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ABSTRACT

Architectural space is experienced and understood through the motion of the human figure. The potential for a dialogue between man and his built environment is one which can only be realized through design derived from the dynamics of our world. I seek to derive physical environments from human and environmental motion in order to reestablish connections of man, motion, physical form and space.
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INTRODUCTION

In the past year I have had a series of experiences which have brought about an acute awareness in the significance of human form and motion in the architectural experience. This past Fall I began an internship in Louisville, Kentucky, working in Old Louisville and residing in the German town area. From my apartment window I watched the traffic on the city streets, trains passing through the landscape, planes ripping the air above my head and barges surging up the Ohio. Alone and without a car I took to the streets by foot and bicycle, discovering the city from this perspective.

This past Spring, I participated in the Polyark IX field study in Europe. Again I found myself taking to the streets on foot.

In Comparing these experiences, I found differences far beyond those of visual imagery. The space revealed in my walks through the cities of Europe had a vitality felt by walking through or watching someone else pass through a space. This vitality, I am convinced, was largely the result of human motion and form interacting with the building process over hundreds of years. The city fabric seemed to be in a dialogue with the user, resulting in a sympathetic and harmonious whole. In Louisville, however, I did not feel that this dialogue existed in much of the city. The city fabric reflected more the motion and vitality of the machine, than the vitality of man.

It is from these two experiences that I began my search for a language of movement to allow me to explore and understand this feeling that is absent in so much new architecture.
I sense a difficulty in much of current architecture which relies on abstract components, for example the wall and the column, as the the source of space formation and definition. Charles Moore speaks of these elements in his book, *Body, Memory and Architecture*, describing their original and inherent meaning. For example, he describes the column as existing as a celebration of the human upright stance long before it was used to hold up a roof. He also describes the wall as an extension of the territory of the body, again, meaning which existed before it was used to form buildings.¹

Meaning may be given to the elements of architecture by the patterns and characteristics of the dynamic environment. For example, a wall in a subway station might find its expression from a man racing to catch a train, his heart beating and feet pounding, breaking a path through a sea of commuters. A wall or indeed a space derived from such a motion scenario might cause the user of the space to feel a bit of what the man racing to catch his train felt. Architect Bernard Tschumi expresses such an idea in *Architectural Manifestos*; for example, in “Manifesto 5” he makes use of three events, “the Dance, the Chase, the Fight” as aids in space formation.²

Tschumi makes use of what he calls a “tripartite mode of notation” which includes events, movements and spaces in his book, *Manhattan Transcripts*. He approaches event notation through the use of photography and film. He borrows from choreography in his use of movement notation, which consists primarily of a system of directional arrows.³

Oskar Schlemmer, an artist and choreographer in the Bauhaus, used a system of movement notation which used directional lines as well as color and drawings of the human figure in costume, conveying both the mechanics and feeling of a dance. His system of notation was related to the grid, which served as a datum for his dances. In the dances which he choreographed, the costume, rather than an event served as the movement regulator. He began with costumes of various geometries, which inherently restricted the motion of the dancer.⁴ The dance was then formed from the limited range of movement. His notation system directly reflected his design process.

Rudolph Van Laban, a dancer and choreographer, developed a highly sophisticated graphic movement notation system which seeks to address all movement possibilities, not just dance. There are four aspects of movement which are addressed by this movement system:
2 Oskar Schlemmer's dance notation.

3 Costume designs by Oskar Schlemmer.
1. The part of the body which is moving.

2. The direction of movement.

3. The level of movement.

4. The duration of movement.⁵

While the system itself may be used as a design tool, the four aspects of movement addressed may be used as general guidelines for understanding the complexity of movement.

