

Overview
AND SUPPORTING DATA

EFFECTS OF THE

BUILT ENVIRONMENT

ON WELL-BEING

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1.0 STATEMENT AND RESEARCH SUMMARY

1.1 Thesis Statement

This thesis examines how we understand our environments and what affects our response to particular settings. It examines the potential effect that the non visual components of perception can have on our experience of space. Specifically, it investigates the principles of the effect that our physical surrounding has on emotion and the possibilities of using form and space as an agent to promote wellness.

1.2 Research Conclusions

The first section of the research was concerned with the effects of our natural and built environments on our behaviour and actions. It lead to the conclusion that the environments we create have consequences, and if manipulated, can positively influence our quality of life. Studies of the natural environment have shown that exposure to light can affect our moods¹, that climate variations can influence how we function², and that sacred places can enrich our spirits. Similar studies of built environments suggest that there is a definite link between certain places and our state of mind.³ The research also showed that control of environmental stressors such as extremes of light, temperature, and noise can contribute to the function of an environment and thereby affect personal well-being.

The research then examined how we perceive and understand spaces and lead to the conclusion that there are elements that can be employed to make spaces more enjoyable, and mentally and physically more supportive. The study of perception indicated that people 'read' space by reacting to various stimuli simultaneously and that this experience is also affected by the individual's actions, purpose, and past history. Specifically, it showed how all of our senses are employed when we perceive space, and that this engagement of the senses directly relates to the quality of the experience of that space.⁴ The study demonstrated that spaces are understood as systems of inter-related elements rather than discrete objects. Consequently, spaces are more effective as a series of surfaces and volumes that we can feel, hear, smell, as well as see, rather than being appreciated simply as two-dimensional lines and points.

Since the cognitive process is directly related to perception, how mental images are developed and utilized was also examined. This study revealed that the quality of our mental images is dependent on the degree of legibility and understanding of the

immediate environment.⁵ The clearer the image or mental map is, the easier it is to orient one's self in the space. Therefore, designs should include basic identifiable elements such as landmarks, paths, and nodes so that each person can relate to, familiarize themselves, and feel comfortable, with their surroundings. It was also discovered that cognitive maps are utilized in assessing the aesthetic quality of different environments. Studies illustrated that, in our culture, people generally prefer environments that they can comprehend and relate to, while still allowing for the opportunity of discovery. This study also identified that people typically find natural environments more pleasing to look at than built environments. This implied that places should be created to have appropriate levels of coherence, complexity, legibility, and mystery and that the inclusion of nature, or reference to it, would greatly enhance the overall experience.

Lastly, the research on the concept of phenomenology suggested that, through an in-depth analysis of the connection between our experience of the environment and the essential qualities of the environment itself, we can rediscover our world and create more meaningful places. This was confirmed by various case studies that examined how environments that reflected their particular conditions and circumstances moved beyond the physical and practical realm to become significant to the people who inhabited them. Consequently, creating environments that incorporate the historical, cultural, and topographical elements of an area will allow people to understand, connect, and be more aware of their surroundings. Without this awareness of place and environment, we cannot expect people to be moved by the experience of a space or a building.

1.3 Manifestation of Research

(i) Macro Environment

The conclusions of the research were utilized in the preparation of a Master Plan for St. David's Ward, an existing residential development south of downtown London. The plan was developed primarily to determine if the research could be successfully applied to a macro environment. The goal of this exercise was to determine if the planning and design of spaces, buildings, and streets (that related directly to understanding context and characteristics of a specific place (St. David's)) could positively affect the people who live there. In the case of St. David's, the desired effect was to reunite the neighbourhood and return it to a cohesive community in which the inhabitants could not only experience a higher quality of life, but also feel a real sense of pride and belonging.

The first step of the master plan was to gain a deep insight into the situation of the existing neighbourhood and how it came to be in its present form. Using the completed research as a guide, the site's physical and non-physical qualities were studied and documented for analysis. This effort revealed both the problems and potentialities inherent in the site. It was then possible to create design principles that related to the repairing of the shortcomings of the site as well as principles that would effect people's quality of life (based on the conclusions of the case studies in the research, ie. the need for legible and identifiable environments). The proposed actions and interventions of the area were consequently driven by these principles.

This framework provided the necessary direction for growth and revitalization of the neighbourhood. It is the intent that this evolution, be mindful of the past and the future, to produce quality spaces that people can enjoy while resurrecting the spirit of the community.

(ii) Micro Environment

The final manifestation of the research will be in the terms of a specific building type. The building and the associated site will test the thesis statement and determine what are the effects, if any, that the environment can have on our well-being.

Using the context of the master plan as a point of departure, a portion of the prescribed interventions was chosen so that a more detailed exploration into the effects of spaces could occur. The site selected is the South Street Campus of Victoria Hospital. This site is of special interest because of the imposed directives from the Hospital Services Restructuring Commission (HSRC) that would see this branch of the hospital move to the Westminster Campus site (five miles south). This decision will have considerable impact on the neighbourhood due to the large amount of vacant land that will be left at the southern portion of the site. Victoria Hospital has existed as an institution in this community since 1875, and has influenced it both positively and negatively. The opportunity now exists to correct some of the wrongs caused by the dominance of the hospital over its neighbours.

