nurturing locus

How can architecture nurture inspiration and ideas in creative thinking?
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John Anthony Babatugon
1347701
“You cannot predict the outcome of human development. All you can do is like a farmer create the conditions under which it will begin to flourish.”

-Sir Ken Robinson, Out of Our minds
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1.1 Research Question

How can architecture nurture inspiration and ideas in creative thinking?

1.2 Aims and Objectives

Architecture is what surrounds us. It is where we live, where we learn, where we work, and where we play.

This project aims to produce an architectural design solution which generates an environment that nurtures creative thinking where inspiration and ideas seem to happen more easily.

Creativity depends upon inspiration and ideas. It has been discovered that the creativity of an adult and a child are not the same. One is fearful and restrained, the other open and free respectively. Providing an interlock between these two characteristics which would integrate child and adults in an environment where interaction and play can happen which may inspire more courage in the adults to take greater risks, thereby fostering more adult creativity. Architecture would then need to help this sync, symbiosis, synergy of the two realms. Investigating what types of spaces, connections, environments, and atmospheres to facilitate a seamless integration of adults and children can be developed.

Figure 1. An idea, as an electrical impulse sparks the neuron.
1.3 Outline of the Project

Creativity. We are all naturally inborn with this phenomenal ability to imagine, invent, and improvise. It is the natural occurrence of genius and talent of genius and talent of people. As Sir Ken Robinson states “we are all born with extraordinary powers of imagination, intelligence, feeling, intuition, spirituality using our sensory awareness”. There is, however, a gap between the creativity of children and the creativity of adults. “Young children enter pre-school alive with creative confidence; by the time they leave high school many have lost that confidence entirely.” The problem here is the fact that we lose this creative confidence we had when we were children. And it is during adulthood in which we really need it to create new innovative ideas.

Children have more fun and play with their thinking. It is through this process of exploring and learning which enhances their creativity. A playful environment provides security for children to take creative risks.

Adults tend to shy away from taking creative risks. The fear of embarrassment and judgement from their peers causes conservative thinking. It is “pure creativity” which children have and which adults have lost. In this project, children’s risk-taking creativity is used as an exemplar, a spark to re-engage and nurture adult creativity.

The role of architecture plays an important part by bridging this gap between children and adult creativity. Linking the two and inspiring one another to benefit and nurture ideas and inspiration. Main ideas of architecture such as spatial qualities, connection, and social structures provide a basis for a creative environment. It is suggested that this might enhance creativity to produce better success in business and creative industries.

This integration of the adult and child realms will probably be beneficial to creativity rather than determinative. All that can be done is to prepare an environment, and like a farmer, create the conditions under which it will begin to flourish. Good ideas happen in networks as Steven Johnson suggests because “chance favours the connected mind”. This project’s purpose is to design a creativity centre for innovation allied with a pre-school/kindergarten. The interaction between the adults (charged with innovation) and the children (vitality, clarity, and pure creativity) can spark breakthroughs for adults. These interactions are associated around play and mental relaxation of their adult focus to allow subconscious creative activity to occur.

Figure 2. The common myth of the left side (logical, methodical, analytical) and right side (creative, artistic) of the brain.


Review of current state of knowledge
2.1 Literature Review

2.1.1 Christopher Alexander / A Pattern Language

The book contains 253 patterns which creates a language. These patterns describe architectural problems and offer a solution to them. Its intention is to give people solutions to improve a town or neighbourhood, design a house for themselves or work with colleagues to design an office, workshop or public building such as a school.

The following two patterns describe the connection associated with the proximity of office spaces and the connection between the master and apprentice. Both patterns provide an insight into the possible layout of a building which responds to ideas and problems pointed out by Alexander.

82 Office Connections

This pattern talks about connections made between office workspaces and explores the effect of proximity on people. Connection between floor levels is important in terms of communication as well as the layout of the floors.

“If two parts of an office are too far apart, people will not move between them as often as they need to; and if they are more than one floor apart, there will be almost no communication between the two.”

People work better when they are active, and if offices are to be strategically placed to force people to walk, it would benefit not only the individual but the company as well. Making the individual walk and get out of their workstation provides a short break, and relief. It gives them a sense of relaxation and a change of scenery while taking that trip.

“An office will function efficiently so long as the people who work there do not feel that the trips they have to take are a nuisance. Trips need to be short enough so they are not felt a nuisance – but they do not need to be any shorter.”

The nuisance of a trip is determined by the relationship of length and frequency. The short distance in taking a trip to the file cabinet many times a day is tolerable but not walking across the other side of the building.

Results were as follows:

<table>
<thead>
<tr>
<th>Percent of people known:</th>
<th>When departments are:</th>
</tr>
</thead>
<tbody>
<tr>
<td>18.2</td>
<td>on same floor</td>
</tr>
<tr>
<td>8.9</td>
<td>one floor apart</td>
</tr>
<tr>
<td>2.4</td>
<td>two floors apart</td>
</tr>
</tbody>
</table>

People knew 12.2% of the people from other departments on the same floor as their own, 8.9% of the people from other departments one floor apart from their own floor, and only 2.2% of the people from other departments two floors apart from their own. This expresses the effect floors have on the departments and that “by the time departments are separated by two floors or more, there is virtually no informal contact between the departments”.

“To establish distances between departments, calculate the number of trips per day made between the two departments; get the “nuisance distance”, then make sure that the physical distance between the two departments is less than the nuisance distance. Reckon on flight of stairs as about 100 feet, two flights of stairs as about 300 feet.”

83 Master and Apprentice

This pattern describes the relationship and the effectiveness of learning between the master and apprentice.

“Arrange the work in every workgroup, industry, and office, in such a way that work and learning go forward hand in hand. Treat every piece of work as an opportunity for learning. To this end, organise work around a tradition of masters and apprentices: and support this form of social organisation with a division of the workspace into spatial clusters – one for each master and his apprentices – where they can work and meet together.”


2. Alexander, A Pattern Language, 409

3. Alexander, A Pattern Language, 410

4. Alexander, A Pattern Language, 414
Sir Ken Robinson is an educationalist, English author, speaker, and international advisor on education in the arts to government, non-profits, education, and arts bodies. His works and talks focus on the problem of the education system and creativity within schools.

His video, “Do Schools Kill Creativity”, at a TED conference, he presented that schools are only teaching education and undervaluing the importance of teaching creativity. He argues that during the schooling years kids are taught to be educated in academic subjects, (i.e. Maths, Science, English), and rather little creative skills (i.e. Music, Arts or Dance).

It is this environment where as a child is growing up it is not important to them whether they are wrong. This is changed by teachers telling them that they are wrong and sensitising them to the ridicule of being wrong so very soon they don’t wish to be wrong ever again. That is when they lose their creativity.

