THE PENNSYLVANIA STATE UNIVERSITY
SCHREYER HONORS COLLEGE

STUCKEMAN SCHOOL OF ARCHITECTURE AND LANDSCAPE ARCHITECTURE
DEPARTMENT OF ARCHITECTURE

MATERIAL AND IMMATERIAL

Designing an Architecture of Cognitive Systems

MATTHEW R. GRAHAM
Spring 2012

A thesis submitted in partial fulfillment of the
requirements for a baccalaureate degree in
Architecture with honors in Architecture

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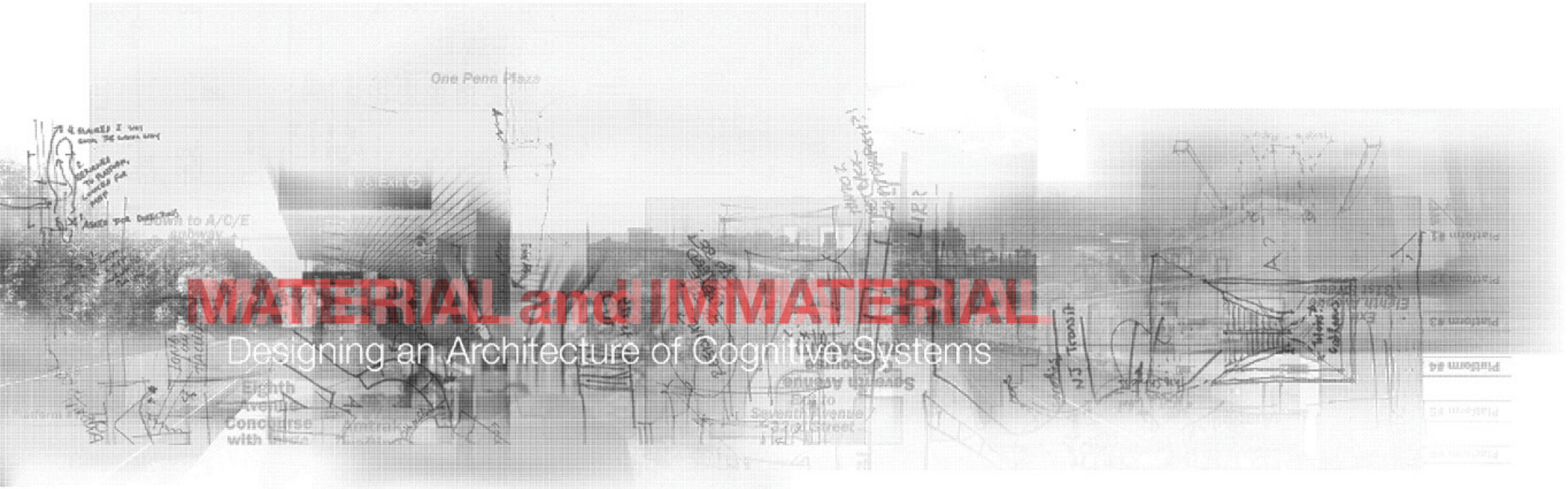


MATTHEW R. GRAHAM

Material and Immaterial

DESIGNING AN ARCHITECTURE OF COGNITIVE SYSTEMS

Architecture, though initially created from the dual forces of human behavior and physical necessity, has become abstracted and separated from a psychological understanding of space, rendering the ways in which architects design buildings disconnected from the ways in which we inherently experience and use space. In the building of our environments, architecture has always been rooted in the material and mmaterial, a concept that translates into space simultaneously existing in both the realm of the Res Extensa, or physical environment, and the Res Cogitans, or inhabitable mental space. Over time, however, as our definition of space has drifted toward the Res Extensa, architecture has tended toward crafting the material, treating the physical volume that we bodily inhabit superior to space shaped in our minds. This way of thinking is at odds with the ways in which we experience space and form an understanding of it as we move through it, use it, and live. Through experience, buildings are not objects, but a continuum, a series of moments distorted and rearranged in the mind in a constant play between our immediate surroundings and a greater understanding of their connections. In order for buildings to be responsive to their users, then, architecture must be viewed as a negotiator and connector between these immaterial and material elements of human experience.

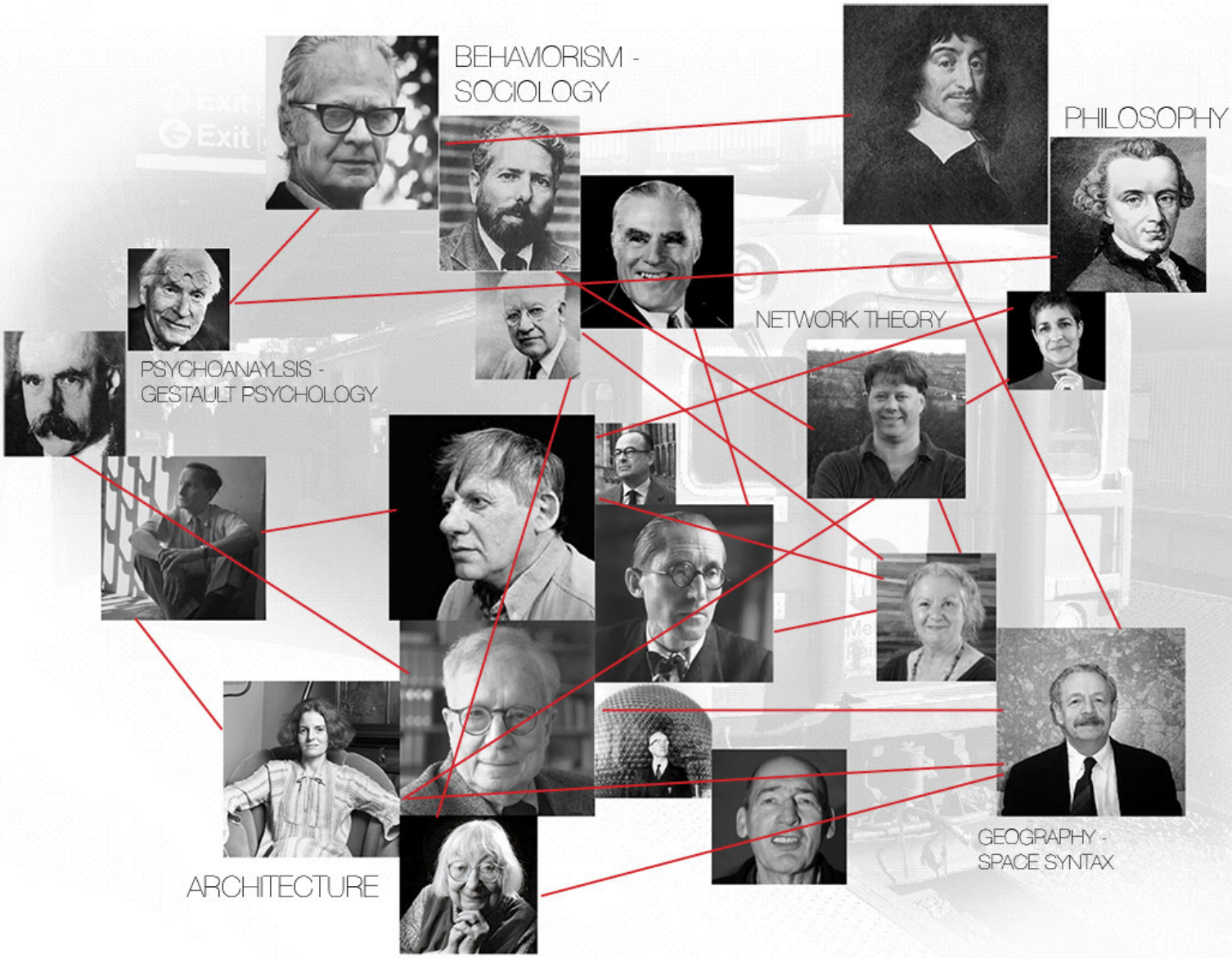
THESIS STATEMENT

Architecture, though initially created from the dual forces of human behavior and physical necessity, has become abstracted and separated from a psychological understanding of space, rendering the ways in which architects design buildings disconnected from the ways in which we inherently experience and use space. In the building of our environments, architecture has always been rooted in the material and immaterial, a concept that translates into space simultaneously existing in both the realm of the Res Extensa, or physical environment, and the Res Cogitans, or inhabitable mental space. Over time, however, as our definition of space has drifted toward the Res Extensa, architecture has tended toward crafting the material, treating the physical volume that we bodily ihabit superior to space shaped in our minds. This way of thinking is at odds with the ways in which we experience space and form an understanding of it as we move through it, use it, and live. Through experience, buildings are not objects, but a continuum, a series of moments distorted and rearranged in the mind in a constant play between our immediate surroundings and a greater understanding of their connections. In order for buildings to be responsive to their users, then, architecture must be viewed as a negotiator and connector between these immaterial and material elements of human experience.

New York's Pennsylvania Station is a network that extends far beyond its physical location, although it has been treated as an object throughout its history. The initial McKim, Mead, and White building of 1910 was an object-signifier of the system, a symbol and head house of the vast reach of the rail network. When this building was demolished in 1963, the system remained, but the symbol was removed and replaced with unrelated objects, leaving the network disconnected from the urban fabric. By understanding Penn Station as a cognitive network of systems, a new building can be designed where these systems themselves form the building and are the building, rather than an object that merely represents the greater network. This building, composed through elements of support, user, social, and information systems are added over time as portions of the existing Penn Station and Penn Plaza complex are removed and taken into the network. This material is expanded outward to become useful in other parts ofthe system and signifies these distant points as a part of the continuous whole of the building. In this way, the design process of the building does not end with the creation of material, but is only complete when compressed in the mind of the system's users

MATERIAL and IMMATERIAL

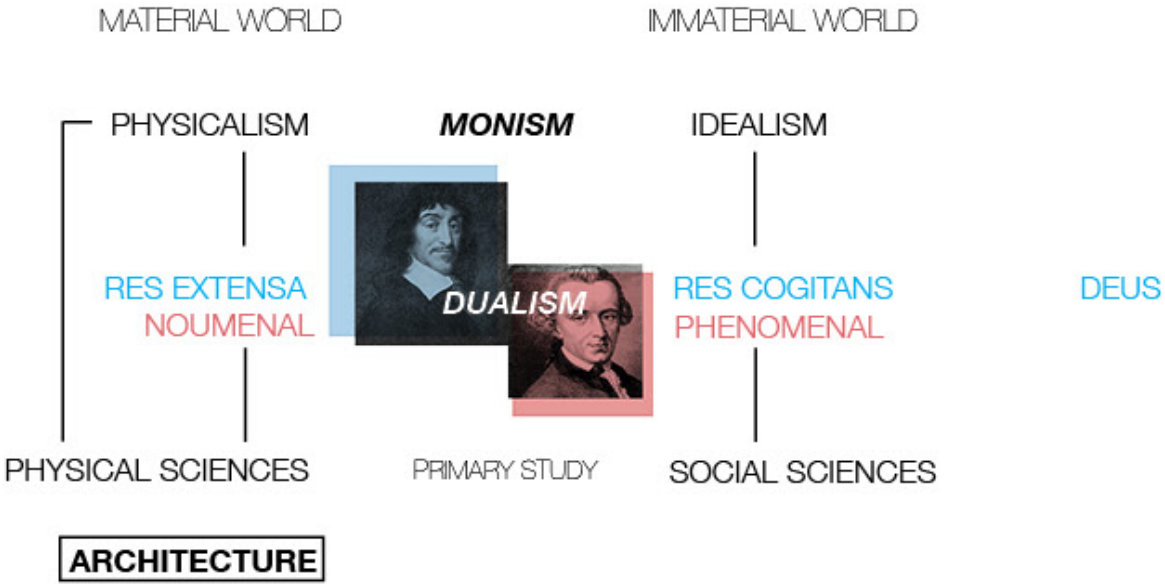
Designing an Architecture of Cognitive Systems


BEHAVIORISM -
SOCIOLOGY
PHILOSOPHY
NETWORK THEORY
PSYCHOANAYLSIS -
GESTAULT PSYCHOLOGY
ARCHITECTURE
GEOGRAPHY -
SPACE SYNTAX

Philosophical Foundations

BODY-MIND PROBLEM
RES EXTENSA AND RES COGNITANS

Body-Mind Problem



"It was perhaps what I now think, viz., that this wax was neither the sweetness of honey, the pleasant odor of flowers, the whiteness, the figure, nor the sound, but only a body that a little before appeared to me conspicuous under these forms, and which is now perceived under others. But, to speak precisely, what is it that I imagine when I think of it in this way? Let it be attentively considered, and, retrenching all that does not belong to the wax, let us see what remains. There certainly remains nothing, except something extended, flexible, and movable. . .

I must, therefore, admit that I cannot even comprehend by imagination what the piece of wax is, and that it is the mind alone which perceives it"

-"SECOND MEDIATATION" BY RENE DESCARTES

Architectural Foundations

MATERIAL AND IMMATERIAL CATALYSTS
ABSTRACTION INTO TROPES

RES COGITANS

BEHAVIOR AND SOCIAL

RES EXTENSA

PHYSICAL

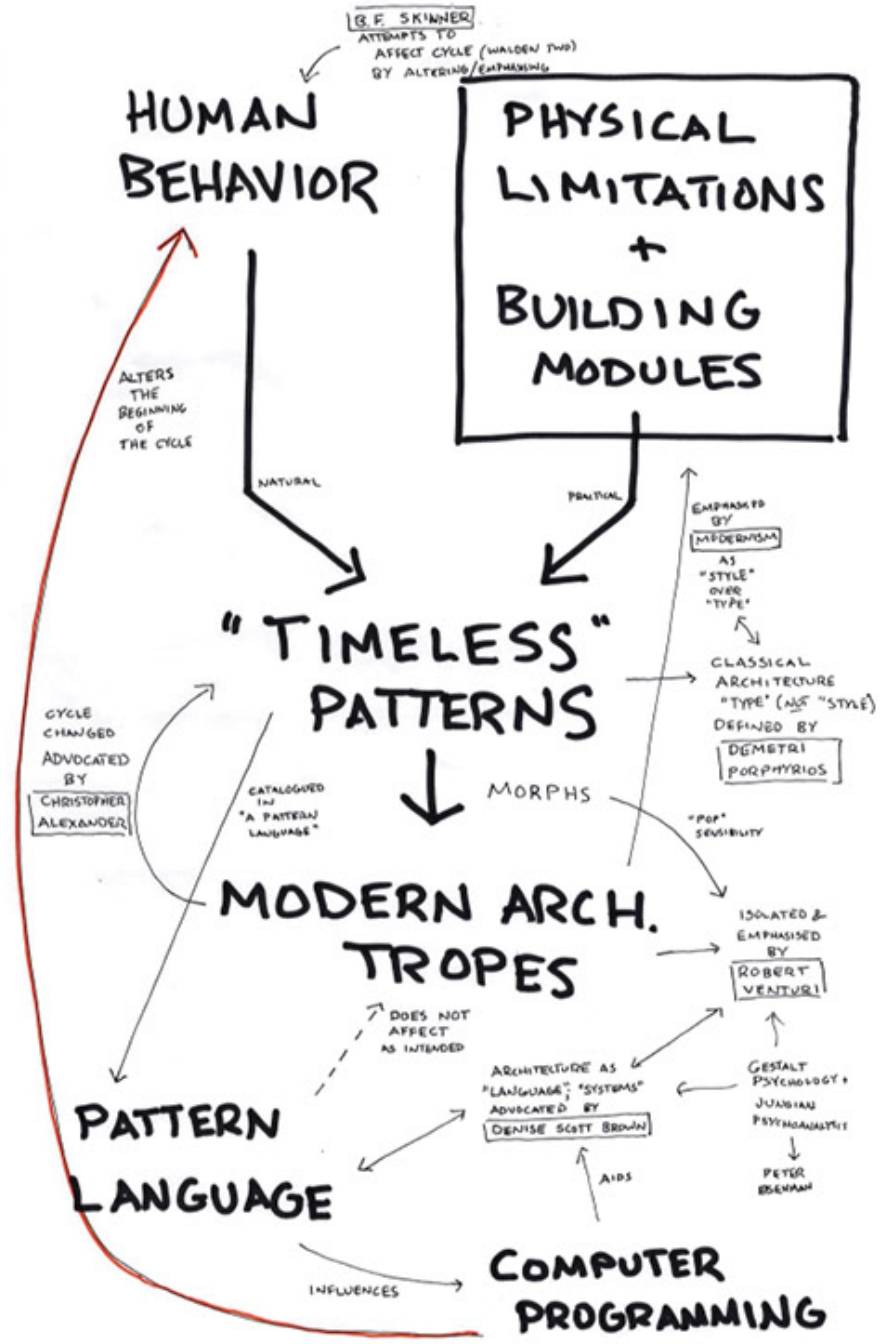
TYPE

TRADITIONAL ARCHITECTURE

ABSTRACTION

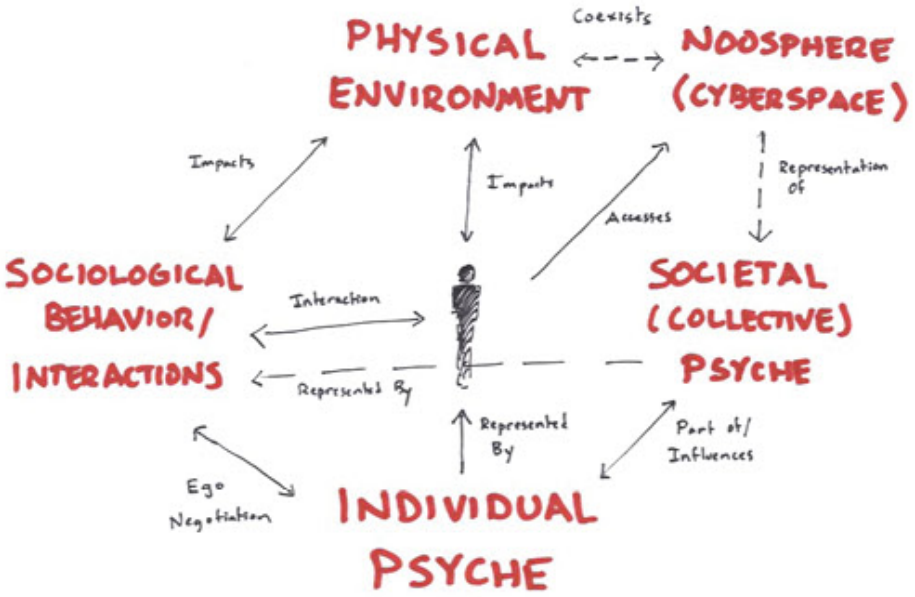
STYLE

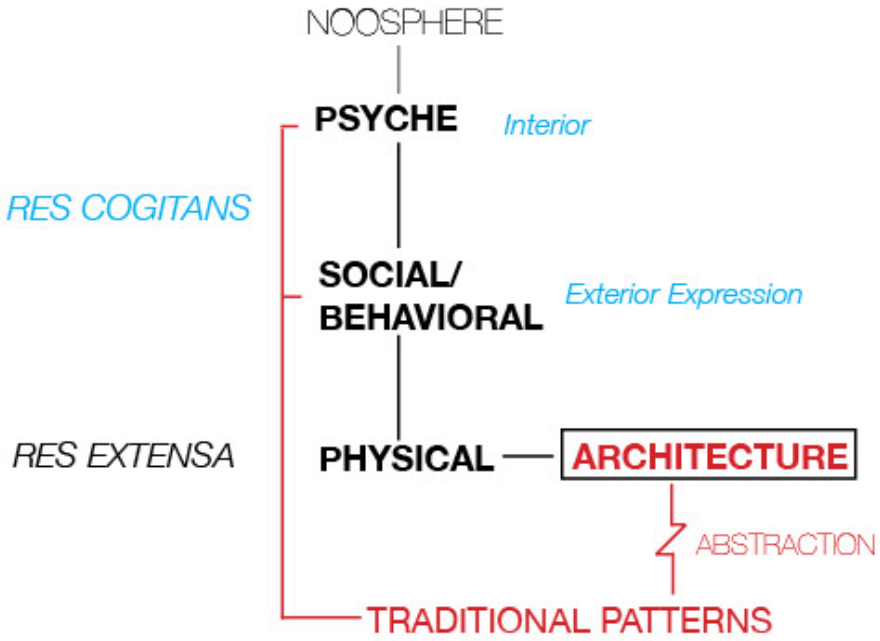
CONTEMPORARY ARCHITECTURAL TROPES

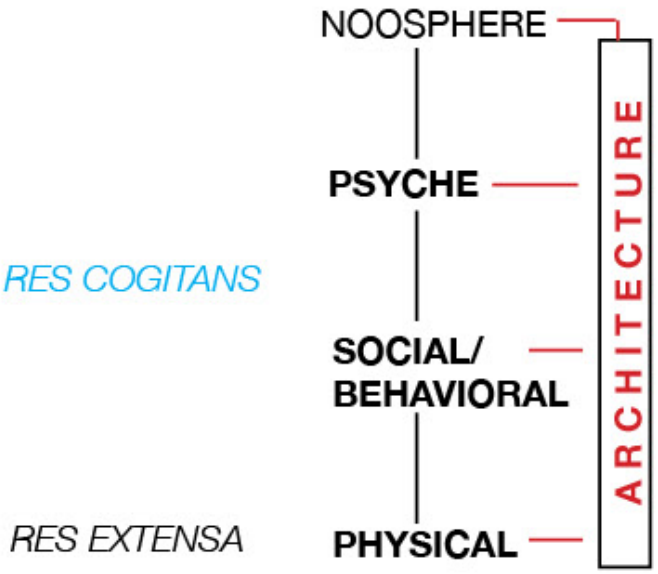


Psychological Concepts

PSYCHOLOGICAL LAYERS OF SPACE
ARCHITECTURE'S RELATIONSHIP TO RES COGITANS

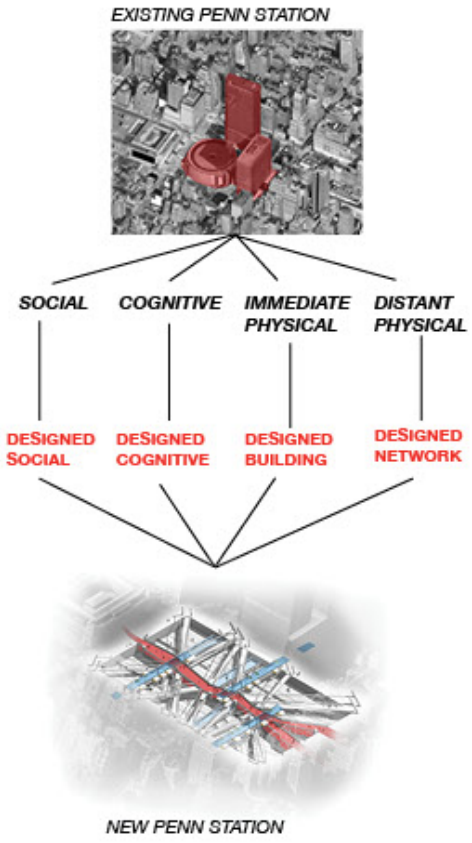






Design Concepts

DESIGN PROCESS DIAGRAM
DESIGN PROCESS COMPONENTS

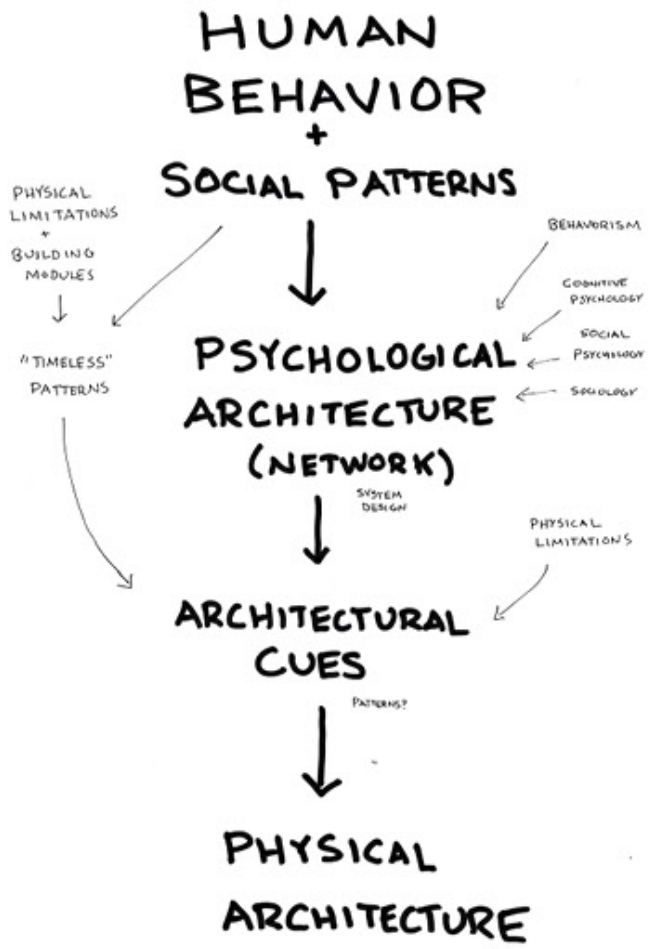


RES COGITANS

ARCHITECTURE OF
RES COGITANS

Translation

ARCHITECTURE OF
RES EXTENSA *AND*
RES COGITANS



Building as Psychological Network

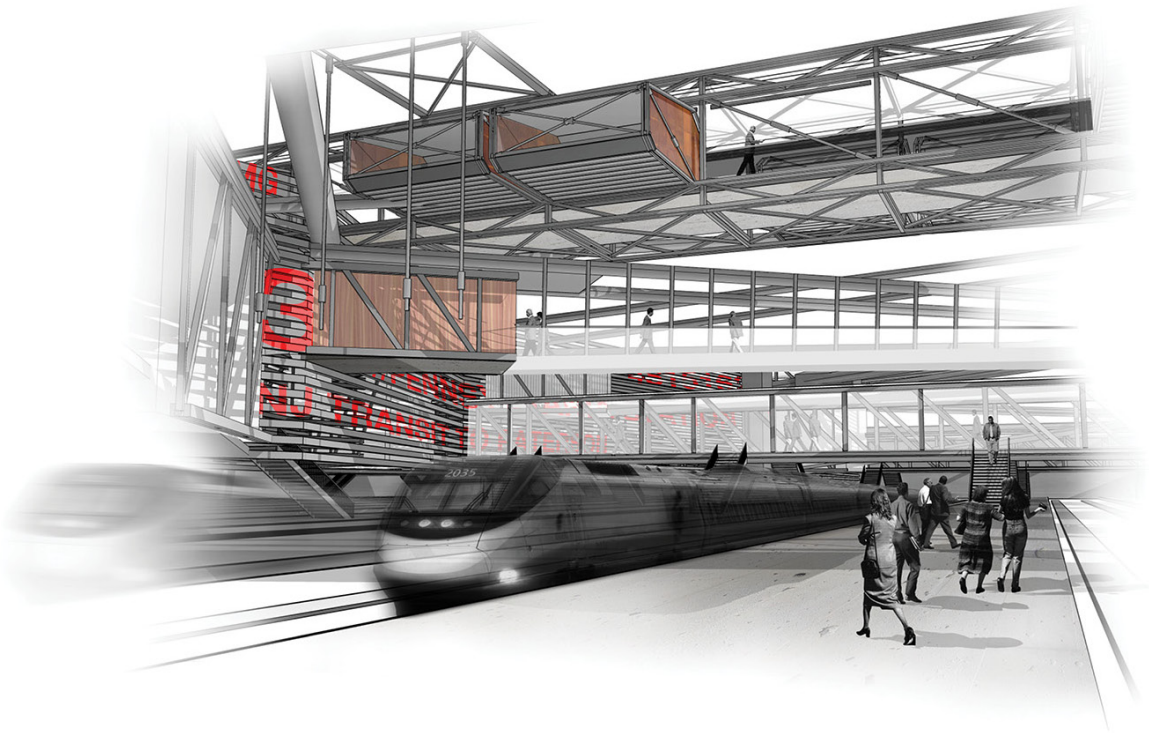
EARLY BUILDING SYSTEMS IDEAS

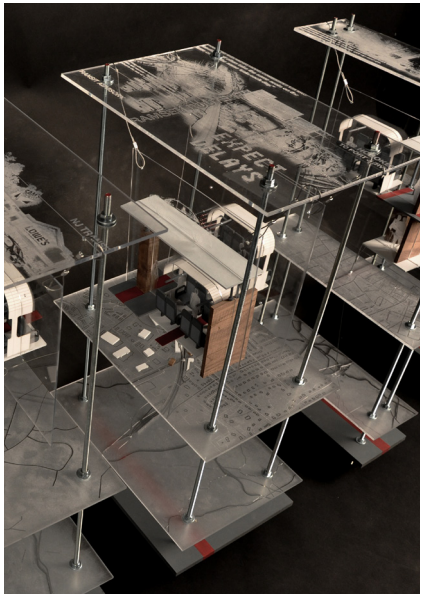
If architecture is to be a negotiator and connector between the Res Extensa and Res Cogitans elements of human experience, a form must be developed as a way of representing mental and social space in a similar method to physical space.