The parcel of land is also of interest for its unique topographical qualities, mainly the Thames River which winds itself around the southern edge of the site. The site offers tremendous growth opportunities and has the potential of being a catalyst for the neighbourhood and surrounding communities. Proper redevelopment could not only improve the public realm and spatial qualities of the area but allow the site to continue as a community asset and public amenity in a more respectful way.

2.0 PROGRAM

2.1 Ideological Foundation

"Over the margins of life comes a whisper, a faint call, a premonition of richer living which we know we are passing by. Strained by the very mad pace of our daily outer burdens, we are further strained by an inward uneasiness, because, we have hints that there is a way of life vastly richer and deeper than all this hurried existence, a life of unhurried serenity, peace and power."

This passage written by Thomas Kelly, summarizes the condition that large segments of our society are experiencing in some form or other. It describes in simple words the unbalance that we have created in our lives. The pace at which we live at comes at a cost and has forced us to lose touch with ourselves and our surroundings. We have become so busy that many of us have not allowed for the time or the place for contemplation and understanding of our own selves. The stresses we experience continually go unchecked and pushed aside as they build on each other layer by layer, day by day. This is not only unhealthy, but it discourages the opportunity of having a more meaningful existence. Having harmony in one's life, and being at peace with one's self, are very basic human needs. We need to recognize this.

Consequently, I am of the opinion that our cities must provide places that will allow us to take a step back, to unwind, and provide appropriate conditions for rest and spiritual restoration. We need a building type that will allow for analysis, understanding and betterment of the self through physical and psychological care. A building whose design will **promote** wellness and **support** the rediscovery of ourselves and our surroundings.

Many of our recently built environments are a direct response to what we are or what we have become. It is important that we also create environments that are a reflection of who we want to be.

2.2 Statement of Intent

It is the intent that this program will further the idea that our surroundings can affect our emotions. Specifically it will explore the possibilities that space can be designed to contain qualities that will enhance our well-being. By applying a set of principles based on scientific research and literature it is proposed that the environment will take an active role in the restorative and healing process. Therefore the building and site will be focussed on the user's movement toward wellness.

2.3 Program

The proposed development will offer compensation to the hectic schedules and multiple demands of our daily lives. It will be designed for those who want to decompress during a frantic work week or take an extended break from the stresses of the modern world. This centre will provide alternate modes of activity and relaxation, becoming a place of respite and refuge. Unlike our daily rituals, this retreat will encourage the release of one's body armour and the opening of the psyche to the moment, letting go of time and place.

The Centre for Wellness and Self-Regeneration, as it will be named, will be primarily concerned with promoting wellness and personal betterment through proper conditioning of the mind, the body, and the soul. It will be designed for bodily perception and experience and will provide an intense and intimate contact with the senses to calm, soothe, and nourish the soul. The spaces created, combined with the customized programs, will be directed toward improving our physical, mental, and spiritual health.

This wholeness will also be reflected in the physical and psychological integration of the building and the site. The building itself will take on qualities of the land while the site will embody various values of the existing topography, as well as properties inherent in the building's program. The design of the site will also cater to the individual body and mind through important connections to the natural environment. In this regard, the site will be an extension building and, in turn, the building will be in harmony with the site.

2.4 Components

There is a great variety in the types of wellness centres that exist in our cities today, ranging from family community centres to personal spas and from massage and beauty centres to fitness clubs. This centre will be unique in the sense that it offers treatment to the "whole person". Therefore, the major components of the program relate directly to the components of wellness, ie physical health, mental health, and spiritual health. Consequently there will be spaces for exercising the body, for learning, for reading, for relaxing and for meditation.

The secondary components of the program will include counselling facilities, shared community resources and the more pragmatic elements such as service areas and administrative functions.

Statistics from CMHA show that forty percent of people consider good mental health a top priority in their lives yet only five percent will actually seek treatment in some form or other.⁶ Therefore, the facility has been sized to accommodate an expected 20,000 visits a year (based on a catchment area of 400,000 people).

(i) Therapeutic Spaces

Therapeutic elements will involve programmed spaces as well as areas for self-directed activities. The room functions will provide both private and social areas, and will include both interior and exterior spaces as outlined:

A/ Programmed Spaces

(i) Fitness.....	1200 sq.ft.
(ii) Treatment Rooms (5).....	500 sq.ft.
(iii) Massage/Aroma therapy (5).....	500 sq.ft.
(iv) Baths.....	3500 sq.ft.
(v) Change - shower, steam, sauna whirlpool etc. (2).....	4200 sq.ft.
Total.....	9900 sq.ft.