“Picasso once said that all children are born artists: the problem is to remain an artist as we grow up. Creativity is not solely to do with the arts or about being an artist. Robinson also presents the impact of the lack of creativity a company or organisation has.

“Organisations that stand still are likely to be swept aside, and corporate history is littered with the wreckage of companies, and whole industries, that have been resistant to change. They became stuck in old habits and missed the wave of change that carried more innovative companies forward.”

These are the severe consequences of a lack of creativity. To be able to move forward and develop positive ideas. These are what companies need to nurture to thrive and survive. Fresh ideas are what companies aspire to achieve.

2. Robinson, Out of Our Minds, 12
2.1.3 Steven Johnson / Where good ideas come from: The natural history of innovation

Ideas are born in very different situations. In “Where Good Ideas Come From”, Steven Johnson explores the history of innovation to discover certain surprising patterns that explain the birth of good ideas, and what we can do to improve the creativity of our environment. Steven Johnson presents seven key characteristics or situations in which fosters creativity and innovation. These patterns on innovation seem to appear through nature and culture.

The following three patterns described below forms the platform needed for architectural implications, and is strengthened by the link each has with one another. The Liquid Networks provide the networked connections needed for Adjacent Possibilities to happen, in turn providing the environment for Serendipity to simultaneously take place.

Liquid Networks

“A good idea is a network. A specific constellation of neurons – thousands of them – fire in sync with each other for the first time in your brain, and an idea pops into your consciousness. A new idea is a network of cells exploring the adjacent possible of connections that they can make in your mind.”

The Liquid Networks describes the neurologica structure of the human brain. This structure consist of the different brain areas and the active neurons connecting them.

“The average neuron connects to a thousand other neurons scattered across the brain, which means that the adult human brain contains 100 trillion distinct neuronal connections, making it the largest and most complex network on earth.”

This network is also capable of adopting new configurations, therefore adopting the term “liquid”. Because a dense network is incapable of forming new patterns, incapable of change, and incapable of exploring the adjacent possibilities.

“When a new idea pops into your head, the sense of novelty that makes the experience so magical has a direct correlate in the cells of your brain: a brand-new assemblage of neurons has come together to make the thought possible. Those connections are built by our genes and by personal experience.”

Through architecture, we can mimic this significant system to make people’s minds more innovative in providing these types of environments and connections.

“Environments that share the same network signature: networks of ideas or people that mimic the neural networks of a mind exploring the boundaries of the adjacent possible.”

If this system works fine in creating breakthroughs in people’s minds, why not upscale it to a size of a building.

The Adjacent Possible

The scientist Stuart Kauffman has a suggestive name for the set of all those first-order combinations: “the adjacent possible.” The phrase captures both the limits and the creative potential of change and innovation.

Serendipity

Serenity is finding something valuable or delightful when you are not specifically searching for it or when you least expect it; a “happy accident” or “pleasant surprise. Innovation can’t be planned, but the best we can do is to encourage it to happen, giving it the environment it needs to flourish in. Sometimes ideas come to us when we least expect it.

For example, a great idea might come to one employee long after the brainstorming session has ended. To help serendipity occur is to build networks where these ideas have a chance to persist and re-connect. Providing an environment where brainstorming is constantly running in the back is the ideal way to go get serendipitous. The possibility of having a database of hunches, where ideas can slowly connect with each other without having the time-pressure of a meeting.

“Good ideas may not want to be free, but they do want to connect, fuse, and recombine. They want to re-invent themselves by crossing conceptual borders. They want to compete in the same way as they want to compete.”

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2. Johnson, Where good ideas come from, 46
3. Johnson, Where good ideas come from, 46
4. Johnson, Where good ideas come from, 46
5. Johnson, Where good ideas come from, 22
Johnson summarises the overall concept of an ‘idea’ that it is through possible, opportunistic connections which are available for the idea to develop and to be completed. Johnson acknowledges the layers in which the three patterns overlap.

Architecturally speaking, Liquid Networks is the system provided for information/people to travel in or the circulation of the building. The Adjacent Possible is the strategic layout of spaces, where a cross-fertilisation of disciplines are located. And Serendipity is the accidental interactions that occur when people randomly meet through the Liquid Network to get to their ‘adjacent possible’. This is where architecture can be implemented to help encourage innovative thinking.

“In’s not an ‘either/or, it’s an ‘and’. You can be serious and play.”

-Tim Brown, “Tales of creativity and play”

2.1.4 Tim Brown / The tales of creativity and play

In the video, “Tales of Creativity and Play”, Tim Brown talks about the links between creativity and play, and how they are integrated to produce efficiency within the business. He expresses the difference of how ideas are being presented between adults and children.

Adults we seem to shy away from out-of-the-box, creative ideas; the fear of the judgement of our peers and embarrassment especially in the work environment causes our conservative thinking. In children, creativity is like play to them therefore tend to fear much less, giving them this sense of security to take creative risks. This security is found through friendship and trust giving them the security to play and uninhibited exploration.

A trusted environment, where people can explore with less apprehension, encourages people to play. There are top creative firms such as Google and Pixar who have invested a great deal to develop a playful, friendly working environment

Tim Brown elaborates “play” into 3 kinds: exploratory play, construction play, and role-playing.

Exploratory Play
Adults tend to want to categorize new things and situations very quickly. Kids are more open to exploring possibilities. For example: kids can generally find more uses for a cardboard box than a new toy that came in the box. An adult’s desire to be original will often limit the number of possibilities they will explore before they settle on a solution to a problem.

Construction Play
Kids learn through constructive play—building a tower and repeatedly knocking it over. Building play is thinking with your hands, quickly getting something into the real world in order to evaluate its effectiveness at doing whatever. It’s quick prototyping.

Role Play
Kids do this all the time—they follow social scripts. They learn the rules for their social interactions. When adults act out solutions it helps them determine if it will work in the real world. If a designer lives through an experience it helps them develop empathy for the client.

Play is not anarchic—it has rules. It’s important to know how and when to play—exploration and execution. This follows the divergent and convergent thinking where being playful and creating numerous choices is being divergent, while being serious and making choices is convergent.

These three qualities of play put forward by Tim Brown will determine the environment where both adults and children can interact. It also shows how adults can incorporate this playfulness within the business environment.

Peter Zumthor analyses and describes what he has on his mind about creating atmospheres within his houses and architecture. He uses images of spaces and buildings to emphasize a particular feeling that affects him, and are every bit important as particular pieces of music or books that inspire him.

From the composition and presence of the materials to the handling of proportions and the effect of light, these poetics of architecture enables the reader to recapitulate what really matters in the process of house design. Zumthor breaks down architectural atmospheres into eight topics through his own personal view.

