Nested
Playing with Autism

a landscape architecture practicum

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I'm stickin' it in my back pocket, Clive. (RIP)


Our dreams are the seeds

Abstract

Children with sensorial and cognitive disabilities have been largely ignored under the 'universal' design philosophy. This is clearly an oversight on the part of the design community as children with these disabilities, such as those diagnosed with autism, present designers with the opportunity to take on new design challenges while bettering these children's quality of life.

As research demonstrates, children with Autism Spectrum Disorders (ASD) are extremely disadvantaged when it comes to playing both with others and alone. As a result, children with autism have underdeveloped socializing skills and can suffer from low self-esteem, self-worth and loneliness. This practicum supposes that safe, stimulating and engaging play spaces for autistic children could not only improve their development in these areas, but enrich their lives. Furthermore, it provides background into autism, its affect on the human senses and play, supplies results of an observational study and provides an example of a play space designed to increase social interaction and accommodate sensorial needs in order to decrease isolation.

Searching
INTRODUCTION

Inspiration

The fictional novel "The Curious Incident of the Dog in the Night-Time" written by Mark Haddon was the inspirational spark that ignited this practicum. After reading this powerfully captivating tale I was left with a profound sense of fascination for the reality within which people who suffer from Autism Spectrum Disorders (ASD) exist, not to mention compassion for those who care from them.
It is my hope that the research and ideas I have developed in this practicum could be an inspiring flicker for someone else.

Purpose & Proposal

The purpose of this practicum is to design a play space that can help autistic children increase their social interaction and accommodate their sensorial needs in order to decrease isolation.

Safe, stimulating and engaging play spaces for autistic children could not only improve their development, but enrich their lives. Often, these children desperately crave the acceptance and self-esteem granted by being able to relate to their peers.[1] Social interaction could be nurtured and encouraged on many levels - between children, caregivers, parents, and the community - by simply improving the design of their play spaces.

If landscape architecture is indeed the design of social outdoor spaces, the discipline needs to broaden its horizons to encompass people who live in realities that are difficult for us to understand. For example, the experience of going to a traditional playground for a parent/caregiver and their child with autism is frequently traumatic, both for the caregiver and the child. Sadly, as a result, social spaces like playgrounds and parks are not visited at all. Clearly, this is a problem for landscape architecture to address.

CHAPTER 1 Discovering

Hybrid Research: Review of Pertinent Literature

Autism is a remarkably complex subject to research. In my investigations, I found that the methodologies of autism research widely ranged in nature from firsthand accounts to observational, comparative and survey research. Despite this, I discovered that studies linking autism and design of any kind are extremely sparse. For my practicum, this meant I needed to develop a methodological hybrid, relying on both observational data and firsthand accounts. As a result, it was necessary to explore the best examples of many methods in order to validate the multi-methodological approach taken by this practicum.

In her online article, “My Experiences with Visual Thinking Sensory Problems and Communication Difficulties”, celebrated autistic person and autism advocate Temple Grandin, outlines the problems and issues associated with being a person with autism. In particular she focuses on the link between her sensorial discomfort and social as well as developmental disabilities. Grandin suggests that due to her childhood inability to exist in social situations, she withdrew into her own world and did not acquire appropriate communication and emotional skills until she was much older. Furthermore, she implies that had someone taken the initiative to ‘force’ her back into social situations sooner, she could be even more comfortable in them today.[2] For the purposes of my research, this article provides an invaluable firsthand account of life with autism and gives strength to the argument that early intervention (perhaps even in the form of a play space) can aid in social interaction.

Armed with survey information provided by the Geneva Centre for Autism, Walker and Cantello justify in their paper "You Don't Have Words to Describe what I Experience: the Sensory Experience of Individuals with Autism based on First Hand Accounts" the relevance of firsthand accounts made by autistic individuals. Walker and Cantello argue the relevance of participants as research sources and make an appeal to the scientific community to better acknowledge the information provided by these individuals.[3] It then presents some of the most compelling and exciting statements and experiences of autistic people who currently have a voice in greater society. This is followed by a summary of Delacato's hypothesis that sensorial phenomenon experienced by autistics can be categorized into three types (hypersensitive, hyposensitive and white noise) and by selected results of the Geneva Centre for Autism's survey concerning the kinds of sensorial phenomenon experienced by autistic individuals. Not only does this article validate firsthand accounts, but it also provides valuable information that will be used to help develop design ideas.

Susa and Benedict's article "The Effects of Playground Design on Pretend Play and Divergent Thinking" is a comparative study on the pretend play habits of children playing on contemporary playground versus traditional playgrounds. This study, conducted by the authors, aims to examine whether or not playground design has any bearing on children's creativity and imagination. The findings of the study conclude that contemporary playground designs are better at fostering creativity and facilitating pretend play activities.[4] The findings presented in this article provide information regarding playground design for my topic. It indicates that the layout of a contemporary playground (essentially defined as a playground that is connected and provides level changes and enclosures) would constitute the most appropriate design approach. This is especially true considering that children with autism have a more difficult time imagining and being creative than typically developing children.

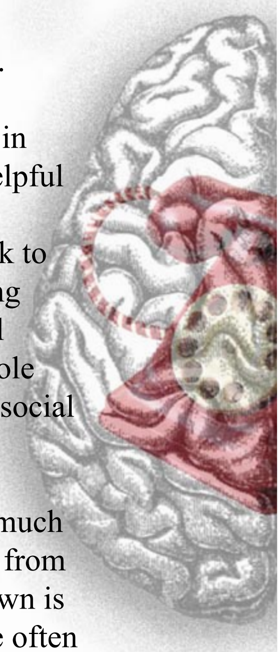
New Zealand professors Bould and Bezerra's paper "Designing Playful and Inclusive Spaces" sheds light on the under explored topic of inclusive playground equipment. They review and critique play theory, inclusive design theory, current play equipment and technologies, and propose modifications to current design philosophies and practice. They also provide examples of inclusively designed equipment by a selection of third year students from the Design Engineering department at the University of Otago, New Zealand. They also note that the work presented in this paper is part of a larger body of research concerning changing design philosophy in the field to include children and adults with disabilities.[5] This article confirms the fact that inclusive play space design is indeed an overlooked topic. At the same time, it provides valuable examples of inclusive play equipment as well as cautions of the pitfalls about designing them.

The information I derived from the aforementioned articles are validated in "Designing a Playground for Children with Autism Spectrum Disorders – Effects on Playful Peer Interactions". Here, Yuill et al. ask whether changing a playground to physically, mentally and imaginatively challenge students with autism can support peer interaction. The results of their observation-based study confirm that children with autism are more likely to play socially when the play environment they interact within supports this (in contrast with results from traditional playgrounds). The study shows more incidences of parallel, group and adult-interaction play as well as marked decrease in solitary activities among children in the specially designed playground.[6] Obviously, this article advances the key point that children with autism could developmentally benefit from changes in their play environments. It also proposes a method for research that can be used in my own practicum.

Along with the observation-based research, I aimed to intertwine firsthand account knowledge within my research methodology. I anticipate this will bestow my practicum's outcome with a high degree of validity.

Drowned by a Tidal Wave: What is Autism?

Autism is a neurological developmental condition that appears uniquely in every case. As a result, there are many degrees of severity of autism, making it necessary to describe the condition as a spectrum of disorders (ASD) from mild to profound. Symptoms, which often present themselves in infancy and early childhood, include absent or substantial delays in developing speech and communication, social skills, and sensory integration abilities.

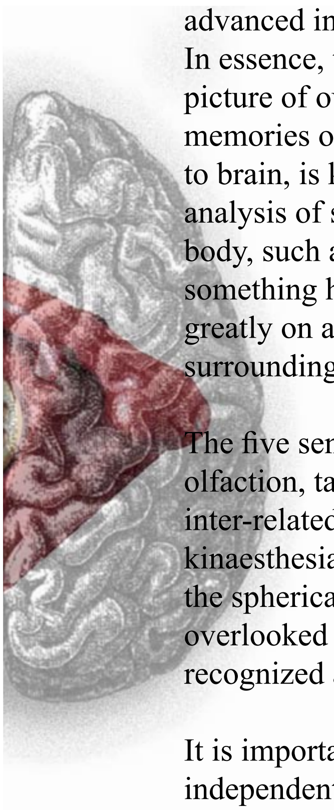


In all cases, autism is thought to be caused by an abnormality in how the brain is wired, causing it to function differently. A helpful analogy is to think of the brain as a telephone company. The autistic brain has superior local service, thus each lobe can talk to itself very quickly and efficiently. However, it has terrible long distance service, meaning each lobe cannot communicate well with other lobes.[7] This inability for the brain to work as a whole creates a number of problems from emotional expression and social engagement to sensory integration.

Exactly what causes this condition is currently the subject of much debate. Recent findings have linked autism to various factors from genetics to mercury poisoning and vaccinations.[8] What is known is that autism affects 1 in every 500 individuals and occurs more often in boys than in girls. It is a disorder of growing concern for parents and doctors, as the number of cases appears to be growing.[9]

Additionally, autism is not a static state. The abilities of a single individual can fluctuate. Like debris adrift on an unruly sea, abilities and skills emerge and sink, sometimes never to surface again; the simple act of tying a shoelace may take years to learn, only to be lost again a few days after it is acquired.[10]

Six (or Seven) Human Senses

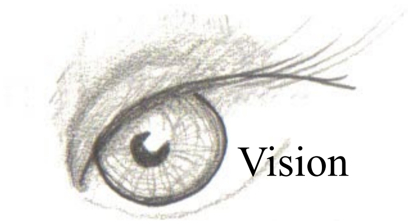


The human senses are the media that allow us to experience, navigate and understand the physical world around us. These senses have adapted over the course of human evolution from primitive to advanced in order to better serve the needs of the brain and body. In essence, the human brain uses the senses to generate an accurate picture of our immediate environment, as well as help us to recall memories of previously encountered stimuli. This path, from stimuli to brain, is known as sensory perception.[11] As a result of the brain's analysis of stimuli, appropriate responses are triggered within the body, such as the reflex of moving your hand quickly when it contacts something hot. It is not surprising then, that survival has depended greatly on an organism's ability to properly perceive and react to its surrounding environment.

The five senses that are most common to us are vision, audition, olfaction, taste and touch. However, there are also two additional inter-related senses that will be addressed, proprioception and kinaesthesia, that work to regulate the experience of living on the spherical earth. These additional sense have previously been overlooked in discussions regarding the sense, however, they are now recognized as being exceeding important in normal development.

It is important to remember that although each sense works independently to some extent, they are very interconnected anatomically. Precedents influencing the outcome of my practicum's final design provide insights on the direction and impact of each sense on architecture and design.

For me, the background knowledge of the senses proved critical. Knowing how the senses operated and exploring sensorial precedents, both spatial and object, opened doors for design inventions that could be based on simulating selected senses

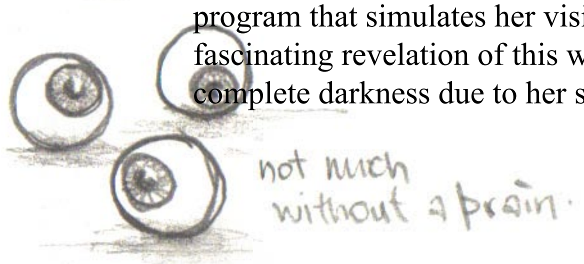


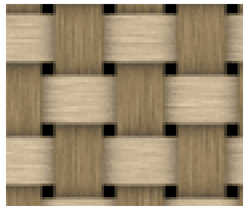
Vision

Typically, humans are most reliant on vision (sense of sight) as their primary means of gathering information about the world. In evolutionary terms, vision is a relatively new and advanced sense since it is only present in high-functioning organisms.[12]

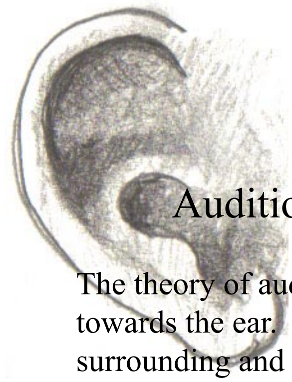
It is not surprising that perception in humans is closely linked to the ability to see. The role of vision is very complex; however, the main components involved in the process are a functioning eye and the presence of electromagnetic radiation. Essentially, the eye is only able to absorb a small portion of the electromagnetic radiation spectrum, known as visible light. The manner, situation and condition in which this light reaches the eye change the perception of the object in the brain. Incidentally, this is why we are susceptible to visual illusions such as those evident through Gestalt testing.[13] Additionally, vision is known as a 'distal' sense because it does not need to be engaged by the body, but is instead continuously present.

Results from a survey conducted by the Geneva Centre for Autism in Toronto suggests that over 80% of people with autism suffer some form of vision distorts.[14] These distorts may include fragmented vision, microscopic vision, visual illusions (e.g. walls caving in), impaired depth perception, poor space perception, inability to see three-dimensionally, double vision, intense colours, synaesthesia, colour/contrast sensitivity, poor print resolution, prosopagnosia (face blindness), light sensitivity, delayed processing of stimuli (from minutes to weeks), clairvoyance, and above average pattern recognition. In order to help others understand her particular vision distortions autistic writer Allison Hale developed a JavaScript program that simulates her vision in typical situations. One fascinating revelation of this work is that she has never seen complete darkness due to her self-described 'chaotic' vision.[15]



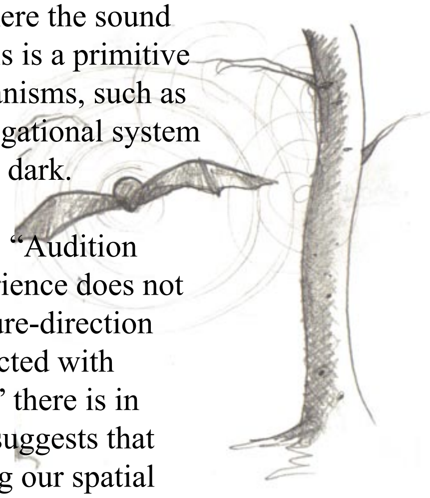


In light of these facts, any space designed for children with autism should be rich with visual interest from a microscopic to telescopic levels. Patterns, both visual and textural should be used throughout to encourage interaction with the environment. Colour should distinguish sharp changes in grade (e.g. stairs) as well as to draw attention to objects of interest. The form of objects within the environment should be visually curious both up close and at a distance as well. Additionally, there should also be space to retreat from visual stimulation, perhaps in a vegetated area. By including these ideas in spatial designs for children with autism guarantees that these children would find interest in the environment, allowing them more opportunities to engage with their peers.



Audition

The theory of audition deals with the movement of sound waves towards the ear. The distance, position and material of the objects surrounding and causing these sound waves work to produce varying types of waves. In turn, each type of wave is received differently by the ear, which helps the organism understand where the sound is coming from and its position in relation to it. This is a primitive sense that is most important in flying nocturnal organisms, such as bats. Audition is a part of these creatures main navigational system (sonar), used to detect the presence of objects in the dark.



Matthen states in his book *Seeing, Doing, Knowing*, "Audition conveys a lot of spatial structure…. Auditory experience does not have…a feature-placing structure, rather it has feature-direction structure…. Distance in audition seems to be connected with the degradation of auditory signals: the more 'noise' there is in the sound, the further away it seems to be."[16] This suggests that proper audition is a key component of understanding our spatial environment.

