Flow and Pause: Exploring human movement within a transit interchange
by kristen spencer

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submitted to the faculty of graduate studies
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I would like to extend a sincere thank you to my committee for their endless help, advice, and guidance. To my advisor, Professor Tijen Roshko, thank you for the constant motivation, support and encouragement. I greatly appreciate all of the time and effort spent on my behalf. Thank you to Dr. Cynthia Karpan for always listening patently and providing constructive criticism, your advice and guidance is invaluable. Finally, I would like to express my sincere gratitude to Professor Jean Trottier who has shared his ideas and creativity, challenging my thinking throughout this thesis process.

To all of my talented classmates, thank you for the inspiration, suggestions and valuable feedback; the amount of competence and skill within this group is astounding. To Janine Shwaluk, the last year would have been extremely difficult and definitely less entertaining without you. To Chris Baker, thank you for your extreme patience and understanding. Lastly, I would not have been able to complete this project without the unwavering support of my family.
Due to the increase of global flows, people, products and information are moving faster than ever before. Transit stations in turn have largely lost the ability to connect the traveller with the local environment, evolving into bland and homogeneous spaces. By introducing a means to pause within these flows, it becomes possible to once again engage in and absorb the surroundings that have become ignored and disregarded.

This study aims to reconnect user and the local context through an interior design of a multi-modal transit interchange. Dance and human movement are used as a methodology to unite user with place, ultimately informing new programs and spatial arrangements. The resulting interior design is able to foster place identity, allowing the user to slow their movements in order to create meaningful social, cultural and contextual connections within a transit space.
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This project aims to investigate the current typology of transit stations though the lens of interior design, producing a fusion of travel, hospitality and retail environments that motivate a connection between users and their surrounding cultural and social milieu. Within the project overview, current contextual issues are examined in regards to transport spaces, ultimately informing the entire design process of the proposed transit interchange.
The notion of interchange is used to imply the connection of numerous transport modes - a central node or point where variation in scales and velocities of movement and transportation can converge. Pedestrian, bicycle, scooter, motorcycle, automobile, bus and rapid transit would congregate and transpose, continuing through a seamless journey of the urban environment.

Within this project, the term “interchange” is applied to a new typology of transportation stations. No longer will each transit mode have disparate connections within the urban core, but one node that houses all modes of transportation. This new typology is necessary due to the numerous changes in regards to transit spaces within the City of Winnipeg that are demanding innovative assessments of transit vehicles and how people access them. The existing Greyhound bus terminal has been relocated to the Richardson International Airport which is under construction at the time of this research. This transference has displaced the current terminal from the urban core to the periphery, further removing any remaining ties to the identity of Winnipeg. Additional changes within the city include plans for a rapid transit system, providing an opportunity to include another layer of transit into the interchange while redefining the traditional notion of transit stations.
“Public space becomes mobile and connected, a set of circulating processes that undercuts the spatial divide of the ‘private’ and the ‘public’…the private spaces of everyday life get connected through the public circulating mobilization across a society”

(Urry, 2007, 91).

Although vehicle movement is crucial to the development of transit spaces, the most important layer is that of the pedestrian. Urban transit has the ability to transform passengers into pedestrians at the start and end of every journey, supporting both street life and public space. As a result, the interchange offers an opportunity for human interaction, creating a true public space in the current automobile oriented society.

According to Jan Gehl, the fundamental roles of public space consist of meeting places, market places, and thoroughfares (2000). By providing a space for all three functions within the transport interchange, the critical relationship between public space and pedestrian life is emphasized. The importance of public space is also related to the political sphere, where relationships with others as well as to the city are produced, becoming a significant element in the formation of the citizen. Through the guise of a transport space, the interchange can utilize the flow of people to instigate purposeful gathering and meeting spaces.
interchange as public space

The transportation station as node within a networked city is the essential urban junction that allows the city to become comprehensible. The station is a landmark, segregating and dissecting the city into smaller parts, allowing the inhabitants to understand and identify with distinct parts of the city.

“In cities where there are complex layers of passages, it may be suggested that it is the intersection points, stations, moments of encounter or interface that are the new urban structure. These paths of inter-modal transference provide order in the matrices of systems that make up contemporary cities” (Livesey, 2004, 94).

The city can be divided into a smaller series of segments that lead to the understanding of place. For example, the City of Winnipeg is identified through its nodes: Downtown, Osborne Village, the University of Manitoba, Assiniboine Park, and Polo Park Shopping district. In larger cities, subway maps, although not an accurate representation of the city, are used to decipher and decode the urban fabric. These nodes consist of fundamentally public spaces, where people are able to interact with each other.

“Nodes may be simply concentrations, which gain their importance from being the condensation of some use or physical character, as a street-corner hangout or an enclosed square. Some of these concentration nodes are the focus and epitome of a district, over which their influence radiated and of which they stand as a symbol” (Lynch, 1981, 47).

As a result, if we identify with our city partly through the nodes, we then identify with the city through its public spaces, revealing the fundamental need for such spaces within our cities. For this reason, the introduction of the proposed interchange as a civic space will conceivably lead to place formation and increased identity production.
interchange as public space

project overview
As public space is vital to the success of a city, it seems warranted to create more spaces, including transit facilities, that promote public connectivity. Without such spaces of interaction, people lose the occasion to share common ideas and information in which shared meanings are developed. Through the provision of opportunities for people to interact with others within the built environment, “shared meanings of the world and self are more easily developed, resulting in the individual’s greater sense of community, self-awareness, social support, and shared interests with others” (Demerath, 2003, 218).

In addition to the production of meaning through interaction, transit spaces have the capacity to contribute to the quality of the city’s public realm.

“A transport node or interchange is a place of mixed emotions- excitement tinged with anxiety, happiness at greeting loved ones and sadness when they depart, comings and goings, the beginning and end of a good night out. In urbanized societies, these spaces are often our principle meeting places” (Jones, 2006, 6)

Consequently, transportation design should celebrate the inherently mundane processes of waiting and moving from one transport process to another in order to produce a public space that promotes civic pride, pleasure and satisfaction. Stations have the ability to create a focal center and gathering place within the city, elevating the overall quality of life of its inhabitants. The station should not be simply a place for passing though, but should be a forum for both local residents and visitors to enjoy the surrounding community; it should be a center for cultural and informational exchange.

This exchange, however, cannot occur without the congregation of people together at the same place at the same time. The assembly of people can be facilitated though the functions of the interchange, where people are encouraged to move through the space at a pedestrian level. Without this pedestrian activity, opportunities for social interaction and place identity are lost.
Without public spaces, we deprive ourselves of places where meaningful interactions and contacts take place. These connections are common and usual, produced through everyday actions. “Our enjoyment of these interactions is so much a part of who we are as social beings, of what we enjoy in our lives, that one might say it is innate; our desire for making the world meaningful, in part through conversation with those who share it, is a basic part of human nature” (Demerath, 2003, 218).

In our current cities, the role of communication between people has been significantly replaced by new technologies and spaces. By providing a space in which new communications and connections can occur, the transit interchange can once again promote place making within the public spaces of our urban environment. “It is these interchanges from one form of transport to another, and to buildings and public spaces, that are what really creates the public life of a city” (Livesey, 2004, 93). By creating an interchange as a public node, individual connections are encouraged, thus facilitating the ability to produce meaning and identity through the built form.
Public space is crucial to the urban fabric since it is where the majority of interactions between people occur. Fundamentally, movement is necessary in order for interaction to occur. This identifies a focus to be placed on the circulation and flow of the body as a design foundation for a transit interchange. With this focus on the individual or groups of individuals, importance should be placed on the needs of these groups, with consideration towards the form and spatial requirements of the body. “Public-space designs that do not explicitly take the human body into account cannot possibly produce an urban environment of high quality” (Hrushowy, 2004, 78). While providing means of increased connectivity, the interchange will also employ the human body to inform both the program and form of the design. Through the study of dance, pedestrian movement, ergonomics and proxemics, the interior space of the interchange will be informed by the movements and requirements of the human body, producing a space that will always be contextual and relevant. “Each place will demand its own solutions, ones that are sensitive to local context, but the human body’s relationship to its environment remains constant across space and time” (Hrushowy, 2004, 79).

“What is of relevance to the urban designer are the points of intersection, the stations, nodes, intersections, events, or moments of translation between these various overlaid systems. The loss of urban space scaled to the human figure means that specific locations in space play the vital role in providing the necessary structure (spatial and narrative) for our inhabitation of contemporary cities” (Livesey, 2004, 97)
The conceptual framework for this project encompasses the formation of place within the public space of a transit station. The movement of the body is the principle function of a transit space. To narrow the scope and anchor the design of this project, human movement is used as an exploration into the interior design of an interchange.
design objectives

to use the notion of pause to examine locality and identity formation through interior design

to explore and develop the relationship between the body and the built environment

to create increased levels of pause through new programs and spatial arrangements

to facilitate place making through increased connectivity of individuals to each other and surrounding context

to create meaningful interiors through the understanding and application of human patterns (movement)
The goal of this project is to examine, understand and apply basic human gestures to the interior design of a transit station. Due to the vast amount of information and topics that relate to the human body and its movements, dance is used as a filter to ground this project. On a social level, connections become the essential element in the creation of meaningful environments. As in dance, it is the relations between the dancers to each other as well as that of the performers and spectators which give the performance power and significance. As a result, this project questions how the body, human interaction and interior design work together to produce a cohesive and significant environment.

“The form of social space is encounter, assembly, simultaneity… [it] implies actual or potential assembly at a single point…Urban space gathers crowds, products in the markets, acts and symbols. It concentrates all these, it accumulate them. To say urban space is to say centre and centrality”

(Lefebvre 1991, 101).
Globalization has shaped the awareness that the world is a more amalgamated society, no longer definitively confined by land and borders. This is illustrated by the spreading out of people over space and time while increasing the level of connectivity (Massey, 1994). The resulting exchange of relations between individuals, organizations and social networks has necessitated increased transportation of people, goods, ideas, information and concepts (Kauffman, 2008). Movement has become faster and more frequent, and has taken on various forms that destroy traditional elements of urban structure and inhabitation. According to engineer Andreas Schafer, not only are people moving faster but more people move farther than ever before. “Today world citizens move 23 billion kilometers; by 2050 it is predicted that figure will have increased fourfold to 106 billion” (Schafer, Victor 2000: 171). This growth in mass mobilities has various environmental consequences including increased noise, smell, visual intrusions, carbon dioxide emissions, ozone depletion, and social fragmentation. Above all and most detrimental, motor vehicle traffic has come to dominate our urban landscape, constricting pedestrian movement and essentially contributing to a decline of the quality of the built environment.

“As processes of globalization continue to change the ways in which we relate to each other as well as to the places that we call home, the urgency mounts to find new ways to (re)unite ourselves back into these spaces”

(Rieder, 2004, 3)
“Once the street accommodated all movement and exchange in the city, as information was material and had to be moved physically; the street was scaled to suit the walking or slow-moving individual, who could socially exchange in the same space. Now, many overlaid mechanical and electronic systems perform the same functions with greater speed and complexity”

(Livesey, 2004, 95)

Contemporary transportation facilities, especially those of smaller scale such as bus stations, have largely followed a path of spatial degradation. Partly due to the decreased reliance on public transportation and smaller profit margins, the interior spaces of such stations tend to become homogeneous and bland. Although there are examples of outstanding facilities around the world, in most cases, stations have become waiting points that do not speak the same language as the city in which they are located with each station reminiscent of the last. These spaces, according to Marc Augé, are referred to as non-places; spaces of travel, consumption and exchange of solitary users (1995). They are places where people co-inhabit without living together, pass but do not meet. Non-places are uprooted environments, evident through mobility and travel. They are sites marked by the ‘fleeting, the temporary and the ephemeral” (Augé, 1995, 78). Lacking the familiar attributes of place, non-places are devoid of a connection to a larger, physical cultural and emotional context, producing empty, abstract and impersonal interiors. Detached from their local environments and exhibiting nothing about locality, such places further endorse a homogenous experience of place. Without these contextual relationships, transit spaces are unable to attach and display significance or identity. As a result, there is an uncertainty about the meaning of these places and how people relate to them, endorsing the need for further investigation of global-local places within an interior design framework.
Although non-places occur largely within transit spaces, the concepts on non-place rest upon the sedentary notion of place where places are given and unchanging. Yet it can be argued that travel, which is said to produce non-place, can in fact lead to place identity and formation. Transit spaces are always changing and fluxuating. People are constantly flowing through as these spaces tend to be extremely permeable. By connecting this flow of people to each other and the surrounding cultural context, the experience of moving through transit spaces can produce familiar and meaningful places. Providing that the spaces relate to the social, economical and cultural milieu that encompass them, it is the individual experience of moving though these spaces that can create significance.

“Physical and interpersonal mobility increases our knowledge of our environment, increasing in turn our ability to make it meaningful in collaborative efforts with others. Both those meaning-making efforts, and the fact that the mobility itself causes people to feel more in control of their ability to navigate that environment, result in a better sense of that environment and the self’s position within it.

(DeMerath, 2003, 221)

As a result, the design of a transit interchange should not solely focus on place as bounded and static, but as a permeable environment that integrates the wider flows of people, ideas and products as means to create a unique assimilation of both local and global social relations.
Within the context of globalization and increased mobility, a new conceptualization of place is necessary. The city is transformed through perpetual and continually shifting interconnections between the local and global, places and flows. Conventional notions of place as bound and settled have shifted to one of diluted and diffused “space of flows” that is unbounded and increasingly spread out (Castells, 2000). These flows are a series of exchanges and interactions of people, capital, information, social and organizational connections, symbols and images.

As a result of this increase in flows, places are progressively more connected to others around the world through constantly evolving social, cultural, and natural networks. New constellations of mobility, immobility, stability and change are being formed. “Place should not be thought of in terms of statis and boundedness, but are the product of processes that extend well beyond the confines of a particular place” (Cresswell, 2004, 50). Thus, there is a need to reconceptualize key terms such as space, place, region and locality to include and embrace the processes of modernity while maintaining a local sense of place. Instead of an attitude of resistance to a space of flows, a sense of place should alternatively celebrate what is different about a place in terms of its entirety, which currently contains global movement and the incorporation of diverse people, goods and capital.
There is the specificity of place which derives from the fact that each place is the focus of a distinct mixture of wider and more local social relations … All these relations interact with and take a further element of specificity from the accumulated history of a place, with that history itself imagined as the product of layer upon layer of different sets of linkages, both local and to the wider world.

(Massey, 1994, 155-156)

The contemporary world as comprised of flows must be embraced in order to design for our current transience. While previous ideas of place have been concerned with boundaries and rootedness, new notions of place as open and porous argue that places are always affected by both internal and external conditions, regardless of how ‘bounded’ they are.