The Body of Architecture
“The material presence of things in a piece of architecture, its frame.” He explains that the experience of a space is what architecture is all about and that architecture “frames” this presented experience.

Material Compatibility
“Materials react with one another and have their radiance, so that the material composition gives rise to something unique. Material is endless.”

This section explores materiality and the way a material reacts to another. The feeling it gives when certain types of materials are used to give an experience of feeling and emotion.

The Sound of Space
“Listen? Interiors are like large instruments, collecting sound, amplifying it, transmitting it elsewhere.”

This pattern explains how spaces connected with one another can create a journey. It is the idea of controlling the flow of movement in spaces, like in The Concise Townscape by Gordon Cullen to draw a person’s attention through the use of visual effects.

Levels of Intimacy
The way a space is experienced through proximity and distance. It refers to the various aspects “size, dimension, scale, the building’s mass by contrast with my own the fact that it is bigger than me, far bigger than me. Or things in the building are smaller than me.”

Between Composure and Seduction
“These were spaces you would enter and begin to feel you could stay there - that you were not just passing through. I’d be standing there, and might just stay a while, but then something would be drawing me round the corner - it was the way the light falls.”

2. Zumthor, Atmospheres, 25
3. Zumthor, Atmospheres, 29
4. Zumthor, Atmospheres, 35
5. Zumthor, Atmospheres, 37
6. Zumthor, Atmospheres, 43
7. Zumthor, Atmospheres, 45-47
8. Zumthor, Atmospheres, 51

“The singular depth of this feeling of presence, well-being, harmony, beauty...under whose spell I experience what I otherwise would not experience in precisely this way.”
2.2 Case Studies

2.2.1 MIT’s Building 20

Project: Building 20
Client/Owner: Massachusetts Institute of Technology (MIT)
Architect: under the direction of the Military
Project Area: 23,225 sq m
Project Year: 1942

Building 20 was built as an extension of MIT’s Radiation Lab in 1942. It was built under military direction, where the radiation lab was developing radar technologies to identify enemy bombers. Hundreds of scientists were hired for this task and to accommodate for increase and immediate need, Building 20 was constructed.

An important characteristic arose from Building 20 being called the “magic incubator” for new ideas and innovation. This characteristic wasn’t initially designed into the structure but rather came by chance. It was the characteristic idea of spontaneous interactions and collaborations of different disciplines.

Building 20 was home to not just one discipline but multiple. This meant that there was a range of perspectives, experiences, and expertise available to tackle a problem. Through the arrangement of spaces and the use of long hallways, the space forced solitary scientists to mix and mingle.

“The lesson of Building 20 is that when the composition of the group is right—enough people with different perspectives running into one another in unpredictable ways—the group dynamic will take care of itself. In fact, they may even be the most essential part of the creative process.”

The circulation layout of Building 20 sparked interactions between people. Due to the long hallways and corridors it forced people to walk past others providing the chance to interact socially and encouraging collaboration. For example if your space was at the end of the corridor, you had no other choice but to walk past other’s spaces before yours.

2.2.2 Googleplex Building 43/ Clive Wilkinson Architects

Googleplex is the headquarters of Google Inc located in Mountain View, California. In 2004 Clive Wilkinson Architects won an invited design competition by Google to undertake a strategic re-evaluation of its workplace processes.

The idea was to “create a diversified campus environment, integrating highly focused software engineering workspace within a support system of learning, collaboration, recreation, and food facilities”.

The main objective was to connect people, create new relationships, and produce a new invigorating form of human community within the workplace. This major concept changed Googleplex for the better making it an efficient creative industry is the concept of education in the workplace. “While you work, you learn”. Merging the two provides a new look at working. Work does not become a recurring daily task but a learning experience, fostering teamwork, collaborations, and creativity.

“A typical campus environment offers the concept of self-containment, so within the immediate area, all of your basic work/life needs can be met and the possibility of casual encounters with fellow “students” for collaboration or recreation is possible anytime during the day or night. At the university level, these opportunities are to support the goals of personal education, with a focus on each individual’s interests, but when these interests become common to a community, the results can be very powerful.”

Various spaces was provided, a mix between work and play, open and private (Figure 4). It gave the users the right spaces needed to be able to think on their own or collaborate with others. It wasn’t your basic office layout but more like a university where everything you needed was found on site.

Project: Googleplex (Building 43)
Client/Owner: Google
Architect: Clive Wilkinson Architects
Project Area: 16,722 sq m
Project Year: 2005

Figure 4. A mixture of the types of collaboration spaces found within Googleplex.
2.2.3 Perry and Marty Granoff Center for the Creative Arts / Diller Scofidio + Renfro

This creative arts center designed by Diller Scofidio + Renfro at Brown University provides performance spaces, exhibitions, installations, and an outdoor amphitheatre. Its goal was to stimulate a collaborative environment with flexibility. It envisioned the advancement of innovative directions for research, teaching, and production across the range of art disciplines.

“In creating the design for the Granoff Center, we needed structural elements that would stimulate the creative process from virtually every aspect of the building. The Granoff Center is a merger of architecture gesture and academic pedagogy. Our strategy was to encourage and illustrate collaboration across every level.”

The main formal characteristic of this center was the use of the split-level structure creating six half-levels allowing and maintaining visual connection between the various program spaces. Split levels provide the opportunity for visual connections to happen between 3 spaces, rather than having a single level which limits visual connectivity to a single plane (Figure 5).

Visual connection is a key component and the first step into making collaboration between disciplines happen. For example, an artist might find inspiration through the movement of a dancer, or the dancer may be inspired through the artist’s movement.

It maximises the opportunity for inspiration. The ability to inspire can happen anywhere and through anything. And it is important to be able to at least provide a type of environment to prepare these sorts of “eureka” moments and this creative arts center shows that.

Project: Perry and Marty Granoff Center for the Creative Arts
Client/Owner: Brown University
Architect: Diller Scofidio + Renfro
Project Area: 3,606 sq m
Project Year: 2011

2.2.4 EPIC Sanctuary (Enterprise Precinct and Innovation Campus)

Innovation is a major driver of economic growth in Canterbury, helping create high value jobs, pay for local services and raise our region’s quality of life. Innovation-based firms will be a crucial part of the region’s recovery from the earthquakes.

EPIC (Enterprise Precinct and Innovation Campus) is designed to stimulate the growth of innovation focussed businesses in Christchurch. The project is to create a campus that attracts ideas, capital and high-tech, high-value staff from around New Zealand and overseas because it is a truly inspiring place to work. It will be the equal of any other facility in the world, while offering access to Canterbury’s unique lifestyle opportunities.

Close connections with the region's educational institutions to promote access to new ideas and create an avenue for brilliant minds will also help drive the growth of the Campus' innovative companies (Figure 6).

