Application of a Salutogenic Design Model to the Architecture of Low-Income Housing

by

Ellen Ziegler
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Abstract

A strong correlation exists between inadequate housing and stress, and between stress and health. Studies have found that inadequate housing places both mental and physical stress on residents and that families and individuals living in low-income housing are often facing more stress and suffer from ill health more than those living in market housing. Salutogenesis, a concept developed by Aaron Antonovsky, focuses on what causes health rather than what causes illness. He links health with the ability to comprehend, manage and apply meaning to stress. This ability is called a Sense of Coherence. The higher the sense of coherence, the less negative the impact of stress will have on mental and physical health. It has also been shown that residents in low-income housing are often confronted with multiple social, physical, emotional and financial stressors, which can further weaken their sense of coherence. In this regard, low-income residents share a similarity with the hospital patients documented in many studies of salutogenics in healthcare, in that they face an abnormally high amount of stress and may be in situations that have weakened their sense of coherence.

In the 1990s architect Alan Dilani suggested that Antonovsky’s salutogenic principles be applied to the architectural design of healthcare facilities as a means to promote health. More recently, this design model has also been applied to long-term care facilities and workplaces, however it has not yet been applied to low-income housing. Although the presence of stress is not solely due to architecture, architecture and design can either intensify or mitigate the effects of stress on health. Countless studies show a relationship between the design of our built environment and health. For example, there is a direct link between access to natural light and blood pressure, between over-crowding or chronic noise and psychological stress and between
healing and nature. With over 8% of the Canadian population living in low-income housing and 3.3 million households paying more than what is considered affordable on rent (>30% of their income), addressing the health impact of low-income housing design is critical.
Preface

This thesis is original, unpublished, independent work by the author, Ellen Ziegler.
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1 Introduction

Salutogenesis is a research model and theory that was developed by Dr. Aaron Antonovsky in the late 1970s as a response to pathogenesis. After working in the medical field, Antonovsky became interested in what promotes and maintains health (*salus*) more than what causes illness (*pathos*). In the 1990s, architect Alan Dilani suggested that the same principles be applied to architecture. He was interested in identifying design attributes, architecture plans, circulation patterns and materials that promote health over illness. In chapter two of this thesis, Antonovsky’s theory of salutogenesis is explored, focusing specifically on aspects that have shaped and guided salutogenic design. Chapter three examines various approaches to salutogenic design and architecture, which has now been implemented in healthcare facilities, long-term care facilities and workplaces but has yet to be used as a model for low-income housing. Architects such as Alan Dilani and Tye Farrow are discussed, as well as researchers and scholars such as Sharon Vanderkaay, Jan Golembiewski, Judith Heerwagon and Roger Ulrich.

In chapter four, the need for a salutogenic model in low-income housing is explored in more detail by looking at the specific stressors that impact those living with conditions of poverty or in low-income housing. Residents in low-income housing often face a uniquely high level of stress and as such, there is an urgent need for a housing design model that aims to promote health through stress-reduction. There is also a large body of knowledge that supports the connection between the built environment and health. In chapter five, relevant historical events and figures that connect architecture with health are reviewed, with a specific focus on housing. It begins in the mid-19th century when the urban landscape was changing rapidly throughout Europe and North America, moving through the 20th century shift into modernism and ends with a case study analysis of Regent Park in Toronto. Regent Park was Canada’s first
public housing project in the late 1940s and is currently undergoing a large-scale redevelopment. Many of the methodologies that are steering the Regent Park redevelopment share principles with salutogenic design. The salutogenic qualities of both the original Regent Park and its redevelopment will be looked at in chapter six.

Based on the principles highlighted in chapter three and six, and on the specific stressors that are identified in chapter four, chapter seven focuses on developing a model for the application of salutogenic design to the architecture of low-income housing. Although people may not be controlled solely by environmental factors, they are heavily affected by the built world and it is a designer’s responsibility to create housing that pushes people towards health. This thesis explores the salutogenic design model in its current form, it looks at the integral role that housing plays in mental and physical health and uses success factors and critiques of current models and a case study to hypothesize on the impact of salutogenic design on low-income housing. It also identifies specific guidelines for low-income salutogenic design through the investigation of Regent Park as a case study.
2 Antonovsky’s Theory of Salutogenesis

In contrast to the traditional study of the sources of disease, known as pathogenesis, salutogenesis is an approach to medical treatment and healthcare that focuses on the origins of health. It was developed in the late 1970s by Aaron Antonovsky, a professor, researcher and medical sociologist who was interested in answering the question of how most people manage to live relatively healthy lives despite being faced with disease, emotional and physical stress, social struggles and other challenges: “Given the ubiquity of pathogens—microbiological, chemical, physical, psychosocial, social and cultural—it seems to me self-evident that everyone should succumb to this bombardment and constantly be dying” (Health Stress and Coping 13). His position was that the vast majority of people in the world are constantly challenged by so many adversities and illnesses that it is a miracle anyone survives, let alone thrives. He wrote: “the question then becomes not how some concentration camp survivors or poor people manage to stay healthy, but how any of us manage to stay healthy—the question of salutogenesis” (9). By shifting his focus from disease to health, Antonovsky began to develop a systematic research methodology with a focus on what promotes health, as opposed to what causes disease.

Antonovsky postulated that the traditional pathogenic approach in the medical field inhibits a complete understanding of health for three key reasons. Firstly, he says: “[the pathogenic approach] blinds us to the subjective interpretation of the state of affairs of the person who is ill” (36). By focusing our attention strictly on the disease “we are disregarding the sickness.”¹ The pathogenic model also risks falling into a search for a “magic bullet” (37). When the focus is on finding a single answer to a single question, there is a risk of losing the bigger

¹ Antonovsky cites Eric Cassell’s, The Nature of Healing, where the definition of sickness is one that “recognizes persons as sick when they cannot achieve their goals and purposes because of impairments of function, ranging from the molecular to the spiritual, which they believe to fall under the scope of medicine. Such impairments may result from disease, but certainly not all” (Health Stress and Coping 36).
picture. Valuable information presented along the way may be missed. Finally, Antonovsky was concerned that the pathogenic approach implies a dichotomous relationship between health and disease; that is, a patient is healthy in the absence of disease. This idea precludes the possibility of disease and health being interrelated, simultaneous and multi-dimensional conditions.

In the 1990s, architect Alan Dilani suggested that Antonovsky’s salutogenic approach be applied not only to medical treatment and research, but also, to the physical design of healthcare facilities as a means to promote health. He suggested the use of Antonovsky’s theory to create Psychosocially Supportive Design, a theory and framework that promote health through the design of the physical environment. “The basic function of psychosocially supportive design is to start a mental process that… may eliminate or, at least, reduce anxiety, bringing about positive psychological changes. Design from a salutogenic perspective defines, not only the causes of stress, but introduces wellness factors that strengthen health processes” (Dilani, “Psychosocially Supportive Design” 16).

In order to understand how salutogenesis can be applied to design, it is necessary to identify some key concepts of salutogenesis, the most notable being the dis-ease/ease spectrum, the relationship between stress and tension, the role of personal and social resources that one has available—or as Antonovsky calls these, Generalized Resistance Resources—and sense of coherence. Antonovsky placed health and disease, or ease and dis-ease, together on each end of a continuum. He defined the health ease/dis-ease continuum as a: “multi-faceted state or condition of the human organism” (Health Stress and Coping 64). A key factor in salutogenesis is not which side of the continuum a person is on, but what factors move a person along the continuum (37). He emphasizes that salutogenesis is not about making a sick person well, rather it is about identifying their location on the continuum, and mitigating the stress that may move them
towards the dis-ease side (196).

Antonovsky also postulated that there is a direct relationship between what he called health-ease, dis-ease and stress. He defined stressors as external or internal demands that upset an organism’s homeostasis (72). He believed that these stressors are omnipresent, that they are ubiquitous to the human condition, and that the key to health is the way in which we cope with such stressors: “Individuals differ, I suggest, not so much in the extent to which underlying emotional conflict is found… rather in the extent to which we can cope with these conflicts” (81). Antonovsky lists eleven notable sources of stressors universal to humans: accidents and the survivors, untoward experiences of others close to us, horrors of history, intra-psychic, unconscious conflicts and anxieties, fear of aggression, events we hear about (news), world crises, psychological crises, social relations, social expectations (89). According to Antonovsky, the key to one’s ability to thrive, or be towards the ease side of the continuum, is centered on the ability to cope with stressors of this nature.

One of the key defining characteristics of the salutogenic model is what Antonovsky refers to as a sense of coherence. He defined sense of coherence as: “a global orientation that expresses the extent to which one has a pervasive, enduring though dynamic feeling of confidence that (1) the stimuli derived from one’s internal and external environments in the course of living are structured, predictable and explicable; (2) the resources are available to meet the demands posed by the stimuli; and (3) these demands are challenges, worthy of investment and engagement” (Unraveling the Mystery of Health 19). According to Antonovsky the strength of one’s sense of coherence is determined by three key factors: comprehensibility, manageability and meaningfulness (Table 1). A person with a strong sense of coherence will understand the challenge they are faced with (comprehensibility), will have the ability to use resources to cope
with the challenge (manageability), and will have the ability to find motivation, acceptance, or hope that is needed to overcome the challenge (meaningfulness). Although a seemingly simple idea, it is sense of coherence that indicates a shift from pathogenic to salutogenic, a fundamental belief in things working out leads one to frame questions from a position of health ease instead of a position of dis-ease. “To ask about health ease, instead of asking about disease, is to search for weapons that may be far more potent in decreasing human suffering” (Antonovsky, *Health Stress and Coping* 56).

Table 1: Sense of coherence factors and definitions
Source: Antonovsky, *Unraveling The Mystery Of Health* 16,18.

<table>
<thead>
<tr>
<th>SOC FACTORS</th>
<th>DEFINITION</th>
</tr>
</thead>
</table>
| Manageability| “The extent to which one perceives the stimuli that confront one, deriving from the internal and external environments, as making cognitive sense, as information that is ordered, consistent, structured, and clear, rather than noise–chaotic, disordered, random, accidental, inexplicable” (16).  
A person can make sense of the situation, problems or challenges that they face. |
| Meaningfulness| “The extent to which one perceives that resources are at one’s disposal which are adequate to meet the demands posed by the stimuli that bombard one... resources under one’s own control or resources controlled by legitimate others–spouses, friends, colleagues, God, history...” (18).  
In the face of a challenge or stressful situation, a person has adequate resources at their disposal and that they trust, which can help them cope. |
| Comprehensibility | “The extent to which one feels that life makes sense emotionally, that at least some of the problems and demands posed by living are worth investing energy in, are worthy of commitment and engagement, are challenges that are ‘welcome’ rather than burdens that one would much rather do without” (18).  
When faced with a stressful situation or challenge, a person will have the ability to seek meaning in it, and will do his or her best to overcome it. |
Antonovsky cites three general sources of the sense of coherence: psychological sources, social structural sources, and cultural-historical sources, all of which are centered around childhood and life experiences that are characterized by consistency, participation in shaping outcome, and under-load/overload balance (*Health Stress and Coping* 184). He states that for a strong sense of coherence to develop, one’s experiences must be predictable and rewarding (187). If experiences are predictable but frustrating and punishing to a point where survival is questioned, then it is likely they have a negative impact on the sense of coherence. Antonovsky claims that although it is more difficult to change a sense of coherence once adulthood is reached, it is still possible (189). Although sense of coherence is considered to be dynamic, the changes that can occur do so around a stable location on the continuum. That is to say, a person with a strong sense of coherence will likely maintain a strong sense of coherence: “one tends to choose situations that reinforce a strong sense of coherence” (125). Or, the reverse of that is also true; when a person is consistently faced with experiences that weaken their sense of coherence they are likely to find it more difficult to put themselves in situations that may help to strengthen it.

The response to challenges, or stressors, is what Antonovsky calls tension. He explains that when a response to a particular stressor comes in the form of tension, it can lead to increased experiences of stress, and that in order to manage tension a set of Generalized Resistant Resources (GRRs) are used, which he defines as “any characteristic of the person, the group, or the environment that can facilitate effective tension management” (100). Three key GRRs are adaptability, social ties and access to institutional or community support (100). Wealth is also a notable GRR: “access to money, the symbolic equivalent of resources is an important GRR in all societies” (106). Antonovsky also notes that absence of a GRR can itself be considered a stressor
For example, the absence of social ties or wealth can increase emotional and mental stress on a person. For Antonovsky there was an important link between GRRs, tension and a sense of coherence. “The extent to which our lives provide us with GRRs is a major determinant of the extent to which we come to have… a strong sense of coherence.” (122)

Figure 1: Antonovsky’s theory of salutogenesis
Source: Health Stress and Coping 184.

Key to figure one
Arrow A: Life experiences shape the sense of coherence.
Arrow B: By definition, a GRR provides one with sets of meaningful, coherent life experiences.
Arrow D: A strong sense of coherence mobilizes the GRRs and SRRs at one’s disposal.
Arrow E: Child rearing patterns, social role complexes, idiosyncratic factors, and chance build up GRRs.
Arrow F: The sources of GRRs also create stressors.
Arrow G: Traumatic physical and biochemical stressors affect health status directly. Health status affects extent of exposure to psychosocial stressors.
Arrow H: Physical and biochemical stressors interact with endogenic pathogens and "weak links" and interact with stress to affect health status.
Arrow I: public and private health measure avoid or neutralize stressors.

A defining characteristic of salutogenesis is how the entire approach is framed.

Antonovsky claims that: “How one poses the question is crucial to the direction one takes in looking for answers” (12). A pathogenic model asks: “what causes a person to become ill,” whereas a salutogenic model ask: “what are the factors that facilitate his or her remaining at that
level [on the health ease/dis-ease continuum] or moving towards a more salutary end of the continuum” (196). When Antonovsky’s principles are applied to the function of a physical environment the question becomes, what are the design factors that move a person towards the salutary end of the continuum? Are there attributes in the physical environment that can strengthen an individual’s sense of coherence, or reduce the stressors that an individual faces? Dilani states: “There is an important relationship between a sense of coherence and the characteristics of the physical environment that strengthen people’s emotional wellbeing” (Dilani, “Psychosocially Supportive Design” 17). It is with this in mind that the question of salutogenesis and the design of low-income housing will be addressed.
3 Salutogenic Design Models

3.1 Alan Dilani – Psychosocially Supportive Design
In the 1990s, architect Alan Dilani, proposed that Antonovsky’s principles be applied to the built environment, specifically to the design of healthcare facilities. Since then, Dilani and many other architects, designers and theorists have begun to further explore Antonovsky’s theory and to approach architecture, interior and urban design through a salutogenic lens, however it has yet to be applied to social housing. Before the significance of salutogenesis on social housing can be made clear, it is important to first understand what salutogenesis means in terms of architecture and the built environment.

Alan Dilani conceived of the idea of salutogenic design, or what he calls Psychosocially Supportive Design, as a way to promote health: “The Psychosocially Supportive Design approach is offered as a useful theory and framework to guide healthcare designers and planners who consider how the physical environment impacts wellness factors in order to promote health” (Dilani, “Psychosocially Supportive Design” 13). According to Dilani, salutogenic design not only defines the causes of stress but it also introduces wellness factors that can strengthen health. “The theory suggests that we not only design for stress reduction, but focus on salutary rather than risk factors” (21).