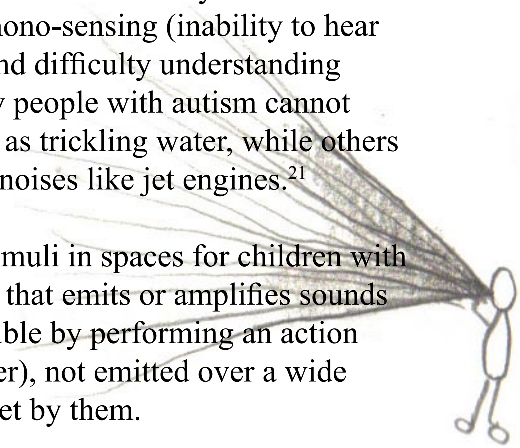
There is certainly a lack of sound landscape architecture precedents that do more than simply reduce undesirable noise. There are, however, notable tectonic models of auditory architecture including classical examples such as amphitheatres as well as those in contemporary architecture and design. Roman amphitheatres such as Herodes Atticus in Athens derived their semi-elliptical shape as a result of their function, namely allowing voices from the stage to be heard by the audience. These outdoor spaces were originally located in natural depressions between hilltops both for ease of construction and the natural sound reverberation abilities of the valley. Even in these locations, methods of capturing sound effectively required modifications. Reflecting surfaces were placed to the rear and side of the stage in order to shorten the delay of resonance, which was desired for understanding speech at a distance.[17]

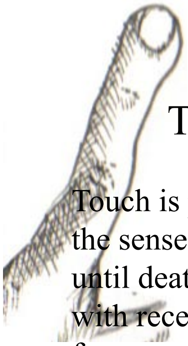
As classical amphitheatres were the predecessors for modern constructs such as auditoriums and stadiums, it is no small wonder that modern technology has allowed us to experiment with sound even further. Installation architecture Sound Space, designed by Bernhard Leitner, not only modifies sound from adjacent sources but also changes the perception of the space itself. Located at the Technical University in Berlin, Sound Space reduces the exceptionally long resonance of sound from adjoining stairwells and courtyards while at the same time electronically shape-shifting the foyer from vault to whispering gallery.[18]

Not every space can be retrofitted to provide desired auditory outcomes. Void spaces called echo chambers located underneath, or adjacent to a space also act to change the auditory conditions of that space. Especially prevalent in recording studios, this concept took off during and after the cultural explosion of pop music. Due to the increased use of artificial means of auditory control, too much natural reverberation was detrimental to the quality of the music. The legendary recording lab, Abbey Road Studio (Thorn-EMI) first used a 'dead' control room located next to the recording room in order to reduce reverberation.[19]

Possibly, over 85% of people with autism have auditory distortions.[20] These include, but are not limited to, mono-sensing (inability to hear and use other senses simultaneously) and difficulty understanding verbal instructions. Additionally, many people with autism cannot tolerate typically soothing sounds such as trickling water, while others enjoy and seek out typically undesired noises like jet engines.[21]

In light of this information, auditory stimuli in spaces for children with autism but be controlled. If equipment that emits or amplifies sounds are present, the noises should only audible by performing an action (e.g. putting an ear up to a small speaker), not emitted over a wide area as some children may become upset by them.





Touch

Touch is perceived through the skin, the body's largest organ. It is the sense that is kept and maintained the longest, from before birth until death. The concept of touch works as stimuli make contact with receptors on the skin's surface. Changes in the duration and frequency of pressure the stimuli create cause sensors in the brain to react differently, allowing the brain to read different textures and weights.[22]

Perhaps more than 70% of the autistic population suffers from tactile hypersensitivity.[23] Symptoms of this include, difficulty adapting to changes in tactile stimuli, the inability to be touched by living things, the desire for deep pressure and enjoyment of tactile patterns and sequences.

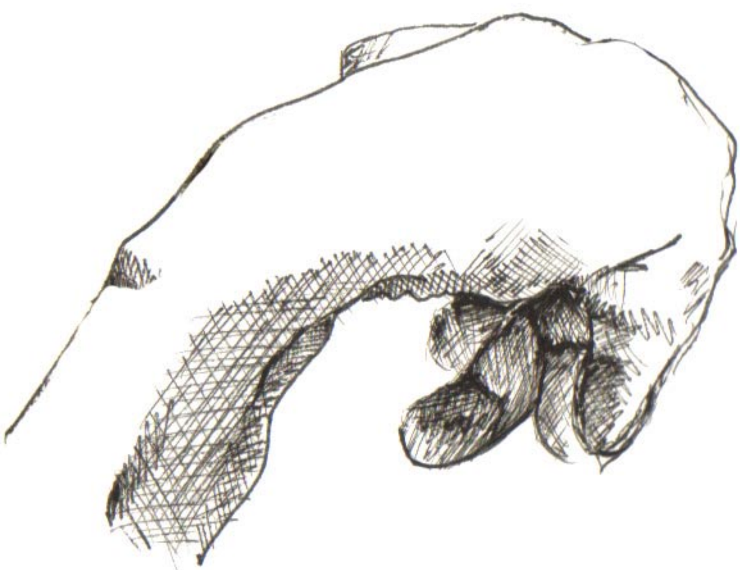
One of the very few spatial precedents for children with autism is the Touchy-Feely designed by Emily Ault. Ault built this space for her autistic son, both with his particular sensorial needs in mind but also to meet the needs of her additional children. As a result the space is extremely patterned, tactile and colourful, which she claims helps capture his attention and allows him to play more independently.[24] Although this space was obviously concerned with the needs of a single user, the idea that the spatial qualities and objects in an autistic child's environment can help initiate and reinforce accepted behaviour is of critical importance. Also important is the fact that the designer's typically developing children also loved to play in this space.

While not a spatial precedent, the concept of the Squeeze Machine is a device developed and built by the renowned autistic individual, Temple Grandin. The machine itself works similarly to a large vice clamp and is lined with foam rubber. For Grandin, it offered reprieve from "a lack of comforting tactile input" on her body.[25] As many people with autism do, Grandin craved deep pressure on her

Carress
kiss
snuggle
cuddle
nuzzle
brush
pet
tickle
hold
embrace

body and searched endlessly to find the 'right type' of pressure to meet the needs of her overactive nervous system. As a result, she would inadvertently act aggressively towards objects of tactile affection, such as pets and family members. The Squeeze Machine allowed Grandin to control the quantity and length of pressure that was applied to her body to satisfactorily gratify her tactile cravings.[26] Grandin explains the machine benefits by saying, "A stimulus that was once overwhelming and aversive had now become pleasurable. Using the machine enabled me to tolerate another person touching me…. I learned how to pet our cat more gently….I had to comfort myself before I could give comfort to the cat."[27] This concept is appealing to explore as it suggests that many autistic children could be comforted by a space or object that supports and cradles their bodies.

Including textural aspects in designs for autistic children would also be highly beneficial. Ideas such as contrasting textures (e.g. warm/cold, dry/wet, rough/smooth, soft/hard), patterns, levers and handholds, shapes and colours would all be appropriate. Additionally, spaces that can be crawled or squeezed into would also help sooth children who crave touch. With regards to touch, variety and diversity of experience are key engaging children with autism.

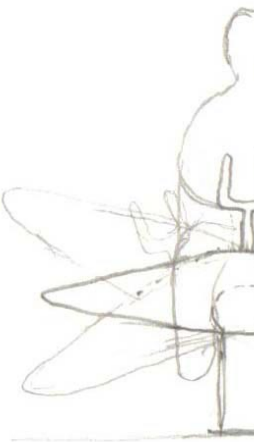


Kinaesthesia/ Proprioception

These two similar but distinct senses are highly interwoven. Essentially, “Proprioception is the sum of Kinaesthesia and joint position sense.”[28]

Kinaesthesia is a dynamic awareness of joints in motion. Whereas, proprioception is a self-regulation device of the vestibular (balance) system. A widely excepted definition of proprioception is, “the cumulative neural input from the central nervous system from specialized nerve endings…These [nerve endings] are located in joint capsules, ligaments, tendons and skin” and are triggered either at the beginning, end or during excessive motion of joints. [29]

Innovative playground design company, Landscape Structures Inc. has developed a line of playground components which aim to keep children’s bodies and minds in constant motion. Termed Evos, these arcing, spiralling objects claim to stimulate creativity and initiate physical activity without prescribing what activities should take place.[30] Critically speaking, the components do not create space and are merely what their name suggests; components of what could be a wonderful space for children. However, the non-traditional objectives of Evos are interesting, especially for children who play in unconventional manners.



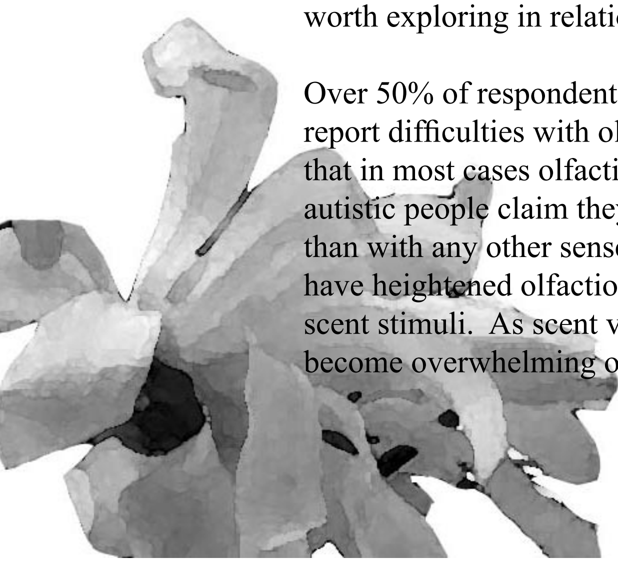
Another interesting idea already used in some playground is the T-stool. This wobbly seat helps the user to develop balance and is a proven fun device for children both with and without autism.[31]

Since many children with autism have problems with balance and orientation, methods of kinaesthetic and proprioceptive exercise are important. Equipment such as swings and riding toys can help invigorate sluggish proprioception, however, there are other options as well. Safe places to climb onto, jump off of or hang upside on can aid in understanding how to use legs, arms, feet and hands. This sense is dominated by gross motor skills, thus any activity, object or piece of equipment that keeps the body in motion is helpful.

Olfaction

Sense of smell is one of our most primitive of the senses. Its use stems from the primordial need to identify food, relatives, and enemies in a non-verbal way. From an evolutionary standpoint, humans most likely lost their acute olfaction when other senses, such as sight, became more useful for hunting/gathering practices.[32] However, it is still especially important in newborn babies, who are born with a highly developed sense of smell in order to recognize their mother as a source of nourishment.[33] As a result, olfaction is very closely related both memory and to its sister sense, taste.

In terms of space, Andy Warhol reportedly concluded that smell was the only sense powerful enough to be a time machine, taking the inhaler back to a very specific place and time in history associated with the particular scent.[34] In light of this, it seems strange that architecture has so few deliberate olfactory precedents. One of the few is a futurist installation developed by Superstudio in the 1970s called Citta 2000. This project was developed as a theoretical look into the future of the city. The installation consists of a building made of cubic cells that emitted images as well as odors to the inhabitant who sat in an ergonomically designed chair capable of meet his every bodily and sexual need. The inhabitant was closely monitored by a computer that compared his reaction to the stimuli to that of his neighbours, adjusting his environment accordingly to maintain equilibrium in the community.[35] Although, Citta 2000. is fantastic, it is not completely irrelevant. The notion that olfactory stimuli could change behaviour is worth exploring in relation to children with behavioural issues.

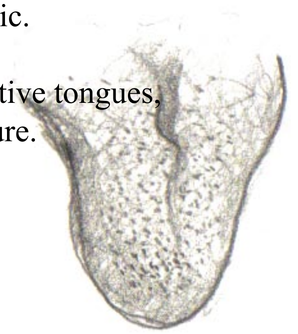


Over 50% of respondents to the Geneva Centre for Autism's survey report difficulties with olfactory sensing. It should be noted, however, that in most cases olfaction is not distorted but heightened. Some autistic people claim they can identify people or pets better using smell than with any other sense, even vision. 36 Since people with autism have heightened olfaction, spatial designs should not include deliberate scent stimuli. As scent varies from person to person, smells may become overwhelming or irritating, especially for those with allergies.

Taste

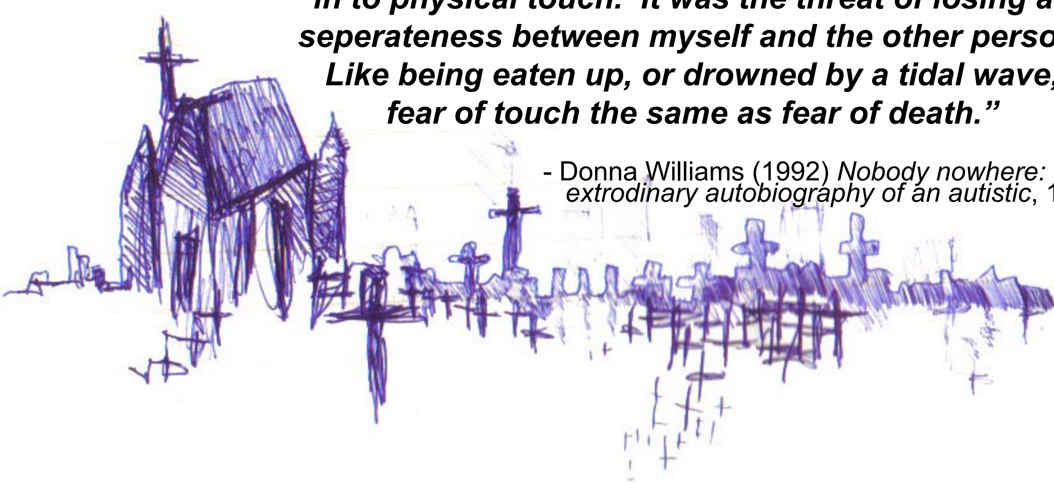
Taste is the most proximal of all the senses, meaning that an object to be tasted must be in direct contact with the body (taste buds). Although this sense is not typically designed for in landscape architectural precedents, it is important to note that children and animals often 'taste' portions of the landscape. This means all items in these spaces must be both durable as well as non-toxic.

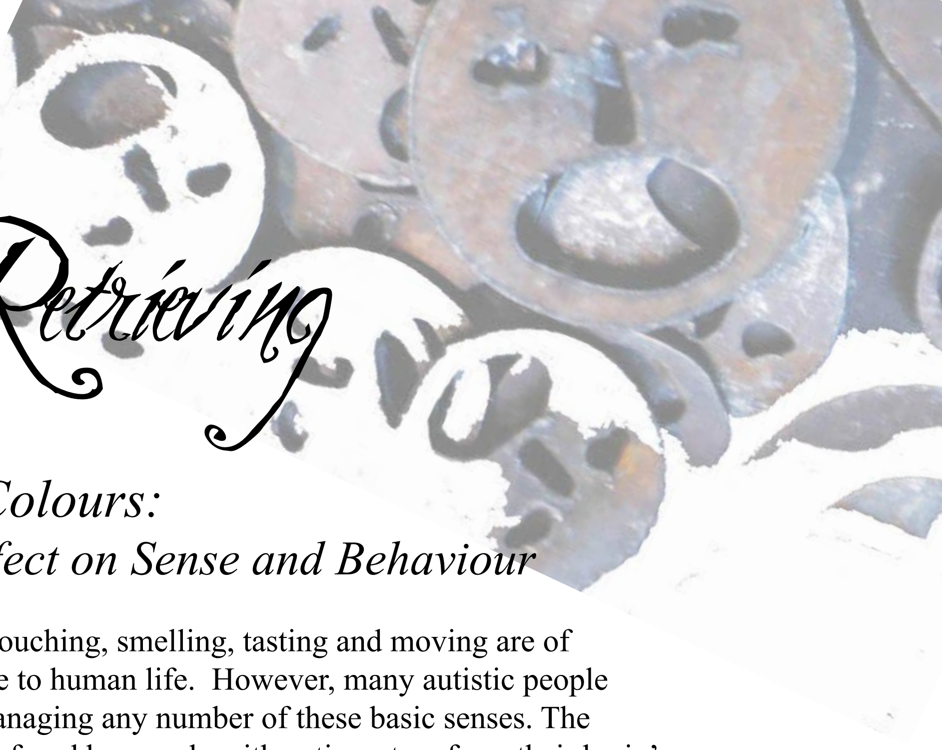
Additionally, people with autism often have hypersensitive tongues, making the actual taste of food as subjective as its texture.