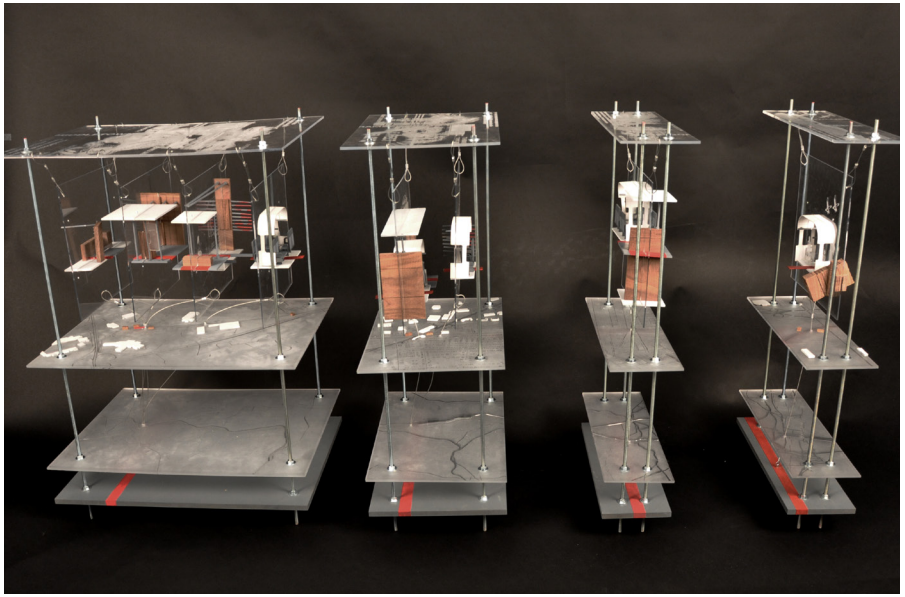
If a building is first treated as a network, a series of interconnected systems (as espoused by Denise Scott Brown and the space syntax movement), then it can be understood as multiple interlocking layers of spatial systems, technical systems, behavioral systems, and social systems. In this way, a building will not be designed as physical and material space first, but rather as a Res Cogitans web of mental and behavioral elements.

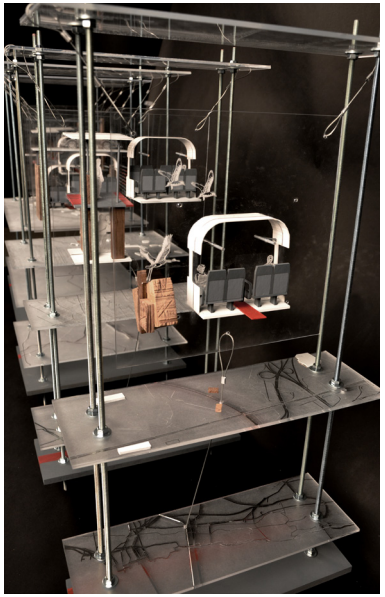
This network can then be translated into physical form by means of architectural cues, following traditional patterns and psychological principles. This step, the first and most extensive used in pattern language and followers of gestalt psychology (like Robert Venturi), is used as a *direct* connection between the mental understanding of space and the physical, rather than an indirect assumption.

Using the vocabulary of space syntax, this will allow mental and behavioral space to be on *either side* of the physical architecture, as it both creates the physical form and is affected by it.









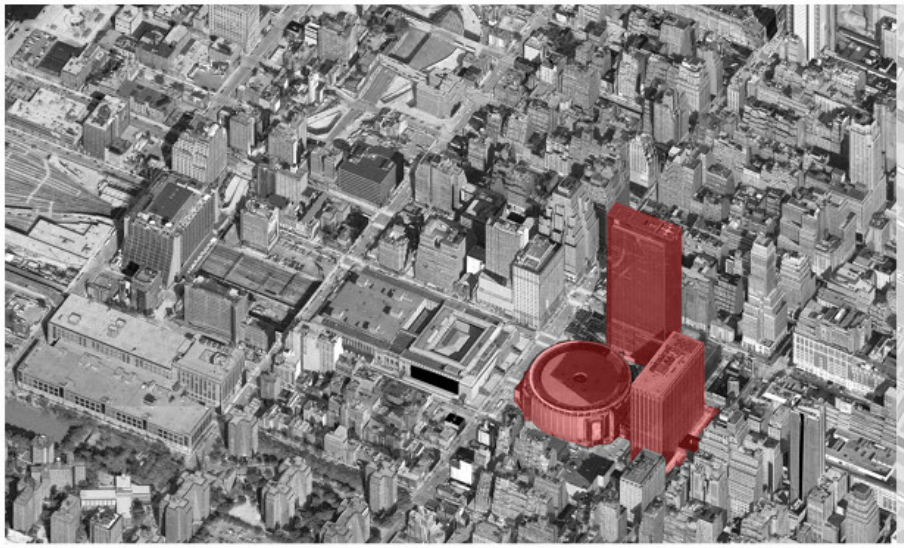
Cognitive Site Analysis

COGNITIVE MAPPING
USER EXPERIENCE
'IMMATERIAL' SITE PLANS


One Penn Plaza
Down to A/C/E subway
Exit to Eighth Avenue / 33rd Street
Eighth Avenue Concourse with access to departure boards (Amtrak)
Amtrak waiting room
NJ Transit
Seventh Avenue Concourse (NJ TRANSIT)
LIRR
Exit to Seventh Avenue / 31st Street
Exit to Eighth Avenue / 31st Street

Pennsylvania Station Site

MANHATTAN, NEW YORK, NEW YORK
BETWEEN 31ST AND 33RD STREETS
AND 7TH AND 8TH AVENUES

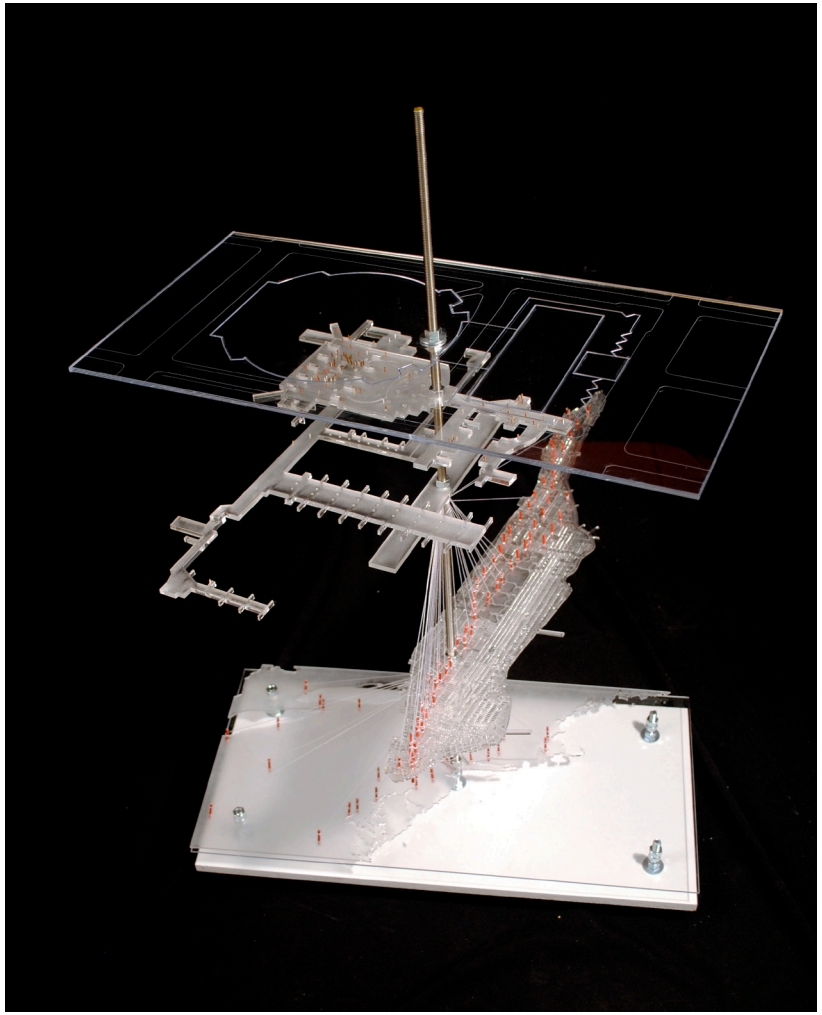


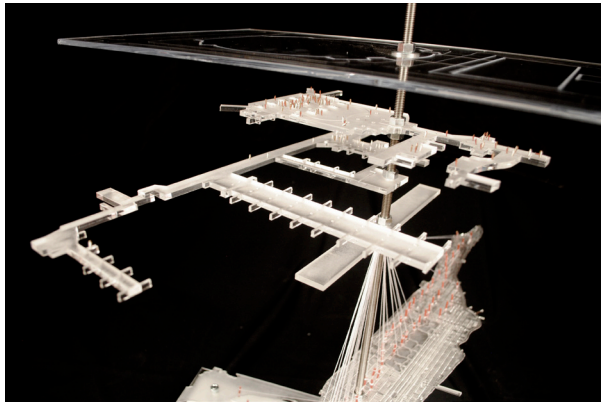
BIRDSEYE LOOKING NORTH
SHOWING MADISON SQUARE GARDEN, 2 PENN PLAZA, AND 4 PENN PLAZA

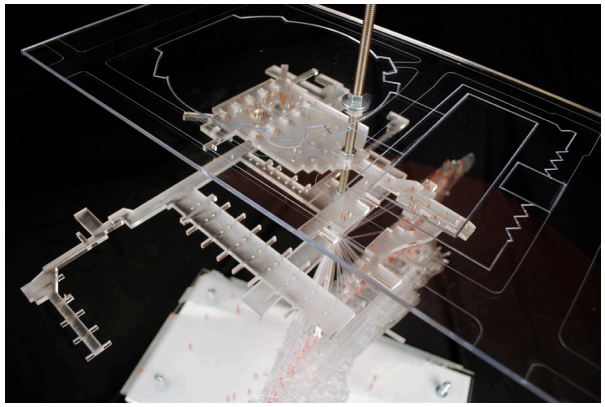
SITE PLAN
WITH ENTIRE PENN PLAZA COMPLEX HIGHLIGHTED

