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Acknowledgements.

I would like to thank all the tutors and staff of the school for their help and support during the last five years; their knowledge, help and patience, given in equal measure have left me feeling greatly priviledged; to have been able to attend such a vibrant and exciting place, and more importantly, feel that I have from the outset been a part of the school and contributing to its life.

To my fellow students at the school I also owe a great debt of gratitude for their acceptance and inclusion of my family and myself in the school and for the friendship, help and encouragement I have received from a great many of them across all years at Saul.

To my classmates, the five years that I have known them have been some of the most exciting and fulfilling of my life, the welcome and acceptance I have experienced at Saul has come from belonging to such a wonderful and open group of people; again I feel extremely priviliged to have been a part of their lives at this most important time of their lives.

Finally to my partner Nicola, who has bore the enormous burden of support of me through 5 years of college, the financial stress and dealing with deadlines and reviews and all that they entail while at the same time raising our two wonderful children Madeleine and Joseph. The real privilige in my life it is that someone as wonderful as this could believe so much in someone like me.
It could be argued that architecture in the era of mass production and the great societal changes of the last century or so has left us surrounded by many repetitive and rectilinear buildings, especially in mass housing projects. The thesis aimed to establish the reason for this and through the texts of several writers on architecture show how this type of space is perhaps at odds with our natural and pre-cognisant understanding of space. The thesis further, hoped to define some of the qualities that these primordial spaces contain at the micro and macro level and how a renewed expression of these spaces may have a greater relevance in our continuously changing world. Concluding, in part that space should be fluid, changeable and adaptable, the thesis hoped to be expressed in the design project, where a large disused clothing factory would tie together programmes for housing, education, agriculture and recreation; using fluid, changeable and adaptable spaces and components to create cohesion at tactile micro and homogeneous macro levels.

Introduction
the primitiveness of the refuge

understanding human space within the built environment
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Loud and unexpected, the tin roof bangs beneath the hammers of the afternoon heat; below, within the darkened workshop, masonry models of mud brick, all at various stages of completion stand around on the concrete floor. I walk between them with a dusty tape and spirit level recording the work of the students, measuring them against the expectations of the London City and Guilds.

I am increasingly conscious of the potential absurdity of my simple lessons in masonry to students who, their whole lives, have watched it being done in other ways by fathers and uncles; danced around their mothers and sisters as they brought precious water from the river, then dug the earth and mixed the mud.

The Kenya Polytechnic syllabus is as demanding as my own apprenticeship; the models I set the students the same as those set for me a decade earlier, but where they were once greeted with a smiling dismay they are now met with stubborn reluctance. The right angles, straight lines and measurements must seem almost abstract; and in the dim light, the fading plans and elevations of the models, drawn out almost invisibly with poor chalk on the increasingly grey blackboard, an unnecessary tyranny to be endured just long enough to receive the all important certificate.

Near the village, we are to build a new room for a small house. The owner slowly inches a fifty kilogram bag of cement out onto the concrete veranda. The students hesitate to help him, as the act will commit them to beginning their day of work beyond the shade. In Swahili such outdoor work is called *Jua Kali*, to be known by the sun.

The fired mud bricks, dry and fragile have already been carried and placed one by one at the side of the building; loosely stacked they create a burnt red ruin around the shallow concrete foundation. The clear and shining water arriving in brightly coloured plastic buckets is handed down from the heads of women and girls, while nearby a trough is dug in a great pile of sand to receive it. The cement bag, a week’s wage, is carefully opened; the mixing begins and after much effort the gray lifeless mortar is carried to the edge of the trench and the students start laying the hot and heavy bricks.

As the work goes on, the owner seems to be having a recurring debate with his wife about the building and our eye contact becomes less frequent. After a short while the size and shape of the room is called into question by a spectator, the women and girls join in, supporting the view point of the wife that the room should be smaller here, and wider there, until, eventually, the owner retreats beside me to the shade of the veranda, and the rectangular plan, soft pencil on lined paper is abandoned to freedom and the grinning boys.
Introduction

As we will see, many writers on architecture have speculated on an ancient or precognisant root to the understanding of spaces. The context of much of this writing has been that this natural language is being neglected and ignored by modern towns and cities. Some of these works were written to form part of a discussion on the poetics and aesthetics of space, while others were intended to be both a critique of rigid functionalism within the built environment and a subsequent appeal for flexibility.

