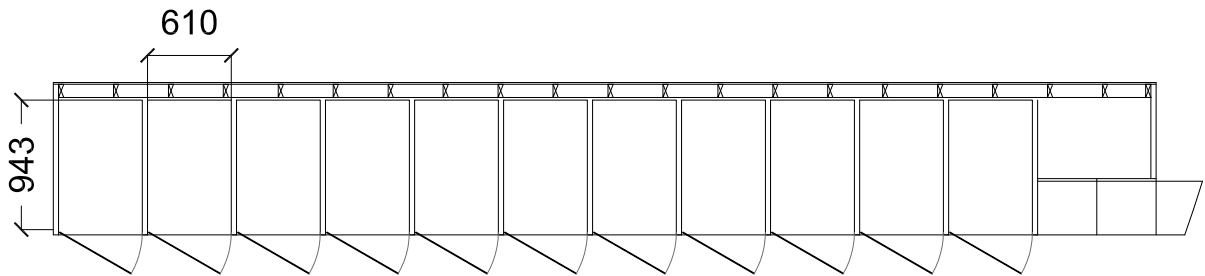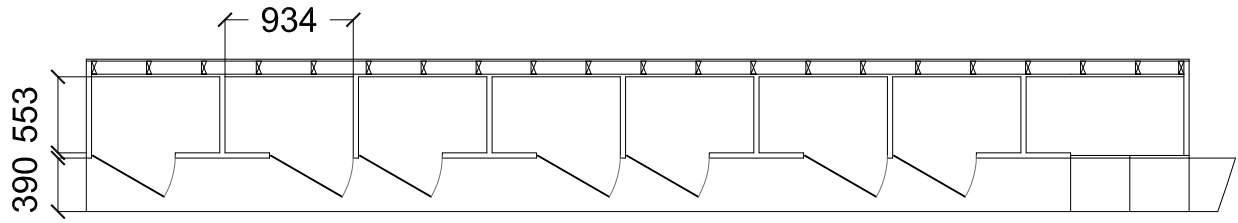
The design illustrated in Figure 12.18 shows a poured concrete, three-level grooming surface overlooking a courtyard. It could just as well be cabinetry with built-in drawers or cupboards for storage of grooming tools and a solid polymer surface. In this illustration, the grooming area is private space, but also a dedi-

Design Approaches to Include Working Dogs

cated one, with a prime location that looks onto an outdoor space.

Bonding Walkway

The intention behind this idea is to promote the bond through walking together, which in itself is bonding, but also to be able to do this in a way that reduces the height difference between human and dog. This will provide the opportunity to communicate through eye contact. The designated walkway will have a wide portion at normal ground level for the human, and then a raised walkway next to it. The height of the raised walkway will vary, since the dogs vary in sizes as do the humans, and some of the humans may be seated in wheelchairs.

The ideal location for such a walkway would be either a long hallway or a cloister-type promenade, that has minimal distractions for the dogs.

Built-In Crating System

Spending time apart is important, especially in the early days of working together, when frustrations may be running high in both human and dog. This time apart and the reunification after that separation actually serve to strengthen the bond. Continuing to spend brief time apart even after the initial bonding period is encouraged, as the dog will be better able to withstand separation in the case of a situation where the handler and dog cannot be together, such as a surgery. A kennel is really not an appropriate solution to short-term separations, and store-bought plastic crates were not intended to be used en masse to house multiple dogs. A more elegant and appropriate design response is required, and this could be applied to a variety of buildings such as gyms, swimming pools, and hospitals, where bringing a dog might not be permitted or practical.

My proposal is a two-level crating unit. Each crate on the lower level is 610mm by 943mm. To provide walk-in access for the dogs to the second level, the crates are rotated 90 degrees, with entrances provided through the side of the crate rather than the front, creating a 390mm walkway in front of the second level crates. Each second-level crate is still a generous 934mm by 553mm. The unit has a set of stairs at one end, that the dog can walk up and then along the walkway to access a crate. The doors are made of either 6mm glass or plexiglass, affixed to the unit with shower door-style hinges. A gap should be left around the perimeter of the door and holes punched through it for air. In a safe place like a service dog training school, the locking mechanism can be a simple sliding lock. A unit installed in any public building needs to be lockable with a key, for the safety of the dogs. Even with a locking mechanism, the crating unit should be kept within view of a staff hub (for example, sign in or customer service desk).

For ease of cleaning, the surfacing material needs to be durable and non-porous. Solid polymer surfacing is an option that would provide for easy replace-ment of any small damaged portions. To prevent the dogs from slipping on the steps or walkway, a non-slip pattern needs to be carved into or adhered to the surfacing material.

Design Approaches to Include Working Dogs
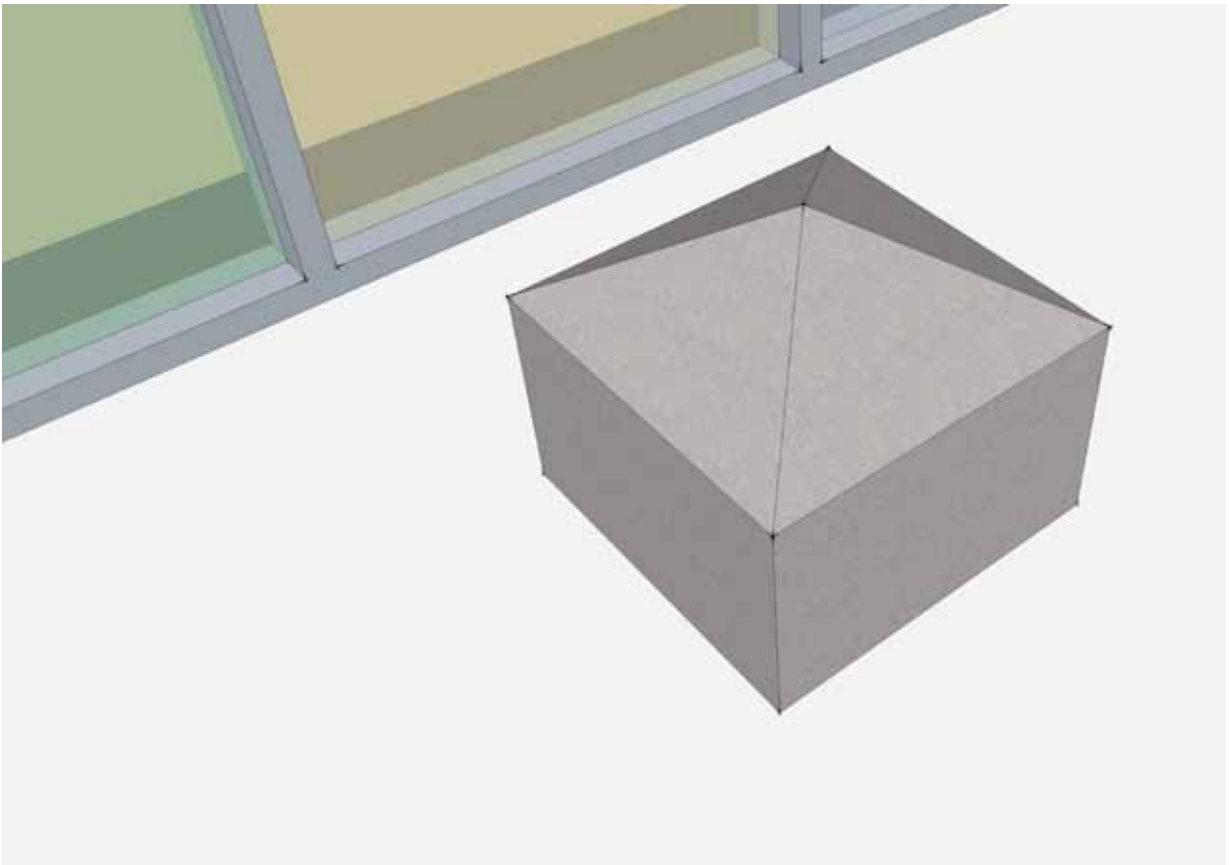
Play Spaces

"But to be so directly in contact with the world, intentionally or not, is to define oneself differently with respect to one's environment than humans do: it is to find less of a barrier at the edge of one's own skin or fur from that which surrounds it." [3]

- Alexandra Horowitz, Inside of a Dog

Service dogs are still dogs, and they need opportunities to release energy and do the things that dogs like to do. Working dogs are given downtime or playtime every day, and this can comprise of walks, playing with their toys, and or playing with other dogs. The need for dog play spaces already exists in shelters, rehabilitation centres, service dog training schools, and perhaps even veterinary hospitals. Play areas would be useful in police stations for police dogs, and airports for bomb-sniffing dogs and travelling service dogs. It is also worth including dog play spaces in hospitals, for the cancer-sniffing dogs that may work there in the future, and also for the service dogs of handlers who are there as patients.

There would be a practical consideration to take into account: security. All types of working dogs who would be using these play spaces are quite valuable. The play space must be fully enclosed to prevent theft by people who see the opportunity to have a well-trained dog, and to prevent the dogs from running off and getting injured or lost. Ideally, the space is outdoors, but directly accessible from the building and contained within the building, such as a courtyard or rooftop. A simple fenced enclosure is less secure and would not be as preferable, though in some cases it will be the only option.

Based on the research compiled in Chapter 6 about how dogs experience the world, a dog play space should include the following elements:

Things to Smell

The dog's sense of smell, regardless of breed, is the primary lens through which they view the world. Including a variety of things that are interesting to sniff is important to creating a space that is intended for dogs.

The ideal form of the space for the dogs would include corners, which works out well considering that this is probably the most easily-integrated shape into human architecture as well. The reason for this is that corners tend to collect things, and the things corners collect generally mean interesting things to smell. I will repeat a quote from Chapter 6, where Dr. Alexandra Horowitz describes how dogs might experience our built spaces:

"Rooms have a parallel life in the dog's world, with areas that quietly collect smells (invisible detritus in the crook of the wall and floor), fertile areas from which objects and odors come (closets, windows), and sitting areas where you or your identifying perfume might be found. Outside, they do not so much notice *buildings:* too big; not able to be acted on; not meaningful. But

the building's *corner*, as well as lampposts and fireplugs, wears a new identity each encounter, with news of other dog passerby."[4]

While she is talking about inside rooms and outside buildings, these ideas can just as easily be applied to an outdoor play space, which will include benches along the walls for the human handlers, and waste receptacles for dog waste. For the purposes of visibility, however, I believe the shape of the play area should be kept regular: either rectangular or square. A circle would also be acceptable, but having no corners, would not collect smells like a rectilinear form would. The ground plane can then be further broken up into different surface treatments, which will smell and hold other smells differently.

As previously discussed, one of the dog's means of communicating with other dogs is through scent-marks. Dogs, particularly male dogs but females as well, have a tendency to leave their urine scent-marks on top of the scent-marks left by other dogs. Male dogs also will often seek out a vertical surface on which to leave their scent-marks. Working dogs are trained to be able to relieve themselves on a variety of surfaces, but are discouraged from relieving themselves while in vest. It would not be acceptable for a working dog to be constantly stopping to urinate on fire hydrants. Therefore, in designing a play space, it is desirable to stay away from populating it with recognizable real-life objects on which dogs might be inclined to leave a scent-mark. However, I think it makes sense to have an area of the space that has objects for scent-marking, as this will provide a fertile sniffing ground for the dogs.

The scent-mark rod I've designed does not bear a resemblance to any object that a working dog is likely to come across often (other than perhaps the occasional bollard), and positioning a number of them together randomly and on a narrow bed of pea gravel would not evoke the inside of a building or a sidewalk. To establish this area as a fertile source of scent-marks, the first dogs to use the play space could be relieved in this area while on-leash. The innate dog tendency to 'overwrite' previous scent-marks will draw future playing dogs to leave their marks in this area as well.

Planting a grouping of trees in another area of the play space will also provide the dogs with interesting things to sniff. They may draw scent-marks as well, which is fine, but the tree emerging from the ground creates a change in the condition of the ground plane, which means interesting smells. Insect life, falling detritus from the trees, and dripping sap will also draw the dogs' interest.

Another section of the play space would have dog-safe decorative grasses, which would be for smelling but also for chewing or eating. Dogs will eat grass to force themselves to vomit if they are feeling unwell, but some dogs just enjoy eating certain types of grass. Ideally, the type of decorative grass chosen would be perennial, low-maintenance, and suitable for the zone where the project would be located. Reed feather grass is a perennial decorative grass that grows in a Southern Ontario climate and will be eaten by dogs that enjoy eating grass.

Design Approaches to Include Working Dogs

Places to Roll

Many dogs find great pleasure in rolling around on their backs or plowing their faces into a smell they find particularly delightful. From my own observations, most rolling seems to occur on grass, wood chips, or in dirt. 'Dirt' as a ground cover should be avoided in play spaces for working dogs, since part of their acceptance in public spaces involves perhaps a higher standard of cleanliness than the average dog. Wood chips probably also need to be avoided, since many working dogs are discouraged from chewing sticks, and the presence of such a resource in the play space could result in instances of toy aggression among stick-loving dogs. In a well-used and fairly small space, however, grass is not the best option as groundcover since it will get worn down to dirt, so I would propose a grassy strip away from the center of the play space. Since maintenance would be an issue, a drought-resistant grass that does not require mowing, such as Eco-Lawn, would be ideal. An artificial lawn such as Astroturf is also a possibility, particularly in rooftop play spaces.

Room to Run

Dogs are such social animals that social time spent with other dogs is a must. Dog play is usually fast, can be quite rough, and involves a lot of visual communication between the dogs, so a cleared area where the bulk of this play can occur is a good idea. For wear resistance and barrier-free access, that play area should either be hardscaped, or include hardscaped pathways.

Places to Rest and Sunbathe

Sometimes dogs enjoy going outside just to lie in the sun until their fur becomes almost too hot for a human to touch. Even if this is not one of their pastimes, at some point most dogs will need a place to rest after playing, one from which they can still observe all the action. A raised deck will provide some height differential in the play space, and would be a place to rest and observe, or sunbathe without getting stepped on by playing dogs. My observations indicate that dogs actually quite enjoy lounging around on decks. For easy maintenance, durability and prevention of injury, a wood composite decking is probably the best option for a deck material.

Places to Cool Off

After a certain period of playing or lying in the sun, a dog will eventually seek out some way to cool down, particularly during the hot summer months. Trees will provide shade, as well as the shadow of the building in a courtyard space. For rooftop or fenced play spaces in particular, other means of shade will be necessary. Umbrellas would work well for this purpose. Sun sails are also an option, and could be attached to walls, maintaining clear space underneath.