A relationship has been established between dance and movement notation out of necessity. Dance exists as an expression of the "movement of the human body, aesthetic expression of the body and artistic creativity . . .".⁶ Movement notation provides a means of recording abstractly the spatial characteristics of the dance. Both dance and movement notation offer ideas about space-making which may be applied to the architectural space. In Body, Memory and Architecture, Charles Moore writes, "Dancers speak of 'feeling' space. " 'Ether becomes "real stuff" to dancers.⁷

Bernard Tschumi approaches the act of space-making, using the idea of carving in Architectural Manifestos. In Manifesto 5 the space regulators are, again, "the Dance, the Chase, the Flight". These events are translated from event notation to movement notation and finally to space notation. Space notation becomes an extrusion of the movement notation into the third dimension. In the dance event, for example, the sequence of steps is noted graphically as footprints and directional lines which are then extruded into the third dimension.

Time, like space, must be discussed in order to approach an understanding of motion. Sondra Horton Fraleigh discusses this relationship in Dance and the Lived Body, writing:

"Time, space, and movement are never separate except in analysis. Likewise, there is no such thing as one time, one space, or one movement except as we designate them according to how we live them, use them, build and compose them. (Thus we can speak of a room as being space and of the time we met and a time when we will meet again.)"⁸

Dance, as an art defined in terms of motion, exists only in the present; it is limited by time. It may be noted, but this is only a record of a lived art. Notation systems, therefore, are limited in meaning by time. Architectural space is experienced by movement and is, in a manner, created by the viewer. The opportunity exists for architecture to be read and used as notation or a score.
Through movement, the architectural score is read and interpreted. The individual's interaction with the architecture is the dance.

There are many concepts of motion which may be applied to the creation of architectural space. Vera Maleteec discussed stability and lability in her book, *Body, Space, Expression*. According to Maleteec, the concept of stability may be associated with symmetry, equilibrium, dimensional balancing and a binding quality. Lability, on the other hand may be associated with asymmetry, disequilibrium, obliqueness, and an unraveling quality. While stability does not imply stillness, labile characteristics more readily suggest movement in static form.

In man, the act of losing and regaining equilibrium is a balanced system made possible by movement and countermovement. Countermovement accomplishes two basic goals. The first of these is that of allowing balance. The second accomplishment of counterbalance is as a reference which intensifies the visual sensation of movement.

Similar to the concept of countermovement is the notion of discontinuity. There must be some reference for judgment if motion is to be perceived and understood, even if that reference is in motion itself. In *The nature and Art of Motion*, Gyorgy Kepes writes, "A still photo of a heavily trafficked street does not tell us which cars are moving and which are still. Our information must include velocity as well as position if we are to do anything about the situation." In this situation all evidence of discontinuity has been lost, therefore no motion is perceived or understood.

*Rhythm* and sequence are essential to the perception of motion. Rhythm is also one of the most significant tools of all arts. Much of this power comes from man's tendency to find empathy with the rhythms and tempos of his environment. Gyorgy Kepes describes this phenomena in *The Nature and Art of Motion*:

When we are present at certain motor performances - the dance, acrobatics, tennis, football... our movements correspond with those which we are seeing and seem led by them; our hand or foot beats automatically... the rhythm of the observed movements. There is therefore a parallelism between movements which are seen and those which are produced. This phenomena can be experienced through common architectural elements, for example, cracks in
the sidewalk. The picket fence and rows of corn in a field produce a similar effect. When sleeping on a train one might even attempt to breathe with the rhythm of the tracks.

The use of these aspects of motion, as well as the work of the authors mentioned, offer the tools with which a dialogue may be established between man and his built environment.

PROJECTS AND PROCEDURE

I have attempted, this semester, to test my research through a series of small design projects. In each project I have explained the purpose of the exercise or its general premise, direct ties to research, and conclusions.

1. Figure Studies

The human figure acts as a "staging center" from which judgments are made and the environment is contacted. In order to use the human figure as a tool for studying connections and relationships, some facility must be developed for representing this complex body. I have, through extensive drawing of the human figure this semester, begun to grasp the range of movement of which the human figure is capable. I have also acquired a better understanding of human proportion and form. Some of the exercises completed include the following:

   a. Drawings were done of the nude model in media including charcoal, conte, ink and crayon. These exercises were approached with the intent of understanding the volume of the body and its spatial definition.

   b. Detail drawings of the hands and head were completed, allowing an understanding of the complexity of these primary receptors of sensory information.

   c. A study of skeletal/muscle structure of the body are in progress. These studies will contribute by providing an example of how movement within the structure of the body affects the surface form, pulling the skin in tension and compression.