B/ Non-Programmed Spaces

(i) Library.....	1000 sq.ft.
(ii) Reading Rooms.....	200 sq.ft.
(iii) Meditation Rooms.....	150 sq.ft.
Total.....	<u>1350</u> sq.ft.

Sub-Total.....	11 250 sq.ft
support (area X 1.1).....	1125 sq.ft.
circulation (area X 1.2).....	2475 sq.ft.

Total.....14, 850 sq.ft.

(ii) Support

Counselling functions, teaching facilities and amenities for extended stays will support the therapeutic functions of the building. The following programmatic spaces will be required:

A/ Assessment Area

(i) Reception / check-in.....	400 sq.ft
(ii) Waiting Lounge.....	600 sq.ft.
(iii)Assessment offices (2).....	200 sq.ft.
Total.....	1200 sq.ft.

B/ Treatment

(i) Counselling Rooms (2).....	250 sq.ft.
(ii) Doctor Offices (2).....	300 sq.ft.
(iii) Seminar Room.....	300 sq.ft.
(iv) Learning Centre.....	350 sq.ft.
(v) Treatment Room (2).....	450 sq.ft.
Total.....	1650 sq.ft.

C/ Extended Stay

(i) Guest Rooms (8).....	1500 sq.ft.
(ii) nurses station (meds. etc.).....	500 sq.ft.

(iii) Treatment rooms (2).....	320 sq.ft.
(iv) Lounge (2).....	700 sq.ft.
(v) Kitchen (2).....	300 sq.ft.
(vi) Quite Room (2)	350 sq.ft.
(vii) Staff area.....	350 sq.ft.
Total.....	<u>4020 sq.ft</u>
Sub-Total.....	6 870 sq.ft.
support (area X 1.1).....	690 sq.ft.
circulation (area X 1.2).....	1 510 sq.ft.
Total.....	<u>9,070 sq.ft.</u>

(iii) Administrative

The administration offices will oversee and be financially responsible for all aspects of the development. In addition to these duties, there will be staff dedicated to liaise and promote this facility within the City of London and surrounding communities. It is expected that the following spaces will be required:

A/ Office Component

(i) Reception / Waiting.....	450 sq.ft.
(ii) Secretarial support.....	400 sq.ft.
(iii) C.E.O. Office.....	250 sq.ft.
(iv) Admin. offices (3).....	550 sq.ft.
(v) Conference room.....	250 sq.ft.
(vi) Staff.....	150 sq.ft.
Total.....	<u>2,050 sq.ft.</u>
support (area X 1.1).....	200 sq.ft.
circulation (area X 1.2).....	450 sq.ft.
Total.....	<u>2,700 sq.ft.</u>

(iv) Shared Community Facilities

To ensure that this facility will be both integrated with, and embraced by, the surrounding community, a number of shared elements will be introduced to this development. These functions will be available to patients, staff, visitors and members of the immediate neighbourhood and the city respectively.

(i) Therapeutic gardens.....	N/A
(ii) Café.....	2100 sq.ft.
(iii) Recreational space.....	1500 sq.ft.
(iv) Meeting room.....	400 sq.ft.
(v) Chapel.....	350 sq.ft.
Total.....	<u>4,350 sq.ft.</u>
support (area X 1.1).....	430 sq.ft.
circulation (area X 1.2).....	960 sq.ft.
Total.....	<u>5,740 sq.ft.</u>

Total Gross Square Footage of the Development.....23,290 sq.ft

3.0 DESIGN PHILOSOPHY

3.1 Health and Environment

Throughout the long history of Western medicine, there has always been a notion that the physical environment in which care was given could modify the medical outcome of patients. In pre-Christian Rome, physicians argued for the accepted practice of sequestering the sick in dark shadowy rooms to soothe the patient and bring them peace of mind. In the 1860's, Florence Nightingale strongly advised to the British Government that the recovery rates of patients would increase if hospitals were built with ample supply of fresh air, sunlight, calm and quiet views of nature, and in a setting filled with "beautiful objects... especially brilliance of colour."⁷ Unfortunately, there has been little progress in modern scientific research in determining whether aspects of the healthcare environments have effects on therapeutic outcomes. Since 1966, there has been fewer than 100 studies that relate a particular design feature to a clinical outcome for a particular patient population. Nevertheless, work in this field is continuing with better control factors and with encouraging results.

(i) Case Studies

One of the currently accepted theories in healthcare design is that a setting may either magnify or diminish the effects of medical intervention, personal characteristics, and causes of illness to influence the ultimate therapeutic outcome.⁸ New studies are being completed to further examine this notion. The following case studies represent a small sampling of the current and ongoing research.

Case Study 1) - "Quiet in the CCU" This study found that women exposed to typical noise levels in a critical care unit had less REM activity, shorter REM durations and longer intervals between REM cycles.⁹ These findings were correlated to patients sleeping less, a situation which is problematic to the recovery of critically ill patients. The conclusions reached in this could be incorporated as design strategies to promote quiet in CCU rooms. (eg. special acoustic tile ceiling, chairs upholstered with sound-absorptive fabric, acoustical sheet vinyl floor, sound-absorptive wall panels and noise cancelling headphones).