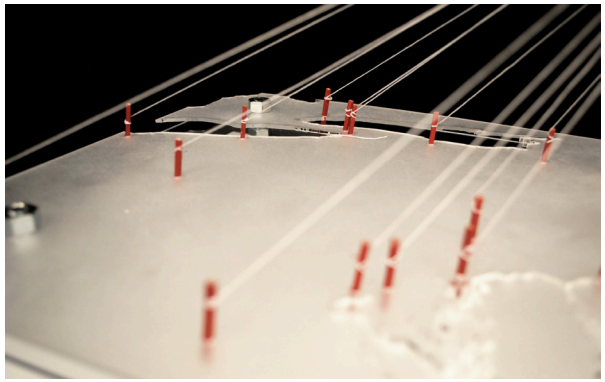
Site Model

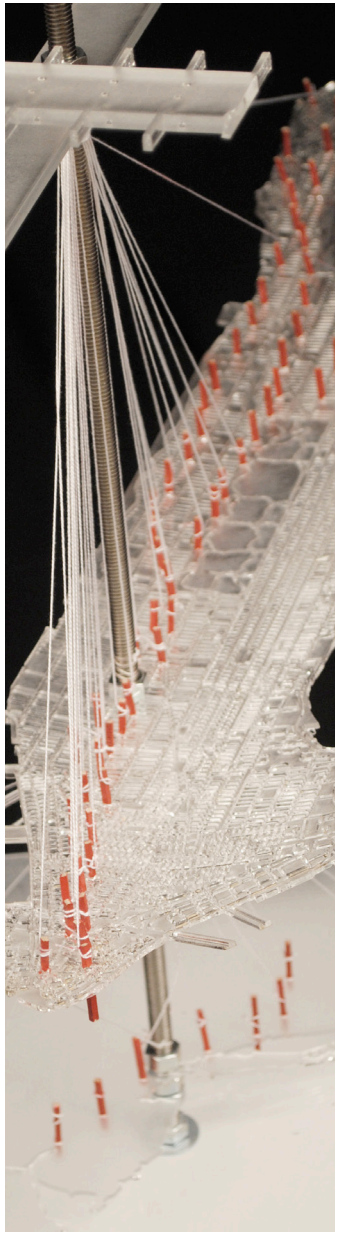
SHOWING EXISITING PENN STATION
AND ITS DISTANT CONNECTIONS

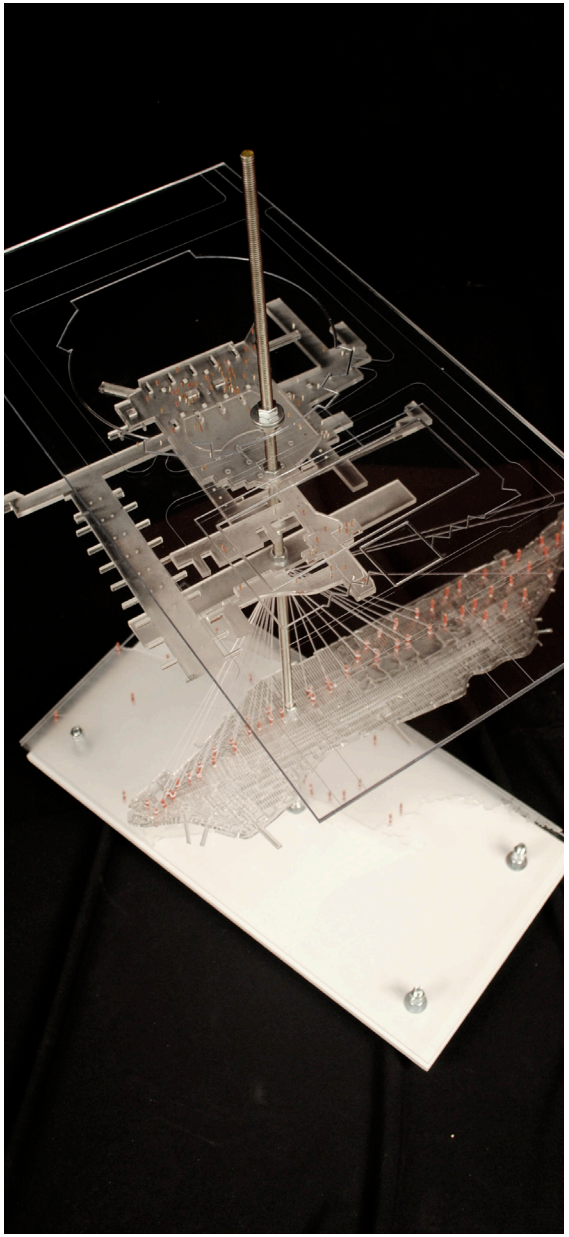


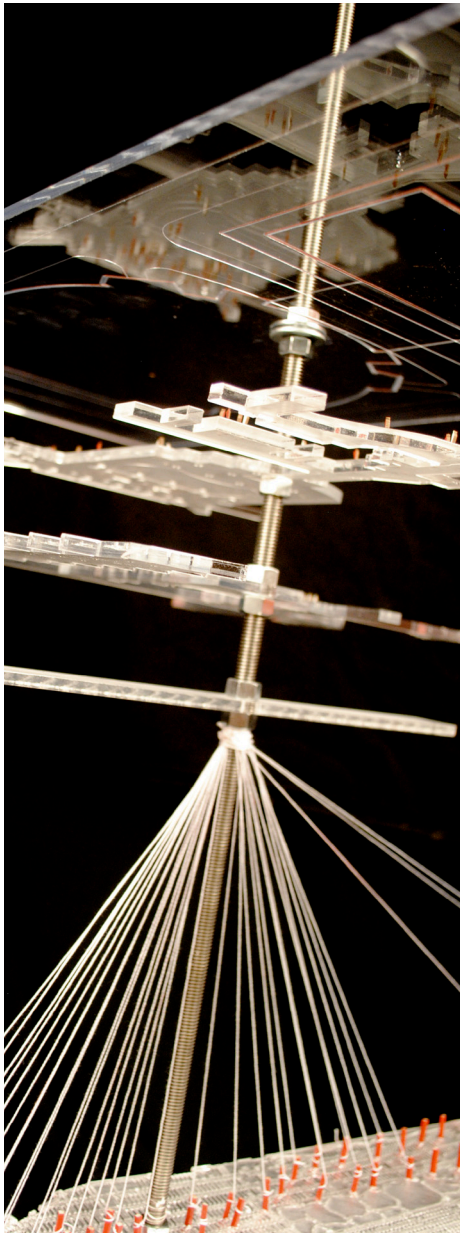


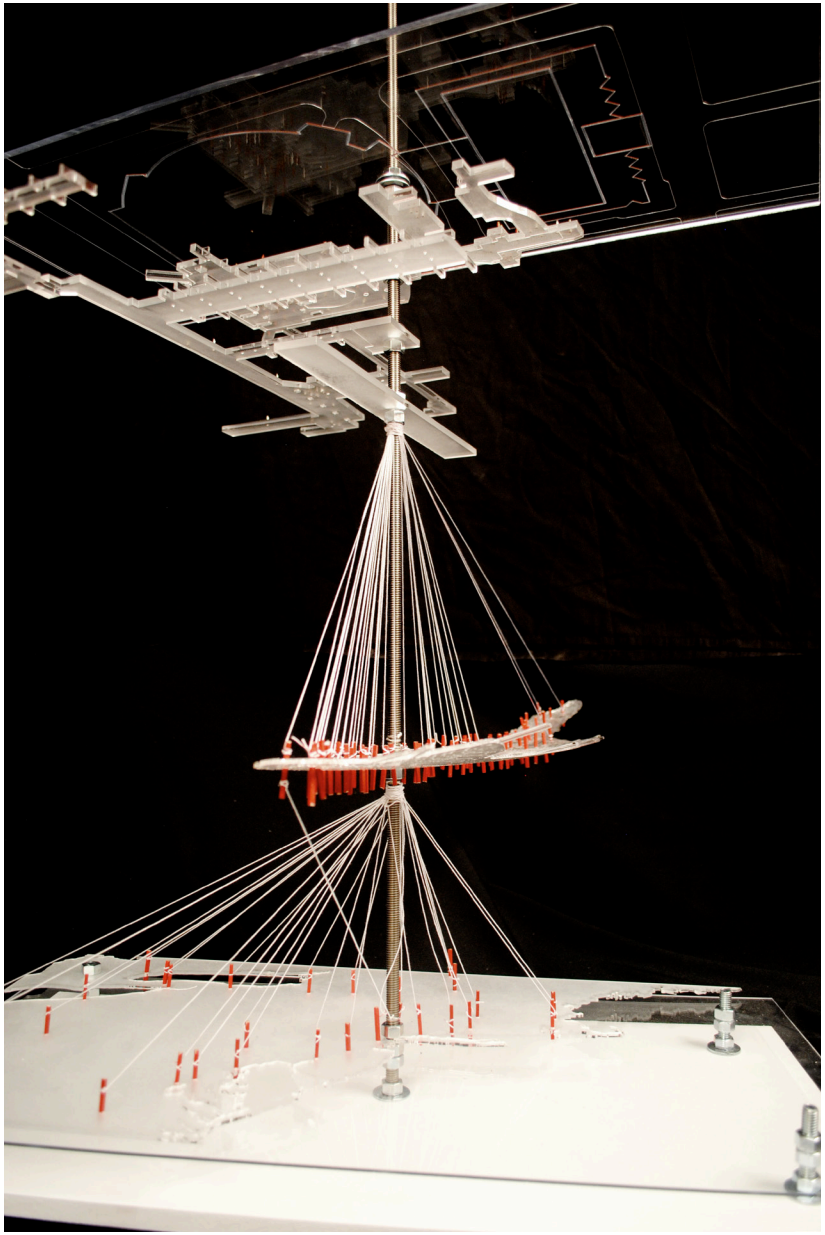


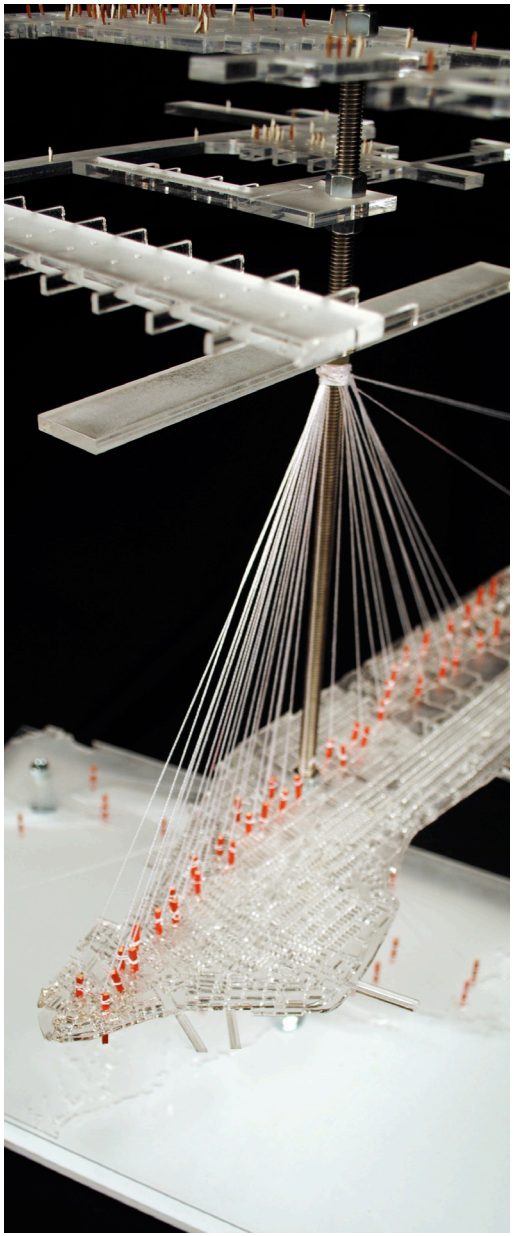


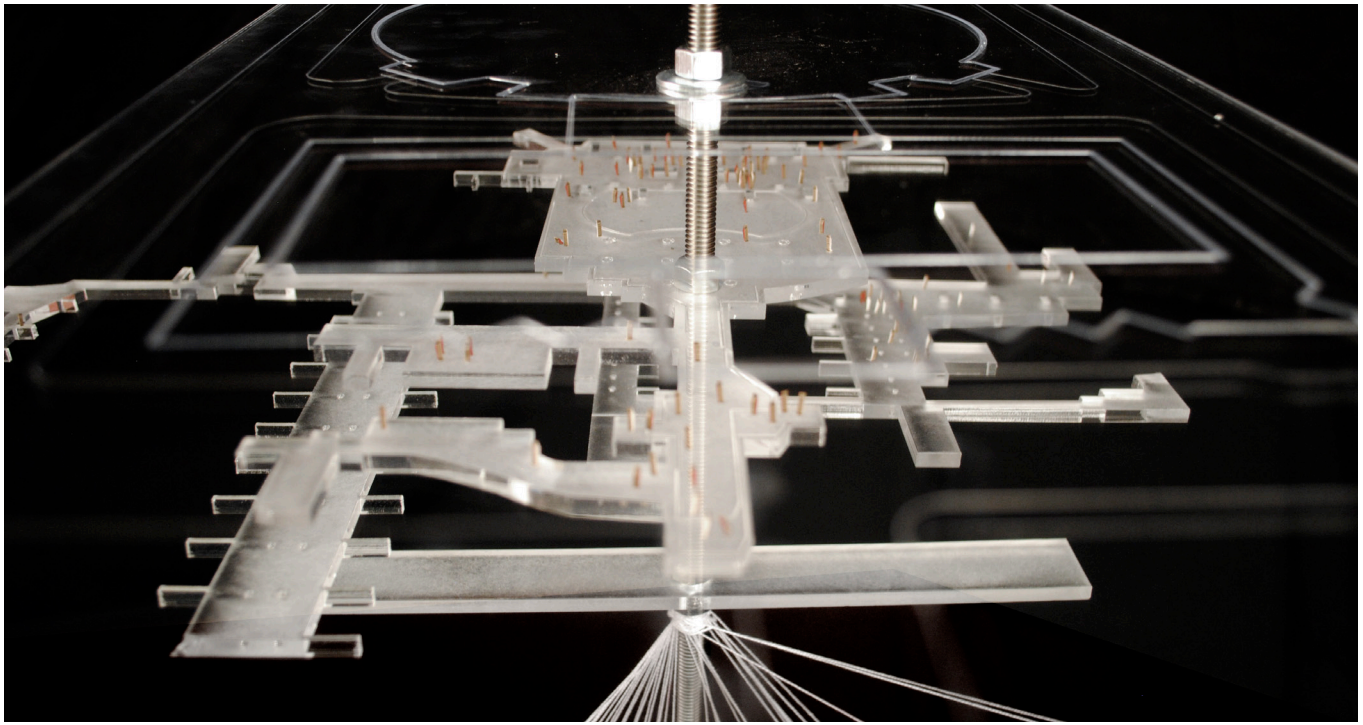


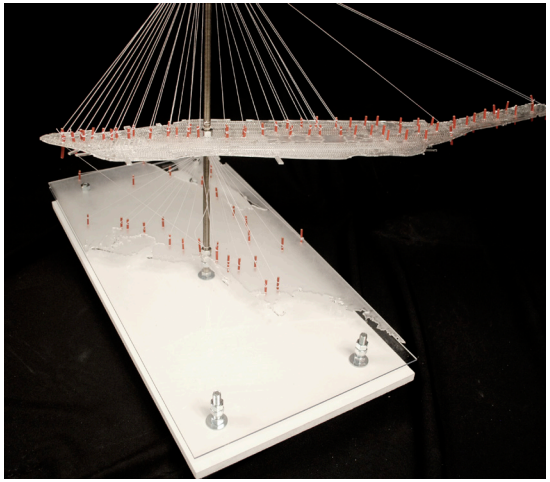


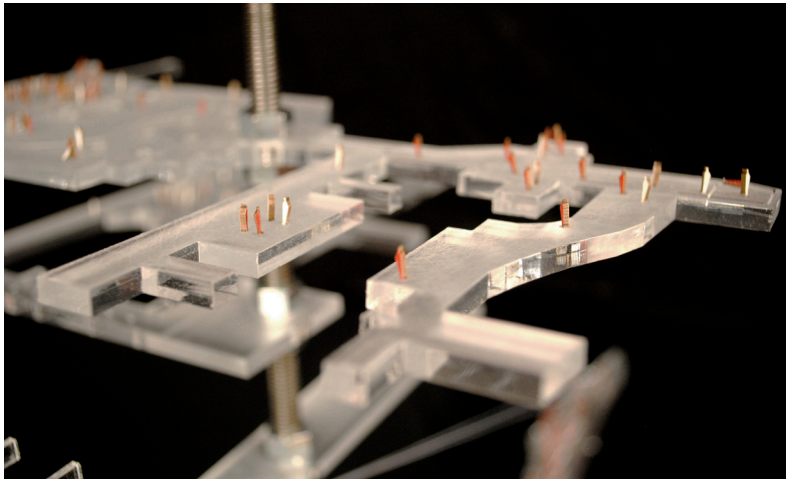








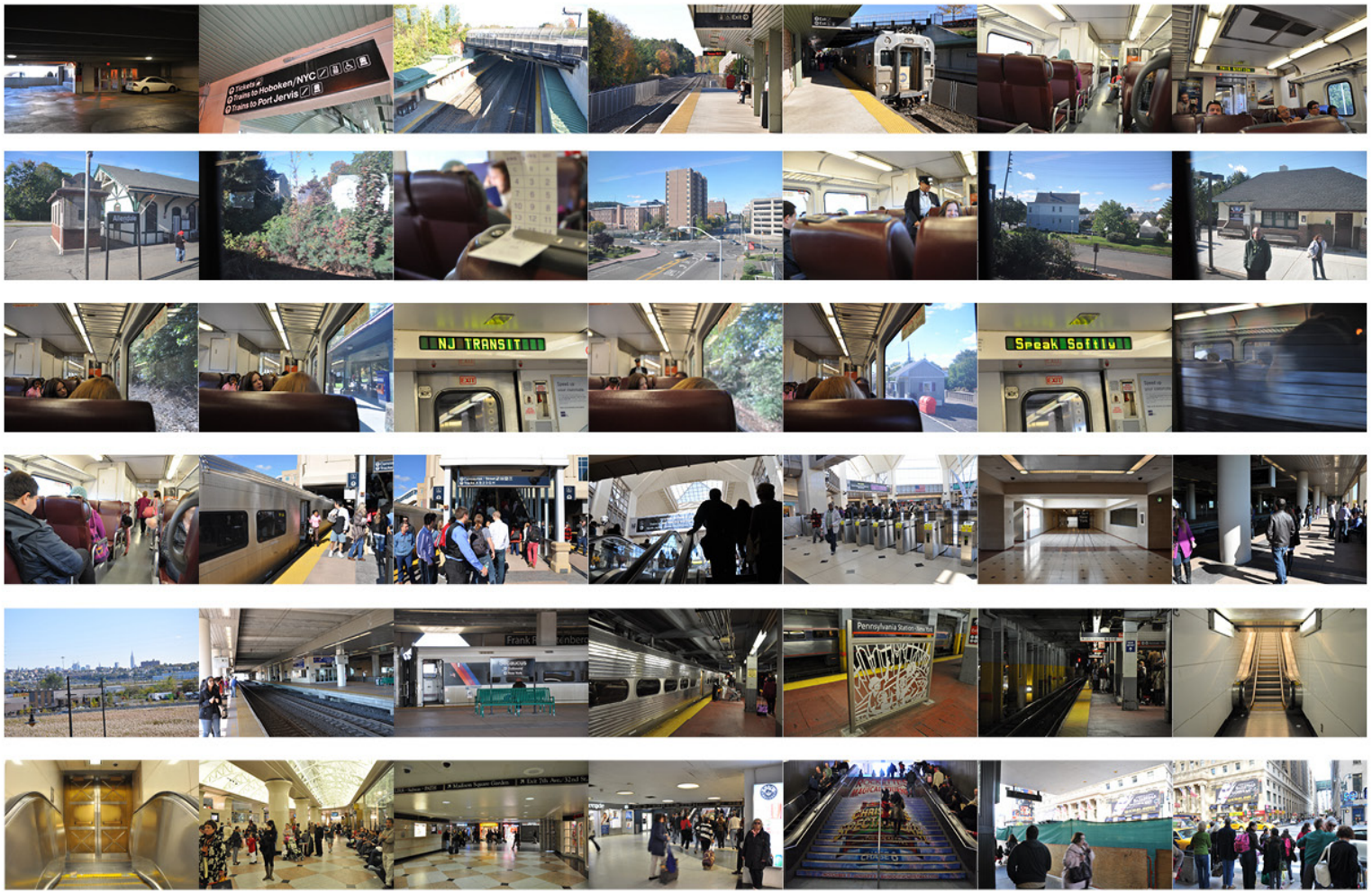




Penn Station as Pathway

ANALYSIS OF TRAIN FROM RAMSEY RT 17 STATION TO PENN STATION

Ramsey, NJ



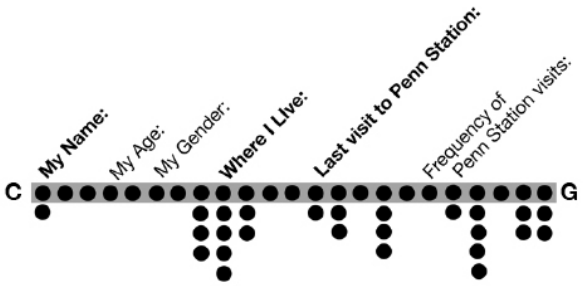
7th Ave & 32nd St, New York, NY

Cognitive Mapping Exercise

IMMATERIAL AND MEMORY MAPPING
USER UNDERSTANDING OF STATION

Penn Station
Cognitive Guide C G

Know something, Share something



1. On a separate piece of paper, draw a map of Penn Station (your understanding of the station's layout)

2. As a separate map, draw the location of Penn Station

3. Again as a separate map, draw your typical route to Penn Station and from Penn Station to your final destination

4. Write directions to the NJ Transit area from both of the locations pictured at left. If you don't know how, state that you don't know.

5.

See Next Page

An attempt to develop a representation of the subject's Res Cognitas understanding of the space. Drawing and memory are utilized to avoid physicalist bias.

This step attempts to ascertain the subject's understanding of Penn Station's connection to its surroundings and the urban fabric

This drawing shows the station's connections to various distant spaces and attempts to clarify's the subject's understanding of the station as part of a greater system and sequence. It can also show the relative importance of the station in the subject's system.

This exercise attempts to show the difficulty of navigating the station and most subject's lack of understanding of how the parts of the station are connected to its greater whole.

Penn Station

Cognitive Guide

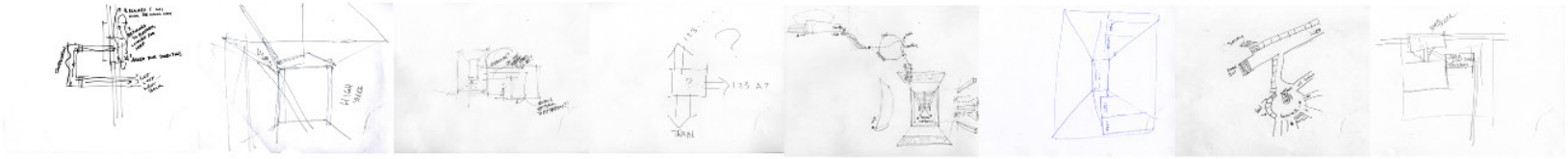
Know something, Share something

6 Number these pictures in a sequence that makes sense to you

This exercise attempts to see what connections subjects can draw between the locations pictured to the left and the significance of the sequence they select. Will the subjects group locations that are located near one another? Will they put them in the sequence that they experience through the station?

Cognitive Mapping Analysis

HAND-DRAWN USER MAPS



1

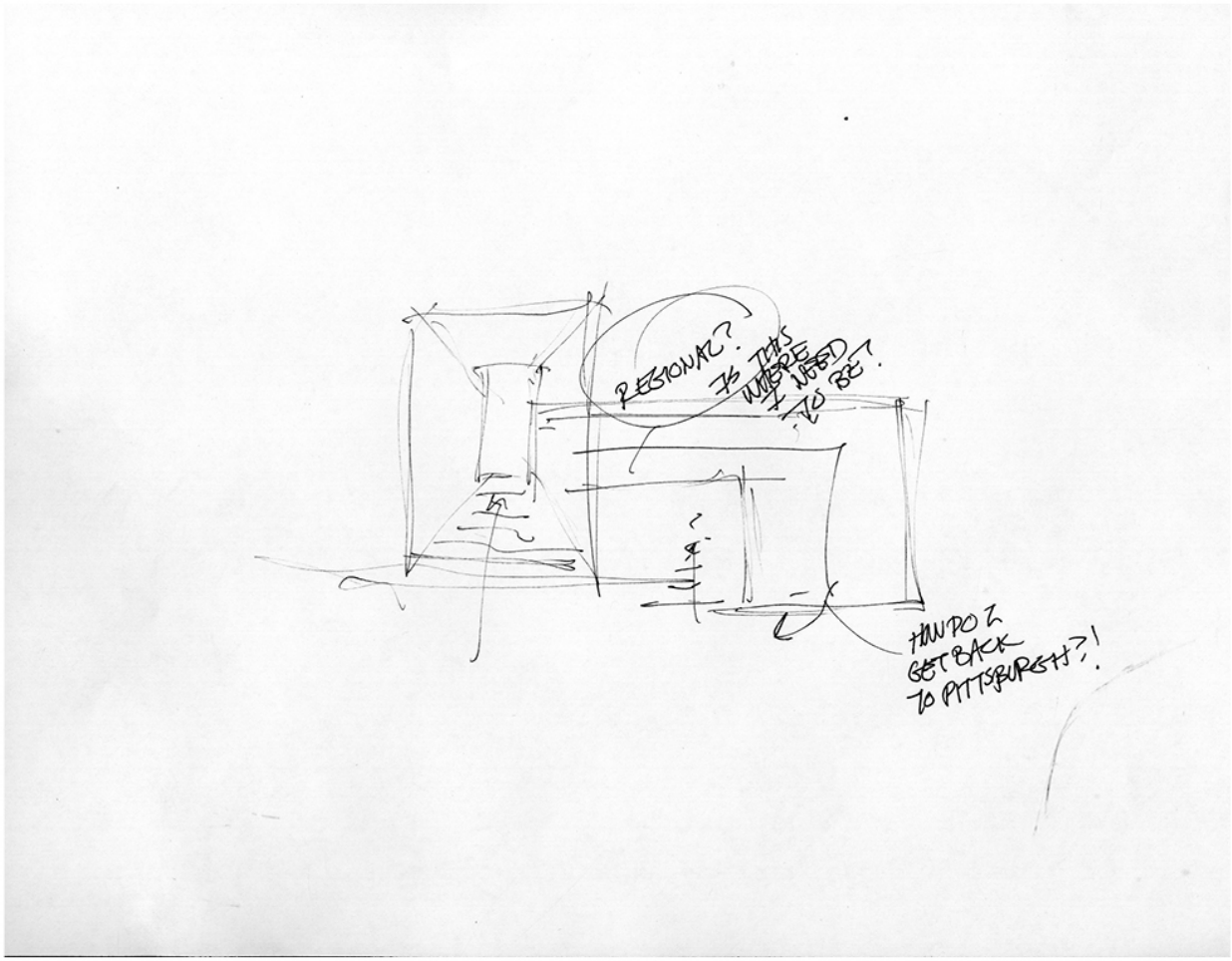
Subjects often expressed confusion while in the station. All drawings, even the few that are fairly similar to the station's actual layout, only express a small portion of the building, and the greatest moments of error occur between systems. A few subjects drew perspectives of moments within the station.

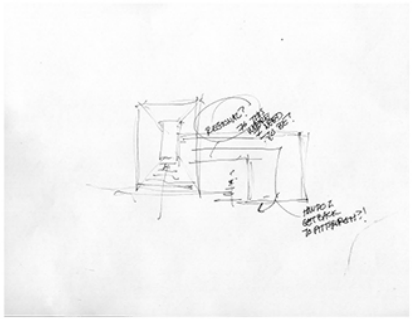
2

Most subjects drew Manhattan although a few drew more local maps and one drew a more experiential location map. A majority of subjects either located Penn Station in the wrong part of the city (at Grand Central in multiple instances) or drew landmarks in the wrong locations relative to the station.

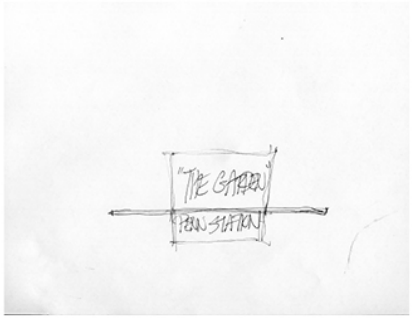
3

Subjects drew and expressed both material/physical networks (buildings, taxis) and immaterial ideas (speed, emotion, time).

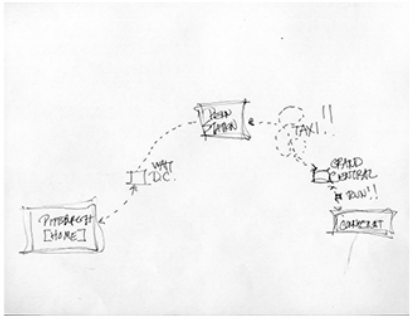

REGIONAL?
IS THIS
WHERE I NEED
TO BE?
HOW DO I
GET BACK
TO PITTSBURGH?!


REGIONAL?
IS THIS
WHERE I NEED
TO BE?
HOW DO I
GET BACK
TO PITTSBURGH?!

1

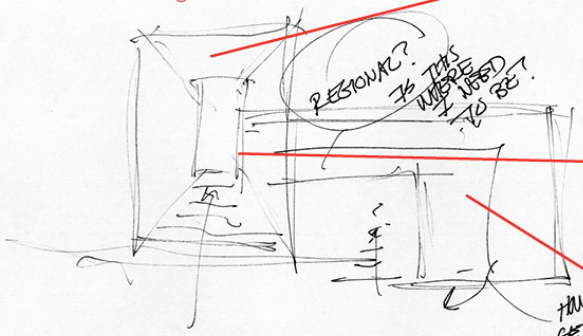

THE GARDEN
PENN STATION

2


PENN STATION
TAXI!!
WHAT
D.C.
GRAND CENTRAL
IN TOWN!!
PITTSBURGH
HOME!
CONNECT

3

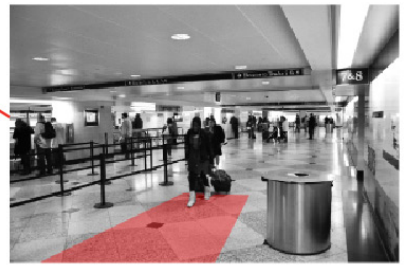
Just the entry portal -
no facade, building, street

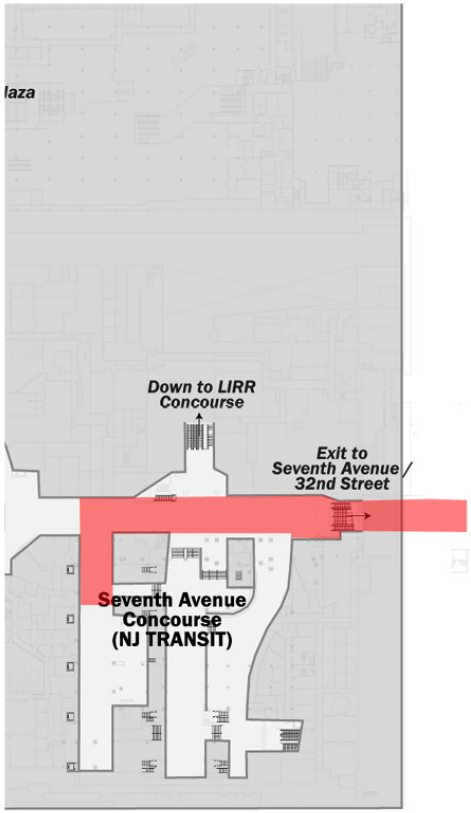


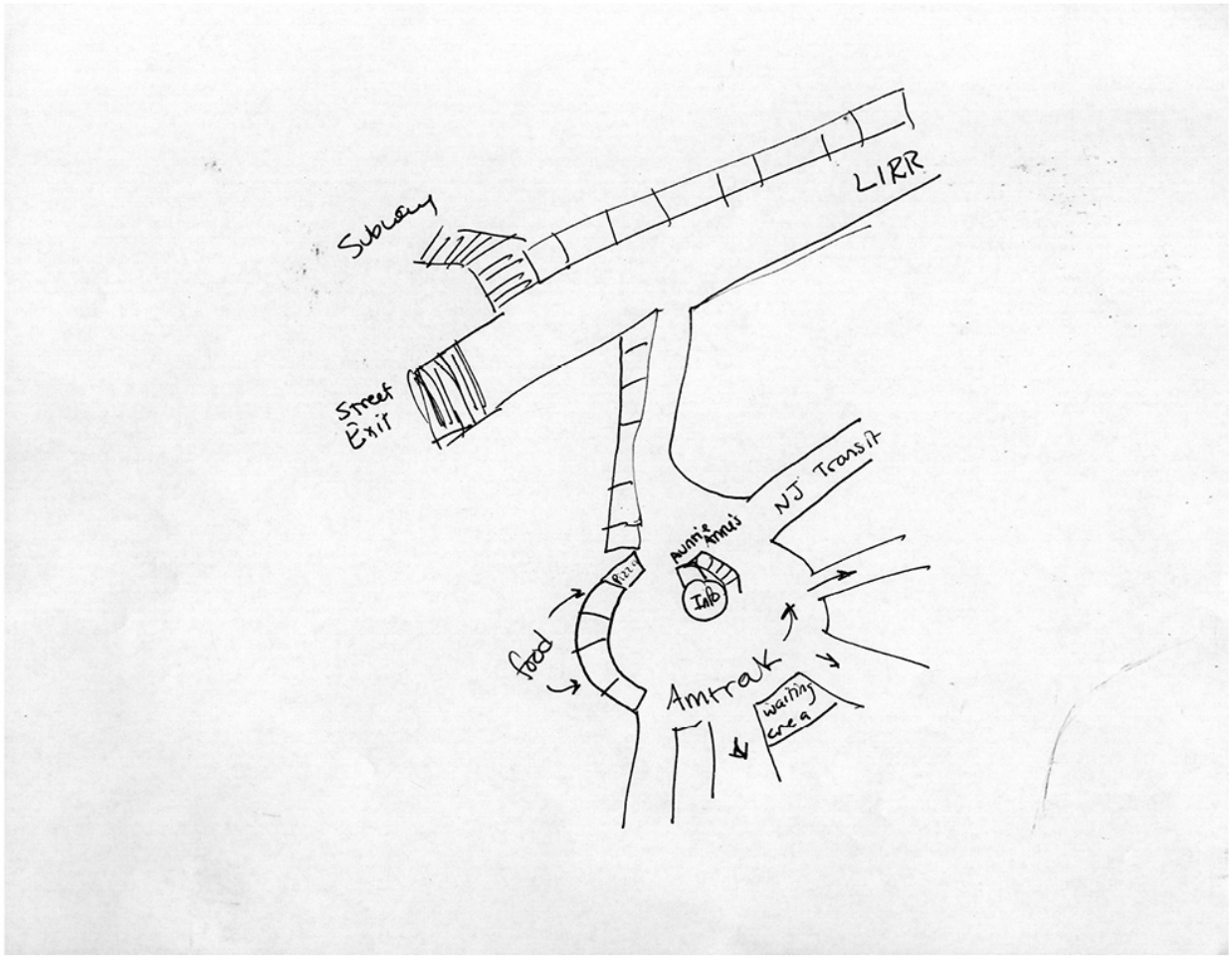
Noted confusion, twice

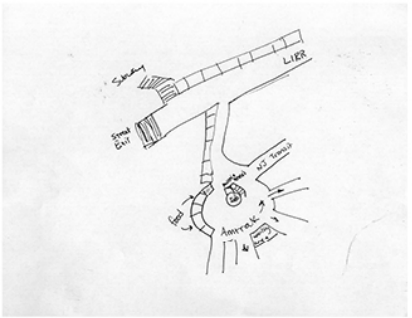
Right turn drawn,
but actually a left turn

Turn toward “REGIONAL?” -
NJ Transit concourse

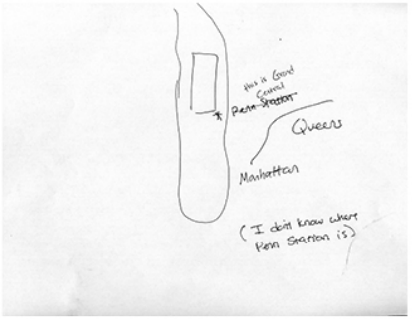




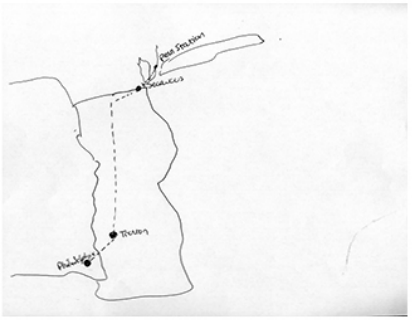

Subway
LIRR
Street Exit
NJ Transit
Info
food
Amtrak
waiting area


Subway
LIRR
Street Exit
NJ Transit
Amtrak

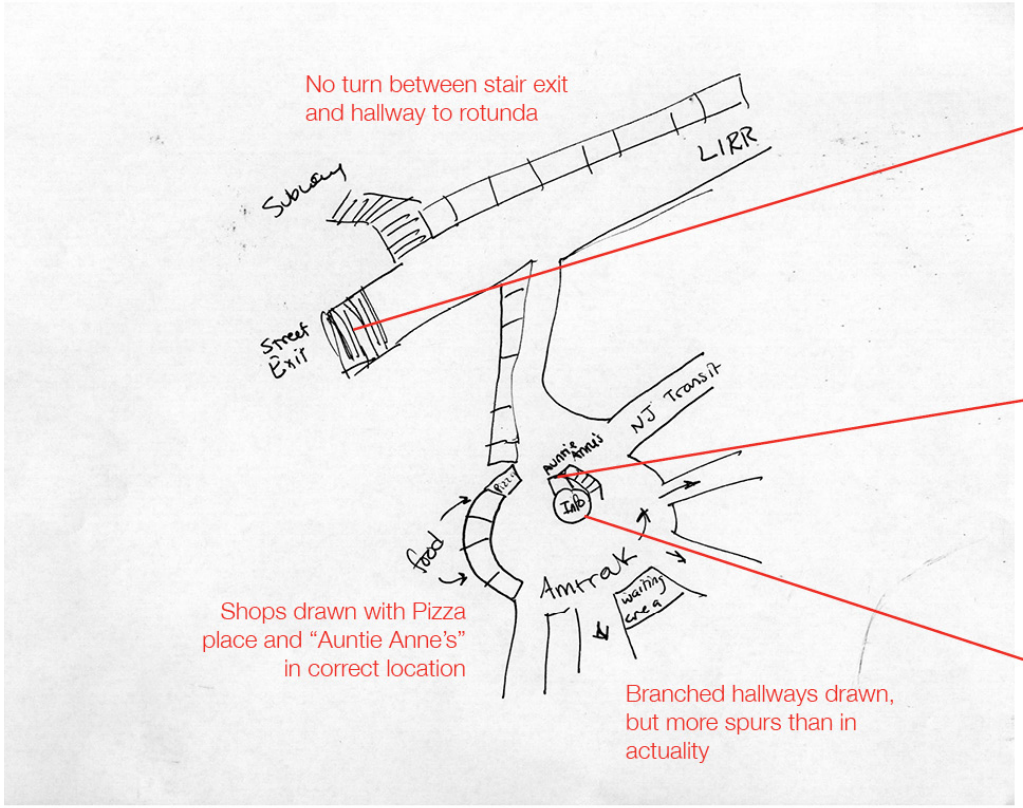
1

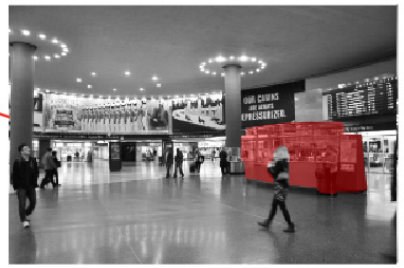

Penn Station
Queens
Manhattan
(I dont know where Penn Station is)

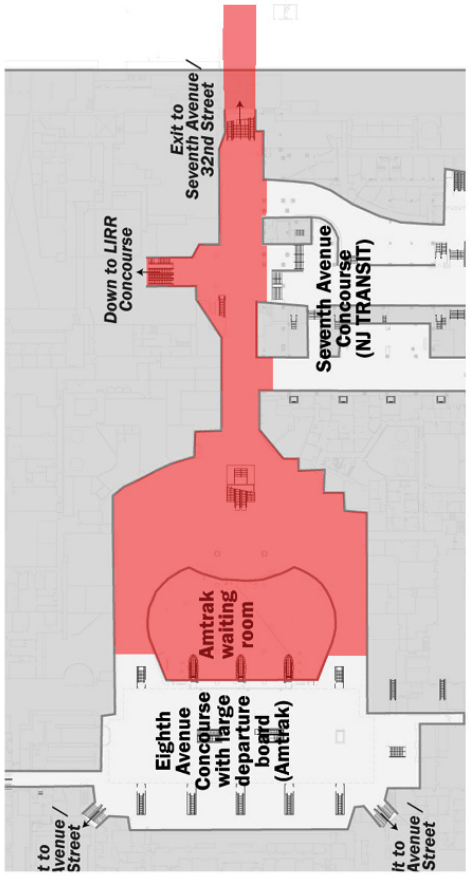
2


Penn Station
Subway

3

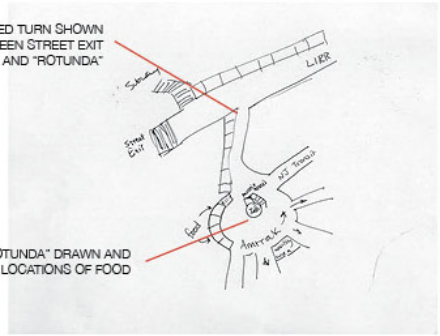

No turn between stair exit
and hallway to rotunda
Subway
LIRR
Street Exit
NJ Transit
Auntie Anne's
Info
food
Amtrak
waiting area
Shops drawn with Pizza
place and "Auntie Anne's"
in correct location
Branched hallways drawn,
but more spurs than in
actuality