In addition to shade options, water is a good way to cool off, and many working breeds are also swimmers. A permanent pool is not very practical for this sort of play space, given the maintenance and the difficulty in controlling access to it if

< Fig. 12.29 (above left) - Tilley plays in the spray from a garden hose
< Fig. 12.30 (left) - Dogs play at Newtown Dream Dog Park (Johns Creek, Georgia), which has a splash pad
^ Fig. 12.31 (top) - Dogs cool off in the shade of an umbrella
^ Fig. 12.32 (above) - A plastic pool inserted in a raised wood deck

getting wet is not an option on a particular day. A splash pad is a sensible alternative: it can be turned on or off easily and has minimal maintenance requirements. Plastic pools can always be filled and put out in the courtyard, if pools are still desired. If a more permanent pool is still desired, a hole for it can be added to the raised deck and a plastic pool inserted into it. The pool could still be removed with reasonable ease, and with some planning, a 'lid' can be made to sit in the hole when the pool is removed. Permanent in-ground pools for dogs can and have been built, but at a considerably greater cost, which may not be feasible for these sorts of play spaces.

< Fig. 12.33 - An in-ground dog pool in San Antonio

< Fig. 12.34 - A Future Dog Guide cools off in a plastic pool

1   Lunde, Paul, ed. 2009. *The Book of Codes: Understanding the World of Hidden Messages*. Berkeley and Los Angeles: University of California Press, 238-9.

2   Ibid., 240-1.

3   Horowitz, Alexandra. 2009. *Inside of a Dog: What Dogs See, Smell, and Know*. New York: Scribner, 246.

4   Ibid., 248.

The Design Proposal:
Lions Foundation of Canada Dog Guide Training Centre
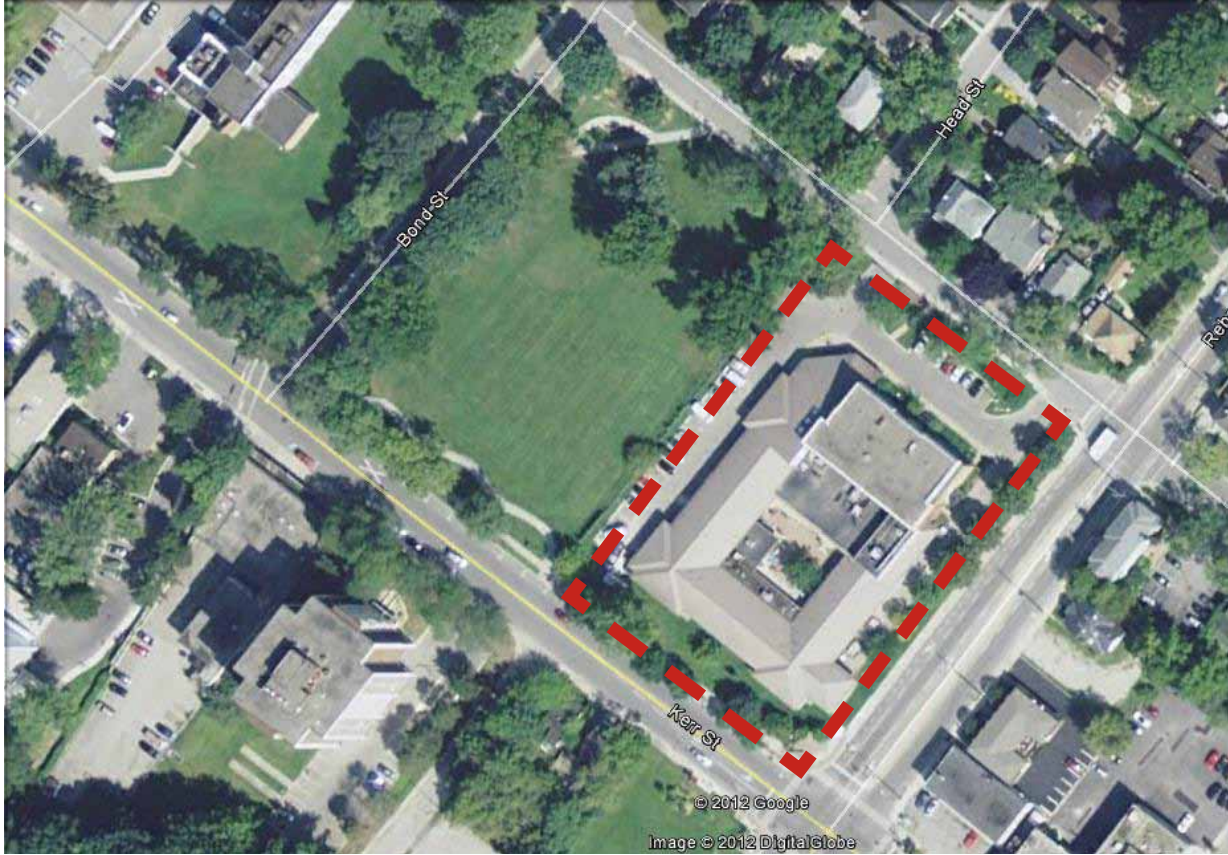
Design Statement

Service dog training facilities are where many symbiotic dog-human part-nerships are formed. While not especially common, this special program makes them the perfect places to explore the architectural expression of the dog-human relationship, specifically the relationship between people with disabilities and service dogs. As a unique fixture within a community, service dog training schools also have the ability to function as symbols. Pride in a building, and awareness of what goes on within it, can be a powerful tool in educating people about disability and service dogs, and thus changing perceptions when it comes to these issues. In addition to the mass-communication value of this individual building, the ele-ments within it are also working to change our perceptions of what the built en-vironment should look like and feel like. One building will not change fundamen-tal perceptions in any dramatic fashion, but applied often enough, these elements will become a part of the human schema for the built world. If you normalize a truly accessible and inclusive environment, then the people – and service dogs – for whom these backdrops were necessary will no longer seem out of place.

The Lions Foundation of Canada Dog Guides is the largest service dog school in Canada and continues to expand. Their current facility has been renovated and the space maximized to allow them to reach a graduation target of 200 teams per year within about five years, but the organization does not believe that further expansion on the current site would be possible due to a shortage of space for parking.[1] However, as Lions Foundation of Canada Director Sandy Turney points out, the current site is very advantageous to the organization, as it is located in an urban environment with plenty of opportunities for real-world training right at their doorstep:

> "Our current facility has a huge advantage compared to almost all simi-lar schools in the world in that it is located right in a prime urban en-vironment. That is unique in that the kennel facility is accepted and yet training of the dogs can take place just by a walk out the door. Most schools have to 'van' dogs in training from rural environments. That is a huge time taker, particularly in our harsh climates."[2]

While there may not be the possibility of further renovations on the site, I believe that by rebuilding in a different configuration they can obtain the space they need while retaining all the advantages of their current location.

This facility must contain multiple functions within one building, the first of which is the administrative side, which oversees everything. Then there are the training functions: kennel areas, veterinary offices, and trainer spaces. The ad-ministrative and training functions are the two primary functions of the building, and are constant. The teaching function, where clients come to stay at the school for two to four weeks and train with the dogs, is not always happening. Schedul-ing of classes is dependent on when dogs are ready, but numbers, and thus the schedule, are also dependent on funding.[3]

The Design Proposal

< Fig. 13.3 - The
cloister at Abbaye
Val Notre Dame,
as seen from the
courtyard

Lions Foundation of Canada Dog Guides is a non-profit organization, and funding is driven entirely by donations,[4] both private and corporate. As such, visibility of the programs and opportunities to gain new donors are very important.[5] This must, however, be balanced with the need to maintain the privacy and dignity of clients, and avoid interference with the program.[6] Increasing the street presence of the building would help to accomplish this goal: a building that stands out and is visible to passerby (including those in vehicles), makes people aware of the building and the organization, and that alone will attract potential donors. The building itself should be advertising for the organization.
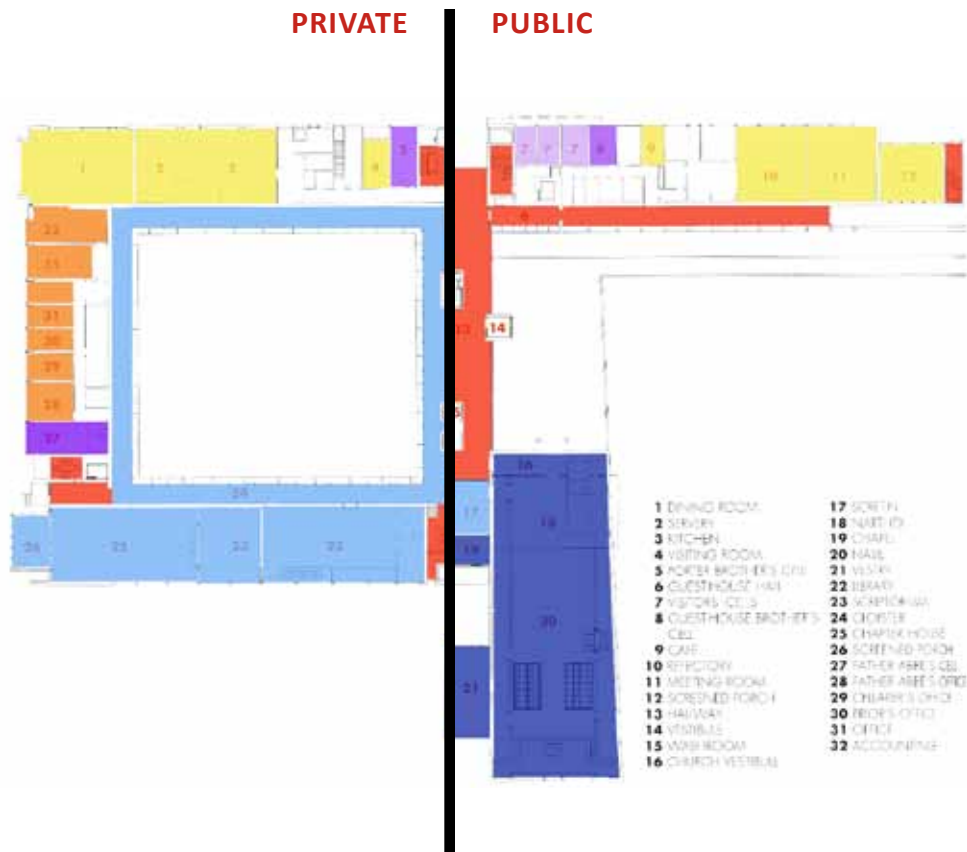
Precedents

Because there is a general lack of purpose-built service dog training facilities, as most renovate an existing property, much of my inspiration was drawn from monastic precedents. Monasteries and service dog training schools are both places of learning, built to facilitate important relationships. In the case of the monastery, it is a relationship with God; in a service dog training school, it is the relationship between people with disabilities and their service dogs. There is a residential component to both, and in some monasteries there is a clear divide between public and private spaces, just as a service dog training school requires.

Designed by Pierre Thibault, Abbaye Val Notre Dame in St-Jean-de-Matha, Quebec, is a monastery with a very clear line of separation between public and private. The ring of the cloister and the program that surrounds it is separated from a main entry hall that connects a guest house wing and the church. Visitor cells, a café, and a refectory are located in the guest wing, ensuring that the cloister and the communal spaces of the monks remain quiet, contemplative places. The cloister serves not only as the central, unifying contemplative space of the abbey, but also as the main circulation route. This creates a lot of efficiency in the plan, and allows the path between destinations to become a contemplative journey. While I believe the garden within the cloister is accessible, it is not accessible from the cloister itself. There is a visual connection to the courtyard along the extent of the cloister, with repetitive wood elements that foster a state of mind that allows one to contemplate the spiritual journey being undertaken.

The programmatic elements on the same side of the building as the main entrance are more communal spaces, while the more contemplative programmatic elements such as the library, scriptorium, and chapterhouse are located on the other side of the building, next to the church. The two sides are joined by an administrative area containing offices and the cell of the abbot. The building seems to be designed as a spiritual journey, where one does not come across the most religious and holy space immediately upon entering. Getting there requires a journey that must bring you closer to God before you can enter His house.

The second floor consists mainly of cells, with some communal spaces. The student brothers are located further away from the church, and the fathers beside it. For some reason, infirmary cells are located in closest proximity to the church – perhaps there is a belief that in sickness, which can be a very different

PRIVATE | **PUBLIC**

1 DINING ROOM
2 SERVERY
3 KITCHEN
4 VISITING ROOM
5 PORTER BROTHER'S CELL
6 GUESTHOUSE HALL
7 VISITORS CELLS
8 GUESTHOUSE BROTHER'S CELL
9 CAFE
10 REFECTORY
11 MEETING ROOM
12 SCREENED PORCH
13 HALLWAY
14 VESTIBULE
15 WASHROOM
16 CHURCH VESTIBULE

17 SACRISTY
18 NARTHEX
19 CHAPEL
20 NAVE
21 VESTRY
22 LIBRARY
23 SCRIPTORIUM
24 CLOISTER
25 CHAPTER HOUSE
26 SCREENED PORCH
27 FATHER ABBE'S CELL
28 FATHER ABBE'S OFFICE
29 CELLARER'S OFFICE
30 PRIOR'S OFFICE
31 OFFICE
32 ACCOUNTING

LEGEND

■ Communal
■ Contemplative
■ Religious
■ Cells
■ Administrative
■ Circulation

1 CELL
2 SCREENED PORCH
3 HALL
4 OFFICES
5 MULTIPURPOSE ROOM
6 WASHROOM
7 WAITING AREA
8 INFIRMARY CELL
9 INFIRMARY OFFICE
10 INFIRMARY
11 ELDERS' CELLS
12 NOVICES' MEETING ROOM
13 MASTER NOVICE'S OFFICE

^ Fig. 13.5 - Ground floor plan of Abbaye Val Notre Dame, showing program distribution and circulation
^ Fig. 13.6 - Second floor plan of Abbaye Val Notre Dame, showing program distribution and circulation