Case Study 2) - "Music during Minor Surgery" Researchers concluded that patients undergoing laceration repair (under a localized anaesthetic) who listened to music that they chose, had less pain than those in the control group without music.¹⁰ A similar study revealed that patients having elective arthroscopic surgery experienced less anxiety when they were exposed to background music.¹¹ Design applications that

might result from this information may include outfitting operating rooms with speakers, headphones, televisions, or 'Thera-sound' body mats, which provide the patient with a full-body experience of sound and vibrational resonance.

Case Study 3) - "Exposure to Daylight and Sunlight" British researchers studying neonatal jaundice found the amount of natural sunlight entering through glass windows in obstetric units reduced the rate of jaundice in new-born infants.¹² The amount of available sunlight also appeared to affect psychiatric patients. In a two-year study, 174 patients admitted for clinical depression were randomly assigned to either "sunny" or "dull" hospital rooms. The average lengths of hospitalization for the two groups of patients were then compared. The results showed that patients in the sunny rooms stayed an average 3 days less than those in the dimly lit rooms and concluded that the amount of sunlight had an effect on the time spent in the psychiatric unit.¹³ These results have obvious implications for the amount and placement of windows, skylights and access to outdoor areas.

Case Study 4) - "Recovery Rates after Surgical Procedures" A general study of adult day surgery patients in the recovery room was completed. Various aspects of the recovery room's design were altered and adjusted including staff treatment and the location of technical equipment. It was discovered that incorporating home-like features such as furniture, plants, carpets and warm colours, as well as increasing human contact by nurses, and disguising or concealing medical equipment from the patient's view, affected medical outcomes. The results showed that as patients' recovery times decreased, the level of post-operative complications decreased, there were fewer readmissions, and patient satisfaction was higher.¹⁴

Case Study 5) - "Light Intensity" When the intensity of light in the neonatal units was reduced, it was discovered that infants spent more time sleeping, less time feeding and gained more weight. Researchers found that when the same light intensity was cycled in 12 hour periods, the weight gain was even greater.¹⁵ In a similar study, newborns exposed to high frequency (blue) light-waves had more waking, greater sleep-wake intervals and greater variability in sleep-wake intervals than neonates experiencing low frequency (red) light-waves.¹⁵

Case Study 6) - "Patient Room Types" The 'patient room', perhaps has been one of the most studied elements in hospital design. Besides accommodating the various functions, technical requirements and patient comfort, there was also evidence suggesting that the room itself can be apart of the healing process. One study concluded that semi-private rooms were more desirable than private rooms after findings of increased sociability and higher satisfaction levels in patients placed in semi-private rooms. It also showed that patients assigned to rooms with window views of a natural setting had shorter postoperative stays, took fewer potent

analgesics and had fewer complaints than patients in similar rooms with windows facing a brick wall.¹⁶ Patients in a similar case study who stayed in an intensive care unit rooms having a view of natural settings showed that the episodes of organic delirium were reduced by 50 percent and they experienced less depression than patients in windowless units.¹⁷

The studies and examples presented offer evidence that suggests and/or proves that aspects of the designed environment can exert significant effects on clinical outcomes for patients receiving medical care. In these type of settings, it is clear that specific elements can be introduced to support or compensate for a particular problem or shortcoming in an effort to improve a desired medical response.

(ii) General Research

In addition to the case studies which have been scientifically controlled, other observations made in less regulated settings have also been proven to be extremely beneficial in reducing stress and increasing people's well-being in both institutional and non-institutional environments. For example, some of the most basic elements of the human relationship with the environment, such as colour, light, sound and smell have long been the basis for helping to create surroundings that are comfortable, satisfying and aesthetically pleasing. Research into facts that are the basis for our emotional responses to these elements can now be utilized in creating spaces that support a specific behavioural effect.

Colour, for instance, is an essential element of visual stimulation with well-documented psychological and physiological effects. Colours also been known to influence behaviour depending on their visual and affective characteristics.¹⁸ The visual factors consider the individual's ability to see and interpret visual images (perception). Colour is vital in setting objects apart from their backgrounds. Contrasts in hue, brightness and saturation help the human eye define objects by distinguishing shapes and edges. The affective factors consider colour preference, symbolic meaning and effects of colour on moods. In general it has been determined that warm colours, especially when they are combined with high lighting levels, can encourage activity, while cool colours promote more passive behaviour.

Light and colours are inherently linked. Light is essential to good vision. The amount of light also affects colour rendering to the extent that it can make sick people look healthier. If people are exposed to a narrow spectrum of light, they reflect light and will look much more ill than in fact they are. Light also has the ability to enhance form and colour to produce desired moods and atmospheres. Light has many proven physiological effects as well, such as influencing the synthesis of certain vitamins as

well as having effects on biochemical and hormonal body rhythms.¹⁹ Light has also been successfully used to treat people suffering from depression. By exposing patients to sustained amounts of bright 'white' light, it has been found to reduce their symptoms and consequently their need for antidepressant drugs.