"There was something overwhelming about giving in to physical touch. It was the threat of losing all seperateness between myself and the other person. Like being eaten up, or drowned by a tidal wave, fear of touch the same as fear of death."

- Donna Williams (1992) *Nobody nowhere: the extrodinary autobiography of an autistic*, 130.

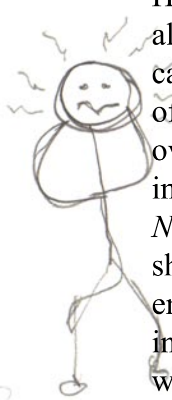




CHAPTER 2 Retrieving

Smelling Colours:
Autism's Affect on Sense and Behaviour

Seeing, hearing, touching, smelling, tasting and moving are of primal importance to human life. However, many autistic people have difficulty managing any number of these basic senses. The majority of issues faced by people with autism stem from their brain's inability to properly process information collected by their senses. This condition is known as sensory integration disorder. Most to all autistic individuals suffer from sensorial distortions that change their experience of space. Evidence suggests that Carl Delcato's hypothesis categorizing types of brain dysfunction in autism is fairly accurate.[37] Delcato describes three categories of dysfunction: hypersensitivity, hyposensitivity and white noise sensitivity.



Hypersensitive individuals have extremely receptive senses that allow too much information stimuli to reach their brain.[38] This causes them to become easily over stimulated and often frightened of new experiences and stimuli. Essentially, they become distressed over sensorial encounters that the brains' of typically functioning individuals would filter out as irrelevant. In the book, *Nobody Nowhere* (1992) Donna Williams describes the hypersensitive vision she experienced as a child, "My bed was…surrounded and totally encased by tiny spots that I called stars, so that it seemed to me I lay in some kind of mystical glass coffin. (I have since learned that they were actually air particles, yet my vision was so hypersensitive that they often became a hypnotic foreground with the rest of 'the world' fading away.)".[39]

Hyposensitive individuals have lethargic sensory systems that do not provide enough information to be received by the senses.[40] These individuals crave sensory experiences. They tend to appear more 'out of control' of their bodies and often inadvertently hurt themselves and others in attempting to gather the sensorial information they seek. In a survey conducted by the Geneva Centre for Autism, one respondent described having such a high tolerance for pain that he cut his finger severely while playing tennis, however did not notice until he saw blood running down his racket.[41]

Individuals with white noise sensitivity have sensory systems that function so incompetently that they create interference-type sounds/visions etc. in the brain. It goes without saying that this interference noise can be very distracting.

Like anything else with autism, these categories are not set in stone. For example, some individuals may operate with hypersensitive hearing but hyposensitive tactility or one sense may continually fluctuate from hyper to hyposensitive.[42] Additionally, people with autism often experience severe bouts of synaesthesia, making it difficult to remember events or instruction accurately.

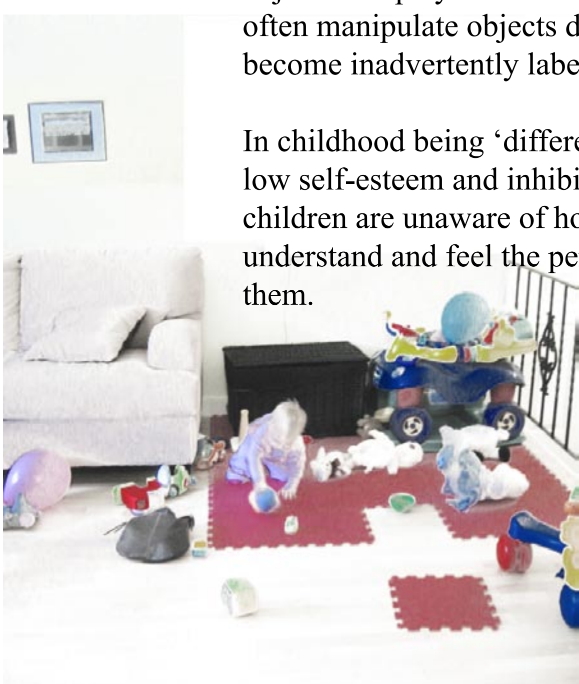
The result of these brain dysfunctions' external manifestations are predictably debilitating on social interaction and acceptance. Sadly, during childhood (where most cases of autism are diagnosed) 'fitting in' is extremely important in building children's social skills and thus, finding self-confidence and esteem in group situations. For many autistic children, this can mean unwanted isolation and loneliness, as they are unable to relate and respond 'appropriately' to their peers. In a word, they cannot play with them, because they don't know how to.

Play and Autistic Children

Scientific research confirms that play is truly the work of children. Play is critical in preparing babies, toddlers and children for the roles, norms, behaviours and social aspects of adulthood.[43] Essentially, play provides children with the tools to become responsible, socially-engaged adults. This is the reason that children require different types and levels of play as they grow. Make-believe, role-playing games, creative outlets such as drawing, and well gross and fine motor skill play are all required for proper development. Unfortunately, autistic children are often not developmentally equipped to engage in all aspects of play.[44] As a result, they face challenges that make growing up even more difficult.

One major component of play that is affected is imitation of adult activities. Many autistic children do not have the ability to pay enough attention to adults in order to copy their activities within their play (i.e. use a toy broom to sweep). Sensory integration dysfunctions cause children with autism to ineffectively recognize objects and play with them in a typical manner.[45] As a result, they often manipulate objects differently from other children, and they become inadvertently labelled as ‘different’.

In childhood being ‘different’ is not desirable. It leads to isolation, low self-esteem and inhibited self-confidence. Some autistic children are unaware of how others regard them, however many do understand and feel the pervasive fog of loneliness settle in around them.



Assembling

CHAPTER 3

Hypothesis

In order to move forward this practicum I needed to presume that autistic children can be encouraged to play more effectively. I also need to believe that by designing play spaces that foster greater social engagement and sensorial experiences, children with autism would become enabled by their environment, rather than disabled by it.

Beginning

One of the biggest questions to be resolved in this practicum was: where can a design like this be most valuable? After much investigation, it was determined that a public elementary school would be the most suitable location. As changes in behaviour would not be visible overnight, an elementary environment was chosen as it gave the greatest opportunities for ongoing use by a regular group of children. Oakenwald Elementary School, located in Fort Garry, was chosen as the project's site because it best fit the characteristics reviewed below.

Additionally, before selecting the Oakenwald site, I was in personal contact with the primary teacher of the IPSA program at Oakenwald, Jess[1*] . Speaking with Jess about the program and the children enrolled in it also helped confirm that Oakenwald was an appropriate site for this practicum.

[*] the instructor's name was changed to maintain confidentiality

Site: Criteria and Location

Criterion 1: A location connected to elementary-aged children both with and without autism. Since children between the ages of 6 and10 are the most prolific users of playground space and equipment, it only made sense to select a site that they had easy access to. Also, by having children both with and without autism using the space, social interaction would be present for the autistic children to see, and perhaps emulate, as well as nurture the notion of inclusion for children with disabilities. Ideally, the chosen site should also able available to autistic children from all of Winnipeg.

Oakenwald Elementary is the location of the Interdivisional Program for Students with Autism (IPSA). As such, up to 12 children who have been diagnosed with autism attend this school along with approximately 200 typically developing and differently-abled children. This program serves the whole of Winnipeg, and therefore does not favour any particular area of the city, income bracket, ethnicity etc.

Criterion 2: A location that is/can be used by both groups of children on a daily and ongoing basis. A key aspect of autism is routine. Children with autism often improve their behaviour and act more predictably when they can grasp what is coming next.[46] As such, it was important that the site could be used by them very often.

The IPSA children share one morning recess and one lunchtime per day with the rest of the students at the school, and therefore have the opportunity to share the site one or more times per day during the school year.

Criterion 3: A location that has ties to the community. Like other children, those with autism will grow up and be expected to become active citizens to the best of their abilities. As youngsters, it is important for them to see and be seen in outside of the schoolyard. This kind of connection can help forge relationships of understanding and acceptance between the autistic community and that in which it exists. As a result, the chosen site needed to be located in an existing neighbourhood.

Oakenwald School presents great prospects in creating community ties. The school grounds are adjacent to Wildwood Park, which is one of the best examples of a model community in Canada. As such, it exhibits a unique design that aims to build neighbourhood relations by prioritizing walking over vehicular activities. It's design also makes the most of the riparian forest on which it is located by snuggling homes and paths within its treed canopy.[47] The brainchild behind Wildwood Park was Hubert Bird, a construction entrepreneur who hoped to improve housing opportunities for the booming Post-WWII population. In 1945, together with architects Green Blankstein Russell (GBR), Bird melded the geographical consideration of Wildwood's prairie river locale with the Radburn model community design to transform a wooded river floodplain into an affordable and desirable neighbourhood. One of the things that makes this area so desirable is it's walkability. As such, this area is in a great location for the IPSA kids to interact with the broader community. The heart of Wildwood Park includes many well-used playground areas. The western-most playground is frequented by the IPSA children and Jess during the spring and fall of the school year. In an interview with Jess, she expressed her belief that this playground was 'more interactive' and thus better utilized by the IPSA children than the current playground located at the school.[48] Coincidently, this playground is comprised of Evos play components; the same equipment previously investigated for its unique approach to play ground design.




wildwood park




wildwood park playground

Criterion 4: A location that is 'safe'. Safety is a real concern when dealing with children with autism. As such, the chosen site needed to already be equipped with ways to keep the children from harm, in particular from vehicular traffic or from getting lost.

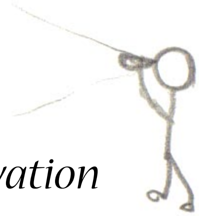
The existing site planning of the Oakenwald school exhibits a number features that make it a suitably 'safe' location for this project. Firstly, although the property of the site itself has a number of entry and exit points for children to use when coming and going from school, they are carefully hidden. As a result, while children may easily move to and from the schoolyard they are not inadvertently attracted to these access points. This decreases the chance that students would be drawn to these locations and accidentally move off of school property. For autistic students, this also means there is less chance for them to get lost. Secondly, the mature trees and vegetation around the site create a comfortable microclimate in the schoolyard. This is important considering the harsh conditions of the Winnipeg winter. Moreover, the building itself acts a windbreak from the winter wind. Since their playspace is already comfortable, students are unlikely to try to take shelter off the school property. Thirdly, the shape of the school building itself effectively works as a barrier between the schoolyard, the street and staff parking lot. Student entry/exits points to the building are located towards the rear and sides of the building, so that the students do not need to interact or even view the street as they move outdoors for recess. Lastly, the location of the playpad and major playground equipment compliments the design and safety aspects of the building's location and layout. These play areas are snugly nestled in the lee of the building, making it all but impossible for excited children or errant balls to end up in the path of vehicles.


looking southeast
playpad
playpad
playpad
seating area
west access
play structure D
play structure E
looking southeast
looking northwest
north access
east access A
play structure F
east access B
east access C
south access
Manchester Blvd. N
Manchester Blvd. S
Wildewood
Forest
Site
Oakenwald Elementary School

ISPA Kids Study – Methodology

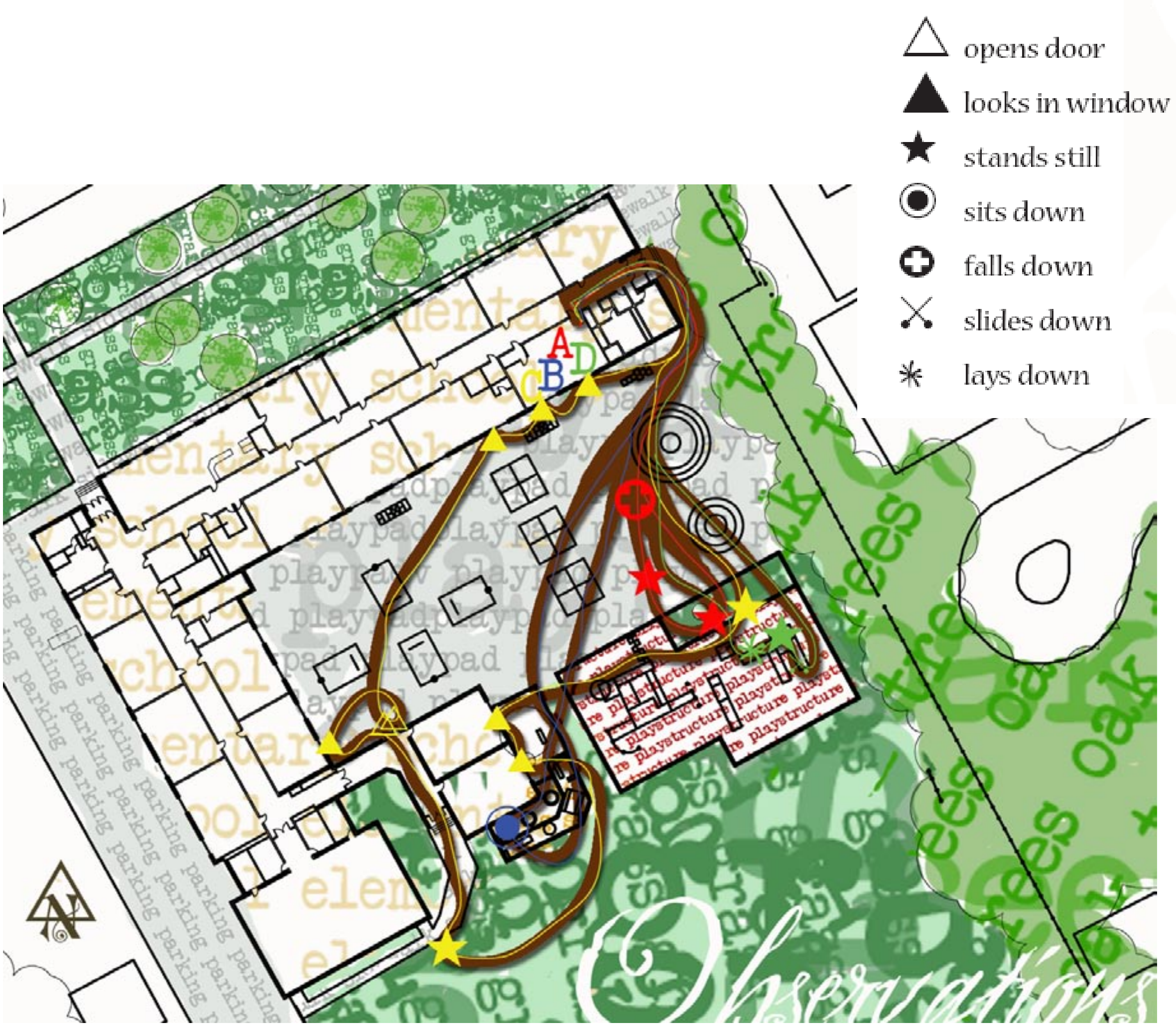
It became clear that in order to begin designing, it was imperative to observe how the Oakenwald School IPSA kids, (and other kids) used the space. My methodology was to observe the IPSA kids, 4 in total (numbered A to D), get ready and go for recess, observe and record their activities during recess and observe them as move back inside again. Secondarily I recorded where the majority of the children where located and their general activities. The IPSA children were alphabetically coded in the order in which they exited the building (with KID A being the first).