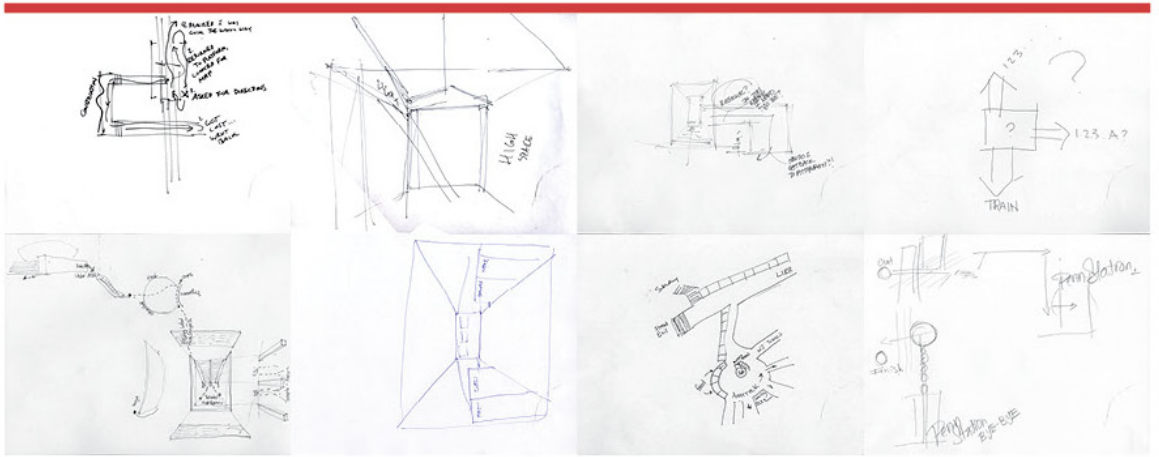



Exit to Seventh Avenue / 32nd Street
Down to LIRR Concourse
Seventh Avenue Concourse (NJ TRANSIT)
Amtrak waiting room
Eighth Avenue Concourse with large departure board (Amtrak)
t to Avenue / Street
lt to Avenue / Street

01 UNDERSTANDING OF STATION LAYOUT

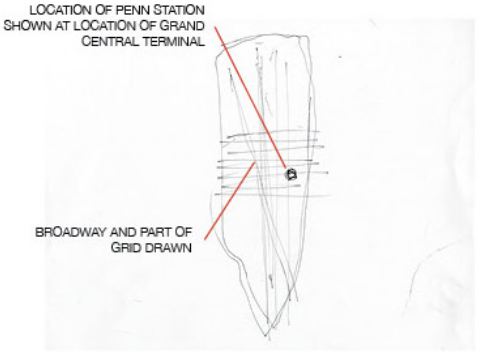
PORTIONS OF BUILDING UNDERSTOOD AND IN RELATION TO SPECIFIC MOMENTS ALONG PATHS

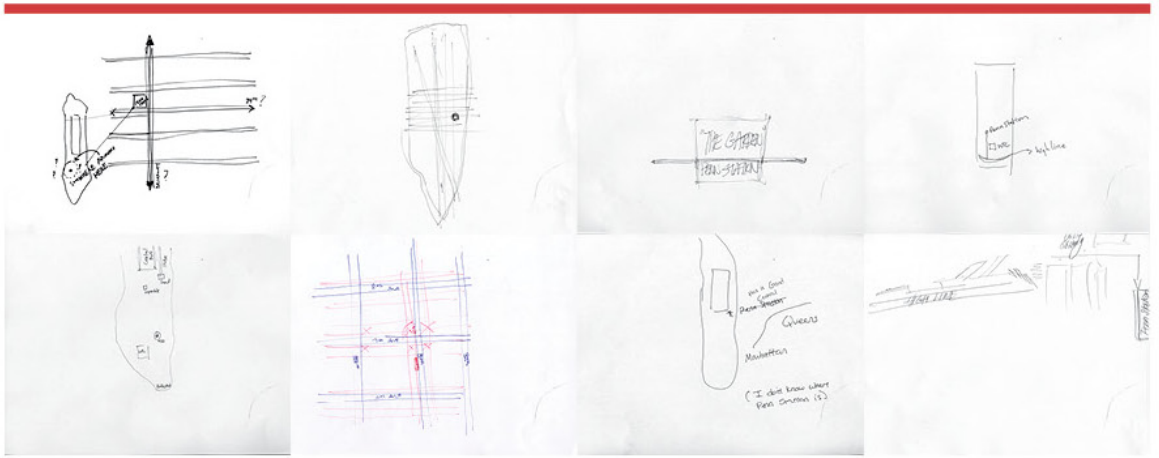




02 CONNECTION TO URBAN SYSTEM

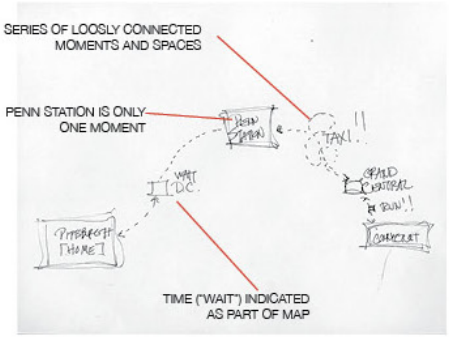
DISCONNECT BETWEEN UNDERSTANDING OF URBAN LAYOUT AND STATION LOCATION

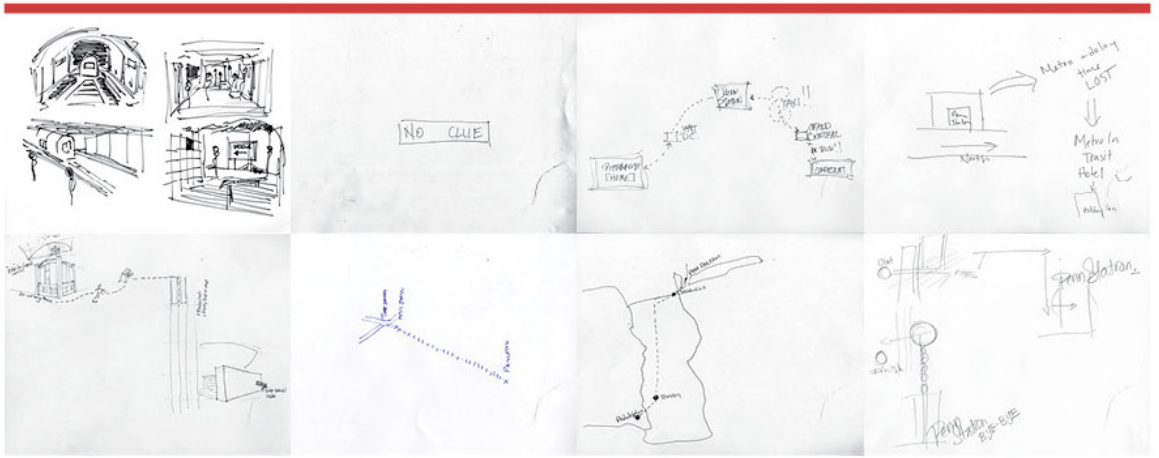




03 SEQUENTIAL UNDERSTANDING OF SPACE

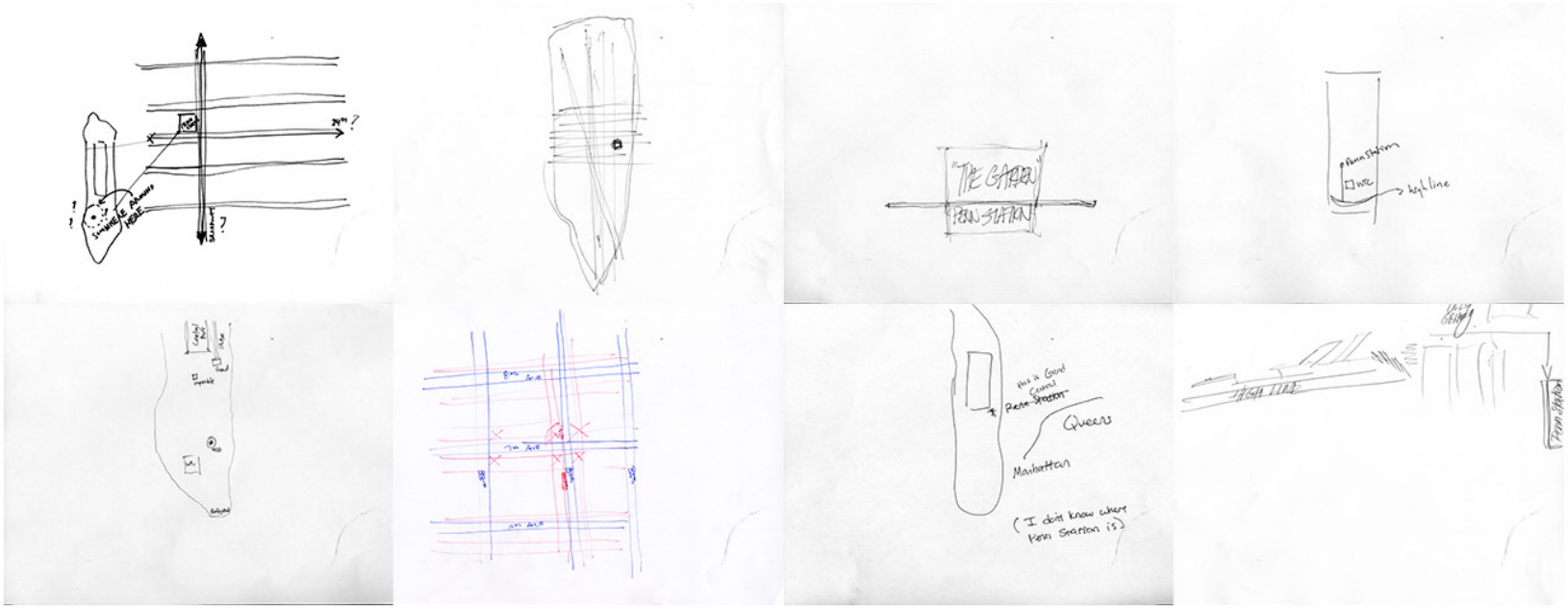
STATION UNDERSTOOD AS A PATHWAY AND AN IN-BETWEEN SPACE CONNECTING DISTANT LOCATIONS





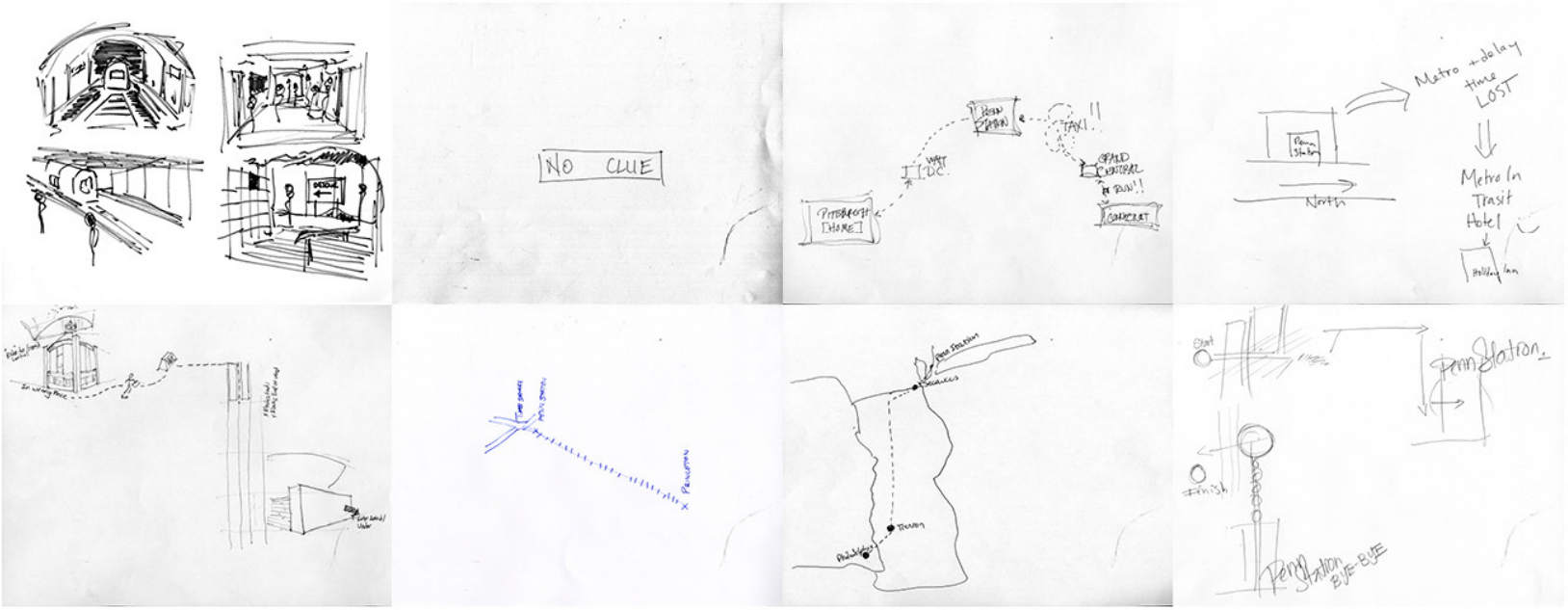

Weehawken Township
Laurel Hill Park
NS-Croxton
Lincoln Tunnel
Downtown Union City
The Heights
Stevens Institute of Technology
Hells Kitchen
Garment District
Chelsea
Midtown
Manhattan
Upper East Side
Rockefeller University
Sutton Place
Turtle
Long Island City
Hunters Point
Queens Blvd
Sunnyside
Woodside
Jackson Heights
Grand Central Pkwy
Northern Blvd
Croxton
Hudson

2

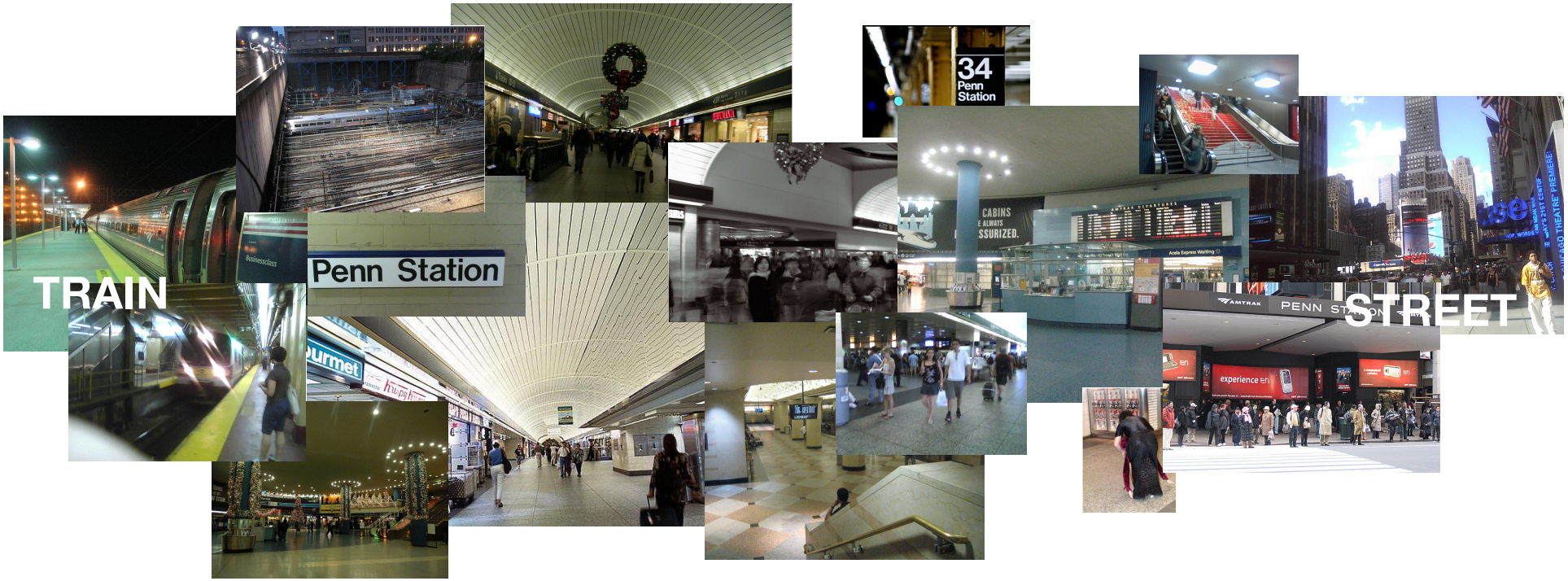

"THE GATEWAY"
PENN STATION
Penn Station
WE
high line
Penn Station
Queens
Manhattan
(I don't know where Penn Station is)
HIGH LINE
Penn Station