Dilani raised the question of how the shift from a pathogenic approach to a salutogenic approach manifests in the built environment: “The basic function of psychosocially supportive design is to start a mental process that… may eliminate or, at least, reduce anxiety, bringing about positive psychological changes” (16). Based on his extensive research he created a list of design qualities that he argues will strengthen an individual’s sense of coherence. Table 2 lists these attributes and categorizes them based on Antonovsky’s sense of coherence factors. Dilani’s
view that design may strengthen a sense of coherence is applicable to any built environment, including housing. In the case of low-income housing, where residents are often faced with a high number of external stressors such as inadequate building conditions, financial stress, overcrowding or housing insecurity salutogenic design principles may be particularly beneficial.

Table 2: Dilani’s design attributes mapped out in relation to Antonovsky’s sense of coherence factors
Source: Dilani, “Psychosocially Supportive Design” 21.

<table>
<thead>
<tr>
<th>Comprehensibility</th>
<th>Way-finding / Colours / Nature / Perception / Landmark / Pleasure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manageability</td>
<td>Aesthetic Elements / Natural Light / Green Environments / Stimuli / Interior design / Restoration / Ergonomic design</td>
</tr>
<tr>
<td>Meaningfulness</td>
<td>Social support / music / art / culture / gym (autonomy/freedom) / pets / views / comfort / positive distractions</td>
</tr>
</tbody>
</table>

Dilani also notes that the salutogenic design approach is integrative and holistic and involves collaboration by team of project stakeholders. “The issue of psychosocially supportive design is not only the task for designers; it requires that the entire organization should understand the meaning of salutary organization” (21). In the case of healthcare, this includes the designers and developers, as well as the doctors, staff and possibly the patients and their families. If the entire team understands the impact that design has on a sense of coherence and in turn on the success of a project, they may be more likely to support the design process and to encourage the upkeep of the facilities. “The organization should measure the sense of coherence; the staff should comprehend it and act on it” (21). This idea is also significant in the case of low-income housing design. For example, building maintenance is an issue that is often raised with residents (Paradis 16). However, if the building management and the residents understand the impact of
salutogenic design there may be more incentive to maintain the building and the surrounding grounds. It can also help create a set of common goals and a common language among the project team.

Although Dilani’s primary focus is the design of healthcare facilities, he has also researched the application of salutogenic design principles to the design of other built environments such as workplaces. “Are the positive characteristics from a stress-reducing point of view, of the above mentioned architectural dimension, possible to verify and implement in current workplaces and the overall built environment?” (Dilani, “A New Paradigm of Design and Health” 15).

3.2 Jan Golembiewski – Neurology of Salutogenic Design
Jan Golembiewski, a leading researcher of the relationship between the built environment and mental wellbeing, states that: “Salutogenic theory is a particularly useful tool as it is specific and easily applied to an architectural application” (Golembiewski, “Start Making Sense” 114). Similarly to Dilani, he maintains that comprehensibility, manageability and meaningfulness—which support a strong sense of coherence and foster a natural healing process—have clear architectural ramifications (114).

Golembiewski’s research is predominantly focused on mental health and neurology and, as such, he applies Antonovsky’s principles to specific architectural settings and individuals. He studies the architecture and design of psychiatric healthcare facilities through the lens of comprehensibility, manageability and meaningfulness. Comprehensibility, he says, is making sure that perceptual cues are present to assist perceptual processes. These include attention to texture and materiality, controlling the size of spaces and the numbers of patients and normalizing environmental features (Golembiewski, “Start Making Sense” 114). Manageability
means making provisions for patients to exercise control of their environment. Features such as operable windows or access to sporting facilities can make a significant difference in the level of manageability a patient may feel. “The feeling that a person is in control of his or her environment and life circumstances is very fortifying… the feeling that you are totally out of control is absolutely disempowering” (107). Meaningfulness refers to a personal or cultural connection and can be enhanced by aesthetics or by consideration of spatial organization, such as providing spaces for visitors or for special personal belongings (114). “Meaning, it seems, is essential to the maintenance of life and is therefore the most significant ingredient of a sense of coherence… Of all the sources of environmental meaning, there is little doubt that it is primarily found in the social environment – in love and communication, in family, friendship…” (111).

Although the architectural details may vary from case to case, this type of design thinking and the strong understanding of neurological responses to the built environment are widely applicable. “…Treatment may be required when one is ill, but a supportive environment is always required to assist and maintain good health” (101). Golembiewski states that: “Under normal circumstances people have a great deal of ability to adapt to new surroundings—even in stressful situations… However, when environmental factors start to erode a general sense of coherence—when meaning, control and comprehensibility are lost—resistance to disease weakens and perceptual difficulties are exacerbated, often creating a vicious circle of increased vulnerability and anxiety” (114). Golembiewski’s theory supports the claim that the outcome of salutogenic design is effective, in hospitals, as well as in any built environment. In his research he found that manageability, comprehension and meaning have significant architectural ramifications and they are central to salutogenic design. As well, his studies that show how environmental factors may erode a sense of coherence and, in turn, will weaken resistance to
disease and perpetuate anxiety. Although Golembiewski’s studies do not reference housing, this observation of his is of particular significance to the design of low-income housing, where residents may already be facing stressors that lead to a weakened sense of coherence.

3.3 Heerwagon – Salutogenic Design in the Workplace

Dilani and Golembiewski primarily focus on the design of healthcare facilities, however they each express belief in the application of salutogenic principles to other types of design. Researchers, Heerwagon, Heubach, Montgomery and Weimer have taken the principles of salutogenic design and applied them to a workplace setting. They argue that the design of a built environment has a measurable impact on mental and physical health, and in a workplace setting it can also impact efficiency and productivity. “The physical work setting is a valuable tool which, if used wisely, can contribute significantly to productivity and wellbeing of workers and organizations” (Heerwagon, Heubach, Montgomery & Weimer 10). Heerwagon, Heubach, Montgomery and Weimer developed a design framework based on research conducted by environmental psychologists, that connects mental and physical health to the built environments. They identify salutogenic qualities similar to those found in healthcare design, such as ability to control the environment, access to private and semi-private spaces, to spaces for socializing or relaxing and to spaces that foster a sense of community (2). The framework that they suggest is based on three components: “1) the identification of basic human needs as they relate to a work setting; 2) identification of properties of the environment that are likely to affect the fulfillment of those needs; and 3) identification of indicators of “fit” and “misfit” related to stress and well-being at work”2 (3). The framework also supports Antonovsky’s notions of a sense of coherence

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2 Heerwagon uses the term fit to describe the congruency between person and environment: “Within the field of environmental psychology, stress has been studied primarily from the perspective of congruence (or “fit”) between person and environment… When the environment is congruent with one’s needs, the person experiences positive feeling and outcomes” (Heerwagon, Heubach, Montgomery & Weimer 3).
and coping or adaptation. “Positive indicators of adaptation could include participation in design
decisions, personalization of spaces, building a sense of place and community, being able to
control the environment and being able to regulate one’s own behaviour to meet changing needs
and preferences” (7). These indicators directly correlate with manageability, meaningfulness and
comprehensibility. Similarly to Dilani and Golembiewski, some specific key environmental
qualities are identified, such as noise control, ability to control the built environment, ability to
control the social environment, and access to spaces that are not over-crowded.

This framework further supports both Dilani and Golembiewski in their proposals that
design can strengthen or weaken a sense of coherence. Heerwagon, Heubach, Montgomery and
Weimer cite the work of G.G. Stern, stating that: “people prefer to be in environments that are
compatible with their needs and preferences; when this does not occur they experience
dissonance. If the dissonance cannot be overcome by modification of environmental demands…
people are likely to experience negative outcomes, including stress responses and discontent.
When the environment is congruent with one’s needs persons experience positive feelings or
outcomes”(3). The dissonance referred to by Stern can be understood in the same way that
Antonovsky describes stress; when one cannot understand, manage or apply meaning to a
situation it can cause stress. They both argue that stress may be intensified when the surrounding
environment is a misfit with one’s needs, an argument that is also applicable to housing. For
example: 1) identification of basic human needs as they relate to a home setting; 2) identification
of properties of the environment that are likely to affect the fulfillment of those needs; and 3)
identification of indicators of “fit” and “misfit” related to stress and well-being at home.

Although the architectural outcome may vary between workplaces and housing, the approach is
applicable to both settings, and therefore may achieve the same goal of creating a supportive
built environment that has a positive impact on mental and physical health and that encourages a strengthening of one’s sense of coherence.

3.4 Roger Ulrich – Theory of Supportive Design
Although Roger Ulrich’s Theory of Supportive Design does not specifically follow Antonovsky’s salutogenic approach, it does support the physical characteristics of salutogenic design. The Theory of Supportive Design is a stress-based model that is a marriage of semi-scientific and scientific research. It looks at how design affects healthcare outcomes in a traditional design setting, using stress as a starting-point. According to Ulrich, manifestations of stress can be psychological, physiological and behavioural (Ulrich, “A Theory of Supportive Design for Healthcare Facilities” 5). Ulrich states that instead of working to mitigate these negative manifestations, the design of traditional healthcare facilities actually worsens them. Noise, lack of privacy, and visually un-stimulating design elements can undermine a patient’s sense of personal control or autonomy, whereas, supportive design can aid in coping with stress and foster improved medical conditions (5). Ulrich focuses on three supportive design principles: design that fosters a sense of control with respect to physical surroundings; design that facilitates access to social support; and, design that provides access to positive distractions (5). He identifies general guidelines intended to help inform the designer’s creativity and point the designer in a direction that will lead to stress-reducing design and that can be tailored to meet specific needs and goals.

Although Ulrich’s model may have helped inform salutogenic design and provides some key design characteristics that will alleviate stress, it lacks the integrative and holistic approach that is key to salutogenesis. The design attributes that Ulrich recommends are salutary, but the overall approach is still one of pathology in that it is approaching the problem by asking: “What
causes stress?" As Golembiewski points out: “...studies invariably focus on single details, frequently drawing on abstract etiological mechanisms such as the general concept of ‘stress.’ The salutogenic methodology is both holistic and more specific: for Antonovsky the stimulation we call stress isn’t just noise, it’s information. And our ability to cope with the flood of information—be it good or bad—is ultimately what determines our generalized state of health” (Golembiewski “Salutogenic Design” 64). Ulrich’s model is much more specific than salutogenesis and does not look at the bigger picture of health promotion through design and how designers can achieve this goal, from conception to completion. It is still, however, valuable to recognize Ulrich’s theory, as it is a significant contributor to current salutogenic design models.

3.5 Tye Farrow and Sharon Vanderkaay – Salutogenic Design Method and Evaluation
Tye Farrow is an architect based in Toronto whose aim is to promote health and implement salutogenic design by looking at: “What causes health?” (Salutogenic Spaces: Designed to Thrive). He, along with researcher, writer, designer and long-time colleague, Sharon Vanderkaay, believe that: “There is no such thing as a neutral space: what we build either promotes or erodes our health” (Salutogenic Spaces: Designed to Thrive). Rather than generating a checklist of specific design details, Farrow and Vanderkaay promote the use of a participatory action-research model that is centered on planning, dialogue, observation and reflection (Figure 2) to guide architects and team members through the design process, in combination with a set of characteristics, or vital signs, used to inform future designs and evaluate the success of the project once it is complete.
Farrow and Vanderkaay’s salutogenic design methodology is based on communication, consensus and observation, as well as on intuition, instinct and emotional reaction. They describe a design spectrum based on Antonovsky’s Health Ease/Dis-ease continuum: “Some places overflow with life, energy and healthy social interaction, there is a feeling of optimism and abundance that has the power to raise our spirits. At the other end of the health spectrum, we see places that may make us feel dis-ease, we may feel isolated, alienated from the community, unsafe or even depressed” (Salutogenic Spaces: Designed to Thrive). Dis-ease, isolation, alienation and depression are feelings that erode a sense of coherence and are comparable to the dissonance described by Heerwagon or the stress described in Antonovsky’s model. The significance of an intuitive response to architecture is not new. For example, in the De Architectura, Roman architect and engineer Marco Vitruvius described the three conditions of architecture as being: “commodity, firmness and delight.” Delight can be understood as the experience of architecture and, even more importantly, a positive experience, one of pleasure,

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3 In the seventeenth century, Henry Wooton translated firmitas, utilitas and venustas into “commodity, firmness and delight” in The Elements of Architecture.
happiness or joy. Similarly, much of Antonovsky’s theory is based on emotional response of the patient or subject. His definition of sense of coherence is based entirely on one’s emotional understanding: “…one has a pervasive, enduring though dynamic feeling of confidence that one’s internal and external environments are predictable and that there is a high probability that things will work out…” (Antonovsky, *Health Stress and Coping* 10). Comprehension, manageability and meaningfulness can be considered subjective experiences but they are accepted as the basis for not only Antonovsky’s theory but also for the theories of Golembiewski, Heerwagon, and Dilani.

Borrowing from Dilani, Farrow and Vanderkaay believes that salutogenesis is a process that involves more than just the designer, but the entire team. A consensus and participatory process is key to their approach. They employ methods from well-known community development models such as Asset-Based Community Development⁴ and Participatory Action Research.⁵ Farrow and Vanderkaay believe the success of a project relies heavily on a participatory model that encourages the stakeholders to understand the design process, their options and the logic of the design decisions being made. Farrow and Vanderkaay describe the importance of this as being about: “believe-in, not buy-in” (*Hands-on Design Process*). According to them, the stakeholders need to believe-in the project and understand the purpose of the salutogenic principles in order to create a successful outcome. In order to help achieve the

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⁴ According to the Asset Based Community Development (ABCD) Institute: “ABCD considers local assets as the primary building blocks of sustainable community development. Building on the skills of local residents, the power of local associations, and the supportive functions of local institutions, asset-based community development draws upon existing community strengths to build stronger, more sustainable communities for the future.” (Asset-Based Community Development Institute)

⁵ Participatory Action Research is a methodology that focuses on participation, planning, observation and reflection. In “Participatory Action Research,” an article published in the *Journal of Epidemiology and Community Health* it is described as a method that is: “…based on reflection, data collection, and action that aims to improve health and reduce health inequities through involving the people who, in turn, take actions to improve their own health” (Baum 1).
difficult task of having a team of stakeholders agree on a shared purpose, Farrow and Vanderkaay established a series of steps based on well-known participatory design methods and adult education tools. These steps outlined are intended to guide the team towards a health-promoting design and are as follows: “Define what we want to achieve together; challenge our assumptions and constraint; identify our unifying purpose and intended legacy; confirm our goals and aspirations in meaningful language; investigate: consider other questions we should be asking; explore: consider options beyond easy answers; document the preferred design solution” *(Hands-on Design Process).*

Through her extensive research on communication, adult learning and urban design, Vanderkaay also developed five “vital signs” used to evaluate or to observe and reflect upon a project. These vital signs can be further described as an interpretation of comprehensibility, manageability and meaningfulness. Similar to Golembiewski’s identification of the architectural implications of Antonovsky’s three points, the presence or absence of the five vital signs conveys the level of comprehensibility, manageability and meaningfulness that is experienced within a space or building. The vital signs that Vanderkaay identifies are diversity, vitality, variety, authenticity and legacy. She developed a series of questions in order to evaluate if or how the vital signs are present (Table 3).