ISPA Kids Study – Observation



Interestingly no two IPSA children played in the same location at the same time, or interacted with each other at any time. Only one IPSA child interacted with the other children on the playground. This child (KID D) was also the only one to use the playground equipment. Fascinatingly, this child's interact with others was actually made possible by the equipment itself. KID D lay down on the wooden bridge and waited for others to walk over it. The child appeared to enjoy the motion created when this occurred. The two of the three remaining IPSA children ran around during this recess period. One child (KID C) appeared to have an interest in windows and doors (thresholds) and using them to see in or move through. The other (KID A) seemed to move in a random pattern and did not engage with any objects. The fourth child (KID B) was the only child to sit during recess.

In terms of the general use of space, it was noted that most children played within a reasonable distance from the playground equipment. It should also be noted that three out of the four IPSA kids also played in this area at some point during the recess (dotted line on plan).


opens door
looks in window
stands still
sits down
falls down
slides down
lays down
A
B
C
D
Observations

LEGEND

1 - running, jumping, games

2 - running, sitting, socializing

3 - using play structure equipment

dotted line - **most populated area**

IPSA Kids Study - Conclusions

As a result of observing the IPSA children, a number of conclusions were drawn.

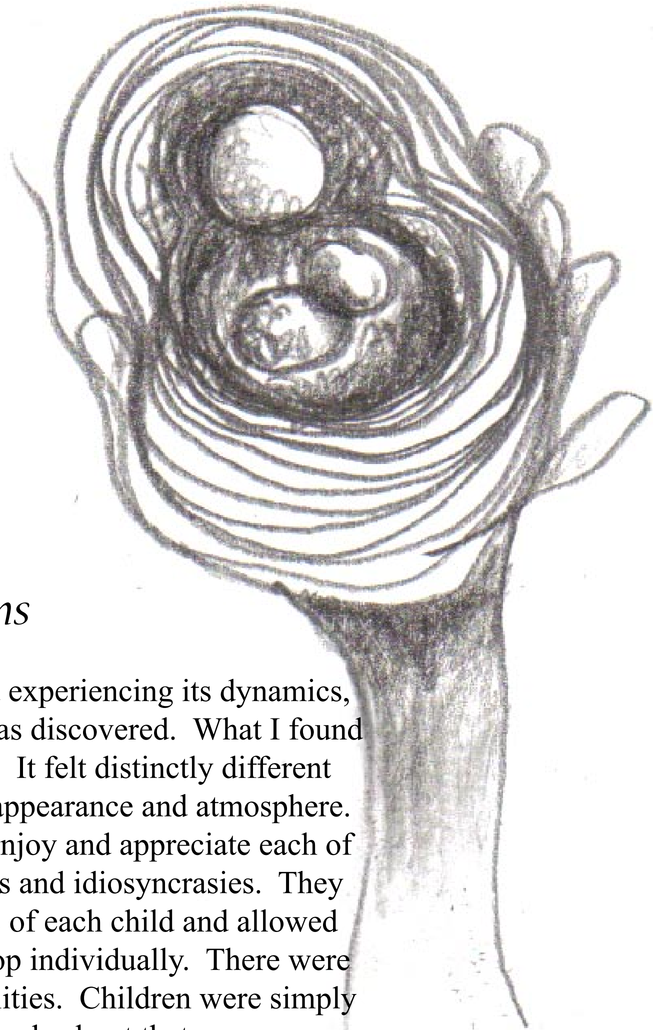
The final design would require diversity and variety of experience. Since only one IPSA child used the play equipment since it obviously did not meet the needs of the other 3 children. The final design would need to take into account different types of play.

An increased number and variety of types of 'play thresholds' should be incorporated. These types of elements would not only engage both autistic and non-autistic children but could help to give the site more visual structure.

The playground equipment needs to have more interactive elements. Increased opportunities for that equipment to become the medium to interact and cooperate with others are paramount.

Opportunities for semi-private retreat and individual play are required. Autistic children in particular need space away from stimulation from time to time.

More spots to observe others which also provide the choice to join in should be incorporated. Autistic children need the chance to learn how to interact from watching others. If spaces were available where they could do this while not appearing out of place, other children might be more inclined to include them. This is also true of any child who desires to fit in.



IPSA Kids Study - Reflections

After visiting the IPSA classroom and experiencing its dynamics, I felt it necessary to reflect on what was discovered. What I found was an environment fostering growth. It felt distinctly different from a traditional classroom, both in appearance and atmosphere. The instructors seemed to genuinely enjoy and appreciate each of their students and their unique abilities and idiosyncrasies. They could see both the potential and limits of each child and allowed him/her to simply discover and develop individually. There were no comparisons or competition of abilities. Children were simply themselves and no judgements were made about that.

The clearest analogy for this is to look at this classroom environment as a nest. The children were like baby birds being nurtured and cared for unconditionally. Of course, all nestlings grow up, as do all children, however this fundamental footing in considerate surroundings allows them to achieve small steps towards big goals. As a result, the nest analogy became a fundamental design concept for this project.

Design Concepts

Nest

The concept of the nest developed in two ways. It first appeared with the recognition that the IPSA classroom was a nest itself, and subsequently as a result of realizing that nest was also a means of organizing. In other words, the idea of nested objects such as bowls or tables gave way to the idea of nested nests.

By using this line of thinking, it was easy to see that the primary, or inner nest, for the IPSA children was their classroom, since it was the place where they could be themselves. The second nest was then the school ground, where they were had the physical opportunity to engage with similarly aged peers. After this, public community space became the third and final nest. As previously mentioned, the IPSA kids walk to a community playground a few blocks east of the school in Wildwood Park a few times each year. This park became a pinpoint within the community in which the children 'practice' being in public space.

Finally, these two concepts of nest became melded during explorations of literal representations of nest. Doing nest-building and drawing exercises helped to flush out the design potential of nest as an idea. The following dialogue is the result from these 'nest-periments'

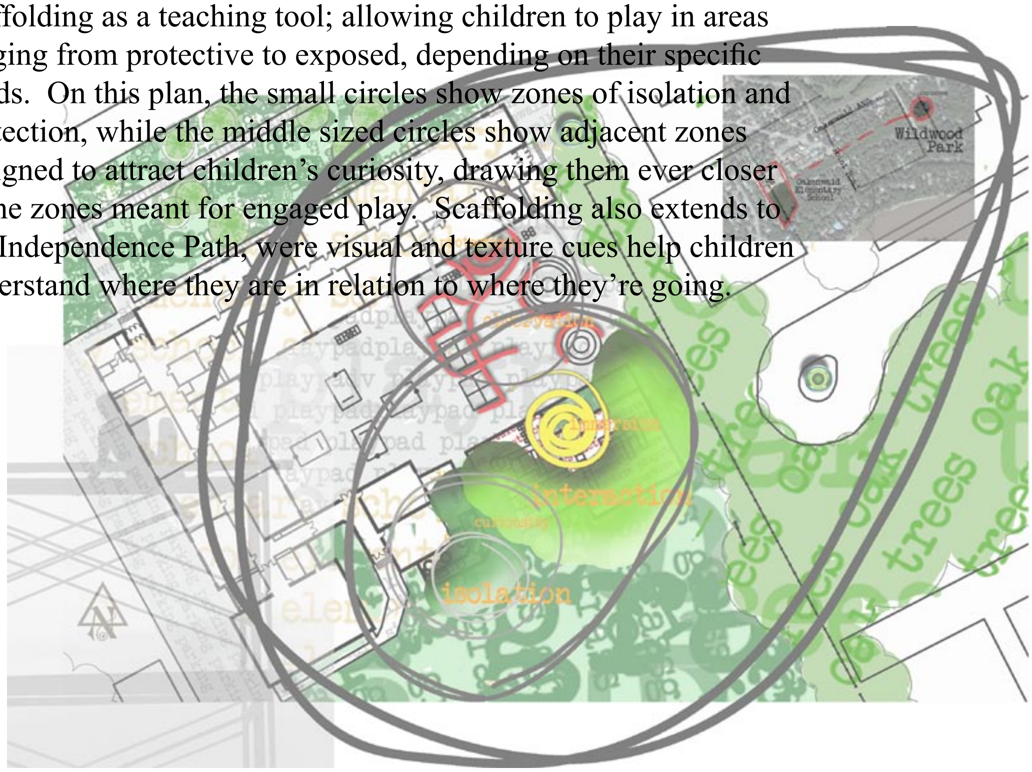


A nest has to have a bottom or its just a ring. It has to have sides of its just a circle. A nest's form is a result of its function and to be functional a nest has to be stable. It has to either adhere to something or be balanced enough to sit upright alone. Nests are innately textural, without texture they are too sterile, uninspired, inorganic, institutionalized. In nature, nests are outcomes of craft: the result of hundreds of hours of collecting, bit by bit, piece by piece and painstaking assembling and reassembling. It is out of love and instinct that nests are created. Nests are born of repetition, repetition of activity and of material. It is this repetition that gives birth to the nest's textural weave and in turn its organic beauty.

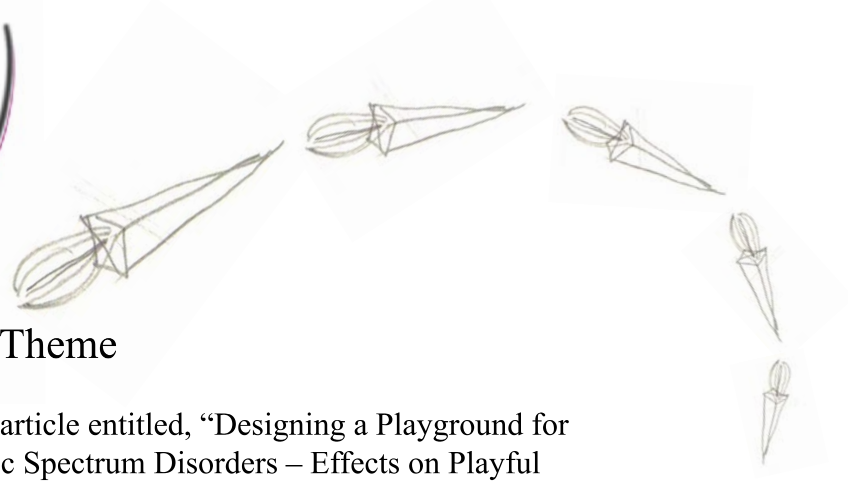


Scaffolding as a Teaching Tool

As the nest concept was developing, the theory of ‘scaffolding’ as a teaching tool was brought to light. This strategy has been shown to aid in both the acquisition and retention of knowledge and has proven to be successful in teaching autistic children to build on their skills and learn new things.[49] Scaffolding is a theoretical construct developed by Russian sociologist Lev Zygotsky that works on the premise that learning does not occur in isolation. It suggests that for any child to learn to complete a task, competent assistance must first be given. After some learning has been demonstrated, the assistance (or scaffolds) is gradually removed. However, at any point the scaffolds may be fully or partially reinstated if the child demonstrates the need for them   This strategy has proven to be successful in teaching autistic children to build on their skills and learn new things.[50] In this project, ‘scaffolding’ brought further validity to the concept of nest and informed the masterplanning of the site. The layout and elements of the design physically reinforce scaffolding as a teaching tool; allowing children to play in areas ranging from protective to exposed, depending on their specific needs. On this plan, the small circles show zones of isolation and protection, while the middle sized circles show adjacent zones designed to attract children’s curiosity, drawing them ever closer to the zones meant for engaged play. Scaffolding also extends to the Independence Path, were visual and texture cues help children understand where they are in relation to where they’re going.



Circuit & Theme



Through reading the article entitled, “Designing a Playground for Children with Autistic Spectrum Disorders – Effects on Playful Peer Interaction” by Yuill, et al, the concept of circuit was brought to light. In this article, the researchers suggest that by laying out play equipment so that the end of one piece leads to the beginning of another, children with ASD (Autism Spectrum Disorders) use all equipment with increased tenacity.[51] As a result of this observation, the final design for this practicum needed to incorporate activity circuit/ circuits to some degree.

Yuill, et al. also discovered that instilling an obvious theme (in this case, trains/railroad) to the ASD children’s play spaces increased quality of the play. They found that group play increased as a result. The children could incorporate their own “ritualistic behaviours” into the repetitive motion of pretending to be a train which helped them engage with others.[52] It should be noted that this play space was only used by children with ASD, therefore the consideration that playground themes hinders imagination were not a concern.

Studies have discovered that instilling an obvious theme into the autistic children’s play spaces increased their quality of their social play. The theme of sensorial navigation emerged and gave way to navigation in terms of movement. This theme is appropriate on several counts. Firstly, because of its ambiguity it does not immediately suggest a certain manner of play. This limits the chances that any of the children’s’ imaginations would be stalled by its presence. Secondly, navigation presents virtually unlimited design possibilities that could only serve to foster the imagination of young children. Thirdly, this theme is a classic area of interest for children making it easy for them to make up their own related stories, games and narratives.

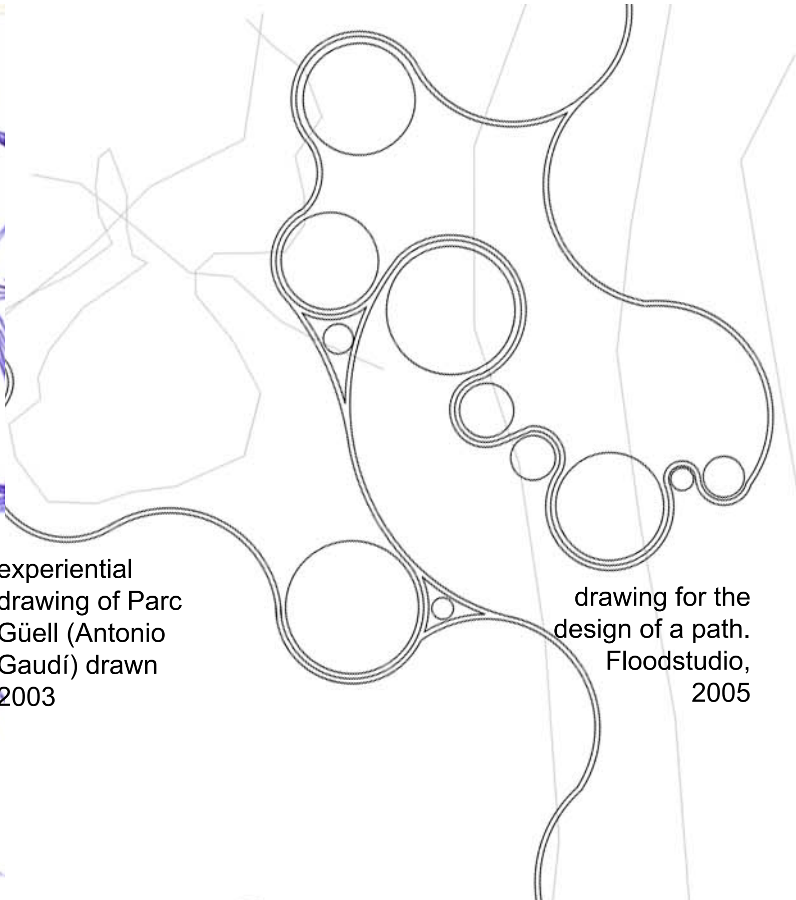
Organicism

Notions and impressions of ‘the organic’ stem from visits to the site. Early on, the existing built environment as well as the site’s playground equipment were deemed unapologetically institutional. As the space is used as a break from regulation, it was felt that a completely opposite approach, using an opposing geometry, was necessary to push that separation as well as animate the space. As the concept of ‘nest’ developed this contrast became even more desirable and ingrained as reflected in the final the design.