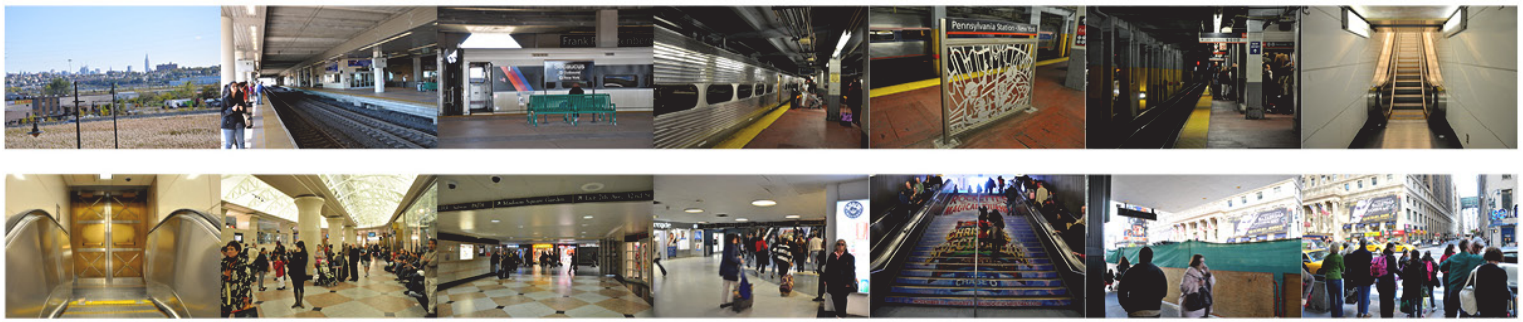

NJ TRANSIT
Speak Softly

3


NO CLUE
TAXI!!
Metro +delay time LOST
North
Penn Station
BYE-BYE

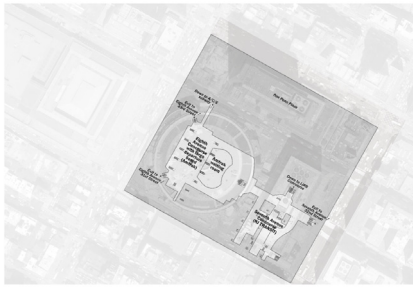
Spatial Sequence

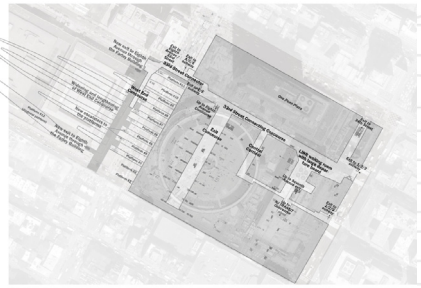




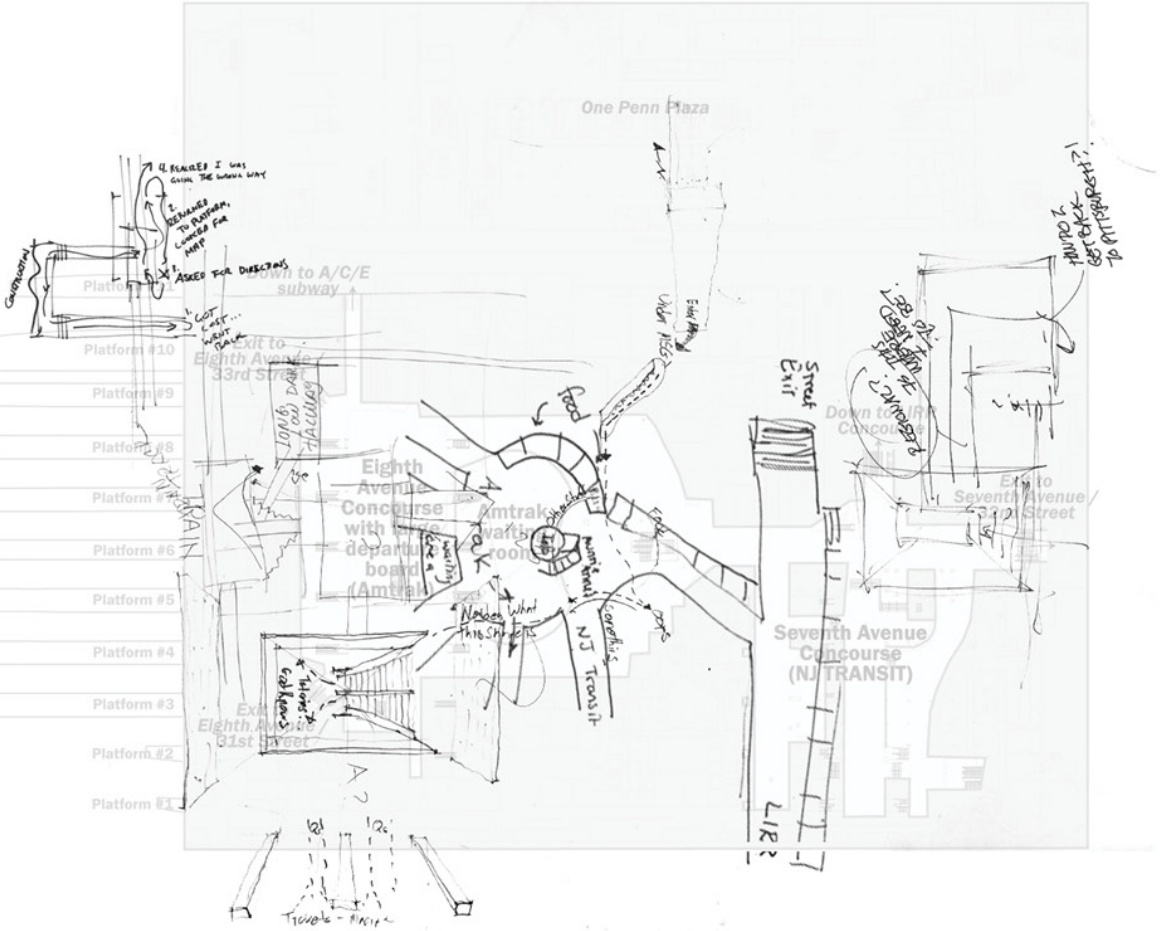
Collective Cognitive Map

USER COGNITIVE MAPS COMBINED
AND COMPARED TO ACTUAL STATION LAYOUT



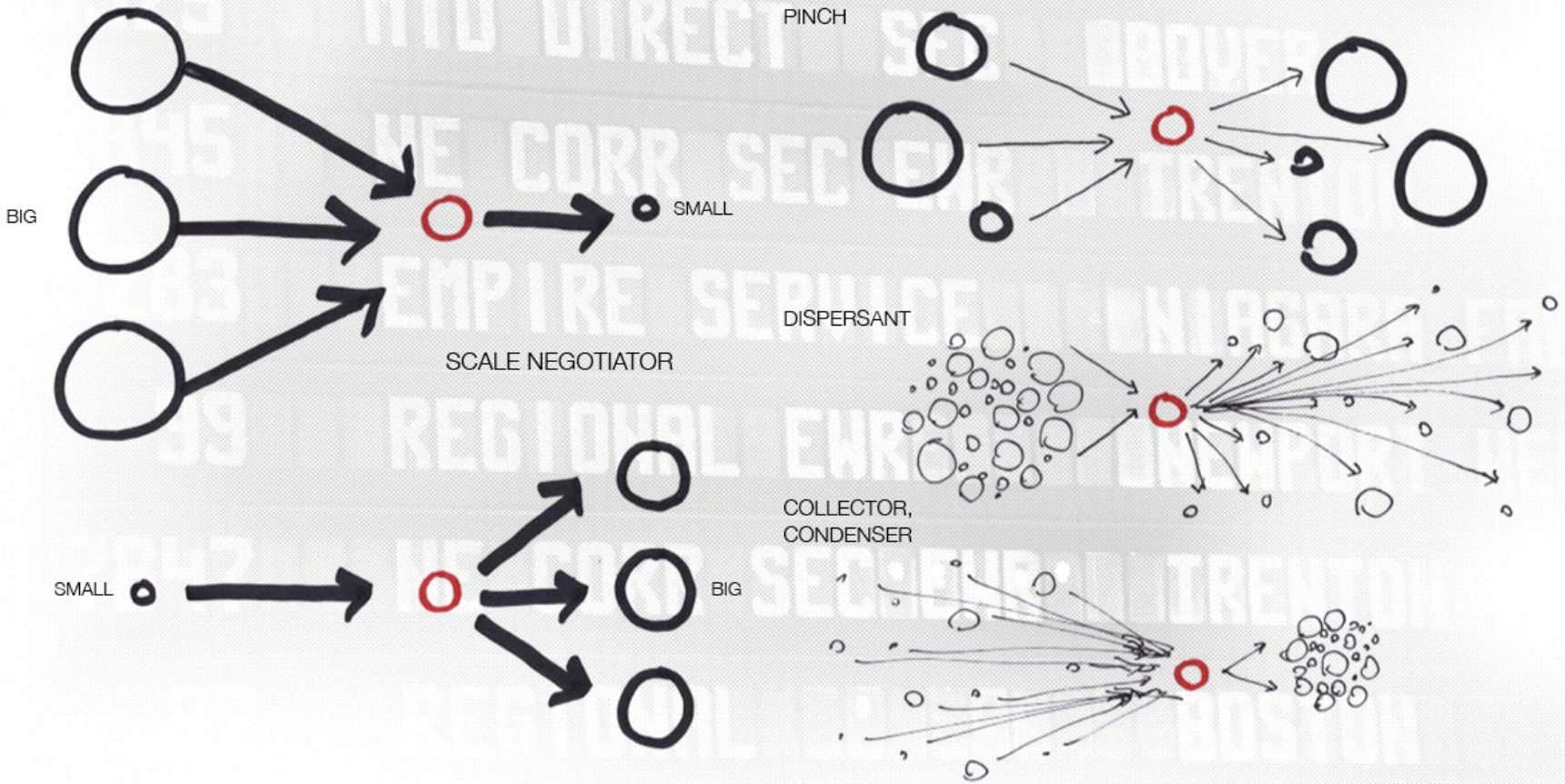


Actual Station Layout



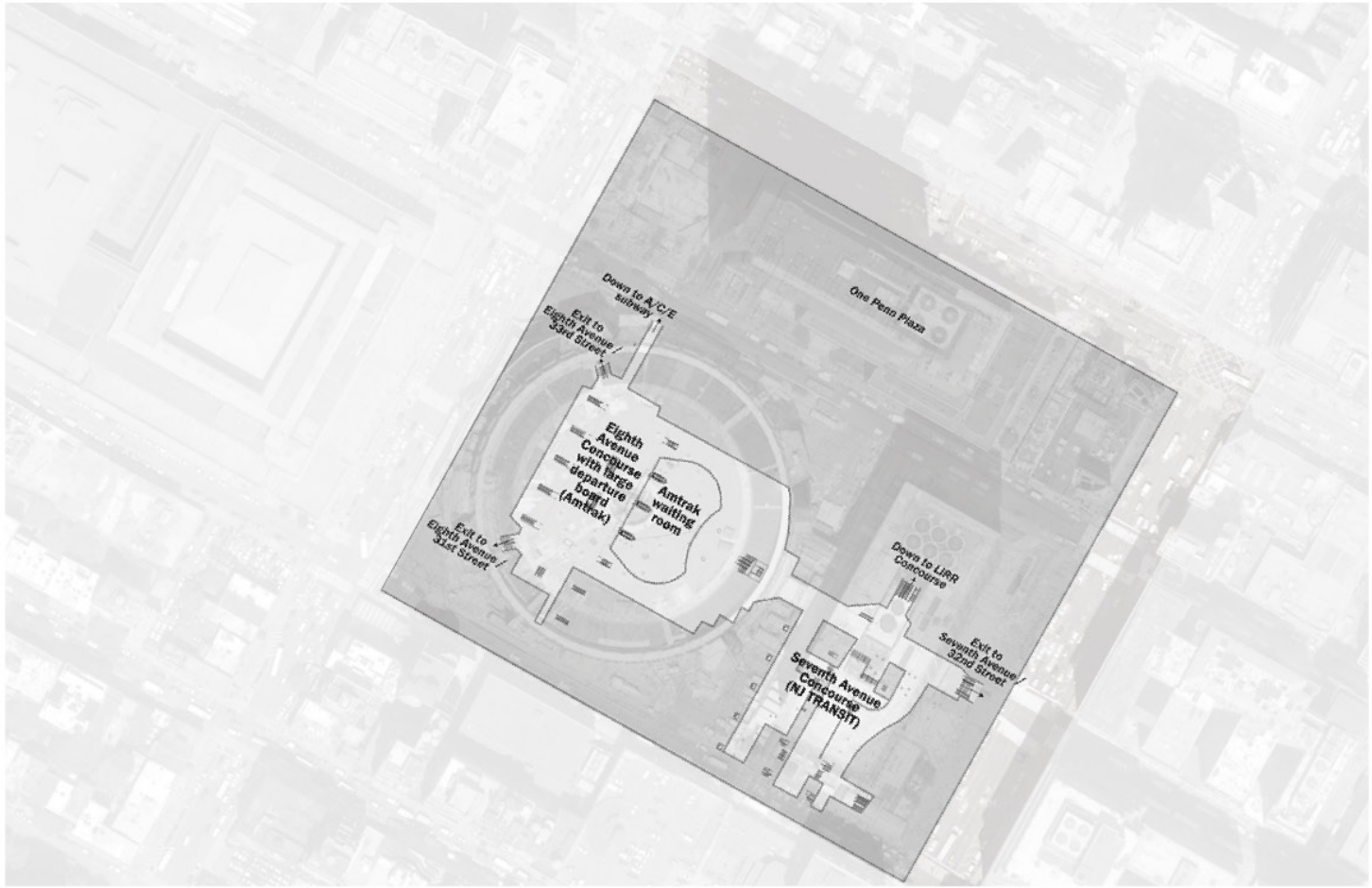
Existing Station Analysis

EXISITING SYSTEMS AND TYPOLOGIES
ECONOMIC FACTORS
ARCHITECTURAL POSSIBILITIES

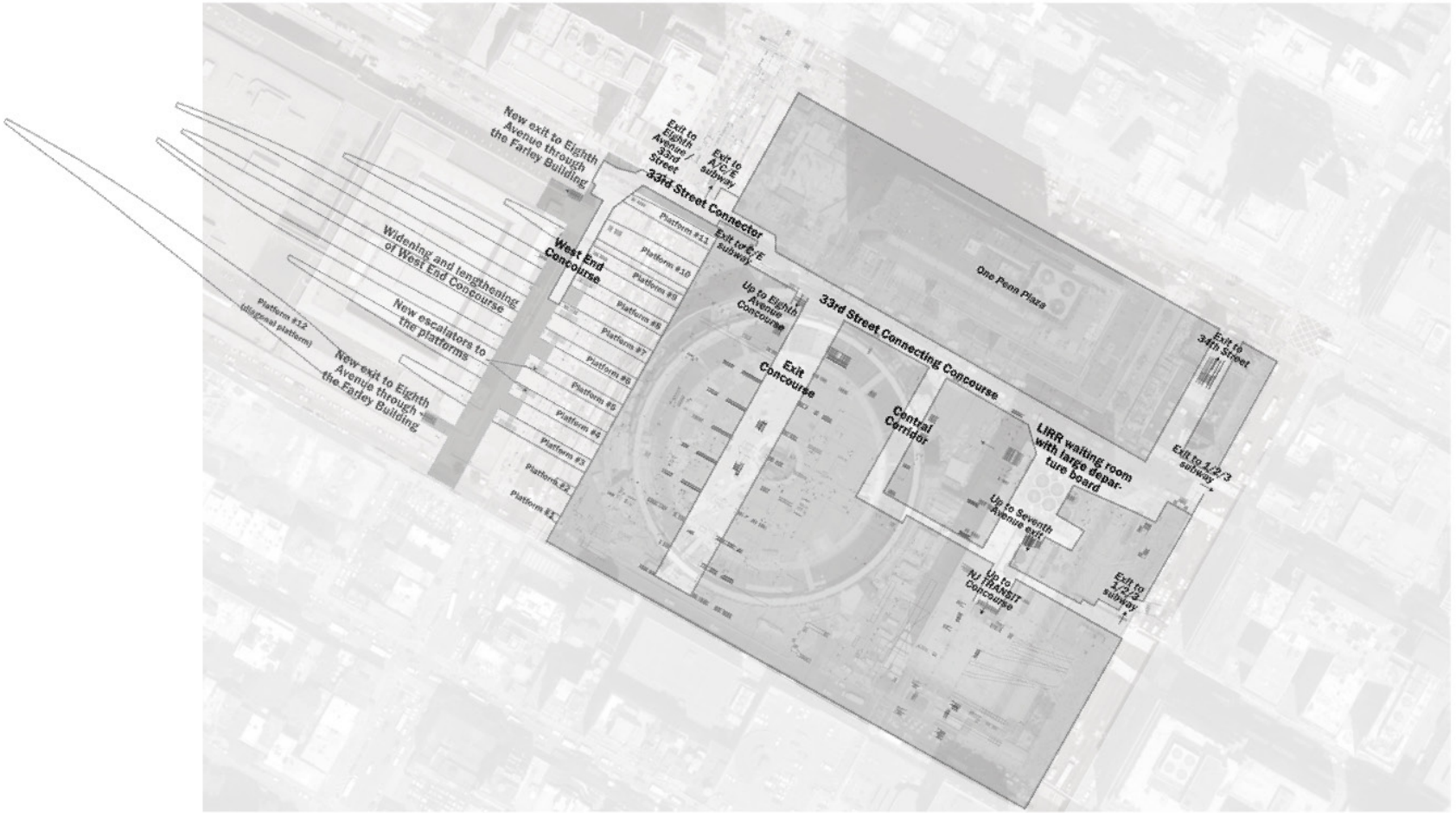


Exisiting Penn Station Layout

AERIAL VIEW



UPPER LEVEL
AMTRAK AND NJ TRANSIT



LOWER LEVEL
LIRR AND SUBWAY

Exisiting Station Rail Systems

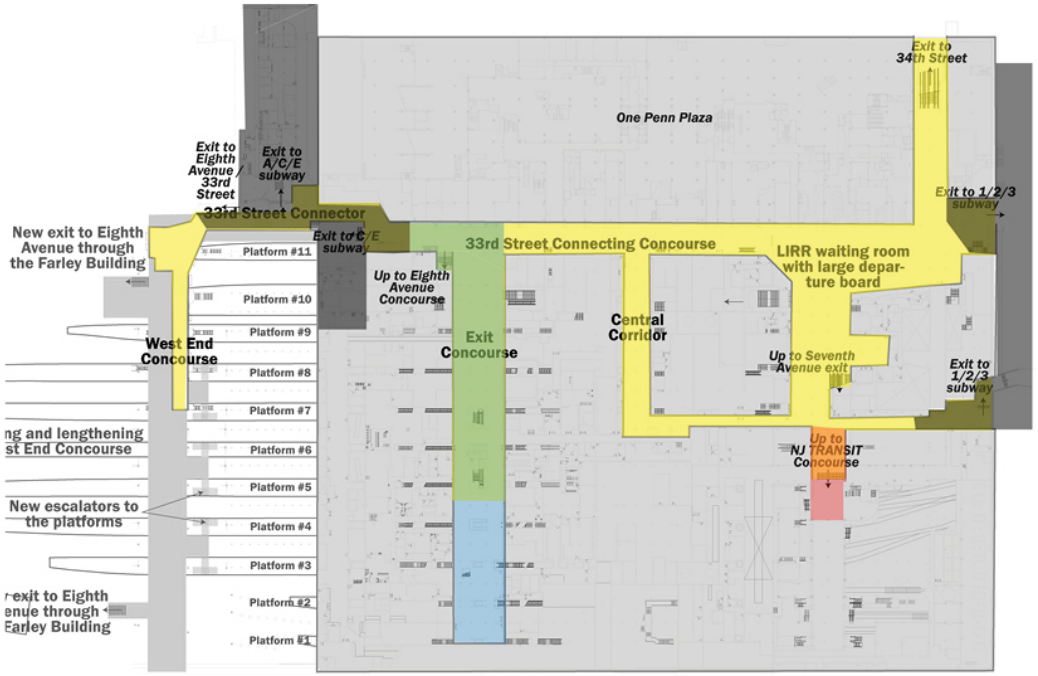
OVERLAPPED COMPETING SYSTEMS

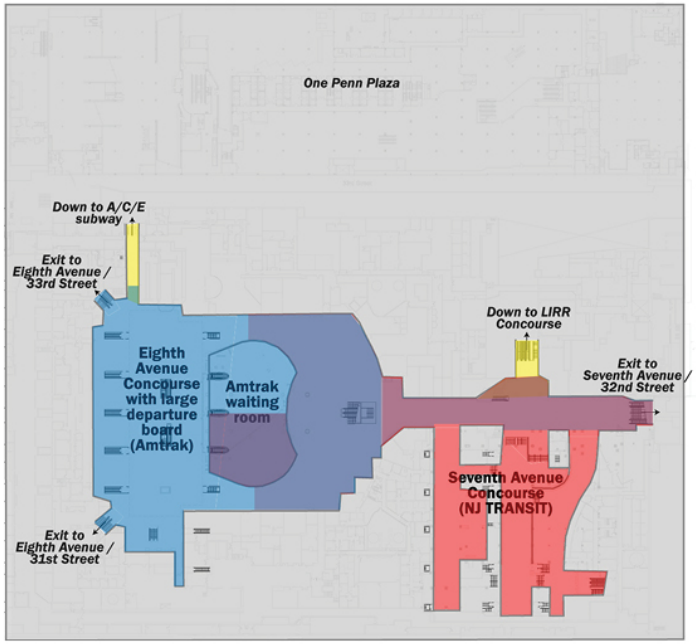
A/C/E SUBWAY

(MTA New York City Subway)
Operated by The Metropolitan Transportation Authority of the State of New York (MTA) - A Public Benefit Corporation

1/2/3 SUBWAY

(MTA New York City Subway)
Operated by The Metropolitan Transportation Authority of the State of New York (MTA) - A Public Benefit Corporation





LIRR

(MTA Long Island Railroad)
Operated by The Metropolitan Transportation Authority of the State of New York (MTA) - A Public Benefit Corporation

AMTRAK

(National Railroad Passenger Corp.)
Government Owned Corp.

NJ TRANSIT

(New Jersey Transit Corp.)
State Owned Public Benefit Corporation

Station Entrances and Exits

LOCATIONS AND CONDITIONS

7th AVE & 34th ST | 7th AVE & 34th ST | 34th ST | 8th AVE & 34th ST | 8th AVE & 34th ST

34

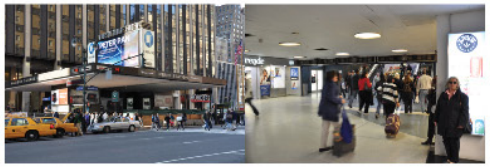
7th AVE & 33rd ST | 8th AVE & 33rd ST | 8th AVE & 33rd ST | K-MART | 1 PENN PLAZA

33

PENN PLAZA | PENN PLAZA | MSG

MID BLOCK

7th AVE & 32nd ST



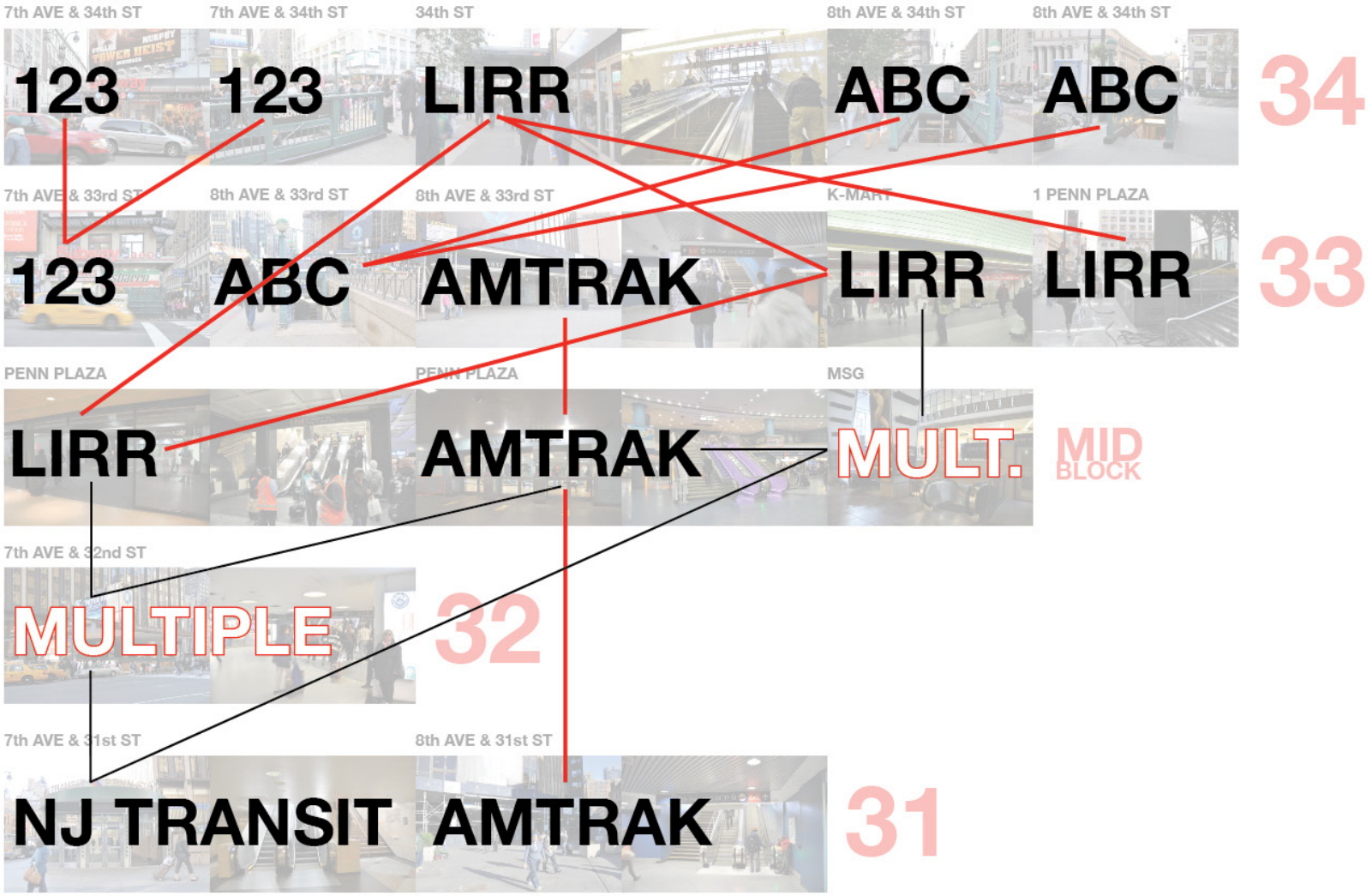
32

7th AVE & 31st ST | 8th AVE & 31st ST

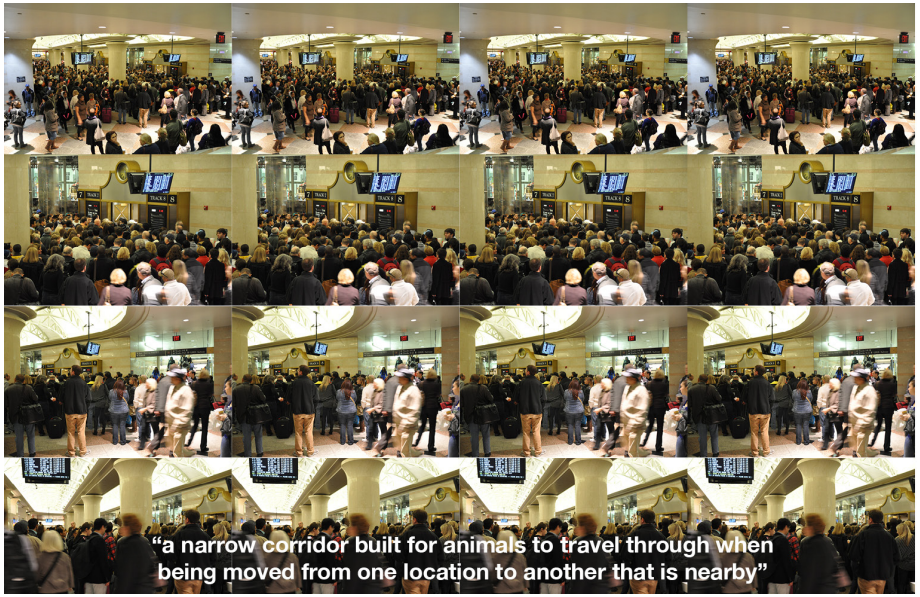
31

Station Entrances and Exits

INTERSECTING UNDERGROUND CONNECTIONS




NJ Transit
Amtrak
LIRR
Subway
Exit
34 Street & 7 Avenue
Tracks 20-21
Saturday, December 22
5:09 pm
7th Avenue
TRACK 8
2292



"To modern eyes it makes no sense: the era where social divisions were keenly felt gave us a space so vast that all distinctions dissolved in its great stone heaven; **the egalitarians, by contrast, gave us a space whose equalizing impulse was best expressed as the desire to oppress everyone's spirit.**

I usually cooled my heels in the Amtrak First Class club, which was a parody of a sham of a travesty of First Class, at least in the 90s. You got a scratchy seat and a battered magazine and translucent coffee. If I didn't have a first class ticket I went to the bar on the north side of the room, where you could smoke. It stank. Aside from rush hour, it was empty, and had a sad battered quality that made you feel like a rude sack of meat slumped over a ration of intoxicants. **And I never knew which track I should take. It never seemed clear. Even though they had signs and names it always seemed as though they were leaving out some key detail. Like your destination.**

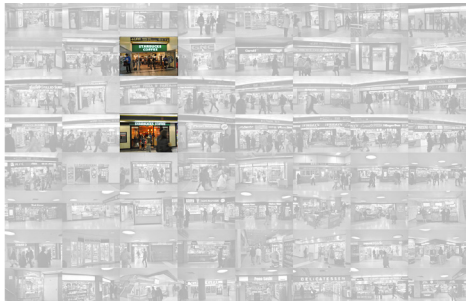
No, I hate Penn Station. I'd like to go back in time, drag the architects into the present, and ask them: what, you thought we would all be wearing George Jetson jumpsuits, queuing patiently for the Atomic Express? **The reality is a waiting room with insufficient signage, a great hall that isn't, and a Hudson News thronged with balding guys, ties askew, furtively paging through battered porn mags."**

- James Lileks

**"One entered the city like a god;
one scuttles in now like a rat."**
-Vincent Scully


SHOE REPAIR
STARBUCKS COFFEE
GNC
Carvel
EUROPAN CAFE
HSBC
GRILLED SUBS
Carlton CARDS
PIZZA & PASTA
Egg Breakfast
Tracks 13-21
SOLEMAN
PENN BOOKS
STARBUCKS COFFEE
One Penn Plaza
Planet Smoothie
FRIDAYS
Carusos PIZZA
Häagen-Dazs
KFC
RESTAURANT
southwest grill
CHASE
DUANE reade
Penn Sushi
DELICATESSEN

Every Store



Starbucks

Duane Reade

Hudson News

“When shopping was still connected to the street it was also an intensification and articulation of the street. Now it has become utterly independent - contained, controlled, surveyed.”