2. Figure in Motion I

The space in which man is a dynamic participant should reflect this contact and interaction. In this study I attempted to explore man in the "frame" of his environment. I used Rudolph Van Laban's
technique for notating movement as a means of translating human motion into a language of space and architecture. This study focused on a sequence of two individuals walking towards each other, recognizing one another, and engaging in a handshake as a form of greeting. I developed a series of architectonic elements based on this sequence. Some of the discoveries I made through this study include the following:

- I found that, by breaking motion down into its base parts, I became aware of movement occurring at many levels of the body. For example, if I noted only motion occurring in the legs, I was disturbed, knowing there was much happening elsewhere in the body.
- I found, in attempting to make graphic notation of "simple" gestures, that these gestures were incredibly complex.
- I also found that the use of movement forced a simplification of gestures, losing subtle meaning in the translation. This, I found easily led to ambiguity in form.
- I feel that one of the most useful aspects of movement notation is the ability to convey tempo and direction.

3. Figure in Motion II

This series of studies focused on the literal movement of the human body without the use of notation systems. The intent of this series was to discover what application the planes and lines of the human figure in motion might have to architecture.

a. The first study involved an abstraction of a "frozen" image of a running man. I first abstracted the planes and axis of the body into a three-dimensional model, in an attempt to capture the labile characteristics in static form. I found that the resulting form did imply motion. I found indications of countermovement in the two-dimensional image which I did not apply immediately to the model, but later added as a backdrop to the composition.

b. In the second study, again I used the "frozen" image of motion, but this time using two images taken at different moments. Again, I abstracted the image, this time in a two-dimensional form first. I then extruded the two-dimensional image into the third-dimension. The intent of this study was to imply motion through superimposed images or frames of motion.
From these two studies I extracted the following basic notions of how labile characteristics may be expressed in static form:

- When the planes and lines are related to a dominant axis, movement and shifting may be measured in relation to that axis.

- The human body employs countermotion to maintain equilibrium while in motion. This concept can be applied towards visual and aesthetic goals. For example, the labile characteristics of a physical form may be emphasized through the use of that form's counterpart.

c. The primary influence on this third study is the work of Oskar Schlemmer. Oskar Schlemmer developed a dance costume which consisted of poles attached to the limbs of the body. He called the dance derived from this costume "The Stick Dance" or "The Dance of the Joints". I have attempted to explore what the use of extensions could tell me about the movement of the body in space. I began this study, using motion sequences from The Human Figure in Motion by Eadweard Muybridge. I started by applying stick extensions to Muybridge's images in an attempt to find some common pattern or link. While I found some common patterns when I drew the path traced by the extensions, I became more interested in the power of the extensions to exaggerate small gestures, thus increasing their visual importance. I felt that this idea could not be fully explored in either drawing or model, but must be lived. I attempted to recreate, in part, the dance costume created by Oskar Schlemmer. I wore the stick extensions within my apartment as well as in a large gathering of people and noted both my own reactions and the actions of others. Some of my conclusions include the following:

- Even the smallest gesture became observable from across the room.

- I became "bigger". My personal space was effectively tripled by the extensions.

- The extensions brought out any imperfections of movement; for example, if both of my arms were not straight, it was noticeable at a glance.

- Parts of the body, which do not normally cross in typical motion, cross through the use of stick extensions. This implies that there is a subtle visual crossing which can occur without the extensions. Dance choreographers approach their work by looking at the lines of the body and space formation between bodies. This principle can be applied to architecture. Two built
forms may share line and form extensions without sharing an obvious or physical link.