EPIC provides spaces for tenants to create an environment where various and different businesses can connect. Cross-fertilization of different businesses of different disciplines was the main driver for EPIC. Divided by intersecting main accesses through the building it acts as the main “street” to and from spaces. It gives the opportunity for spontaneous interactions and spillover is encouraged. Supporting this is the café and main meeting space which is strategically placed at the centre. So people would have to walk past other businesses chancing this interaction with one another.
“What kind of environment creates good ideas? The simplest way to answer it is this: innovative environments are better at helping their inhabitants explore the adjacent possible, because they expose a wide and diverse sample of spare parts – mechanical or conceptual – and they encourage novel ways of recombining those parts.”

-Steven Johnson, Where good ideas come from

Figure 7. A system of connected neurons of the human brain.
3.0 Methodological Approach

How can architecture nurture inspiration and ideas in creative thinking?

Creative thinking is the ability to be innovative, to be able to create new and useful ideas. To enhance this process in an individual is to provide an environment where this can happen easily. An idea is a thought processed as a conception that actually or potentially exists in the mind as a result of mental activity. Inspiration is to captivate an idea and develop it further. It is this process in which we can move forward in the world as we push for the “new”.

We get ideas and inspiration from anything, whether it’s from an object, a movement, the person you were talking to, or even the simplest mark on the ground. It is our mind which stores all this information in which we see the world and makes a connection to solve a problem, idea, or thought we had in an attempt to create the right answer.

To understand the research question, the literature review and case studies present four major patterns: creativity, connection, social structures, and spatial qualities. This provides the basis towards architectural design which would nurture inspiration and ideas.

A look at the source of our creativity, the brain, there is already a fully functioning network system. A system where information is transmitted, communicated, and delivered. The human neural system.

We can derive this system into architectural implications. By examining how information is controlled and delivered, and the types of connections associated with it, can be applied to how people (information) are arranged within a building. This would be through the exploration of physical and visual connections, social structures, and spatial qualities.

3.1 The Brain

The brain (Figure 7) directs almost everything we do. It controls our voluntary movements, and regulates involuntary movements such as breathing and our heartbeat. Human consciousness also lies in the brain where it stores our memories, gives us our personalities, and allowing us to feel emotions. Therefore lending us the ability to imagine, to create, and to discover new ideas.

Figure 7. The anatomy and functional areas of the human brain.
3.2 Neurons

Neurons have an anatomy consisting of a cell body, dendrites, axons, and axon terminals (Figure 8). The cell body contains the nucleus which directs the cell’s activities. Extensions from the cell body are called dendrites, which gather information to the cell body. The axon is the opposite extension carrying information away from the cell (Figure 3).

There are three types of general neurons within the nervous system – sensory neurons, interneurons, motor neurons.¹

Sensory neurons are neurons which detect and react to external stimuli, such as light, sound, taste, and touch, to transmit a message to the central nervous system (internal stimuli). The interneurons are then responsible for integrating this information from the sensory neurons to generate a response. The response information is then sent along the motor neurons which then stimulate muscles to contract or relax making the appropriate response.

The analysis into how the neuron works and shares information is a working system. Breaking down its anatomy and functionality it can provide ideas on how architecture can imply this to nurture creativity and ideas.

People can be described as the information within the building. The link between the formal applications of the neural system is also supported through Johnson’s Adjacent Possible, where connectivity is the driver to be able to have limitless interactions with ideas.

³.2.1 Electrical Transmission

Electrical transmission involves an electrical impulse generated from a stimulus. It causes an electrical charge in the neuron’s membrane (electrical impulse) which is one unit of neural information. When this electrical impulse flows along the length of the neuron it is called a nerve impulse (Figure 9).

Figure 8. The anatomy of a neuron.

Figure 9. A nerve impulse is information (in the form of an electrical impulse) flowing through the dendrites, cell body, and axon of a neuron.

3.2.2 Chemical Transmission

Chemical transmission occurs when an impulse reaches the end of one neuron and needs to move to another. The junction between the axon terminal and dendrite is called a synapse (Figure 10). They do not physically touch each other but is separated by a small space, a synaptic gap.

The neuron carrying the impulse (the sender) is called the presynaptic neuron and the receiving neuron is called the postsynaptic neuron. The flow of information travels through the axon of the presynaptic neuron, across the synapse, and to the dendrites of the postsynaptic neuron.

How the impulse travels from the presynaptic neuron across the synapse is through the diffusion of neurotransmitters. These molecules are released into the synapse and bind with the receptors of the postsynaptic neuron (Figure 11). When neurotransmitters bind to the receptors, the charge across the postsynaptic membrane changes, and if the change is great enough, it triggers a nerve impulse. The new nerve impulse then travels along the postsynaptic cell.

Information travelling between neurons can be seen as people moving throughout the building and that providing the suitable connections needed for information/people to interact.

Neural Evolution

The development of the neural system within the brain occurs by growing neurons and eliminating neurons that are not being used. This pruning of neurons is a natural process called programmed cell death or apoptosis. “One neuron’s loss is likely to be another neuron’s gain, however. Neighbouring neurons compete to fill the space left by a cell that has died due to apoptosis, and in some cases cell death actually stimulates the growth of new cells”.1

For children 7 years and below, the growth rate at which new cells are being added is faster than the ones being eliminated during the pruning process. By the age of 7 the amount neurons in the brain peaks and then gradually decreases for the remainder of a person’s life. Existing and surviving neurons continue to grow more complex.

This process continues during the course of life. Due to mental activity and practice skills are maintained sharp even in old people. With the support of neurotrophins neurons strengthen and continue to grow while skills not practiced are lost because of the lack of mental stimulation associated with those neurons.

We can link this natural phenomenon into design. The brain transfers signals and information to be communicated and connected. The neuron is a form of connection in which develops and strengthens through constant use.

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Birth

At birth mental activity and processes begin to stimulate the neural system. Simple neural structures are created. Highlighted in black shows how the neuron develops through constant use.

7 Years

During this stage, the brain is making more neurons than it actually needs and peaks. However, some individual neurons strengthen, grow and develop. (Through constant mental activity.)

Adult

Through the process of apoptosis, rarely used neurons diminish while neurons with constant use continue to further grow into complex structures.

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Figure 12. The early stages of neural development at birth.

Figure 13. Neural connections grow and strengthen. The number of neurons peak, more than enough needed.

Figure 14. Surviving neurons grow into complex structures.
The brain of a mouse is similar to humans in terms of their anatomy, physiology and genetics. A study of a mouse brain performed by the Allen Institute for Brain Science explores the neurological system in great detail. It allows for molecular approaches to understand the functional circuitry of the nervous system. This information provides “new insights into the relationship between genes, brain and behaviour” (Figure 15).