The story at the beginning of this thesis could, very simply, be about western notions of size and space meeting east African tradition; and these romantic, nostalgic, traditions could be the embodiment of a very human and visceral way of building; a way of building that grew from the inside; the human body described an arc, and the arc became walls that would symbiotically be destroyed and rebuilt season on season for thousands of years; or again, the story could be about western attitudes to disciplined construction and planning and how these can be frustrated when they come up against spontaneous, traditional construction; again a romantic and nostalgic view of the creation of spaces that can be both easily understood and immediate. Or finally the story could illustrate all of the above and also be part of a discussion of the existence of a wholly human space, its roots in this ancient and primordial understanding of spaces, its importance, its scale, the means of its creation and its potential to create flexible alternatives to and within the existing built environment.

If we take seriously the existence of an ancient, unconscious understanding of space, then we might say that this understanding must have certain qualities and these qualities should be identifiable within architecture; this being true then we might also say that the nature of many spaces we inhabit, especially within repeatable typologies, is in some respects artificial, and perhaps artificial enough to actually be a constraint. If we experience physically and spiritually these feelings of connection or alienation with our surroundings, then the reconciliation of these surroundings to our own personal human space is perhaps one of our most fundamental needs as an individual, a community or as a society.

The spaces within our built environment have rarely been arrived at from the needs of personal space, but themselves are products of society; whether these are religious, class and status, economics or gender roles. Some of these imperatives, are still working components of our society, but there are others now less important than historically they were; society throughout the world changed dramatically over the last century, the sexual revolution, changing demographics, the fall of religion, the rise of the individual, yet these changes all happened within a built template that was laid down for a very different society and time. We have not yet uncoupled our expectations and future from the expectations and future imagined by previous generations; the future has certainly deviated from its path and our expectations are rapidly changing.

For example, technology; barely imaginable only a few decades ago, proliferate our world, their influence has been so immediate and far reaching that it may have over shadowed, thus far, the profound and lasting effect it will have on our experience of space and the architecture it must generate. As we move further away from traditional society and its roles and expectations, might an architecture that contains the qualities of our precognisant understanding of space be better able to accommodate this rapidly changing world and its emerging relationship with the existing built environment.
Ancient Language

To begin we can perhaps look to the idea of spatial understanding belonging to an ancient language that we have all inherited. For example in Poetics of Space, Gaston Bachelard states that “The normal unconscious knows how to make itself at home everywhere.” He explains by saying that this ability is part of a deeper unconscious understanding of the spaces we inhabit, born from a “daydreaming” of previous spaces we have already inhabited and from an ancient memory of primordial spaces; their comfort, intimacy and solitude taking us back to an ancient heritage. “We must therefore experience the primitiveness of refuge and, beyond situations that have been experienced, discover situations that have been dreamed.” He paints a picture of human spaces existing within, while remaining autonomous from, the built environment, quoting an old saying “We bring our lairs with us.”

In Lessons for Architecture Students Herman Hertzberger uses the “generative grammar” theory of Noam Chomsky, which is, that language and its grammar have a common ancestor from which all languages have come; to illustrate his own belief that the ‘language and grammar’ of architecture also has a common ancestor. Here Hertzberger echoes Bachelard when he says that spatial organisation could also “be traced back to an innate ability of all men to arrive at ever different interpretations of essentially the same ‘arch forms’.”

If we accept that our understanding, of both form and space have a common ancestor that originates in the ‘primitiveness of the refuge’, then we might say that it is with this understanding that we define and experience space. As we will see in the following pages, there is a clear similarity between; the psychological and sociological theories of an individual’s unconscious personal spheres of space, (also believed to be rooted in precognisant attitudes to comfort and refuge), and our relationship with created architectural space and even perhaps our attitude towards created aesthetics. It would therefore be useful at his point to also examine the idea of personal human space in psychological and sociological theory, how we define it, how we create it, and how it might be understood as architecture independent of our built environment.
The Scale of the Individual

We all know what it means to feel at one or at peace with our surroundings, this feeling, or its opposite, we may experience even when there are no obvious reasons for feeling one way or the other. In socio-psychology this feeling is our personal sphere of space reacting to its physical connection with people and places; and that when moving through our lives we constantly and unconsciously create and recreate these invisible spheres of personal space that, although we never fully delineate them, encompass our personal life and our connection with the places and people that surround us. In Public and Private Spaces of the City, Ali Madanipour defines this space as follows, “It is personal space, a socio-psychological, invisible and yet physical personal space around each individual, which others may not enter without consent.”