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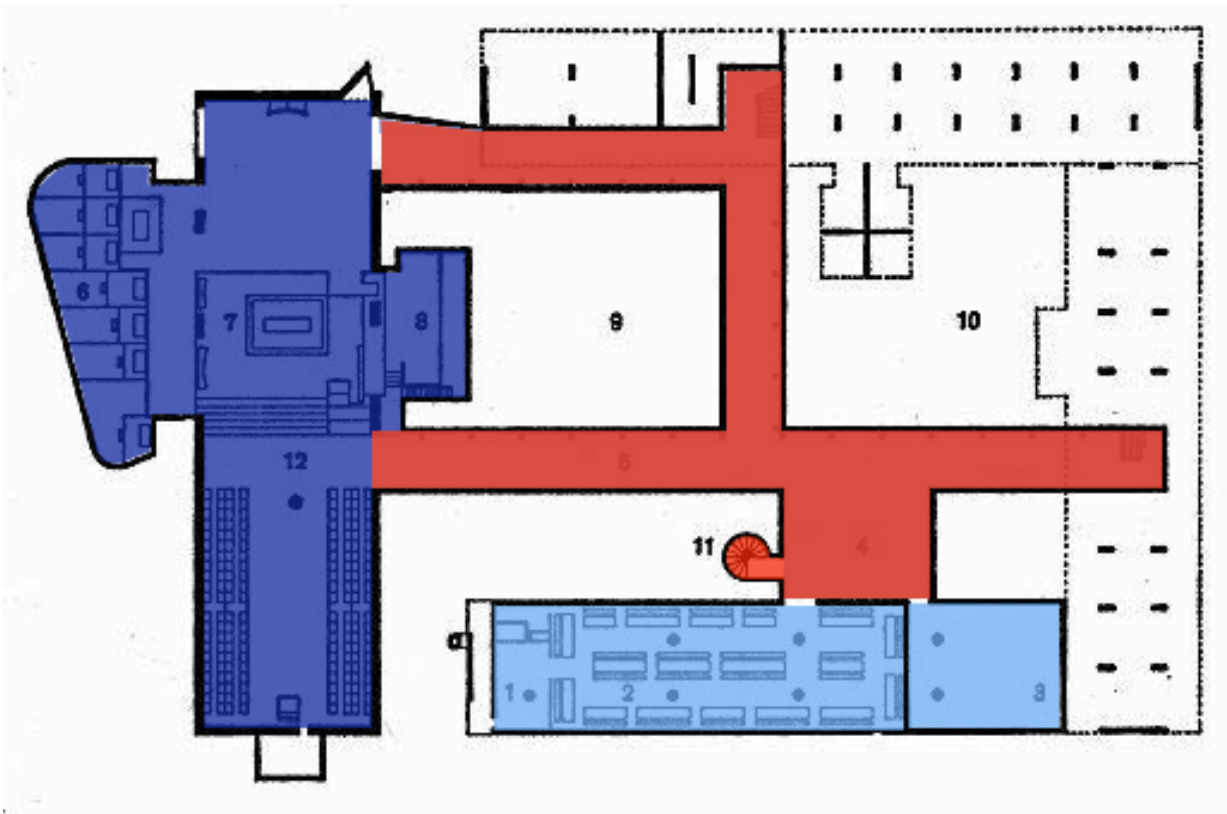
Refectory floor
1 Pantry, 2 Refectory, 3 Chapter-room, 4 Atrium, 5 Cloister, 6 Lower church, 7 High altar, 8 Sacristy, 9, 10 Courtyard, 11 Spiral staircase, 12 Church
GreatBuildings.com

^ Fig. 13.7 (top) - The exterior of Le Corbusier's La Tourette
^ Fig. 13.8 - Lower level of La Tourette, showing program distribution and circulation
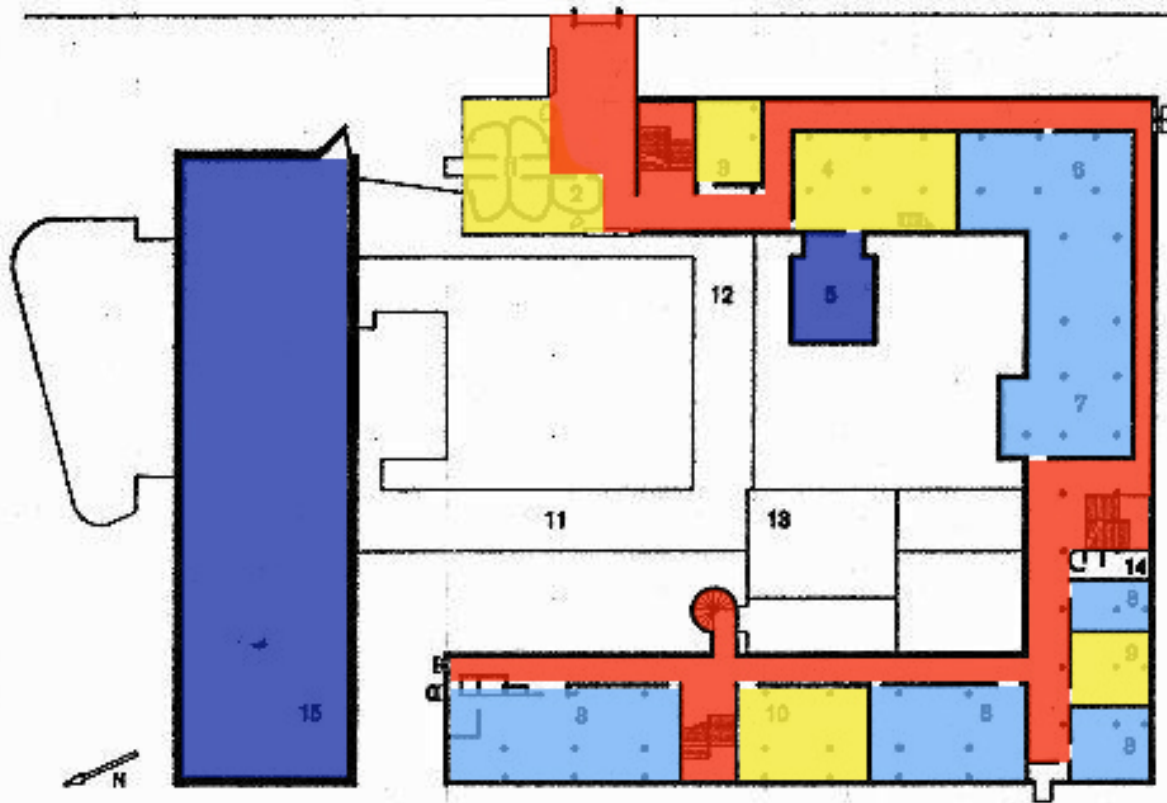
Entrance floor
1 Conversation cells, 2 Porter, 3 Room for the lay-brothers, 4 Common-room for the student brothers, 5 Oratory, 6 Reading-room, 7 Library, 8 Lecture rooms, 9 Common-room for the student brothers, 10 Common-room for the fathers, 11, 12 Cloister, 13 Atrium, 14 WC, 15 Church

LEGEND

🟨 Communal	🟦 Religious	🟧 Administrative	
🟦 Contemplative	🟪 Cells	🟥 Circulation	

^ Fig. 13.9 - Main level of La Tourette, showing program distribution and circulation
> Fig. 13.10 (top, adjacent page) - The church interior of La Tourette
> Fig. 13.11 (bottom, adjacent page) - Top level of La Tourette, showing program distribution and circulation
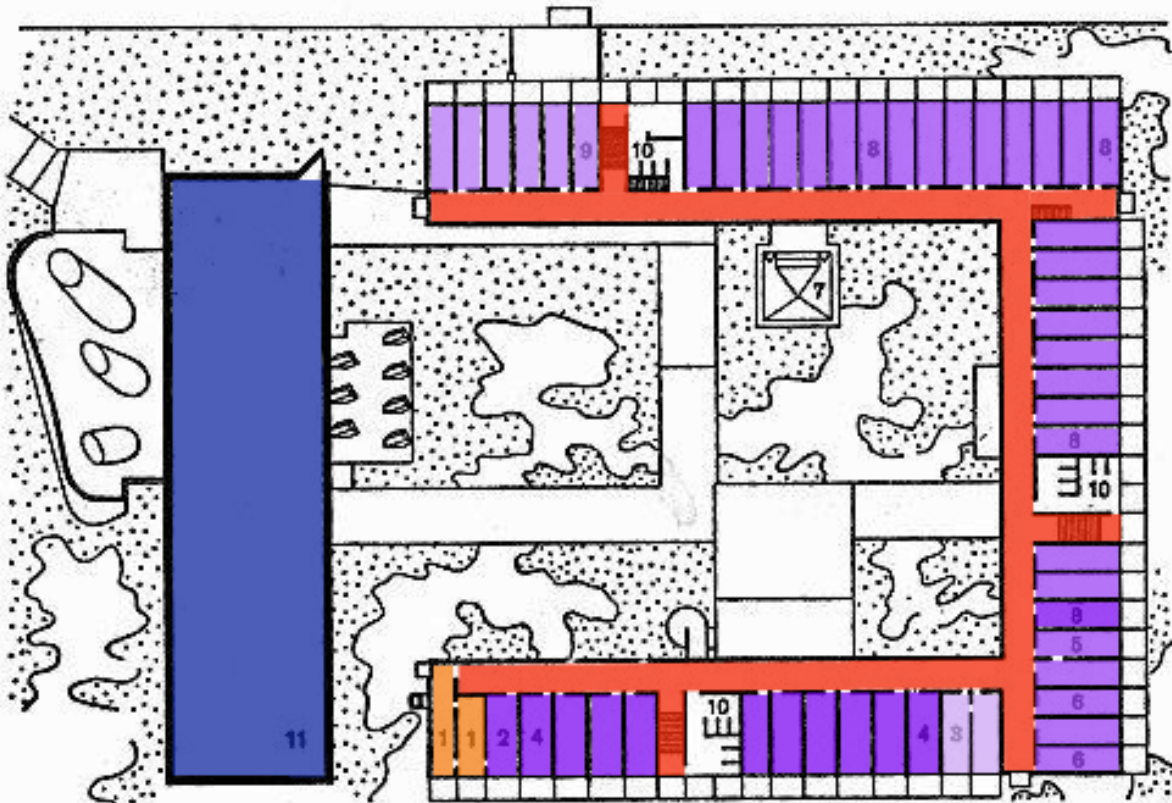
Cell floor
1 Cells for the sick, 2 Nurse's cell, 3 Cells for visitors, 4 Fathers' cells,
5 Cell for the monk in charge of the student brothers, 6 Student priests'
cells, 7 Oratory, 8 Student brothers' cells, 9 Lay brothers' cells, 10 Sanitary offices, 11 Church

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The Design Proposal

state of mind, one is closer to God.

At Le Corbusier's Sainte Marie de la Tourette, the communal areas are located on the main floor. The program is organized in such a way as to simulate the spiritual journey that the monks are undertaking: program for student brothers is located closer to the entrance or the entry side of the building than program for the fathers, which is located closest to the church. Common areas for the lay brothers and student brothers, as well as the library, are located right next to the main entrance, while classrooms and the common room for the fathers is on the opposite side of the building.

The contemplative and religious spaces - the cloister, chapterhouse, refectory, and church - are located on the lower level. The cloister also serves as the circulation route for this level, perhaps as a preparation for entering the holy spaces. The courtyard is not accessible from the cloister, but it is visible, and the undulating pattern of the mullions not only casts beautiful patterns on the floor but may be conducive to a more trance-like and therefore contemplative state of mind. The upper level consists exclusively of cells, again arranged so that the sleeping spaces of the student brothers are furthest away from the church, while the fathers are located closest to the church. As in Abbaye Val Notre Dame, the cells for the sick are located directly beside the church. On all levels, the circulation is simple and efficient, which may reflect monastic attitudes that generally prefer sparseness and frown on excess.

The Abilities Centre in Whitby, designed by B+H Architects, is the only facility of its kind in North America. The entire building is designed with universal access in mind, to try and make it a facility that could truly be used by anyone. Since universally-designed buildings are not altogether common, I felt it was important to visit this precedent in person to get a feel for the space. They were very welcoming and gave me a tour of the facility.

The fitness component occupies the ground floor, while the upstairs has rooms that can be used for community classes in art, music, and cooking. A long ramp in the reception area goes up to the second floor which helps those with mobility impairments experience the building the same way as everyone else. All the doors in the building are either double doors or 42" wide, and can be opened with long vertical barrier-free push buttons that are extremely durable and can be kicked or rammed with a wheelchair. This creates better access for those with limited upper-body mobility, who may not be able to push a button at hand-height. They were clearly trying to create a building that can be experienced by everyone. The design process included substantial input from user groups, and they continue to get feedback from users which they try to integrate into the building.

A lot of the focus seems to have been on access for the mobility impaired, with a secondary emphasis on access for the visually impaired. Other than visual fire alarms and the strategies that are common between disability categories, I did not see a lot of intentional strategies for the deaf/hard-of-hearing population. While it is obviously not possible to make a building of this sort open plan, there is an open
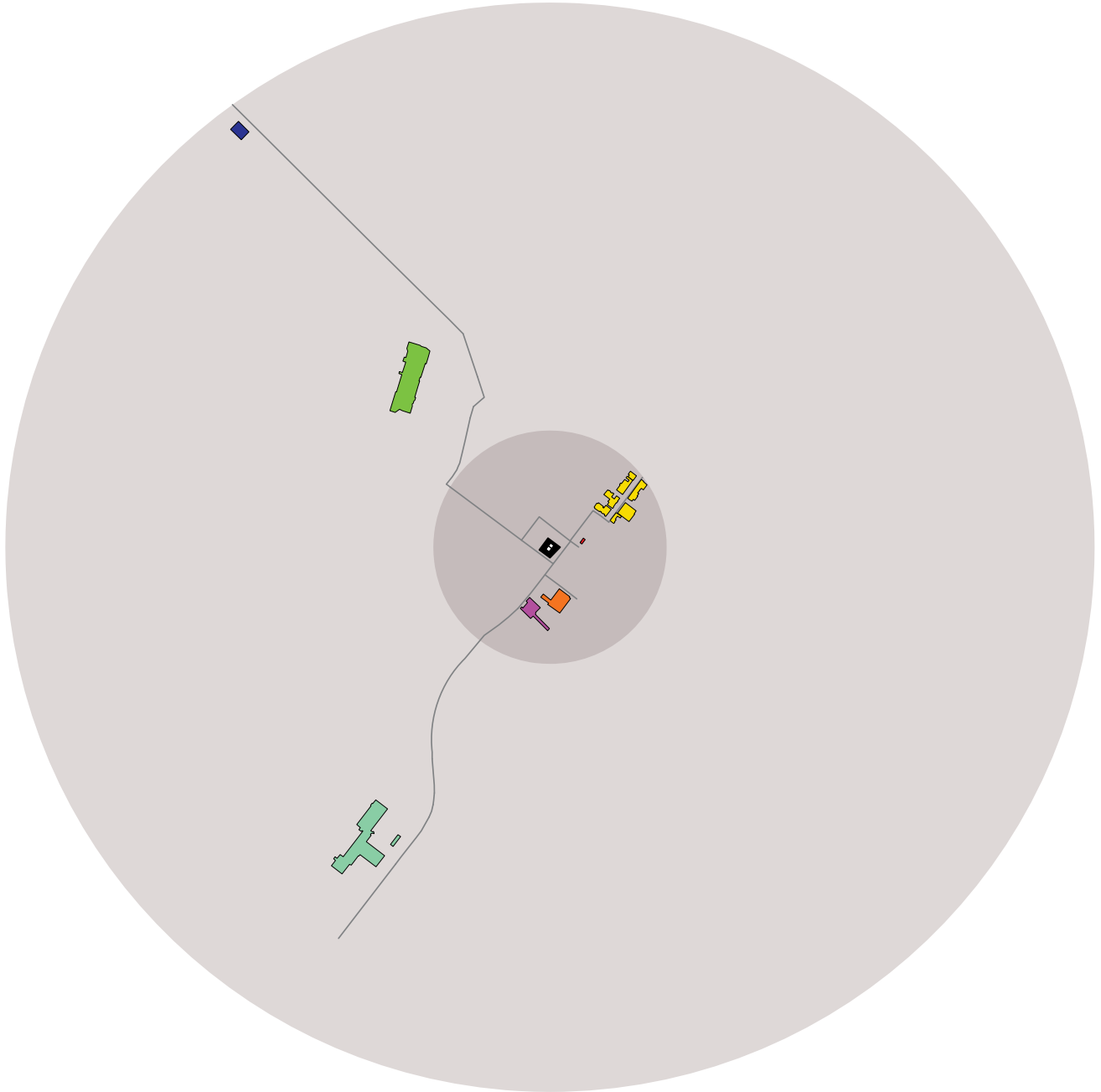
The Design Proposal

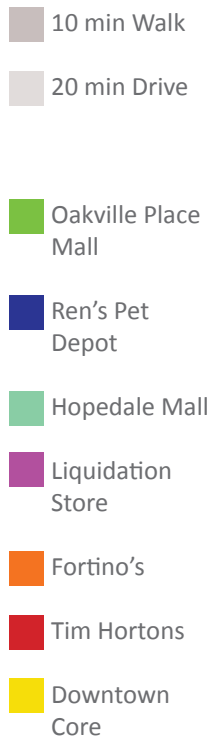^ Fig. 13.15 (top) - The common room for the Poor Clares
^ Fig. 13.16 - Break room and patio

^ Fig. 13.17 (top) - Poor Clare cells, as seen from the exterior
^ Fig. 13.18 - Outside the convent's refectory

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feel to it and the space has not been divided more than necessary. This allows the deaf and hard-of-hearing to understand their surroundings visually, which can't be done when things are really closed off. Although the structure in the field house, with its enormous triangular trusses, is beautiful and eliminated the need for columns which would have restricted sight lines, I have concerns about the acoustics of the space: large spaces can have issues with echo, which presents difficulties for both the deaf/hard-of-hearing and the visually impaired. There did not seem to be much if any acoustic treatments in the field house to minimize this issue. They did forego additional glazing in the field house to eliminate possible glare issues, and a good portion of the east and west glazing is actually frosted, which created a nice, diffuse light in that space. Those with autism were taken into consideration with a sensory room provided on the second floor, which can either be dark with minimal stimuli, or there are lights and other stimuli that the individual can interact with.