A dye is injected into a part of the mouse brain revealing networks and networks of neurons. It shows the collection of networks which run that part of the brain and the connections between different brain areas (Figure 16).

The images show the networks of neurons associated within a part of the mouse brain. Visible are the dendrites and axons and the way they are connected with one another (Figure 17). The brighter the dye describes the concentration of neurons.

Figure 16. Image of the neural network at 280 microns.

Figure 17. Anatomy of the neuron is visible, such as dendrites and axons.
Research study done by Mark Rosenzweig in 1960 at the University of California revealed that physical, social, and mental activity may protect memory and alertness, and stimulate neural growth.

Comparing mice in standard cages with those with an enriched environment by placing toys, ladders, and running wheels. For example, mice raised in an “enriched” environment, which contains other mice and a variety of stimulating toys, displayed dendrite growth and performed better on learning tasks than inactive, isolated mice did (Figure 18).

These results were observed in mice of all ages. Mice raised with toys but no social interaction, as well as mice raised with other mice but no toys, performed less well on learning tasks and showed less neural growth than those raised with both toys and social interaction did. Therefore, mental, social, and physical stimulation are all positive regulators of neural growth and seem to have an additive effect on learning and memory. In addition, mice subjected to learning tasks tend to retain more of the dendrite growth they experience during enrichment than do mice that are left alone after enrichment.

From this study, architecture needs to stimulate the people within an enriched environment to nurture inspiration and ideas in creative thinking. Not only does it encourage stimulation mentally, socially, and physically, it provides a positive regulator of neural growth. Neurons are stimulated, forming additional and strengthened synaptic connections.

Figure 18. Mice raised in an impoverished environment (a) show less dendrite growth (c) than do mice raised in an enriched environment (b, d).
3.3 Creativity

The brain, consisting of complex networks, is where creativity lies. From gathering information from the world to processing it to create new ideas, this is source in creative thinking.

The brain directs almost everything we do. It controls our voluntary movements, and regulates involuntary movements such as breathing and our heartbeat. Human consciousness also lies in the brain where it stores our memories, give us our personalities, and allowing us to feel emotions. Therefore lending us the ability to imagine, to create, and to discover ideas is what pushes our world to strive for the “new”. This is creativity. However, the creative capacities between adults and children are different.

“Picasso once said that all children are born artists: the problem is to remain an artist as we grow up. Creativity is not solely to do with the arts or about being an artist, but I believe profoundly that we don’t grow into creativity; we grow out of it. Often we get educated out of it.”

-Sir Ken Robinson, Out of Our Minds
3.3.1 Creativity in children

The creative capacities between adults and children is different. Children from birth start to absorb information like a sponge. It is during this time that they have this “pure” creativity where exploration and play is a way for them to understand problems and to engage with the world.

Children are more creative because their worldview is incomplete and is driven by discovery. They prosper because they embrace their ignorance instead of ignoring it. And they are willing to explore, investigate and put their ideas to the test because they are willing to fail. Unlike adults, they don’t care how other people perceive or evaluate their ideas, and they are unconcerned with the impossible or what doesn’t work.

What the child does is see solutions and opportunities that the rational mind cannot see. From the age of 3-5 years old is the period of time where they flourish exponentially. Connections inside their brain begin to densify as information and understanding are formed (Figure 20). This is Sir Ken Robinson’s argument that schools do not embrace this creativity but rather get “educated” out of it.

“The child knows of no law other than its spontaneous sensation of life and feels no need to express anything else.”

-Constant, Manifesto

3.3.2 Creativity in adults

Creativity in adults still exist but are locked away behind years of rational thinking through schooling and work. It is through Sir Ken Robinson’s argument that we don’t grow into creativity; we grow out of it. Another reason is that as adults we are fearful of our outrageous ideas, however unique. As Tim Brown points out that in adults we seem to shy away from these creative ideas and it is through the fear of judgement of our peers that we hold back, producing this conservative thinking.

This centre would provide an environment for adults to be engaged, charged and refreshed with creativity (consciously and sub-consciously) through the children whose playful way of thinking and understanding would spark breakthroughs and encourage a different view on a problem. It is through this balance of play and seriousness in which would make this centre flourish and nurture creativity.

It is important for this integration of creativity to occur to stimulate and benefit the companies involved. To create new, innovative ideas and technologies which surpass other companies due to the “pure creativity” the children have. Children provide a comfortable environment towards the adults to be free and playful. Instead of being embarrassed with an outrageous idea in the office, adults have the openness and freedom to be let free as illustrated by the children playing.

Supported by the study on the mice, children can be seen as the stimuli towards the adults. They can provide an enriched environment making it acceptable for adults to express their creativity without limitations.

“Being creative does usually involve playing with ideas and having fun; enjoyment and imagination. But creativity is also about working in a highly focused way on ideas and projects, crafting them into their best forms and making critical judgements along the way about which work best and why.”

-Sir Ken Robinson, Out of Our Minds

“...people work best only when they are healthy in the mind and body. A person who is forced to sit all day long behind a desk, without ever stretching his legs, will become restless and unable to work, and inefficient in this way. Some walking is very good for you. It is not only good for the body, but also gives people an opportunity for a change of scene, as way of thinking about something else, a chance to reflect on some detail of the morning’s work or one of the everyday human problems in the office.”

-Christopher Alexander, A Pattern Language
3.4 Connection

The brain. Where ideas are made and where inspiration is developed. Looking into the source of how ideas occur within the brain on a scientific level was the initially step into understanding. Linking with the ideas put forward through my literature review, connection and network was a main principle/subject/characteristic in relation to nurturing inspiration and ideas.

The neuron in the brain is the best example in terms of processing and transmitting information through signals (Figure 21). These signals can be communicated electrically and chemically. By taking this example with the transfer of information between neurons through synapses, we can provide an architecture which simulates this type of environment between people. The interaction and transfer of information between disciplines is the important key to nurturing creativity and new ideas.

“A new idea is a network of cells exploring the adjacent possible of connections that they can make in your mind.”

Johnson says that we can mimic what the brain does when creating ideas, that we could use this concept and adapt it to creating innovative environments. This can be put into use through the interaction associated between a child and adult, where the layout and networking of these spaces reflect a working brain. Connection of the spaces through the treatment of barriers, thresholds and apertures control the type of interaction on has with the other whether it is visual or physical.

1. Johnson, Steven. Where good ideas come from. (New York: Riverhead Books, 2010), 45

Figure 21. An image of a system of neurons or brain cells showing the network of connections made.
3.4.1 Physical Connection

Building 20 was a great example of this connection. The way the circulation was planned out meant that there was interaction happening between the different disciplines residing within the building.