This unconscious sphere of space could also be understood as both fluid and flexible; the personal spaces we create do not exist independently in time from each another, but like a child’s bubble, space moves with us, constantly expanding and contracting. Within the built environment this bubble can either connect with or grate against other people, the size and shape of a room or of a street, forever compelling us to find or create a space that calms us, where, temporarily, we can be still.

Instinctually we know this, when we say that “walls surround us” or “hem us in”; we are conscious of the potentially oppressive nature of our architecture. Largely we find ourselves in places where we must conform to the dictates of where we are, but we are more comfortable when these places contain freedoms of choice and movement. Often our discomfort within a space is our resistance to being contained by boundaries we cannot accept; our reaction then is to create within a room; at a table, on street, a personal set of boundaries; we angle our chairs, we place our belongings, we create invisible walls. These creations are fragile and fleeting and ultimately we find ourselves more comfortable when our personal space fits perfectly into a place of comfort or shelter, where we are free to retreat into solitude or to engage with the world flowing past. This attitude to space and why we react in certain ways is further explained by Madanipour who also says that “Research has shown that individuals maintain a larger personal space when rooms are smaller in size, or are narrower in shape, and, for men, when ceilings are low. Furthermore, people seem to require larger personal spaces when placed in the corner of a room than in the centre, when seated than standing, when indoors than outdoors, and in crowded than uncrowded conditions. These preferences seem to reflect differences in availability of escape; we are content with less space when we know we can get away.”

This idea of personal space establishing boundaries and reacting to our physical surroundings resonates with Bachelard’s quote about carrying our lairs with us, and Herman Hertzberger introduces a useful practical example when making the comparison between modern houses and older homes in Amsterdam, where he says. “What makes the old canal-houses so liveable is that you can work, relax or sleep in every room, that each room kindles the inhabitant’s imagination as how he would most like to use it.” The individual, carrying his lairs and his imagination with him; circumnavigating the solid walls that surround him and within this territory of functionless rooms, investing it with his own private world. Here the individual does not express anxiety or distress with his surroundings.

So what are the shared qualities of architectural and socio psycho spaces; shelter, refuge, aesthetics, choices? In the following pages we will see where these shared qualities or lack of them have been identified as opposing physical arrangements in our homes towns and cities.
Qualities of Space

The latter quote by Hertzberger segues from the idea of primitive space and form to his argument that modern houses and by extension modern cities have been born out of a process that has segregated living into functions, and that the application of this delineation has led to the proliferation of new artificial space. “Houses and cities that are being built nowadays do not and will not allow any fundamental changes at all.” and “that the collective interpretation of living standards must be abandoned.” Similarly Jan Gehl in Life between Buildings also critiques much urban and town design, focusing greatly on what he sees as functionalism’s destruction of the possibilities of spontaneous activities; the rigid planning that programmes-out chance encounters, the disappearance of personal freedoms to do such simple things as take an alternative route home or even to actually see let alone meet other people, neighbours or strangers.

In Gehl’s text the reader is aware of the change of the physical layout of modern cities and also the changed attitude to the scale of the individual or community within the city. The ability to find functionless places of shelter or refuge, and places of chance encounters; what he identifies as, “necessary, optional and social activities” have been eroded away by the need to delineate function throughout our built environment. Streets for children have been replaced by roads for cars and parking, seating in public places, often seen as lonely exposed pedestals sitting in the centre of pedestrian thoroughfares, are abandoned by everyone except the old or exhausted. Gehl argues for a return, in the planning of towns and cities, of the freedoms that allow us, “To move about easily and confidently, to be able to linger in cities and building complexes, to be able to take pleasure in spaces, buildings and city life, and be able to meet and get together with people.” This ‘freedom’ is to be expressed in the ‘modest’ inclusion of a “good physical framework for life between buildings”; containing spaces that are human, aesthetic and functionless.