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6 Vanderkaay’s study of communication and adult learning is significant because it greatly contributed to her understanding of how to communicate clearly between stakeholders.

7 Each of the vital signs — variety, vitality, nature, legacy and authenticity — are words that have many meanings and interpretations, particularly within the field of architecture. Because Vanderkaay’s architectural framework is the focus of this section, her interpretation and definitions of each word will form the basis for the discussion on his vital signs.
Table 3: Vital signs or characteristics used to evaluate the built environment through the lens of salutogenesis
Source: Salutogenic Spaces: Designed to Thrive

<table>
<thead>
<tr>
<th>Vital Sign</th>
<th>Evaluation Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variety</td>
<td>Does the design provide visual interest and support diverse activities? Does it promote a sense of discovery? Does it tell a story about people as individuals, does it reveal a sense of humor and encourages creative talents?</td>
</tr>
<tr>
<td>Vitality</td>
<td>Does the design convey energy and stimulate social interaction? Does it make us feel energetic and social?</td>
</tr>
<tr>
<td>Nature</td>
<td>Does the design make connections with the natural world? Does the design incorporate views or experiences with living things, growing things or water?</td>
</tr>
<tr>
<td>Authenticity</td>
<td>Does the design convey locally-inspired character? Does it have roots in the community? Does it reflect the value and aspirations of people who live and work there? Does it reflect human scale?</td>
</tr>
<tr>
<td>Legacy</td>
<td>Is it a design that is beyond “sustainable” in terms of advancing long-term health and prosperity? Does it make use of natural systems to generate healthier water, air or land use?</td>
</tr>
</tbody>
</table>

In order to provide support for the five vital signs within the realm of architecture, a selection of architectural theories, examples and cultural references follow.

**Diversity**
The first vital sign, variety, can also be understood as diversity. Jane Jacobs also discusses the need for diversity in cities in *The Life and Death of the Great American City*: “In our American cities, we need all kinds of diversity, intricately mingled in mutual support. We need this so city life can work decently and constructively, and so the people of cities can sustain (and further develop) their society and civilization” (Jacobs 241). Essentially, Jacobs is arguing that diversity, or variety, promotes growth and life within a society. Vanderkaay explains that to assess the presence of variety in a design it is necessary to ask questions, such as: “Does the design provide visual interest and support diverse activities? Does it promote a sense of discovery? Does it tell a
story about people as individuals, does it reveal a sense of humor and encourages creative talents?” (Salutogenic Spaces: Designed to Thrive).

**Vitality**

Vanderkaay describes the second vital sign, vitality, as something that conveys energy and stimulates social interaction and that encourages feeling energetic and sociable (Salutogenic Spaces: Designed to Thrive). The notion of vitality can be closely linked to Jane Jacobs, who believed diverse urban design coupled with a city full of diverse people and cultures work together to create community vitality (Projects for Public Spaces). Vitality can also be tied to the idea of conviviality, liveliness and socializing. Many well-known urban theorists such as William Whyte and Jan Gehl showed great interest in social interactions in urban centers. Whyte believed that: “The street is the river of life of the city, the place where we come together…” (Whyte 7) Social interaction and spaces that feel alive are particularly important in high-density urban spaces such as inner city low-income developments where a sense of community and a sense of safety may be key to the success of the development.

**Nature**

The third vital sign that Vanderkaay identifies is nature. She describes the impact of nature in the built environment as inspiring play, relaxation, social interaction or expression, stating that: “We feel better and less anxious when we can see living things… nature helps us cope with the stress of excessive noise, information overload and other realities of life in the city.” The connection between nature and health has been studied in many disciplines, including architecture and medicine. Examples of some of the more specific connections are: how views of nature can decrease the time it takes for a patient to recover (Beauchemin); that sunlight supports a natural circadian rhythm, which is needed to maintain good cardiovascular health (Portaluppi, et al.); and that contact with nature—whether it be visual, active or passive—has been shown to
improve moods and decreases stress (Heerwagon “Restorative Commons” 42). In 2005, Richard Louv reluctantly⁸ coined the term Nature Deficit Disorder in reference to the impact that a disconnection with the natural world has on the human condition, particularly on children. He describes the effect of such a deficit as: “diminished use of senses, attention difficulties, and higher rates of physical and emotional illness” (36). A study from Chicago further supported this when it found that public housing projects with large trees were more likely to encourage social interaction between neighbours than projects without trees, which increased the social bond within the community (Sullivan 679). It is also important to note the influential role that nature has had on many urban planners and architects of the 20th and early 21st century. Architects such as Frank Lloyd Wright, Alvar Aalto and Richard Neutra are just a few of the key 20th century designers whose designs were highly informed by the natural environment. These ideas are also widespread in contemporary architecture dialogue, enough so that there are entire areas of study on biomimicry, biophilic design, and sustainable design, which is driven by architecture’s relationship to the natural environment. It is important, however, to acknowledge that there are designers who specifically consider nature as key to health, such as: Perkins + Will and Charles Jencks. Both of whom will be discussed in greater detail at the end of this chapter in relation to their contribution to salutogenic design.

**Authenticity**

The fourth vital sign is what Vanderkaay identifies as authenticity. Although the term authenticity can be understood in many ways, particularly within the field of architecture, Vanderkaay describes her interpretation in a similar way to that of author and professor of architecture, Avi Friedman, who says that authenticity is: “a sense of place… Place gives the

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⁸ Although he doesn’t use the term salutogenic, it is arguable that Louv’s approach was salutary as throughout the book he references the focus on illness instead of health. “Our culture is so top heavy with jargon, so dependent on illness, that I hesitate to introduce this term [nature deficit disorder]” (Louv, 36).
people who inhabit, visit, and use them a sense of identity. Those [places] with an authentic atmosphere inspire people and draw them into some kind of relationship” (Friedman 10). Vanderkaay and Friedman both use an example of a personal experience in a common North American shopping mall as lacking in authenticity. For Freidman it is the mall food court that spurred his journey into exploring the meaning of place: “A row of cafeteria-like tables with seats affixed to the floor lined the wall…I looked at the high ceiling. Painted black, it was daunting with exposed ducts and conduits. The sparse lighting fixtures cast a soft yellow shade that draped a monochrome veil over the place… It offered no comfort… It failed to welcome and lacked the touches needed to turn a passerby into a guest or a resident” (10). In order to recognize the authenticity of a place, Vanderkaay asks: “Does the design convey locally-inspired character? Does it have roots in the community? Does it reflect the value and aspirations of people who live and work there? Does it reflect human scale?” (Salutogenic Spaces: Designed to Thrive). Authenticity can also be understood as appropriateness, which speaks to Vanderkaay and Farrow’s idea of flexibility. In order to be successful a design must be appropriate for the time, place and people for which it is being created. This means that the final product could differ greatly with each project. There is no one magic bullet, as Antonovsky argues, instead it is key to ask the right questions for the right population, and to evaluate projects through a salutogenic lens.

**Legacy**
The final vital sign that Vanderkaay identifies is legacy. Dr. Elizabeth Hunter believes that: “legacy-creation is a universal drive” (Hunter 327) and her studies show that leaving a legacy is closely linked to finding meaning in life for individuals (325). In architecture as well, there is a strong connection between legacy and meaning, but on a much larger scale. Architecture can leave a legacy for an entire generation, culture or society. In more contemporary dialogue, the
word legacy also evokes notions of social, cultural and environmental sustainability. For Vanderkaay, legacy means: “…creating a design that is beyond ‘sustainable’ in terms of advancing long-term health and prosperity” (Salutogenic Spaces: Designed to Thrive), and environmental sustainability is a key part of such a legacy: “[designs that] make use of natural systems to generate healthier water, air or land use” (Salutogenic Spaces: Designed to Thrive).

There is an important connection that can be drawn here between the vital signs that Vanderkaay uses to evaluate the success of a project and the architectural interpretations of Antonovsky’s criteria: “A person with a strong sense of coherence will understand the challenge they are faced with (comprehension), will have the ability to use resources to cope with the challenge (manageability), and will have the ability to find motivation, acceptance, or hope that is needed to overcome the challenge (meaningfulness)” (Unraveling the Mystery of Health 16). Variety, vitality, authenticity, nature and legacy each demonstrate how well a space is used, if it is used, and what it is used for, which can ultimately reveal the success of a project. As well, the vital signs can contribute to the ideas of comprehensibility, manageability and meaningfulness, by both promoting them and revealing them. For example, based on Farrow’s descriptions, variety and authenticity can allow a person to better understand what they are experiencing in a space (comprehension); nature can provide positive distractions or act as a component of a design that is in the hands of the user (meaning and manageability); and legacy and vitality can provide a sense of connection to a place (meaning). The connection between Vanderkaay’s vital signs and Antonovsky’s sense of coherence factors are shown in Figure 3.
Figure 3: Connections between Vanderkaay’s vital signs and Antonovsky’s sense of coherence factors

3.6 Examples of Health-Promoting Architecture

Credit Valley Hospital and Peel Region Cancer Care Centre, Farrow Partnership
Farrow Partnership Architects designed the Credit Valley Hospital using salutogenic design principles. Based on the information gathered from the action-research workshops, a design was created that made use of natural materials and glass, shapes that mimic nature that included views of nature and inviting public and semi-private communal spaces. Large wood columns curve up towards the ceiling and extend their beams like branches, evoking the scale and shape of the trees. Interior foliage weaves around benches and the bottom of the columns, adding an element of privacy and conveying the image of a forest floor. The large panels of glazing and skylights let natural light filter in like dappled sunlight.
St. Mary’s Hospital, Farrow Partnership and Perkins + Will

St. Mary’s Hospital in Sechelt BC has been recognized by the salutogenic design community as a successful example of design that promotes health. It is designed with the intention to foster healing by connecting healthcare and nature. Rooms and corridors are designed with large windows that have views to the ocean and an abundance of natural light. Tradition, art and culture also played an important role in the design and materials selection, as members of the local First Nations band were a part of the team and helped design an extensive wood mural reminiscent of the traditional Coast Salish bent wood box. St. Mary’s is the first carbon neutral hospital in North America taking into consideration both nature and legacy.
Maggie’s Centers and Charles Jencks

Charles Jencks began the development of a series of cancer care centers in the UK after his wife passed away following a long battle with cancer. The experiences he and his wife shared in hospitals while undergoing treatment led them to ask: “…is there an architecture that helps you live?” (Jencks). Jencks’ describes the impact that architecture can have on health as the architecture placebo effect: “You have to believe in a placebo or it won't work, but if it works it's obviously working in some indirect way, through feedback in the immune system, let us say, or in the willpower of the patient to take a more strenuous exercise in their own therapy” (Jencks).
The aims of the Maggie’s Centers are to provide spaces emotional, social and practical support. The design of the building is considered part of the reason why the Maggie’s Centre model has been successful: “… our Centres are uplifting places… a friendly place to meet other people… a calming space to simply sit quietly with a cup of tea” (“About Maggie’s”).

The six Maggie’s Centers have been designed by very well-known architects and although there is no detailed outline of what is needed in terms of design, they all share common design qualities such as: natural light, intimate and open spaces, views, ventilation and a connection to nature. They are small in scale, comparable to living spaces instead of hospitals, and many of them are centered around the kitchen as a place for community and sharing. As Jencks’ describes them: “They are buildings that hug you, but don't pat you on the head” (Jencks). Patient accounts of their Maggie’s centers include not only discussions on treatment, but often also accounts of their experiences in the space. They describe Maggie’s Centres as calm, peaceful, a refuge or a sanctuary (“About Maggie’s”).

The architecture of Maggie’s Centre (below) in Oxford was informed by the wooded area in which it is situated, and by the philosophies of Maggie’s Centres: “The tree house concept maximizes the relationship between the internal space and the external landscape offering discreet spaces for relaxation, information and therapy… it provides a sympathetic and caring retreat, in tune with its surroundings” (Wilkinson).
Maggie’s Lanarkshire (below) is also centered on nature, views and natural light. It is designed as an extension of the landscape that offers a variety of experiences and qualities. It is centered on the kitchen and surrounded by courtyards.
The salutogenic design model embraces elements from many existing models and essentially acts as an umbrella or a framework within which to work. It can act as both a starting off point as well as a set of guiding principles that continually brings the design team back to the intention of promoting health. Farrow and Vanderkaay use an action research model that includes participatory design, consensus, evaluation and evidence-based research. Through this process the design results are often similar to those described by Dilani, Golembiewski and Ulrich. Farrow and Vanderkaay describe image, identity, colour, light, shape, variety and flow as the design attributes that can be used to build spaces that “cause health” (Salutogenic Places: Designed to Thrive). However, like Heerwagon, their method focuses more on the principles that encourage salutogenic design, as opposed to the specific design qualities that are created, which illustrates the importance of a framework or criteria rooted in consensus and flexibility. For Farrow and Vanderkaay, the intuitive and experiential qualities of a design are key to recognizing success. “Architecture is not produced by adding plans and sections to elevations, it is something else and something more… should not be explained; it must be experienced” (Rasmussen 9).

In their design models, Dilani, Ulrich and Golembiewski outline specific design implications, Heerwagon proposes frameworks that may take on various architectural forms but will maintain clear outcomes and follow guiding principles, and Farrow and Vanderkaay provide both a working methodology and an evaluation tool. Through the key principles and methodologies developed in these contemporary design models along with the guiding principles of Antonovsky’s original theory an understanding of the application of salutogenesis on low-income housing will be more fully understood.


4 Effects of Poverty on Mental and Physical Health

By looking at the salutogenic design models it starts to become clear that there is a strong correlation between design of the built environment and how it impacts health, but before the history and that relationship is explored in greater detail, it is important to identify why residents in low-income housing would benefit from salutogenic design. Research shows that people living with conditions of poverty face ill health more than those who don’t (Evans and English 1238; Raphael 23) and that the stressors associated with living in poverty have a direct relationship with poor health outcomes (Elstad 600). Professor and researcher Gary Evans argues that people who grow up living with conditions of poverty are more likely to suffer from ill health in adulthood. "… children who grow up in poverty have a steeper life trajectory of premature health problems than other children, regardless of their socio-economic status in adulthood” (Evans, “Why Poor Kids Make Sicker Adults”). Evans’ research highlights the lasting negative impact that poverty has on mental and physical health. Other researchers, such as Dennis Raphael of York University, support the opinion that poverty in childhood leads to adverse health outcomes in adulthood: “Children in poverty do less well in school, develop a weaker sense of control over the environment, and show a greater likelihood of adopting health threatening behaviours, all of which are powerful determinants of health. Poverty experiences disrupt cognitive, affective, and social competencies that reduce future access to economic and social resources that protect health” (23).

In his research, Evans also found that: “there was a marked tendency for low-income families to be exposed to greater than three stressors at one time, whereas middle-income families tended to be exposed to zero to two stressors”\(^9\) (“The Environment of Poverty” 1241).