The horizontal layout of Building 20 encouraged collaborations. People met in the lobby or in one of the long hallways, or on the staircase where they could easily share information and ideas. The idea that connection, between offices is important as it creates chances for individuals, (in this case from different disciplines), to interact spontaneously.

We can compare this to the wiring of the human brain, where the connections are made in proximity of two parts of the brain (Figure 22).

The study done in Christopher Alexander’s, A Pattern Language investigates the proximity of offices and their connections, as covered in the literature review. “If two parts of an office are too far apart, people will not move between them as often as they need to; and if they are more than one floor apart, there will be almost no communication between the two.” Therefore, the connection between adults and children need to be in proximity of one another. It cannot be too far away that the trip becomes a nuisance.

Figure 22. The wiring of the human brain. It shows the proximity of connections between different areas of the brain.
3.4.2 Visual Connection

Connection is not just on a horizontal plane but through the use of split-levels can be vertical as well. Split levels achieve greater visual connection between floors. The Perry and Marty Granoff Center for the Creative Arts by Diller Scofidio + Renfro does this on the simple level. Rather than having visual connection between two levels, split levels allow for three levels.

Visual connection is important. Ideas are generated from the world and we experience it through our senses. Compared to the other senses, (hearing, taste, smell, touch), our sight is the most used. This also means that it gathers the most information.

Visual connection between adults and children enhances the environment to be open and playful. It is beneficial for the adults to see children play and interact as a form of relaxation, (the children provide a view away from the office environment), and as idea generators, (the idea that children are energetic and play with exploration).

Children also benefit from this visual connection as it gives them opportunities to be in an environment with adults other than their parents and teachers. It reflects the pattern by Christopher Alexander of Master and Apprentice. “The fundamental learning situation is one in which a person learns by helping someone who really knows what he is doing.”

Steven Johnson points out that “innovative environments are better at helping their inhabitants explore the adjacent possible, because they expose a wide and diverse sample of spare parts – mechanical or conceptual – and they encourage novel ways of recombining those parts.”

Connection between visual and physical awareness has an important role to play in the process of developing an idea. An engagement, physically or visually between an adult and child has more possibilities to enhance creativity because they both have different creative capacities and their perspective of the world is completely different.


2. Johnson, Where good ideas come from, 41
Figure 24. A sketch diagram showing where the groups of connections occur and lead to and from.

Figure 25. The different parts of the brain and the proximity between them.
3.5 Social Structure

Social structure is the social organisation based on patterns of social interaction between different relationships, (such as between adults and children, teachers and students, employers and employees), and is determined through common shared values.

Through this process the social structure between adults and children would be the driver of the layout of the spaces. This also incorporates where engagement and interaction between adults and children can occur.

Adults would like to have their own space sometimes away from the children, this goes the same for children. So three zones need to be addressed: adults (private), children's (private), adults and children's (shared). By arranging adults and children in a certain way, connections can be determined.

Jacob L. Moreno¹, a psychosociologist, provided a graphing system which allowed to determine social patterns within a social network.

The goal is to be able to uncover either or both of two kinds of patterns. Social groups which is a collection of people who are closely linked to one another or social positions which are the commonality of people who are linked in the total social system in similar ways.

¹ Moreno, Jacob L. Who shall survive? Foundations of sociometry, group psychotherapy and sociodrama. (New York: Beacon House, 1953), 95-96

Figure 26. A social network analysis of friendship choices among fourth graders (from Moreno, 1934, p. 38).
3.6 Spatial Quality

The spatial quality would determine the physical and atmospheric space. This includes form, materiality, sound, air and lighting of the space providing an experience towards the users physically, emotionally, and spiritually. We are immersed in it and participate in it with all our senses and in different ways.

Peter Zumthor defines atmosphere in architecture as quality architecture. “Quality architecture to me is when a building manages to move me.” In moving he means our capability of immediate appreciation, a spontaneous response, or rejecting things in a flash.

The goal is to create an atmosphere which would nurture ideas and inspiration. For example one space can be comfortable and suitable to be playful in, but the other can be serious and confined. This causes an effect to affect the user through this experience of space.

“My mood, my feelings, the sense of expectation that filled me while I was sitting there. Which brings that famous Platonic sentence to mind: “Beauty is in the eye of the beholder.” Meaning: it is all in me.”

-Peter Zumthor, Atmospheres
4.1 Site

According to the 2012 Auckland Plan:

“Our children and young people are the top priority. As their guardians, it is our responsibility to ensure that every child can reach his/her full potential. All Auckland children are entitled to the basic needs of love, shelter, food and safety, as well as education and skill development, to instil confidence and pride. We need strong, healthy communities to achieve this. This Plan emphasises that families, whānau and the wider community share these responsibilities”.

Auckland is a great developing city with the push to make the city children friendly. A suitable site is to be located in Auckland City where it is surrounded by business and education. A site located here would be appropriate with the research intention because it is the largest business district in New Zealand. This centre would only influence surrounding businesses into enhancing creativity.

4.1.1 Criteria

A site for this type of centre needs to be well established within Auckland CBD.

Size: The site needs to be large enough to incorporate multiple businesses and provide enough open space for the children.

Physically: The site needs to present opportunities towards the surrounding area for a specific form. It needs to be situated where there is moderate foot traffic. This ensures that the building is overlooked most of the time and engagement of the public is important. The footprint, surrounding building heights, and overall volume would be determinant of this site. Safety of the children is important so connection to side roads, for easy access of traffic to and from the site, and connection on ground level where visibility is a must for the children’s safety.

Socially: The site shall provide opportunities for connection of the surrounding site, including schools and businesses. The aim is to socially incorporate the building into its immediate surroundings, where engagement of the public through additional functions becomes beneficial to the site. The integration of another function that adds value to the surrounding context as it draws people to the site such as through cafes and retail. To provide a great working environment that nurtures creative thinking is important in a business and this would be achieved through visual and physical connections the site has with the surrounding context.
4.1.3 Site Analysis

Size: The site is 46m x 46m with a site area approximately 2,116m² and considering the surrounding context may reach up to 6-7 storeys. This would give an estimated maximum floor area of 15,162 m², if the floors were an extrusion of the site footprint. This ensures the site is large enough to deal with the investigation of the stated research question.

Physically: The surrounding buildings consist of multiple typologies such as education, commercial, and residential. They vary in building heights which will affect the design in terms of solar gain. In activating the site, the surrounding buildings would benefit due to the foot traffic generated. There is an existing public access way which connects Queen Street to Airedale Street. This encourages the public to take the shortcut; it can also provide a suitable route for people to access the site. These are the constraints in which the design of the building is to work with.

Socially: The context is universal where many people walk past, whether it is residents, students, or workers. This gives the range in which the building needs to integrate itself with the benefit of the public. The idea that diversity of people can help spark new ideas from different perspectives. The location of the site could also benefit the adjacent buildings in terms of new ideas. Ideas can be created within this building and be shared to Telecom or AUT. For example they can feed off each other to benefit one another.