Alain de Botton in The Architecture of Happiness connects these themes of life within designated function versus our primordial reading of our surroundings and how this influences the way we use space; and creates a resultant theme that suggests that there is a possible connection to the way we interact with these spaces and define our own aesthetics. Initially pointing out that our

“This behaviour is riddled with eccentricities that frustrate casual attempts at prediction. Rather than sitting in the middle of a room on a soft armchair we are capable of deciding that we feel more comfortable perched on a hard bench set against the walls.”

He suggests, like Madanipour and Bachelard that this unconscious reaction is precognisant in origin, “as though we were on some level still warding off ancestral fears of attacks by a predator.” However he takes this suggestion further in the following pages by criticising the work of architects he feels have neglected to acknowledge these quirks and eccentricities, this neglect has the effect of making us “work harder” to fit into certain environments; and that in conclusion,

“The places we call beautiful are, by contrast, the work of those rare architects with the humility to interrogate themselves adequately about their desires and the tenacity to translate their fleeting apprehensions of joy into logical plans – a combination that enables them to create environments that satisfy needs we never consciously knew we even had.”

Here Botton not only adds to the argument that functioned spaces are the opposite of primordial human space; but also, that not only do we find the spaces that acknowledge our unconscious comfortable, we also find them beautiful.
Components and Creation

If this innate ability to create personal space is ancient and subconscious, then it is important to understand why our society has created uniform and repeatable typologies in which to dwell. The second half of the twentieth century witnessed an unprecedented physical growth of cities and suburbs throughout the world and this expansion was only possible by the use of typologies that alleviated the great stress placed on existing cities and towns. The massive population changes, better social conditions and new infrastructure, typical of the post war years, could not have been possible without them. However the need to find suitable and repeatable typologies created almost indistinguishable typologies, characterless homes, offices, shops and factories.

“In our cities of today we are confronted with large numbers of dwellings, the construction of which entails production methods whereby enormous quantities of components can be supplied – which, however, are uniform. By equating the uniformity of dwelling units – with the equality of the inhabitants, we have come to the point where uniform dwellings are assembled in monotonous, uniform building blocks.”

Here Hertzberger makes the link between human spaces and the modern production of the components that created them; but also he appears to suggest that these components themselves have influenced or placed limits upon the design process. The modern methods of construction are of course about efficiency and economy but they are also able to reach higher and be stronger than traditional methods and materials. Modern construction has produced a pallet of components that can surely set us free from the normal way of doing things. It would seem therefore that somewhere in the move from the use of natural or simple materials of construction to modern manufactured and mass produced components, there was also, at the same time, a change in the way we design spaces for ourselves. If this is true then perhaps the changes in the way we design, have also designed away our connection to primordial spaces.
To sixteen year old apprentices the task of bonding alternate brickwork courses was not the most difficult of problems in the world, nor the most pressing. However, in the following winter months, the task became a puzzle, more complicated. The simple repetitive models are replaced by monumental walls, thicknesses vary, bonds change at each turn, and piers jut from the smooth faced brickwork. Recesses appear, full of hidden meaning, truncated buttresses rise to support invisible forces, the models confuse and demand understanding, while the instructor impatiently delivers warnings of the working world to come; a world full of rectangular details belonging to something of great importance.

Around model after model, we boys, turning and turning, in the cold corrugated hall, our trowels and hammers clicking and chinking, scraping against the worn out sides of the much used bricks. Parodies of working men, backs never straightening; our wishes, to be anywhere but here, doing anything but this, jokingly curling inside our clouded breaths, laughter lost in the galvanized echo of the cheap radio and heavy hammers.

Emerging from the propane warmth of the sliding windowed office; the final measurement, the spotless tape, a shining spirit level, whiskey, nicotine, the judgment, a tally of ticked circles recording the seismology of millimetres, a nod, an oath, maybe a clip, and beginning again, the clicking and scraping, returning and returning down around the walls, the piers, the arches reducing and reducing, lime and sand growing under the soles of our boots, the bricks softened and chastened and chipped, scraped clean and stacked again along the sides of the hall to dry till the morning. The dead mortar, laced with cigarette butts, shoveled and brushed as one back to the mixing shed.