This study supports the three criteria for perceiving "bigness" which Charles Moore discussed in *Body, Memory and Architecture*. The physical extensions measurably increased my size, fulfilling the first of his criteria. I appeared visually larger, as supported by the reactions of others; therefore, Moore's visual component of "bigness" applies. Finally, I felt "big", based on the reactions of those around me and my own difficulty maneuvering through space.

4. Design Response

This in-progress study, which departs from the pattern of my other projects, involves testing my study of motion in an active dialogue with other systems of design. John Day, who is studying the layering of geometries in architecture, has been working with me in producing an evolutionary model. This model, without stated purpose or program, is intended as a means of discovering the reactions of the environmental change with forms based on "pure" design theory. Both of us have brought to the project our own program and agenda. At this point the model has not yet yielded a satisfactory work. I suspect that at this point that both of us are still imposing design ideas upon the model rather than working with this growing context. I plan to meet with John next semester to discuss this weakness and possible means of resolution.

5. In this final study for the semester, my intent was to explore the relationship of environments related by the routine, habits and relationships of individuals. I selected the program for the Venice Stage Competition as a vehicle for this study. The "Venice Stage idea is to create a place celebrating the unique characteristics of the Venice Community and the activities that can be seen and experienced along the Venice boardwalk." The program consists of a community art center which may range from a large complex to a simple plaza. In my design I am exploring a time - motion relationship which I feel is strong in the environment of Venice, California. First, I feel there can be a comparison made between the vital, active boardwalk and the idea of present motion. Also I have drawn a comparison between Windward Avenue, a primary street leading to the ocean, and the aspect
Venice Stage
BORDWALK SHOPS

Venice Stage
Venice Stage
of time. It is over time that Venice and the ocean have shaped one another. It is at the boundary between the city and the ocean that the strongest tension occurs. This is the boardwalk, also called Ocean Front Walk, which I have spoken of. The point of highest tension, therefore is the intersection of Windward Avenue and the Ocean Front Walk.

In studying the site, I have detected a subtle shift to the north of activities and landforms in Venice. The ocean current appears to be strongest from the south, while people gather north of the intersection of the Ocean Front Walk and Windward Avenue. The memorial to Abbot Kinney, however lies south of this important "pivot point". This has led me to create an axis along these significant points to represent the labile forces in Venice. A major perpendicular path leading from the Ocean Front Walk to existing parking on the beach southeast of the site crosses this axis.

The shifting nodes and the intersection of the aspects of time and motion have led me to place a "tidal clock" at the intersection of Windward Avenue and the Ocean Front Walk. This clock, which also acts as one of many informal stages for performance along the boardwalk, emphasizes both the present moment through the motion of pendulum, and the passing of time through shadow and marks on the canal wall. A plaza, combining the wave or dune motion of the the beach and the city grid, occurs off-center from the intersection of Winward Avenue and the Ocean Front Walk at a location preferred for informal performance. This plaza acts as an extension of the Boardwalk and the open market and gallery spaces across the Ocean Front Walk. The market and artist cooperative buildings are formed by a simple framework of wall and stairtowers which conceptually have been exploded into the beach landscape, forming places for informal performance and even a small place for contemplation on the breakwater. I have attempted to further address the dynamics of the Venice environment by making connections using the element of water, in a theatrical way. The Pier spotlights the action of the waves against the breakwater, the action of which is enhanced by projections at the base of the pier. The antithesis of this occurs in the Abbot Kinney memorial circle, in which I have placed a vortex of water.

In this project, which is in process at the present time, I have attempted to draw together many of the ideas and concepts which I have studied and formed during the course of the semester. The challenge in this project is the reconciliation of abstract concepts with a real site and program
with existing issues and concerns.

6. In the spring semester I will spend up to three weeks evaluating my work on the Venice Stage Competition, adding to my research base and documenting and programming a semester long project. Tentatively this project will consist of several small stations for the Chicago Transit Authorities elevated trains. Preferably one of these stations will be elevated and at least one will be placed underground. The potential for development of my ideas of motion, I believe are substantial. Some aspects of motion which might be addressed through such a study include the following:

- Relativity

  Within a train station, individuals move at different rates and in many directions. Some move within moving trains, other along the platform. The station must somehow serve as a datum for motion.