“[place] can be imagined as articulated moments in networks of social relations and understandings, but where a large proportion of these relations, experiences and understandings are constructed on a far larger scale than what we happen to define for that moment as the place itself…And this in turn allows a sense of place which is extroverted, which includes a consciousness of its links with the wider world, which integrates in a positive way the global and the local”

(Massey, 1994, 155)

This exploration of place as the unique point of connection in a wider series of movements initiated the theoretical framework of this project and the resulting transit typology. The proposed interchange will incorporate a range of velocities and scales in order to accommodate connections of a variety of users. Smaller, intimate spaces that incorporate lower levels of movement will contrast large public areas of increased connectivity and flow. Massey’s work is used to inform the conceptual ideas of this project as she begins to answer questions of how meaningful places can be created in transient areas through the inclusion of
movement and flows. Instead of place as motionless or bounded, they can be considered a product of processes that extend beyond a specific place. Place can therefore be understood as open and hybrid; a product of interconnecting flows, where variation of a mobile experience is more important than the fixity of place within the fluidity of globalization (Massey, 1994). In other words, our global society does not make space meaningless but merely alters spatial logic, where different spaces coexist and overlap and are constantly emerging and reemerging (Urry, 2007).

Taking these concepts into consideration, the interchange can become a significant place regardless of its ephemeral nature. All spaces cannot exist without the constant merger of movement and temporality. This is especially true for transportation stations, which will always be dynamic and permeable due to the continual movement of individuals though, around and between them. This notion of transformation, however, is not confined to transit station. In fact, there is no place that is permanent or unchanging. “Each time we enter a new place, we become one of the ingredients of an existing hybridity, which is really what all ‘local places’ consist of” (Lippard, 1997, 5-6). Thus, I argue that the uniqueness of place is based on the fact that each place is the point of a distinct combination of both larger and more local social relations.

Since the connection between the movement of people and transportation spaces are inherently linked, it is logical to use human movement to define the interchange. According to Micheal De Certeau, space is a practiced place in which the flow of people within orient the space. It occurs when people enter, move through and connect with others. Without this activation, a connection to place can not be created. “A space exists when one takes into consideration vectors of direction, velocities and time variables. Thus space is composed of intersections of mobile elements” (De Certeau, 1984, 117).
The interchange, as a result, will facilitate relationships between movement and people, people and place, as well as people with each other. Fundamentally, it is the connections between people that allow for unique and meaningful places to exist. “What gives a place its specificity is not some long internalized history, but the fact that it is constructed out of a particular constellation of social relations, meeting and weaving together at a particular locus” (Massey, 1994, 154).

Following the notion of place as connection, the proposed transport interchange will be formed by human relations and interactions, in which different groups of individuals interact at different scales, linking local development to national, international and global processes. Especially within the typology of a transit space, this project questions how an interior can establish a sense of place through the emphasis on continual flux and connection.

“A permeable pedestrian environment makes social contact significantly more likely...Permeability of pedestrian environments creates potential for social exchange among diverse social groups” (Demerath, 2003, 221).

Reasons for flow:

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<tr>
<th>Asylum and refugee</th>
<th>Post-employment</th>
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<td>Business and professional</td>
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<td>Discovery travel of students</td>
<td>Tourist travel</td>
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<td>Medical</td>
<td>Visiting friends</td>
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<td>Military mobilities of armies</td>
<td>Work related</td>
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(Urry, 2007, 262)
## Translation Framework

<table>
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<tr>
<th>Key Issue(s)</th>
<th>Design Filters</th>
<th>Design Guidelines</th>
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<tbody>
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<td><strong>flow</strong></td>
<td><strong>technological</strong></td>
<td>sightlines from waiting areas to train/vehicle to visually connect to flow</td>
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<td></td>
<td>systems</td>
<td>allow for space to be open and unrestricted by building structure</td>
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<td></td>
<td>materials</td>
<td>use materials that allow for large spans and transparency:</td>
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<td>structural</td>
<td>steel/glass</td>
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<td><strong>human issues</strong></td>
<td><strong>psychological and sociological</strong></td>
<td>mix between social and public zones</td>
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<td>proxemics</td>
<td>loitering-unplanned spaces, loose programming, flexible spaces</td>
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<td>personal space</td>
<td>spaces of flow more public, less privacy needed</td>
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<td>user feelings and interactions</td>
<td>larger scale- add to experiential quality; unusual, Disney experience</td>
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<td>light</td>
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<td>within public spaces</td>
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<td>time</td>
<td>sense of time heightened, views to street, moving vehicles</td>
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<td>texture</td>
<td>smooth, sleek, colourful surfaces to spur ideas of motion and speed</td>
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<td><strong>functional</strong></td>
<td>transportation</td>
<td>non-places, increased group interaction, more public spaces, open</td>
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<td>security</td>
<td>seating areas, less segregation, flexible (work, leisure, inhabit)</td>
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<td>hierarchy values of user/client</td>
<td>can see themselves within group activity- open spaces-visibility</td>
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<td>group interaction</td>
<td>“people to see”</td>
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<td>individual identity</td>
<td>views to other spaces. Wide corridors to facilitate movement</td>
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<td>circulation</td>
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“The absence of movement is as important as movement. In the theater, as elsewhere, it is in relation to stillness that movement is defined…The stillness thus draws the move to the attention of the spectator, it brings into existence as a complicated entity within the flux of being”

(McAuley, 1999, 106).
placemaking through pause and flow
With the increase in transport needs and demand for new transportation systems, it is assumed that a design focus will begin to shift toward mobility spaces. This is where the proposed interchange becomes relevant and necessary. As current travel typologies fail to fulfill all of the physical, psychological, and cultural human needs found within the continuous movement of travel, it becomes important to reconnect the traveller to the space in which they are moving through; to pause and experience these spaces. The lack of pause consistent with the transition through typical transit facilities produce a frequent loss of understanding and connection of place, resulting in a disconnect between the traveler and the surrounding networks.

To combat the experience of non-place as discussed previously, the process of place formation should also be a process of creating pauses within the flows of transportation. Since public spaces, stations and exit points are all situated on the field of tension between place and flow, the creation of pause is crucial to the proposed interchange in order to balance these pressures. As such, transport spaces are located where “spaces occupied by flows” meet “spaces occupied by places”, allowing new development potentials and possibilities to be achieved (Hulsbergen, 2005).

“Intersections can be experienced as a compression of social time space. This intensification can stimulate playful responses. Intersections also punctuate journeys through urban space. People’s need to change direction, or to navigate their way though intersecting flows of people or traffic, generally causes them to slow down, or to become temporarily stationary. This intensifies their attention to things around them”

(Steven’s, 2007, 99)

Opportunities to capture, frame and embrace the intersecting flows within the public realm of a transit interchange will produce identification of place within the continuous movement resulting from global processes. People are able to slow down and comprehend the contextual milieu around them at that particular moment, assisting in the production of both meaning and identity within the interior environment.
The notion of pause is intrinsically linked with place according to geographer Yi-Fu Tuan. He makes the comparison between space and place where space becomes place as one becomes familiar with it.

“What begins as undifferentiated space becomes place as we get to know it better and endow it with value…The ideas ‘space’ and ‘place’ require each other for definition. From the security and stability of place we are aware of the openness, freedom, and threat of space, and vice versa. Furthermore, if we think of space as that which allows movement, then place is pause; each pause in movement makes it possible for location to be transformed into place”

(Tuan, 1977, 6)

It can be argued, however, that place can be comprised of pause while still maintaining a level of openness and permeability. It is through the interaction of people that truly produces a sense of place. By incorporating and increasing opportunities for the flow of people within an interior, the chance of individual interaction increases. These interactions become points of pause, facilitating what Tuan refers to as place, where people ‘get to know it better’. I argue that both flow and pause are needed to produce these connections, thus allowing for place to be created within the transient nature of a transit station.

“The making of places- our homes, our neighbourhoods, our places of work and place- not only changes and maintains the physical world of living; it also is a way we make our communities and connect with other people. In other words, placemaking is not just about the relationship of people to their places; it also creates relationships among people in places”

(Schneekloth, 1995, 1)
The proposed interchange will facilitate placemaking through the inclusion of interaction points where individuals can connect with other individuals at varying scales. Albiet a transit interchange is typically transient in nature, through repeated use and provision of areas of pause, users begin to recognize the other repeated users within the space as a result. Even through no immediate connection was formed, the users begin to identify with others as well as the built environment.

“Although design can attend to many features of an environment to enhance interaction, including the presence of common referents, the most significant interaction opportunities result from the simple (and complex) presence of others. Chance interactions are the stuff of spontaneity and serendipity. The amount of time spent in public spaces constitutes the most significant variable in creating opportunities for interaction” (Demerath, 2003, 222).

The interchange will facilitate spaces for interactions, which will also become places of pause. At interaction points, people are able to connect with each other and are therefore more likely to build a sense of shared meaning and to participate in the collaborative production and reproduction of culture (Demerath, 2003). The pause, created through specific interaction elements including performance, retail and hospitality zones, will allow for an increased opportunity for connection within the transit interchange. The interaction between individuals will occur at various scales, depending on the amount of interaction desired by each user. Further, the interchange will be programmed to include spaces in which an individual can reconnect with oneself; relaxation space to unite the mind and body.

“An intersection expands time, creating a time apart during which play is possible. Intersections are points of both convergence and divergence. Intersections broaden the field of vision, opening up new options for experience and directions for movement” (Stevens, 2007, 99).
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<tr>
<th>Key Issue(s)</th>
<th>Design Filters</th>
<th>Design Guidelines</th>
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<tbody>
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<td><strong>technological</strong></td>
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<td>pause</td>
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<td>materials</td>
<td>views to exterior to inform users about surrounding context</td>
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<td>pause</td>
<td>proxemics</td>
<td>smaller space needed for more intimate areas</td>
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<td>personal space</td>
<td>spaces more enclosed in relation to areas of flow</td>
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<td>user feelings and interactions</td>
<td>apply anthropometric data within the interior environments as well as in furniture and fixture design/placement</td>
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<td><strong>physiological</strong></td>
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<td>pause</td>
<td>privacy</td>
<td>more privacy needed as spaces range from public to personal</td>
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<td>comfort</td>
<td>seating and atmosphere should lead to increased comfort to entice users to stay longer. All interior furnishing should relate to the human form</td>
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<td>pause</td>
<td>space</td>
<td>colour and forms must catch and hold attention of customers</td>
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<td>light</td>
<td>access to natural lighting in all public space. Diffused light for more personal spaces</td>
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<td>line</td>
<td>sense of time slowed down</td>
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<td>time</td>
<td>soft textures and materials</td>
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<td>texture</td>
<td>more subdued curves and colour, range from commercial to lounge to rest areas</td>
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<td>form</td>
<td>level changes in ceiling and floor plane to slow down users (like speed bumps)</td>
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<td>pause</td>
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<td>rhythm</td>
<td>scale relational to activity and scale of movement within</td>
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<td>harmony</td>
<td>create enough interest through variety to temporarily alter pedestrian flow and dominant spatial patterns</td>
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<td>functional</td>
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<td>pause</td>
<td>transportation</td>
<td>seating that spills onto concourse: becomes stage for interaction</td>
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<td>security</td>
<td>spaces of pause to face flow (circulation) spaces that function as city streets</td>
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<td>hierarchy values of user/client group interaction</td>
<td>sense of security should be apparent within all public spaces</td>
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<td>individual identity</td>
<td>flexible seating/areas to facilitate group interaction</td>
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<td>circulation</td>
<td>areas of intimate space to facilitate reconnection with the self</td>
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<td></td>
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<td>areas of pause should be found at intersections of flow</td>
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For the purposes of this project, three sites of transport were analyzed; the existing Greyhound bus depot, the current Via Rail Union Station and the proposed interchange design. Firstly, the Greyhound depot in downtown Winnipeg was studied in terms of circulation, function, amenities and atmosphere. Through this investigation, it was apparent that the existing bus transit typology was not designed to its full potential to meet the values and needs of current travellers.

Equally, the Union Station in Winnipeg, the proposed site for this project, has lost the majestic glory in once possessed. With most of the historic interior areas converted to offices, the remaining public areas are drab and outdated. Through the analysis of the station’s site and context, the proposed project is able incorporate significance and meaning into the interior; producing a space that is both modern, functional and sensitive to the users physical and psychological needs.
The existing Greyhound bus depot in Winnipeg is not in harmony with the connections between flows and permanencies needed to create understanding of place within a global world. While there are large volumes of flows and trajectories within the station, represented by dotted and solid lines, there is a lack of connections to ground the movements with significant spaces. The pauses, which are indicated by circles, are limited to modes of waiting or use of minimal services and amenities. These spaces are dispersed and occur mostly on the individual scale. Any interaction points between groups of individuals are segregated and disconnected from the series of flows which produce movement and vitality within the space.
1. interchange
2. vehicle
3. pedestrian primary
4. pedestrian secondary
5. pause
6. connection
1. interchange
2. vehicle
3. pedestrian primary
4. pedestrian secondary
5. public
6. personal
7. private
existing transit spaces

In response, a new paradigm is proposed that answers the physical, psychological and cultural needs of humans being in constant state of movement. The proposed interchange will result in increased forms of pause and the introduction of varying scales to include intimate, personal and public zones. These zones will promote heterogeneous use of the interchange, creating variances that add interest and diversity. By providing varied interaction points and opportunities for pause, the connections between individuals will correspondingly increase, further encouraging movement between each zone.
At the time of this project, the City of Winnipeg is developing a rapid transit link that will initially connect downtown to the University of Manitoba via existing rail lines with further expansion planned to connect the rest of the city. These "city wide corridors" will produce high capacity, high performance transit routes and services with dedicated bus ways, active transportation commuter paths for cycling and walking, as well as park and ride facilities (Rapid Transit Task Force, 2005). Bus rapid transit systems provide a number of benefits that incorporate reduction in travel times, increased frequency and reliability of service, as well as a reduction of greenhouse gas emissions attributable to more efficient vehicles and greater ridership.