\(^9\) Evans looks specifically at the following stressors: density, noise, housing problems, family turmoil, family separation and violence. (1241)
Evans argues that facing multiple stressors at one time is a unique characteristic of poverty-related stress. “…the accumulation of exposure to multiple physical and psychosocial stressors, rather than singular stressor exposure, is a key, unique aspect of the environment of poverty. It is the confluence of multiple demands from the immediate environment, both physical and psychosocial, that may lead to socio-emotional difficulties…” (1238). Facing multiple stressors can impact the ability to adequately cope with stress, which can then increase the negative outcome stressors have on mental and physical health. In this regard it can be argued that residents in low-income housing are similar to hospital patients in that they are often faced with multiple types of high-level stress at one time. However, for low-income residents, the stressors are usually long-term or permanent.  

Research shows that: “sustained, chronic stress is known to stimulate immunosuppression and promote a maladaptive stimulation of the neuroendocrine system, leading to a wide range of life threatening conditions, including cardiovascular and coronary heart disease” (Dunn, “Housing Inequalities and Health” 671). Because low-income housing is most often a long-term situation, chronic stress may be a significant problem for the mental and physical health of the residents and thus further calls for a shift towards health-promotion as a driving design factor in the architecture of low-income housing.

In 2014, Emily Paradis with the University of Toronto released a report on conditions of the low-income high-rises in Toronto, and in 2011 a similar study was undertaken by the United Way Toronto. Both of these reports identity some significant stressors specific to low-income housing that have negative outcomes on health: financial stress, housing insecurity, inadequate building and maintenance, safety issues, over-crowding and noise (Paradis iv). Other stressors

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10 Emily Paradis’s report *Nowhere Else to Go: Inadequate Housing and Risk of Homelessness Among Families in Toronto’s Aging Rental Buildings* shows that low-income housing is, for most families, a long term or permanent solution. “Service providers working in settlement agencies noted that newcomer families may believe that overcrowded, deteriorating, or unaffordable housing will be temporary, but these arrangements often become long-term as families encounter discrimination and structural barriers in the labour market” (24).
that have also been identified are food insecurity (Paradis 30), family turmoil (Evans and English 1238) and access to services (Osborne 43). Many of the stressors noted have direct design or architectural implications, particularly inadequate building conditions, overcrowding, noise, lack of common areas and poor maintenance or grounds upkeep. Stressors that are not related directly to architecture are still related to sense of coherence and impact the residents’ ability to cope.

Table 4 identifies which stressors are directly related to architecture, which are indirectly related to architecture and how each stressor may impact a sense of coherence.

Table 4: Stressors specific to low-income housing and how they relate to sense of coherence

<table>
<thead>
<tr>
<th>INDIRECTLY RELATED TO DESIGN</th>
<th>POTENTIAL IMPACT ON SOC FACTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unaffordable Housing</td>
<td>Manageability</td>
</tr>
<tr>
<td>Insecure Housing</td>
<td>Manageability, Meaningfulness, Comprehensibility</td>
</tr>
<tr>
<td>Incidences of social disorder</td>
<td>Manageability, Comprehensibility</td>
</tr>
<tr>
<td>Financial Hardship</td>
<td>Meaning, Comprehensibility</td>
</tr>
<tr>
<td>Family turmoil</td>
<td>Manageability, Meaningfulness, Comprehensibility</td>
</tr>
<tr>
<td>Family separate</td>
<td>Manageability, Meaningfulness, Comprehensibility</td>
</tr>
<tr>
<td>Violence</td>
<td>Manageability, Meaningfulness, Comprehensibility</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DIRECTLY RELATED TO DESIGN</th>
<th>POTENTIAL IMPACT ON SOC FACTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overcrowded Housing</td>
<td>Manageability, Meaningfulness</td>
</tr>
<tr>
<td>Unsafe Housing</td>
<td>Manageability, Comprehensibility</td>
</tr>
<tr>
<td>Bad Unit Conditions</td>
<td>Manageability, Comprehensibility</td>
</tr>
<tr>
<td>Bad Building Conditions</td>
<td>Manageability, Comprehensibility</td>
</tr>
<tr>
<td>Infestation - vermin or pests or both</td>
<td>Manageability</td>
</tr>
<tr>
<td>Lack of common areas to promote social support</td>
<td>Manageability, Meaningfulness, Comprehensibility</td>
</tr>
<tr>
<td>Noise</td>
<td>Manageability, Comprehensibility</td>
</tr>
<tr>
<td>Food Insecurity/Access to nutrition (x)</td>
<td>Manageability, Meaningfulness, Comprehensibility</td>
</tr>
<tr>
<td>Access to schools/education (x)</td>
<td>Manageability, Meaningfulness, Comprehensibility</td>
</tr>
<tr>
<td>Access to transit (x)</td>
<td>Manageability, Comprehensibility</td>
</tr>
<tr>
<td>Proximity to employment (x)</td>
<td>Manageability, Comprehensibility</td>
</tr>
</tbody>
</table>
Two prominent stressors indirectly related to design are financial hardship and housing insecurity. According to the 2011 United Way report, 40% of the residents living in Toronto’s rental towers are considered low-income. This is much higher than the thirty-percent that the Canadian Mortgage Housing Corporation identifies as a household with a “core housing need.”

The United Way report also found that forty-eight percent of residents “worry about paying rent each month,” and twenty-five percent sacrifice things they need in order to afford to pay rent. Financial stress can also be linked to housing insecurity. The Paradis’ report cites that one-in-five families is at risk of eviction due to rental arrears (9) and even goes so far as to suggest that nine out of ten families living in Toronto’s low-income high rise’s are at risk of homelessness (9). Poverty and ill health are also closely linked to food insecurity. According to a report published in 2012, four million Canadians in lived in households that struggled to get adequate food (Tarasuk 4). It has been shown that having little or no access to healthy food can contribute to heart disease, diabetes, high blood pressure, food allergies, and major depression and distress (Vozoris and Tarasuk 121), which can in turn increase dependency on the healthcare system through more frequent visits and longer hospital stays. This is particularly problematic in Toronto’s low-income high-rise developments and in recent years there have been initiatives to resolve this, such as the Toronto Public Health and Tower Renewal Project.

Although these statistics clearly demonstrate the financial difficulties experienced by low-income families and individuals, they do not illustrate the emotional duress of financial

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11 CMHC defines Core Housing Need as: “a household is said to be in core housing need if its housing falls below at least one of the adequacy, affordability or suitability, standards and it would have to spend 30% or more of its total before-tax income to pay the median rent of alternative local housing that is acceptable” (http://cmhc.beyond2020.com/HiCODefinitions_EN.html#_Core_Housing_Need_Status).

12 In 2014 Toronto Public Health and Tower Renewal began a new initiative called “Healthy Corner Stores.” It is a project that proposes to give suburban communities better access to fresh produce, and other healthy food options, through convenience stores. Accessed at http://www.eraarch.ca/2014/charette-healthy-corner-stores/.
hardship or housing insecurity and the strain it can cause on familial relationships. Studies show that: “…economic circumstances may diminish relationship quality by increasing conflict and reducing intimacy” (Hardie and Lucas 1141). Jan Golembiewski links relationships and intimacy directly to Antonovsky’s notion of meaningfulness in a strong sense of coherence. He states that: “Meaning, it seems, is essential to the maintenance of life and is therefore the most significant ingredient of a sense of coherence… Of all the sources of environmental meaning, there is little doubt that it is primarily found in the social environment – in love and communication, in family, friendship…” (Golembiewski, “Start Making Sense” 111). Professor and researcher Jim Dunn also recognizes the importance of meaning as a factor in health, stating: “Housing is understood to have both significant material dimensions (housing costs, wealth generation and storage, controlled physical environment, protection from elements, etc) and meaningful dimensions (housing as a reflection of self identity and pride, a place of refuge, a site for the exercise of control, a source of social status, etc.) for health” (Dunn “Housing and Inequalities in Health” 672). Stressors such as financial hardship, housing insecurity, inadequate building and maintenance, over-crowding and noise may diminish a sense of comprehensibility and manageability, particularly in reference to the home as a site for the exercise of control. If the impact of experiencing such stressors leads to an erosion of manageability, comprehensibility and meaningfulness, it suggests that a strong sense of coherence is not being fostered, which is integral to coping with stress and promoting health.

Poor physical condition of the units and buildings are examples of stressors associated with low-income housing and ill health effects that are directly linked to architecture. According to Evans: “Poor children reside in more polluted, unhealthy environments. They breathe air and drink water that is more polluted. Their households are more crowded, noisier, and more
physically deteriorated, and they contain more safety hazards. Low-income neighbourhoods are more dangerous, have poorer services, and are more physically deteriorated. The neighbourhoods where poor children live are more hazardous (e.g., greater traffic volume, more crime, less playground safety) and less likely to contain elements of nature…” (Evans, “The Environment of Childhood Poverty” 88). Based on his studies on poverty, housing and health, Jim Dunn found that not only do the stressors associated with poverty directly impact health but also the state of housing has a direct impact on physical and mental health. Dunn cites social epidemiologist and author Richard Wilkinson: “…it is less a matter of the immediate physical effects of inferior material conditions than of the social meanings attached to those conditions and how people feel about their material circumstances and about themselves” (Dunn 672). Low-income residents often have little or no control over the maintenance of the building and the units, which can lead to a high number of units in disrepair, regular elevator breakdowns or broken laundry machines, infestations by vermin or pests, and noise pollution. These stressors have a direct connection to the architecture and design or the buildings, as well as to the maintenance and upkeep. They also have a likelihood of aggravating delicate emotional situations and fostering a sense of powerlessness in the residents’ in regards to their safety and surroundings.

Overcrowding is another often-cited stressor that is connected to mental and physical health and is directly linked to the importance of having access to privacy, which can be dictated by the layout of building units.\(^\text{13}\) Parents may need privacy for certain types of discussions, for intimacy or for emotional downtime. Teenagers or college-aged young adults may need private space to study away from the chaos of large families. “Living in an overcrowded house can limit

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\(^{13}\) It should be noted that the concept of overcrowding varies greatly from culture to culture. For the purpose of this paper the definition of overcrowding is borrowed from Emily Paradis’ Report on Homelessness which defines overcrowding as: “Two or more persons per bedroom (excluding couples and same-gender children sharing a bedroom)” (Paradis, Nowhere Else To Go, 6).
the control one has over domestic situations, reduce privacy, and potentially create undesirable social interactions and influence parenting behaviours. Lack of control within the home environment can in turn act as a stressor…” (Riva et al. 367).

Until now the salutogenic model has mainly been used in the architecture of healthcare facilities, therefore in order to identify how a similar model may alleviate stress and promote health in housing, it is helpful to look more specifically at the similarities and differences between hospital patient experiences and low-income resident experiences, which I have outlined in Figure 4. Understanding the similarity and differences between patients and residents will help inform a salutogenic model that can be applied to housing. Comparable to hospital patients, residents in low-income housing face multiple types of stressors at one time, however, unlike hospital patients the residents are often facing the stressors over long periods of time whereas the length of stay for patients varies greatly from case-to-case. Both patients and residents often have little or no control over the design or configuration of their built environment. Access to sunlight, views, nature, spaces for social interaction or privacy are often dictated by the design and layout of the facilities or housing.

Figure 8: Patient and resident similarities
Martha Wadsworth argues that the ability to cope with poverty-related stress is the most important factor in overcoming the negative impact of the stress. She states that: “Ongoing stress borne of low socio-economic status, low-income, and poverty creates constant wear and tear on the body, deregulating and damaging the body’s physiological stress response system and reducing cognitive and psychological resources for battling adversity and stress” (Wadsworth 18). But when people have the ability to cope with such stressors, they are able to improve their overall functioning (23). “Having the ability to cope effectively with poverty-related stress could prevent the development of depression and other psychological problems that interfere with success in occupational, academic, and interpersonal realms...” (24). Architects like Dilani and Farrow argue that architecture can strengthen a sense of coherence, which thereby enhances the ability to cope with stress, which in turn can lead to an overall increase in health or shift to the health-ease end of Antonovsky’s continuum. The findings from Jim Dunn’s study out of McMaster University support the hypothesis that: “features of the domestic environment, especially as they pertain to the exercise of control and the experience of demand, are significant predictors of self reported general and mental health status” (Dunn 678). His findings show that the physical environment can reduce overall stress and increase the amount of social support available within a community. “It is plausible that interventions designed to increase control and reduce demand in the domestic environment could reduce overall levels of stress and enhance social support” (681). Based on the success found in the salutogenic design of hospitals, long-term care facilities and workplaces, on the needs, demands and types of stressors that low-income residents are faced with, and on the shared similarities between patients and low-income residents, the development of salutogenic low-income housing may have a strong impact on the sense of coherence of residents, on their ability to cope with stress and on their overall mental
and physical health, which can have a long lasting positive impact on not only the current residents but also on the neighbouring communities and on future generations. For this to be successful, it is imperative to focus on health as a driving factor in design decision-making.
5 Drawing a Connection Between Housing, Design and Health

5.1 19th Century – Important shifts towards designing healthy housing

In order to clearly understand the impact of the design of the built environment, specifically housing, on health, it is important to look, if briefly, at some of the history of health and design. There is a broad range of studies regarding the relationship between our built residential environment and our health. The following chapter highlights some significant events and theories that support salutogenic design and its connection to low-income housing. A notable shift that connected physical health to the design of housing occurred in the 19th century as the relationship between sanitation, the built environment and physical health became more widely understood. Many large cities in Europe and North America experienced a sudden growth in urban populations, which led to a massive increase in infectious diseases. As biological knowledge increased, health reformers in the United States and Europe quickly connected the condition of cities and the housing crisis to the spread of illness. Medical Historian, Dr. Charles-Edward Winslow called it: “the great Sanitary Awakening” (Shapiro 13).

In the 19th century in the United States, issues such as ventilation, light, housing conditions, drainage and dampness were at the forefront of design consideration. “The importance of an abundance of light has already been insisted upon. If possible, every room should have direct light…” (Vaughan 7). Detailed architectural designs were outlined, not only for the design of homes for the wealthy, but also for working-class homes, schoolhouses and factories. Elsewhere in the world, a similar change was taking place. The population of Paris doubled between 1801 and 1851 and the twentieth century geographer, Louis Chevalier described the city as: “suddenly dark and unhealthy, crushed by its masses, stifled by its own respiration, transpiration and excreta” (Shapiro 6). Inadequate sewage treatment, massive
housing shortages, lack of clean water and poorly maintained buildings caused rampant widespread disease. The sudden onslaught of people moving into the urban center caused a massive strain on a city ill-equipped to house 500,000 new inhabitants, and health reformers were quick to identify working class housing as the main issue: “More and more social reformers, hygienists, and politicians alike identified unsanitary working class housing as the primary cause of urban ills” (xiv). Although the focus was primarily on controlling disease and on the physical implications of housing, Professor Ann-Louise Shapiro notes that nineteenth century French historians Monfalcon and Polinere recognized that housing conditions could impact the physical health as well as the mental health and morale of the urban poor (15).