Pushing this idea even further, perhaps an organic approach to the final design is the only logical possibility. In his book, *New Organic Architecture: the Breaking Wave*, David Pearson states that, “organic design places special emphasis on developing a sensitive and creative relationship with both the client…. instead of having preconceived ideas about form and structure, design begins with the community, the people and expresses their needs and wishes, even their personal idiosyncrasies.”[53] Although this is made as a statement regarding organic design process, this sentiment reflects my approach to designing for children with autism. As a result, using an organic formal language may also help the IPSA children, as well as the other children using the space, to feel healthier here.

Another designer that shares this sentiment is Antonio Gaudí. In the early twentieth century Gaudí began melding architecture, interior design and landscape architecture together, creating organic geometries and spaces that feel comfortable, despite their overtly grothesque undertones. Stemming from Art Noveau decor, part of Gaudí’s approach proposed that sinuous, curvilinear lines, like those found in nature, expressed the essence of God,

experiential drawing of Parc Güell (Antonio Gaudí) drawn 2003



drawing for the design of a path. Floodstudio, 2005

and were therefore truely beautiful. As a devoted religious man, there is no question that Gaudí's architecture was a reflection of his personal style as a designer.

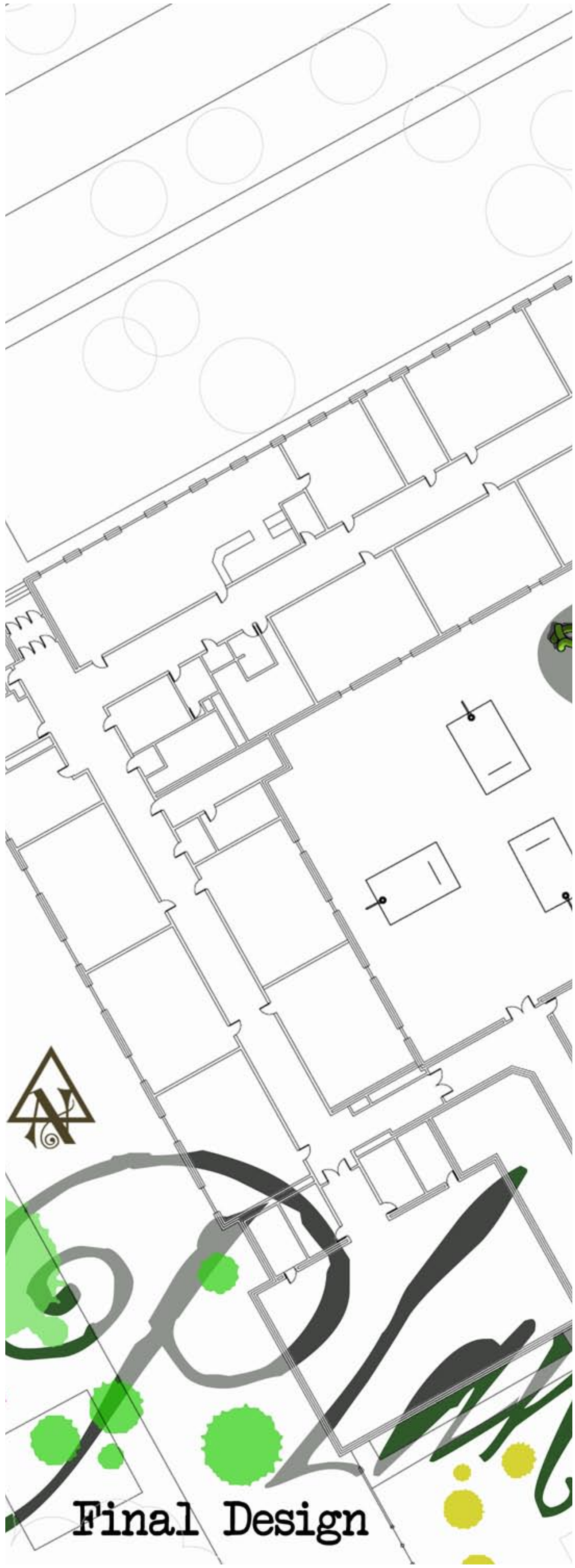
Perhaps organicism also stemmed from my personal inclinations as a designer. I have always been drawn to both spaces and objects that have been influenced by organic forms. Although this is by no means a new concept, it is my sentiment that the being in spaces inspired by natural concepts and geometries imbue our subconscious with a shard of primordial harmony that has been lost in the milieu of modernity. Despite the disparity of program or location, projects in both my undergraduate and graduate studios have always leaned towards organic architecture and landscapes. In the words of Javier Senosian, "[I] want to attain spaces adaptable to the human body, like the womb or the animal's lair. Like the troglodytes who carved a niche for themselves out of the earth, or igloo builders, this is not a regression to primitive ways, but a premeditated reconciliation."[55]

Creating

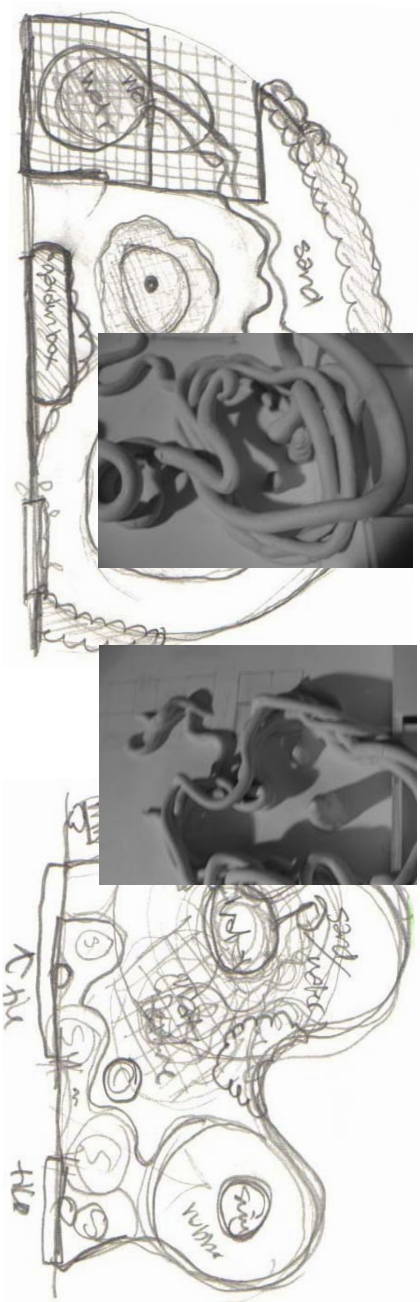
CHAPTER 4

Final Design

This is the plan of my final design. Each element of the design, from the Protection Zone to the Independence Path is a part of conceptual scaffolding for children with autism. The design allows for varying scales and types of experiences, from solace to interaction with objects and peers to their emergence into the community in nurturing and secure manner.



path
protection
observation
immersion
interaction
curiosity
isolation



process modelling

process drawings

Protection Zone

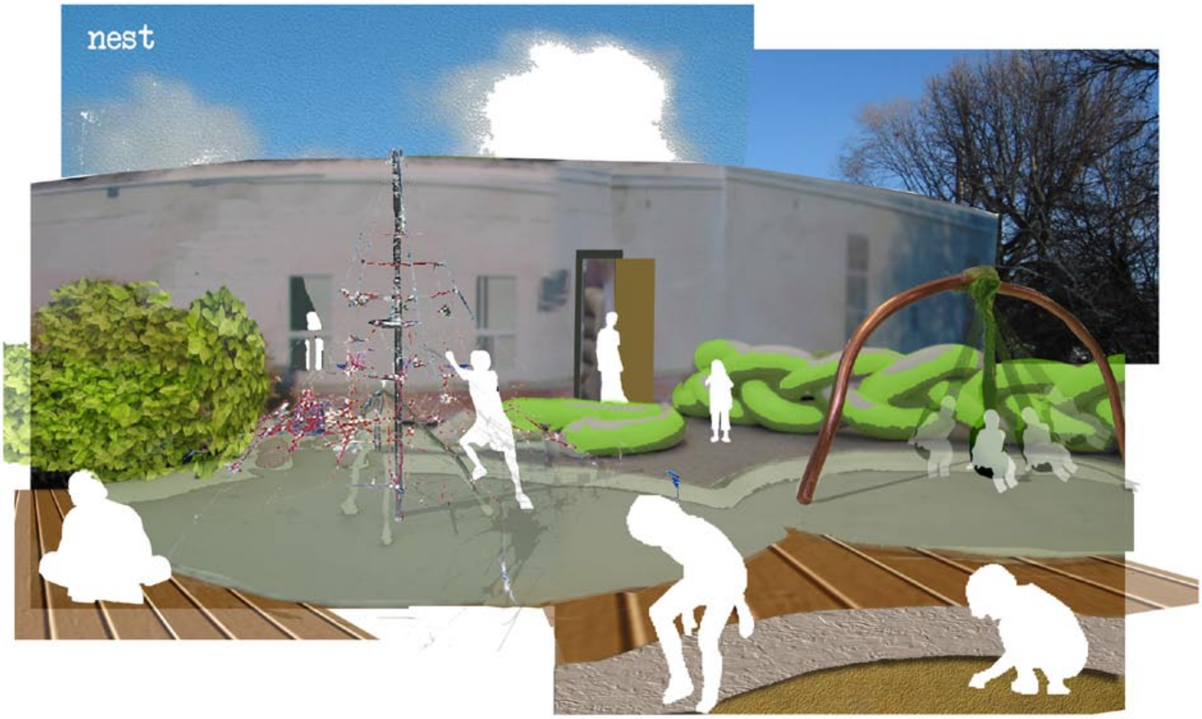
The idea of the Protection Zone works to make the IPSA children feel safe, calm and secure in an outdoor space while also providing the small taste of the freedom available to them in the Interaction and Independence Zones. This zone is comprised entirely of the Inner Nest.

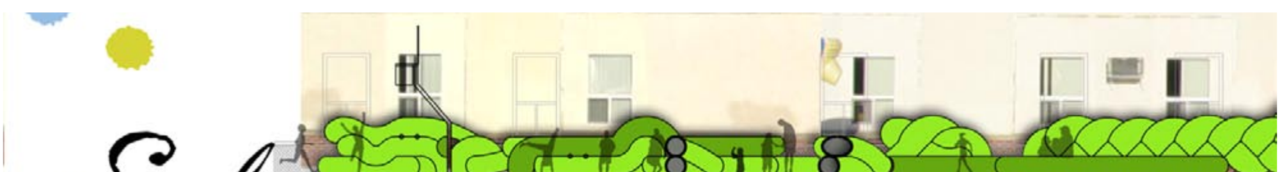
Inner Nest

The Inner Nest is a walled space adjacent to and accessible from the IPSA classroom. It is a space allocated specifically for the IPSA children to use as they desire thorough out their school day. The location the space adjacent to their classroom also allows them to have an accessible outdoor space during non-recess times.

The Inner Nest is conceived as an outdoor exploratory space where the children are free to be themselves. The space also allows instructors and assistants to supervise the children both from with in the Inner Nest and from inside the classroom. As a private playground, this outdoor room contains equipment and spaces that are meant to satisfy the children's sensorial needs, allowing them to be free to behave as they please, away from judgemental eyes.

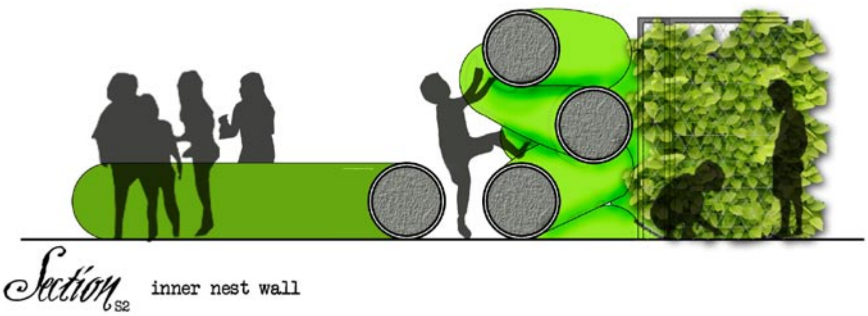
As it is a private space, equipment that could not be included in public play spaces, such as a swing, are located here. The Inner Nest contains a swing, climbing web, sand play, polyurethane morphological cushions (BodyProps), a living wall and peepholes to view outwards. The swing, made from fabric, is devised to support a child's entire body in varying positions, making it more inclusive than the traditional rubber variety. The climbing web provides a place for a child who enjoys climbing to get higher than the surrounding walls, allowing them to perch and survey, able to see what opportunities exist beyond their own world. Rope webbing was used to allow the supervisors to easily see beyond and around the structure. A sandbox is often a very social location for children however this sand play area is devised as an exercise in tactility. The edge of the sand area is lined with Photo-Cast LCC photographic bas-relief ceramic tile created using images of ripples in sand at the beach. The low areas in the relief of the tiles catch small amounts rainwater, providing the children with yet another material to use explore, manipulate and combine. BodyProps are set into rubber matting providing both the students and instructors with unique, comfortable seating options. The living wall and walkable ground cover below give more tactile prospects as well as the advantage of watching living organisms thrive, grow and change throughout the seasons. Surface materials used include fall-zone grade rubber, wooden decking, asphalt, and walkable vegetative groundcover. These would provide the children with different auditory and proprioceptive changes as they moved around the space. Encircling the area are 1-2 m tall green 'thread' walls made from Super Adobe tubes. Loosely in some locations and tighter in others, the tubes are weaved together to form a semi-permeable barrier.