Within the rapid transit system, there are numerous proposed stations located along the transit corridors, ranging both in size and amenities offered. The City of Winnipeg plans to incorporate Union Station into future rapid transit plans. Downtown will have a central station which will include a main line, Northwest line and airport/downtown lines. The stations are to be climate controlled, with level boarding access and off-board payment. From a rapid transit perspective, the station will include areas where passengers enter and leave the system, wait for vehicles and transfer lines. Although the city had not planned to utilize the existing station, it is now increasingly feasible with the inclusion of this project’s plan for a station redevelopment. Based on the amalgamation of rapid transit, its history and programming as a rail station, as well as the downtown location, Union Station is the ideal site for the proposed interchange. As a result, the interchange will be catalyst for renewing decaying neighborhoods and derelict industrial areas through the possibility of transit oriented development (TOD). In addition to increased ridership, an urban interchange will bring people back into the downtown. Accessibility will be improved, allowing for a more pedestrian friendly downtown while supporting a higher density population, thus encouraging smart growth and infill development.
Through such revitalization, the interchange can become a major hub; a node for retail, employment and meeting places for both residents in the area and throughout the greater City of Winnipeg. With the inclusion of rapid transit, alternative transportation modes and existing pedestrian traffic within the area, Union Station could once again become an urban transportation hub of cultural, economic and social significance within the city context.
textual concept formation

project overview
dominate place-connected activities: private and public services, shopping, hotel and restaurants, housing

target market: commuters, city users, long-distance business or pleasure traveller

type of property development: renewal of existing fabric

transport pattern: polycentric distribution

dominate uses: non-transport related

land consumption per unit transported:

moderate

place

economic impact of node:

node-place relationship:

low

node

transport unit cost:

environmental impact of node:

’space-time compression’ from node:

from node:

public

access:

local

spatial reach from node:

high

land use density:

variety of uses:

main accessory services at node:

accent on:

passenger

16

summary of typical characteristics of stations. adapted from Burtolini, 1998.
access:

summary of typical characteristics of stations. adapted from Burtolini, 1998.

typical characteristics of stations. visualization

project overview
The inquiry process used to develop this project is based on investigation and application of movement into the design of a transit space through four methods of exploration; gestures, narratives, shadows and traces. Gestures of a dancer are used to understand pause and flow within choreography, paralleling such pauses to areas of the interchange. Narratives are then explored to witness how the body uses these gestures to produce a story, and how an interior can also help inform narratives. Shadows were investigated in terms of human performance space and finally traces were used to question the spatial requirements of the body as it moves through space.
The inquiry process used to develop this project essentially revolved around questions of place making. How is meaning produced? What constitutes a meaningful and significant place? How can one connect to the surrounding context and engage in the social surroundings? The concept of movement and flow became an important investigation, especially relevant within a transit typology design. On a smaller scale, the exploration into the movement of the human body is used to narrow and focus the project. Consequently, narratives, shadows, gestures and traces are used to create connections between movement research and design application.
The human body and its movement is crucial in the development of interior spaces. Dance, and its relationship between space and the body, will become a medium of investigation into the design of public spaces. Gestures, narration, performance and human movement will all be explored as means to creating interior spaces that relate to and have meaning for the human experience.

As human gestures produce meaning, the interior of the interchange can also create meaning within space. Changes in texture, form, and materiality can produce distinct sensations and spatial experiences that each user perceives and comprehends. Through interior gestures that relate to the human body and its movements, the interchange will be able to create meaning and contextual relationships that every user will identify with.
Architecture in its most basic role is to provide shelter for the human body. Although this focus has at times been replaced by aesthetics, the need for the body to be the basis of design is still relevant. This project strives to explore and develop a relationship between the human form and built space; to create interior spaces that connect to and are informed by the spatial inhabitation of the self.

Spaces of our built environment are exceptionally interrelated with the movement of people in and around them. As the human figure can sense itself in relation to the built environment, not only through sight, but all of the senses combined, it is extremely important to produce spaces that are engaging and sensitive to the human form. The movement of both the body parts and the locomotion of the whole body through the environment are experienced by users within a space. (Rodaway, 1994, 42). This becomes important for the design of the interchange interior. As will be discussed further in chapter three, these design principles will be utilized to produce an interior that portrays a particular feel or experience on the scales of private to public, and movement to pause.

“The human body brings space to life and dance in being. And the choreographic placement of dancers’ bodies describe the volume within which the dance is performed”

(Armstrong, 1984, 9).
“Each living body is space and has space: it produces itself in space and it also produces that space”

(Lefebvre, 1991, 170).

The relationship between the human form and space is fundamental to the creation of the built environment. “It is by means of the body that space is perceived, lived and produced” (Lefebvre, 1991, 162). If an interior does not relate to the body, that space becomes both arbitrary and abstract. “Space then, like subjectivity, is a construct, a human or social construct, and so it cannot be explored without reference to human subjects” (Bringinshaw, 2001, 4). Therefore, in order to create consequential interior spaces, the spatial conditions and movements of the human form must be recognized and applied to the construction of our environments. In order to comprehend the relationship of the human body to architecture, dance is explored as a fusion of both space and the body. Human form, gesture, movement patterns and narrative will be examined through the lens of dance to understand and apply human spatial needs to the interior of the interchange.

In order to design for the human body, the body must be understood. The typical space occupied by a dancer, or a fully extended reach of any human body is six feet by six feet. This dimension can be used to comprehend the space requirements of a body in full motion.
Dimensions of the dancer’s body: choreography’s basic building block. (Adapted from Bringshaw, 2001.10)
“Dance and architecture have much in common. Both are concerned with practices of space. For a dancer the act of choreography as a writing of place occurs through the unfolding of spatial dimensions through gesture and embodied movement. For the architect space is the medium through which form emerges and habitation is constructed. For both, the first space we experience is the space of the body”

(Brown, 2003, 1).

An investigation into dance as the performance of the human form has facilitated a greater awareness of how the physical body occupies space when in movement. The intent of this investigation is to first comprehend the space that the body consumes, followed by a translation of that space through the capture, study, decipher and transformation of human passage, gestures and flows. The form of such movement begins to describe the fluid motion of a dancer, which will then be incorporated into the design of the transit interchange. “The syntax of dance can be considered in terms of sequences of transition, or transmutations, from one pose to the next” (Gavrilou, 2003, 3).
Choreographed by Nicki Loud, “The Hill” is a contemporary dance piece that utilizes the full potential and motion of the human body. Through examination, the piece can begin to translate the dancer’s movement into spatial consideration for the proposed interchange. Through this piece, it became important to see the translation of three dimensional physical movement into a two dimensional plane. The pauses and flows were analyzed at important points of pause, as seen by the silhouettes below, at which point still frames of the dancer were taken. These images were then used to plot the moments of pause on paper. Through this inquiry, it is evident that, similar to the movement of global processes, dance can be understood as a series of flows and pauses within a larger series of movements. “Dancers and viewers alike consider the individual moment [of a dance] as part of an overall flow, and the individual movement as part of a complex co-ordination of other movements” (Gavrilou, 2003, 2). The movement between each pause was also notated, resulting in the path of the dancer on stage. Subsequently, the pauses in The Hill were plotted on the dancer’s path of movement. Each pause is evident as the focal point or culmination of a series of choreography, including leaps and extensions. “Certain positions and certain moments in time are given particular emphasis, through momentary pauses. Movement can be perceived to occur as to bridge between such privileged moments and in turn, the privileged pauses can be perceived as culminations of motions” (Gavrilou, 2003, 3).
The pauses found within “The Hill” can be used as a filter to analyze the pauses found in the proposed design of the transit interchange, where the length of the pause is relational to the time spent in the areas of the interchange. The larger the circle diameter represents a longer pause. For example, the entrance represents a short pause, as one does not commonly spend large amounts of time in this area. Furthermore, the range of hue between pauses illustrates the public and private levels of each pause; lighter pauses represent public areas where darker pauses are areas of privacy.
Gestures, which are an essential part of human communication, are movements of the body that belong to both language and space. “Gestures range from the posture assumed by the entire body, through a wide range of movements of hands and limbs, to the subtlest movements of the face” (Livesey, 2004, 72). The interpretation of human gesture can be used within the language of the interchange interior to communicate a spatial language to the users. For example, ideas of exhilaration, rest, and excitement can be adapted from the body’s communication of these emotions through form, light and materiality.

“Each phase of movement, every small transference of weight, every single gesture of any part of the body reveals some feature of our inner life. Each movement originates from an inner excitement of the nerves, caused either by an immediate sense of expression, or by a complicated chain of formerly experienced sense of impressions stored in the memory”

(Laban, 1980, 19).
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<th>Key Issue(s)</th>
<th>Design Filters</th>
<th>Design Guidelines</th>
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<tr>
<td>technological</td>
<td>systems</td>
<td>materials and structures used to portray character of space: cool, hard materials for areas of flow, natural, warm materials for areas of pause.</td>
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<td>materials</td>
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<td>functional</td>
<td>transportation</td>
<td>movement of vehicles to be seen from interior spaces</td>
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<td>security</td>
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<td>hierarchy values of user/client</td>
<td>portray locality through gestures: horizontal landscape, convergence of rivers, birthplace of the city and larger context can be represented within interior</td>
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<td>group interaction</td>
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- Gestures (movement): Systems, materials, structural
- Human issues: Psychological and sociological, proxemics, personal space, user feelings and interactions
- Physiological: Privacy, comfort, anthropometrics, human scale
- Aesthetic: Design elements, space, light, line, time, texture, form, colour, shape
- Design principles: Balance, rhythm, harmony, scale, unity, variety, proportion, emphasis
- Functional: Transportation, security, hierarchy values of user/client, group interaction, individual identity, circulation
“[Pedestrians] walk- an elementary form of this experience of the city; they are walkers, Wandersmanner, whose bodies follow the thicks and thins of an urban “text” they write without being able to read it...The networks of these moving, intersecting writings compose a manifold story that has neither author nor spectator, shaped out of fragments of trajectories and alterations of spaces”

(De Certeau, 1984, 93).
The existing Greyhound bus station, located downtown Winnipeg at Portage Avenue and Colony Street, is explored in order to understand the current model of transit typologies. The interior space is essentially a rectangular box, consisting solely of insignificant waiting, ticketing, and retail areas. The views are limited, as are the connections between people with each other and site. Built in the early 60’s, the current bus depot is banal, homogeneous and non-descript, culminating in the desire to create a fresh and innovative transit interchange.
The bus station is dated.
Dirty doors you don’t want to touch.
Visibility and wayfinding is hard depending on the chosen entrance. Low ceilings.
The salisbury house is comforting and typical somehow Winnipeg.
Cheap bad food, fitting for a bus depot downtown?

The bus depot itself is linear, but not boring.
plastic chairs, varied in blue and white
form the seating area in little more than a block with windows.

Although it is Saturday afternoon,
the terminal is quiet.

There are a few stationary people sitting in various spots among the seating area. A security desk where two young men are observant to every action occurring within the terminal, but also produce

a soft flow of energy
from their constrained movement and discourse.

A tv plays in the otherwise passive environment. A man working behind the ticket counter near the main entrance. He too seems
stagnant and stalled in space and time,
tipping into his computer. Although the space does feel stationary, if you look closely, there is

always a flow. energy. sound. movement. vibration.
The man behind the desk moves to another computer, the security guards change shift. A family comes to wait for their bus. Kids are loud, move and play with the arcade, hit every button. Another man comes in from the rear to use the bathroom. A janitor is cleaning the floors with a pressure washer. A group of young boys cross the terminal, cutting through the city block.

Then it is quiet again. The tv is constant. The man waiting folds and unfolds the newspaper. The main paths of movement are obvious, but there are also the less obvious paths of movement- the janitor moving back and forth to cover the entire floor, the kids moving through the chairs to go between parents and machine.

Pauses can also be observed, although less apparent. Everyone seems to be moving, restless, eager to more on.

Transience...
Narratives can also be applied to the built environment. Spaces are designed, constructed, inhabited and interpreted, in which human actions unfold. It is through narrative theory that we can understand these unfoldings.

(Livesey, 2004, 37)

I began to challenge the relationship between narrative as a two dimensional form and the spatial connotations that words can possess. The question becomes how to create a metamorphosis from what constitutes the typical transit station to one which allows for points of reflection, pause and identity formation. The preceding narrative was dissected, each phrase and word analyzed and reconceptualized based on its spatial manifestation. Expressions were then restructured and reformed over the plan of the Union Station, resulting in a new narrative with a focus on movement, flow and undulation. The relationship of text to spatial forms becomes apparent and even obvious, as words themselves contain spatial influences. Through this investigation, points of connection are evident, with the center dome area as the focal point; the site where flow, sound, movement and vibration convene.

The textural investigation also began to look at how spaces can be constructed to produce narrative compositions within a transit typology. By placing textural phrases on the plan of union station, one can see the how spaces can indeed form narratives. “An intersection is the transition between modes of technology, the station that defines the transition between pedestrian travel and railway travel. If significant, these intersections or events in space register in some other order, they may weave themselves into a narrative structure” (Livesey, 2004, 107).
inquiry process
Consequently, interior design can be used to form the experiences and stories understood by the user within that space. “Narrative trajectories are distorted or shaped by objects or structures, such as architecture, that define and modify space” (Livesey, 2004, 39). At the same time, the surrounding cultural and social milieu of a space can and should be used to inform how that space is created. “The architect gives shape to form based on an interpretation of the context and by creating narratives” (Livesey 2004, 37). Thus, it can be argued that space constructs the narratives understood by the user while the user’s histories and past narratives are used to construct space. Narratives are the interplay and mutual relationship between story and place. “We come to know places because we know their stories” (Swaffield, 2002, 136). For this reason, narratives are essential to the creation of significant spaces. “Stories thus carry out a labour that constantly transforms places into spaces or spaces into places” (De Certeau, 1984, 118). They have the power to add meaning, to make spaces relevant and memorable. The site of the Union Station is a powerful instrument to portray meaning through narrative. The history of the building and the connotations attached can be used in conjunction with the interior design to aid in spatial understanding. This notion will be used within the design of the interchange by incorporating existing station materials and repeating traditional forms.

Dance also utilizes storytelling through body movement to portray meaning and significance. Similar to the way in which words are combined to construct intelligible sentences, both dance and narratives use spatial organization to produce meaning. Dance creates understanding though the combination of a series of movement and pauses while narratives combine events into sequences to tell a story.
The volumes created within the narrative study can be used as a basis for an analysis of interior space. The interior design of the interchange can be organized in such a way to create a narrative for use through a series of organized spaces that structure the experience of each user. As such, the spaces within the interchange can be organized based on volume, movement and levels of interaction, creating a spatial story of human connection. In order to structure interior spaces that produce the appropriate narrative for each user, the spaces must be analyzed and organized according to volume, movement and human scale.
Dance, like space and text, can be used to tell a story, to create narratives. It is an art form intended to communicate images that appeal to the aesthetic sensibilities of the observer (Laws, 2002, 1). This communication based is on the visual language of the human body, where the visual movement of the body becomes a language that can be understood as well as rewritten to produce another meaning or narrative. “[Dance] involves a vocabulary of individual moves, a syntax governing the sequence of such moves in time, and a syntax of co-ordination between different moves occurring simultaneously or in parallel” (Gavrilou, 2003, 2). The most basic elements of dance can be segregated into three groups: connection, movement and form. These elements are used in conjunction to produce meaning and create a legible narrative. Throughout the interchange, connection will be used in relation to the connection of users. The continuous connection and separation of people with each other and place is examined and reproduced within the interchange to facilitate both notions of flow and pause. Movement is also essential to the functionality of the design of the interchange; the main goal of a transit space is to move people with the greatest ease and efficiency possible. Based on desired interaction and performative levels, form will be explored to apply the spatial requirements of the users throughout the proposed interior environments.
key elements of dance

- connection [tension.compression]
- movement [speed/direction]
- form [shape.space]
The dancer activates space so that it functions in the meaning making process, where the dancer’s movements are the key signifiers. Only though the performer can theatrical communications occur: without the dancer, there is no meaning. “On stage it is principally movement, even something as minimal as a shift in orientation, a look or gesture, that draws the spectators attention and enables meaning to emerge in relation to words or other signifying systems” (McAuley, 1999, 94). It is through narrative and performative discourses that give architectural forms their meaning.