Although these changes were taking place in large urban centers worldwide, Paris serves as a representative model of these developments, especially as it significantly contributed to connecting urban planning with physical health. In 1832, following the first cholera epidemic, Dr. Reveille-Parise was said to have prescribed for his patients: “40 doses of warmth, 5 doses of cleanliness, 1 dose of sobriety, 1 dose of activity, 1 dose of good sleep, 1 dose of healthy food, 1 dose of pure air, and 50 doses of spiritual tranquility—the anticholeric tonic par excellence” (14). Although those changes alone may have been insufficient remedy to a cholera outbreak, the ideas behind his advice encouraged health reformers to look not in a tonic but in the built environment for a solution. This attitude led to the promotion of clean streets and clean air as preventative measures (14), as well as a shift towards a more health-centered approach. For hygienists, newly found evidence of health and urban conditions supported the search for biological answers. For architects and planners, the new evidence encouraged a change in the design of cities and buildings, a change that focused on asking new questions of old problems: “Instead of merely hammering at a man’s chest to find if he has a tendency to any disease, would
it not be well for the medical examiners of life insurance companies to inquire if he has a cesspool leaking into his well, or untapped pipes beneath his basins and closets” (“Healthy Homes for Rich and Poor” 15).

By 1850, political and social pressures to address the ailing urban condition began to mount and the French government instituted the first public health measure to control the interior of private dwellings, known as the *Melun Act of 1851* (Shapiro 20). The bill specifically addressed housing for the poor and was intended to: “protect those workers, neither the provident elite, nor the freeloads and malingerers, who lived on the boundary of poverty and indigence” (20). At the same time, similar reforms were taking place in Britain and in Belgium, in an attempt to, as Shapiro states: “…improve housing, reduce social tensions, moralize the working classes, promote public health and create a more acceptable alignment between social space and geographic space” (xiv). In England, comparable legislation went so far as to give authorities the right to demand housing repairs at the expense of the landlords. This shift in the relationship between public and private sphere further strengthened the idea that housing for the poor required some degree of public regulation and that would have a direct impact on the health the residents (22).

Not long after, in the United States, an amendment to *The Tenement Housing Act* was passed that required all bedrooms to have windows with direct light and air, which greatly added to the powers of the Board of Health to remedy abuses in such buildings. For the first time in North America, detailed design recommendations and housing repairs fell into the hands of the law and the impact of the built environment on health was backed by strong social and political support. As Catherine Bauer stated in her discussion on public housing and health in 1949: “…it became clear that not only the absence of dirt but the presence of sun, air, and adequate space are
essential to the prevention of disease… finally the whole emphasis changed from a remedial approach to more positive and constructive goals” (Bauer, “Housing and Health” 462).

Although it was still a far cry from salutogenesis and the architectural models that would later follow, these newly implemented regulations revealed the important relationship between health and design. It paved the way for twentieth-century thinkers to approach problems from a new angle, an angle that would eventually lead to Antonovsky asking the question: What are the origins of health?

5.2 First half of the 20th Century – The push for housing strengthens
Physical health was still at the forefront of many designers’ minds as the 20th century began, however the focus of medical officials expanded to include measures that would address physical strength and stamina and would also help to increase happiness and mental wellbeing. By the 1930s, an American Committee on Hygiene and Housing compiled a list of 30 principles pertaining to the development of “healthful housing” (American Public Health Association) (Appendix A). The list was broken down into four sections: Fundamental Physiological Needs, Fundamental Psychological Needs, Protection Against Contagion; Protection Against Accident (352), and included recommendations such as: Provision for admission of direct sunlight; Protection against excessive noise; Provision of adequate space for exercise and for the play of children (358, 359).

The policy changes that occurred in the late 19th and early 20th century also created a political and social landscape that led to the formation of a group of influential housing advocates known as “Housers.” Catherine Bauer14 was one of the most notable Housers and was

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14 John Bauman dubbed later generations of this group “communitarians” (Bauman, 115). He described the difference as: “Housers focused entirely on housing reform through slum eradication and fought against public housing, insisting that small builders could provide good low-rental housing if given the right tools, incentives and rules, whereas following the Depression, communitarians looked more broadly at the community as a whole,
also one of the main contributors to the discourse, design and development of public housing. Her work was highly influential on policy and planning in the United States, and as such the follow chapter focuses largely on the main points of her arguments. Bauer insisted that every American not only deserved a healthy home but was rightfully entitled to one (Bauer, *Health and Housing*, 466). She and her counterparts were interested in the development of good buildings as well as healthy neighbourhoods and communities: “We are concerned... not only with restrictive housing standards and the elimination of slums, but also with the provision of homes and neighbourhoods that are positively good—a residential environment that promotes mental and social well-being as well as physical health…” (462).

Housing shortages were still rampant, which meant overcrowding conditions continued to rise despite the new understanding of the physical and mental health implications. As such, the focus in the mid-1900s became about building housing quickly and creating neighbourhoods that would replace the overcrowded slums. In the United States and Canada, various changes to federal housing policy were made which created a wave of funding for “slum-clearance” and postwar development. In the United States in 1934, a *National Housing Act* was passed that created a governing body at the federal level, the Federal Housing Authority (FHA), to oversee the development of public housing and in 1937, the *Housing Act of 1937* was passed that gave the FHA ability to subsidize local housing agencies. Although the governing bodies and specific regulations were amended throughout the second half of the century, the role of the federal government in funding, monitoring and developing public housing remained in place. The hope was to provide much needed funding and legislation for the development of public housing. In Canada, similar programs were being instituted and, in 1938, the federal government created the

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advocating for public housing and the holistic development of entire neighbourhoods” (115). However, throughout her lifetime, Catherine Bauer continued to refer to herself in her writing as a Houser despite her interests in both houses and in community development at the neighbourhood scale.
first National Housing Act. By 1945, the Central Mortgage and Housing Corporation was created which took over the responsibilities of the government and became the leading national housing agency responsible for public, low-income and rental housing (“History of CMHC”).

Ebenezer Howard’s Garden City Movement, which developed at the turn of the century, also influenced the design of many suburbs and some large inner city developments in Canada and the United States well into the 1960s. The movement centered on providing an alternative to, as Howard describes: “…crowded, unhealthy cities” (Howard 45). The principles included direct access to surrounding outdoor green space, self-sufficient neighbourhoods of a particular size, and access to services. Although the concentric circular design of Howard’s original garden city is found in few neighbourhoods, the basic principles, particularly access to green space and specific neighbourhood sizes, led to what is now called the superblock and in the mid-1900s influenced public housing developments in Canada such as Regent Park.

Pathogenic attitudes still drove the medical and design industries, but officials were beginning to examine how a well-designed built environment could impact its residents. The notion that model housing would produce model citizens was a predominant theme in development in Europe, Canada and the United States (Turkington 33). In Sweden, Alva and Gunnar Myrdal proposed the idea of: “fostering individuals to become good citizens in the context of physical and social public planning” (33). In Canada in 1934, the Report of the Lieutenant-Governor’s Committee on Housing Conditions, commonly referred to as The Bruce Report, documented well over 2000 cases of poor housing conditions among the working class in Toronto. The report cited that: “Bad houses are not only a menace: they are active agents of destruction. The Committee is satisfied from its investigations and enquiries that they destroy happiness, health and life. They destroy morality and family ties. They destroy the basis of
society itself by their destruction of self-respect and their promotion of delinquency and crime” (Bruce 4). The emphasis of the Bruce Report was to improve the health of the city through the health of the population, specifically the lower income populations. Its primary focus was on solving the problems created by the already stigmatized “slum conditions,” such as illness and mental stress, by creating affordable healthy housing. The Medical Officer of Health of Toronto, Charles Hastings, described slums as: “scrupulously deviant environments that produced vice, crime and disease” (Purdy “Chapter 1” 57). In 1944, the Curtis Report further recommended that the federal government build low-income housing to address the ever-increasing housing crisis and in Toronto the attention was specifically focused on Cabbagetown (71).

Cabbagetown was a neighbourhood that developed at a time when European and North American cities were furiously fighting against the fears of contagious diseases, which arose during the nineteenth century. It was described by some as: “the largest Anglo-Saxon slum in North America” (James 71) and by others as: “…a lively, complex and politically engaged community; one that fits Jane Jacobs’s description of the type of ‘slum’ that possessed its own wisoms and potential for regeneration…”(71) Sean Purdy cites J.M.S. Careless in describing Cabbagetown as: “a place of small-town family and neighbourly focuses, of mutual aid and accepted, bonding obligations… equally a place of arduous work, often in adjacent industries; of stringency, layoffs, and all-too-frequent hardship; of contending constantly with dirt, cold and diseases. ”Further to that, the Bruce Report stated that an investigation of Cabbagetown and the surrounding neighbourhoods revealed that there were thousands of families living in houses which were: “insanitary, verminous, and grossly overcrowded.” The attitude of the government officials, combined with a growing need for housing following WWII and the shift in government regulations on publicly funded housing projects only strengthened the assumption
that change needed to take place at the scale of neighbourhoods (James 71). With that, in the late
1940s Cabbagetown was demolished and Regent Park was erected; Canada’s first public housing
development. Regent Park was intended to solve problems of both housing and health. “Both
governments stand to gain from the decreased burden of unemployment relief and from the
increased prosperity and public revenues which all such expenditures promote; and they stand to
gain more especially from the works which we recommend because better housing increases
health and happiness and diminishes delinquency and crime” (Bruce 7). Several elements were integral to changing how housing development and design took
place in the first half of the 20th century including the Garden City Movement, the group know as
Housers, documents such as The Bruce Report and various government funding initiatives.

Physical strength and stamina, mental health and happiness, vibrant communities and nuclear
families were the driving ideologies of design and planning. However, by the 1960s many people
believe that there was little success found in mid-century public housing developments;
something was missing from the formula that was replicated in cities around North America.

Numerous examples, such as the now infamous Pruitt Igoe,15 illustrate how the developments
failed the residents and their communities. Some theorists and housing officials blamed the
architecture for such failures, others blamed the political and social landscape, while architects
and designers blamed the developers and budgetary restrictions (Bristol 165). Investigating the
success factors and failures of developments such as Regent Park through a salutogenic lens may
shed light on how salutogenic housing can promote health and an alternative outcome to that

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15 Pruitt Igoe was a large public housing development built in St. Louis in 1954. Within less than ten years, the
neighbourhood became infamous for so much poverty, crime, violence and racism that by the early 1970s all thirty-
three buildings were demolished and the residents were relocated. Architectural historian, Charles Jencks called its
destruction “the day Modern architecture died” (http://www.economist.com/blogs/prospero/2011/10/american-
public-housing).
suffered by Pruitt Igoe.

5.3 Regent Park, 1948 to 1995 – How the original Regent Park came to be
Like many large urban centers in North America, Toronto experienced a rapid increase in population throughout the early and mid 20th century. People flooded into the city from rural towns and from other countries, with hope of finding employment. Researcher and academic, Sean Purdy, cites: “the population of the City of Toronto and surrounding municipalities increased by almost 190,000 people from 1931 to 1947 while less than 44,000 new dwelling units were built” (Purdy “Chapter 1” 53). In 1948, in response to the housing shortage and to evidence in the Bruce Report, Canada’s first public housing project, Regent Park, was built in the name of slum clearance. Comprised of low-rise buildings, high-rise towers and townhouses, it was designed based on principles of the superblock and borrowed from architecture models such as Cleveland’s Cedar-Central housing projects and Le Corbusier’s housing model for Unite d’Habitation (CBC).

Regent Park used many of the garden city principles; the neighbourhood was directed inwards with the intention to create a safe exterior space free from vehicular traffic, and there was a high ratio of exterior green space to interior housing. However, similar to the well-documented case of Pruitt Igoe, many of the factors that were intentionally designed to benefit the residents ended up being the very factors that caused its demise. For example, the inward design isolated the Regent Park residents from the rest of the city by creating physical and social segregation, and the large swaths of car-free land became unsafe places that were invisible to surrounding neighbourhoods and the rest of the city and were inaccessible to police cars. As
well, the number of residents in Regent Park was very high\textsuperscript{16} and they had access to few amenities. There were no community centers, no outdoor pools\textsuperscript{17} and only a few small convenience stores to serve the entire community (Yarhi “A Brief History of Regent Park”). It took residents seventeen years of raising money to build the first Regent Park Community Centre (Yarhi “A Brief History of Regent Park”). Budget also seriously hindered the original intentions of the development and cost-effectiveness became a driving force behind the architects design.

“The city authorities responsible for building Regent Park North were preoccupied with selling the financial benefits of public housing to the general population and to reluctant officials in the higher levels of governments and were therefore interested in social reconstruction on the cheap” (Purdy 82).

Purdy states that: “the key elements of slum clearance and redevelopment discourse are the concern with physical well-being and the spread of disease, the flagrant disorder of the inner-city built environment and life, and lack of a morally sound community” (81), and he links these elements directly to the design and planning of Regent Park. Even the materials and design details of Regent Park were in contrast to the physical appearance of the Cabbagetown slums; stark, monotonous red brick, right angles, and standardized building details were the visual antonyms to the messy, yet lively, dilapidated wooden row houses they were replacing (Figure 9). The city’s and the housing officials’ attitude towards slum clearance was that of a tabula rasa: wipe the slate clean. Change the inhabitants—their mental well-being, physical health and habits—by changing their living conditions. Perhaps paternalistic leadership and a belief in architectural determinism led the housing officials to assume, or hope, that the architecture

\textsuperscript{16} By the end of the 1950s the population of Regent Park is estimated to be nearly 10,000 residents living in 5,400 units on 0.23 square km of land (http://regentparkarts.ca/portfolios/a-brief-history-of-regent-park)

\textsuperscript{17} Outdoor pools are particularly important in cities such as Toronto, not only for the recreational aspect, but also for the health of residents who live in large towers with no air conditioning. Heat waves can reach about 40 degrees Celsius and free pools are a method of keeping residents cool.
would correct behavioural patterns assumed associated with slums. This attitude is captured in a 1953 documentary-style short film, *Farewell to Oak Street*, which depicts a happy ending for all of the families who move into Regent Park. “Down came Oak Street. Down came the verminous walls, the unclean, unhealthy rooms. And, down came the fire hazards, the juvenile delinquency, the drunkenness, the broken marriages” (*Farewell Oak Street*).

Figure 9: Cabbagetown slums (top) demolished and replaced by regent park mid-rise (bottom)
Source: CBC “Toronto’s Mosaic: Regent Park.”
Correcting behavioural patterns through architecture was also expressed in developments beyond Regent Park. One example of this is Robin Hood Gardens in East London, which was developed to replace old rundown tenements and was, as Simon Smithson, states: “… based on a real passion that better housing could make peoples lives better, which would in turn improve society” (Smithson on Housing). Similar to the original Regent Park, Robin Hood Garden residents cited a strong sense of community that existed within the neighbourhood but did not necessarily praise the architectural design. Although positive design attributes guided the development, such as noise reduction, natural light, ease of future maintenance issues and the creation of community, the success of the project is still highly contested. Also like Regent Park, certain elements of the design fell into the realm of salutogenesis, however the overall process lacked salutogenic principles. For example, the paternalistic attitude of correcting behavioural patterns, the lack of architectural variety, the enclosed design which shut off the neighbourhood from outside communities and the design of the interior spaces did not accommodate family activities (Smithson on Housing). A design that aims to promote health, such as Salutogenesis, would have identified and addressed many of the issues that contributed to the outcome of Robin Hood Gardens. This will be discussed in further detail in the upcoming section on the salutogenic design model for housing.