Noise, whether positive or negative, is defined as environmentally-generated sound with no specific human purpose. High noise levels have been shown to increase a patient's perception of pain and discomfort, impair sleep and cause confusion and disorientation. Conversely, natural sounds, especially water, can be used to calm patients and mask the other undesirable noises resulting in a more relaxing environment. Similarly, music has been shown to stimulate the body's release of endorphins and consequently lower heart rates.²⁰ Music, natural sounds and breathing techniques have also been used in psychotherapy to reduce stress and allow patients to enter a state of deep relaxation and receptivity.

Aromatherapy is widely accepted in Europe and Asia as part of the healing process where certain scents and essential oils from fruits have particularly beneficial effects for the patients. This is not yet common place in Western medicine. However, simple techniques can enhance and de-institutionalize environments to make patients feel more comfortable. For instance, siting patients and visitors away from medical odours or using light, pleasant aromas to mask unwelcome smells or invoke pleasant memories through familiar smells has been used with successful results.

Exposure to nature, particularly in settings related to healing, has been proven to have extremely positive effects on the people's well-being. In laboratory research, exposure to every day, natural environments have produced substantial recovery rates from stress within only about four minutes. This is validated through positive changes in physiological measures such as blood pressure, and muscle and skin conductance. In a similar study (Hartig 1993), it was found that Los Angeles residents who were experiencing stress found that psychological and physiological recovery from stress were faster and more complete if persons were looking at natural rather than built environments.

These are general, but important examples of how an understanding of basic elements that affect our senses (such as light, colour, noise, aroma and air) can be manipulated to reduce tension and stress and enhance our quality of life. This philosophy will be explored in more detail so that specific principles that affect our emotions and increase our well-being can be identified.

3.2 Specific Design Principles

(i) Application of Research

The research reported in the document Phenomenology of Form and Space, supports the idea that, if properly manipulated, built form can have positive effects on our lives. This notion can be explored and understood. The conclusions can be applied specifically to what affects our "wellness". For example, the analysis of the effects that our surroundings have on us lead to the conclusion that if environmental stressors are properly controlled, our well-being could be increased. Similarly, in determining how we perceive and understand spaces it was revealed that wellness can be increased by creating environments that engage all of our senses. Studies of cognition and mental images concluded that wellness can be further enhanced by creating stimulating and comprehensible spaces. Finally, the research indicated that our well-being is also affected by our level of awareness of our environment as well as of its cultural and locational appropriateness.

The studies presented (Section 3.1) also showed that the built environment can directly affect the medical outcome of patients. The knowledge gained from both these areas will be combined to determine what principles can be applied to forms and spaces that will promote well-being. This theoretical position will be expanded and utilized specifically for the design of the subject building and its site.

(i) Determining Principles of Wellness

The goal of this development will be to encourage and increase the levels of wellness of the guests. In order for this to occur, a process of healing must first be activated. The word "healing" is derived from the Anglo-Saxon word *haelen*, which means to be or become whole. To achieve this wholeness there must be harmony or balance of the mind, the body and the soul. Therefore, determination of the principles of wellness will relate specifically to issues and elements that are conducive to improving ones' physical, emotional and spiritual states.

Element 1 - Physical health

Physical health is a large component of our personal well-being. We must have appropriate amounts of exercise and proper nutrition, as well as the ability to control or cope with various stresses in our lives if we want to be physically sound. Elements will be introduced into the design to accommodate areas for physical activity and spaces for understanding and learning about good nutrition. The idea of stress, however, is not quite as tangible or as easy to accommodate through physical forms. It is true that stress is a natural and necessary condition of life. It is neither totally negative nor totally positive. However, stress can be harmful when it is prolonged without adaption. The results of psychological stress can include feelings of helplessness, anxiety and, as well, behavioural problems (ie. depression withdrawal, and even substance abuse). Equally harmful are the physiological symptoms which often occur simultaneously, such as increased blood pressure, muscle tension, higher levels of stress hormones, sleeplessness and a decrease in the immune system.²¹ Adaptability to stress is essential in maintaining balance in the internal environmental components of the body. Without this harmony, negative effects will occur to our physical and mental states. The most recent research, completed largely by Roger Ulrich of Texas A & M, shows that patients stress levels can be reduced by having a sense of control over surroundings, having positive distractions and access to support systems within the environments. Therefore the first two design principles will assist in reducing the amount of stress experienced by the guests as they become engaged in the building and associated programs.