-Rem Koolhaas

Commercial Typology

ORGANIZED BY STORE TYPE

MARKET, STAND

NEWS, BOOKS, CARDS

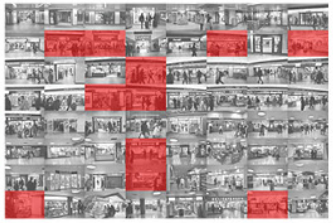
HEALTH

TOURIST GIFTS

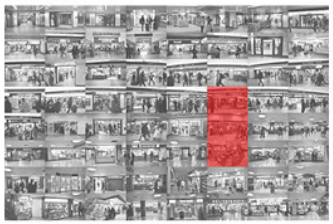
CHAIN MARKET

CHAIN FAST FOOD

CHAIN COFFEE, SMOOTHIE



RESTAURANT



PIZZA

SANDWICH, CAFE, DELI

BAR

SUSHI

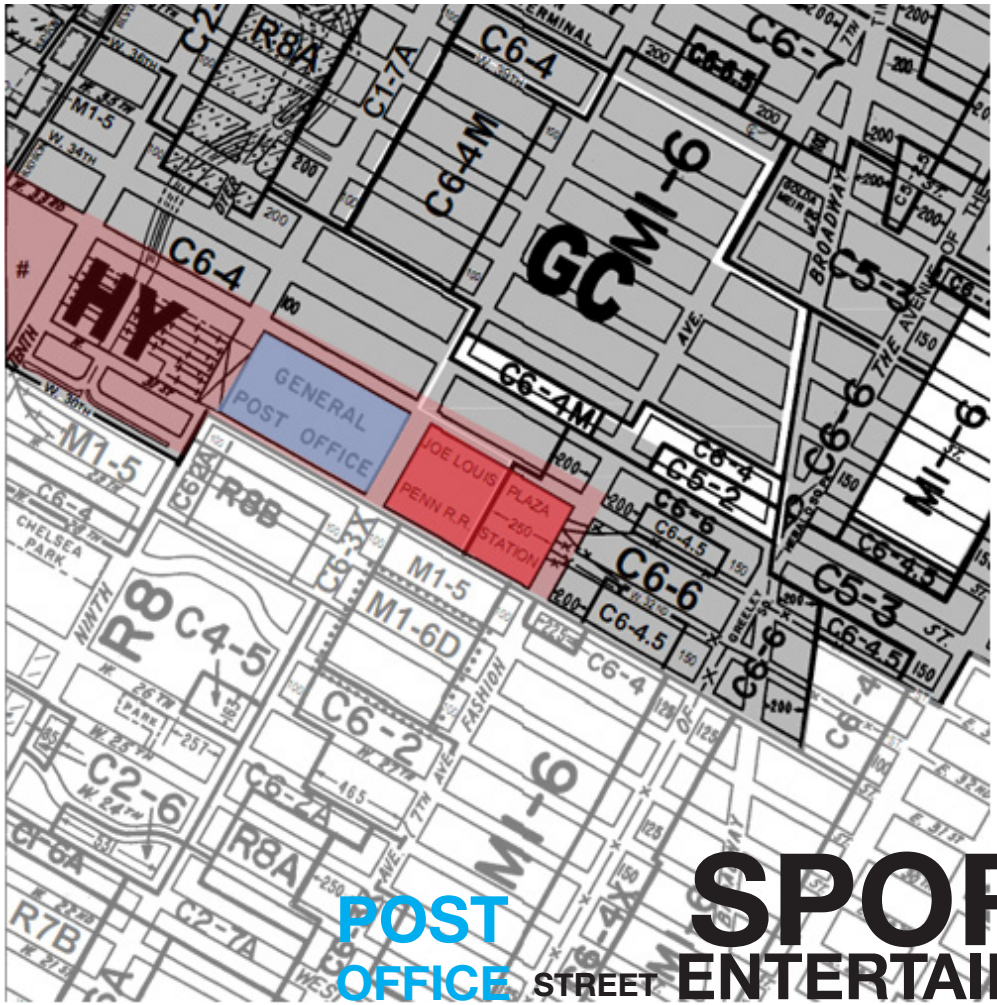
BANK

CELL PHONE PROVIDER

CLOTHING, PERFUME, FLOWERS

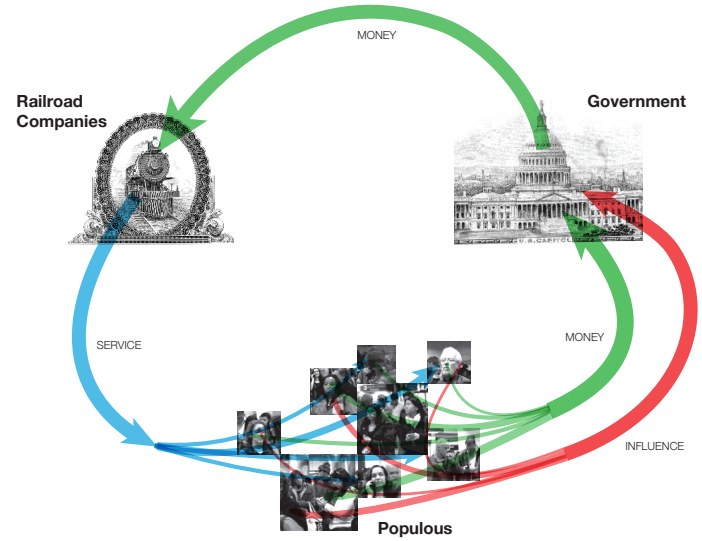
SHOE REPAIR

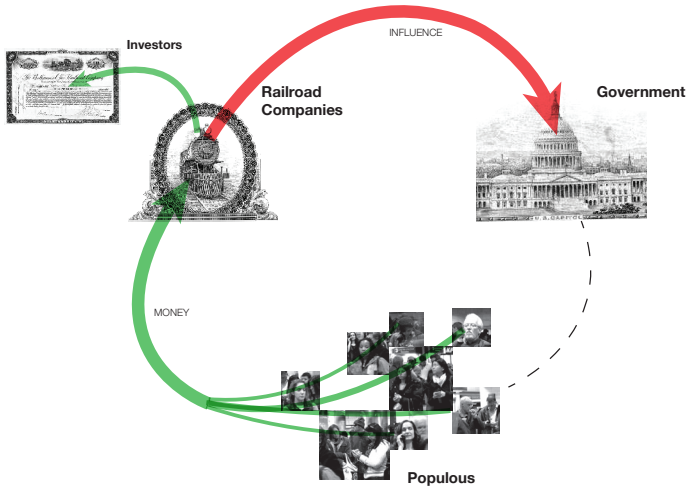
General Zoning Analysis



ZONING MAP SHOWING SPECIAL HUDSON YARDS **(HY)** DISTRICT AND GARMENT CENTER **(GC)** DISTRICT

Game Theory Economic Analysis

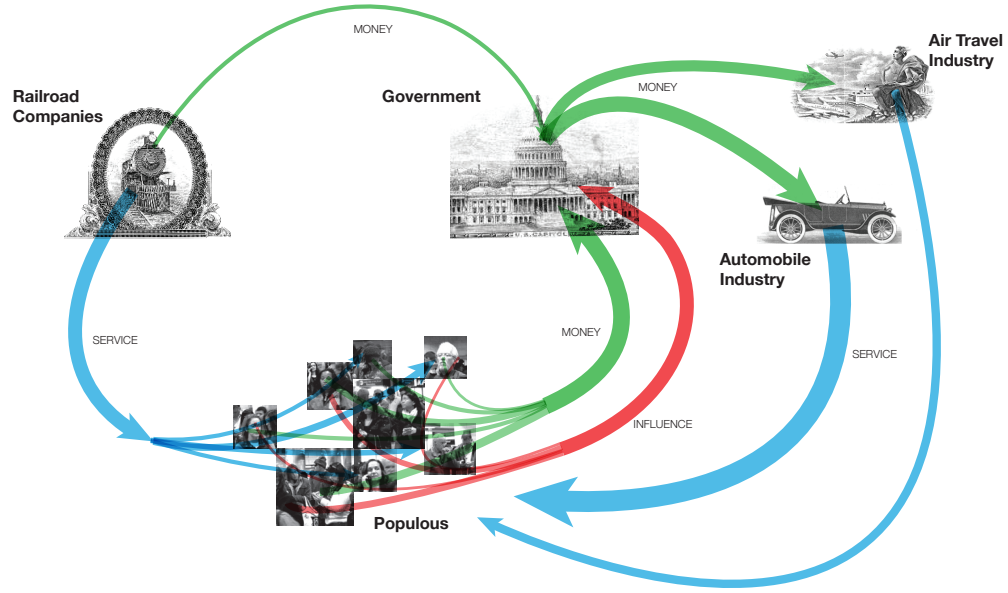


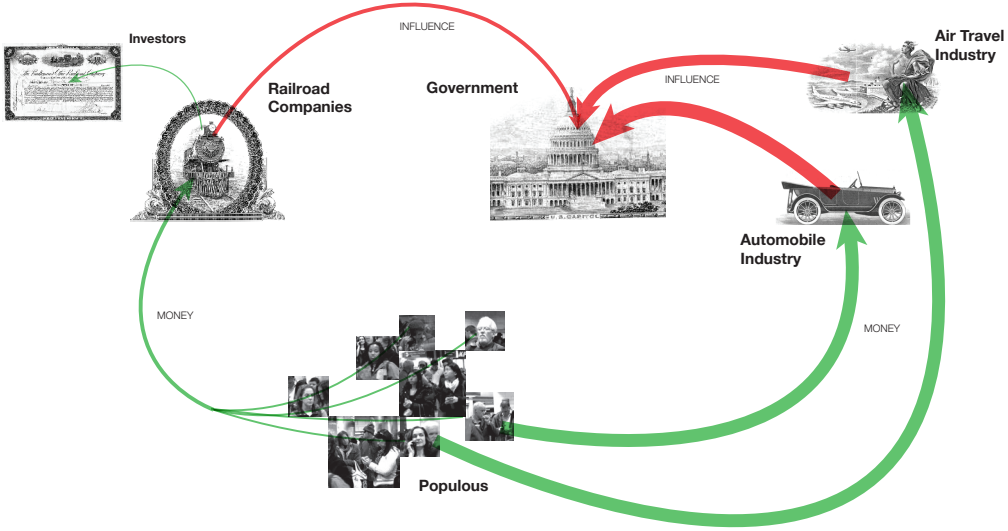


GAME ONE

Between 1855 and 1871, the federal government operated a land-grant system wherein rail companies were given thousands of acres of federally controlled, unsettled, Western land to sell or to give to bondholders in their company (who would use the land for profit or to sell themselves), in exchange for the development of a national rail infrastructure. Throughout the 19th century, subsidies like this encouraged the growth of countless small and medium rail companies throughout the continent that owned varying lengths of track and operated numerous passenger lines independently. **(1.1)**

The late 19th century and early 20th century brought about the consolidation of many of these independent companies due to inefficiency and duplicate services, which, in response, led to the Interstate Commerce Act to restrict monopolies and trusts. With the increasing affordability of both air and automobile transportation, and the increased influence of their commercial shipping lobbies, the government began to shift federal funding away from rail projects toward the development of the national highway system and air traffic infrastructure. The private rail companies, losing income from both decreased freight and passenger services in addition to diminishing federal funding and influence, began to seek new sources of revenue to remain solvent. Many rail companies then defected from their understood agreement to provide transportation services to the public in exchange for profit (from these services and, mainly, freight shipping) due to the changing atmosphere and the government's defection. They did this by discontinuing less popular lines and selling tracks and the air rights to their property in major cities. Although these companies were private, they operated public services, in many cases as a monopoly despite government regulation, and their stations acted as important public structures within their urban settings.



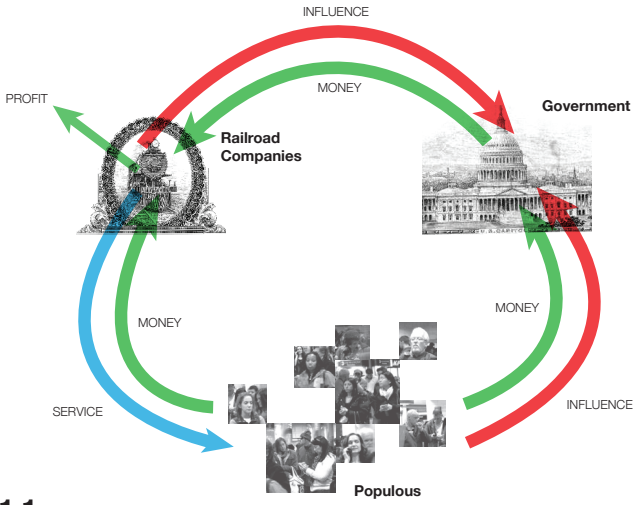


This series of defections, caused by the changing nature of the transportation commons with the interjection of new players (auto and air), led to a shift of equilibrium by the government away from rail, which caused, in desperation, the defection of the rail companies from a public-private agreement that the government still maintained but did not support.

In other words, when the government was forced to spread its spending to air and auto infrastructure in addition to rail, the rail companies considered this a defection, although the government expected the companies to continue offering the services of the agreement (public benefit) without as much of a reward (profit). This can be seen as the government still expecting the public benefit to be '10' while the sum benefit to the rail companies was reduced to '5.' (**1.2**)

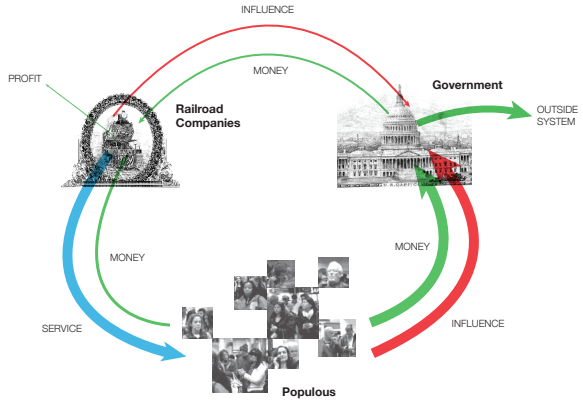
This led to the defection of the rail companies by not offering its full services (public benefit) to match its loss of profit, bringing both players down to '5.' The sale of air rights to stations changed the outcome again, with the public at '3,' and the companies at '8.' **(1.3)**

Ultimately, as in most defection games, the efforts by the rail companies to maintain profit failed, and most were forced into bankruptcy, bringing the outcome for the companies to '0' and, with the expected complete loss of service, the public to '0' as well.

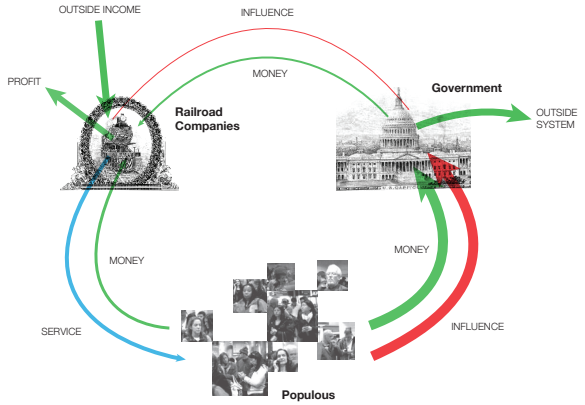


1.1

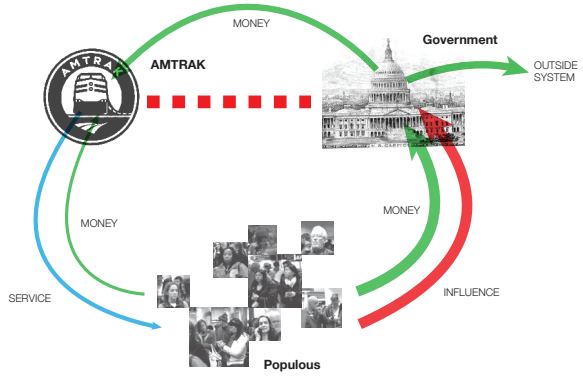
Money flows to the Railroad Companies and Influence flows to the Government.



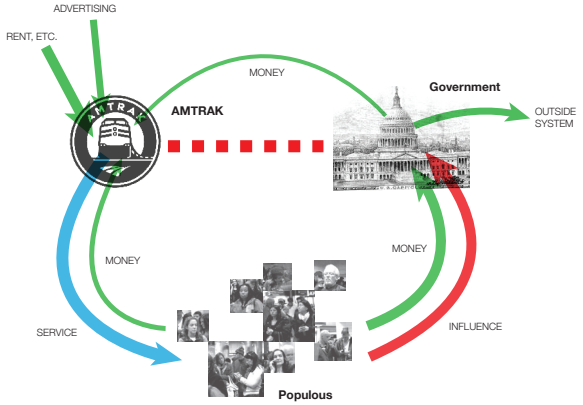
1.2 *New elements to the system and less money from users leads to less influence and decreased profits.*



1.3 *To maintain profit, service is cut; new and outside income (sold air rights) is introduced to the system.*



3.0 *The influence cycle falls apart as Rail and the Government become tied and all money stays within the system.*



4.0 *Still working within the same system, new income sources are needed to expand service and, with decreased money flow from the government, outside sources inject money into the system.*

GAME TWO

With the potential loss of a public benefit due to the failure of its private facilitator, the government could not allow a loss of service to occur. To respond to the events of game one, the government then created two entities to fully consolidate the previously independent, private rail systems. With the passage of the Rail Passenger Service Act of 1970, the National Railroad Passenger Corporation (NRPC, operator of passenger Amtrak services) was created, followed in 1976 by the Consolidated Rail Corporation (Conrail, owner of rail track and rights), two hybrid public-private companies backed by the federal government. Many within the government expected the companies to fail and dissolve within a few years as ridership continued to decrease.

A defect by the government (for example, privatizing the company) would allow it to save a portion of its investment, albeit with public outcry, for an outcome of '9,' while the public, due to the insolvency and inherent unprofitability of the business, would most likely completely lose service, in addition to government faith and their tax dollars, for an outcome of '-1.' A complete loss of ridership after the government's intervention could have created a double-defection scenario with the government's outcome at '-2' due to loss of money, trust, and reputation, and the public at '-2' by losing a service and sharing the government's loss.

GAME THREE

In a perfect version of Game two, the government would fully support the new entities due to the potential damage of a defection by either party. Many within the government, however, saw a defection by the public as inevitable and sought to distance their investment so that damage from a failure would be minimized (for them but not the general public). Because of this, Amtrak's funding was set and remained low compared to operating costs, even with limited and poor quality service. With this low quality, few new riders were encouraged to use the service and, thus, new income did not come from the public. The government saw this as validation for their lack of investment. Even with the loss of a player (the Rail Companies), the introduction of a straw man (Amtrak acting as the rail companies on the governmnet's behalf), keep the system as status quo.

In this game, a mutually beneficially situation of both parties investing minimally would only gain each '9.4.' A defection by the government (defunding and cutting ties) would allow them to save face and would not have cost them much for a gain of '9.6' while the public, with loss of service, some tax dollars, and government faith, would have an outcome of '-1.6.' The government also protected itself from defections by the public by not fully investing in the service, so that both parties would have an outcome no less than '-1' in that instance.

GAME FOUR

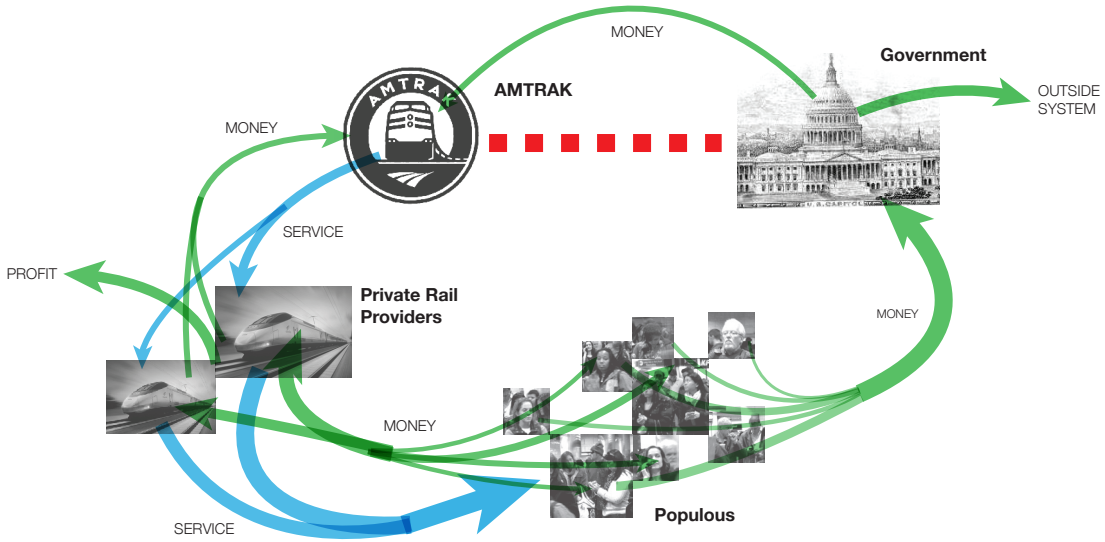
In order to increase the quality of rail service and ridership while working within the established system, Amtrak needed outside investment and new sources of income. By looking back to the private sector, Amtrak continued the rail companies' system of selling and leasing property and drastically increasing advertising and sponsorship in stations and on trains. In this manner, new money was injected into the system and, instead of leaving it as profit as it did under the rail companies, it was absorbed as service. What had started as a mutually beneficial system between public and private interests facilitated by corporations and supported by the government became a system completely operated by the government and supported by corporations.

Proposed Game Theory Solution

GAME FIVE

The system of game four, with it's introduction of outside income, mirrors game 1.3 and, like that game, is untenable. The problems caused by games 3 and 4 occurred due to the 'perfect' scenario of game 2, wherein the facilitator of the system (the government) chose to operate in the same manner that it had before, when the system proved itself to be unstable with the introduction of new elements. Instead of changing the system, the facilitator chose to replace the player that lost (the rail companies) with a puppet that they controlled, but that was expected to act in the same manner as the previous player. With this, the government moved from being merely the facilitator of the system and the game, to being a player in it, causing a clear conflict.

The solution to this problem would be a system wherein the introduction of a new player would allow for a stable injection of money so that the system would be able to support itself. In this way, the government could use Amtrak not as a player in the game, but as a check and a facilitator for the new player or players. By shifting Amtrak's responsibilities from a service provider to a government-supported operator of tracks, stations, and overarching support, private railways could be introduced into the system to run passenger service. With this, these private companies would operate similarly to the old system, but would need only invest heavily in trains and passengers as all other concerns would be taken care of by the new Amtrak, acting as a collective that all the new players would pay into. These costs would be reasonable as they would be supported by taxpayer dollars. Amtrak could even continue to operate as passenger rail's trademark brand and could cover advertising and promotion for the collective.



With this new system, the government wouldn't have to provide as much monetary support for rail but would still be able to provide the service for the public. The public would benefit by having the service, now of better quality, of more quantity, and still at reasonable prices. Amtrak, in it's new role, would receive funding from both public and private sources within the system and would have drastically cut operating expenses. The new private service providers would also benefit by being able to make a profit in exchange for providing a public service and by being encouraged to form and operate by having large expenses and operations covered by a collective, providing all parties with an outcome of '10.'

Advertising Analysis

ECONOMIC IMPACT ON ARCHITECTURAL EXPERIENCE

ENTRY =
AD

TRACK 17 =
AD

‘ROTUNDA’ =
AD

STAIRS =
AD

SUBWAY =
AD

...It was logically assumed that the federal government’s passenger railroad would become one of [the new Monihyan Station’s] chief tenants. But New York City demanded that Amtrak pay rent if they were to use the facilities. As Van Hattem puts it, Amtrak responded by telling the city, **“We own the current Penn Station, we’re strapped for cash, there’s no possible way we can move into this new structure and start paying you rent, when our budgets are getting slashed left and right, and our funds from the federal government are shrinking.”**

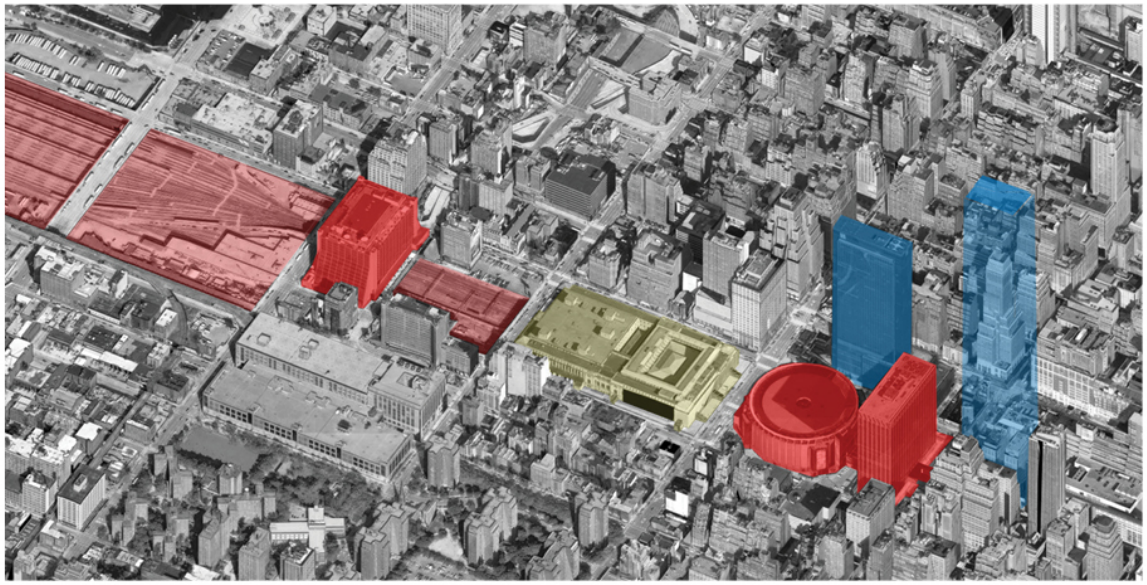
Air Rights and Government Incentives

ECONOMIC IMPACT

450 W. 33rd St.
Air Rights Sold
by Pennsylvania Railroad 1967

'Manhattan West'
Air Rights Sold
by the MTA
(Public-Benefit Corp.)
for future development

'Hudson Yards'
Air Rights Sold
by the MTA
(Public-Benefit Corp.)
for future development



1 Penn Plaza
Zoning and Tax Incentives
Built 1972

15 Penn Plaza
Zoning and Tax Incentives
Approved for Construction

Farley Post Office
USPS Property
(Independent Government Agency)
Built 1912

Madison Square Garden & Theater
Air Rights Sold
by Pennsylvania Railroad 1963

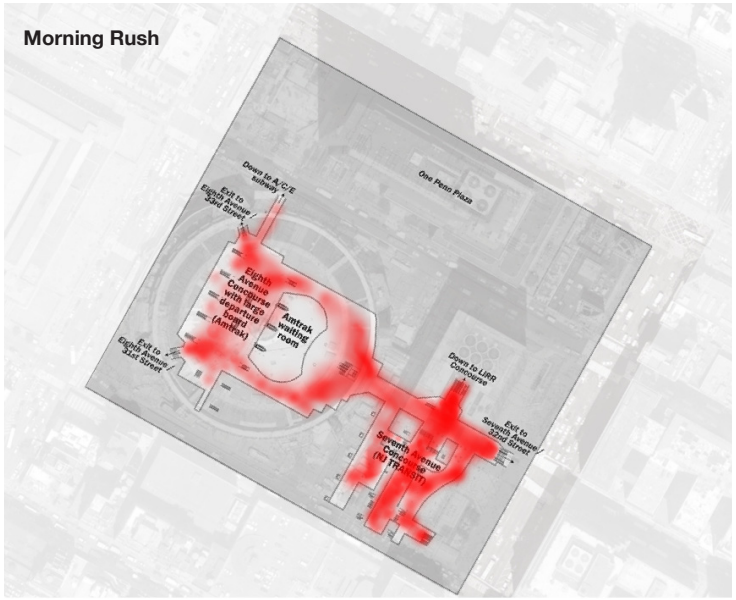
2 Penn Plaza
Air Rights Sold
by Pennsylvania Railroad 1963

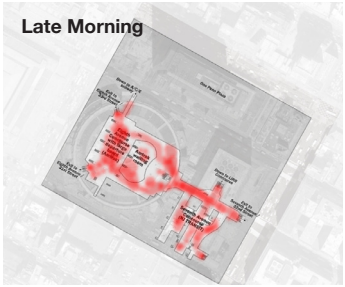
"There is one last frontier available in Manhattan..."

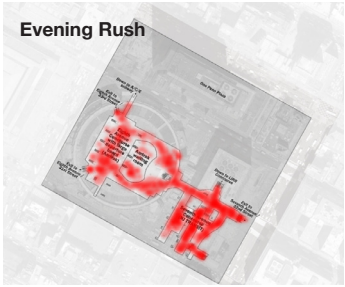
"[Greater height is allowed than] standard zoning rules provide under special regulations that encourage the development of high-density office space near transit hubs."

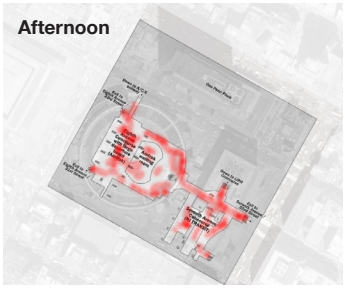
Station Flows

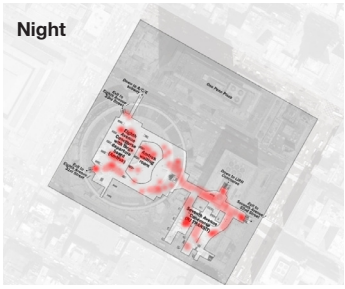
SPATIAL CHANGES OVER TIME DUE TO USER PATTERNS

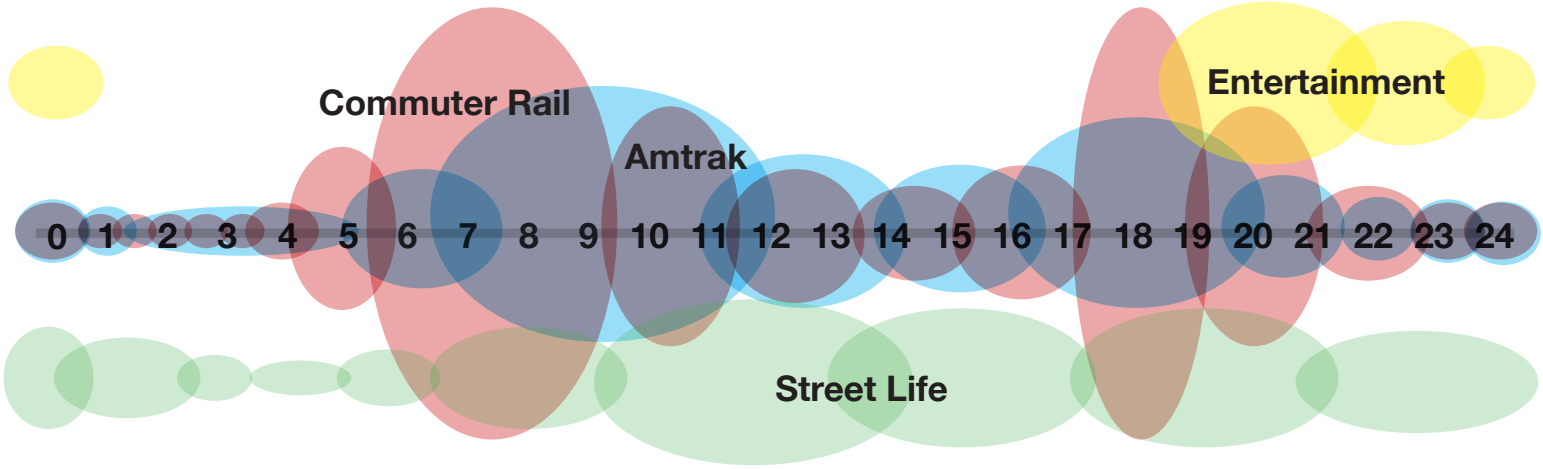






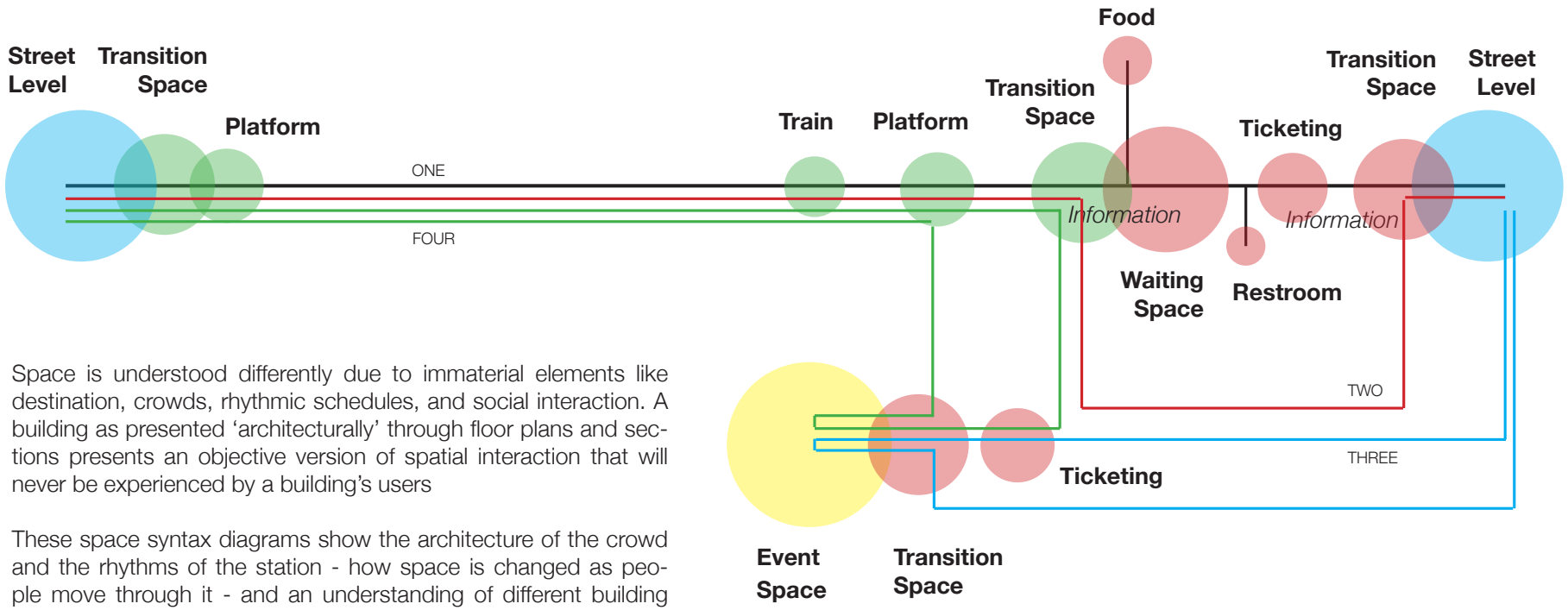






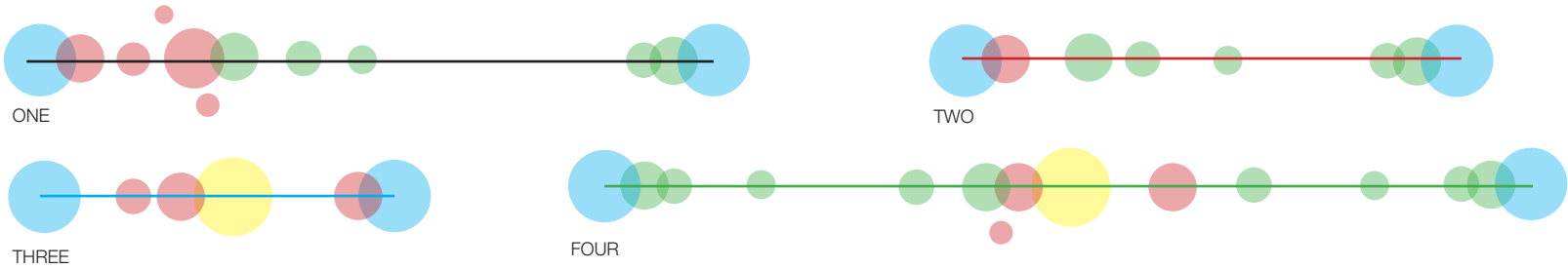
Space Syntax

STATION ANALYSIS AS USER PATHWAYS



Space is understood differently due to immaterial elements like destination, crowds, rhythmic schedules, and social interaction. A building as presented 'architecturally' through floor plans and sections presents an objective version of spatial interaction that will never be experienced by a building's users

These space syntax diagrams show the architecture of the crowd and the rhythms of the station - how space is changed as people move through it - and an understanding of different building sequences that create completely different architectures for each user.