5.4 Second Half of the 20th Century – Attitudes begin to shift

It is important to recognize the shift that took place in housing models throughout the 1900s in order to understand how the salutogenic model can learn from its mid-century counterparts. The landscape of housing changed dramatically during the 20th century; officials, residents, housing reformers and politicians were filled with optimism during the first fifty years, but by the 1960s the atmosphere changed. In the United States, Pruitt-Igoe became synonymous with the downfall
of modern social housing. The development was so ridden with crime, devastation, poverty and destruction that within two decades after its occupation all thirty-three buildings were demolished. As Turkington states: “the consequences of this reaction cannot be overstated” (151). Bauer stated that: “… there are just about as many unsanitary, congested and dilapidated homes in the US as there were in the middle of the depression—probably with more people living in them! And today almost everyone recognizes their existence, and admits their conditions must be somehow remedied” ("Dreary Deadlock of Public Housing” 142).

By the end of the 20th century there was a mixed reaction to the design of public housing, however, the link between physical and mental health and architecture did not waiver. In fact, it became so widely accepted that researchers began to explore the relationship in much greater detail and in 1986 the Ottawa Charter for Health Promotion was established, which demonstrated a very significant shift in how the government was starting to approach health. Its aim was to achieve “health for all” by the year 2000 and still today it lists “peace” and “shelter” as the top two fundamental conditions for health. In 2010, the World Health Organization met to discuss the need for a set of international guidelines on health and housing. “…standards of ‘adequate housing’ or ‘sustainable housing’ in the modern era tend to be informed by technological rather than health rationales… Current evidence shows that the home—despite highly developed technologies, materials and construction styles—remains a major cause for ill health” (WHO 3).

Studies have been done looking at very specific connections, such as: the correlation between blood pressure and exposure to natural light; the psychological and physiological effects of art, colour, sounds, pets, and laughter; the importance of spaces that are conducive to having intimate conversations; the significance of privacy; the impact of over-crowding on school attendance in
young adults, or; the use of stairs as a way to decrease instances of cardiovascular disease in adults (Evans; Heerwagon; Kreiger; Emdad; Coates; Lawrence; Roux). Alan Dilani references many of these studies, noting specifically that: “research in environmental psychology has shown that architectural parameters such as stimulation, coherence, affordances, control and restoration are closely linked to the perception of positive and negative stress” (Dilani 20).

After nearly two centuries of writing, research, practice, and trial and error, the vast body of knowledge on health and housing is seemingly endless. But, given the level of dedication and research, as Bauer stated: “It is all too obvious that the wheels of progress in housing matters have not been moving as smoothly or as rationally as they should have” (“Housing and Health” 462). The prevailing argument continues to demonstrate that adequate housing is unequivocally linked to health and that poor housing can directly contribute to the destruction of mental and physical health of an individual. Healthy housing is a necessary component of a successful and functioning individual and therefore a necessary component of a successful and functioning society. What then is missing from current design models and methodologies that prevent the creation of healthy housing? Bauer suggested that the change needs to take place in politics: “I propose therefore to explore quite a different hypothesis, which may prove more illuminating as to the nature of our current difficulty. I suggest that political philosophy—the motivating forces behind public action and the application of scientific knowledge—is not secondary or incidental, but paramount” (463). The salutogenic design models suggests that the political realm be

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18 According to Dilani, the specific architectural ramifications are as follows: **Stimulation**: intensity, variety, complexity, mystery, novelty, noise, light, odor, color, crowding, visual exposure, proximity to circulation, adjacencies; **Coherence**: legibility, organization, thematic structure, predictability, landmark, signage, pathway configuration, distinctiveness, floor plan complexity, circulation alignment, exterior vistas; **Affordances**: ambiguity, sudden perceptual changes, perceptual cue conflict, feedback; **Control**: crowding, boundaries, climatic & light controls, spatial hierarchy, territoriality, symbolism, flexibility, responsiveness, privacy, depth, interconnectedness, functional distances, focal point, sociofugal furniture arrangement; **Restoration**: minimal distraction, stimulus, shelter, fascination, solitude. (20)
augmented by the involvement of the public, the community and all the future stakeholders involved. Models such as population-based design, psychosocially supportive design and others related to a salutogenic framework all support this shift from what causes illness to what causes health.
6 Regent Park and Salutogenesis: A Case Study

6.1 Regent Park Original Development – 1948 to 1995

Similar to many of its counterparts, Regent Park did not live up to the promises upon which it was built, despite the fact that creating healthy housing was considered in the design. “Orderly and open site design and building layouts abolished the anarchic and claustrophobic misery of overcrowded slum life, which produced crime, delinquency and other pathologies” (Purdy 93). However, by the 1960s it had already become an economically and socially segregated neighbourhood and was showing severe signs of physical wear. Throughout the 1970s and 80s gang violence and drug-related crimes increased and by the 1990s the community began to rally for a neighbourhood renewal (Micallef 8). Based on the approach taken by officials, developers and designers of the original Regent Park, it appears that most or all of the salutogenic principles previously mentioned were not present in the methodology, development or design. In order to fully examine this argument, it is helpful to analyze the original design by comparing it to the salutogenic design models such as Vanderkaay’s five vital signs and to the presence Antonovsky’s sense of coherence factors. It is also helpful to acknowledge what a salutogenic approach would have addressed differently at the onset of the project.

In reference to Vanderkaay’s vital signs, and as mentioned previously, variety was intentionally left out of the architectural design. Instead of celebrating tenant diversity and a vibrant community, the thought was that a clean, repetitious and ordered façade and building layout would lead to clean and ordered tenants. Vitality was also absent from the design of Regent Park. Similar to many other developments that were designed using the superblock principles, large swaths of land that were intended to provide green space for the community instead created isolated and dangerous areas that were void of pedestrians and traffic or void of
vitality and life. As Jane Jacobs states in *Death and Life of the Great American City*: “a well-used city street is apt to be a safe street. A deserted city street is apt to be unsafe” (Jacobs 34).

Nature, the third vital sign, is present in the original Regent Park development, though it was a secondary consideration of the design. “…modern, sanitary housing is the goal; parks and playgrounds, desirable as they are, beneficial as they will be, must still be a secondary consideration” (James 74). As well, the lack of fenced-in private yards for the townhomes in the original design was intended to promote interaction between neighbours, but instead gave residents no room for private outdoor activity. The shared outdoor space consisted of large fields or parking lots with very few simple amenities such as benches, gardens or sports fields, which also discouraged social interaction.

The forth vital sign, legacy, speaks to the story of the community and to the heritage that the architecture leaves for future generations. One of the aims of the original development was to create a neighbourhood that was orderly and structured, a kind of monoculture to replace the diverse patchwork of people, cultures, buildings and houses that existed previously. Although the goal of the planners was perhaps to create a clean modern environment for future communities to enjoy, the very nature of the intent removed the necessary character and diversity that legacy is built upon. Alongside that, authenticity, or appropriateness, is also absent from the original design. The repetitious units and the clean brick Georgian-style architecture did not represent the tenants nor did the larger urban design of the neighbourhood suit the type of neighbourhood that once existed, which had naturally led to many social interactions and a strong community.

A salutogenic approach to a revitalization of Cabbagetown would have resulted in a very different outcome. The methodology, the architectural and the urban design would have showcased the positive aspects of Cabbagetown and celebrated the diversity that had organically
grown instead Regent Park intentionally turned its back on the vibrant community.

To further understand the relationship between the salutogenesis and the original Regent Park development, it is helpful to analyze how Antonovsky’s three sense of coherence factors are linked to the selection process and to the development and methodology of the project. In terms of the notion of comprehension (*a person can make sense of the situation, problems or challenges that they face*), the very process of being selected for housing was out of the hands of the resident and was in the somewhat subjective hands of the housing authority (Purdy 101). Purdy describes the housing officials’ method of visiting potential residents and creating a checklist of items that would determine the families’ eligibility, including personal notes such as: “Has made effort to clean up… Would be purchasing new furniture if accepted” (100). This checklist also included items, such as “health factors,” “overcrowding,” and “eviction through no fault of own,” which were scored by the official who would assign each item a point from one to fifteen. The selection process was based on the points as well as the personal remarks that each official made about the families (98). The selection method was rather difficult to understand and the subjective nature of it risked increasing the amount of stress on families and individuals who were already facing eviction or relocation.

This process would have greatly impacted the residents’ feeling of manageability (*in the face of a challenge or stressful situation, a person has adequate resources at their disposal and that they trust, which can help them cope*), which was intentionally removed from the hands of the residents into the hands of the authority. James Ryan references Albert Rose’s description of why he believed an authoritative leadership was necessary in the planning of Regent Park: “some persons deplore the social role of management as paternalism, however benevolent, this role was both necessary and desirable because respect for the strength, authority, helpfulness and firmness
of the management is of great importance in building a community in which several thousand people must learn to live together” (74). One of the intentions of the development was to remove the manageability from the residents and place it into the hands of the housing authorities and the government. Purdy stated that: “[Public housing] managers acted as custodians of a ‘deficient’ but alterable population whom they saw as reaping the rehabilitative benefits of public largesse” (Purdy 96). This was, in part, made possible because of the changes to the federal and provincial laws that gave power to the housing authorities such as the Toronto Housing Commission and the Canadian Mortgage and Housing Corporation. However, despite these intentions the residents at Regent Park reacted by mobilizing themselves into a strong tenant board and were able to fight for things such as a community centre and a pool (CBC). In the late 60s the Regent Park Community Improvement Association was formed, which was the first step towards tenant participation at Regent Park and arguably led to the redevelopment happening today.

The final sense of coherence factor, meaning (when faced with a stressful situation or challenge, a person will be have the ability to seek meaning in it, and will do his or her best to overcome it) may not have been intentionally removed from the project, but the project methodology would still have impacted the sense of meaning for the residents. Meaning, as Golembiewski states, is found in social ties, love, friendships and social interactions (Golembiewski “Start Making Sense” 111). Purdy notes that the delicate social fabric that made up Cabbagetown was seen as a negative aspect of the neighbourhood that was being demolished: “The working-class street environment itself was condemned: children playing on the streets and in the alleyways and women and men gathering on street corners to talk was a palpable expression of irrationality and disorganization at odds with the neatly structured and privatized view of proper middle-class life” (Purdy 66). From a salutogenic perspective however, the
interactions of the residents, the children playing and the natural gatherings that occurred would be seen as a positive quality that should be retained in the new development. Salutogenesis would recognize the importance of having a sense of community.

Unlike a salutogenic model, which would have focused on participation, the original Regent Park development involved almost no community participation. Homes were demolished and residents were moved into the replacement development. Again, it should be noted that this was not because residents did not want to participate. There was highly significant tenant participation after occupancy, which years later would drive the redevelopment of the entire neighbourhood (Micallef 10). However, as Farrow and Vanderkaay strongly urge, it is important to have as much consensus as possible from the onset of a project. In a housing model, this consensus, or understanding of the project intention, includes not only the residents but the building managers and maintenance teams as well.

Although the majority of the original Regent Park development no longer exists, it is still possible to do a basic design comparison using what buildings remain, as well as descriptions and images of the original architecture. Based on these, Table 5 lists Alan Dilani’s architectural interpretation of Antonovsky’s sense of coherence factors and indicates which factors were considered in the original design. As it shows, most sense of coherence factors were only somewhat considered or were not considered at all. According to Dilani, if these factors were present they could strengthen the sense of coherence of the residents, which would have increased their ability to cope with stress, and would potentially have a positive impact on the health outcome of the residents.

By looking at the connection to Antonovsky’s sense of coherence factors, the presence of Dilani’s sense of coherence architectural elements and by evaluating the project using the vital
signs established earlier in this paper, it becomes clear that the original Regent Park was not a salutogenic design. What also becomes clear is that the salutogenic aspects that naturally occurred, such as the strong sense of community, is one of the most important factors that continues to prevail today. Throughout the years, residents pushed to make changes to the neighbourhood that helped to create a healthier community, and challenged the original design intentions. A strong group of tenants and local business owners drove the design changes that took place, such as the addition of a community centre and community gardens throughout the neighbourhood as well as an increase in smaller stores. It was this strong commitment by Regent Park residents to make changes that eventually led to a large-scale multiphase redevelopment.

Table 5: The presence of Dilani’s sense of coherence factors in the original Regent Park design

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Figure 10: Aerial view of Regent Park
Source: Globe and Mail, Kevin Van Paassen

Figure 11: Building façade at Regent Park
Source: Author’s image
6.2 Regent Park Redevelopment - 1995 to present

Regent Park faced a demise that eventually led to the demolition of the original project and a large-scale revitalization of the neighbourhood. By the end of the 20th century, the community and the city recognized the need for change at Regent Park, however this time the change was being led by the residents and not by the city (Micallef 11). The revitalization is taking place in five phases. Currently, phase one is complete and occupied, phase two is partially complete and phase three is in the beginning stages of demolition. Phases four and five are to follow later.

Although the revitalization plan does not identify itself as being salutogenic, the intention and methodology are inline with many guiding salutogenic principles, and it is an exciting step forward in the introduction of salutogenic design into low-income housing.

Community engagement was the driving factor that led the Regent Park revitalization, a condition that grew out of the high level of tenant participation during the 1970s and 80s. In a report on this process, Shawn Micallef equates some of its success to the following factors:

“…Inclusive, continuous communication and consultation between residents and key stakeholders… unwavering support from residents, urban thinkers, local government representatives, and Toronto Community Housing… reconnecting the neighbourhood to the fabric of the city by seamlessly mixing uses, architectural styles, and income levels within the redeveloped community…” (Micallef 12)

Actions such as providing childcare and food at community meetings to ensure that everyone could attend (Micallef 11), providing additional meetings for those with mobility issues, or for the elderly (Laughlin 28), and recognizing cultural differences that may impact how some of the residents communicate (Meagher and Boston 25), helped the residents gain trust early on in the process. In his report Micallef quotes public engagement facilitator Sean Meagher: “We broke [the process] down structurally… Somalis tended to gather in big meetings while Spanish residents liked to gather around kitchen tables.
We had to make some groups gender specific. For example, we had a Bengali Women’s strategy.” The specific measures may change from project-to-project depending on the population of residents, but for Regent Park these actions were key to creating an atmosphere that was centered on consensus, belief and trust.

Similar to the analysis of the original Regent Park development, Vanderkaay’s five vital signs can be applied to the design elements of the new Regent Park in order to understand its effect on the neighbourhood and its residents.

**Variety**
Components of the new Regent Park development are somewhat more varied than the original development. One of the most notable urban design changes was the move away from the superblock and the reintroduction of streets throughout the neighbourhood. This immediately adds more opportunity for variety along each street. Though the material treatment and massing is similar throughout the development, the buildings are not identical. One of the strategies to avoid repetitious design is to hire multiple architects. Micallef describes the scene in Regent Park as: “people are walking along or sitting on their stoops…With glass being used as a primary building material, interior and exterior public life are visible from the sidewalk” (Micallef 27). Ensuring that there was no difference between the appearance of the low-income and market housing is also considered in the architecture of Regent Park. All buildings were given the same quality of treatment as a means to promote the cohesion of the community. Jim Dunn believes that this type of architectural normalization is: “…a major part of socially mixed redevelopment is a form of place de-stigmatization, and may alter both material practices and representational practices related to stigma, which have very real effects on the everyday experience of residents” (Dunn “Socially Mixed” 87).
Figure 12: Regent Park redevelopment. The building on the left is low-income/rental, while the building on the right is market/ownership.  
Source: Author’s image

Figure 13: Regent Park redevelopment. The townhouses are a mix of low-income on one side of the street and market on the other.  
Source: Author’s image
Programmatically, the new development introduces much more variety than the predominately-residential neighbourhood that once existed. It includes new community facilities, a sports field, an aquatic centre, parks, an art and culture centre, grocery stores, a bank, coffee shops, a pharmacy and restaurants.