- Ties to the Human Dimension

  Within a subway train, as with any other mechanical conveyance, there is a level of removal from the immediate surroundings. Limited opportunities exist for exploring and establishing ties with the environment. For example, many commuters pass through stations hundreds of times in a year without having any idea of the character of the district of the surrounding the station. The challenge is to establish visual ties or references to the city. This can be accomplished, in part, by relating the patterns, rhythms and sequencing of the station to the immediate surroundings.

- Routine

  The aspect of routine must be addressed in the train station, for hundreds of commuters take the same trains, through the same routes, at the same time, five days a week, every week, sometimes for many years.

- Multiple Types of Motion

  Multiple types of motion and occupation must be addressed in the train station. Commuters waiting (standing or sitting) or running to catch trains must be accommodated. There must be some accommodation for street musicians who gather crowds when they perform, as well as people who seek out the station to meet or find shelter.
Time-Motion

The aspects of time, place and motion should be addressed in a train station. Each train, when it
pulls into the station, exists in the present place and present time. This train has passed through
another station in the past and will enter another station soon after it leaves this one. This
arrival/destination relationship can be expressed formally to act as a script of events.

While I have not yet researched subway stations, I am aware of precedents, including the
system in Washington DC and the station at O'Hare airport in Chicago by Helmut Jahn. In addition, I
have seen stations in Chicago, New York, Montreal, Paris, London and Munich. While each of these
systems has unique characteristics, I believe that all have been built more from an engineering
standpoint than an architectural one. This does not seem appropriate, considering the number of
people who spend time there and how this time is spent. I hope that through my study of motion that
I might create an environment which responds to the dynamic quality of the subway station as well
as the users of such an environment.
Part II
INTRODUCTION

In the second semester of this study of motion I selected transit station design as a vehicle to continue my exploration of this profound element of the environment. The selection of this building type was based on the multiple layering of movement systems and the dynamic contexts which are usually present with transit stations. My familiarity with the Chicago transit system and the proximity of Chicago led me to select this city as the context for a major test of my thesis. A new transit line under construction on the southwest side of the city provided the opportunity for discussion with transit officials directly involved with the design of this line.

THE SOUTHWEST TRANSIT LINE, CHICAGO, ILLINOIS - DESCRIPTION

By 1992 the city of Chicago intends to complete its newest transit line, linking the Chicago Loop with Midway Airport on the city's southwest side. The line will originate at a new station at Roosevelt Road where it will connect to Chicago's historic Loop. The line will continue on elevated and grade structures along railroad rights-of-way, terminating at a site east of the Midway Airport Terminal Building, across Cicero Avenue. While Midway will act initially as an intermodal terminal facility, the long range plans of the Chicago Transit Authority are to extend the line to the Ford City Shopping Center, south of Midway Airport.

PROJECT DESCRIPTION

I approached this exploration by selecting two major sites on the southwest transit line in Chicago for documentation, based on site visits and the advice of transit officials. I selected the first site, at Roosevelt Road, based on the number of motion systems in the environment which included elevated and subterranean rapid transit and two levels of street traffic. I selected a second site, at Midway Airport, based on the dominance and intensity of landing aircraft. I explored both through drawing and writing, first attempting to analyze each in terms of environmental dynamics. After my initial analysis I elected to continue with the design at Midway Airport, which I found to be located in an inspirational environmental context. I began with an evaluation of the local environment and the meaning of rail transit in such an
environment.

In the primarily flat landscape of Chicago the horizon is of extreme importance as is the ground plane. Any deviation from the level ground plane is read as important or significant. The train acts as a datum line which registers any change in the landscape; rivers, streams, ditches and hills act like jumps on a graph. The tracks of the rapid transit line stretch like a ribbon on the landscape, uninterrupted, avoiding all obstacles.