Historically, interior design and architecture is witnessed as static, conveying ideas of permanence and stability. Yet, through movement, heterogeneous flows are capable of reshaping our relationship with the built environment, transforming it into dynamic rhythmic spaces. “Dance can make a specific contribution to our description, conceptualization, and formulation of spatial patterns and spatial meaning in architecture” (Gavrilou, 2, 2003).

The aim of this project is to cultivate how we understand and design the spatial structure of the built environment in relation to the spatial structure of the embodied experience. Movement, dance and performance will be employed to define the interaction between buildings and the bodies that occupy them. Dance can enlighten and enrich the manner in which we understand buildings as generators of spatial experience by retrieving principles of movement, coordination and spatiotemporal form (Gavrilou 2003).

“Meaning does not reside in the gesture alone, but in the dynamic interrelationships between language, place, body and time that it sets up and of course, between the fictional and presentational levels that are constantly in play during any performance”

(McAuley, 1999, 116).
It is important that the interchange portray a legible narrative, one that describes the cultural, social, historical and economical context that surrounds it. Particularly in a transit typology where people are in continuous movement from one place to another, the story that the space conveys will dictate if meaning and place is created by the user. “Instead of the author having control of meaning, readers play a significant role in reworking and producing the meaning of a text. In addition, a text, a book, a building, or “the self” are sites of the intersection or layering of other texts. They become intertextual” (Potteiger, 1998, 33). Similar to Massey’s notion of interweaving places together, meaning is entwined with the user and their distinct background and experiences.

“The space could be to the place what the word becomes when it is spoken; grasped in the ambiguity of being accomplished, changed into a term stemming from multiple conventions, uttered as the act of one present (or tone time), and modified by the transformations resulting from successive influences”

(Merleau-ponty, 1964, 173).

The movement of the pen to paper, the forms and traces left behind all work together to create something that can be read, but also contains inherent significance. When one takes the time to look at the formal structure of a letter, word or sentence, the relationship between text and space can be seen. For example, the straight lines and intersection of the letter t produces a difference meaning (feel, comprehension) than the gentle curve of an s. The connotations are distinctive. Even the way the voice speaks these letters produces a different effect. Hard versus soft, sharp versus gentle.
“A series of articulated operations (gestural or mental)- that is what writing literally is- traces on the page the trajectories that sketch out words, sentences, and finally a system” (Certeau, 1984, 134).

The physical movement of the body also can be interpreted and translated in the same way. Fast, abrupt movement portrays meaning contradictory to that of slow, flowing movement. This can be further recognized within the movements of pedestrians. The meandering, cyclic actions of the tourist and the direct straight line of the business person convey opposing stories. In this sense, pedestrians are able to write their own text through their movement within the city. By recognizing and reconstructing these various movements of the inhabitants of a city within the interchange, the station can produce its own text or story. Similar to a book, the city and the places located within can be read and understood as a text. The shape of movement within a city tells a story; a structure similar to a sentence.

The visible patterns of inscriptions and adaptations of the city’s contours and the everyday movement within. The movements of people become the written word, the urban text. Similar to the notion of flow that connects the global world, the pedestrian connects the city. “Their swarming mass is an innumerable collection of singularities. Their intertwined paths give their shape to spaces. They weave places together. In that respect, pedestrian movements form one of those real systems which existence in fact makes up a city” (De Certeau, 1984, 97). It is through this spatial and narrative engagement that architecture is defined. Space is thus rendered human, as some places are activated and others negated. However, these conditions are always evolving, and depending on who undertakes the reading of the space (users), it is subject to changing interpretations.
By creating interior spaces that regulate how people inhabit them, one can modify and inform the narrative within that space. For example, a larger space with bright lights, large corridors and hard sleek surfaces perhaps lead to the unconscious speeding up of users, whereas soft, diffused and enclosed spaces convey ideas of home, relaxation and rest. Therefore, it can be argued that the interior can control how spaces are experienced and thus regulate the narrative of that space.

The accumulation of text into a story is also significant when discussing space and place. If the walker can write their own text, a narrative is thus created, and as text, it is distinctive to each individual. “Narrative structures have the status of spatial syntaxes...they regulate changes in space (or moves from one place to another) made by stories in the form of places put in linear or interlaced series” (De Certeau, 1984, 115).

Walking can also be witnessed as a parallel to language. “The act of walking is to the urban system what the speech act is to language or to uttered statements” (De Certeau, 1984, 97). The act of walking becomes a narrative strategy. The walker uses the city as their own in the same way as the speaker uses language. Reasons for movements transform the path as dialects alter sentences. Regardless of the path or sentence spoken, they will never be performed exactly the same again. In other words, the mobility of walking implies relations between locations similar to the way the spoken word connects speakers. This way, the circulation within the interchange interior becomes very important. It is what unites each space together, forming the whole sentence and narrative of the interchange as a whole.

Like space, the word, when spoken, is dependent on many different conventions. Both are modified by successive contexts. The meaning of a word alters due to the other words surrounding it, while space transforms in relation to the spaces experienced before and after. Also, both language and space are experienced differently for each individual, although the structure remains constant. Due to past histories and events and cultural, economic and social backgrounds, the meanings are never identical.
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Through the exploration of shadows, one can begin to analyze the relationship between static architecture and body kinetics as well as the relationship between body displacements in space and geometries of architecture. To understand these interactions and to define space further, I began to look at the performance shadows of my own body in relation to the surroundings; my shadow of self. By placing interior panels at varying distances, and projecting my shadow onto them, I was able observe how the scale of the body alters with changes in the built environment. [1] Although static, these panels still had an affect on the body, creating a distinction in scale, dimension and proportion of the body.
As a result of these studies, I became aware of the correlation between shadows and the surrounding built environment; the space that the shadow consumes on the floor surface. In combination with both the vertical and horizontal planes, the shadows began to inform how the body in performance appropriates and occupies space. Subsequently, the shadows formed by my movements were then located, through modeling, into a grouping of various positions [2]. The plan view was then studied to examine the horizontal shadows of the same postures from the earlier experimentation. As a result, my performance area was able to be mapped in the form of performance boundaries, or how much space the body needs for personal performance [3].
inquiry process
performance space
These performative zones are the extension of the body that manifests the spatial requirements that the body needs to project physically into space. The shadow also becomes a territorial marker; the distance one needs from another individual in order to perform, both physically, socially, and psychologically. Consequently, the performative zones oscillated between four and six feet, depending on the scale of performativity and motion. These dimensions can be utilized to inform the organization of the transit interchange and enlighten designers to the spatial requirements needed to facilitate individual performance within public areas.

Through the study of performative space, the relationship between motion and performativity becomes apparent, along with the connection to movement and pause. Places of pause require less performative space and are increasingly individual as the level of pause increases. Similarly, areas that are more public and communal require a larger performance space and encompass increased movement within. These studies inform the scales of each particular areas throughout the interchange. As a result, it can be incurred that the rejuvination area required less space per individual in comparison to the concourse or entrance area, which will help to inform the interior design of each space.
Performance is inevitable in public spaces. According to Judith Butler, identity does not exist without performance. And like the heterogeneous flows of our global culture, the identity one displays at a given time is continually transforming, shifting between real and constructed representation of the self (1999). Typically, people act in a certain way that is culturally and socially appropriate, following specific social conventions, norms and ideologies. Historical, social, ethical and political issues are all tied into personal performance. Even from conception the body is immersed in culture; they way people use their bodies at every moment in their daily lives is a product of their culture, background and environment.

“The act that one does, the act that one performs, is, in a sense, an act that has been going on before one arrived on the scene. Hence, gender is an act which has been rehearsed, much as a script survives the particular actors who make use of it, but which requires individual actors in order to be actualized and reproduced as reality once again”

(Butler, 1990, 272).

These performances vary according to whether the individual is in a private or public space. According to Goffman, there is both a front and back region of everyday life, where actors perform on the front stage and prepare back stage. “Performances in front regions typically involve efforts to create and sustain the appearance of conformity to normative standards” (1995, 208). In the front region of the public everyday, habitual performances can be observed through the interactions of people on a regular basis. For example, people use inherent body gestures to portray feelings, expressions, and statements about themselves and current circumstances. “The walker performs himself or herself as someone whom it is possible to interpret as they are approached” (Urry, 2007, 75).
scale of individual space required

concourse
performance
loading
commercial
lounge
rejuvenation

6'-1"
5'-10"
5'-7"
4'-5"
4'-2"
4'-1"
As a result, one can conclude that movement, communication and performance are intrinsically connected. According to Rudolf Laban, “movement shapes and rhythms show the moving person’s attitude in a particular situation. It can characterize momentary mood and reaction as well as constant features of personality” (1980, 2). Direct communications with other individuals within the front region also include elements of performance. “Conversations consist of not only of words, but also indexical expressions, facial gestures, body language, status, pregnant silences, voice intonation, past histories, anticipated conversations and actions” (Urry, 2007, 236). Words and phrases are articulated through gestures and movement, and vice versa. These frontal gestures exhibit clues pertaining to the construction of the self within the public realm, and are performed to portray an individual’s identity. “The frontal relations between people are those most strongly framed by cultural conventions as to distance and behaviour. These relations also frame social meanings, reinforcing differentiated role relations” (Stevens, 2007, 60). Alternatively, the back region is concealed from the public, in which the level of performance is reduced. “Here the performer can relax, he can drop his front, forgo speaking his lines, and step out of character” (Goffman, 1995, 97).

Una Chaudhuri states that there are various delimitations of space within theater areas, including audience, practitioner and performance space (1995). ‘Audience space’ incorporates all types of social behaviour and social interactions. In this space, socializing, watching the socialization of others, consuming food and drink, as well as commercial transactions occur. ‘Practitioner space’ includes stage door access, backstage dressing areas and the stage itself. The ‘performance space’ is where performers and spectators meet and work together (Chaudhuri, 1995).
These areas can also be segregated into Goffman’s front and back regions, where the front region consists of the audience space, the back region as the practitioner space, and the performance space somewhere in between. The front and back regions can be further delineated as the spectrum of public to private space. This definition of space will be utilized within the design of the interchange to determine how various public and private spaces will be organized.
### Key Issue(s)

- **Technological**
  - Systems
  - Materials
  - Structural

- **Human Issues**
  - Psychological and Sociological
    - Proxemics
    - Personal space
    - User feelings and interactions
  - Physiological
    - Privacy
    - Comfort
    - Anthropometrics
    - Human scale

- **Aesthetic**
  - Design Elements
    - Space
    - Light
    - Line
    - Time
    - Texture
    - Form
    - Colour
    - Shape
  - Design Principles
    - Balance
    - Rhythm
    - Harmony
    - Scale
    - Unity
    - Variety
    - Proportion
    - Emphasis

- **Functional**
  - Transportation
  - Security
  - Hierarchy values of user/client
  - Group interaction
  - Individual identity
  - Circulation

### Design Filters

- **Technological**
  - Systems
  - Materials
  - Structural

- **Human Issues**
  - Psychological and Sociological
    - Proxemics
    - Personal space
    - User feelings and interactions
  - Physiological
    - Privacy
    - Comfort
    - Anthropometrics
    - Human scale

- **Aesthetic**
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    - Balance
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    - Unity
    - Variety
    - Proportion
    - Emphasis

- **Functional**
  - Transportation
  - Security
  - Hierarchy values of user/client
  - Group interaction
  - Individual identity
  - Circulation

### Design Guidelines

- Relate found performance space to interior of interchange, depending on scale of publicity and performativity required.
- Front and back regions (concours - rejuvenation) vary in level of privacy; people prefer to sit back to back or adjacent when sitting in close proximity to strangers.
- Space for each individual based on space needed for performative zone.
- Similar to front and back stage: light levels vary from bright to diffused based on scale of performativity from concourse to rejuvenation.
- Spaces of less performativity require less physical space, as the space required for each individual is less.
- Scale dependant on level of performance.
- Screens rather than walls, providing sense of being seen but not being totally within reach.
- Front space relational to group identity. Allow for personal performance.
- Individual identity important in intimate spaces (rejuvenation) less performative.
2.4 traces [pedestrians and proxemics]

Traces can be used to comprehend the individual movement of a human through space. By understanding these traces, the space occupied by the body can begin to be translated into the interior of the proposed interchange.
The movements of the individual through space is fundamental to the design of a transit interchange, where the main function is to process people. To further comprehend the space needed for individual movement within the scope of this project, I began to look at concepts of motion capture. Through the use of motion capture in its most primary form, sand was placed on a horizontal plane of a floor surface which could then be used to retain the trace of the movement [1]. Once a dancer performed a series of dance steps on the sand, the contrast between the sand and the underlying floor surface was visible. Through the resulting impression, which visually expressed the gestures of the dancer on the floor surface, I was able to photograph and trace the gestures in order to produce a reference plan. This plan was then modeled through wire to generate a relational three-dimensional form that represented the dancers’ movement [2]. From this model, both structure and surfaces can be perceived and translated into the interior language of the interchange [3].
Through the investigation of traces, the space required by the dancers’ movement were recognized and interpreted to inform the design of the interchange. This investigation can also be used to analyze the everyday movement through space by individuals and pedestrians. As a result of the model forms, it becomes apparent that, at the level of the pedestrian, similar to the traces of a dancer, movement is unobstructed. People are free to wander, explore and decode both the environment and other people that surround them.
“In order to produce new forms of urban space, designers must understand the fullness of human action. For urban designers a new order of heterogeneous, amorphous, and anomalous spaces must emerge against the banality and predictability of contemporary cities”

(Livesey, 2004, 82).
spatial forms developed from sand traces. Will be used to create formal properties within the interior of the interchange.
In order to produce meaning though the environments that we inhabit, we must be at a level and scale to interact with other groups and individuals. It is possible to discover how patterns in movement reveal underlying patterns of order within our everyday spatial experience. Walking allows for the development of meaningful encounters, extending social relations. Seats, café’s, markets, retail, vendors, entertainers, and other people allow for increased possibilities of pause and interaction through finding common topics to initiate dialogue. “Conversations can start when people are at ease, in particular when they are occupied with the same thing, such as standing or sitting side by side, or while engaging in the same activity together” (Gehl, 2000, 170). Yet this exchange can only occur at the pedestrian level, a necessity for lively public spaces.