The wayfinding system incorporates 4 methods: colour, writing, picture, and Braille. All walls have a rail for those with visual impairments. Despite its apparent simplicity, according to my tour guide the plan of the building does create some confusion in wayfinding, particularly where the changerooms have two exits into parallel corridors, which is confusing when the subject expects to emerge in one hallway and ends up in the other. On the whole, the building was very impressive, and it was great to learn that even though it is now open and occupied, they continue to listen to the user group and implement further changes when possible.

The Convent for the Poor Clares at Ronchamp, by Renzo Piano, was another project I looked at because I felt that the relationship of inside to outside is very compelling. This convent is located on the same site as Le Corbusier's famous Ronchamp chapel, and includes cells for the nuns, a chapel, as well as a visitor's centre and bookshop. The convent is built into the hill in order to be respectful of the Ronchamp chapel on the top of the hill. The cells have direct exterior connections in order to facilitate a contemplative connection with nature, and sparse, clean exterior courtyards that bring light into the building.

Interpretation and Vision

The proposed Lions Foundation of Canada Dog Guide Training Centre would be situated on the site of their current facility in Oakville. The site is bounded by Kerr Street to the southwest, Rebecca Street to the southeast, and Wilson Street to the northeast, and Westwood Park to the northwest. Proximity to both the waterfront and Sixteen Mile Creek means that there is an abundance of parks and trails in the area.

The larger community surrounding the site functions as an extension of the learning environment for the dog guide teams in training. Grocery stores, malls, and restaurants become classrooms for learning how to work together in public locations and around food. The downtown core of Oakville is located within a ten-minute walk, and there are two public transit routes in proximity of the site. Excursions into the community simulate as many situations as possible that the

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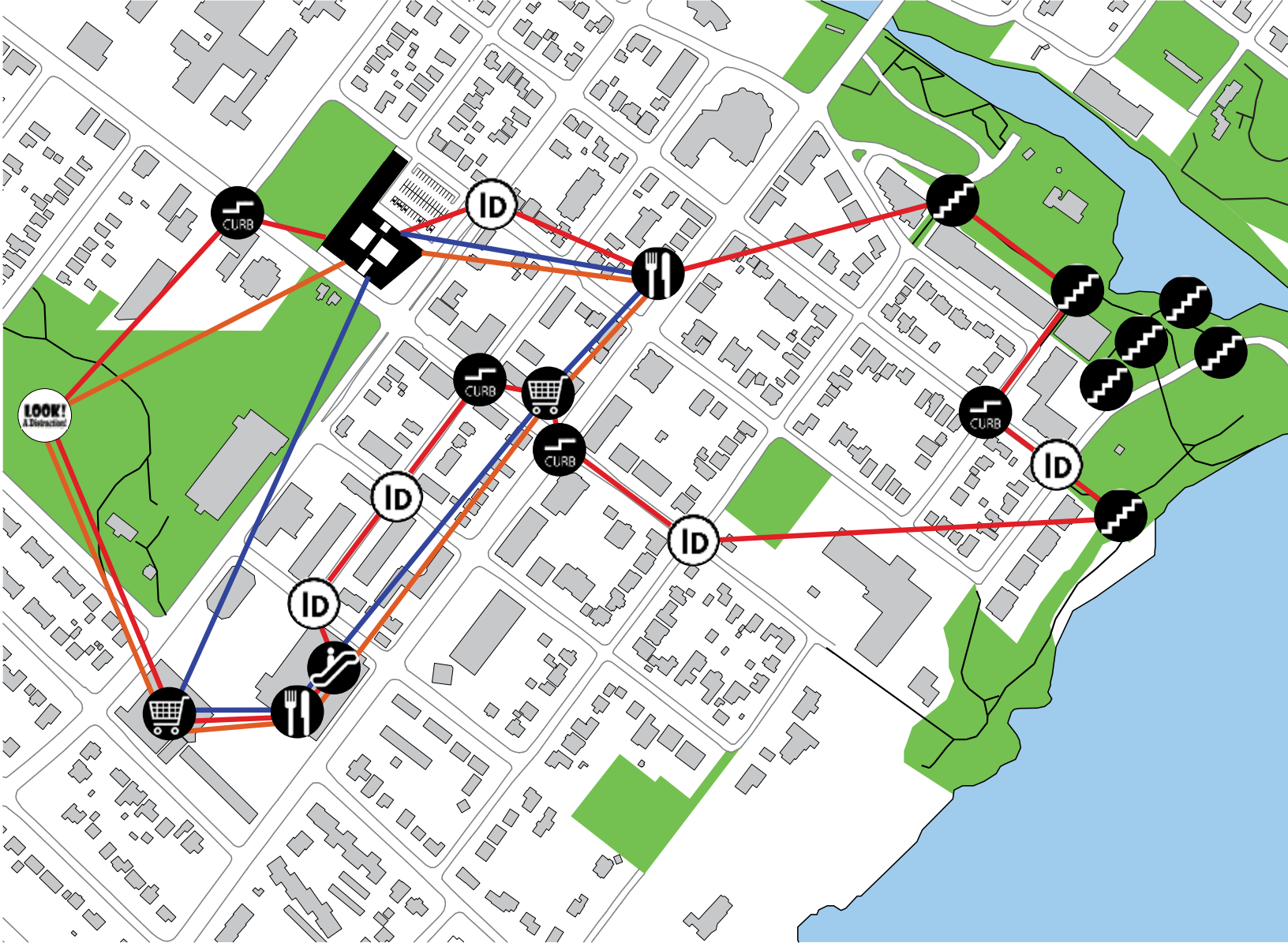
| | CANINE VISION | | SPECIAL SKILLS | | HEARING EAR, SEIZURE RESPONSE, AUTISM ASSISTANCE, DIABETIC ALERT |

INTELLIGENT DISOBEDIENCE

ESCALATORS

FOOD DISTRACTION

CURBS

GENERAL DISTRACTION

STAIRS

STORE

teams will encounter once they graduate and return home.

The parking lot on the site has 45 parking spaces and 8 barrier-free parking spaces, for a total of 53 parking spaces. This is an increase over what they currently have, and should grant them more square footage in the building.

A series of courtyards and their relationships to the interior spaces are the heart of this design proposal. For security and noise issues that are due to the urban site, outdoor play space for the dogs needs to be enclosed within the walls of the building.[7] Two of the courtyard spaces provided are designed for canine play. The other two small courtyards, which are enclosed on only three sides, provide an option for outdoor teaching, human social gathering, and interspecies (one-on-one human-dog) play.

The lower courtyard is enclosed entirely by a playful tri-coloured glass curtainwall, and is accessed from the kennels on the ground floor. It is not accessible to clients at all, so this space is always available for use by groups of dogs-in-training from the kennels. It provides pea gravel and bollards for scent-marking, a paved area for running and playing, a grassy area for rolling, a deck for sunning, some reed feathergrass for chewing, trees for shade and a splash pad for water play on warm days. This courtyard intrudes slightly into the public event space and is the main feature within it.

The upper courtyard is for use by the dogs while they are training with their handlers (though it can be used by the kennel dogs too). Because this courtyard is surrounded by teaching spaces on three sides, only one side has the tri-colour curtainwall. The play area can be very distracting to the dogs while they are in class, particularly if they can see other dogs playing in it, so the windows that look onto classrooms bring daylight into the spaces, but are too high for the dogs to see out. The upper courtyard has the same amenities as the lower one, except that umbrellas are used for shade rather than trees.

During training, initially playtimes involve only dog and handler, as part of the bonding process. These playtimes can occur in the indoor classrooms, since they would not be in use in the evenings, but I have provided two additional small courtyards that could be used for this purpose. Eventually, there will be playtimes for all the dogs of one class. The smallest of the courtyards can support up to 6 dogs, so they could be used for class playtimes as well. The second smallest courtyard would probably be used mostly as a human courtyard, for some meals and socializing during the warmer months.

In addition to the courtyards, the partial third floor accesses a rooftop garden. During the training, clients are not allowed to leave the building with their dogs. The outdoor rooftop space would provide an opportunity for being outdoors with the dog that is safe and can be supervised. This area could also be used for teaching, for growing food for the kitchen, and it would also provide room for future expansion of the third floor if necessary.

The public event space on the ground floor is intended to be used to host

the graduation ceremonies, fundraising events, and open-house events. It is a space separate from the teaching areas, so that events can occur concurrent to training classes without disrupting them. Because of this separation, there is also a possibility of renting out this space to independent groups for added income. A servery has been provided to facilitate the possibility of catered events, with a dumbwaiter leading up to the full kitchen on the second floor.

The main feature of the space is the two-storey, coloured glass curtainwall that looks into the lower-level courtyard, enabling observers to watch the dogs playing. Across from the courtyard is the ramp leading to the second floor. There is also a viewing area into the kennels.[8] Outside the building, adjacent to Rebecca Street, is patio space that can be used as an extension of the interior.

The nature of this space requires hard finishes on the floors and walls, but because of its size, acoustics will be a serious issue in this space. As previously discussed, good noise control is a necessary aspect of inclusive buildings. I am proposing both acoustic ceiling and wall treatments: an Armstrong WoodWorks Grille for the ceiling, which involves a series of horizontally-placed wood blades with acoustical infill panels behind them which absorb sound; and custom metal walls by Armstrong with perforations to absorb sound.

The public event space would increase the visibility and awareness of the training school within the community, which could attract more donors, while maintaining privacy for the clients.

Having the kennels at grade provides direct access to outside and to the parking lot, where dogs can be easily be loaded into vans to be transferred to and from the school. My kennel layout drew heavy inspiration from the current Lions Foundation of Canada kennels, which were part of a recent renovation and are well laid-out and successful within the available space, in my opinion. The kennels are compartmentalized into groupings of 10 to 14 runs by full-height walls, with a total of 58 runs. Each run will contain two or three dogs (the kennel buddy system). The glass doors of the runs are angled so that the dogs can see each other: for well-socialized and familiar dogs, being able to see each other is reassuring. Each compartment includes a food preparation area, and all except one include a grooming area within the compartment.

The intent behind compartmentalizing the runs is noise control: kennels can easily become uncontrollably loud. Future dog guides tend to be on the quieter side because of their training, and because many measures are taken to decrease the stress of kennel life. However, dogs have more sensitive hearing that humans and controlling noise will create a more pleasant and considerate environment for them. In addition to horizontal separations, acoustical ceiling and even possibly wall treatments should be included. Durable solutions such as perforated metal panels could work well in such a space. Dog Guides Canada has been quite pleased with the tile finish they have in their current kennels, but a rubber flooring would be another durable and easy to clean option.

The kennels also have three play/training areas: these can be used to provide the dogs with indoor playtimes, and or as training areas that trainers can use as an alternative to the teaching areas on the second level. There is also direct access to the lower-level courtyard, which is intended for use only by the dogs in the kennels. There is a viewing window in the public event space that looks onto a kennel and associated indoor play area, allowing potential donors to view the kennel area without disruption.[9]

In addition to the regular kennel areas, there are veterinary offices with space for two veterinarians, and 11 holding/recovery kennels. The large food room[10] is located centrally within the kennels and has direct access to the parking lot for unloading.

The administrative areas and trainer areas are located on the ground floor, providing staff and trainers with easy access in and out of the building and to the kennels. There are 12 private staff offices, which could accommodate future growth by being furnished for two people per office, and an open office space for volunteers. The Operations Manager's office has an adjacent meeting space. A large boardroom/meeting room is also provided.[11] The administrative staff share a lounge area with the trainers.

The trainer areas contain an open office for the head trainers, and a trainer office with a number of computers which the remaining trainers share. There is also a telephone room for communicating with clients and a meeting room. For the most part, the trainers work with dogs all day, so they have access to locker and change rooms where they can store their belongings and change and shower as needed.[12]

The client rooms are all located in one wing, spread over the second and third levels. This is more efficient for both supervision and in case of an emergency,[13] where the fire department can be made aware that all the client rooms are in one dedicated area of the building. All of the rooms are dimensioned with wheelchair accessibility in mind. All rooms also are built with a door into an adjoining room, which allows for flexibility since some programs require that a caregiver or support person attend class with the client. This allows the caregiver to have their own room, but also means that the rooms themselves are more flexible and can be assigned to someone from any program. The design includes 44 rooms. Depending on the programs, four to five full classes could run at one time, even with two rooms set aside for trainers on duty.

Clients stay at the school for a fairly long period of time and the days can be long and quite stressful. It is beneficial to provide them with areas where they can spend their downtime. The design proposal includes several lounge-type social spaces and games rooms, as well as rooms that can be set up for distraction-free television and or movie-watching. A reading room and a small fitness room have also been provided. The dining hall, when not in use for meals, can be used as additional social space. The two smallest courtyards on the second level, as well as the roof garden on the third level, can be used as outdoor social spaces.