There is a certain freedom associated with the elevated sections of the "L". The rider is given a privileged position, viewing buildings at the second story while soaring above the landscape of the city. A ride on the "L" might even be compared to flight. Along the route the passenger maintains a continuing relation to the environment, in many ways far better than may be experienced by other modes of transport. Arrival and departure occurs from arbitrary points along this ribbon, disconnected from the familiar streets below.

In contrast to the elevated train, the subterranean or open cut line achieves a strong sense of control, direction and purpose. Blinders are put on the rider and there is nothingness in the space between stations. Subway travel might be considered a very abstract means of traveling from one point to another. There is a strong sense of arrival in a subterranean station; arrival is announced by a sudden slowing of the train followed by a blast of light. In spite of a sense of destination, the arrival at such a station usually lacks of sense of place and relation to the surface environment.
ROOSEVELT STATION

The Roosevelt Station site lies at the intersection of Roosevelt and State streets. The virtue of the Roosevelt Street site does not lie in the aesthetics of the surrounding environment; rather, the site is a large scale example of the twisted, complex connections in and around the Chicago Loop. For example, the subway tunnel and elevated line which lie at the boundaries of the site are responsible, in large part, for the physical form of the entire Loop. The elevated lines formed the major transportation system around which the city developed, while the subway tunnel is related to a system of tunnels which once ran throughout the loop area for the transportation of freight. The combination of elevated lines, subway lines, surface streets and elevated streets results in a site bounded by the weaving of four levels of transportation.

The purpose of a new station at Roosevelt Street is the connection of the Dan Ryan elevated line and the State Street subway. I conceived of this station as a continuation of the weaving patterns which surround the site on three sides. I wove passages under the elevated lines as an entrance to the elevated line, while providing stairs which descended in a double-helix to the State Street subway. I continued the spiraling motion by forming a system of connections around the perimeter of the site, linking bus stops and the two transit stations. While I found the dynamic potential of this site to be strong, I found the dynamics of the site at Midway to be even stronger.
Midway Airport Transit Facility
Midway Airport Transit Facility
Midway Airport Transit Facility
MIDWAY AIRPORT TRANSIT STATION

At the Midway site the environment is formed from motion. The large weed-filled site, strewn with garbage and old tires is almost free from a traditional architectural context. In the distance the terminal building of Midway Airport can be seen behind the sea of cars across Cicero Avenue, west of the site. To the North the empty lot stretches on, past the rubble of a demolished department store. To the east an occasional freight train passes on a pair of tracks that will soon be joined by the tracks of the new transit line. Finally, to the south lie the anonymous structures of car rental agencies amid, again, a sea of cars. In this context the elements which move are dominant. The strongest elements are the landing aircraft which enter the airport to the north and south of the site. The planes continually scream overhead, less than one hundred feet above Cicero Avenue. The sun reflects off of the cars and buses passing through the parking lots as the wind whips across the open plains.

In the Midway Airport Transit Facility, I have allowed the major elements of motion in the environment to influence space formation and modeling. The primary function of the facility is the accommodation of arriving and departing passengers and rapid transit trains; I have translated the blast of air from an arriving train in the form of a curved plane which swells from the direction of an arriving train. Also, the force of this train has compressed the lower edge of the structure, causing the underlying trusses to bulge into arcs and the plane above to burst through the top of the form; this shifted plane is expressed architecturally as a clerestory. This impact occurs at a point of intense compression in the landscape in which trains, platforms and vertical clearances are at minimum dimensions. This impact is registered throughout in the form of "projectiles" which approximate the proportions of the transit cars and follow potential paths or trajectories for impact. The source of these elements in motion is reflected through a functional use as circulation elements such as stairs and loading canopies. The "projectile" elements track the path of arriving aircraft while appearing to shift from the impact of the approaching buses and automobiles. Beyond the point of impact, the force of the train is allowed to dissipate; the tracks and platforms spread apart, platforms narrow, and the platform covering gently lifts into the sky.
The initial sculptural form which resulted from environmental motion has been transformed through the movement of the human form. The circulation element which connects the station to the airport terminal is shifted to the north along its length. This allows the station lobby to be slightly out of view from the end of the twisting element. The shift is experienced from within as the rocking of a moving train or the shuffling, imbalanced walk of an individual carrying luggage. Along this passage, as well as in the lobbies of the station, windows and structure are designed to encourage an oblique view of the landscape, such as one experiences on a train. Seating on the platform is also designed to reflect seating on a train.