At the pedestrian scale, the conformity of a vehicle is absent. Walking can produce the ability to permeate the built environment without being constricted, and even at times impressing a new path into the urban fabric (Thrift, 2004). “Rather than following predetermined paths which reinforce perceptions, the urban walker always constructs their own path and hence actively shapes their own perceptions” (Stevens, 2007, 65). The pedestrian is no longer “clasped by the streets that turn and return it according to an anonymous law” (De Certeau, 1984, 92). The basis of the project reflects the creation of an interior public space where people are forced to travel by foot, allowing new experiences and encounters with both other people and the surrounding environment to produce a new comprehension of contextual space and identity.

“Pedestrian activity increases our breadth of experience due in part to the mobility and permeability walking provides. Because of their mobility … walkers are better able to explore, manipulate, and revisit anything of interest. Further, the slower speed of the pedestrian increases her ability to experience within the environment”

(Demerath, Levinger, 2003, 227).
The ability for users to fully experience space is further facilitated by the pedestrian’s capacity to move faster or slower (or pause altogether) in response to interest and tensions within the surrounding place. In this way, the pedestrian is able to shape an unfolding encounter; continue moving or linger to experience connections with both people and the environment. Through the study of how the body appropriates space, designers can understand how people actively use and shape the physical environment, not just react to it. We can also start to comprehend and apply the ways in which the physical environment is utilized to manage and enhance social interactions.
It is crucial when designing public spaces that one possesses a thorough understanding of how physical space is associated with social interaction. Interpersonal distances define the personal response to perceived stimuli, resulting in the ability to design for these reactions. Proxemics, coined by Edward Hall, is the study of how the human body occupies space. Hall defines social distances into four scales: intimate, personal, social and public (Hall, 1966). “These scales are determined by the kinds of sensory information people can transmit and perceive about each other and the kinds of physical interactions they can undertake.” (Stevens, 2007, 55) Intimate spaces occur within a distance of 0.5m or less. At this separation, smell and touch, which are considered intimate senses, are liable to occur. Individuals unconsciously share more detailed information about themselves and their emotional status due to the close proximity, which may be uncomfortable in certain public situations. Personal spaces, between 0.5 – 1.2m of separation, promote personal and exclusive engagement. Physical contact is at arm’s reach, allowing each individual to maintain a certain degree of privacy.

The findings of the study of New York plazas by William Whyte suggest that people are unlikely to sit within close personal distance of strangers. He examined the effective capacity of such plazas- the number of people who chose to sit at a place during normal peak-use periods. “Each place has its own norm, and it depends on many particulars- the microclimate, the comfort of perch, what you see from it, the overall attractiveness of the area” (Whyte, 1980, 68).
balance of safety and personal control over level of involvement

bodies of other people lose their roundness and look flat. to be gazed upon and read rather than be encountered and negotiated

not necessarily engaged with each other

far social
bodily interactions begin to take precedence over the gaze

person's actions communicate to group not individual

3m radius: personal space per person informal unforced social encounters
the four zones of Edward T. Hall’s Proxemics. Adapted from Kilmer, W. 1992.
Social spaces are considered to be between 1.2 and 3.6m. Near social space (1.2 – 2.1m) is a common distance for people attending social gatherings. “At this distance a couple can engage each other briefly and disengage at will” (Hall, 1966. 115). Such distances are customary for informal public leisure setting, where contact remains a possibility but not necessarily required. Far social distances are between 2.1 and 3.6m, which begin to initiate a formal character. “Interactions can still be initiated at such distances because it is possible to gain and hold someone’s attention in a relatively direct and private manner” (Stevens, 2007, 58). At this distance, the communication relationship between people transforms from the individual to the group. Gestures, actions and comments are read by more people as the social distance increases.

Lastly, public distance is depicted as any space greater than 3.6m. In this space, individuals are not necessarily engaged with others. “At such distances, people are effectively flat images to be gazed upon and read, rather than solid, sensual bodies to be encountered and negotiated” (Stevens, 2007, 59). It is possible to distinguish mood and feelings of others, yet the individual is past the point of engagement with friends and acquaintances.
Within the public areas, there are varying levels of proximity that occur, depending on the contextual elements of the space. The location of seating, density of other people, volume of space, as well as occurring events can alter the comfort level of an individual in relation to others. For example, “An external stimulus causes people to spend more time in close proximity to strangers…It also directs the gaze and the body posture of people in the crowd away from each other, making their close bodily encounters less confrontational” (Stevens, 63). Whyte refers to this phenomenon as triangulation: “the process by which some external stimulus provides a linkage people and prompts strangers to talk to each other as though they are not” (1988, 154).

Triangulation can be caused by a performance, an intriguing view or vista, or an unusual individual. “Although there is a uniting context that produces a similar encounter, the real show is usually the audience and their individual performances. Many people will be looking as much at each other as at what’s on the stage” (Whyte 1988, 96).

The interchange will incorporate the notion of triangulation through the utilization of an interactive light-emitting diode (LED) wall within the main floor concourse area. This will animate the space allowing for increased connection between the users of the station.
Currently, there is a wealth of information regarding the typical dimensions of human bodies and human factors (Kilmer, 1992). When designing interiors, especially a project that is based upon the human body and its movements, these measurements are invaluable. Our built environments should always take the human scale into consideration so that the spaces in which we inhabit are shaped by our own movements instead of our movements being shaped by the environments.

Anthropometry is the science of measuring the human body and includes body dimension and range of motion (Pheasant, 1986). Not only can the measurements of a typical human be utilized within the design of an interior, the dimensions needed for persons with disabilities are extremely useful to designers. Ergonomics is the application of the anthropometric data to the problems found within design. It has a focus on the “relationship between human beings and their functions in the environment” (Kilmer, 1992. 190). Through the application of anthropometrics and ergonomics, the interior design of the interchange can produce optimal human/environments relationships.
Jan Gehl, in his work on pedestrian patterns in *Life Between Buildings*, divides public activities into three groups: necessary, optional and social activities. According to Gehl (1996), necessary activities are mostly compulsory, concerning work, shopping, waiting and errands. Largely related to walking, necessary activities are rarely influenced by the built environment and climatic conditions. Optional activities occur if there is a desire rather than requirement, and only if time and place allow. Such events are strongly relational to both climate and place. Exterior conditions dictate whether activities, such as walking, sunbathing, or sitting take place. While the previous activities may occur on an individual basis, social activities depend on the presence of others and transpire anytime two people are in the same place. Conversational and communal activities, as well as passive contacts such as seeing and hearing people are considered social activities. These activities are termed as resultant activities because social activities “occur spontaneously, as a direct consequence of people moving about and being in the same spaces” (Gehl, 1996, 14). Although an interior space cannot determine the type, character or intensity of such interactions, space can be designed to influence the frequency in which they occur. By increasing circulation and connectivity (flow) between and around activity areas (pause), the interchange can facilitate further relationships between individuals.
Table showing the relationship between the quality of spaces and the rate of occurrence of activities. When the quality of areas is good, optional activities occur with increasing frequency, resulting in a substantial increase of social activities. (Gehl, 1987, 13)
The behavioural force model of pedestrian motion, created by Helbing (2001), illustrates how pedestrians spontaneously arrange themselves in lanes of uniform walking direction if the pedestrian density is high enough. Pedestrian moving against the stream of traffic will have strong and frequent interactions with others moving on the opposite direction. “In each interaction, the encountering pedestrians move a little aside in order to pass each other. This sideward movement tends to separate oppositely moving pedestrians” (Helbing, 2001, 369). As a result, pedestrians moving in uniform lanes will have weak and rare interactions. If the intended purpose of a space is to create pedestrian interchange within moments of pause, designing areas of complex interactions between various flows may achieve the desired outcome. Furthermore, pedestrians take direct routes to their respective destinations because there is no reason to choose another route (Helbing, 2001). Instead of choosing the most direct route though an environment, users should be provided with options and substitutes. By providing alternative paths that are both appealing and inviting, interior spaces can alter the routine passages of pedestrians to include new and diverse experiences. Circulation paths should be undulating and flow between and around each activity zone to increase connectivity between users. Within the context of a transit interchange, it is the pedestrian flow though the space that is the core consideration that brings the various individuals together.
Walkscapes: ways in which we can interpret the urban landscapes that surround us by walking through them. These actions can be used to experience, construct and transform the encompassing landscape.

TO WALK
- to cross a territory
- to open a path
- to recognize a place
- to discover propensities
- to attribute aesthetic values
- to comprehend symbolic values

TO GET ORIENTED
- to invent a geography
- to assign place names
- to descend a ravine
- to climb a mountain
- to trace a form
- to draw a point

TO GET LOST
- to tread a line
- to inhabit a circle
- to visit a stone
- to narrate a city
- to traverse a map
- to perceive sound

TO ERR
- to guide oneself through smell
- to observe thorns
- to listen to ditches
- to celebrate dangers
- to navigate a desert
- to sniff a forest

TO SUBMERGE
- to breach a continent
- to meet an archipelago
- to host an adventure
- to measure a dump
- to grasp elsewhere
- to populate sensations

TO WANDER
- to construct relations
- to find objects
- to take phrases
- to no take bodies
- to tail people
- to track animals

TO PENETRATE
- to enter a hole
- to interact with a grating
- to hurdle a wall
- to investigate an enclosure
- to follow an instinct
- to leave a station platform
- no to leave traces

Adapted from Francesco, C. (2002).
<table>
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<tr>
<th>Key Issue(s)</th>
<th>Design Filters</th>
<th>Design Guidelines</th>
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<td>traces [pedestrian and proxemics]</td>
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<td><strong>technological</strong></td>
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<tr>
<td></td>
<td>systems</td>
<td>LED wall to spur triangulation within concourse areas</td>
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<td></td>
<td>materials</td>
<td>structural systems to facilitate meandering and curving spaces</td>
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<td>structural</td>
<td>transparent concrete to convey movement from interior to exterior and between interior spaces</td>
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<td>human issues</td>
<td>psychological and sociological</td>
<td>incorporate proxemics distances to create interiors that promote appropriate social interactions</td>
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<td></td>
<td>proxemics</td>
<td>proxemic distances and privacy used to create optimal user comfort in varying activities, make users feel comfortable (adjustable seating) so they are more likely to initiate conversation with each other</td>
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<td>design elements</td>
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<td></td>
<td>space</td>
<td>use street as well as vista: create sense of locality</td>
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<td></td>
<td>light</td>
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<tr>
<td></td>
<td>line</td>
<td>lines reminiscent of those found through dancer’s movement: mix of curvilinear and convex</td>
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<td></td>
<td>time</td>
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<td></td>
<td>texture</td>
<td>forms generated from dancer’s movement to be utilized throughout interior. Can also be paths of circulation connection activity zone.</td>
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<td>proportion</td>
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<td>emphasis</td>
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<tr>
<td>functional</td>
<td>transportation</td>
<td>transportation of people relocated to the pedestrian level, where connections can be made</td>
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<td></td>
<td>security</td>
<td>circulation of users to be directed from vehicle to foot to vehicle to ensure relationships of people to occur</td>
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<td>hierarchy values of user/client</td>
<td>easily permeable interior spaces to facilitate easy access of pedestrian circulation paths to be undulating to create connectivity</td>
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<td>group interaction</td>
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<td>individual identity</td>
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<td>circulation</td>
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<tr>
<td>human interaction</td>
<td>connection of people to create spatial meaning and local understanding</td>
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<td>station as civic node</td>
<td>create public space within the city through a transit space</td>
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<tr>
<td>contextual connection</td>
<td>connection of the user to the greater cultural, economic, and social context of the interchange</td>
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<tr>
<td>pause</td>
<td>places for users to rest, rejuvenate or associate with others</td>
<td></td>
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<tr>
<td>flows</td>
<td>increased modes of transport and amenities, and the connections between</td>
<td></td>
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<tr>
<td>gestures</td>
<td>relation of the gestures of the human body to the interior of the interchange</td>
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<tr>
<td>narratives</td>
<td>create spatial story/series, include references to surrounding cultural milieu</td>
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<tr>
<td>shadows</td>
<td>the extension of the human body in space, displaying the performative reach of an individual</td>
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<tr>
<td>performance space</td>
<td>construction of front and back region within interior, definition of private and public space</td>
<td></td>
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<tr>
<td>triangulation</td>
<td>process in which an external stimulus unites people</td>
<td></td>
</tr>
<tr>
<td>traces</td>
<td>application of dancers/pedestrian movements to the interior of the interchange</td>
<td></td>
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<tr>
<td>proxemics</td>
<td>the study of human bodily occupation in space</td>
<td></td>
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<tr>
<td>benefits</td>
<td>design implications</td>
<td></td>
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<tr>
<td>------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>shared identity, social support, community creation</td>
<td>create spaces that facilitate convergence: ex. flexible spaces that can create either privacy or social interaction; provide spaces at different scales: intimate, personal and public</td>
<td></td>
</tr>
<tr>
<td>produce opportunity for shared ideas and connections of inhabitants</td>
<td>create adaptable spaces that can allow for cultural activities; provide numerous amenities to accommodate a variety of people</td>
<td></td>
</tr>
<tr>
<td>the traveler's understanding of place is increased through links to the city and its inhabitants</td>
<td>include elements and activities that relate to the surrounding culture (food, art, history etc), create vistas and exterior space to facilitate connection to city, implement meeting places for human connection</td>
<td></td>
</tr>
<tr>
<td>users can slow down from the constant movement of travel to experience and understand place</td>
<td>create spaces of varied atmosphere to signify change in speed and movement through lighting, colour, texture, and scale. Place areas of pause at intersections to encourage more people to pause</td>
<td></td>
</tr>
<tr>
<td>to encourage more users and thus greater opportunities for human interaction</td>
<td>wide corridors, connected to areas of pause. Increased visual connection through interior to encourage movement, amenities/spaces visible from main circulation paths</td>
<td></td>
</tr>
<tr>
<td>one can more clearly understand spaces which are informed by the human body</td>
<td>space to convey ideas of energy, movement, rest etc. through physical gestures that represent human gestures of the same ideas.</td>
<td></td>
</tr>
<tr>
<td>users are able to 'read' the interior, designs that include a narrative can increase spatial awareness and comprehension</td>
<td>use interior as allusion to culture/history of city through formal qualities as well as spatial organization. Narrative structure of interior can be used to portray appropriate behaviours (ex. slow down, increased movement)</td>
<td></td>
</tr>
<tr>
<td>a person's comfort level can be maintained through the application of performative zones within appropriate spaces. Understand and apply the spatial requirements of the users</td>
<td>based on intimate, personal, social or public areas, apply performance distances to interior to maintain desirable proximity from other users.</td>
<td></td>
</tr>
<tr>
<td>promote interaction and performance as well as rest and leisure</td>
<td>interior spaces organized as private and public, as well as an intermediate space, similar to front/back stage and audience space.</td>
<td></td>
</tr>
<tr>
<td>connects users and promotes public interaction and communication</td>
<td>create interactive environments (LED sensors etc) or unusual interior elements to spur conversation/connection</td>
<td></td>
</tr>
<tr>
<td>to create spaces that correspond to the human body and its movement through space</td>
<td>apply forms found from traces experimentation. Use LED sensors in concrete to display pedestrian movements within the interior</td>
<td></td>
</tr>
<tr>
<td>facilitate desirable interaction levels within interior spaces</td>
<td>adjust distances between users based of interior zones of intimate, personal, social and public. Ex. People should be further apart in public spaces than intimate, to maintain a level of social comfort.</td>
<td></td>
</tr>
</tbody>
</table>
3
precedent review
This chapter investigates current examples of the built environment that will be used to inform various design principles of the proposed interchange such as light, form, circulation and programme.