For convenience and safety, relief areas for the dogs are contained within the building. The current facility has one concrete pad and multiple concrete stalls for the clients to use to relieve their dogs. Slip-resistance was a concern, and so the concrete was left unsealed, which has allowed dog urine to be absorbed into the concrete over the years.[14] What I am proposing is rubber flooring like Johnsonite Roundel rubber flooring, which is naturally slip-resistant, non-porous and easy to clean. The sloping pad configuration has been maintained, since this is good for wheelchair accessibility, and stalls have also been provided, as these are used by Canine Vision clients. Two pads and five stalls have been provided on both the second floor and the third floor. There would also be the possibility of toileting dogs in the upper courtyard or green roof.

A variety of wayfinding strategies have been considered in this building. Two contrasting colours have been used on the floor to guide travel, and handrails on the walls with symbols and Braille labels can also be used for guidance. Sidelights in the doors to teaching and social spaces allow the deaf and hard-of-hearing to be aware of what is happening on the other side. The 300x600mm tile in the atrium runs in the same direction as the space, preventing confusion. Keeping echolocation in mind, both entrances to the atrium are located under an overhang or canopy, which is helpful for locating building entrances. Rooms are kept rectilinear and hallways straight to avoid the confusion of round or curved spaces. The dining area on the mezzanine has been glassed in to prevent cavernous echoing. The small open mezzanine area at the top of the ramp is a transition space, not intended for gathering.

Clues in the building's layout, particularly on the second floor (the first floor, other than the public event space, is occupied by people who use it regularly, unlike the second and third floors which see new clients every few weeks), also aid in wayfinding. The dining hall and kitchen can be identified by the smell of food, which provides a point of orientation. The social area, which is near the elevator, would be another of these points, perhaps identified by social chatter or the sound of people playing pool. The sound of the elevator announcing itself could also be an indicator. But because the social area is not always in use, it would probably be wise to provide another way of identifying it: either a speaker that emits a constant, consistent noise, or an odorous potted plant.

A colour-coded signage system like the one used at the Abilities Centre in Whitby should be included here as well. This system has information coded in a variety of ways, including colour-coding, pictograms, and Braille. The service dog signage discussed in Chapter 10 would also be included in the wayfinding. In addition to this system, textured maps should be provided on each floor.
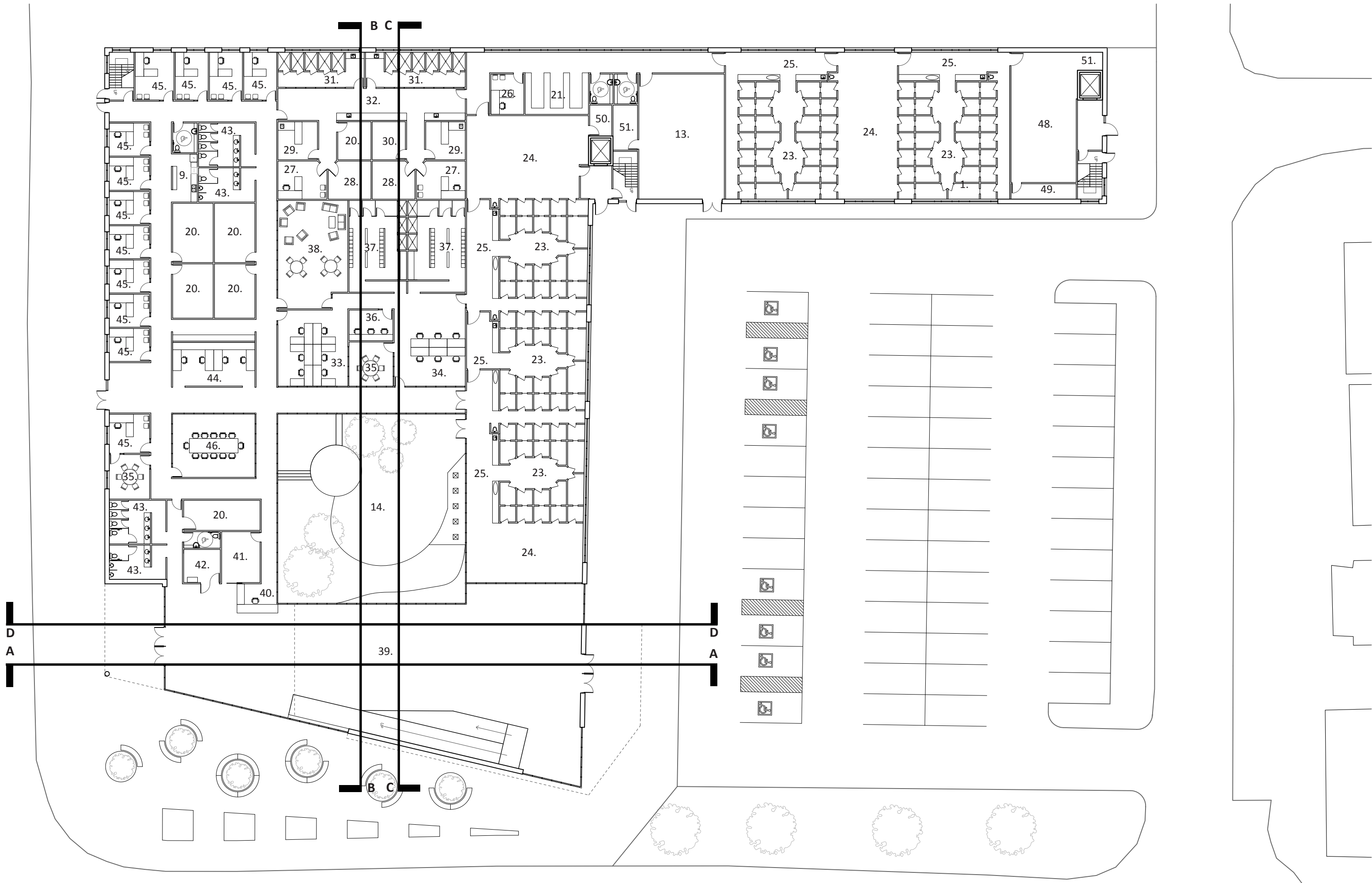
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#	Room Name	Quantity	Unit Area (	Total Area (sm)
	PRIVATE			
1	Client Room	44	27	1188
2	Reading Room	1	36	36
3	Fitness Room	1	36	36
4	Games/Social Area 1 (w. dog crating area)	1	71	71
4	Games/Social Area 2	1	70	70
4	Lounge	1	42	42
5	Lounge/TV	2	32	64
6	Private Classroom	5	36	180
7	Open Classroom 1	1	170	170
7	Open Classroom 2	1	215	215
7	Open Classroom 3	1	205	205
8	Dining Area	1	140	140
9	Kitchen	1	38	38
10	Kitchen Storage	1	10	10
11	Relief Area	2	80	160
12	Grooming Area (w. dog crating area)	1	32	32
13	Food Storage	2	16.5	33
14	Upper Courtyard	1	285	285
15	Medium Courtyard	1	111	111
16	Storage	1	14	14
17	Small Courtyard	1	62	62
18	Universal Toilet Room	2	6	12
19	Supply	1	30	30
20	Storage	1	44	44
21	Laundry	1	25	25
22	Linens	1	4	4
	Kennels			
14	Lower Courtyard	1	316	316
23	Kennels - 10 runs	3	80	240
23	Kennels - 14 runs	2	111	222
24	Play/Training Area 1	1	66	66
24	Play/Training Area 2	1	90	90
24	Play/Training Area 3	1	83	83
25	Food Prep and Grooming	5	30	150
13	Food Storage	1	100	100
21	Laundry/Storage	1	25	25
26	Office	1	12	12
18	Universal Toilet Room	2	7	14
	Veterinary Offices			
27	Vet Office	2	17	34
28	Surgery	2	15	30
29	Exam Room	2	14	28
30	X-ray	1	12	12
31	Holding/Recovery	2	31	62
32	Prep/Writeup	1	57	57
20	Storage	1	12	12
	Trainers			
33	Head Trainer Office	1	50	50
34	Trainer Office	1	50	50
35	Meeting	1	18	18
36	Telephone	1	13	13
37	Lockers/Change Area	2	50	100
38	Staff Lounge (shared)	1	69	69