Principle 'A' - Sense of Control and Order

Research has shown that it is human nature to want a sense of control over ourselves and our environment and that uncontrollable environments can often lead to feelings of uneasiness and tension. In a healthcare situation this resultant stress can often impair the recovery process of patients (Ulrich 1995). Therefore, it is necessary that the guests of the centre maintain either a real or perceived sense of autonomy throughout their treatment. This can be applied in the design process by reducing noise levels, ensuring adequate levels of privacy, incorporating understandable wayfinding and providing easily accessible amenities. Control of various environmental levels within defined or personal spaces can also be included (ie. lighting levels, different views, temperature control, amount of air, sound control etc.). It has also been documented that when the desired patterns of the individual are supported by the environment, less negative energy is used and well-being is increased (Davidson 1988). Therefore, the designed environments should contain enough variation and flexibility so that people can choose how they want to use it. It is important that the guests be able to manipulate the particular spaces or "settings" specific to their needs

rather than have the spaces control them. Stress resulting from the building's environment should then be considerably reduced.

Order is important for people if they are to make sense of the environment. It is particularly relevant to this building as the guests try to bring coherence and understanding to their own lives. The environment can be designed to reflect these needs by creating well defined and ordered spaces. Order also implies unity and assists us in determining the patterns that exist within the environment. We observe these patterns and understand them by comparing them to others already stored in our brain. If the environmental pattern presented is consistent with the desired activity, a positive experience is likely to occur. This can reduce chaos and bring a degree of dignity to our lives.

Principle 'B' - Achieving Harmony

Harmony is linked to the idea of control and order within the environment. It is an integral element in promoting wellness. The quest for internal balance should be mirrored in the external environment. In other words, the environment should be consistent with the function or task at hand in order to reduce anxiety and stress. When this match occurs, one does not have to expend additional energy to achieve the desired goal or alter the situation. For example, minimizing environmental stressors, such as noise, is consistent with the pattern desired for reading; and energy is consequently not required to block the unwanted interference. When we do not have to focus our attention on inconsistent patterns within the environment, we feel more comfortable or harmonious with that particular space. Therefore harmony can be "a moving" together of complimentary patterns which allows us to "flow" with the environment.

Harmony can also assist in our well-being through our experiences in the physical forms and spaces of the building and site. If the building is engaged with the site and shaped by the qualities of the surrounding environment, it is likely to be more comprehensible and familiar and consequently less intimidating to people whom experience it. A sense of unity and equality can also be created through composition and volumes within the building that relate to human size and scale. History provides many examples that relate human proportions to those found in nature (ie. Golden Mean or The Devine Proportion). When these relationships are represented in architectural terms, the spaces created can become extensions of our own bodies. This allows us to become connected to both physical and natural environments which adds to the desired sense of wholeness.

Element 2 - Mental Health

Psychological balance is the second major component of wellness. Mental rest and restoration are as important as physical rest in managing and controlling stress. However, our minds also need to be active in order to be able to examine ourselves and evaluate our situation. Accordingly, spaces must be stimulating enough to engage us and heighten awareness of ourselves and our place in the world. This awareness has also been identified as an element that contributes to our overall well-being.²² The building itself can provide spaces for reading and meditation to allow people to achieve their desired mind state. However, the environment can do even more to encourage and support mental well-being by increasing our awareness to our surroundings. This can be achieved by creating environments that have enough complexity to affect all of our senses. Although there have been many great advancements in medical technology, it is still vital that we continue to understand the intricate links between mind, body and spirit as one system. Therefore, it is essential that the interior and exterior environments reflect these non-medical conditions. These elements need to be integrated with the treatment procedure to assist in promoting the common goal of supporting the guest's recuperation and quest for wholeness.

Principle 'C' - Complexity of the Environment

Environments that are complex have been shown to positively affect people and have influence on their actions. Studies have revealed that people generally prefer complex environments over simple ones and that these spaces encourage interaction by offering a sense of mystery and exploration.²³ Environments that stimulate, without being overwhelming, are also associated with keeping people active and mentally alert.

Complexity can be achieved by providing multiple levels of meaning and choice. Complexity can also be created by implementing multiple cues that respond to all levels of our perception including sight, sound, smell and touch. By affecting all of our senses, spaces are perceived and understood more readily. This allows us to feel more comfortable by reducing the uncertainty that can be felt in less understandable environments. Utilizing some of the most simple elements of the environment, such as colour, light, sound and smell, can add to the depth and complexity of spaces. It has been found that this increases our experience and awareness of the environment which has greater effect on our emotions.

Environments can also be layered with positive distractions to help maintain low levels of stress and enhance well-being. Positive distractions can be defined as environmental elements or situations that can increase levels of positive feelings, effectively hold attention or interest and block or reduce worrisome thoughts. These elements not only enhance one's mental state but can also result in desirable

physiological changes such as reduced blood pressure (Ulrich 1992). It has been shown that positive distractions such as nature, window views, music, laughter, art and, even smiling faces, can provide appropriate levels of stimulation to take a person's focus away from their illness or condition. Some research has linked this reaction as an evolutionary phenomenon, meaning that we may have a partly biological or genetic disposition to react positively and pay attention to these elements.²⁴

Element 3 - Spiritual Health

Spiritual health is the final component of wellness. Spirituality is even less tangible and more difficult to define than issues that surround physical and mental health. It cannot be easily gauged or quantified and typically holds different meanings for each individual. For this reason, it is difficult to design specific spaces that will accommodate this state. However, if spirituality is thought of in general terms as a connection to something other than our own immediate condition, spaces can be created to evoke a sense of wonder. Therefore spirituality can be considered as an awareness to all there is in the world and an openness to what is not. By pulling attention to nature, the idea of being connected to the 'larger' world can be reinforced. This association can be an awakening experience and encourage people to encounter themselves at a deeper level.