Precedents:
Central Bus Station. Munich, Germany
Mumuth Music Theatre. Graz, Austria
Virgin Clubhouse. Heathrow Airport
Innsbruck Stations. Innsbruck, Austria
LED Wall. Norway.
Munich, Germany
Construction: 2009
Gross Floor Space: 25,000 m²
Design: Auer+Weber+Architekten

The first precedent that was examined shares the transit typology of the interchange. The Central Bus Station in Munich functions as a point of departure and arrival for long distance bus travel, with connections to the adjacent railway and subway. The station provides both commercial and office areas as well as a hotel and restaurant. This combination of functions within the transport space provides a guide for the proposed interchange. The Central Station expertly incorporates commercial space into the public circulation and promenade to encourage both travelers and employees to utilize the same space.

The relationship between travel hubs and the public realm is also encouraged throughout the design of the station. The lounge and café opens out onto a spacious square that faces the city. Exterior terraces facilitate extraordinary views into Munich, reconnecting the city with both the station and its travelers. In addition, there are four large inner courtyards that link the interior to the exterior of the city.

As the interior spaces are built above the main level bus circulation, it is important to provide lighting to the lower bus level. The four atria allow light to penetrate into the ground floor bus terminal while the large amount of fenestration, including ample skylights, offer ample daylight and views into the city from all parts of interior.

Similar to the proposed interchange, the design of the Central Bus Station focuses on circulation of both the pedestrian and vehicle. Vertical and horizontal circulation between platform and commercial space is natural and the promenade...
offers effortless and efficient movement from vehicle to interior and back to vehicle. Analysis of this circulation can be used to create a seamless journey for the pedestrians of the transit interchange in Winnipeg. The form of the Central Bus station is also important to note. The station takes its form directly from transportation vehicles (Jones, 2006) such as a bus or salon car; the space alluding to movement and speed. This notion of representing movement within the physical form of a transit space is valuable and can be applied to the future interchange design.
Through the design of the Mumuth Music Theatre, the users are guided through the space in a free flowing, wandering manner. No only does this occur on the horizontal level, but the transition between floors is also fluid. The biomorphic shape of the spiral staircase is similar to the forms created by the movement of the human body. The interior space itself becomes a representation of the shape of the body and the human form.

Made of concrete, the central spiral form is used to connect the entrance to the auditorium and music rooms, fusing together all three floors within the theater. The interior becomes a series of flowing, movement based volumes, creating a continuous connection between the floors. These forms allows for a free and fluent spatial arrangement. The space uses a language of movement and organic forms, a language that will be used within the design of the transit interchange.
Throughout the interior of the theatre, views are created to other interior spaces as well as to the exterior. It is through these vistas that create a contextual connection between the user and the built environment, which can be utilized within the proposed interchange design.
Leisure and wellbeing facilities are becoming increasingly popular in transit spaces, especially within airport typologies. The Virgin Clubhouse within the Heathrow Airport has expanded to include a whole floor to accommodate a diverse range of activities. The floor plan includes but is not limited to a spa, salon, cocktail bar, deli, observation deck, garden and library (Thomas-Emberson, 2007).

The key feature of the Virgin Clubhouse that will be of most value to the design of the interchange is the variety of activities located within one space. Although there is a second floor for the observation deck and roof garden, the majority of services are located within one floor. This open concept will be adapted for the design of the interchange, which will similarly accommodate various activities. The use of partitions, built in furniture systems, lighting and level changes, the space is divided into multiple sections without the use of full height walls. This allows for the interior to feel open and spacious, visually connecting the users to each other as well as the rest of the space.

The furniture layout is also important to examine. A variety of fixed and moveable seating allow for the individual to choose spaces in which they feel comfortable. Chairs can be repositioned to either be closer or further away from another group or individual, facilitating personal preferences and variation in behavioral activity. The furniture is also used to define the different spaces.
Each zone has a unique but coordinating grouping of furniture, producing a distinct yet harmonious combination. In addition to the furniture layout, lighting is used to produce depth and distinctiveness within the interior. The lighting alters for different activities, constructing a unique atmosphere for each zone.

Both the space planning as well as the circulation between the multiple zones are an important area of analysis. Especially within a transit spaces were time is critical, interior spaces should be well organized providing the users with a clear spatial understanding to quickly navigate through the space.
exploratory materials

Creating movement forms through architecture can be difficult due to the physical properties of building materials, hindering the design. As a result, it is important to explore material mediums that can produce organic and even biomorphic forms.

The railway stations designed by Zaha Hadid in Innsbruck, Austria, offer an exterior material that is constructed of double-curvature glass. The glass allows for a fluid language to be used through the stations, alluding to the movement of both pedestrian and vehicles within. It is important to note the process of translating the formal qualities of natural movement into a linear form, subsequently translating the form into interior spaces. This precedent investigates how motion and flow of people, goods and overall transportation systems can be represented through structure and form.
Interaction between the individual and the interior, as well as the movement through, is a significant concept to the design of the transit interchange. As discussed earlier, an external stimulus can provide a linkage between users and prompt strangers to engage with each other. The LED interactive wall designed by Snohetta Architects, does just that; it creates an event that will become a interaction point within a public space. Not only does the wall promote further investigation of the pedestrian walking by, but it is also interactive: allowing the pedestrian to see their movement within the built environment. The corridors become lighted portals, pleasant to use while providing safer transit spaces.

The wall of LED’s illuminate when a person passes by re-establishing a connection between the user and the surrounding space. Users can observe themselves and others as elements within the interior. This interaction has the ability to turn a bland pedestrian space into a brand new experience. By incorporating a similar concept, the transit interchange can facilitate both increased movement and placemaking potential.
4 site analysis
The relocation of the existing Winnipeg bus terminal at the time of this project, from the downtown location near the corner of Portage Avenue and Colony Street, to the new Richardson International Airport initially spurred the concept for this project. Instead of rebuilding a new station on the periphery of the city, which is appropriate for airports due to space and noise factors, a transit interchange should reside within the core of an urban center to facilitate connectivity to other transportation links and amenities only found in the downtown area. The urban core has the capability of offering a rich variety of supporting elements: shops, cultural activities, restaurants and hotels. By implementing a new civic space, Winnipeg will begin to improve the quality of the urban environment, possibly resulting in more people resolving to reside downtown. If the city is to survive, the downtown must house more people in the core area, which will therefore encourage street life and increased housing.

It is desired that though the implementation of a new interchange, the increased amenities will attract enough people to make it profitable. “The success of large scale pedestrian areas depends partly on how animated they are by day and night” (Richards, 31). As a result, the city desperately needs a new model to facilitate increased usage and varied functions.
Maintaining an urban site is imperative to the sustainability and longevity of the transit interchange. The Union Station, located at the intersection of Broadway Avenue and Main Street in downtown Winnipeg was selected based on numerous criteria. Firstly, by maintaining a building with an existing transport typology, many of the spatial requirements are already in place. A transportation structure is highly dependant on the ability to facilitate the movement of both people and vehicles, which would be unfeasible to reproduce in another existing building within the urban core. Secondly, the central location serves as a node within a network of social and transportation links, allowing visitors and new arrivals greater access to the city and adjacent commercial, cultural, and other transportation facilities. The downtown location better represents the identity of Winnipeg with the proximity to the Forks, Market Square, Osborne Village, the Exchange district, the theatre district, multiple art galleries, and Provincial Legislature. In essence, due to the location within the urban core, the site has further ties to the city and its historic identity, supporting a local sense of place.

As vehicle accessibility and mobility are essential in the design of a transit interchange, the site around Union Station is surrounded by a large quantity of parking spaces and rail lines, providing ample room for the opportunity to be converted into other types of circulation. Situated adjacent to the corner Portage Avenue and Main Street, one of the most active intersections in Winnipeg, the site will also afford many routes to be taken to and from the interchange location. Broadway Avenue currently accommodates accessible sidewalks, storefronts, residential buildings, numerous office buildings, and high pedestrian movement, aiding the proposed site to facilitate critical pedestrian flow between the city and transit interchange.
The Union Station was chosen to rejuvenate the existing historical language of a train station. “Railway stations were the ‘monuments’ around which large modern cities developed” (Ross, 2000, 5). The interchange will add a level of splendor and awe found within the train station typology to everyday travel in the city, creating a focal point and civic center within the city.

The location of the Union Station in relation to the junction of the city’s two main rivers is historically significant. The convergence of the Red and Assiniboine Rivers, known as the Forks, provided access for both indigenous groups and later fur traders. The Forks developed into a principal trading post for the Hudson’s Bay Company and the North West Company. “By the 1790’s, the Forks became well-known as an important transshipment point for brigades travelling west and north. The confluence of the rivers had begun to be a vital provisioning centre for pemmican, fat and hides” (Huck, 2003, 75). Due to the federal government’s national policy on immigration, over the past 130 years, tens of thousands of immigrants arrived in Winnipeg via the Forks to start a new life in a new country. By the end of the 19th century, the Forks was known as Western Canada’s “Ellis Island”; the immigration clearing house for all of the Canadian West (Huck, 2003). The Forks became a central rail yard as the city began to grow. By 1891, rail lines were being constructed by the Canadian Pacific, Canadian Northern and Grand Trunk Pacific railways. The year that Union Station was built, twenty four rail lines radiated out of Winnipeg, contributing to the identification of Winnipeg as “the gateway to the west”. Attributable to the conjunction of the rivers and junction of the railways, Winnipeg became the hub of all western movement.
fort garry

history
The history of the site surrounding the Union Station is significant to the design of the interchange. Although the station is being redeveloped to house new functions and typologies, the past history of the station and Winnipeg as a whole should be prevalent. This is done by preserving some of the exiting original materials and maintaining a part of the historical design language; incorporating the new and old in one cohesive interior.
paths.nodes
Nodes and paths are used within the site analysis to illustrate the points of flow and pause. Along Broadway, pauses are found through the meeting spaces of the area’s working class. These pauses are found alongside the flow of both pedestrian and vehicle traffic that populate Broadway Avenue. Other important nodes within the area consist of the Forks and the Fort Garry Hotel. This analysis communicates the relationship of node/circulation and pause/flow within the context of the surrounding site.
There are very few permanent residents within the downtown core of Winnipeg. Most of the people found within this area are business and office employees that work between nine and five. There is a small number of users that occupy the site in the evening, who patronize the various clubs and restaurants. A range is also found within the building density of the area. On the south side of Main Street, the majority of occupied downtown buildings exist, whereas the East side contains industrial and light commercial spaces.
The rhythm of this site is very distinctive. Broadway Avenue is extremely populated during the workday, especially at noon when the business employees spend their lunch hour seeing and being seen. The evening is witness to almost complete abandonment. This is especially true throughout the winter months, when the majority of tourists and travellers as well as the city’s inhabitants spend more time indoors. The rhythm analysis has lead to the understanding of the city’s cyclic motions; the transition and fluxuation can then be used to reflect the city’s movement within the interchange.
### Variables

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<td><strong>F</strong></td>
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Latitude: +49.88 (49°52’48”N)
Longitude: -97.17 (97°10’12”W)

Climate analysis of a site is especially relevant for the design of the transit interchange as it informs how natural light will penetrate the interior. The site analysis also identified months in which the interior can open to the exterior as well as daylight hours, which will effect the security and perceived safety levels within the interchange.
main vista [broadway]

vehicle access

pedestrian access

main

broadway
The Union Station is positioned such that it is at the precise intersection of Broadway Avenue and Main Street. This access is part of the identity of the original station and will be maintained throughout the new interchange interior. Vehicle access is also significant to the interior as the movement of trains and buses become a point of interest and animation within the design.
Although many of the existing views from the original station will be obstructed by the new interchange design, daylight and vistas are still necessary. Outdoor spaces are used to redirect main vistas to the North and South of the city, overlooking the train tracks and vehicle movement. Vistas are also created within the interior in the form of circulation routes. These flows are treated as interior streets, which activate the space as well as produce points of interest.
Today, the Union Station is still an image of grandeur and majesty. Opened on June 24, 1911 during the peak of the railway boom in Canada, Union Station is an impressive four storey limestone structure. The station was designed in the Beaux Arts Style, typical of the City Beautiful Movement, by architects Warren and Wetmore, the same architects who designed New York’s Grand Central Station (Huck, 2003). Spanning 100m along Main Street, the interior was finished with terrazzo floors, meter-high veined marble wainscoting, and arched skylights under a great dome ceiling. The functions accommodated within the building, typical of the Beaux Arts Style, are expressed through the main compositional elements: the domed rotunda, north and south wings, and the sub-grade passenger tunnel. Furthermore, the articulation of the building in relation to the site and its conscious symmetrical views down Broadway Avenue, still hold significant historical value.

At one time, the station saw 8,000 passengers a day (Huck, 2003). Travelers, immigrants and soldiers all passed through the station’s four storey dome.

“Day after day, thousands of immigrants stepped off the trains to find a new life for themselves and a better education for their children. They came to work on farms and in factories and offices in a province that had become known as the Heart of the Continent or, lured by the promise of free homesteads, stopped en route to destinations farther west” (Gillies, 1996, 67).
However, the movement of these immigrants far differed from those travelling passengers. During the time of segregation, the immigrant passengers were confined to the basement that held large waiting rooms, the laundry, a lunch counter and washrooms. Separate designated stairways were employed in addition to segregated entrances and passenger carts. Although this section of history is inherent of the station’s identity, the concepts of passenger circulation has dramatically changed. Through the proposed interchange design, passenger circulation and movement is used to bring people together and foster interaction of various social groups.

Once the automobile became a more efficient mode of transportation, dependence on the train was significantly reduced. With a considerable decline in the volume of rail passenger traffic, Canadian National Railway and Canadian Pacific Rail sold the last remaining functioning passenger railway station in Winnipeg to Via Rail in 1977. Today, only twelve passenger trains a week move through the Union Station, three from the east, three from the west, and six to and from Churchill. These twelve trains carry an average of 40,000 passengers a year, a meager 110 per day compared to 8,000 per day in the past. The majority of once public space has been transformed into Via Rail and government office space. “On the main floor, the station’s original lunch room, which covered 120 square meters, as well as a restaurant nearly twice that size on the north side of the waiting room, no longer exist” (Gilles, 1996, 72).
Section 3.1 general
3.1.2. Major occupancy classification: Group A, Division 2
Building area: 50,000 sq. ft, 4,645 sq. m
Building height: 3 floors
Building sprinklered.
3.1.16. Design occupancy load
Main floor: as per table 3.1.16.1: 2511 people allocated within interior space
building area: 88 m sq. : 1.85 m sq/person

Section 3.2: building fire safety
3.2.2.58. Group A, Division 2, Any height, Any area, Sprinklered
Noncombustible construction
Floor assemblies shall be fire separations with a fire resistance rating of no less than 2 hours
Load bearing walls, columns and arches shall have a fire-resistance rating not less than that required for supported assembly.
3.2.4 fire alarm.
Fire alarm and detection system is required
3.2.7. emergency lighting
Emergency lighting is required.