Figure 14: Community pianos are located in the buildings throughout the development. Source: Author’s image
A defining feature of the development is the introduction of mixed housing tenure, or mixed income, into the neighbourhood. This was a major change for the highly socially segregated original Regent Park and was met with mixed reactions from housing advocates, scholars and residents. Some articles have been published highlighting the negative impact of gentrification and mixed tenure (Martine) while others saw the change as inherently unavoidable due to the current nature of development (Leinburger).

**Vitality**
Although it will become more evident with time, Micallef’s current account of Regent Park includes a description of the community’s vitality: “Up the block is a Tim Horton’s restaurant, busy around the clock as people meet up with each other. The sound of kids playing from a daycare mixes with the sound of kids from the Lord Dufferin Junior and Senior Public School across the way” (26). However is also possible, that despite the ills of the original Regent Park, neighbourhood vitality became stronger throughout its years and by the 1990s the resident participation was so strong that it helped to create vitality within the community. The hope with the new development seems to be to maintain and increase that vitality, however as Danielle Laughlin found in her study on the youth perspective of the new Regent Park, some younger residents recognize the difficulty with this: “It is one of the paradoxes of this revitalization that you are going to tear down community to create community. There is already a strong community here” (Laughlin 126).

**Nature**
The addition of nature into the Regent Park community began decades earlier with the residents’ push for community gardens. The new design takes this into consideration and includes an expansion and preservation of the gardens, as well as the creation of a green house, container gardens and rooftop gardens. A large park in the center of Regent Park will serve as an anchor
for the community, while smaller “parkettes” will be distributed throughout the neighbourhood for immediate access. The original Regent Park had a “boardwalk,” which was a large pedestrian-only pathway running east-to-west through the development. Some young people who were interviewed expressed concerns over the removal of the boardwalk indicating that it was used as an important hangout space (Laughlin 126). The worry they expressed also indicates the importance of communal teenager and kid-friendly hangout spots in the area, which is the goal of the new parkettes and larger park, and is a good example of flexible design that can be geared towards specific populations.

Figure 15: A free aquatic centre and a large park in the centre of the neighbourhood acts as an anchor. Source: Author’s image

Legacy
The importance of legacy cannot be understated. In many of the interviews, adults and youth both expressed the importance of the community and described the strength that existed within the Regent Park community. Micallef quotes a long time resident who was heavily involved with the participatory design process, regarding the decision to maintain the name of Regent Park,
despite whatever stigmas may have been attached to it: “Regent Park has a long and proud history that residents wanted to maintain so that the rest of the city and the world could see the vibrancy of the community we love and call home. Keeping the name was integral to this, and our partners embraced the idea” (Micallef 22). Farrow’s notion of legacy also includes environmental sustainability, which is evident in the development of the Regent Park Energy Centre and in the developer’s intention to create a walkable neighbourhood with community gardens and access to schools, services and public transportation.

**Authenticity**

As previously mentioned, authenticity can be difficult to define architecturally, but based on the notion of cultural or local appropriateness, authenticity was a driving force in the methodology. This was addressed by involving residents and community agencies from the onset of the project and throughout the entire process, and ensuring that a mix of people from different age groups and cultures were encouraged to be involved.

Figure 16: Art installations in the Daniel’s Spectrum theatre, gallery and community art centre showcase the diversity of local residents.
Source: Author’s image
Comprehension, Manageability and Meaningfulness

Viewed through the salutogenic lens, it becomes clear that the revitalization process followed very different principles than the original model; it seems to be focused almost entirely on inclusion and participation. It is important to look specifically at how these elements impact Antonovsky’s sense of coherence factors as these factors are ultimately what can lead to an increase in health.

The intense participatory process would have had a direct impact on the level of comprehension, manageability and meaningfulness experienced by the residents. Although this will always vary from person-to-person, the overall intention of the project was centered on involving the residents in a way that helped them to understand, manage and find meaning in their surroundings. This is made clear by the process of creating the Regent Park Social Development Plan and by the stated goals of the Toronto Community Housing as told to Micallef by Derek Ballentyne: “We wanted to make it feel like a neighbourhood, with employment opportunities, sustainable buildings, and mixed ownership. Regent Park had the capacity to do this because it had strong, vocal, articulate tenant leadership” (Micallef 14). The Social Development Plan included seventy-five specific development recommendations, based on the guiding principles that were established by the residents in the beginning of the process. The feeling of manageability was also promoted though actions such as participatory budgeting: “It was about giving away power and control. For example, we did participatory budgeting. It sounds corny but giving residents control meant good decisions were made” (Micallef xx)

Jim Dunn states that: “Meaning is created not just through its ascription to income, educational attainment, and place in the job hierarchy, it is also ascribed to the materiality of individuals’ everyday life. Housing—central as it is as an expression of so many important social norms, economic security factors, and cultural symbols—is likely to be a pivotal feature of any
understanding of the role of meaning…” (Dunn 681). Currently Dunn and his team are conducting a longitudinal study that investigates the impact of the design of Regent Park on the health of the residents.\footnote{19} Although this research is still underway, data from the first two reports show some positive changes, particularly in regards to the built environment. For the first report tenants from phase one of the temporary relocation and subsequent move-in were interviewed. The results showed improvements in housing satisfaction and meaning, neighbourhood satisfaction and safety and a decrease in fear of crime (Toronto Social Housing and Health: One 6). The second report, which used the same process to interview tenants from phase two of the relocation retrieved similar results except showed a greater change in the impact of the housing on feeling distress (Toronto Social Housing and Health: Two 8). “First, [Tenants] were more satisfied with their home (noise, cleanliness, pests, etc) and felt like their home was a good ‘fit’ for them (a good place to live and a place they were proud to show others). Second, participants felt better about their neighbourhood and more connected to the community. Third, they felt safer, particularly after dark. And finally, participants felt less ‘distress’ (another word for mild depression) after a year in their new unit” (8).

Architecturally, based on Dilani’s principles, comprehension, manageability and meaningfulness are more evident in the Regent Park redevelopment than in the original (Table 6). Many of the elements that Dilani believes may strengthen a sense of coherence are present in the new design.

Table 6: The presence of Dilani’s sense of coherence factors in the Regent Park redevelopment

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**6.3 Redevelopment Critiques**

Although the process and methodologies employed at Regent Park are very similar to a salutogenic design model, health did not provide the foundation for the decision-making that took place. What would the Regent Park methodology and design have looked like if the health implications were more clearly the focus? Based on the documentation, articles and information that has come out of Regent Park since the redevelopment and based on the status of Regent Park at the time of writing this paper,\(^{20}\) four main concerns would have been more clearly addressed, or alleviated, by using a salutogenic model:

1. **Stress caused by the process of temporary relocation**

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\(^{20}\) At the time of this paper, Regent Park has not been occupied long enough to fully understand many of the health implications of the design. It may take multiple generations of residents before it becomes clear how the design and methodology has impacted the residents’ health. Jim Dunn’s longitudinal study looks more closely at this area. For the purpose of this paper I have chosen to focus on the factors that can be analyzed based on current status.
2. Maintenance

3. Success of Mixed Tenure

4. Ability to Replicate

1. Stress Caused by the process of temporary relocation

Relocating residents is difficult to avoid with a redevelopment project as large as Regent Park. During phase one over 300 families were temporarily relocated, phase two saw the relocation of over 400 families and it is estimated that phase three will involve over 600 households (star article?). Although the relocation is temporary and each household is guaranteed the right to return to Regent Park, it still means that the families must plan to be out of their homes for at least two years (Paikin). In an article published by the Toronto Star on the relocation process, TCHC Spokesperson Sara Goldvine acknowledged that: “Relocation is the most difficult part of the revitalization…” (McKnight).

The process began with tenants selecting a temporary unit, which started as a first-come first-serve process. Tenants would line up when the office opened to select a temporary unit, which was potentially in a neighbourhood outside of Regent Park, and some quite far away from downtown Toronto. TCH made great efforts to keep families in the Regent Park area if they preferred to stay, but were limited by the availability of units. Tenants were given multiple notices regarding how the selection process would take place, but the method still resulted in a stressful experience for many residents. According to a series of interviews done by researcher Richard Schippling, tenants ended up lining up overnight, sometimes many nights in a row, to have their first choice in a unit (69). For many tenants with children at home, mobility issues, or for single mother tenants, this process felt unsafe and extremely stressful (79). Toronto Community Housing changed the process once it became clear how difficult it was and instead
established a first-come first-serve in smaller segmented populations, which largely decreased the number of tenants lining up at one time (69).

Given the difficulties with relocation, Toronto Community Housing did a remarkable job at communicating with residents and adapting to the challenges as they arose during the relocation process. It is highly commendable that they changed the unit selection process part way through such a major operation. However despite their impressive effort, according to Schippling, the process still caused much stress on the residents. Stress that, as noted in an article published by TV Ontario, may have outweighed the happiness associated with moving back into the permanent residence. “Experiences of relocation and return vary widely, and while residents may espouse support for the presumed benefits of redevelopment, long-term hopes for secure, well-maintained homes are sometimes overshadowed by stressful experiences of relocation and return” (Paikin).

Beyond selecting a temporary unit, relocating a family or individual has the potential to greatly affect their sense of coherence. Antonovsky states that: “If experiences are... frustrating and punishing to a point where survival is questioned, then it is likely they have a negative impact on the sense of coherence” (Health Stress and Coping 189). Families are moved away from their social circles and children may have to change schools. Even the temporary nature of relocation can be stressful. A report published by the Annie E Casey Foundation21 indicates that the negative outcomes associated with relocating families during redevelopment can include: “the inability of children to learn and thrive in healthy communities, families being thrust deeper into poverty without their former social networks to mitigate tough times and repetition in the

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21 The Annie E Casey Foundation is an organization whose aim is to build stronger communities, decrease poverty and support children by strengthening families. The foundation has published a series of papers on child welfare, impacts of poverty, research and policies, evidence-based practices, economic opportunity and education (http://www.aecf.org/).
cycle of neighborhood disinvestment, despair, redevelopment, and gentrification” (Responsible Redevelopment 5).

Relocation also impacts one’s Generalized Resistance Resources (GRRs), or personal resources, which Antonovsky posits are needed to cope with stress. As discussed earlier in this paper, some key GRRs that Antonovsky highlights are: adaptability, social ties and access to institutional or community support. In a salutogenic design model the importance of the GRRs would be recognized, as would the potential impact that removing them would have on the residents. Schippling’s interviews identify specific worries that the residents had regarding relocation such as: getting a good temporary unit, stress about the unit selection process, losing social ties and community, losing access to services, community centers and schools, moving to “bad” neighbourhoods and temporary relocation lasting for too long (Schippling 73, 88, 86, 83, 98). Schippling also identified actual problems that arose during the relocation such as: confusion and miscommunication regarding move out dates, temporary homes had pests or pests were transferred in the moving trucks from other homes, temporary units and neighbourhoods felt unsafe, units found in disrepair, loss of personal and social connection to Regent Park, anxiety, depression and stress (82, 89-90, 102). What salutogenesis would have focused on is how to relocate while having the most minimal impact on the residents’ sense of coherence. In order to do this, the issues and worries above could have acted as tools to help determine the concerns that Toronto Community Housing needed to address. These concerns are ultimately what will impact the residents’ experiences of meaningfulness, manageability and comprehension.
The Annie E Casey Foundation report outlines some key guidelines for a responsible relocation process that further support the salutogenic model. These guidelines are outlined in Table 7.

Table 7: Guidelines for responsible redevelopment
Source: “Responsible Redevelopment: Relocation Road Map” 8.

<table>
<thead>
<tr>
<th>Relocation Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensuring that the relocation plan and processes are as transparent, clearly defined and Resident-centered as possible</td>
</tr>
<tr>
<td>Promoting meaningful community involvement at every critical juncture</td>
</tr>
<tr>
<td>Providing genuine choices of quality and affordable replacement housing</td>
</tr>
<tr>
<td>Ensuring that residents are not discriminated against or made homeless as a result of relocation</td>
</tr>
<tr>
<td>Providing fair and flexible financial benefits</td>
</tr>
<tr>
<td>Offering counseling and support services focused on the specific needs and interests of residents before, during, and after relocation</td>
</tr>
<tr>
<td>Providing opportunities for residents to improve their income, assets, health, and other aspects of their overall quality of life</td>
</tr>
<tr>
<td>Offering residents affordable opportunities to return to the redeveloped neighborhood</td>
</tr>
<tr>
<td>Tracking long-term outcomes of relocated households to assess the effectiveness of support services</td>
</tr>
</tbody>
</table>

Based on the relocation challenges faced by the residents that were noted in Schippling’s research, the potential impact those challenges would have on a sense of coherence, and the overall intention to increase sense of coherence, a salutogenic model may have addressed the relocation by implementing the guidelines such as: involving the residents in the relocation process—listening to their fears, and have them help decide the best way possible; provide a representative from TCH to work with families and individuals directly during relocation (this is especially important for families with children, people who work during the day and cannot line up in the morning and people with mobility, language or literacy issues); provide emotional and psychological support through counseling or gatherings throughout the relocation process; indicate where the new neighbourhood amenities and support services are and offer rides/bus fare/access to support services; help tenants choose location based on proximity to their own
needs (eg. walkable grocery stores, close to schools or close to transit), and; offer a chance for families who are close to one-another or large extended families to move into the same neighbourhoods. In order to follow these guidelines a participatory model would need to be implemented during the initial planning phases. This would ensure that relocation worries and unforeseen stresses could be avoided or mitigated, and it would also ensure that communication and trust between the residents and housing authority is established at a very early stage.

2. Maintenance
A key aspect in a salutogenic design model is the involvement of the entire team. Although the Regent Park revitalization takes great measures to ensure that all the stakeholders are involved, what is unclear from the current documentation is the level of involvement of the Toronto Community Housing employees who are responsible for building maintenance and communication with the tenants—both of which can impact the sense of coherence. Maintenance is a recurring concern in much of the research on Regent Park, as well as other low-income housing developments in Toronto (Laughlin, Paradis, United Way Report) and housing projects throughout the United States (Bloom). Nicholas Bloom, in *Public Housing that Works* quotes the deputy general of the New York Community Housing Authority saying: “…within three or four days there would be a serious impact on the quality of life should maintenance standards falter…” (2). Lack of building and grounds maintenance is also linked to the failure of Pruitt Igoe. Maintenance fees came from rental income, which meant that the lack of residents led to a decrease in funds and the more the buildings fell into disrepair the less tenants would pay in rent and the less likely tenants would move in. Building maintenance, therefore, is a key factor in a salutogenic housing model. Salutogenesis recognizes that each aspect of the development, including long-term issues such as maintenance will impact the residents’ sense of coherence. It
also recognizes the important role of the building staff and property managers. They too, must be provided with a place of work that strengthens their sense of coherence and mental well-being.