Elevation looking north: threads & inner nest


visually accessible

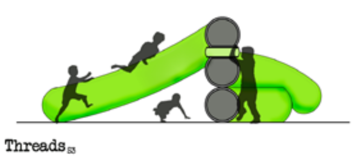

Section S2
inner nest wall

Observation Zone

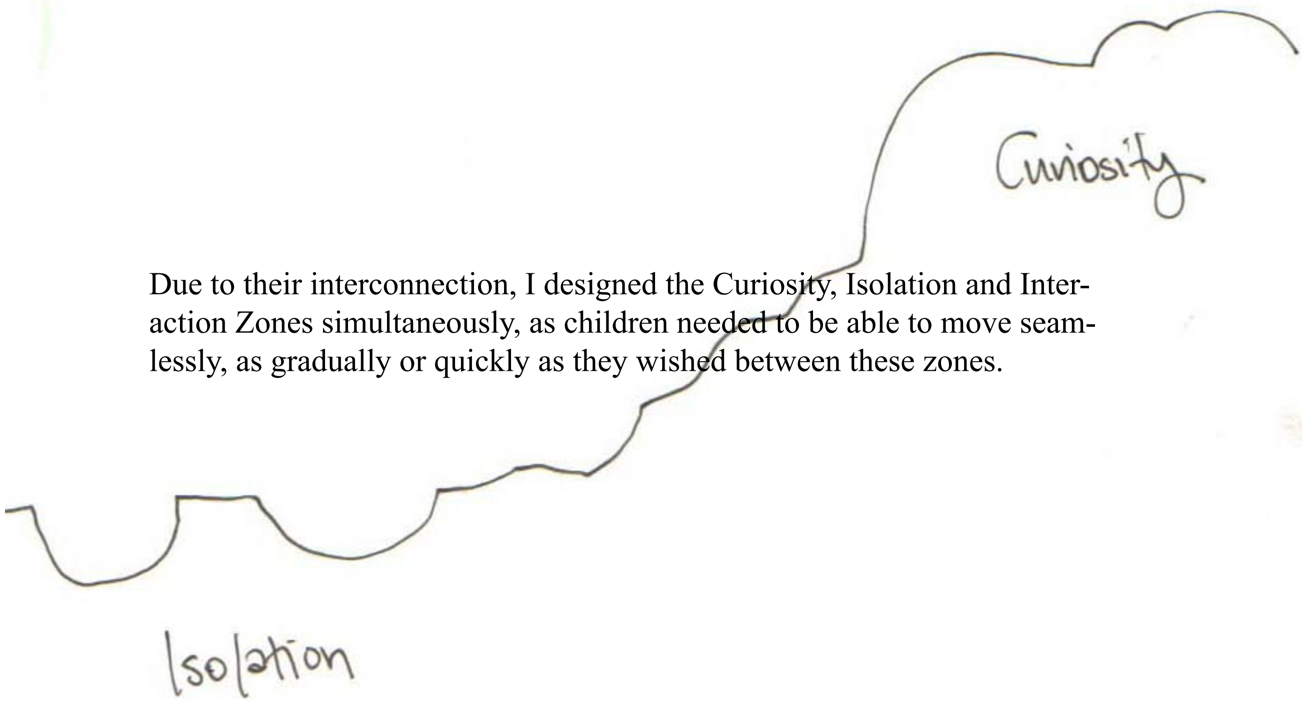
The Observation Zone is located between the Protection Zone and the Interaction Zone. Its primary function is to create spaces for the existing playpad activities (4 square, hopscotch, dodgeball) to take place. By doing this, thresholds, both visual and physical were created to add yet another layer of play to the school grounds. This zone is accessible to both the IPSA kids as well as the typically developing children so that opportunities for observation and imitation of play are increased.

Threads

Comfortable spaces are created from the physical and metaphorical degradation of the nest. Located outside of the inner nest, these threads of the nest create and frame hard surface games. Varying in height, the Super Adobe threads allow places to sit, watch, chat, peak and play. Taller sections are equipped with peepholes as well.



Due to their interconnection, I designed the Curiosity, Isolation and Interaction Zones simultaneously, as children needed to be able to move seamlessly, as gradually or quickly as they wished between these zones.

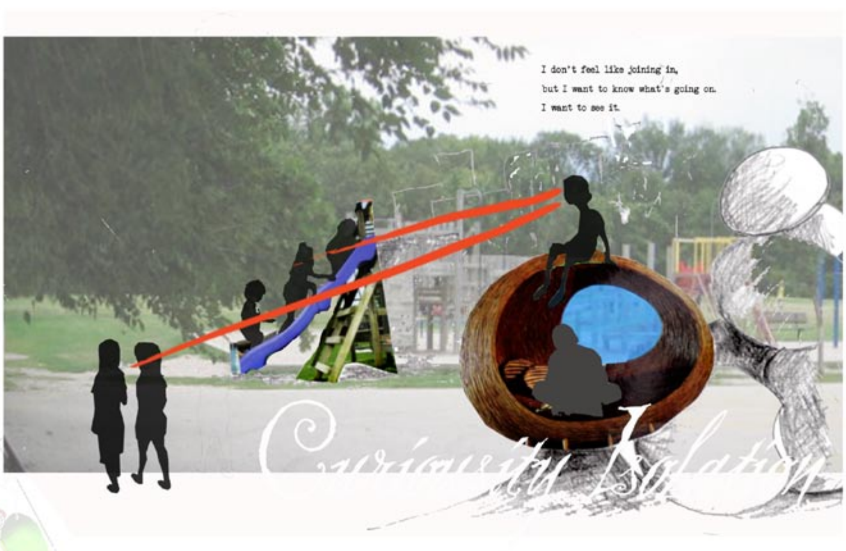


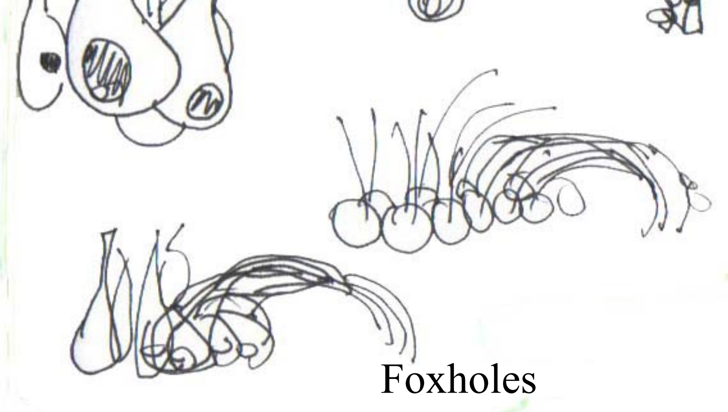
Isolation Zone

True to its name, the Isolation Zone is a remote area, shrouded in American Basswood trees (Tilia americana) and set slightly apart from the rest of the play space. This area is to be used as a retreat. All children, especially children with autism, require an accessible space where they can play alone or in small groups, away from the most stimulating areas of the play space. As such, the main features of this zone include the Foxholes, basswoods and a few Globes.

Curiosity Zone

The Curiosity Zone is nestled between the Observation, Interaction, Isolation Zones, existing primarily on a hill (Curiosity Hill). By touching the boundaries of these zones, the Curiosity Zone functions as a place where curious children, who may be on the cusp of joining in on a game or activity, can hang out without feeling awkward. The advance of this space is that it allows all children to feel that they are 'somewhere'. The most prominent features of this zone are the Wormholes and the Globes.



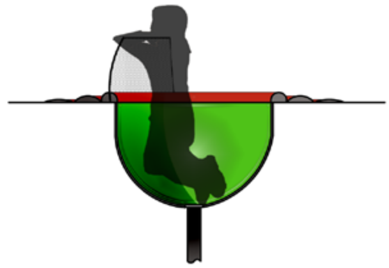


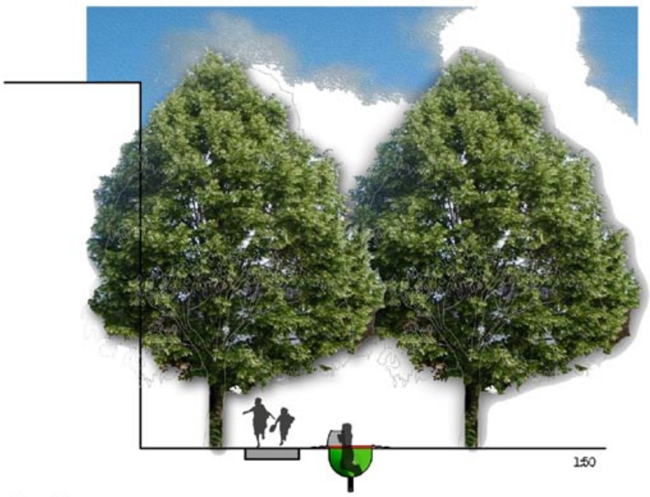
Foxholes

Foxholes are small rounded depressions in the ground where a single child can sit/play in isolation. As a result, the holes serve two functions; perceptive retreat and stealthy surveillance. A hole is located either to provide the occupier views to a point in the site where children/supervisors might gather or play (i.e. the intersection of two paths) or where they can sit alone. A few holes are located in tandem or triplets allowing children to play/sit in parallel or cooperatively. The holes have a semi-opaque screens that swivels around the circumference of the hole allowing the child inside to feel hidden from view. For the convenience of surveillance, the visual permeability of the screen leaves them mostly visible to supervisors.

The holes themselves are semi-circular fibreglass shells with a grate at the bottom for drainage. To decrease the change of falling, colourful red rubber rings surround the circumferences of the holes. For easy identification, these rings mimic those marking the surfacing holes located in the Curiosity Zone. Additionally, the foxholes have semi-opaque screens that swivel around the circumferences of the holes allowing the children inside to feel hidden from view. For the convenience of surveillance, the visual permeability of the screen leaves them partially visible to supervisors.

Foxhole





Foxhole$_{S6}$

Basswood Trees

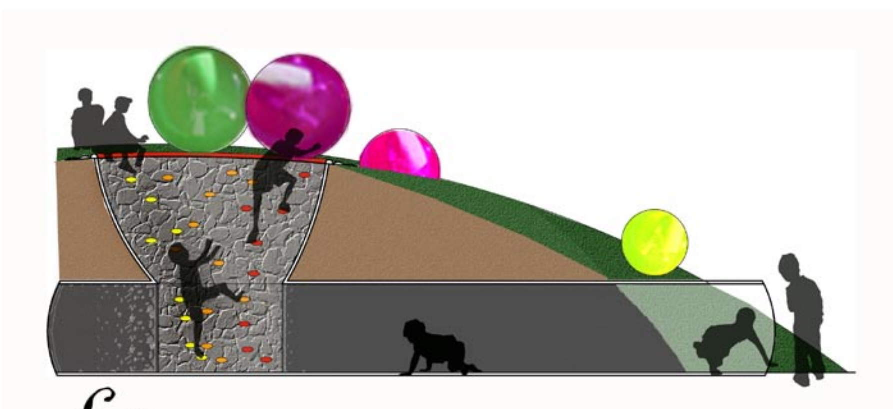
Basswood trees were selected for their stature, wide canopy and large leaves. Combined, these characteristics of the Basswood tree's canopy amplify the ambiance of 'hiding' for children play or sitting in the Isolation Zone. They also provide much needed shade to the play space site.


foxholes


beside Curiosity Hill

Wormholes

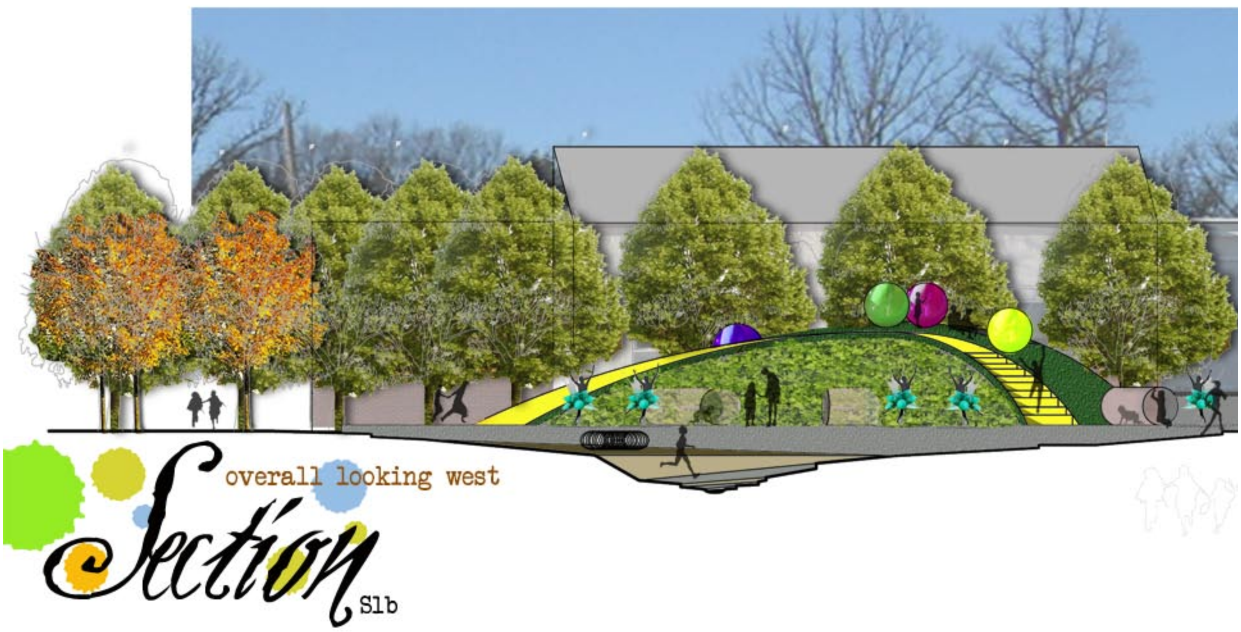
Together, the wormholes work to create a network of shallow tunnels and openings that allow children to crawl through, underneath and around different areas of the play space. These translucent tunnels differ in length and contain visible openings to 'surface', allowing children who might be afraid of enclosure to join in. The Wormhole network also allows supervisors to see the children, as well as let light penetrate inside. For safety, all entry/ exit points are visible. Where multiple tunnels join, openings to the surface of Curiosity Hill are conical in shape (wider at the top) and are faced with playground-grade rock surface so children may climb out of and into the holes. Wormholes take children from the Curiosity Zone into the Interaction or Observation Zones in a manner that favours seclusion, allowing childewn to either emerge and join in or to retreat unnoticed.