Section 3.3 safety within floor areas
3.3.2.4. aisles
Aisles leading to exits shall be no less than 1100 mm

Section 3.4: exits
3.4.2.1. number of exits: every floor intended for occupancy shall be served by at least 2 exits
3.4.3.1 exit widths: required widths for all exits shall not be less than 1100 mm
3.4.5. every exit door shall have an exit sign

Section 3.7: health requirements
3.7.4.2. water closets: the number of water closets required are 12 male and 23 female water closets.
Proposed: create three separate bathrooms to facilitate the users of each zone. Each bathroom shall have a barrier-free stall or separate washroom area.

Section 3.8: barrier free design
Barrier free access provided to all main floor tenants.
existing building analysis
building photos
5.1 transit context

In order to design a transit interchange, a basic understanding of why people travel is important. As a result of an examination and consideration of the primary and secondary users, as well as their needs and desires, the proposed interchange can accommodate and facilitate these needs through the design to create an interior that fosters personal place and cultural attachment.
Due to the combination of migration from the city center and increased sprawl throughout Winnipeg, it has become harder for transit systems to serve the same population over a greater area. According to Statistics Canada, between 1991 and 2001, the population of the downtown core has decreased from 13,320 to 12,815 inhabitants. Additionally, the use of public transportation has also decreased as automobile use has increased. Since 1996, the percentage of those 15 years and over and employed in the labour force whose main mode of transportation is automobile has increased from 66.6% to 68%. Ridership on public transport has decreased from 15.5% to 14.2%. Although these figures seem minimal, they demonstrate a trend toward increased automobile transportation in Winnipeg. Alternatively, cycling and walking as modes of transportation have increased slightly from the 1996 census data, indicating that the proposed interchange should incorporate and support alternative modes of transportation, while encouraging less dependence on the automobile. Not only will this modification of traditional transportation stations lessen environmental impacts, the additional modes of travel will encourage increased and diverse patronage.

With an increase of flows, there is also an increase of factors influencing the reasons for such movement. These factors must be recognized in order to understand and design for travellers.
To produce an informed design of a transit interchange, individual travel choices must be understood and applied. These preferences and resulting transport experiences are influenced by the obligations, opportunities, and inclinations of the individual (Knowles, 2007). Not only is the journey important, but also how those journeys are realized. Household and personal characteristics – age, gender, income, location, etc. – shape individual choices and transport patterns, and are unalterable by the design of the station and transit networks. However, by providing a site for several modes of travel to converge at dynamic interior spaces, individual choices and patterns may be influenced to include both pause and movement through the interchange.
In 1977, Canadian Pacific and Canadian National Railway abandoned passenger services in order to solely carry freight. Via Rail was thus established as an independent crown corporation to operate the national passenger rail service on behalf of the Canadian government. In conjunction with the City of Winnipeg Transit services, Via Rail will continue to own the Union Station, allocating space for other transportation modes and supporting administration areas within the building.

With a focus on passenger rail, Via Rail has the ability to concentrate on customer service and experience, which is vital to the proposed transit interchange. Via Rail has started to focus more precisely on customer needs and expectations while enhancing the features of train travel experience most valued by customers.

Vision: We will offer the best travel experience in Canada.
Mission: We work together to exceed customer expectations every time.

Guiding Principles:
- I focus on the customer
- I take action and am accountable
- I am flexible and contribute to change
- I make the difference
Primary Users: Travelers

There are two types of travelers that will utilize the transport interchange: visitors to Winnipeg and local residents who use the interchange for everyday travel. Due to the variation in modes of transportation, the interchange facilitates both user groups. Visitors, who are either staying in Winnipeg or just passing through will most likely be travelling by train or regional bus service. Local residents will commute to and from the downtown location for work or pleasure through a combination of city busses, the proposed rapid transit system, bicycle use, personal vehicle use or by foot. Local users and discretionary riders consist of the working force, students, people who do not own a vehicle or are too young to drive, as well as the elderly and persons with disabilities. With such a wide range of users the design of the interchange must be accessible by all, including implementing wayfinding, universal design and barrier free principles.

Secondary Users: Destination visitor

Consisting of typically local residents, this user group perceives the interchange as a public space where one can meet with friends or take advantage of the amenities offered. The interchange becomes a destination rather than a place of passage, distinguishing this type of user from the traveler group. Seating areas and atrium spaces, in addition to the central location, attracts downtown employees before, during, and after work as an informal space to gather and observe other people. The age demographic for the destination visitor is between 17 and 50, with the average age of 28. It is probable that these users live near or around downtown, although with increased transportation opportunities and ease of accessibility, the average living radius of the user group may also increase.
Tertiary Users: Interchange staff:
The employees of the interchange shape the tertiary user group. Staff includes administration, ticketing, maintenance, security and retail/market/hospitality employees. The demographic of the interchange employees range from 18 to 60, and have varying incomes based on duties and hierarchies. Due to the transit nature of the employment location, the personnel commute commences from all areas of the city. Staff areas will be segregated from the majority of the public spaces to provide security and comfort while working.
<table>
<thead>
<tr>
<th>user group</th>
<th>values</th>
<th>activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>travelers</td>
<td>security</td>
<td>travel between arrival and departure points</td>
</tr>
<tr>
<td></td>
<td>safety</td>
<td>transfer travel modes</td>
</tr>
<tr>
<td></td>
<td>efficiency</td>
<td>wait for mode of transportation or transfer</td>
</tr>
<tr>
<td></td>
<td>reliability</td>
<td>buy goods and/or food</td>
</tr>
<tr>
<td></td>
<td>comfort</td>
<td>use facilities while waiting:</td>
</tr>
<tr>
<td></td>
<td>privacy</td>
<td>spa areas to freshen up and rejuvenate after travel</td>
</tr>
<tr>
<td></td>
<td>functionality</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ease of wayfinding</td>
<td></td>
</tr>
<tr>
<td>destination</td>
<td>security</td>
<td>meet acquaintances</td>
</tr>
<tr>
<td>visitors</td>
<td>various amenities</td>
<td>consume meals/beverages</td>
</tr>
<tr>
<td></td>
<td>comfort</td>
<td>shop, buy food in market and retail areas</td>
</tr>
<tr>
<td></td>
<td>aesthetics</td>
<td>use rejuvenation areas before/after work/meeting</td>
</tr>
<tr>
<td></td>
<td>cultural diversity</td>
<td>watch/participate in public events/performances</td>
</tr>
<tr>
<td>interchange</td>
<td>safety</td>
<td>work in office area, ticketing, security, hospitality</td>
</tr>
<tr>
<td>staff</td>
<td>comfort</td>
<td>eat lunch/dinner in dining areas</td>
</tr>
<tr>
<td></td>
<td>reliability</td>
<td>spend breaks in public areas</td>
</tr>
<tr>
<td></td>
<td></td>
<td>use rejuvenation area before/after work</td>
</tr>
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</table>
## User Analysis

<table>
<thead>
<tr>
<th>Needs</th>
<th>Frequency of Use</th>
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<tr>
<td>Reliable transportation services</td>
<td>Most often</td>
</tr>
<tr>
<td>Efficient, navigational spaces</td>
<td></td>
</tr>
<tr>
<td>The interior must feel secure at all times</td>
<td>6am-2am</td>
</tr>
<tr>
<td>Places to wait comfortably</td>
<td>Most frequent:</td>
</tr>
<tr>
<td>Activities/amenities/entertainment to pass time</td>
<td>7-9am 4:30-6am 7-9pm</td>
</tr>
<tr>
<td>Views to outside to understand context and locality</td>
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</tr>
<tr>
<td>Ability to purchase food and beverages quickly</td>
<td></td>
</tr>
<tr>
<td>Ease of circulation</td>
<td></td>
</tr>
<tr>
<td>Access to washroom facilities</td>
<td></td>
</tr>
<tr>
<td>Weather protection</td>
<td></td>
</tr>
<tr>
<td>_spaces to feel safe and secure</td>
<td>Often</td>
</tr>
<tr>
<td>Attractive spaces to gather or be alone, variety of scales</td>
<td></td>
</tr>
<tr>
<td>Stimulating environment to create excitement/interest</td>
<td>9am-12am</td>
</tr>
<tr>
<td>Choice and option in activity and venue</td>
<td>Most frequent:</td>
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<tr>
<td>Varied interior spaces to provide intrigue</td>
<td>12-1pm  5-7pm</td>
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<tr>
<td>Variety of people/users to observe</td>
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<tr>
<td>Access to washroom facilities</td>
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<tr>
<td>Safe, productive workplace</td>
<td>Always</td>
</tr>
<tr>
<td>Access to washroom facilities</td>
<td>Operating hours:</td>
</tr>
<tr>
<td>Some segregation from public areas</td>
<td>6am-2am</td>
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</tbody>
</table>
There are three main criteria for transit spaces; ease of access, shelter, and legibility. Additionally, efficiency in processing travelers as well as their safety and security are similarly important requirements. However, “an architect of today must provide added attractions and excitement if that station...is going to be a success” (Jones, 2006, 65).
<table>
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<th>space</th>
<th>entry</th>
<th>street</th>
<th>vehicle</th>
<th>service</th>
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</tr>
<tr>
<td>bike lockers</td>
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</tbody>
</table>

- **extremely important**
- **very important**
- **important**
- **negative relationship**
# Spatial Requirements

<table>
<thead>
<tr>
<th>Area</th>
<th>Sq. Feet</th>
<th>Activities</th>
<th>Atmosphere</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance</td>
<td>13,800</td>
<td>Public space</td>
<td>High activity/stimuli, spacious</td>
</tr>
<tr>
<td>Concourse</td>
<td>600</td>
<td>Ticketing</td>
<td>Bright, stimulating, efficient, open, welcoming, modern</td>
</tr>
<tr>
<td></td>
<td>200</td>
<td>Security</td>
<td>Open, welcoming, modern</td>
</tr>
<tr>
<td></td>
<td>500</td>
<td>Tourist information</td>
<td>Translucent</td>
</tr>
<tr>
<td></td>
<td>1,720</td>
<td>Parcel pick-up</td>
<td></td>
</tr>
<tr>
<td></td>
<td>700</td>
<td>Lockers</td>
<td></td>
</tr>
<tr>
<td>Lounge</td>
<td>4,800</td>
<td>Bar</td>
<td>Quiet, warm, personal, inviting</td>
</tr>
<tr>
<td></td>
<td>1,000</td>
<td>Book store/lounge</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2,000</td>
<td>Patio</td>
<td>Semi-enclosed</td>
</tr>
<tr>
<td></td>
<td>2,240</td>
<td>Connect/work area</td>
<td>Semi-private, comfortable, soft</td>
</tr>
<tr>
<td></td>
<td>500</td>
<td>Meeting space</td>
<td>Productive, efficient</td>
</tr>
<tr>
<td>Rejuvenate</td>
<td>2,400</td>
<td>Rest/nap pods</td>
<td>Quite, soft, tactile, calming, tranquil, diffused</td>
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<tr>
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<td>900</td>
<td>Massage</td>
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<td>300</td>
<td>Oxygen pods</td>
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<td>150</td>
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<td>Retail opportunity</td>
<td>Bright, colourful, fulfillment, active, cultural, spacious, views</td>
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<td>2,580</td>
<td>Cafeteria</td>
<td>Lively, open</td>
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<td>30,000</td>
<td>Office</td>
<td>Efficient, energetic, bright</td>
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<td></td>
<td>600</td>
<td>Staff area</td>
<td></td>
</tr>
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<td></td>
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<td>50,000</td>
<td>Platforms/bay</td>
<td>Efficient, bright, open</td>
</tr>
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<td></td>
<td>200</td>
<td>Bike lockers</td>
<td></td>
</tr>
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<td></td>
<td>400</td>
<td>Freight loading/unloading</td>
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</tr>
<tr>
<td>area sq. feet</td>
<td>activities</td>
<td>atmosphere</td>
<td>emotional value</td>
</tr>
<tr>
<td>-------------</td>
<td>---------------------</td>
<td>-----------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>13800</td>
<td>public space</td>
<td>high activity/stimuli,</td>
<td>excitement,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>spacious</td>
<td>anticipation</td>
</tr>
<tr>
<td>600</td>
<td>ticketing</td>
<td>bright, stimulating,</td>
<td>sense of control, ease of navigation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>efficient, sense of control,</td>
<td>secure,  safe</td>
</tr>
<tr>
<td>200</td>
<td>security</td>
<td>open, welcoming,</td>
<td>comfort,</td>
</tr>
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<td>relaxing,</td>
</tr>
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design proposal
The proposed interchange will be housed in the rear building of the existing Union Station. Currently, there are three tracks that penetrate the structure, allowing for the conversion to rapid transit and bus systems. Two new entrances were designed to increase permeability and allow connection of the users to the surrounding cultural amenities found at the Forks and Downtown Winnipeg.
exterior elevation
The majority of the first two floors in the Union Station were left unaltered with the exception of the vertical circulation. The platform level was opened by the use of curtain walls to increase connectivity between the user and the site. The main design intervention occurs with the addition of the third floor which contains most of the hospitality areas. Exterior stairs and elevators were designed to increase ease of access into and throughout the interchange.
Design Features

The main floor houses the concourse that connections the historical connections between broadway and the forks. This path is highlighted by an interactive led wall that activates the interior will spurring triangulation with other users. Bike storage, lockers, parcel pickup and ticketing all occur at this level. The administration offices for the station are left unaltered from the existing structure.

Access to the platform and third level occur from both the interior and exterior. Bike storage, lockers, ticketing and parcel pick up occur at this level. The focus is on circulation and movement, which is reinforced by the open concourse and LED wall. As a space that encourages high levels of flow, the concourse is largely barrier free, allowing for the staircases to be the focus of the space.
Design Features

The platform level houses the main vehicle transportation within the interchange. Train, bus and rapid transit all converge at this level. Waiting spaces are defined by lowered ceilings over seating areas to create a sense of human scale. Quick access coffee, news and snack stands are built into these spaces to facilitate the user’s needs within this high movement zone.

To encourage connection between place and user, openings in the ceiling create visual access from the platform to the third level. Sections of the platform will be constructed of light-transmitting concrete to transfer the image of moving vehicles to the floor below. Glass elevators, translucent stairwells and railings around the platform level incorporate the contextual surroundings into the interior of the interchange.