Principle 'D' - Exposure and Connections to Nature

If we ignore the presence of nature and create spaces that are contrived by only logic, we ignore the human presence. Appreciation of nature and the knowledge of being a part of it, are an essential elements of being human. Therefore, humanizing space with elements of water, wind, light, and open sky can assist in psychological orientation and provide sensations that are important in maintaining a sense of one's self. Nature can help sustain people both intellectually and spiritually and it is believed that this response may be genetic as well as cultural. (Ulrich 1985)

Exposure to nature also contributes to wellness because of its calming effect on people. There are countless examples in the healthcare environment that show the positive restorative effects of therapeutic gardens on patients. For example, studies indicate that for stressed persons, engagement with the natural environment can result in a broad shift in feelings toward a more positive-toned state and positive changes in activity levels in different bodily systems.²⁵ In the simplest terms, nature provides sensory stimulation and a positive distraction to a stressful or unwanted situation. At the most profound level, nature can offer the reassurance that, even in times of desperation, one is apart of the vast biological and eternal cycle.

3.3 Summary

To summarize, the four principles that will inform design decisions so that the environment may assist in the restorative process are as follows:

- 1) Sense of Control and Order;
- 2) Achieving Harmony and Balance;
- 3) Appropriate levels of Environmental Complexity and
- 4) Exposure to Nature

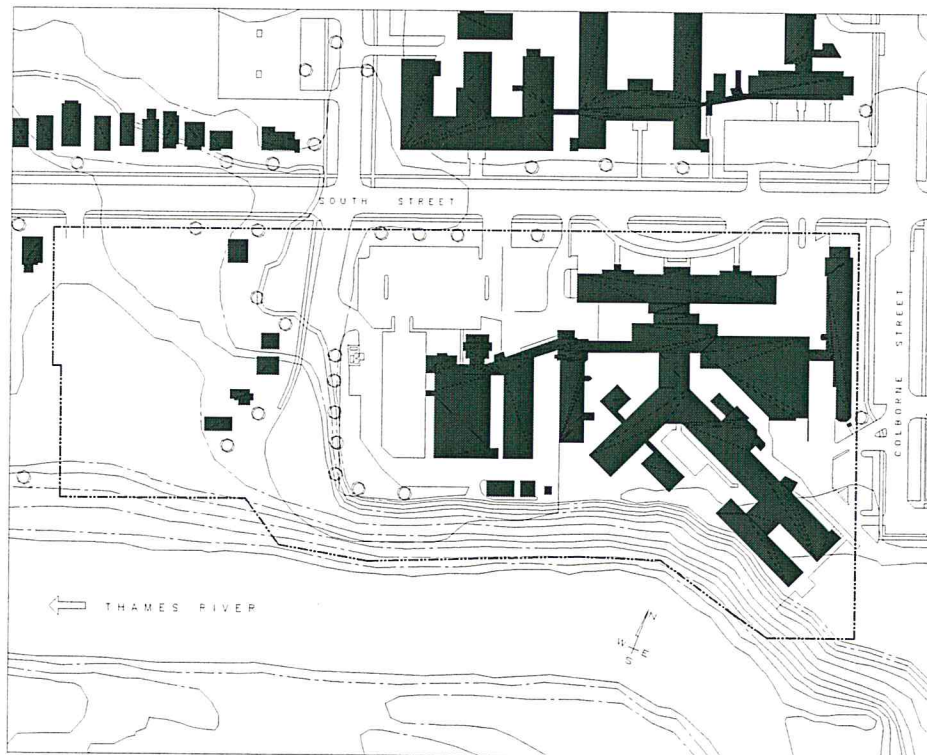
It is important to note that restorative environments should also be supported by caring staff. Many recent scientific studies have shown that when individuals are in contact with helpful and supportive people they are less stressed and are healthier than individuals who do not have a strong social support system.²⁶

4.0 SITING

4.1 Physical Setting

The chosen site is located in the southern portion of St. David's Ward adjacent to the Thames River. Its boundaries extend along South Street to Colborne Street. The west portion of the site stands virtually empty while the east side of the site is occupied by the various buildings of Victoria Hospital.

The siting and general planning for this development will be consistent with the Master Planning Document and will respond directly to the site assessment already completed.



Existing Site Plan

Figure 4.1a

4.2 Situation

To walk the site today, one cannot help but experience a variety of emotions. At one moment in time you can witness the disturbing consequences of uncontrolled growth, feel the subtle virtues found in accidental occurrences and anticipate the possibilities and potentials of rebirth. This site provides an interesting commentary of both urban growth and decline. The remaining shells of decaying houses and the vacant hospital buildings are fitting testaments to what has been and, perhaps, what may be again.