In our text books; figure after figure of unattainably perfect masonry, rigid in isometric beds of jet black ink, confidently containing their monumental strength, piers and buttresses changing thickening, reducing, returning page after page, the walls deliberate in their design, turning themselves around a purpose we could not yet see.

Upstairs, exhausted, on the bus going home, out through the rain streaked glass, the purpose became clear within the broken roofed factories and empty tenements; columns, buttresses, piers and arches, acre upon acre, mile upon mile, the bricks, how many millions, revealed behind the wind torn wallpapers; beyond the empty windows the fleeting complex interiors are seen as a blur.

What men could have built them, mile upon mile, they knew what was now being taught us; they understood what had been asked. The bricks and cut stone had defined an era and had contained the way of life that our parents and grandparents had lived. We knew nothing and now after mere decades, broken factories and empty tenements lined the roads toward the heart of an emptying city.

In the cold spring, we boys, upstairs on the buses long before sunrise, woollen caps bouncing against the cold black windows. Out to the edges of the city, to the last stop, to the new houses growing from the fresh mud, boys, glove less and love less, nothing was ever asked of us, just mile upon mile, acre upon acre of stretcher upon stretcher, around and around the mean homes within the shrinking expectation of a garden. Nothing of the cold corrugated hall was needed, nothing was asked, merely enough skill to butter bread.
Creation of Space

Material and its tactile qualities have been at the heart of all human construction: the ability to feel to touch to express the quality of a space; to feel to touch and see the art of its facade, from the seasonal symbiotic quality of the wattle and daub construction of the first, and still surviving, semi nomadic peoples; to the carving of stones and woods of the earliest recorded civilisations; through classical history, the renaissance and the cities of the post industrial age. These tactile and human qualities of construction reflected the qualities of our understanding of form; born from a need to express again the earliest arrangements of our living spaces, the cave and the clearing.

The need to arrange efficiently our cities and towns in the post industrial age bore straight lines and repeatable typologies. The expectations of the home and what it looked like became the expectations of the king, the church, the industrial developer and the landlord. Modern architecture sought to redress this, to design for function, to find new ways to express space other than the glorification of symmetry or complacency; at the same time new materials and techniques appeared, appealing to the ideals of the modern, of space and of light.

However human involvement at a tactile level was designed out, for example the role of the mason, had become so simplified and so modular, that the expression of masonry as walls and as spaces, containing purpose and forces was forgotten, the walls themselves reduced to little more than a veneer, easily replaced by concretes etc. The carpenter also has found his role in the process of construction much reduced; his tactile and responsive skill became largely the assembly of components.

Modern materials can of course be more efficient structurally, economically and be more beautiful and expressive than brick, stone or timber. However it must contain a clear expression of human space, it must have a tactile and human scale and therefore a human connection with the space being created.

What has been lost, argues Hertzberger, in its physical sense, is flexibility of spaces, what he calls “polyvalence”, a rich combination of a variety of spaces the lack of which, in modern buildings, has left them extremely inflexible. Despite the variety found in much urban and suburban housing and the relative openness of many urban and suburban plans, for example, there is little or no option for change. In the case of urban domestic planning, as stated before, Hertzberger believes that spatial diversity has been compromised by the separation of functions, and that lack of integration of these functions has resulted in “rapid obsolescence of all too specific solutions [leading to] not only to disfunctionality but also to serious inefficiency.”

It is important to say here that; to suggest that there must be a distinction between mass produced components, mass produced design and mass produced buildings; and tactile components, human design and singular buildings, and that of these two groupings the former will produce functioned spaces and the latter will produce flexible expressions of human space is not the intention or aim of this thesis. Interestingly however the writing we have seen that suggests the existence, physical, spiritual or aesthetic of primordial space is in general written as a response to what the writers felt was a failure of rigid functionalism in modern design and planning. To make the suggestion would be easy at this point, however the difference between; mud and twigs or steel and glass, or a multi-storey office building and a small rural cottage is not the issue, but the space created by them or within them.
**Alternatives**

“The only constructive approach to a situation that is subject to change is a form that starts as a permanent—that is, essentially a static—given factor: a form which is polyvalent. In other words, a form that can be put to different uses without having to undergo changes itself, so that a minimal flexibility can produce an optimal solution.”