Lighting in the station is designed to reflect movement. The lobby is oriented with an arced glass wall to the south. The deep, layered structure of this wall allows for the continual change of shadows throughout the day. A clerestory at the second level also allows for changing light quality through the form of a sloping arced roof.

The design of the station is best understood through the process of moving through it. The typical passenger might approach the station from the Chicago Loop, passing over the Chicago River, past the warehouses in Chinatown and through trainyards filled with lumbering freight trains. The passenger is elevated as he approaches the site, in line with the flight path of landing aircraft. The train turns and descends, bringing landing planes into view. The train continues to descend, causing adjacent objects to become a blur. Suddenly the ground springs past the window as the train descends into a cut in the ground. The wheels of the train squeal as it rounds a corner, still descending. The shadow of the station precedes it as the train crashes below, the cars rocking with the blast of air. The cars slow and the movement of people on the platforms is altered by the movement of the train.

When the train comes to a stop people push to the door; visual perception, limited to oblique views in the train is limited further by the crush of people. Finally, once outside the car, vision opens up. The platform cover sweeps upward, revealing soaring planes. Light pouring through openings in the platform covering and a stream of passengers announce the exit from the platform. The surfaces of the exit shine like the polished surface of a steel rail, in contrast to the matte surfaces of the skin of the station. An elevator beyond the exit, seen through a
protective screen, glides slowly into a shaft above. In the lobby above, long shadows fall across the floor, in contrast to the moving shadows of passengers. Further ahead light falls on the spinning turnstiles which split passengers into two directions. Beyond the turnstiles passengers move in all directions; some move out side doors to the parking lots, while others move towards the connector to the airport. This element is announced by a depression in the ceiling which compresses space towards the connector.

Standing at the end of the connector the passenger can barely perceive the end of the passage. The passage gently sways along its length. Moving along the connector, the passenger recognizes the bus loading areas by the canopies which cut like projectiles through the connector. Beyond the ends of the “projectiles”, planes are visible as they land at the airport. Shadows of the structure are broken as an endless stream of passengers flow in both directions. The north wall is filled with moving shadows passing and colliding. At the end of the passage the airport terminal is visible across the street; the tails of airplanes move slowly behind the airport walls. Descending the stairs, the ceiling compresses downward, recalling the compression felt on the train as it moved beneath the station. At the other side of the street, in the airport terminal, escalators carry passengers upwards as light spills from above. At the top a skylight reveals the sky, the next destination of the passenger.
CONCLUSIONS

While this thesis began with an emphasis placed on the movement of man \textit{the individual}, I have found that attempts to derive architectural form directly from human motion to be limiting, rather than liberating. Therefore, throughout the evolution of my thesis I have expanded my study of motion to include the dynamics of the environment as a form shaping force. Such a process allows the creation of sculptural form for use as a datum for design. This datum may \textit{then} be manipulated in reaction to the movement of man. Man neither lives nor reacts in a vacuum; the motion of man, rather, is guided by the dynamics of a natural, constructed or even imaginary environment. Within this environment man is one force among many. If an architecture can be created which derives from a symbiotic relationship between all levels of environmental dynamics, perhaps harmony might be born from disharmony, and \textit{true} cities from the conglomerations of buildings which are today called cities.
ENDNOTES


7Bloomer, p.58.

8Fraleigh, p. 178.


11Kepes, p. 45.

12Bloomer.


ILLUSTRATIONS


BIBLIOGRAPHY


BIBLIOGRAPHY - TRANSIT FACILITIES