From records dating back to 1881, we see how the current site was once two independent sections of land with very different pasts. As time has progressed, they physically have fused into one but their individuality and physical distinctiveness still remain. The structure on both sites are extensions of the urban grid and originally being typical blocks with streets on all four sides (including the south edge adjacent to the Thames River).

The character and states of the west portion of the site have been continuously influenced and pressured by the overwhelming presence of institutions located across the road and immediately adjacent to it. Since its birth, it has accommodated mostly single family dwellings which were likely occupied by immigrants that settled to work in the neighbouring hospital or factories. The site remained like this until the late 1960's when most of the remaining houses (those that survived the flooding of the Thames 1937 and 1947) fell victim to the pressure of Victoria Hospital and it's need for additional parking. Thirty odd years later, the site stands virtually the same, home to a handful of houses and two hundred parking spots, quietly awaiting its next destiny.

The easterly portion of the site has always been home to Victoria Hospital. The buildings that have occupied these lands since 1875 constitute an historic succession of functional hospital architecture. They have been linked together, expanded, torn down, built and rebuilt in an on-going adaption to meet the ever-changing needs of the health care system. This adaption however has over-extended itself. Most of the buildings have reached their useful lifespan and have now been made obsolete by the passage of time. This does not however devalue the site's rich past and the

importance of maintaining it's history in the collective memory of the neighbourhood and the city.

The context and situation of the lands are quite intriguing. As you stand in the vacant area of the site, there is a hint of both calmness and unrest. The hum of the traffic seems to compete with the sound of birds much the same way that the smells of the Thames River conflict with the nearby bakery. The institutional buildings that remain active on the site stand beside abandoned structures that appear to foreshadow an inevitable fate with their boarded windows and barricaded doorways. This sense of turmoil and friction exists throughout the site and seems to be further underlined by the softness of the unsettled ground. These contradictory elements reveal part of the nature and complexity of the site that has been evolving over time.

The conditions at the periphery also contribute to the site's fragmentation as it seems to transform itself into several variations at each different edge condition. Where the land rises slightly to confront Wellington Road, there is an immediate sense of heightened, almost nervous, energy caused by the speed of the 40,000 cars that pass each day. Although there is only a glimpse of it seen from the site, it's impact cannot go unnoticed. This is in contrast to the less travelled South Street which is lined with trees, homes and sidewalks bringing a more human scale to the northern fringe of the site. The river's edge to the south, has tremendous potential but is currently quite disappointing as the lay of the land makes it almost impossible to see the waterway. The uncontrolled vegetation is also a source of frustration as it physically obstructs any personal engagement with the shoreline. The remaining easterly boundary, which is the site's highest elevation, is somewhat ill-defined as it immediately borders parking lots which eventually give way to a mix of residential and light industrial buildings. The overall context and mood of the site are hard to determine and represent a further challenge to be overcome.



Thus response to the site must the inherent contradictions and react responsibly to each condition, each view and each feeling. This requires more than rational thought and functional planning. It requires attentive intervention which is sympathetic to the people and places that inhabit the area. The final resolution of the overall design must not only satisfy the program, but clearly express the environment from which it grew, by which it is encompassed and which it exists within.

4.3 Response

The haphazard conditions described are not well suited for supporting the program. The mass and scale of the structures are unbalanced and not consistent with the surrounding buildings. Similarly, the planning is equally as discontinuous with, and does not follow, the established patterns of buildings and blocks found in the existing neighbourhood. The spatial continuity is somewhat fragmented, leaving dead or lost space between buildings. These conditions are not in keeping with established principles of wellness and consequently, are not conducive to the idea of a restorative environment. Modifications by means of subtraction, addition and renovation of existing buildings will be necessary. An analysis of each structure (physical and non-physical) is necessary in order to determine if they might contribute to the specified program.

The objectives of the redevelopment of the site relate directly to the principles of wellness. The first effort will be to try and impose a sense of order and planning sensibilities to the current conditions. Secondly, it is important that new buildings coexist with the site and that they support the street and each other. It is also necessary that the existing dead or lost spaces be reconfigured so that the areas between buildings and edges are meaningful and diverse and contribute to the public realm. Finally, the natural features and topography of the site will be not only uncovered, but emphasized so that the presence of nature can be enjoyed by all. These interventions will bring order, harmony, complexity and nature to the site and support the building's program of personal well-being.

5.0 SUMMATION

5.1 Conclusion

The final test will not judge solely how well the site responds to the existing urban fabric, or how pleasing the building appears on the street-scape, but rather, how it affects people who use it and how it is accepted by the community. Ultimately, this building will help people to restore, or find, balance in their lives. The rebirth of this site will provide meaningful places for people of the community to gather. Through this combined action, both the people and the community will be greatly enhanced thereby making a positive contribution to the city as a whole.

5.2 Notes

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