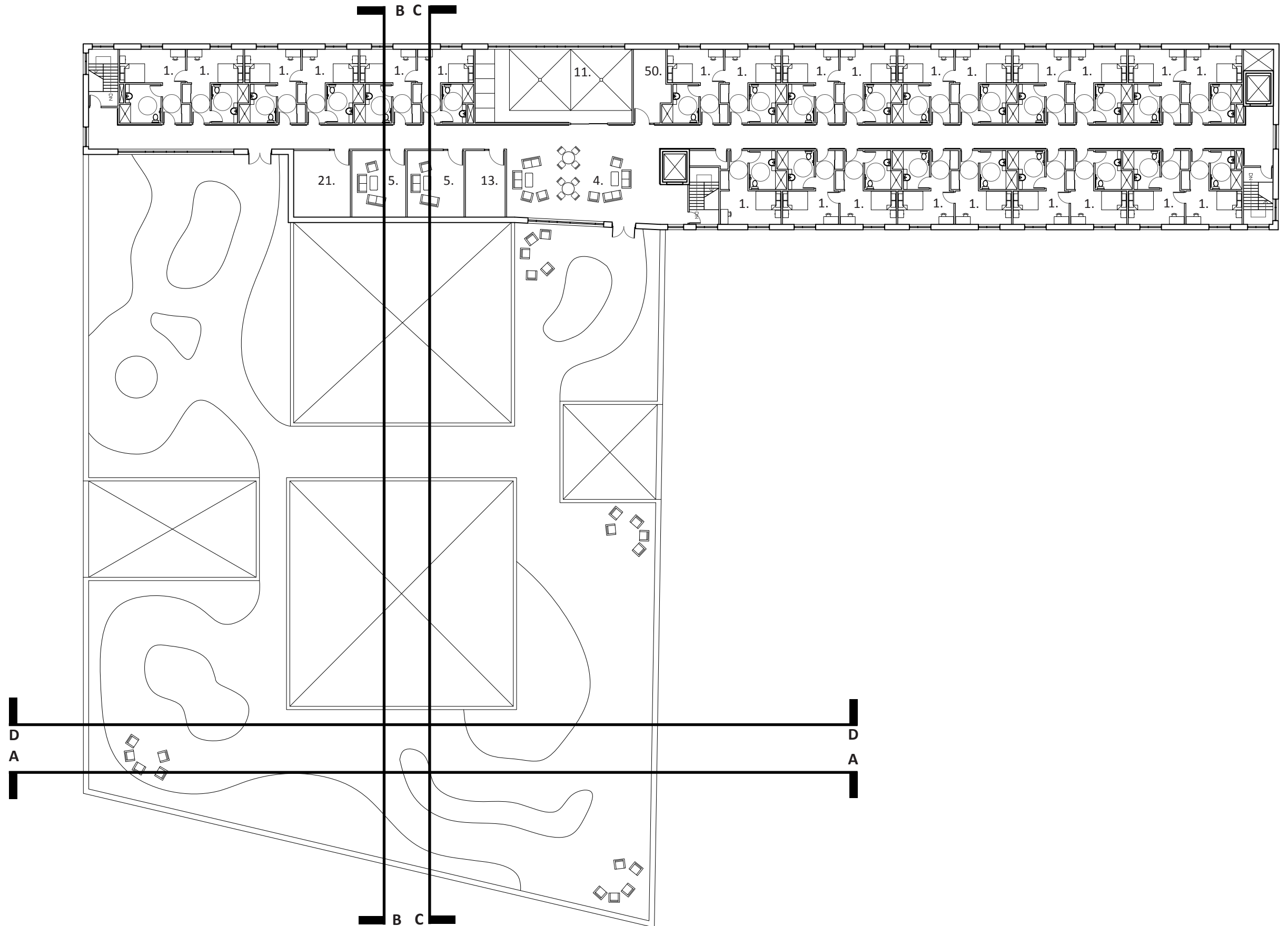|	**PUBLIC/PUBLIC RELATIONS**			
39	Event Space	1	570	570
40	Reception	1	11	11
20	Storage	1	22	22
41	Gift Shop	1	19	19
42	Servery	1	12	12
43	Public Washrooms	1	42	42
18	UTR	1	6	6
	Administration			
44	Volunteer Office	1	34	34
45	Private Office	7	12	84
45	Private Office	1	17	17
45	Private Office	4	15	60
35	Small Meeting Room	1	17	17
46	Board Room	1	50	50
47	Photocopy/Supply/ Recycle	1	17	17
20	Gift Shop Storage	1	22	22
20	Files Storage	1	22	22
20	Finance Records	1	22	22
20	Purina Walk Supplies	1	22	22
9	Kitchen	1	12	12
18	Universal Toilet Rm	1	7	7
43	Washrooms	1	43	43
	BUILDING SERVICES			
48	Mechanical Room	1	80	80
49	Electrical Room	1	10	10
50	Janitor Room	1	6	6
50	Janitor Room	2	13	26
51	Elevator Machine Room	1	11	11
	Net Building Area			6374
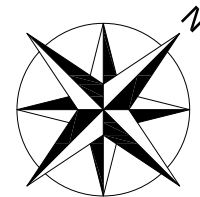
< Fig. 13.27 - Program chart
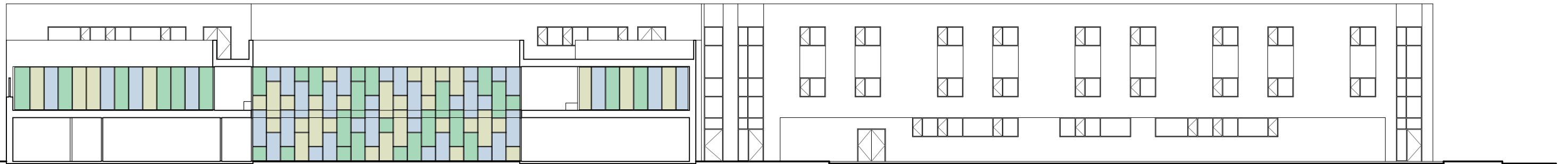
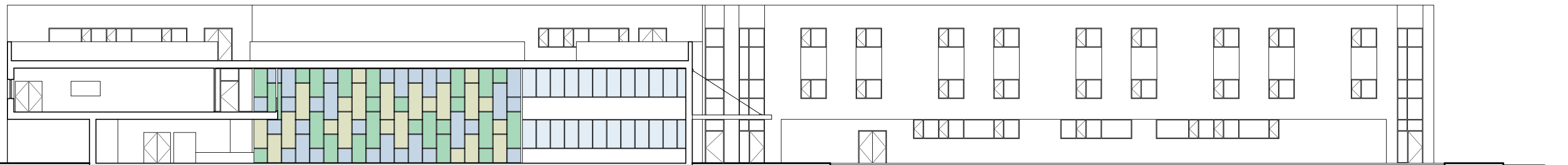> Fig. 13.28 (adjacent page) - Ground Floor Plan, 1:325
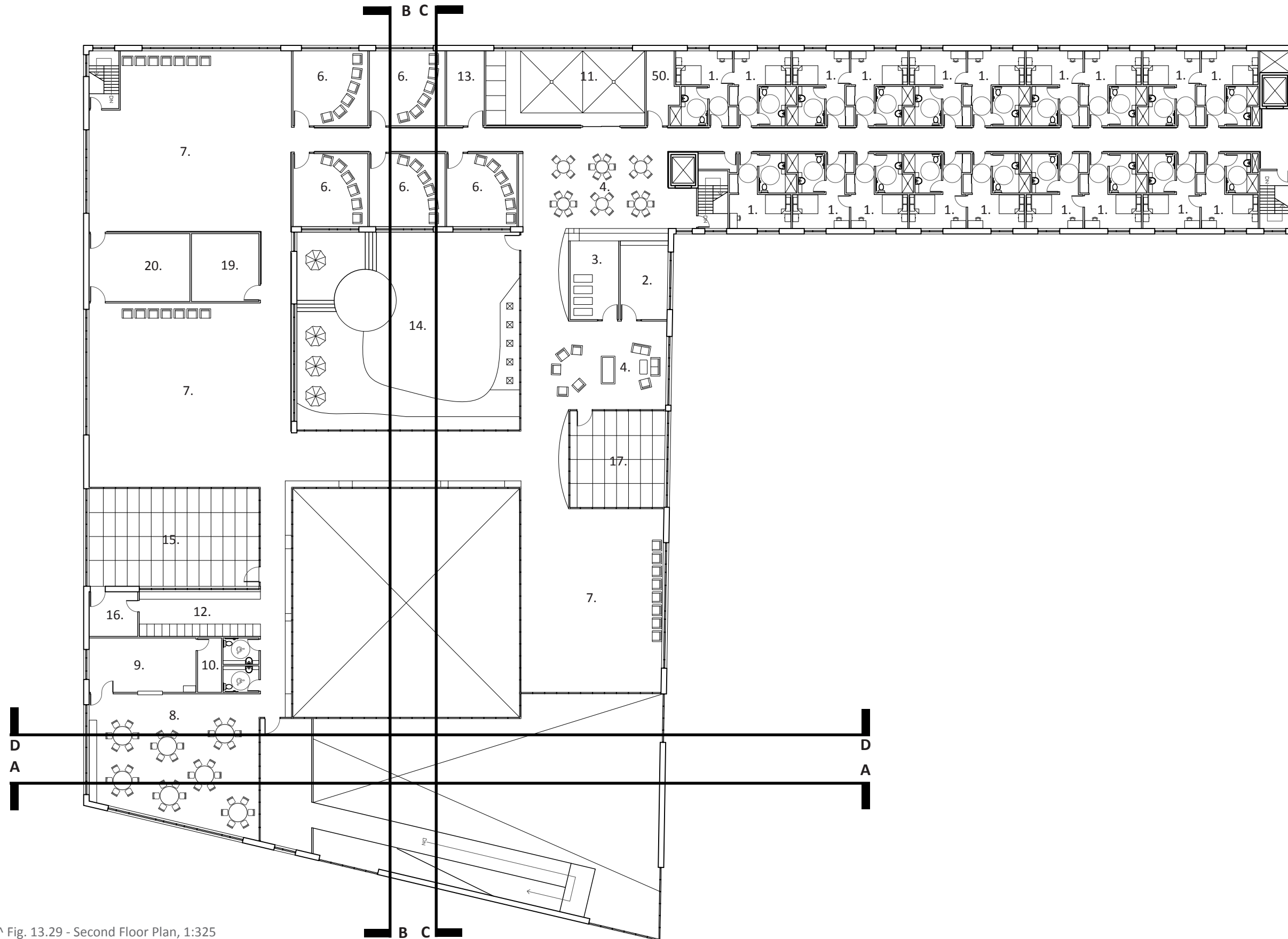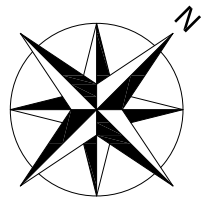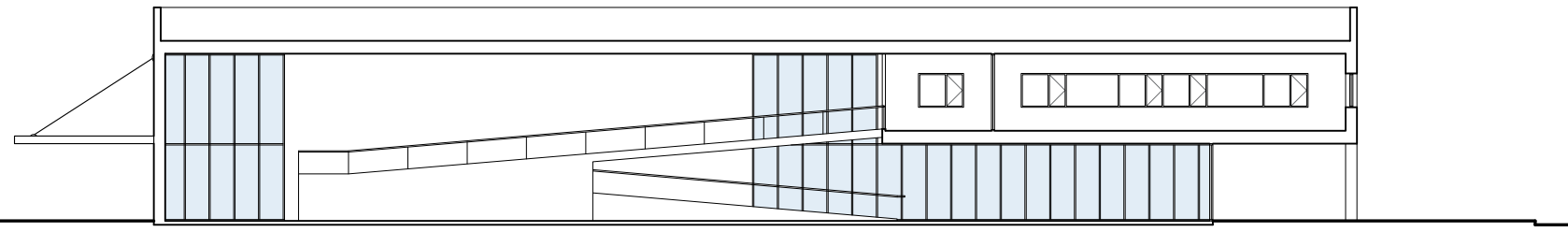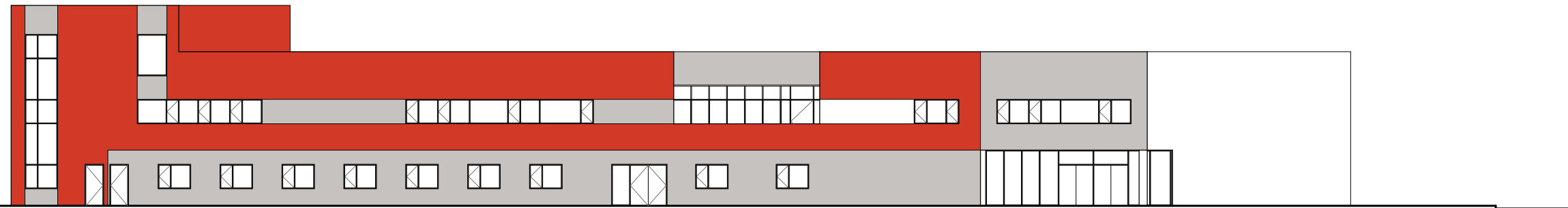
Section-Elevation A
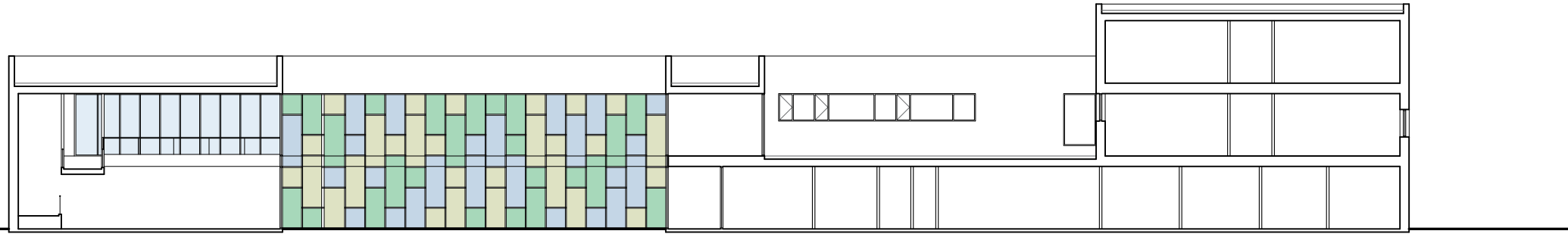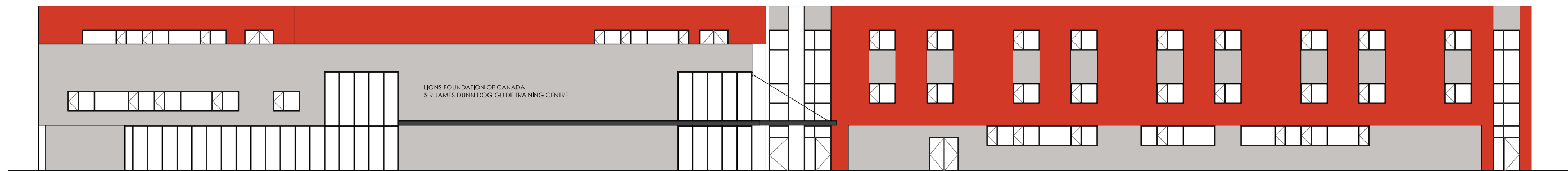
Section-Elevation B

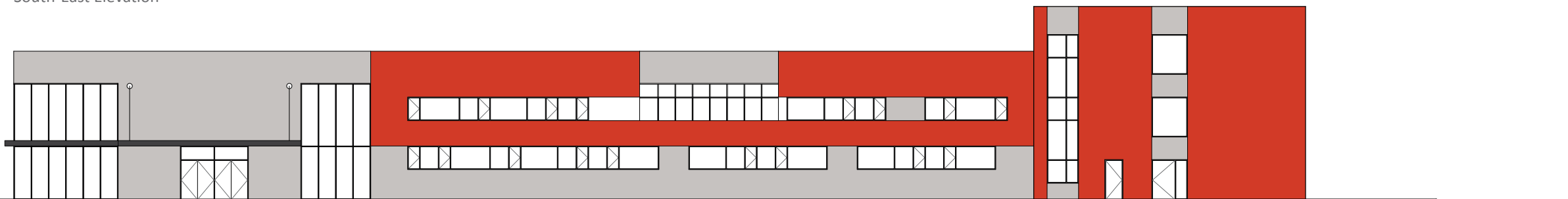Section-Elevation C

Section-Elevation D
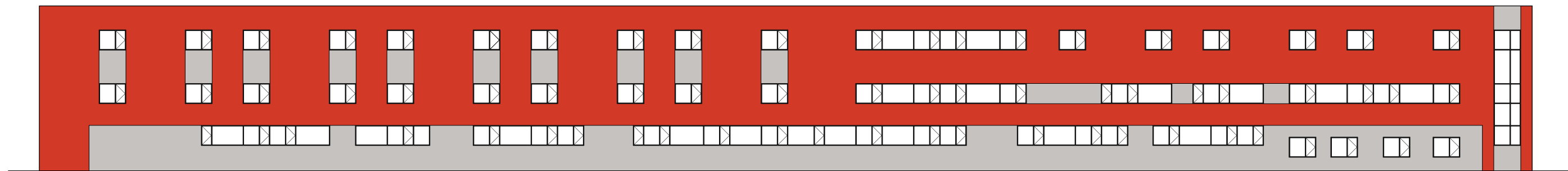
Fig. 13.31 - Section-Elevations, 1:275
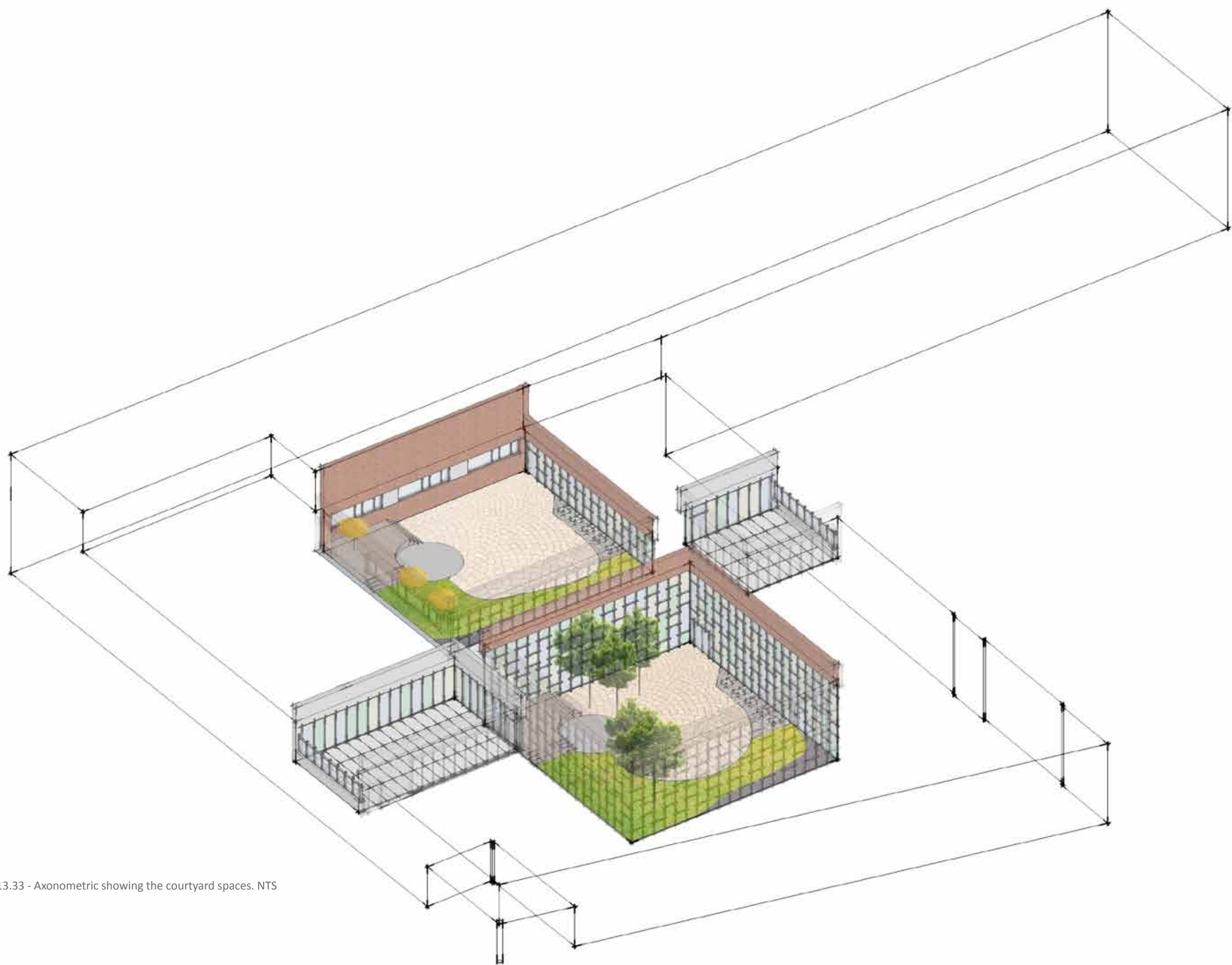
258

South-West Elevation

South-East Elevation

North-East Elevation

North-West Elevation

Fig. 13.32 - Elevations, 1:275. Areas in red represent rainscreen brick cladding, areas in grey represent corrugated metal siding.