Design Alterations

STATION AS SYSTEM

PENN STATION =
CATTLE RACE

PENN STATION =
MALL

PERSON-PERSON

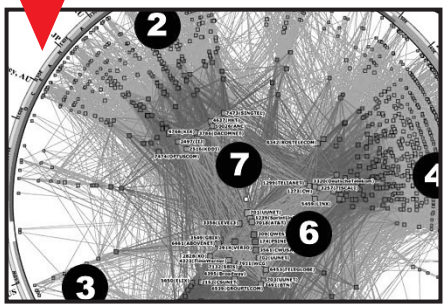
PENN STATION DOES NOT ACKNOWLEDGE THE SOCIAL

PERSON-ENVIRONMENT

PENN STATION DOES NOT LEND ITSELF TO BE COGNITIVELY UNDERSTOOD

ENVIRONMENT-ENVIRONMENT

PENN STATION DOES NOT CONNECT TO THE URBAN FABRIC OR ACKNOWLEDGE ITS DISTANT CONNECTIONS



NETWORK

TRAIN

PEOPLE

By acknowledgeing the immaterial and transitory elements of the station - the essential elements that give the station a purpose and exist independently of the built form - a new architecture can be designed that better fits how people understand and use space.

Station As System

BUILDING THE "IN-BETWEEN"
HISTORIC BUILDING TYPOLOGY ANALYSIS
EXISITING VS. NEW CONSTRUCTION
CHANGING SYSTEMS OVER TIME

"Ma is a concept of absence and in-between, which is a departure from a way of looking that privileges the tangible. It is a powerful concept with many faces and layers. Apart from space, *ma* is applied to the discussion of time as well, revealing that in Japan there was **'not even a distinction between space and time like in modern Western thought'**.

The word '*ma*' essentially refers to **"an 'interval' between two (or more) spatial or temporal things and events."** Thus it is not only used in compounds to suggest measurement but carries meanings such as gap, opening, space between, time between, and so forth'.

COLLECTING

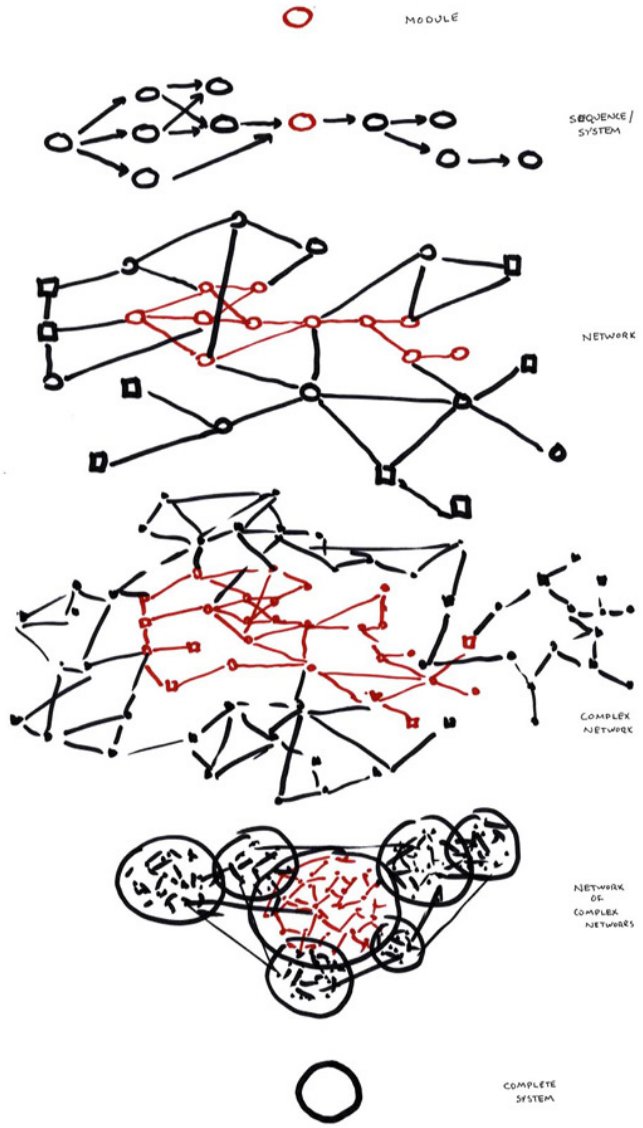
CONDENSING

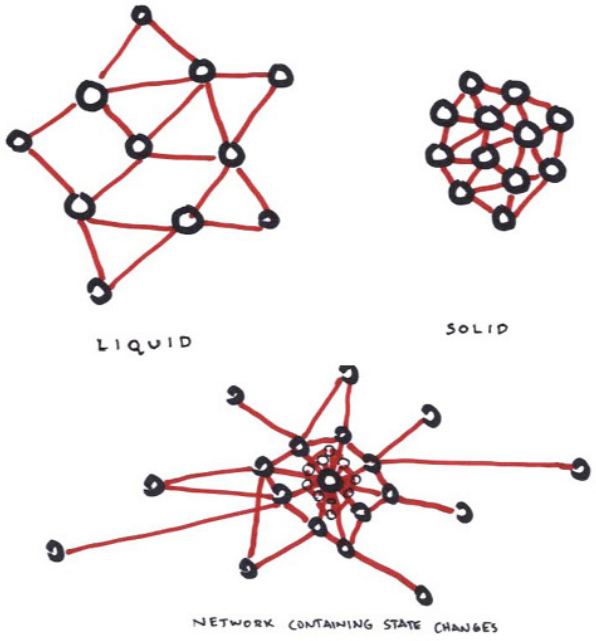
DISPERSING

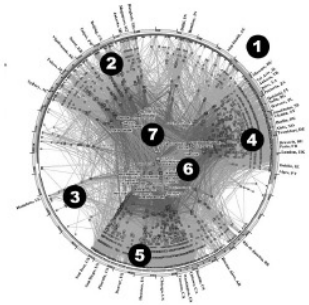
EXPANDING

MA

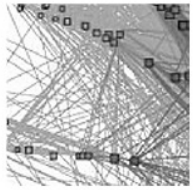
Network Theory







THE INTERNET



THE INTERNET - *DETAIL*

Order is

BY LOUIS I. KAHN

Design is form-making in order
Form emerges out of a system of construction
Growth is a construction – In order is creative force
In design is the means – where with what when with how much

The nature of space reflects what it wants to be
Is the auditorium a Stradivarius
or an ear
Is the auditorium a creative instrument
keyed to Bach or Bartók
played by the conductor
or is it a conventional hall

In the nature of space is the spirit and the will to exist in a certain way
Design must follow closely that will
Therefore a stripe-painted horse is not a zebra
Before a railroad station is a building
it wants to be a street
it grows out of the needs of the street
out of the order of movement
A meeting of contours englazed.

Through the nature – why
Through the order – what
Through the design – how

A form emerges from the structural elements inherent in the form.
A dome is not conceived when questions arise how to build it.
Nervi grows an arch
Fuller grows a dome

Mozart's compositions are designs
They are exercises of order – intuitive
Design encourages more designs
Designs derive their imagery from order
Imagery is the memory – the form
Style is an adopted order

The same order created the elephant and created man
They are different designs
Begun from different aspirations
Shaped from different circumstances

Order does not imply Beauty
The same order created the dwarf and Adonis

Design is not making beauty
Beauty emerges from selection
affinities
integration
love

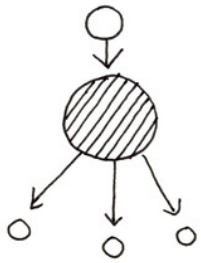
Art is a form-making life in order – psychic

Order is intangible
It is a level of creative consciousness
forever becoming higher in level
The higher the order the more diversity in design

Order supports integration
From what the space wants to be the unfamiliar
way may be revealed to the architect.
From order he will derive creative force and power
of self-criticism to give form to this unfamiliar.
Beauty will evolve.

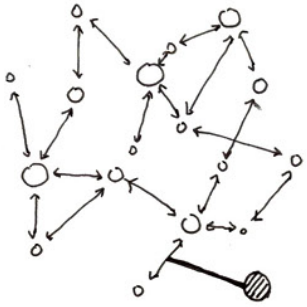
Social Interaction Models

CURRENT AND PROPOSED METHODS OF SOCIAL AND COMMERCIAL INTERACTION

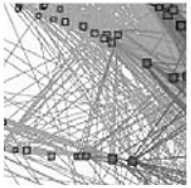


ONE-WAY INTERACTION

TWO-WAY WITH A FACILITATOR

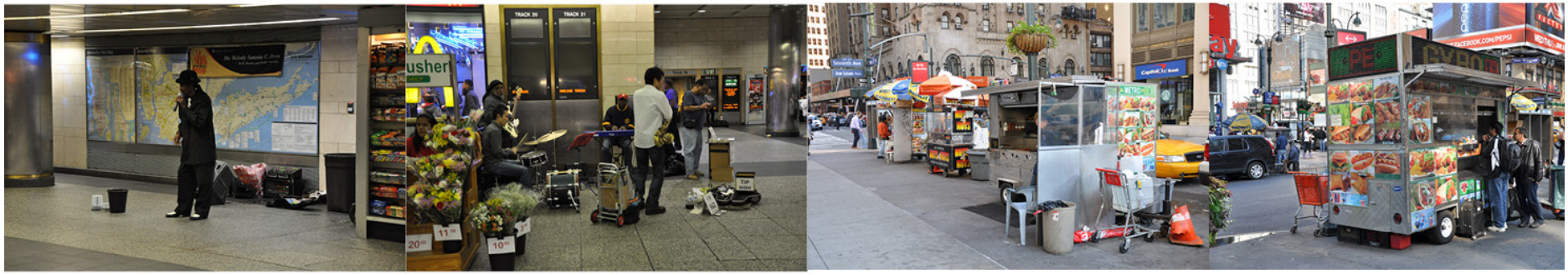


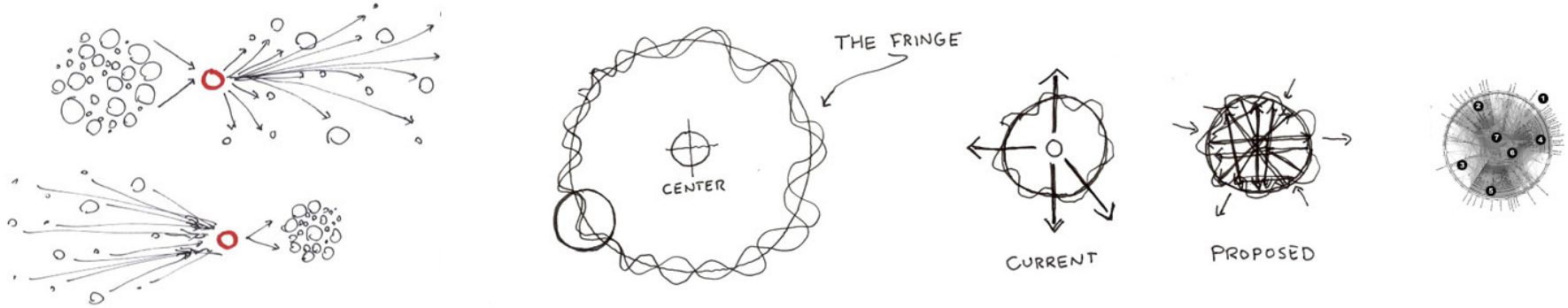
NETWORK WITH THE SYSTEM AS A FACILITATOR AND A FACILITATOR FOR THE SYSTEM



Social Innovation Models

FRINGE AND CENTER



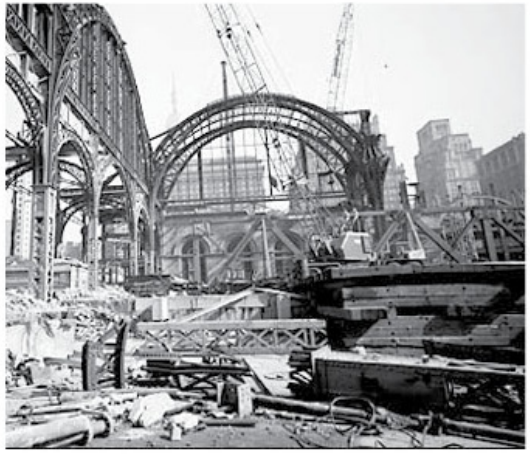


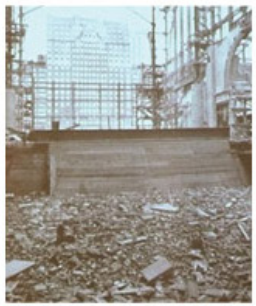
Penn Station History

CHANGING PRIORITIES, CHANGING FORMS

ORIGINAL STATION - 1910

DEMOLITION - 1963



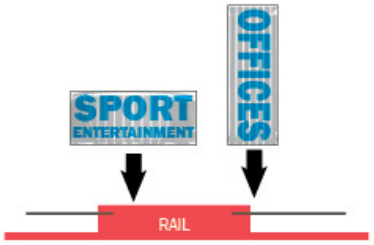


CURRENT STATION - 1964

Historic Building Typologies

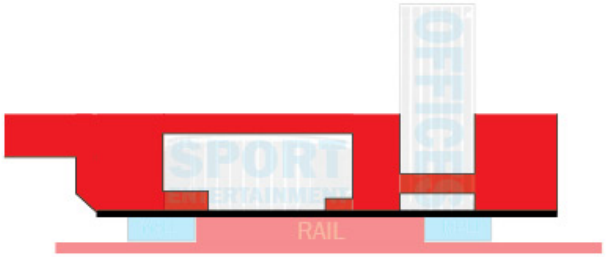
STATION AS OBJECT-SIGNIFIER, SYMBOL
STATION DISCONNECTED FROM SYMBOL
STATION AS THE IN-BETWEEN

Rail Station as Object -
Signifier of the System -
Symbol

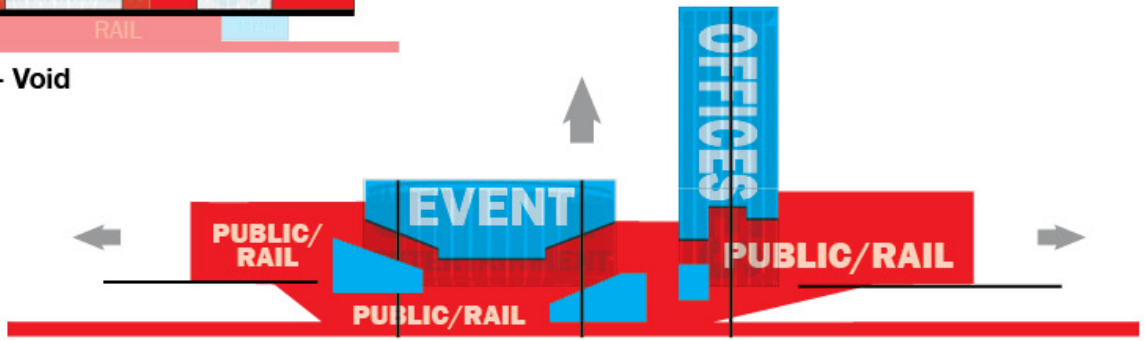


Symbol removed and new, different
object-symbols placed

Hardline developed between surface
and system below -
no signifier



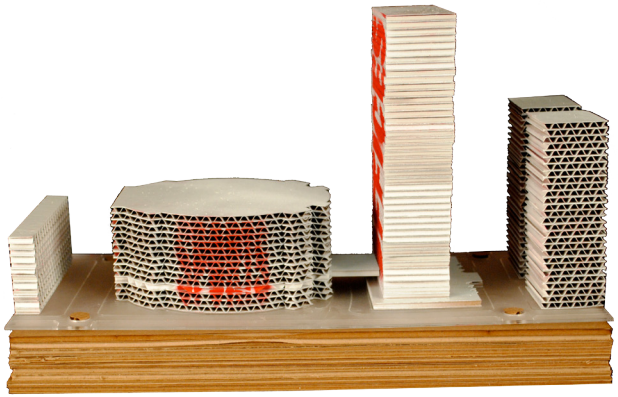
Public Space - Void

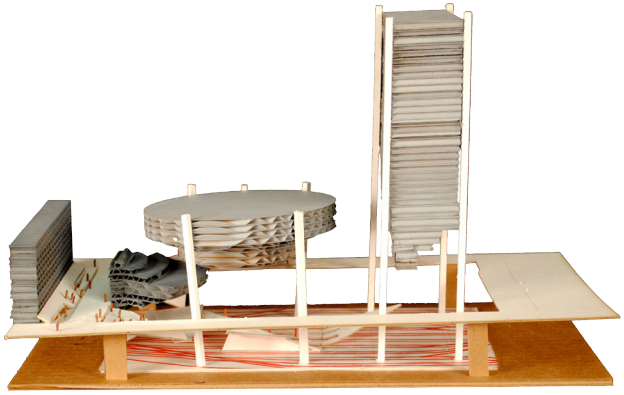


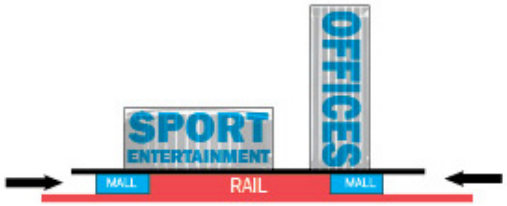
Station as the In-Between

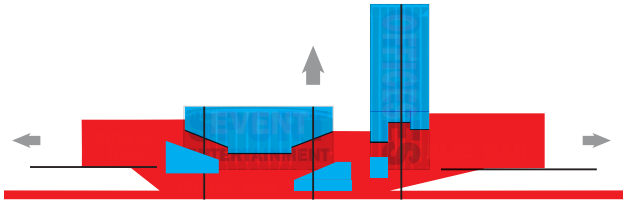
Drawing the Street down into the Station
Pushing the Station up and out into the Void