Inflexibility and how it limits change in both society and the built environment is also at the core of much utopian writing on architecture. In *Spaces of Hope* the social geographer David Harvey states that: “Once structure is built it is hard to change, try as we might to build flexible structure and spaces, the fixity of structures tends to increase with time, making conditions of change more rather than less sclerotic.” The suggestion, a society weighed down with the precedence of the past, law, politics, tradition, the physical built environment, all of them working against change and flexibility; the inability to allow fundamental changes to society in general, is because choice and the creation of choice has been curtailed within and by the physical environment, as Harvey writing on Lefebvre in *Dialectical Utopianism* states “that the production of space must always remain one of endless possibilities” and “a means to explore alternative and emancipatory strategies.”

While above, Hertzberger suggests that “polyvalence” is the solution, for example a variety and flexibility of spaces, we should move further and suggest that this variety and flexibility can really only be achieved if there is true fluid changeability, from construction to demolition, and that this changeability should be tactile and responsive at a human scale.

**Future and Potential**

In respect of modern technology, the implications to architecture and the built environment contained within the proliferation of small hand held devices that can communicate, record and broadcast thoughts, images and information to almost everyone on the planet, and how this link and the ways that it must change the way in which we interact with each other and our own personal space, are likely to be profound and far reaching. This change perhaps creates an opportunity for us to begin to anticipate a new flexible way of building that can adapt to both the changing world and the existing built environment.

At this time, we are experiencing great change technologically and demographically within our society; the built environment is arguably becoming less relevant in our increasingly virtual world, this irrelevance could potentially grow until the built environment is reduced to a wall we hang our society on or project it against; or we can acknowledge and respond to human space as it is now being redefined by media barely imaginable only a few decades ago.

Technology has taken the new media of human life, telephone, television, and computer, recent but stable solid objects within our homes and offices, so much so that space had been made for them and revolved around them. They were welcomed into modern homes as part of modern living; they helped reshape modern homes creating new spaces of designated function. However technology has taken these media and reduced and reduced them to tactile pocket objects, connected by waves of light to each other and the greater world in an invisible cloud of information.
By becoming these smaller objects, paradoxically they themselves have outgrown our functioned spaces. They are spaces themselves, autonomous of their surroundings; they have escaped the constraints of the built environment. They are themselves a “Lair” of Bachelard that we now enter. In each hand appears an office, a library, a cinema, a world. By escaping the physical world, they point to an opportunity to reframe ourselves within their new space.

As we have seen earlier, we as individuals already unconsciously change our built environment by whatever means we have available, coats, bags, chairs etc. It is within our ‘sclerotic’ environment that our understanding of primordial spaces manifests itself. Therefore this ‘sclerotic’ environment, described by Harvey, could offer an opportunity to find a way to articulate the nature and value of our spaces and create the ‘endless possibilities’ and ‘emancipatory strategies’ of Lefebvre.

Perhaps we need do very little to our built environment to make it more ‘polyvalent’ and therefore more flexible. Grafting on or carving out human spaces from the solid canyons of our existing cities, towns, homes and rooms; and creating the ‘good physical framework’ of Jan Gehl. This may be what Unger would say risks being called “utopian tinkering”, a spatial solution to an ideological problem, but he also states that we “Be conscious of redrawing the map of possible and desirable forms of human association, of inventing new models of human association and designing new practical arrangements to embody them.”
End notes.

15. Herman Hertzberger, *Lessons for Students in Architecture* (Rotterdam, 2005) p146

Bibliography

Tait’s Clothing Factory
Site Description and Thesis Project.

The aim of the final design project is to apply the elements contained in the thesis text to an existing built environment; and with this template create new expressive spaces at a human scale within the site; at the same time connecting the programme and the existing building, its architecture, its topography and its history. It was important therefore, to select a site that would fit the criteria provided by David Harvey in *Spaces of Hope* of a “sclerotic” environment; a site that now exists in a rigid unchanging state, almost a blockage to further development.