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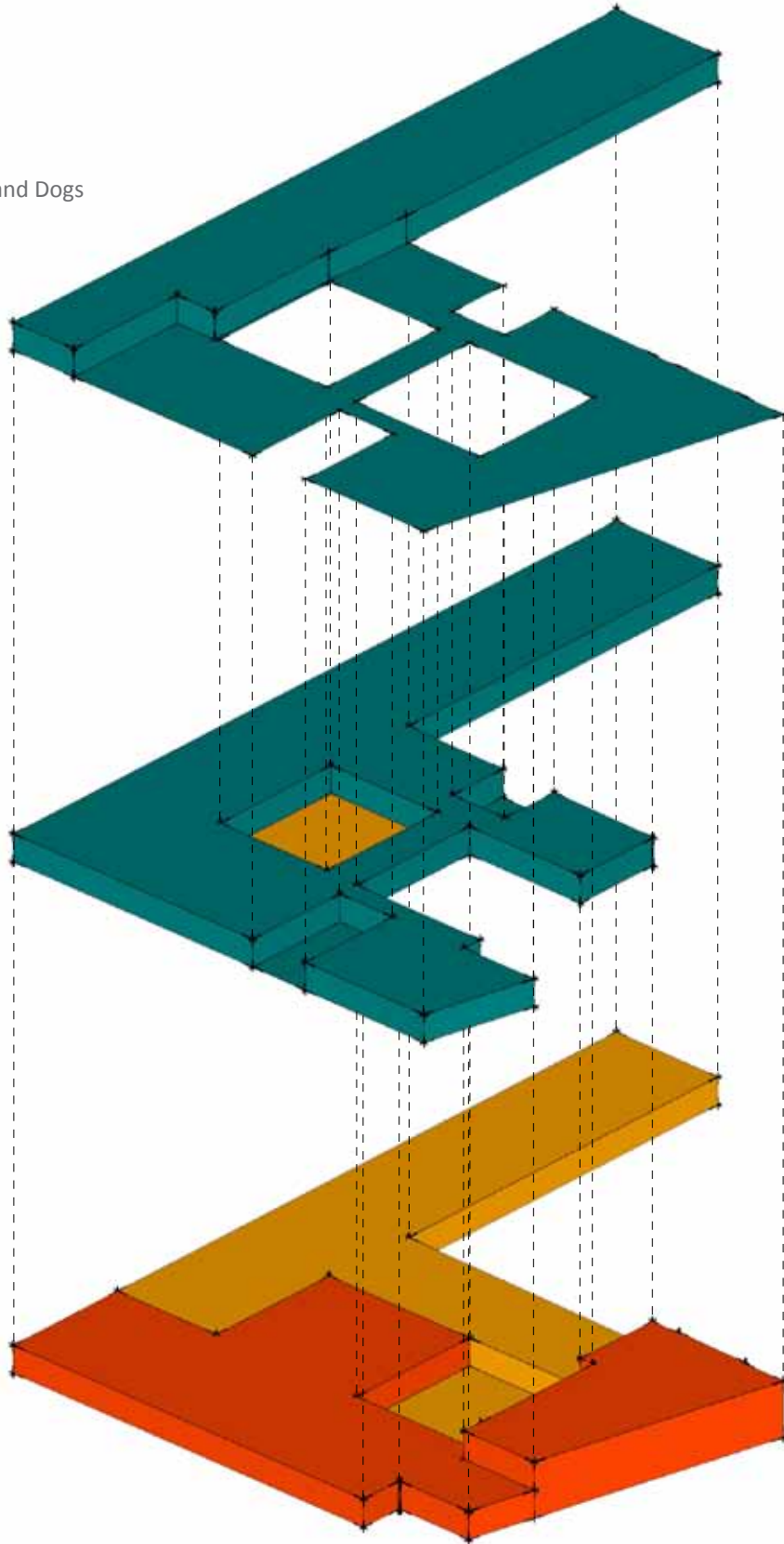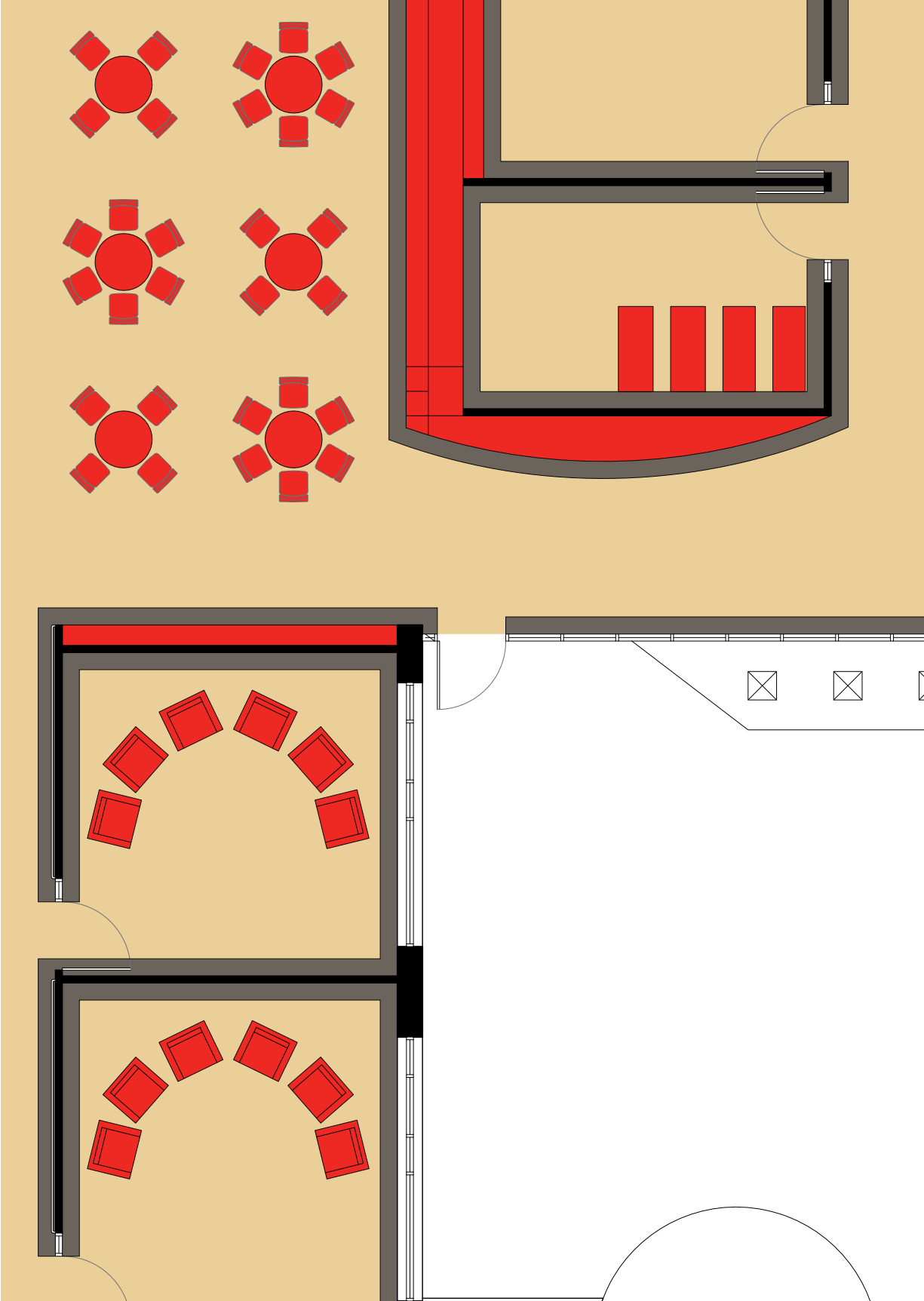^ Fig. 13.33 - Axonometric showing the courtyard spaces. NTS

Fig. 13.34 - Organizational diagram: dog-oriented spaces, human-oriented spaces, and spaces for both. NTS
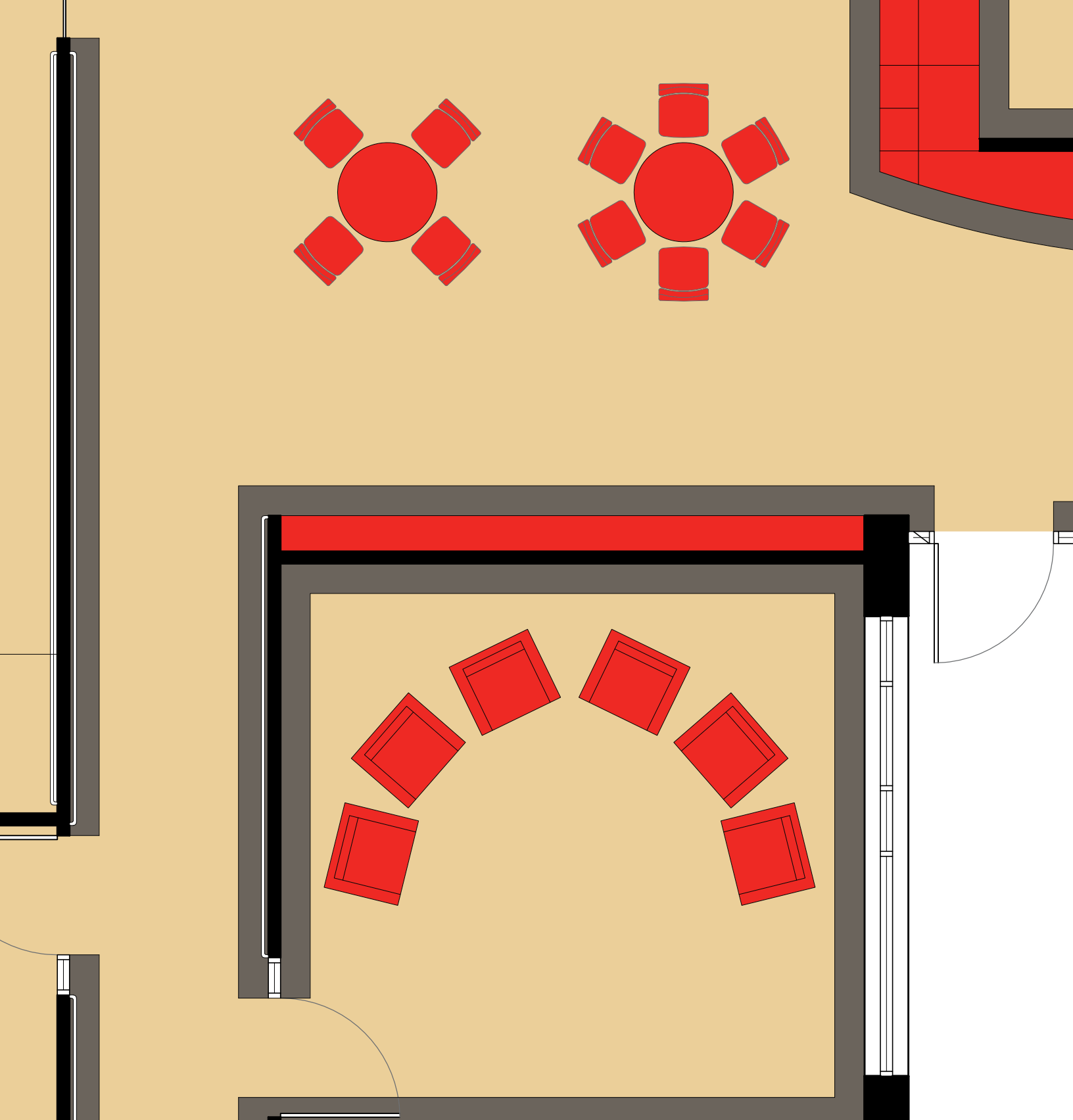
< Fig. 13.35 (previous page) - Floor Finish Plan Detail, 1:100
^ Fig. 13.36 (above) - Floor Finish Plan Detail, 1:50