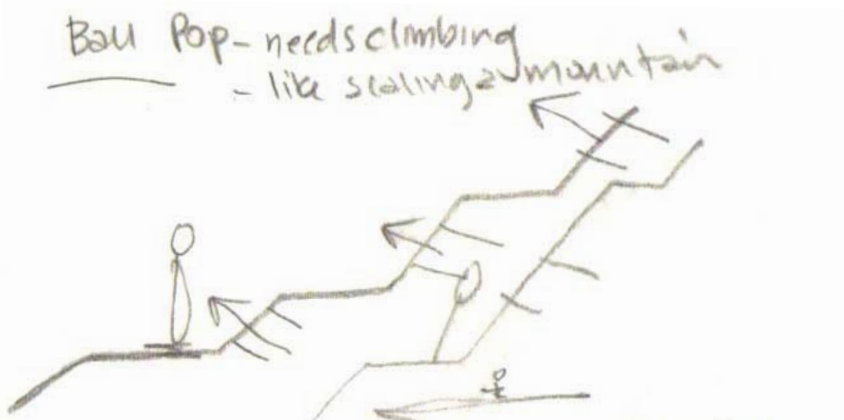


Section S4 Wormhole

Globes

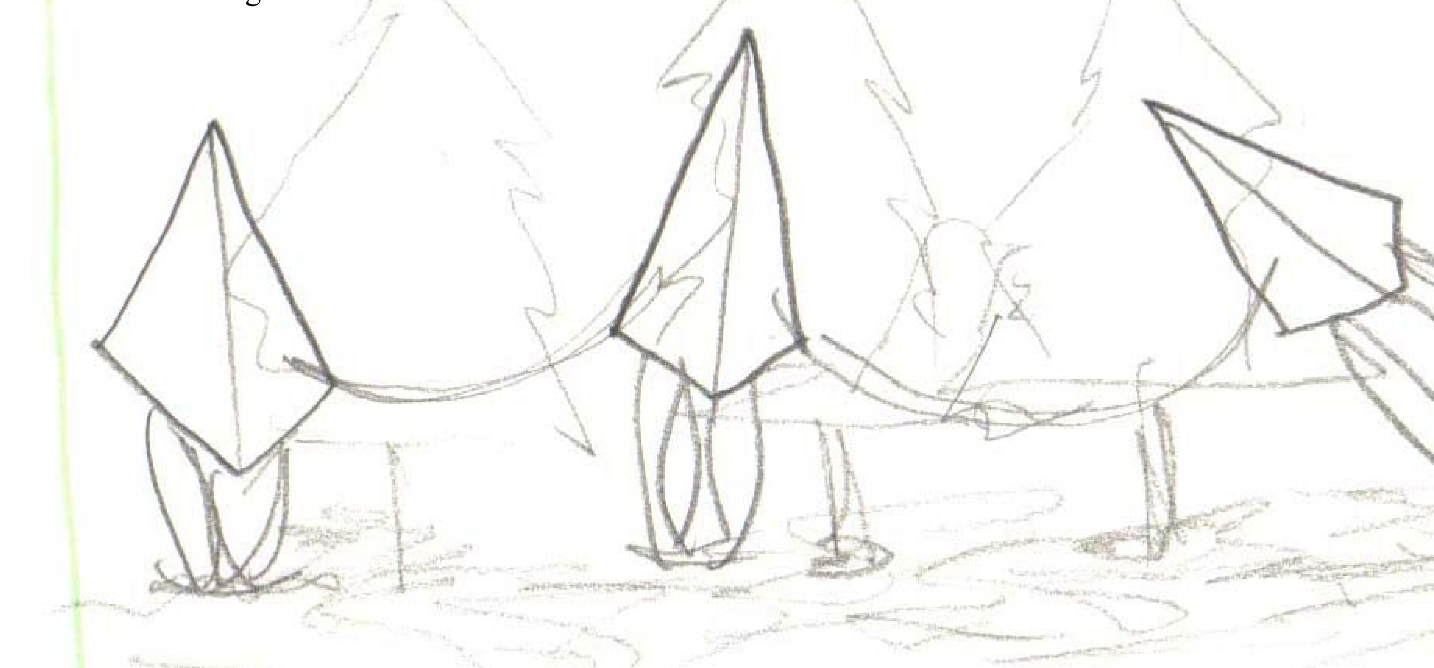
Globes that are deliberately located in the Isolation Zone and have the same physical characteristics as those in the Curiosity Zone. The reasoning behind this is two-fold. Firstly, it creates the playful impression that some of the Curiosity Zone globes have rolled down the hill. Secondly it causes the two zones to visually appear interconnected. This rather seamless flow between Curiosity and Isolation gently suggests to socially isolated children (as autistic children often are) that being accepted into group play is attainable in this space. The Globes in the Curiosity Zone are primarily located on the hilltop beside the slide and the climbing 'U'. This provides children with opportunity to climb or hide around them, yet also jump into either of these two areas when they desire. They are dual toned and textured and rotate on an axis so children can spin them, allowing the children to explore the changes in texture and colour as quickly or slowly as they like. Rotation also gives children the opportunity to share and compromise, if two or more children wants to spin the same Globe.


overall looking west
Section
Slb



Interaction Zone

Two design concepts that particularly inform the layout of the Interaction Zone are notions of circuit and theme. As previously discussed, recent studies suggest that autistic children are more likely to use playground equipment if it arranged so that one piece of equipment leads to another.[56] In light of this information, the Interaction Zone itself was designed as a circuit to encourage play structure usage by the IPSA students. Additionally, it has been found that children with autism are more receptive to play equipment and spaces if they contain a recognizable theme.[57] Instead of working with a strict theme, which may limit the imaginative play of the typically developing children, the concept of theme (namely cosmic travel and movement) was applied selectively to the Navigation Capsules and surrounding area. Other features of the Interaction Zone include, the climbing 'U', slide and the T birds. The activities and equipment in this zone provide opportunities for cooperation, pretend play, and development of gross and fine motor skills.



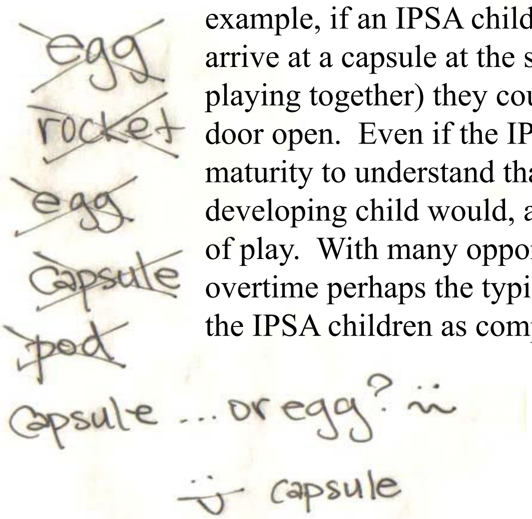

I'm attracted here by textures;
bumpy, smooth, rough, slippery
sounds;
voices, and shoes
and movements of the structure,
somehow it is more fun to be here when
others are here too.
they make it different.
Interaction

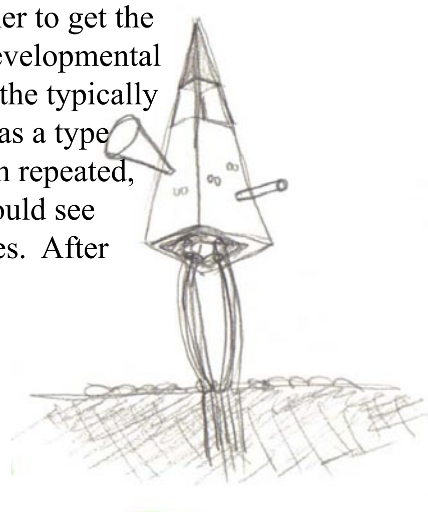
Navigation Capsules

These child-sized capsules appear as naviagation units on the outside, but are internally themed around three methods of navigation/senses (Hearing, Seeing, Orientation). Bridges of varying inclines and textures create a dynamic route throughout this area.

One of the highlights of the Navigation Capsules is their points of access. The doors to each capsule operate on a simple system of gears, pulleys and wedges, making it necessary for the children to access the capsules using a cooperative activity. Two children are required to each turn a handle that, through a series of gears and pulleys, opens one side of a small opening. Once each side of the door has been opened, the children need to rotate wedges into place to keep the access point unobstructed. Although the doors can, in theory be opened by a single child via cranking one handle and then the other, it is clear that the effort needed to access the capsules becomes much easier when shared by another.

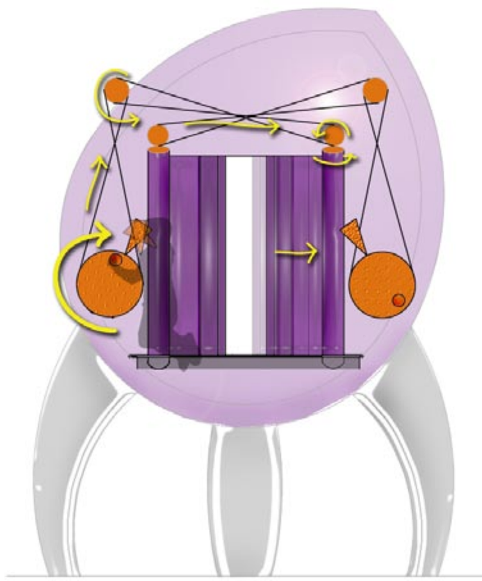
As such, the theory behind the capsules is to encourage the children to work together (or at least in parallel) to gain access to the more exciting play places. This type of task-oriented peer interaction provides children, both with autism or other socially disadvantages, the opportunity to engage with others and redeem its rewards. For example, if an IPSA child and a typically developing child both arrive at a capsule at the same time (even when they are not initially playing together) they could momentarily work together to get the door open. Even if the IPSA child doesn't have the developmental maturity to understand that the two are 'cooperating', the typically developing child would, and thus interpret this action as a type of play. With many opportunities to have this situation repeated, overtime perhaps the typically developing children would see the IPSA children as competent others, if not playmates. After





Section S1b looking east: capsules

capsule



capsule entry mechanism

hearing

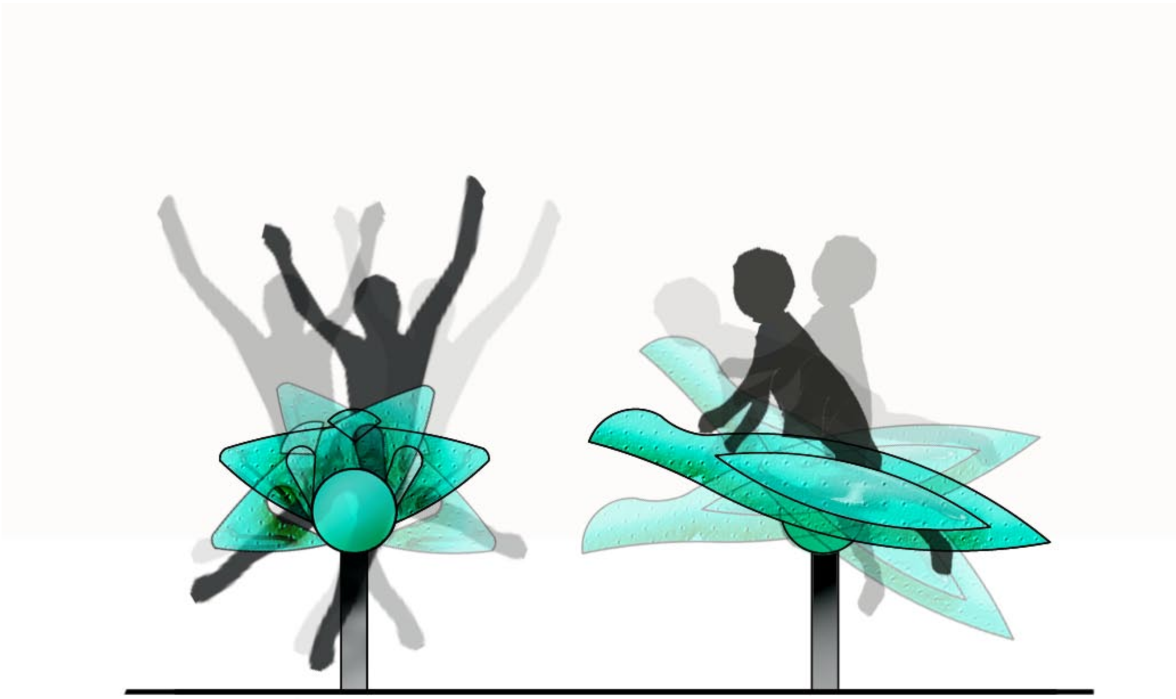
balance

seeing

the children have entered, the wedges holding the doors release automatically in response to the increased weight on the floor of the capsules.

Once inside, the theme of the capsule would be very obvious. The Hearing capsule has no windows to see out of but instead has microphones, speakers, other listening devices to amplify and integrate the sounds from outside into the capsule. In contrast to this, the Seeing capsule housed devices such as peepholes, fisheye lenses, and telescopes, while the Orientation capsule encloses compasses, rotating floor surfaces, climatic conditions monitors, and a variety of steering mechanisms.

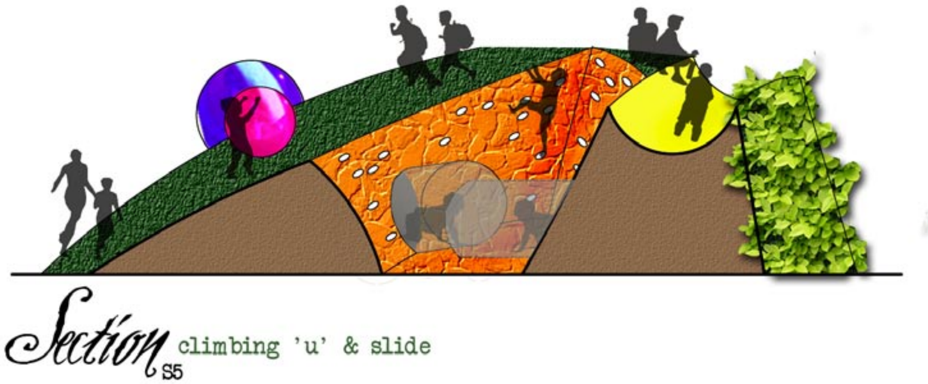
The capsule themselves have steel frames sheathed in glossy fibreglass shells. A section at the top of each capsule is translucent to allow light to penetrate the interior. The door pulley system is encased in transparent plexiglass box, allowing the children to visually understand the forces and instruments they are manipulating. For safety, the doors themselves close with a 100mm gap between and are buffered with rubber flanges. As for the capsules' interiors, each is covered with black rubber so the devices inside are visually highlighted.



T Birds

T Birds

T Birds are wobbly, climbable pieces of single sheet of metal manipulated to into the shape of a stylized bird then coated with rubber and PVC. They require a child to sit or lay on them and balance their weight appropriately and 'ride' them. This concept is based on one mentioned by C. S. Kranowitz in her book, *The Out-of-sync Child has fun: activities for kids with sensory integration disorder*. Kranowitz suggests that T-stools help children develop balance, increase coordination and stimulate sluggish vestibular systems.[58] T Birds wobble via a rotating ball on a stationary post. Their design is stylized enough to compliment the subtle theme of travel and movement but not hinder the imagination of the children using them.



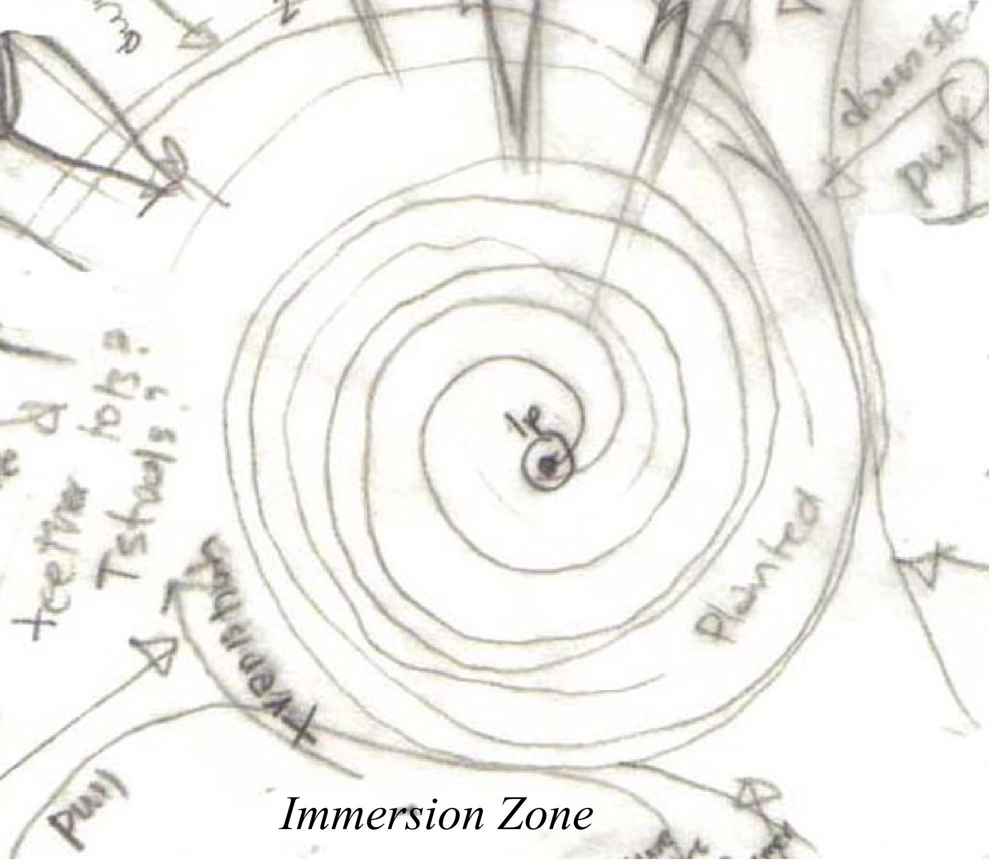
Climbing 'U'

The Climbing 'U' is a half-pipe-shaped area, set into Curiosity Hill bordering the Curiosity and Interaction Zones. The 'U' itself is made from rubber and playground engineered rock climbing surface. The area has multiple levels of physical challenge, making it accessible to children of varying levels of aptitude. The west wall of the U is the least difficult, while the northern tip is moderately difficult. Since the east wall forms one side of the slide, this wall is the most physically challenging (due to its verticality), although providing the most reward (a trip down the slide). The hand/foot holds of the Climbing U are colour-coded, providing opportunities to follow the colours in order to get to a particular location on the wall. Of course, using this colour system is not a mandatory, allowing children of all abilities to delight in it. The climbing U is also accessible to children with physical disabilities, as it is begins at ground level.