Based on the shadows and traces studies, the interior is large and unobstructed to allow for the increased levels of movement required. Because this space is also very public, the levels of performativity increase. As a result, the platform is extremely open, both visually and spatially.
translucent concrete
1. **Circulation.** The third floor consists of a combination of flows and pauses to produce the greatest levels of connectivity within the interior. The majority of circulation occurs at the vertical circulation areas which are closest to the platform and entrances. This gradually fades as one travels further into the interior.

2. **Pause.** Opposite to the circulation diagram, areas of increased levels of pause are located away from the main circulation. The lounge and rejuvenation areas incorporate the longest level of pause, or where people spend the longest period of time. These areas are also the most private areas within the interchange.

3. **Movement.** The relationship between circulation and pause can be seen within the movement plan. The speed of movement in the interchange is at the highest level around the vertical circulation. The speeds are designed to be reduced as one moves through the interior.
Design Features

The third level is where most of the user amenities are located. Ranging in levels of pause, the interchange is based on Edward Hall’s proxemic levels; public, social, personal and intimate areas to facilitate the human needs of all types of users. The public areas are the closest to the main vertical circulation and include a coffee shop, market and magazine stand. These spaces are open and permeable and allow for easy access.

A book lounge, cafeteria, wine store and other retail spaces form the social spaces; less pervious areas that still maintain a level of transparency. Personal areas consist of the lounge and connect/work areas where less movement and increased pauses occur. The intimate space is made up of the rejuvenation area. This space allows for personal reflection and relaxation.

Lastly, the circulation areas converge into a main performance area that will facilitate further local and cultural connection. This space is a combination of public and social proxemic levels, depending on where the user is situated. In this space, the columns become meeting points that occur more often as one travels from the movement to the pause areas.
The coffee area is part of the express services offered within the interchange. Based on the public gesture of this area of pause, the design is increasingly open and permeable. Counter seating is provided as meeting areas where one can both perform and be observed.
design
performance

reflected ceiling
The performance area is characterized by open, translucent spaces to connect the user to the site and facilitate place formation. The openings in the floor are enveloped by clear resin forms that create places to play, sit, meet, and watch. These forms allow views to the platform below while acting as a lightwell to enhance the sense of movement within the interior.
The notion of connectivity between user and site was continued into the exterior areas of the interchange. The public viewing patio allows for informal meeting spaces while providing views to the moving transit vehicles and surrounding context. In relation to the shadow investigations, the patio serves as an extension of the interior functions and offers various seating and privacy options to accommodate the range of users.
Design Features

The cafeteria is a self-serve eating area designed to foster social interactions. As this area of pause is semi-public, the gestures studies dictate that the cafeteria be communal in nature with high levels of movement. As a result, bench seating and long banquettes are used to facilitate shared eating spaces while large, open circulation paths and hard surfaces are utilized. Furthermore, views between the cafeteria and both the interior of the interchange as well as the exterior are used to increase the level of performativity and publicness.
cafeteria patio

reflected ceiling
cafeteria
Design Features

The lounge in comparison to the cafeteria is increasingly warm and rich in colour and texture. As this area of pause of personal, the design of the lounge reduces the volume of the interior to create an intimate interior. The extension into the exterior is also segregated from the public areas and defined by planters and vegetation. The lounge still maintains a level of translucency to provide a small level of connection to the other users within the interchange.

Lighting levels and materials create a soft and relaxed atmosphere in comparison to the more public cafeteria. Curved banquet seating and lowered ceilings reflect reduced performance levels while maintaining a sense of enclosure and individuality.
lounge

reflected ceiling
The rejuvenation area consists of individual rest pods, oxygen pods and massage areas. These spaces are used to revitalize the traveler who is in between destinations. Low ceilings and winding corridors are used to maintain a sense of privacy as this area. Materials are textured and warm to produce a calm and relaxing interior. Low lighting levels and diffused daylight are also used to promote slow and relaxed movement.

The curvilinear forms encourage intimate areas as sight lines and visibility are reduced. Furthermore, the glass wall that typically separates the performance areas from the other areas of pause is replaced by a semi-transparent resin surface. The patio extension is segregated from the public viewing patio that provides a sense of pause within the exterior of the interchange.
7 conclusion
The objective of this project was to create space by utilizing dance movement as a methodology that answers the current human needs of a multi-modal transit interior. As seen in typical transit stations, the goals of the interchange were to combat non-place, loss of meaning and a disconnect with the existing social and cultural context and networks. To further encourage this connection, it was necessary to slow down the traveler within the larger global flows to allow for engagement in social connections. By producing areas of pause, the traveler is able to comprehend and absorb the surrounding environment.

The interchange was designed to facilitate the various needs of the users through multiple degrees of movement, flow and pause. Programs were enhanced and spatial arrangements created to produce a multi-modal center that fosters place attachment, spirit of place, as well as personal and cultural identity formation.

Through the inquiry process of this project, a new design vocabulary was derived. With a focus on human connection as means of identity formation and place making, dance, and its relationship between space and the body, became a medium of investigation into the interior spaces of the interchange. Gestures, narration, performance and human movement were explored as means to creating interior spaces that relate to and have meaning for the human experience.

To facilitate a greater awareness of how the physical body occupies space when in movement, dance as the performance of the human body was examined. The investigation of dance movement as gesture was incorporated into the interchange through the variation of pause characteristics and atmospheres. In terms of the interchange design, each space of pause, from the public concourse areas to the spaces of rejuvenation, was created to portray a distinct feeling and mood that ultimately further supported the
comprehension of that space. Materials and space planning strategies were used to portray a specific character; cool, hard materials in areas of flow and natural, warm materials for areas of pause. Translucency and opacity were also used to convey public or private areas.

Narratives are used within the interchange to describe a personal understanding of the space being interpreted. In order to structure each area of pause to produce an appropriate narrative for each user’s requirements, the spaces were designed and organized according to volume, movement, levels of interaction and human scale. Also, visual connection between the interior spaces of the interchange as well as the surrounding exterior context create local references that increase spatial awareness, comprehension and allow users to ‘read’ the space with increased thoroughness. Based on the location of the flows and pauses, the permeability of the interchange, both from the exterior and other interior spaces, allows the user to create their own narrative without the interior being overly prescribed. The user is able to create a narrative structure through the act of walking.

Shadows, the third movement investigation looked at personal space in relation to performance and the built environment. The design of the interchange was largely based on the range in performance levels found within the programme. Location, furniture placement and organization, movement levels, colour and form were all used to define the amount of performance displayed and observed. Public, social and intimate in atmosphere, the cafeteria, lounge and rejuvenation areas greatly differ in design and characteristics. Within the cafeteria, large open spaces and views are created between the adjacent interior and exterior interchange spaces to allow for a communal and public interior. Open, bench seating and long banquets serve as a platform for seeing and being seen. In contrast, the lounge consists of curved banquet seating and partitions to produce a sense of enclosure and individual identity. The views are limited within the lounge area to maintain the lower levels of performance. Rich materials and \
lowered ceilings are also used to decrease sound travel which further endorses the personal atmosphere. Intimate in atmosphere, the rejuvenation area maintains the lowest performance levels and personal space. Each user has their own personal space, while the communal corridors are curved to restrict visual access throughout the interior.

Trace, the last investigation, was used to comprehend the physical motion of dance through space. The resulting form was to describe the flow or circulation paths within the interior of the interchange. These paths are unobstructed, permitting the user to wander, explore and experience space in an organic manner. As such, the interior of the interchange should be permeable and allow for natural and undefined movement and circulation. Circulation paths found within the varying levels of social distances are also used to dictate the openness of movement within. The cafeteria utilizes large, linear paths of movement to allow for a sense of publicness, while the rejuvenation area and the lounge feature narrow and curvilinear corridors. Additionally, the location and design of the interchange columns, vertical circulation elements, as well as the performance seating forms were all established from the formal properties of the initial dance motion capture investigation.

The programs offered within the interchange also produce an increased level of connectivity between the users as well as to the site and surrounding context. Due to the varied user groups, the interior accommodates numerous levels of interaction based on the needs of the user. This allows for relationships to be developed regardless of the amount of time spent within the interchange. By compelling users to slow down and move through the interior in a weaving fashion, opportunities for interaction are increased.
The programs, although not original in typology, explore the relationship between the body and the built environment. By incorporating a complex combination of pause, movement and performance levels, each space or pause is designed to affect how the body functions within that interior; slow down, speed up, relax, or perform.

Within the interchange, the programs are used to create a sense of pause in order to examine locality and identity through interior design. This strategy is most evident within the performance area. The area is characterized by open, translucent spaces to connect the user to the site and facilitate place formation. The openings in the floor are enveloped by clear resin forms that create places to play, sit, meet, and watch while the placement and distribution of columns force users to take a less direct path. These design features allow the central space to slow down the movement of the users in order to witness the performance, leading to contextual connections based on the interaction of other users found at one specific location. It is this congregation of people and their inherent personal performances that create the identity of place.

Through interior design, the interchange facilitated users to slow down and connect with other users through a complex layering of pauses and flows. Users are brought into and through the interior, naturally beginning to understand the local and cultural context based on the interaction with each other as well as the internal and external connections within the interchange.

The complex spatial systems of a multi-modal “interchange” can be planned by utilizing cross-disciplinary methodologies, dance gestures, performance and human movements to combat the ubiquitous concepts of “non-place”, “globalization”, and “placelessness”. New changes require new approaches in design in order to satisfy the current physical, psychological and cultural needs of the users within the interior environment.
bibliography


### Design Considerations

- **facilitate quick and efficient service**
- **lighting to facilitate workspace**
- **legible and highly visible signage**
- **allow for counter(s) to be highly visible**
- **both human and computer ticket access**

### Activity

- **ticket purchase**
- **obtain tourism info and vehicle scheduling info**
- **pick up/ drop off parcels**

### Spatial Relationships

- **computer**
- **security**
- **ticketing**
- **human**
- **info**
- **parcel pick-up**
- **lockers**

### Equipment

- **ticket counter**
- **register and cash storage**
- **computer**
- **information counter**
- **file and supply storage**
- **lockers**

### Materials and Finishes

- **wood/bamboo**
- **metal**
- **resin counters**
- **moulded forms (fibreglass)**
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**design considerations**

- wayfinding must be clear and efficient
- mix of translucent and opaque materials to display private - intimate levels
- high lighting levels

**activity**

- main throughfare for users
- pedestrian passage from vehicle to vehicle
- connection to all interior activities
- spur conversation through interactive LED wall

**spatial relationships**

- washroom
- stairs
- elevator
- LED wall
- seating

**equipment**

- lighting fixtures
- occasional seating
- LED lighting on main floor

**materials and finishes**

- colourful, sleek, streamlined
- resin
- metal
- wood/bamboo
- floor tile
design considerations

- Space to be flexible for alternative uses
- Views/access to street/train/city
- Flexible seating for varied user groups
- Both open and enclosed (booths) areas
- Ceiling changes to differ from circulation area
- Dramatic lighting to highlight bar as stage

activity

- Serving of drinks and light fare
- Public meeting place

spatial relationships

- Counter with seating
- Bar rail
- Booth seating
- Side tables and chairs
- Vertical surface for gallery
- Kitchen (could be shared)

materials and finishes

- Neutral base colours
- Warm materials
- Natural materials
- Glass, wood
- Vibrant accent colours and focus areas
### Design Considerations

- Flexible space for alternative uses (parties)
- High levels of daylight
- Open space to allow for various activities
- Columns as meeting point

### Activity

- Viewing space for local performance
- Waiting space for travellers
- Play area for children
- Meeting/connect space

### Spatial Relationships

- Retail
- Seating
- Performance
- Circulation

### Equipment

- Built in seating in columns and built forms

### Materials and Finishes

- Translucent materials to provide long views
- Hard surfaces
- Built forms as furniture

### Zone

- **Concourse**

### Occupants

- **150**

### Movement Level

- **Medium-high**

### Area

- **Performance**

### Square Feet

- **13800**

### Personal Scale

- **Public - Social**
**zone**  
**lounge**

**occupants**  
**20**

**movement level**  
**medium**

**area**  
**book lounge**

**square feet**  
**1000**

**personal scale**  
**social**

**design considerations**

- allow for counter to be highly visible
- monitors hidden from public view
- easy staff access to public areas

**activity**

- local writer to interact with users
- seating for reading
- book readings
- adjacent to book store

**spatial relationships**

- reader area
- seating
- book store
- views

**equipment**

- seating
- individual and group
- task/reading lights

**materials and finishes**

- bright and plush upholstery
- natural materials
- glossy surfaces
- historical reference
- mix of modern and traditional
Design considerations:
- Communal seating and exterior access
- Self-serve food and beverage
- Views to city/concourse
- Close to entrances
- Transparent walls to kitchen, increase levels of publicity and openness

Activity:
- Breakfast, lunch and dinner
- Interior and exterior eating areas

Spatial relationships:
- Cafe
- Seating
- Views
- Patio
- Entrance
- Kitchen
- Take-out
- Register
- Storage

Equipment:
- Tables and chairs/benches
- Snack/take out counter
- Registers/computers
- Patio seating

Materials and finishes:
- Colourful, warm materials
- Hard surfaces
- Mix of soft materials and upholstery with sleek counters and tables
Zone: Rejuvenation
Occupants: 5
Movement Level: Lowest

Area: Oxygen Pods
Square Feet: 300
Personal Scale: Intimate

Design Considerations:
- Sound and light insulation
- Individual space
- Translucent views - still connected

Activity:
- Quite reading/waiting
- Oxygen intake
- Light, music, color
  Controlled by user

Spatial Relationships:
- Reception
- Rest pods
- Oxygen pods
- Storage
- Patio

Equipment:
- Lounge chair and foot stool
- Sound system
- Built in oxygen tank

Materials and Finishes:
- Soft, plush, textural
- Calming/neutral colours
- Colour therapy/lighting
**Zone:** Rejuvenation  
**Occupants:** 10  
**Movement Level:** Low

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**Design Considerations:**
- Sound and light insulation
- Protected views from public exterior
- Can see movement but not details of others
- Diffused and warm lighting
- Lower ceilings/floors: more enclosed spaces
- Pod-like spaces for each activity

**Activity:**
- Shower
- Hair/makeup prep
- Storage of belongings
- Washroom use
- Massage
- Oxygen bar use

**Spatial Relationships:**
- Reception
- Oxygen Bar
- Rest Pod
- Laundry
- Staff Area
- Patio

**Equipment:**
- Sink + shower stalls
- Counter and stools
- Oxygen input
- Massage tables
- Reception seating

**Materials and Finishes:**
- Tile surfaces in water areas
- Natural materials
- Glass/mirror
- Warm neutrals
- Contrast of white and color

- Appendix
- Appendix
- Staff Area
- Patio
- Oxygen Bar
- Massage
- Rest Pod
- Reception
- Laundry
- Staff Area
- Oxygen Bar
- Rest Pod
- Reception
- Laundry