Figure 28. This diagram shows what is surrounding the site. It expresses proximities (red) of education facilities (blue), reserves and parks (green). The chosen site is at the point where business and education sectors intersect, which will both benefit from this new integration of both typologies.
Figure 29. Diagram showing the immediate surrounding buildings.
Figure 30. A 360 degree panoramic view of the surrounding buildings.
“You cannot predict the outcome of human development. All you can do is like a farmer create the conditions under which it will begin to flourish.”

-Sir Ken Robinson, Out of Our Minds: Learning to be Creative
5.0 Design Process

The main key words are Connection, Creativity, Social Structure, and Spatial Qualities which have been the key concepts found in the literature reviews and precedent studies.

Looking into the main source of creativity, the brain, it presents a working system where information is transferred successfully and efficiently. The concept that different parts of the brain have a certain function and that neurons have a network system which adapts allows this to occur. In mimicking this idea, it would provide a basis for the architectural design implications and building layout.

This is an attempt to define the different parts and areas of the brain in association with their function. This maybe a solution into how spaces can be defined and arranged within a building. The brain provides an insight into what areas work together for the body to function. For example, 1, 2, and 13 would have to work together for the body to sense its environment.

Figure 32 shows an attempt in understanding the levels of the different areas of the brain.

Figure 31. A sketch over the anatomy of the brain, defining the different areas.

Figure 32. A model of layers representing the different areas of the brain. Lighter areas show that the level is high, and darker areas show the level is low.
5.1 Initial Concept

Using the maximum site volume allows for flexibility within the building, with regard to the adjacent buildings, keeping the volume “cubed” as well so it could be overlooked by adjacent buildings.

The initial design looked into the brain and how different areas control different parts of the body. This can be seen as the different disciplines businesses have. A set of planes intersect the volume to divide the cube into different areas (volumes). From the site analysis of the surrounding area, there are businesses (Telecom) and educational facilities (AUT) and the “slits” act as viewports to adjacent buildings creating visual connection. (Figure 33)

The slits caused by the intersections provide a viewport towards the surrounding area which can trigger ideas and inspiration since we get this from the world itself. Though limiting the viewport to a particular slit may limit inspiration and ideas because it seems forced. This is not a good idea and you would want the most connection to the outside world to trigger random ideas.

This was an attempt in how areas can be arranged within the building. From a formal perspective the slits converge to a point in which mimics a neuron. The concept that information travels from neuron to neuron through the axon in a network system.

The intersections created the leftover volumes, which then became the different areas of the building more like how the brain is segregated in different parts. An exploded axonometric shows this and can be linked to as having two hemispheres. The initial idea was that the two typologies of children and adults, just like the image myth of the brain, had separate hemispheres (Figure 34).

It developed to a more integrated arrangement of volumes for the children and adults (Figure 35). Rather than have all children in the lower hemisphere, and all the adults in the upper hemisphere, why not intertwine the two. It supported this idea of cross-pollination of disciplines as shown in MIT’s Building 20.

Johnson argues that it is in the collisions that happen when different fields of expertise converge in shared physical space and that’s where the true sparks fly. It is because of the different perspectives of people which is rich in new ideas rather than have similar people thinking in similar ways.

Figure 33. Initial concept model showing the mass being intersected, allowing the slits to become view ports.

1. Johnson, Where good ideas come from, 163
Figure 34. Exploded axonometric of the conceptual design, showing the different parts of the building in two hemispheres.

Figure 35. Exploded axonometric showing the integration of adults (grey) and children (colours).
Site

The building height is also determined by the pattern 82: Office Connections in Christopher Alexander’s, A Pattern Language. It showcases the importance of building height and the effects on communication and connection regarding floors. That the maximum amount of floors in which people still communicate effectively is 2.2. The idea that vertical proximity and distance through floors between people has a great effect on communication and connection. So limiting the amount of floors affects the overall height of the building.

Lineaments

These linear forms derive from the surrounding context as an expression of connections between educational facilities and businesses which are located around the city in relation to the site (Figure 23). As the centre for creativity, it provided the views needed to inspire ideas, using visual cues in the surrounding context.
Volumes

Site – Axes = Volumes. The volumes are generated by subtracting the Axes from the Site as an attempt in trying to tie the model of the brain with architecture. Rather than having horizontal and vertical planes as spaces, it provides a cross between the two. The volumes are where education and business are located in an attempt to integrate and interlock the two. Slits provide visual connections externally as well as light penetration through the building.

Ramps

An initial idea was to ramp the building providing a continuous flow of spaces just like how an idea is developed within the brain through neurons. Information travels from neuron to neuron, having a liquid connection. This flow can be achieved architecturally with this simple concept as it connects the various volumes and at different points.

Volumes + Ramps

The combination of ramps and volumes provided a connection throughout the building as a whole, where all the volumes was linked to a “main” circulation. It forces people to move and pass through other spaces.
Split Level Floors

The use of split level floors provides visual connection between floors and an increase in physical connection due to the proximity of floors.

It also allows children to be at “eye level” of adults and allow accidental interactions to occur. It also minimises the distance of proximity within office connections as stated in A Pattern Language.

“If two parts of an office are too far apart, people will not move between them as often as they need to; and if they are more than one floor apart, there will be almost no communication between the two.”

5.2 Design Development

Visual connection is an important idea within the building, and limiting this connectivity to “slits” seemed like a forced view of the world. By inverting the form, the slits are solid and the volumes are not, it provides an open visual connection with the surrounding area (Figure 24). It maximises the opportunities for chance visual connections, sparking ideas and an environment which feels open and unrestrictive.

In doing so the new form became the structure of the building and minor adjustments had to be made to accommodate this, leading to the thickening and addition of the form (Figure 25).

Figure 37. An inverted model of the initial concept.

Figure 38. A model showing the additioning and thickening of the structural form.

1. Alexander, A Pattern Language, 408
Standard floor to floor levels limit not only the visual connection between floors but the physical as well (Figure 26). Due to this a sense of separation is created and the only connection between floors is through the circulation of the building.

Split levels achieve and maximise the connection visually by creating a floor in between floors (Figure 27). The sense of separation is eliminated due to the various volumes created by the split levels.

To provide a greater integration between adults and children, a split level may be used to achieve an “eye level” connection (Figure 28). It engages children with the adults by making them equal rather than seeing adults as dominant figures.

“If two parts of an office are too far apart, people will not move between them as often as they need to; and if they are more than one floor apart, there will be almost no communication between the two.”