The chosen site is a former clothing factory, located on Lord Edward St, a few hundred metres from Peoples Park at the edge of Georgian limerick. Closed in 1975, the site eventually became derelict and has been closed off for a number of years by steel fencing and locked gates. While the roof and floors and some of the masonry have been lost, the main limestone walls still exist along with the former housing for the steam engine and boiler; all of these structures are now form part of an Industrial History Preservation order. The existing building, known as “Taits Clothing Factory”, first appears in an ordinance survey map in 1870, though it is estimated that the building was constructed in 1863, (garment making had already been going on at the site in a number of smaller buildings since 1854).

Located at the edge of the low ridge on the eastern side of Prospect hill that once marked the edge of the city, the factories imposing limestone gables and chimneys would have been visible at some distance rising above the large fields below. These gables rising 14 metres above the factory floor still exist and are still as imposing; across the factory floor they are separated by 98m and span almost 40m, three quarters of this space was the main factory work space.

The factory, at its peak, would employ a thousand workers, supplying uniforms to armies across the world. At this time a steam engine housed in a block at the eastern end of the building provided the power to drive a multitude of industrial machines. The water for this task was collected directly from the building’s roof and stored in a large cast iron tank that still sits above the old steam engine room; the tank weighing approximately five tonnes would hold an estimated 145,000 litres of water, while the pipes that carried the steam to the machines ran beneath the factory floor between masonry walls that can still be seen today.
Apart from the southern wall, which forms the boundary with the City Campus, the factory’s structure has a great many windows and doors, formed in the limestone walls by red brick quoins and arches, their scale is industrial, some have been blocked up over the years as the factory evolved and extended, but if opened up, now present a structure potentially more porous than it might first appear. Other opportunities are presented by the remaining sub floor walls that create a number of changes in section across the main factory floor, with a greater change in levels west to east from Edward St to the edge of the ridge.

The eastern and northern edges of the site now abut the back gardens of two storey terraced homes, whilst the western edge is separated from Edward St by empty stone buildings that once belonged to the original Tait factory enterprise. Before it was recently cleared of debris the site had also began to become overgrown with bushes and trees which began to appear, above the 6m high walls, this I believe was an indication of the existence of a courtyard microclimate created by the sheltering walls and gables. This offers then more potential value to the site as a park or garden.

The thesis project therefore aims to connect these elements in a cohesive programme driven by human scale creation of spaces, drawing from the factory’s industrial history, its stone and brick architecture, its connection to the city and surrounding housing and microclimate.
One of the most important points suggested by the thesis was that genuine flexibility of materials is needed whilst changing physically the existing built environment. It is inherently difficult, wasteful and time consuming to build and then demolish, this was cited as being one of the problems in the thesis of change and the willingness to change the existing environment and society. It was important therefore to explore a new way of building or changing existing architecture.

The text had cited examples of masonry as a rigid homogenous solid that allowed for the construction of both micro and macro environments and also as a fluid medium for the creation of space that was neither rigid or controlled. Both of these potentials of masonry led to the exploration of a new type of brick that could allow the creation of changeable spaces and also be able to provide cohesion to larger public buildings and spaces and that could potentially create a new tactile relationship between the creation and use of space.

The illustration, right, shows various types of brick that slide together and therefore can be slid apart, these bricks form both vertical and horizontal surfaces, while at the same time interlocking blocks transform masonry arches into diaphragm vaults.
above, the chevron brick slide across one another to corbel and change direction, while openings and new walls are formed from the surfaces.
Taits clothing factory today

opposite page, light studies for morning, noon and evening; mid winter, equinox and high summer, establish a cycle of light and shade inside a microclimate.
Site plan sketch; the proposal, the creation of a winter garden and a productive summer garden made of raised planters using existing masonry walls. The garden also containing creche and cafe with study areas for students from the adjoining city campus. Housing on the north side of the site evolving to and through existing limestone walls.
The housing units themselves begin as standard domestic scale spaces but evolve slowly reacting to use, the existing structure, topography and each other. Creating the life between buildings cited in the thesis by Gehl and the variety of spaces of importance to Hertzberger.
Above and opposite page, sections through the housing units showing the change in heights and floor levels corresponding to room size. See thesis, Mandanipour and Bachelard.
Axonometric cutaway showing the housing units meeting the existing building and the creation of streets.
Final plan showing proposed layout with study carrels at the western gable acting as buttress to existing structure.
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Final sections from west to east.
Wire frame perspective from the north west
Final presentation model of section from north to south across the site, showing housing, existing walls and raised planters.