Elevation

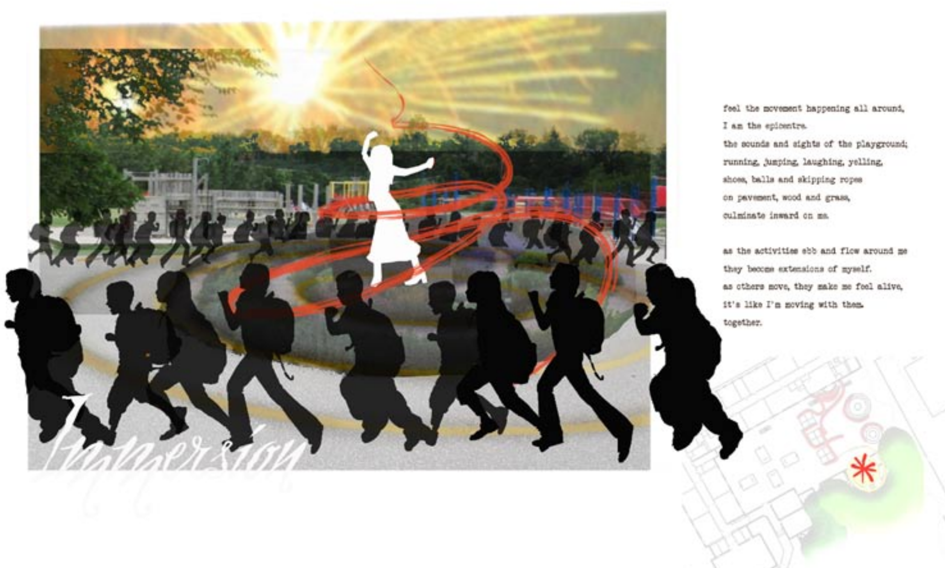
looking east: Curic

osity & Interaction zones



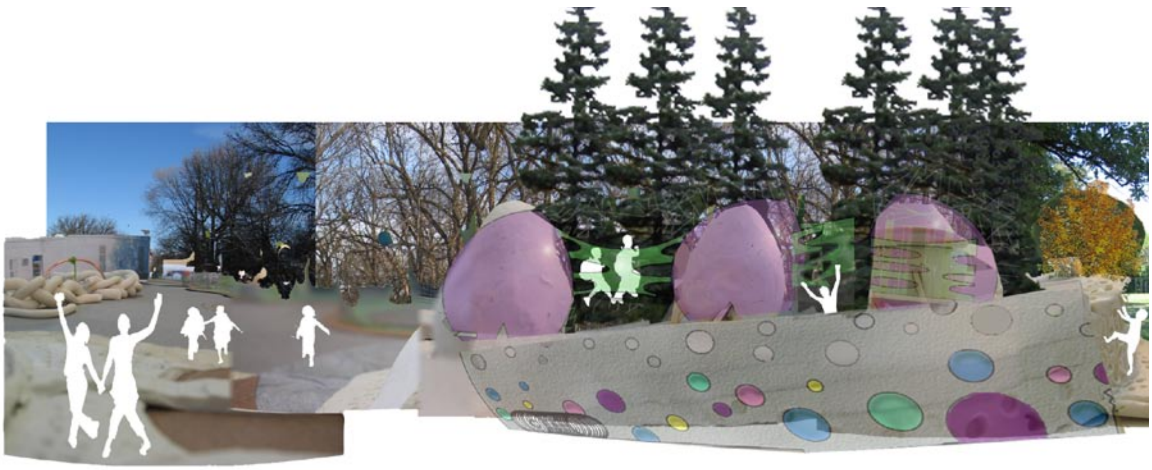
Immersion Zone

The Immersion Zone is located literally in the middle of the Interaction Zone and beside the Observation Zone. The sole feature of the Immersion Zone is the Spiralling Centre, however the area is also a means to access areas beyond the play space site.



Spiralling Centre

The Spiralling Centre is the low point of the site where all the energy of the play space focuses. In this area the geometry and materials of the space magnify sounds, sights and ambience of play. Sounds of running, laughing, yelling, and playing echo off the hard semi-circular vertical and plunging horizontal surfaces. The sparseness of this area also gives the occupant a 360-degree view of the Interaction Zone. Seating in the form of woven steel mesh benches allows supervisors to comfortably sit, watch and listen to the children play here. As an additional feature, the downward spiral of the area lends itself as a means of draining runoff water from the site.



Panorama standing in the Immersion Zone

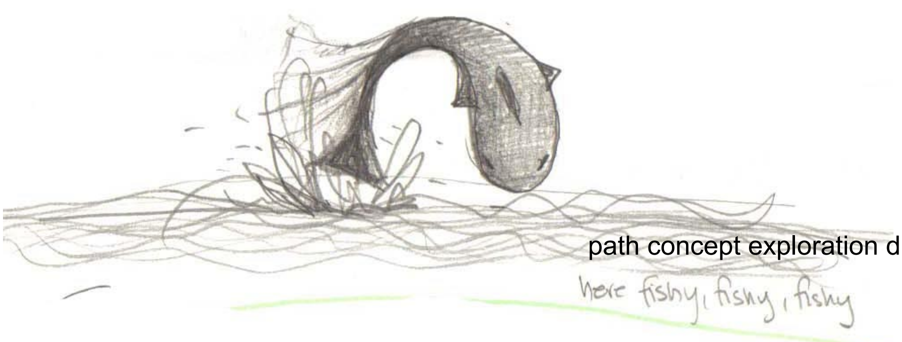
leaving a trail of breadcrumbs....

Path

The Path cuts directly through the Wildwood Forest and connects Wildwood Park to the Oakenwald School grounds. By locating the path within the forest, not only does the beauty of the forest become part of the experience, but the forest itself becomes a barrier safeguarding the children using it from vehicular traffic. As numerous studies suggest, children with autism are chronically underexposed to nature. In lieu of this, the presence of a forest bestows a unique opportunity to allow the children to visit a nature in a supervised and ongoing manner.

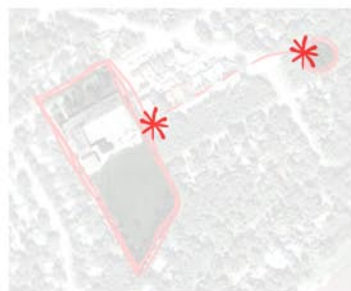
The Independence Path provides a link for the community move around their neighbourhood, however, the path has a number of features designed for the IPSA children that highlight the experience of being in the forest. Obviously, they may also be enjoyed by the community as well.

At the end of the path, the Wildwood Park playground is revealed. The second aspect of the Independence Path is the Rememberribbon, a band of shiny steel that meanders from the door of the school to the Wildwood Playground.



path concept exploration drawing

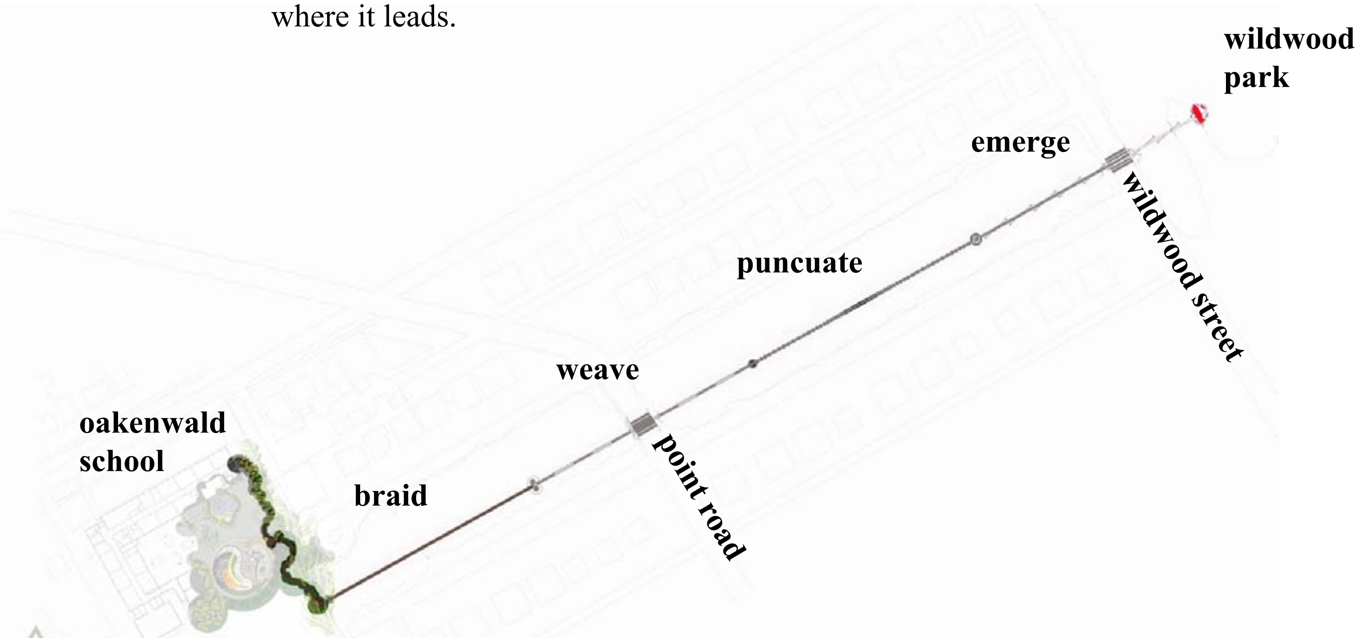

I know where I'm going
I can see where I'm going
I know how to get there
I see the way
Path



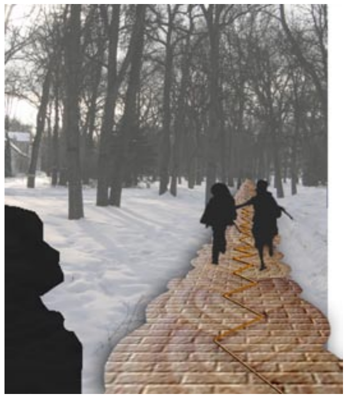
Independence Path

The Independence Path is a means for the IPSA kids to see and be seen in the community. It is their means to publicly emerge from under the guarded wing of the school ground.

The path is divided in multiple segments, each manifesting itself differently according to its location. For example, the weave segment crosses a major street (Point Road) and undulates similarly to speed bumps. Between the segments are three nodes, which highlight the experience of being with the forest canopy, an experience not often had by autistic children due to safety concerns. Overall, the linear form of the path helps supervisors to easily see where the children are. This in turn, allows the children to be and feel less constrained while they walk here. Along the path, the rememberribbon is a recurring element that works to both unify the segments of the path as well as intrigues others on the path as to where it leads.



site plan of path



braid

weave

puncuate

emerge

Each element of the design, from the Protection Zone to the Independence Path is a part of conceptual scaffolding for children with autism. The design allows for varying scales and types of experiences, from solace to interaction with objects and peers to their emergence into the community in nurturing and secure manner.

Clearly, designing engaging, social play spaces is something landscape architecture can address. This practicum suggests that not only could sensitively designed play spaces improve the quality of life for children with cognitive disabilities, they would help all children to see beyond physical and mental differences to new playmates and friends.

Roosting

CHAPTER 5

Reflections

As I sit, on this, the eve of the completion of my practicum document, I'm compelled to reflect on the past two years of effort I have put into this project. In general, I feel very satisfied with the progress, development and outcomes that I achieved. Having said that, there are certain aspects and questions, particularly in the final design, that I think could have been addressed differently. Truthfully, I enjoyed doing this practicum and I think it shows.

Before the birth of my daughter in 2007 my life was dictated by timelines, which I met (for better or worse) with military precision. This (obsessive) compulsive need to complete everything within an allotted amount of time was thrown, kicking and screaming, out of the window when I had a kicking and screaming newborn to contend with. Although I was chomping at the bit to work on my practicum, I had no choice but to take a breath and be a mom.

After the shock of missing many self-imposed deadlines wore off, I found that patience yielded far better results that panic. Waiting for ethics approval (twice), getting in touch with Oakenwald school, getting permission from the school division for my study, coordinating time to observe the IPSA children, not to mention giving birth, definitely slowed down the project's initial stages to a sluggish crawl. However, I feel that serenity paid off since it led me to meet Lianne (the Occupational Therapist for the IPSA children), who made a crucial addition to my committee. Without her (or someone of similar expertise) my practicum would have amounted to nothing more than a giant guess in far too many ways. As a result,

I truly believe that this practicum could not have been completed any faster than it was and still have the same level of success in both concept and design. I think my design is successful because it meets the sensorial needs of children with autism while encourages them to engage with both equipment and other children. By using the scaffolding as a concept for this interaction, children have opportunity to move back and forth between solice and interaction, as quickly as slowly as they need to, in order to feel comfortable and empowered by their play environment. I feel this success is largely due to the length of time I took in developing my ideas.

In past studios, I often felt too rushed to properly flush out and experiment with all the design ideas I had. In this project, my newfound patience allowed me to make sure I did not repeat past mistakes. Especially important to me was including the luxury of shelving the project for a few weeks at a time. After doing this once or twice I realized I could look at my ideas with fresh eyes, which in turn let me critique my own work more effectively.

There are of course, things I would change. Throughout the last half of the project, I argued with myself over whether or not less was more or more was really more. I waffled between thinking I was making the design too complex or too simple. Complexity was never something I had shied away from in the past, however, I promised myself that for this, my final project in the bubble of academia, I would not let my creativity outsmart my ability to communicate its ideas.

To this day, I still wonder if I could have had more layers of experience without making it too confusing. In particular, I wonder about the Protection Zone and the Path. The Protection Zone is the only part of my work that I am a little disappointed in. Because I needed to include equipment that could not be in the public play area, I had to consider the safety standards for this equipment. As a result, the Inner Nest does not have the feelings of intimacy and protection that I had in mind. If I were to keep working on it, I would try to create the perception of greater intimacy. Regarding the path, I should have given it more thought as I was designing the main playground area. Had I done this, I think I could have devised and experimented with more options (particularly involving scaffolding) and found a better and more elegant solution. As a result of my own tardiness, I think the path is the least well-resolved portion of my project. If I were to keep working on it, I would re-examine its role in the scaffolding concept and play with physical manifestations and forms that it could take. Even as I write this, I'm imagining more creative and distinctive ways to resolve that path. But I digress.

As a final thought, I'd like to mention something that was revealed to me by my external advisor after my presentation. She said she was struck by my willingness to delve into the worlds of autism and the education and find landscape architecture's role within them. This statement synthesises what the practice landscape architecture means to me: a willingness to melt, merge and meander in order to make things better…maybe not for everyone at once, but a couple of people at a time.

Christine

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