-Christopher Alexander, *A Pattern Language*
Figure 42. Diagram of the volumes of each split level.
The “Play” Vortex

The space is an opportunity for adults and children to interact. It was a physical space that allowed play of all sorts to happen, such as exploratory play, construction play, and role play. (Figure 43).

Located centrally, it was easily accessible by both children and adults. The “play” vortex provided an environment safe enough for children play and safe for adult to express their creativity by playing.

Materiality of this space is similar to one used in Numen’s art installation, NET. This space is something that Numen calls “Transparent Landscapes” and creates a layering of levels that are transparent (Figure 44).

“The next set of nets are connected to the peripheral walls and then the nets are strung together creating hills and valleys, connections to above and below, all while maintaining the sense of levitation and instability.”

It was a trusted environment, where people can explore with less apprehension, encourages people to play.

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1. See Tim Brown / The tales of creativity and play.
Figure 46. Diagram of structural form + split level floors + the “play” vortex = development design
Three main ideas which developed from the initial design are the structural form, split level floors, and the collaboration space, the “play” vortex.

Each idea emphasises on connection visually and physically it influences inspiration and ideas through collaboration and spontaneous interactions.

What this building attempts to do is provide the suitable environment and maximum opportunities to nurture ideas and inspiration, by mimicking the networking found in our brain and incorporating the idea of connection through adjacent possibilities.

However, split levels only provide a basis for this connection and a development and refinement of this idea is needed. This goes towards the structural form as well where it can be further developed to be integrated within the volumes and spaces.

Figure 47. Development design model showcasing the structural form.
This is a detail model of the structure. It showcases the form as primary, secondary, and tertiary structure. Consisting of various materials, the primary structure uses large steel "I" beams, the secondary using concrete frames, and tertiary as steel members. It consists on the level of layers as follows: the primary steel structure, façade and tertiary steel members, and finally the secondary concrete structure.

“The almost imperceptible transition between the inside and the outside, an incredible sense of place, an unbelievable feeling of concentration when we suddenly become aware of being enclosed, of something enveloping us, keeping us together, holding us.”

This structure is different from standard column and beam systems where everything is standardised. People working within do not feel an excitement while being enclosed in such a repetitive enclosure. What this structure does is create a different perspective of the view of the surrounding context in the hope of making people think outside the box.

1. Zumthor, Atmospheres, 45-47
Sketches of connections within the building. It show the entrance points of the building and a projection of possible lineaments are used to resemble a person’s movement as they enter the building (Figure 49). Lines represent the possible connections or interactions between spaces, as it creates a network of lines similar to a neural network in the brain. Concentration of lines mean that there is a significant amount of activity. Intersections express a collaboration or and interaction between the lineaments.

The overlapping of these sketches provide an analysis of how spaces can be arranged according to the amount of intersections and concentration of lines. Floor plans are derived from this sketch, creating irregular spatial qualities (Figure 50).

Figure 49. Sketches expressing physical movement from the entrances of the building.

Figure 50. An overlay of sketches.
Floor plans consist of a mixture of open and closed areas. The first three floors invite the public to be engaged, consisting of gallery spaces, café, and public meeting room. Because the best idea is a network, and if we limit to only the people within the building we are not exploring the adjacent possibilities with the people outside and around the building.

As the levels progress up a gradual change in arrangement occurs. Level 1-3 is open and engaging with the foot traffic at ground level (Public + Adults + Children). Level 4-5 provide a mixture of open spaces, rooms, and studios (Adults + Children). Level 6-7 have office pods available for companies of various disciplines (Adults).
The following models was an experimental process to create spatial qualities with structure. The use of structural rods and ties allowed to define space while creating a threshold.

The play with light and shadow created atmospheres uncommon within your typical office building. It played with the volume of the space where some areas it might be at double height to where you would have to crouch to get through. It created a sense of play and expresses the overall theme of the neural network system.

Figure 51. Experimental models of structure intersecting space and defining new spatial qualities.
5.3 Latest Design Development

Developing the three main ideas found in the previous design development, this was an opportunity to refine those ideas and integrate them as a whole.

Form

The structural form has been defined into primary, secondary, and tertiary structure. It provides enough structure for certain floors to be supported and hung from. Not only does the form look like a network of neurons it functions well structurally due to the overlaps of members.

Journey

The circulation within this building can be described as a journey. Staircases and ramps lead to and from certain floors as it forces people to casually interact within different parts of the building. It is this idea that Johnson stated for the “adjacent possible” to occur by providing the right environment and maximising connection. Physical connection is maximised through the use of the ramps and stairs at various points throughout the building.

Spaces

The volumes and spaces within this building gradually change throughout levels. The first two levels are dedicated to be open, engaging the public. It can be used for public displays such as art and design competitions. Rather than make the public walk around the building, why not let them walk through and be engaged with the building itself.

Creative Centre

With the main ideas complimenting and integrating with one another it provides a creative centre which houses a creative environment.
Figure 53. External renders showing the creative centre within its context.
Figure 5. Internal renders showcasing the spaces of adults and children, and the connections achieved.
“Environments that share the same network signature: networks of ideas or people that mimic the neural networks of a mind exploring the boundaries of the adjacent possible.”

-Steven Johnson, *Where good ideas come from*
The primary outcome of this study has been in a form of this explanatory document and the architectural design response to the research question.

How can architecture nurture ideas and inspiration in creative thinking?

Through the research presented, ideas have surfaced which suggest architectural implications deriving from the human brain. As the driver for this project, an analysis of the function of the human brain with the support of various theoretical perspectives has produced the design included within this document.

The initial argument was that there is a difference in creative capacities between children and adults. However due to the progress of this research project, the issue was larger than that. This building needed not only to integrate children and adults and provide a safe environment for adults to express their inner child of creativity but provide the maximum amount of possibilities for ideas and inspiration to happen.

The study and analysis of the human brain provided an insight of how it can be implied within architecture. From the anatomy of the brain to its microscopic level, it has put forward important ideas overarching the whole project; connectivity, social structure, and spatial qualities. A look into theoretical approaches had this underlying idea. Whether it was to do with the proximity of people, the difference of creative capacities between children and adults, play within the workplace, or the atmosphere of the space, connectivity, social structure, and spatial qualities is what ties them all together. Connection is the main idea overarching this project’s ideas. It is defined as a relationship in which a person or thing is linked or associated with something else. Physical or visual it is the link between two entities converging.

The brain has a fully functioning, efficient network system of neurons using connectivity to communicate and transfer information. So why not take this working structure and imply it into architecture? What this building attempts to do is provide the suitable environment and maximum opportunities to nurture ideas and inspiration, by mimicking the networking found in our brain and incorporating the idea of connection through adjacent possibilities.

Future directions for this research project would be to further define the types of spaces which involves this nurturing of ideas and inspiration. A more integrated combination of architectural implications.
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