The Regent Park community engagement strategy report found that maintenance and safety issues were widespread concerns and identified these on the list of weaknesses that needed to be addressed in the redevelopment: “Lack of maintenance; slow maintenance service; housing office hours too short and lack of communication – residents need to be listened to and heard; TCH service is unfriendly; poor cleanliness in building, unhealthy” (Meagher and Boston 43). In Danielle Laughlin’s research many of the interviewees noted maintenance issues as well. “The insides of the buildings are never cleaned. I mean, clean the elevator because when people spit on the buttons, no one wants to touch it” (Laughlin 140). Although these concerns were identified very clearly, and the proposed redevelopment plan addressed issues regarding housing, parks, community facilities and business/employment (Meagher and Boston 52), the long-term maintenance plan is unclear.

In a series of interviews with residents who currently live in the redeveloped Regent Park conducted by Master student and researcher Daniel Rowe, there is indication that the maintenance of the buildings are not yet being upheld. According to his findings, there is successful upkeep in the condominium buildings but not in the public housing buildings. Regarding this disparity Rowe suggests that: “the public tenants were, relative to the condominium owners, disempowered” (135). He provides anecdotal evidence in the way of interviews that indicate problems such as elevator breakdowns, plumbing issues, difficulty communicating with TCH staff, miscommunication…(46, 47, 50-53). Even if this is true only for the residents that Rowe interviewed, it still illustrates that the potential long term maintenance plan needed to be addressed more clearly. The quality and care of a building will have a long-
term impact on current residents and on future generations of residents. Based on the issues at Regent Park, some long-term solutions that may have arisen through the application of a salutogenic model are: Include the building maintenance staff in the early participatory design discussions and in discussions with the residents. Through engagement, maintenance staff and residents can provide insight regarding how problems may arise and can contribute to potential solutions; Ensure the budget includes realistic allowances for long-term maintenance and appoint a TCH department to manage the funds, and; create a short-term and long-term communication strategy between the landlord, maintenance team and residents. Allow room for adjusting this strategy as new problems arise and new solutions are found. It is important to recognize that the failure of a project will be more costly than a properly planned and executed long-term maintenance strategy. That there is successful maintenance happening in the market buildings at Regent Park, and elsewhere, shows that it is possible to execute a maintenance strategy that can work. What is necessary is an open and transparent maintenance plan that is continuously reevaluated to ensure that it proactively meets the current and future needs of its residents.

3. Success of Mixed Tenure
Another potential concern expressed by both old residents and new owners, is the idea of social mixing. Kelly expressed the difficulty new tenants were experiencing in understanding roles within a new community regarding the mixed income. She notes that essentially the development is still trying to “normalize” Regent Park and reduce its “perceived ghettoization” (174). She also points out that although the approach is very community-driven, it still follows many of the principles of environmental determinism (175). Some residents expressed concern over how the intended social mixing would play out on a day-to-day basis: “Considering how much the redevelopment is predicated on this premise [social mix], you would think that somebody like the City or TCHC would be playing a little bit more of an active role in actually making this
happen. But they’re neither here nor there when it actually comes to making it happen. Mostly, they’re just talking about it” (189). The younger residents in the community expressed similar concerns with regards to social mixing. Laughlin quoted one girl saying: “They might treat you like when a lady is walking down the streets and she starts to clench her purse more. How’s that going to make you feel? It’s going to make you feel like shit because, oh, just because I lived here from before doesn’t mean that I’m going to run up on you and take your purse and shoot you and everything like that” (Laughlin 154). This reaction reflects how integral it is to include strategies that continue to encourage community participation once the development is complete. 

One example of how the Regent Park development tries to do this is through the Paint Box Bistro, which is a social enterprise that encourages food security by providing a retail shop, a bistro, as well as a communal kitchen to act as an incubator for local food production. However, based on Laughlin’s conversations with some of the local youth, there is still a risk of social segregation: “Why do I want a bunch of noodle huts and little cafes here? It’s not like I’ll be going there” (Laughlin 135). Losing parts of the community such as local businesses is a risk with any newly mixed-income neighbourhood and helping to maintain such stores is another opportunity to promote trust and social mixing.

In the case of Regent Park, a salutogenic model would have taken measures to more actively promote social mixing. One opportunity may have been to encourage new owners to become more actively involved with the local community, such as supporting local businesses through promotion and awareness or creating events that encouraged both renters and homeowners to participate, such as farmer’s markets, shared garden spaces, or shared community art programs. Regent Park homebuyers intentionally bought units in a mixed income
neighbourhood and as such, there is an opportunity there to encourage more community participation.

4. Ability to Replicate

Based on the information available on the Regent Park process it would be difficult to replicate. In part, the success of the process was due to how customized and flexible it was. But in order for the Regent Park success to act as a precedent for future developments, it needs to have a more clearly defined goal and process. By identifying a process it immediately provides a base from which to work. As issues arise, such as maintenance and relocation stress, the team can identify the challenges and solutions from a salutogenic lens.
7 Guidelines for a Salutogenic Housing Model

The complicated task of creating healthy low-income housing has challenged designers, residents, planners, housing agencies and city officials for well over a century. The one-size-fits-all solution implemented in cities across North America and Europe in the mid-20th century had the intention of helping people by providing them with high-quality low-cost housing, but the attitude of the selection process, the deterministic design of the buildings, the social and economic segregation that developed due to the architecture and urban design created the opposite effect. As well, by underestimating the importance of vital design decisions, such as: having access to natural light; the use of high-quality materials, which would help reduce noise-pollution and would withstand wear-and-tear; having direct access to views or nature; supporting well-maintained grounds and having access to community facilities, led to the eventual demise of housing developments such as Toronto’s original Regent Park development.

There is an intensely noticeable difference between what remains of the original Regent Park (slated for redevelopment in phases four and five) and the neighbouring revitalized buildings. In the revitalized sections, there is very little distinction between the architecture of the low-income and the market housing, the trees, parks and landscaping are large and welcoming, and the local streets are busy with bikers, skateboarders, new cars, old cars and strollers. The mix of people is evident, but there is yet to be any distinctive segregation. However, the long-term success, or potential shortcomings, of the attempts to socially mix the community will only make itself truly known over time.

Much of what the Regent Park redevelopment achieved is due to the strong tenancy activism, the participatory nature of the design methods, as well as the presence of salutogenic

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22 It should be noted that participatory design on it’s own does not necessarily lead to a timeless solution. Future generations of residents may not have the same needs, desires, aesthetics, familial structure or routine than current
design elements, such as light, nature, access to services and transit, common spaces, art and culture. What a salutogenic design process could have provided for a development such as Regent Park is a defined objective: how does this decision impact health? If a salutogenic objective had been implemented, it would have identified the issues that did arise such as the stress due to relocation, insufficient attention to maintenance, and the concerns around social mixing, and would have given the design team an opportunity to address them before the redevelopment was implemented.

7.1 Salutogenic Design Methodology
There are many public engagement, service design methods and charrette models that have proven successful and salutogenic design can ultimately be applied to whichever is most suited to each project, allowing for maximum flexibility in the engagement process. At the core of each of these models is a human element. Each model it is the interpretation, evaluation and translation of the needs of the residents into a design. These models don’t challenge the need for salutogenesis but instead support it, because salutogenesis adds a much-needed focus on health to the existing human element. In order to apply salutogenic design to a model, at each milestone the team must evaluate and reevaluate the salutogenic nature of the decision. This should happen at various phases throughout the process, namely: 1) when establishing a principle or project guidelines, 2) during the design development and 3) when evaluating a project.

1. Establishing Principles
Establish a list of stakeholders in order for the team to recognize the importance of each person and each role, including:

residents are identifying with. This can be a challenge, but further supports the idea of strong communication, flexibility. As well, some design attributes, such as ones identified in salutogenic model (natural light, ventilation, views, nature) have been shown to be successful through many generations of tenants.
• Residents (population);
• Building managers;
• Building maintenance and staff;
• Local business owners, healthcare workers and teachers;
• Architects, Developers, Engineers, Construction Manager, Project Manager and the entire Project Team.

Define “health” as a team and establish a shared purpose.

• Clarify the basics of what health is beyond the idea of not being sick. For example: feeling happy, safe, good, excited, energized, vibrant or positive.
• Establish a definition of “health”
• Establish a shared project purpose
• Discuss healthy spaces and what makes a place healthy by using the five vital signs.

2. Design development

Begin the team design engagement process by using participatory design models such as Participatory Action Research and a series of design charrettes. There are many established models that have proven success and each project may require a slightly different approach. In order to make it a salutogenic model, evaluate the impact of health at each milestone during each phase of the project (process, design development, construction and occupation) by asking:

• How does this decision affect the health of all stakeholders?
• How will this impact the health of future residents?
• How does this decision impact the sense of coherence--meaning, manageability and comprehensibility?
• Does this create a healthy space?
Establish design ideas

- How does this support the shared purpose of the project?
- Evaluate these questions using Vanderkaay’s vital signs and the team’s definition of health.
- **Decode the results** that are developed by the entire team and use them as guidelines during design development process. **Reevaluate** each design decision by reflecting on the team’s definition of health and asking how each design decision will impact a sense of coherence.

3. Evaluation

**Evaluate** each project using the team’s definition of health, by comparing the goals with the outcomes of a project, Vanderkaay’s vital signs and the shared purpose.

**Establish a willingness to fail.** Failure can be seen instead as lessons to move forward. Learn from design decisions that succeed and design decisions that created unexpected outcomes.

**Document** findings using post-occupancy evaluation techniques, as well as looking at the team’s goals, so the lessons can be used to guide future projects.

Figure 17: Salutogenic Design Method
There is an inherent challenge in providing definitive proof that a project has had success in promoting health. In part because there are factors outside the scope of the designers that may impact the results of a project, and in part because it takes time to reveal the full effect that design may have on health. However, Vanderkaay’s five vital signs provide an important starting point for analyzing the success or failure of a project, as does comparing the goals of the project with the outcomes of the project. To undergo a conclusive study that proves or disproves the hypothesis presented in this paper would require a series of longitudinal studies that are outside of the scope of this thesis. However, based on the evidence that already exists, there is a very strong case for the application of salutogenic design on low-income housing. I have shown that architectural elements have a direct and indirect impact on physical health, mental health and on the sense of coherence, I have also shown that low-income residents face a significantly high amount of stress and suffer from the ill effects of inadequate housing more than those who live in market housing. Based on the evidence available and presented in this paper it is my conclusion that by applying a salutogenic design model to the architecture of low-income housing the ability for residents to cope with the high level of stress they are facing may increase, and as such the design would have a positive impact on the health of the residents.
**8 Conclusion**

In recent years salutogenic design has expanded from solely being used in healthcare design and has now been implemented in long-term care facilities (Dilani, Vanderkaay, Farrow) as well as in workplaces (Heerwagon). However, it has yet to be used as a model for low-income housing. Similar to hospital patients, residents in low-income housing and people living with conditions of poverty face a unique type of stress (Evans) and there is an undeniable need for a housing design model that aims to promote health through stress-reduction. Although people may not be controlled solely by environmental factors, they are heavily affected by the built world and it is a designer’s responsibility to create housing that pushes people towards the health-end of Antonovsky’s continuum. Salutogenesis is not only a method, it is a language, and the various design models and successful case studies are tools used to create the language. What resonates the most clearly for the author of this thesis, is the reoccurrence of Antonovsky’s sense of coherence factors—manageability, meaningfulness and comprehensibility. In each of the salutogenic design models and in all of the examples of how stress impacts health, there is a direct connection to the strengthening or weakening of a sense of coherence. Had Regent Park employed salutogenic design principles the impact on the sense of coherence factors would have guided the design outcomes. They would have provided a clear direction that would have addressed issues as they arose, and would have considered the impact of relocation, maintenance, social mixing and replicability—four concerns that have the potential to greatly impact the outcome of the project.

Similar to a thesis, salutogenesis has a single objective. It provides a foundation for all other decision-making and lays out a guideline that can be applied to all forms of housing but will still allow for multiple design outcomes. It combines participation with expertise and works
towards a single defined goal, which can help the team ask the right questions. Success can’t be measured by whether or not the development is simply still standing, success, like Antonovsky’s entire thesis, is looking at whether or not the development actively promotes health and strengthens a sense of coherence. As an alternative to looking at Regent Park new and old, Pruitt-Igoe, or other low-income housing models as the “death of modernism” let us look at them from a salutogenic perspective: what have these models given to the world of housing and architecture, what have they caused in terms of health? These models helped strengthen tenancy participation, and encourage communication; they created a desire for residents to engage socially and politically; and a desire to be close to art and nature. They have encouraged designers to ask different questions and to look for answers through the lens of health. They are the first of many exciting steps towards creating sustainable and healthy housing for everyone. As Catherine Bauer so passionately believed, everyone has a right to live in healthy housing, yet in 2013 nine-out-of-ten families in Toronto’s low-income high-rise developments were facing homelessness. Now we are armed with new questions and with what we learned in the twentieth century, and now it is our duty to challenge the definition of health, to acknowledge the impact that housing has on our communities and to work together to create a solution that can push us all towards the healthy side of the continuum.
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Appendices

Appendix A

Basic Principles of Healthful Housing, Committee on the Hygiene of Housing American Public Health Association, 1938

A. Fundamental Physiological Needs

1. Maintenance of a thermal environment which will avoid undue heat loss from the human body
2. Maintenance of a thermal environment which will permit adequate heat loss from the human body
3. Provision of an atmosphere of reasonable chemical purity
4. Provision of adequate daylight illumination and avoidance of undue daylight glare
5. Provision for admission of direct sunlight
6. Provision of adequate artificial illumination and avoidance of glare.
7. Protection against excessive noise
8. Provision of adequate space for exercise and for the play of children

B. Fundamental Psychological Needs

9. Provision of adequate privacy for the individual
10. Provision of opportunities for normal family life
11. Provision of opportunities for normal community life
12. Provision of facilities which make possible the performance of the tasks of the household
without undue physical and mental fatigue

13. Provision of facilities for maintenance of cleanliness of the dwelling and of the person

14. Provision of possibilities for reasonable esthetic satisfaction in the home and its surroundings

15. Concordance with prevailing social standards of the local community

C. Protection Against Contagion

16. Provision of a water supply of safe sanitary quality, available to the dwelling

17. Protection of the water supply system against pollution within the dwelling

18. Provision of toilet facilities of such a character as to minimize the danger of transmitting disease

19. Protection against sewage contamination of the interior surfaces of the dwelling

20. Avoidance of insanitary conditions in the vicinity of the dwelling

21. Exclusion of vermin which may play a part in the transmission of disease

22. Provision of facilities for keeping milk and food undecomposed

23. Provision of sufficient space in sleeping-rooms to minimize the danger of contact infection

D. Protection Against Accidents

25. Erection of the dwelling with such materials and methods of construction as to minimize danger of accidents due to collapse of any part of the structure

26. Control of conditions likely to cause fires or to promote their spread

27. Provision of adequate facilities for escape in case of fire
28. Protection against danger of electrical shocks and burns

29. Protection against gas poisonings

30. Protection against falls and other mechanical injuries in the home

31. Protection of the neighborhood against the hazards of automobile traffic