Dark grey represents dark-coloured flooring; the beige is the primary, light-coloured flooring; and red is furniture
(built-in as well as moveable)
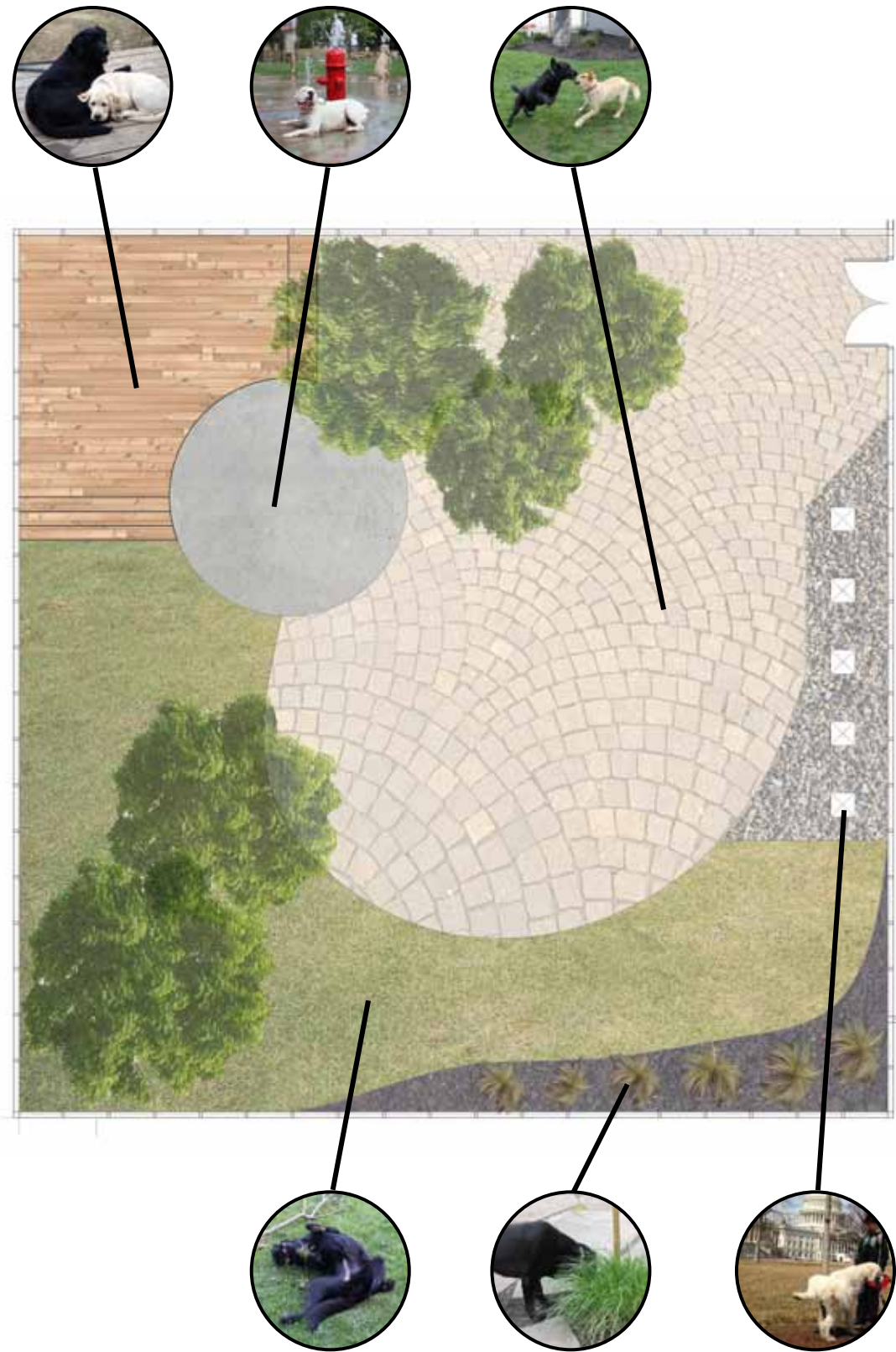
Fig. 13.37 - Lower Courtyard Plan, 1:125
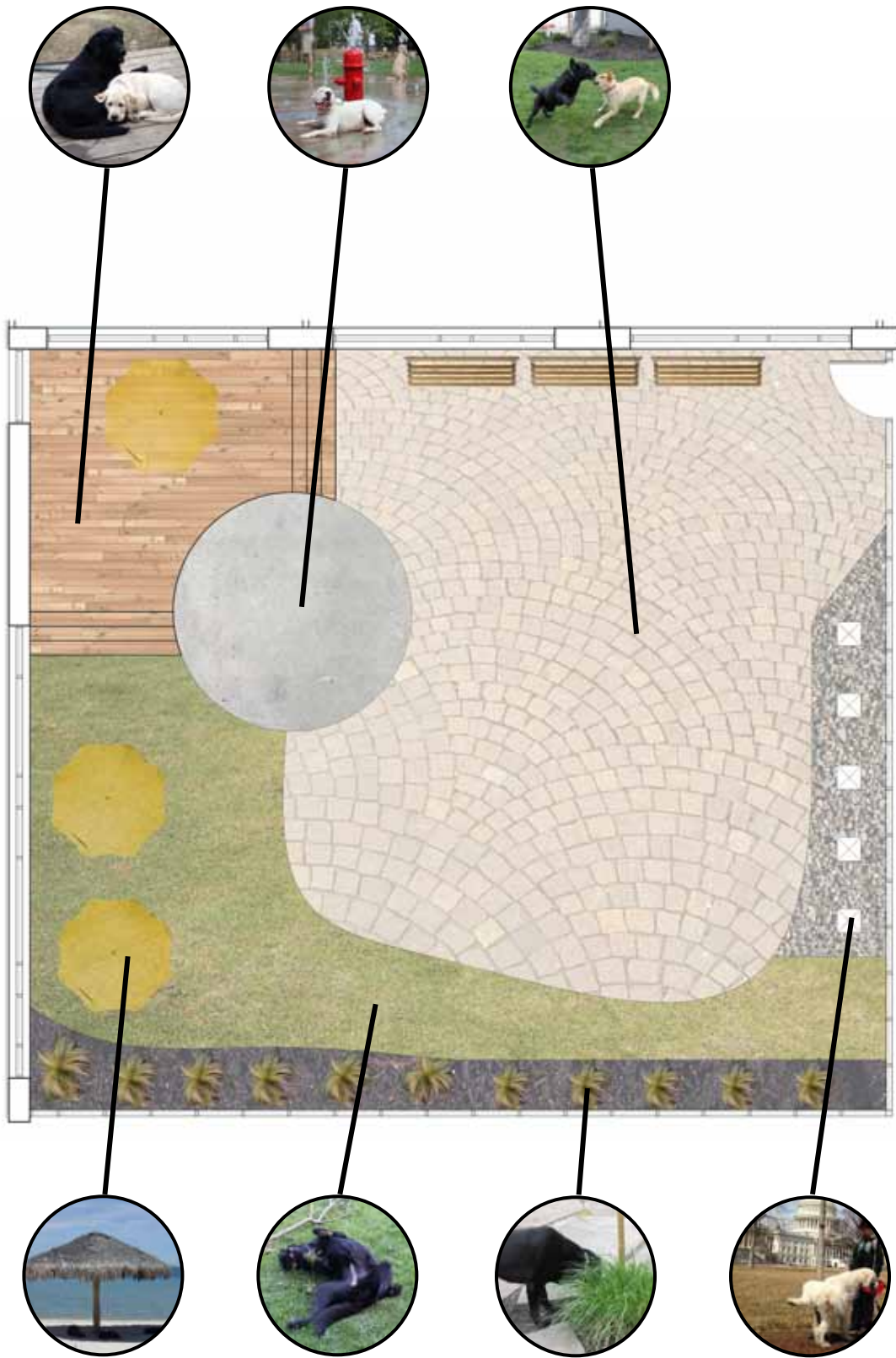
Fig. 13.38 - Upper Courtyard Plan, 1:125

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Fig. 13.39 - Vignette showing the upper courtyard dog play area

Fig. 13.40 - Vignette showing the lower courtyard dog play area

Fig. 13.41 - Vignette showing the games/social room, which includes built-in crating for the dogs

Fig. 13.42 - Vignette showing the bonding walkway

Fig. 13.43 - Vignette showing one of the open classroom areas
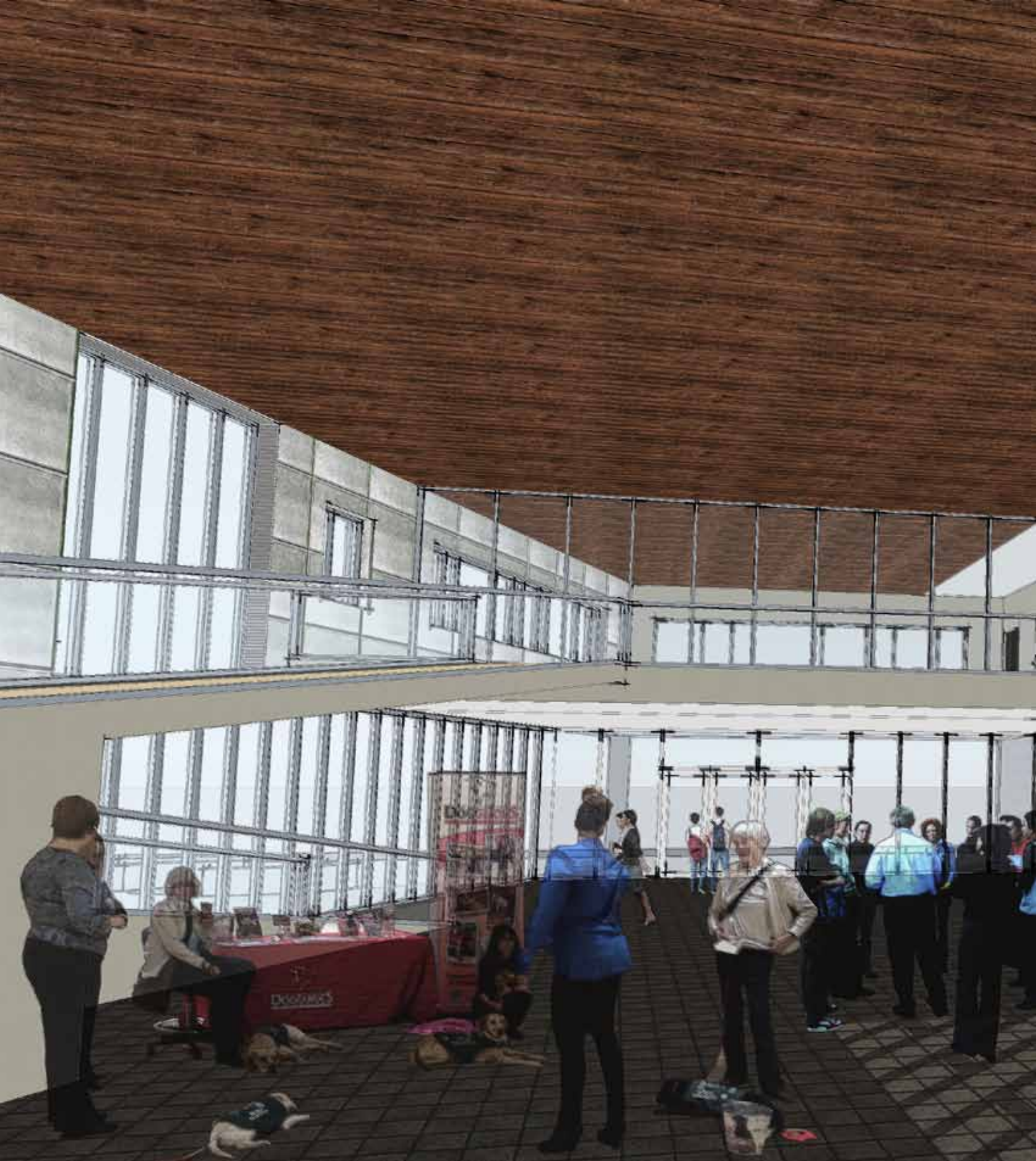
Fig. 13.44 - Vignette showing the atrium/event space

The Design Proposal
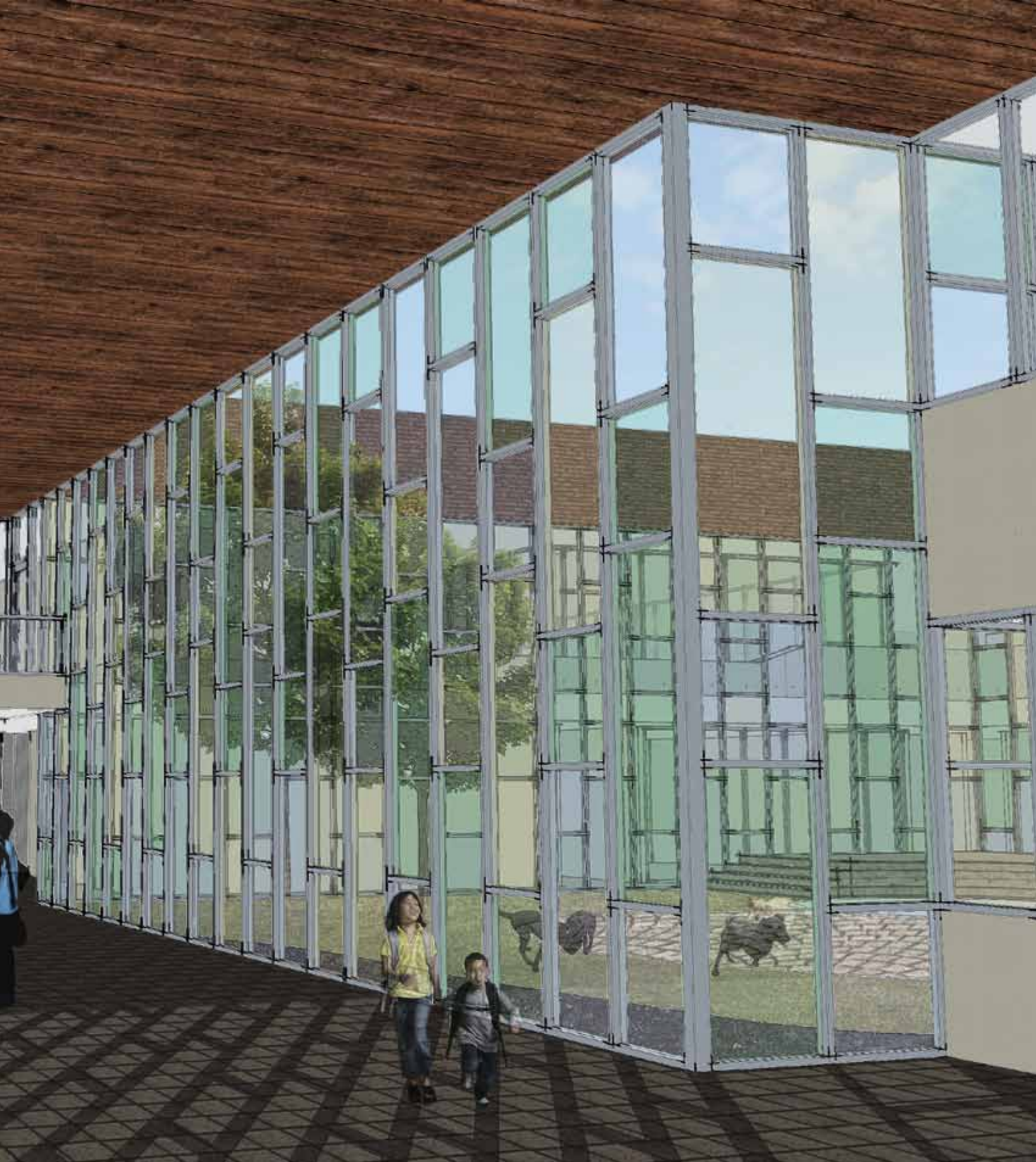
Fig. 13.45 - Vignette of the Kerr Street building entrance

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1   Author's interview with Sandy Turney
2   Ibid.
3   Ibid.
4   Ibid.
5   Ibid.
6   Ibid.
7   Ibid.
8   Based on author's interview with Sandy Turney
9   Ibid.
10   Ibid.
11   Ibid.
12   Ibid.
13   Ibid.
14   Author's interview with Sandy Turney

Conclusion

People with disabilities have had to face and overcome many barriers to be able to live the lives they lead today, but despite so much progress, they continue to face deeply entrenched attitudes of discrimination and physical environments that only change in response to often-resisted minimum requirements set out by law. Changing such deep-seated attitudes is no easy feat, and is a battle that will have to be fought on multiple fronts. One of these fronts will involve changing our schema of the built world to encompass a broader definition of the human condition.

I would like to point out that the scope of this thesis has been limited, with a focus on only certain types of disability. Mental disorders are not covered in any depth, though there are service dogs being trained for people with anxiety disorders and Post-Traumatic Stress Disorder. There is still a great deal of stigma attached to mental illness, and a closer look at mental illness in architecture is certainly warranted and needed.

This thesis has identified the inclusion of service dogs and other working dogs in the built environment as a way of improving accessibility. Service dogs mitigate the often-unseen effects of disabilities, both visible and invisible, and designing for better service dog inclusion would make buildings more accessible in particular for people with invisible disabilities: the increased presence and acceptance of service dogs for a variety of disabilities would in turn reduce the stigma attached to certain disabilities. In effect, the goal would be to normalize the presence of service dogs and thus the existence of the disabilities which they mitigate, using architecture as the language of lived experience.

This is quite a lofty goal, and one building such as the one proposed here will not bring about such immense changes in the structure of our society. While I truly believe that implemented on a large scale, the strategies proposed will change how we conceived of our built world, changing some of those deeply-entrenched attitudes in the process, large-scale implementation of anything requires enough people having a compassionate or empathic understanding of the issue and a desire to solve it. In a society with a large portion of the population entering their senior years and modern medicine leading to an increase in people living with chronic conditions, I believe we will soon be at the point of realizing that disability is not a minority issue, but something which has or will at some point affect us all.

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