Reclaiming public space
Direct Connection to the Urban Fabric









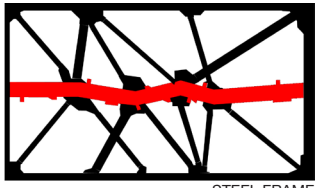
Old Penn Station

Current Penn Station

New Idea

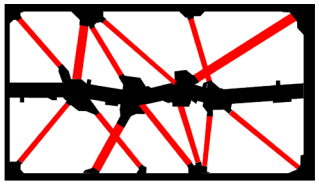
Preliminary System Studies

VOID



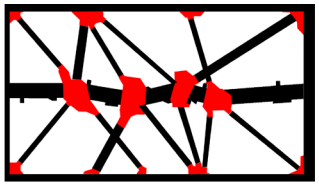
CORE

STEEL FRAME



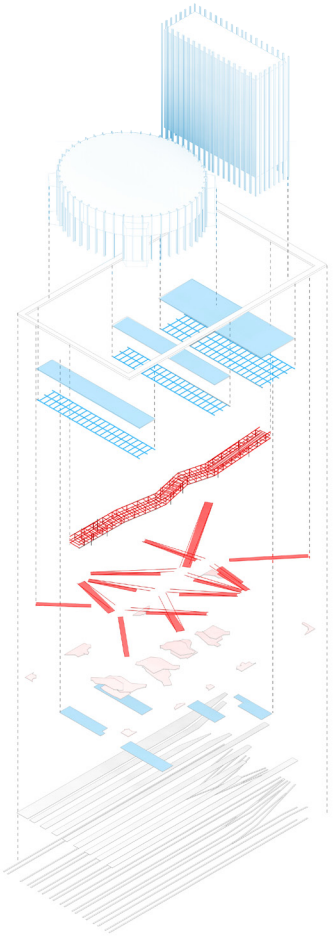
PATHS

PRE-CAST AND
TENSION STRUCTURE

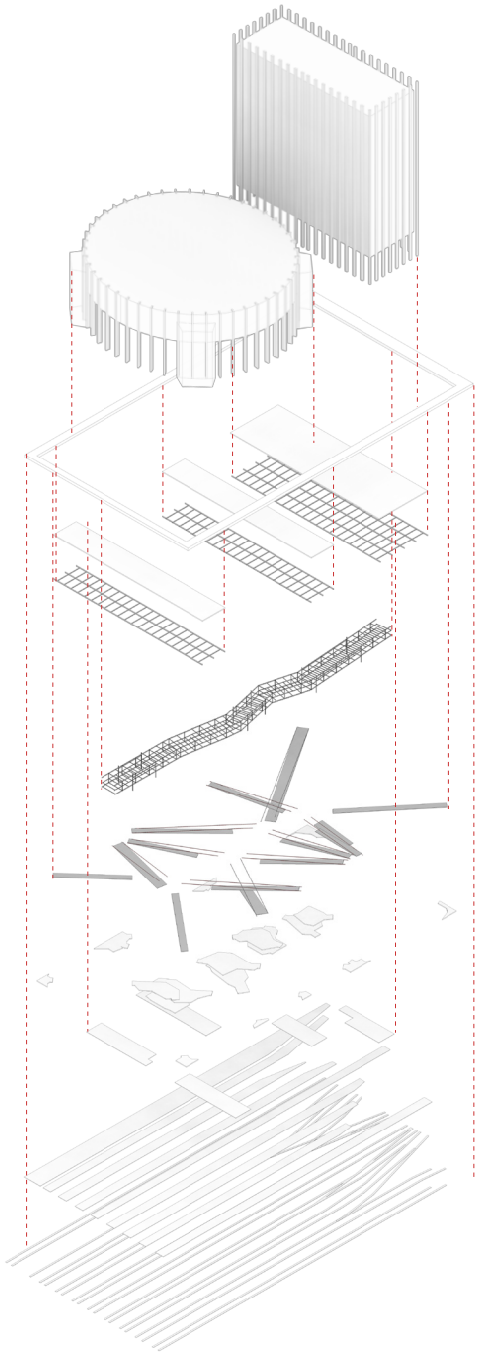


NODES

SITE-CAST REINFORCED
CONCRETE



NEW CONSTRUCTION
ALTERED EXISITING



PROGRAM
WITH SQUARE FOOTAGES

EXISITING BUILDINGS
WITH ALTERATIONS

SIDEWALKS

EXISITING PLATFORM STRIPS

SUPPORT CORE
Restrooms, Employee Services, Backstage Spaces, Security Offices

HVAC Ducts, Electrical Systems, Plumbing

93,918 SF

PATHWAYS
AND TENSION STRUCTURE
Circulation and Access

Tension Structural Support

44,880 SF

NODES
Gathering Spaces - Waiting, Meeting

Ticketing Services, Lockers, Seating, Information

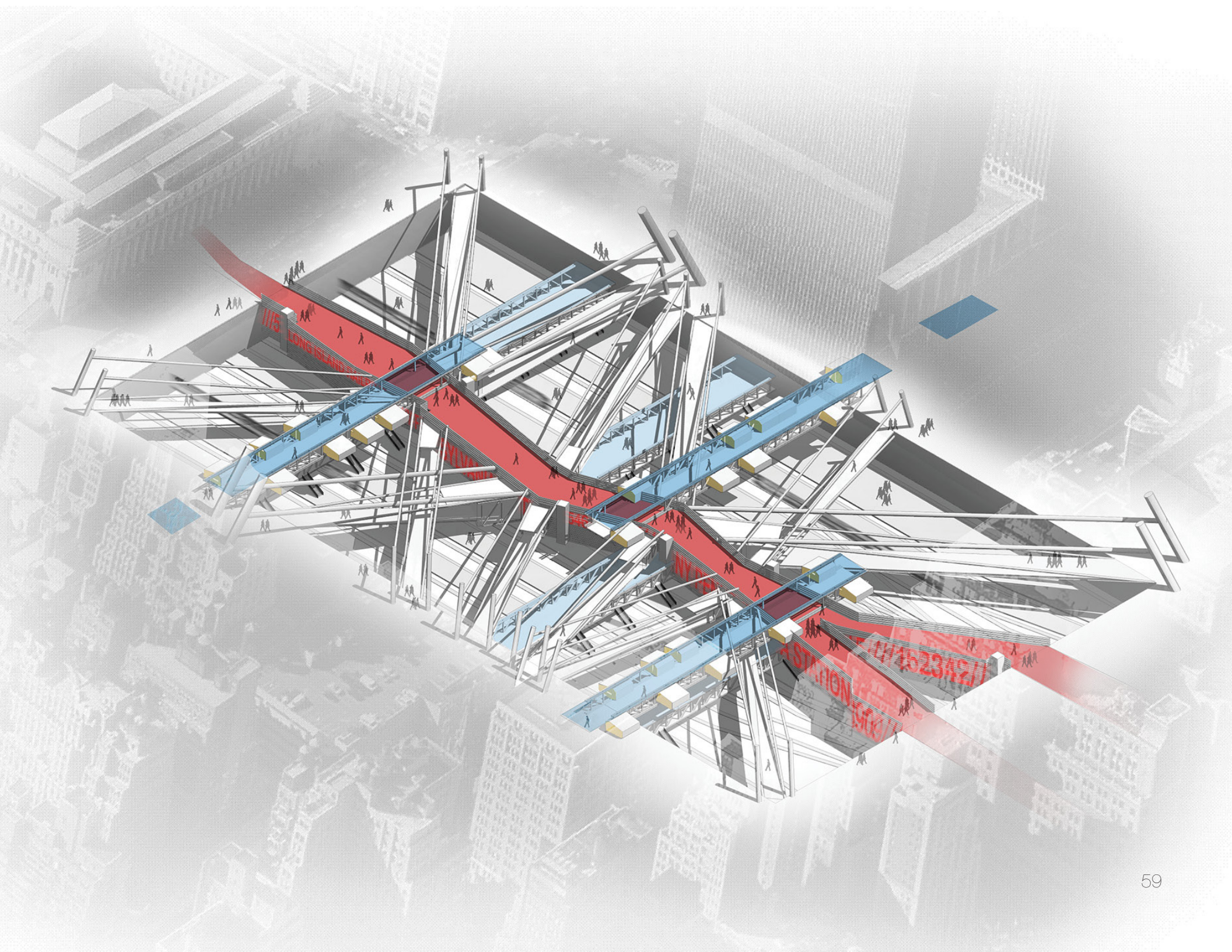
43,075 SF

EXISITING CONCOURSES
WITH ALTERATIONS
33,856 SF

TRAIN PLATFORMS

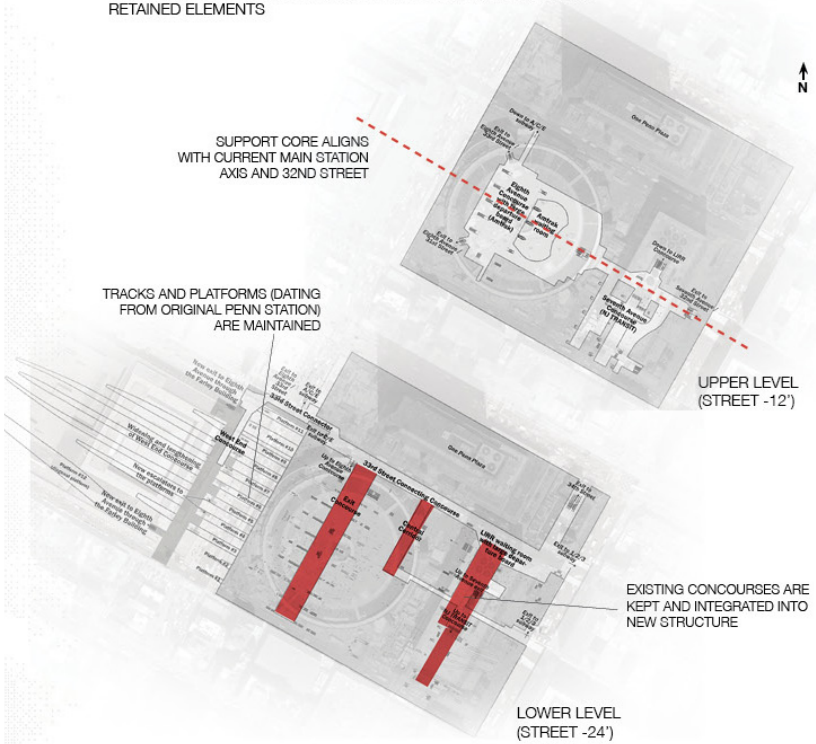
TRACKS
Platforms + Tracks:
361,800 SF

577,529+ TOTAL 'STATION' SQUARE FEET



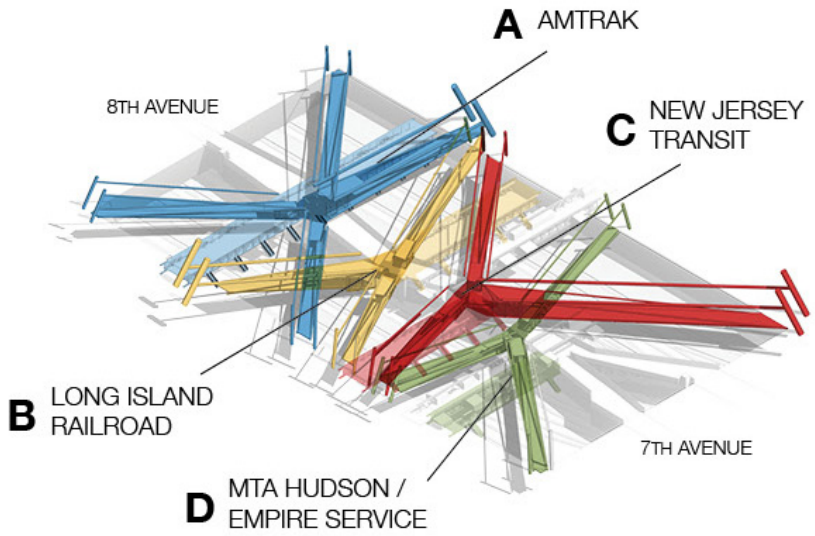
Existing and New Construction

RELATIONSHIP OF NEW CONSTRUCTION TO EXISTING STRUCTURE
RETAINED ELEMENTS



Rail Systems

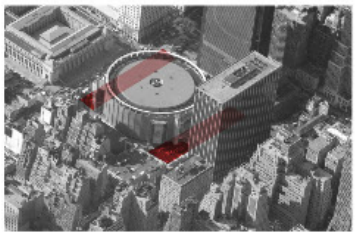
INTERLOCKED, INTERDEPENDENT, SEPARATE SYSTEMS
STREET TO PATHWAYS THROUGH CORE TO CONCOURSES AND PLATFORMS



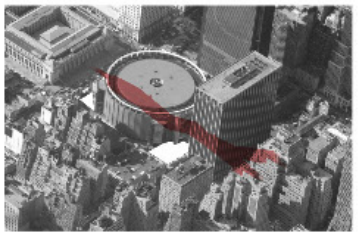
Construction Alterations Over Time

STAGED REMOVAL OF EXISTING ELEMENTS
CONSTRUCTION AND INSERTION OF NEW ELEMENTS

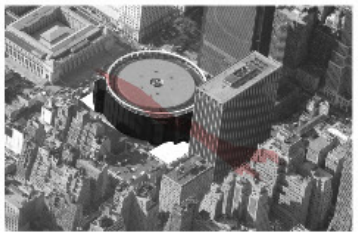
01 EXISITNG BUILDING COMPLEX



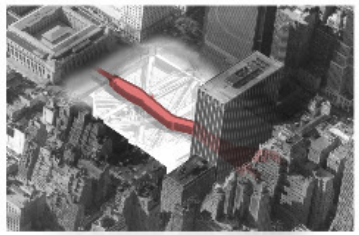
02 PORTIONS OF STREET LEVEL PLATFORM REMOVED



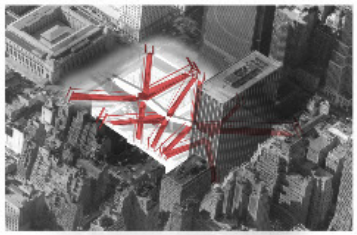
03 CONSTRUCTION BEGINS ON CORE STRUCTURE



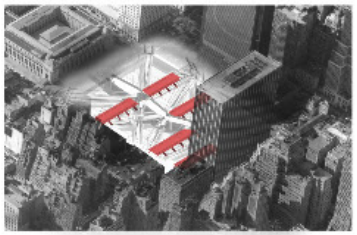
04 REMOVAL OF MADISON SQUARE GARDEN'S CONCRETE FACADE



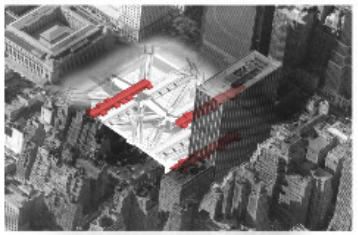
05 REMOVAL OF MADISON SQUARE GARDEN AND MORE PLATFORM



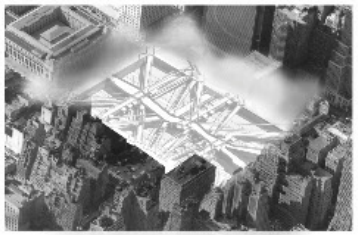
06 COMPLETION OF CORE AND CONSTRUCTION OF PATHWAY / STRUCTURAL SYSTEM



07 CONSTRUCTION OF STRUCTURES OVER EXISITING CONCOURSES



08 CONSTRUCTION OF SOCIAL WINGS AND INSERTION OF PODS

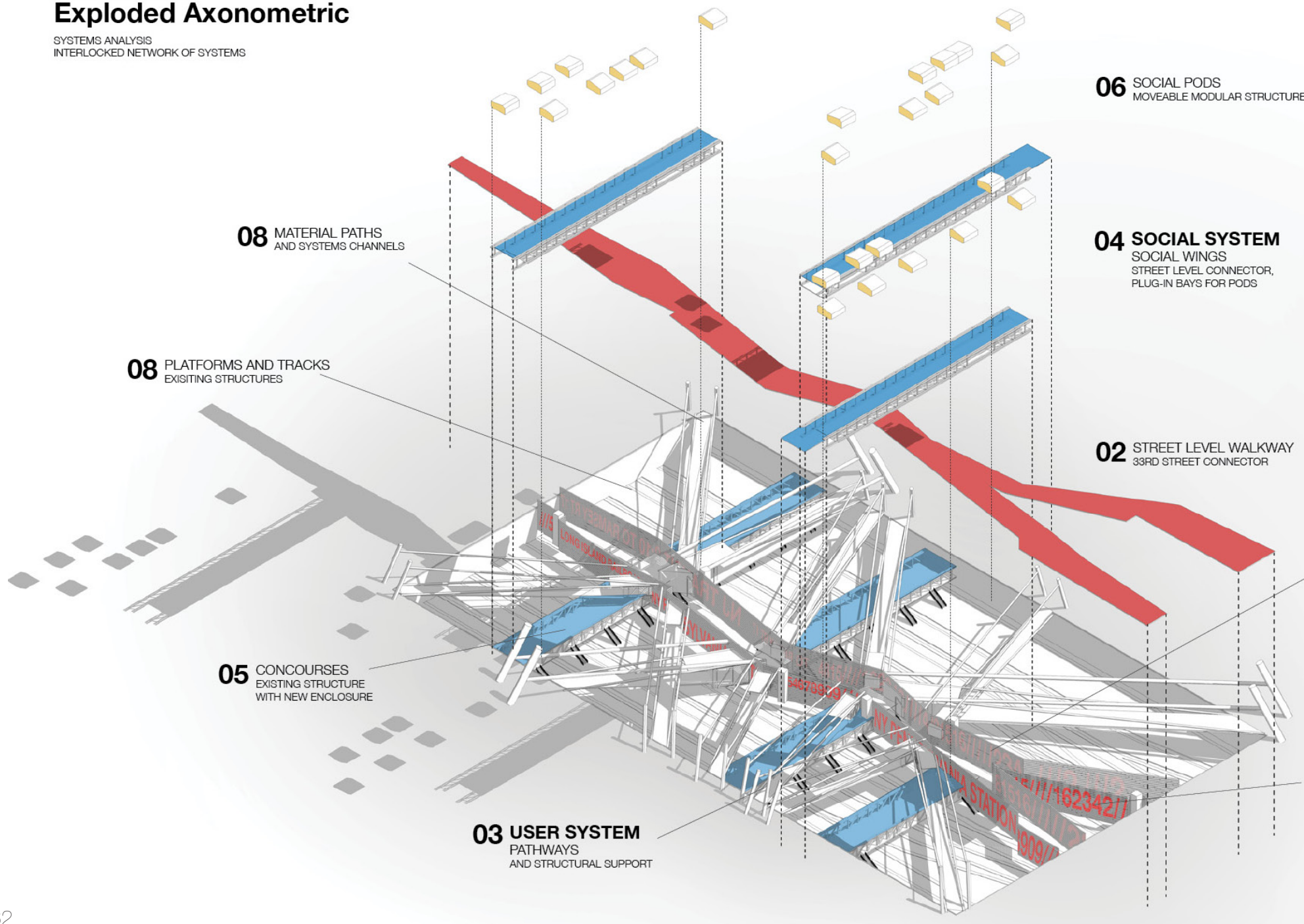


09 REMOVAL OF 4 PENN PLAZA

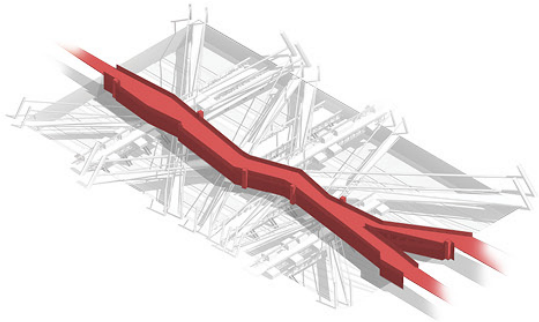
10 FUTURE INTEGRATED DEVELOPMENT

Exploded Axonometric

SYSTEMS ANALYSIS
INTERLOCKED NETWORK OF SYSTEMS

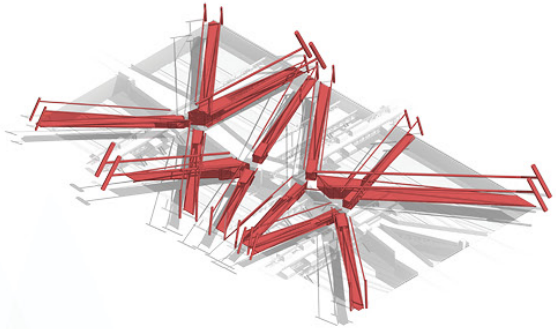


Building Systems



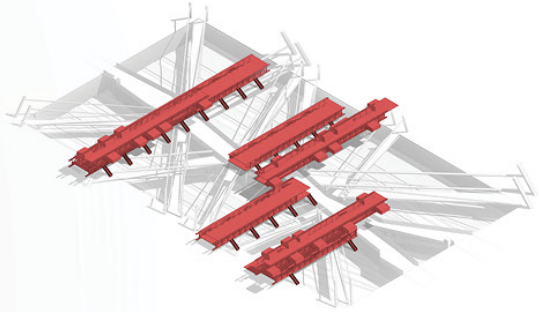
Support System

CONNECTION TO URBAN INFRASTRUCTURE
CENTRALIZED TECHNICAL SYSTEMS
RECONNECTED 33RD STREET VIA OPEN WALKWAY
USER SUPPORT PROGRAM
MAIN INTERLOCKED AXIS



User System

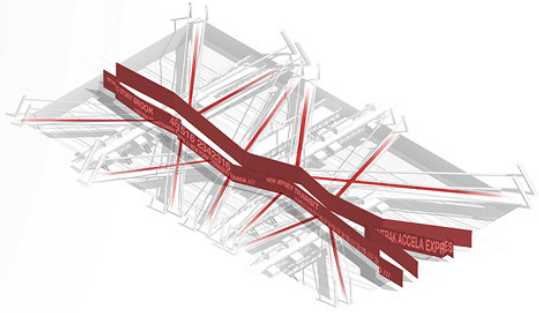
USER PATHWAYS FROM STREET TO STATION
STRUCTURAL SUPPORT FOR CENTRAL CORE
EXTENSION OF STREET ACTIVITY



Social System

EXTENSION OF STREET ACTIVITY
SPACES FOR ORGANIC COMMERCE
IN-BETWEEN MEETING AND GATHERING SPACES
EXISITING CONCOURSES WITH NEW STRUCTURE
PLUG-IN MODULAR PODS

01 SUPPORT SYSTEM
CORE STRUCTURE
WITH INFORMATION FACADE



Information System

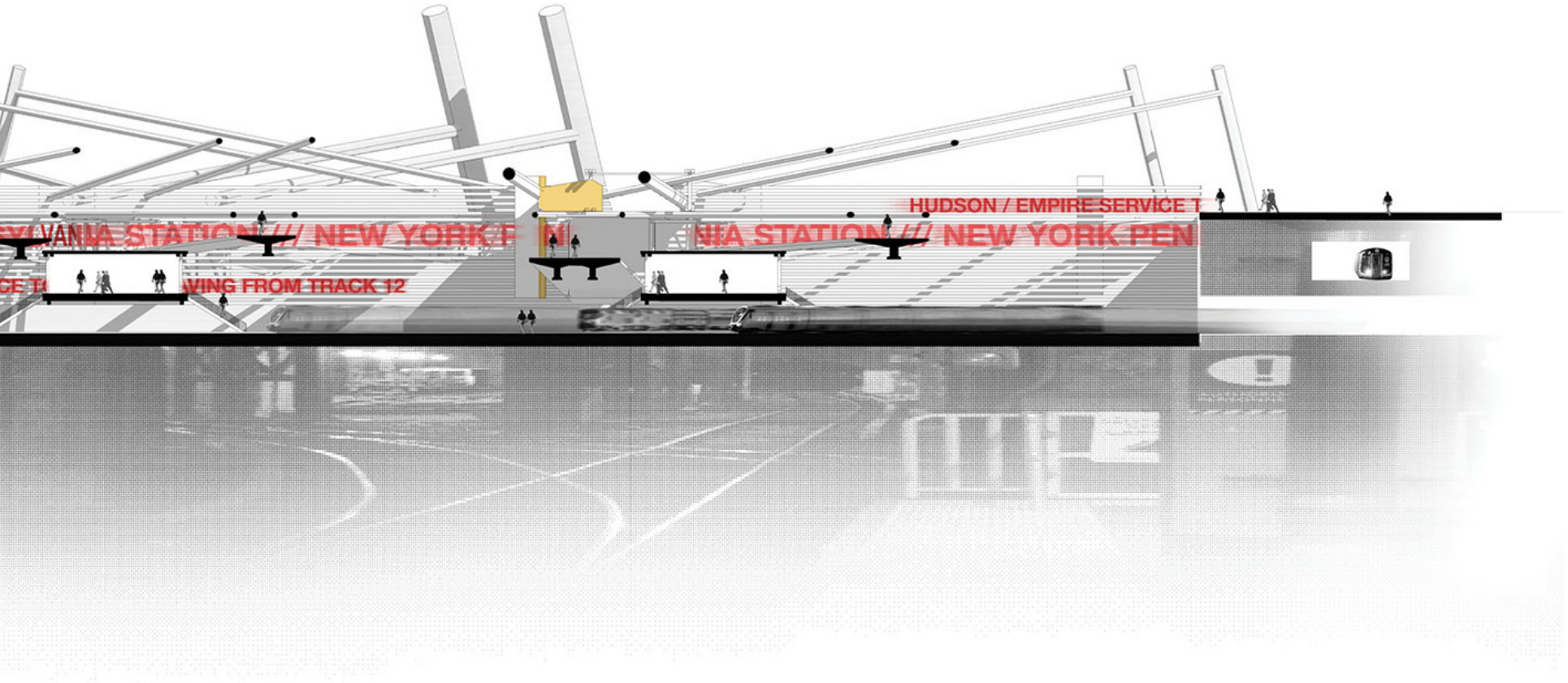
TEMPORAL
LED LOUVER CORE FACADE
MOTION AND SCHEDULE CHANGING LIGHTS
ARCHITECTURAL RESPONSES TO STATION'S FLOWS

SPATIAL
MATERIAL PATHWAYS FOR EACH RAIL SYSTEM
CONNECTION TO DISTANT STATIONS

07 INFORMATION SYSTEM
LED LOUVER FACADE

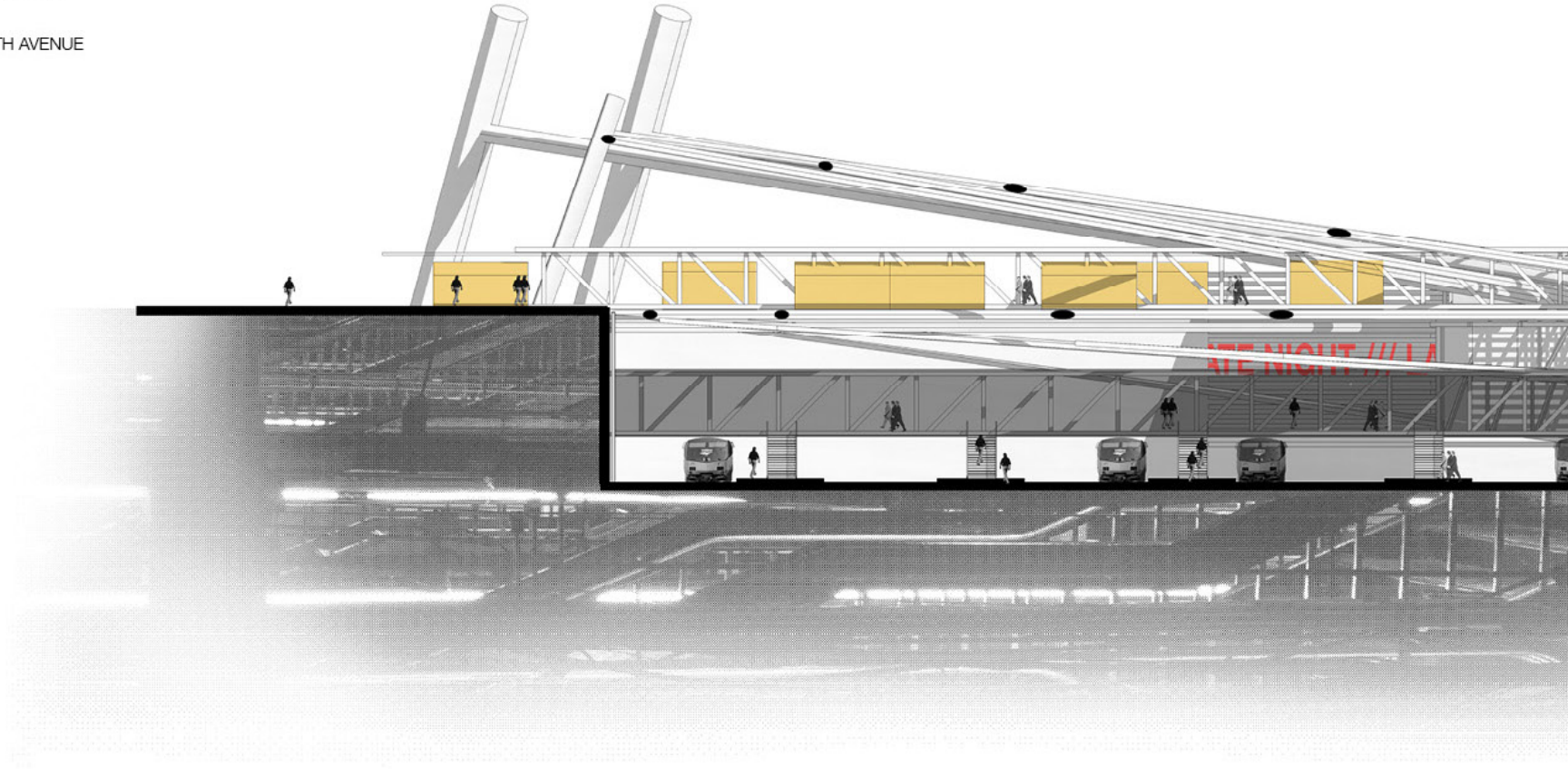
Longitudinal Section

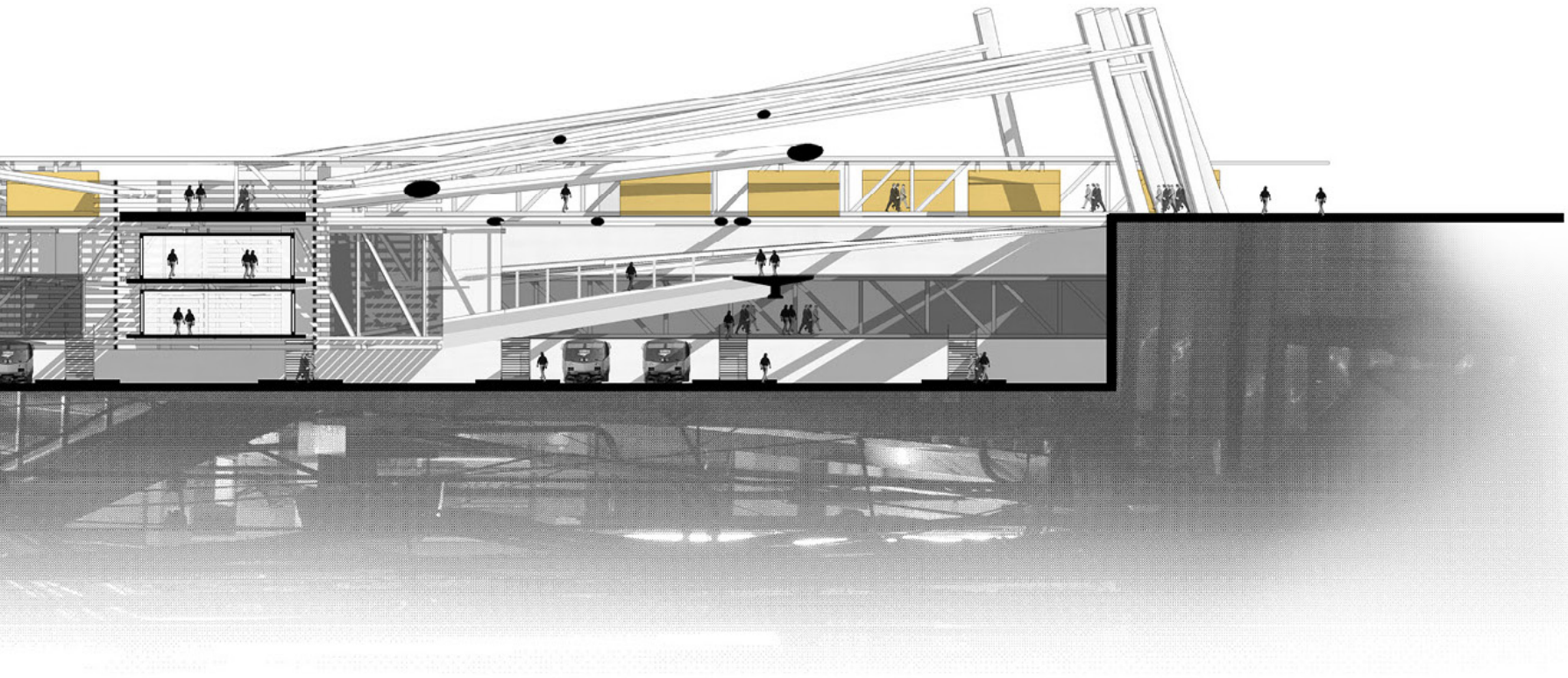
1/32" = 1' SCALE
LOOKING SOUTH TOWARDS 31ST STREET


HUDSON / EMPIRE SERVICE T
NEW YORK PEN
VING FROM TRACK 12

Cross Section

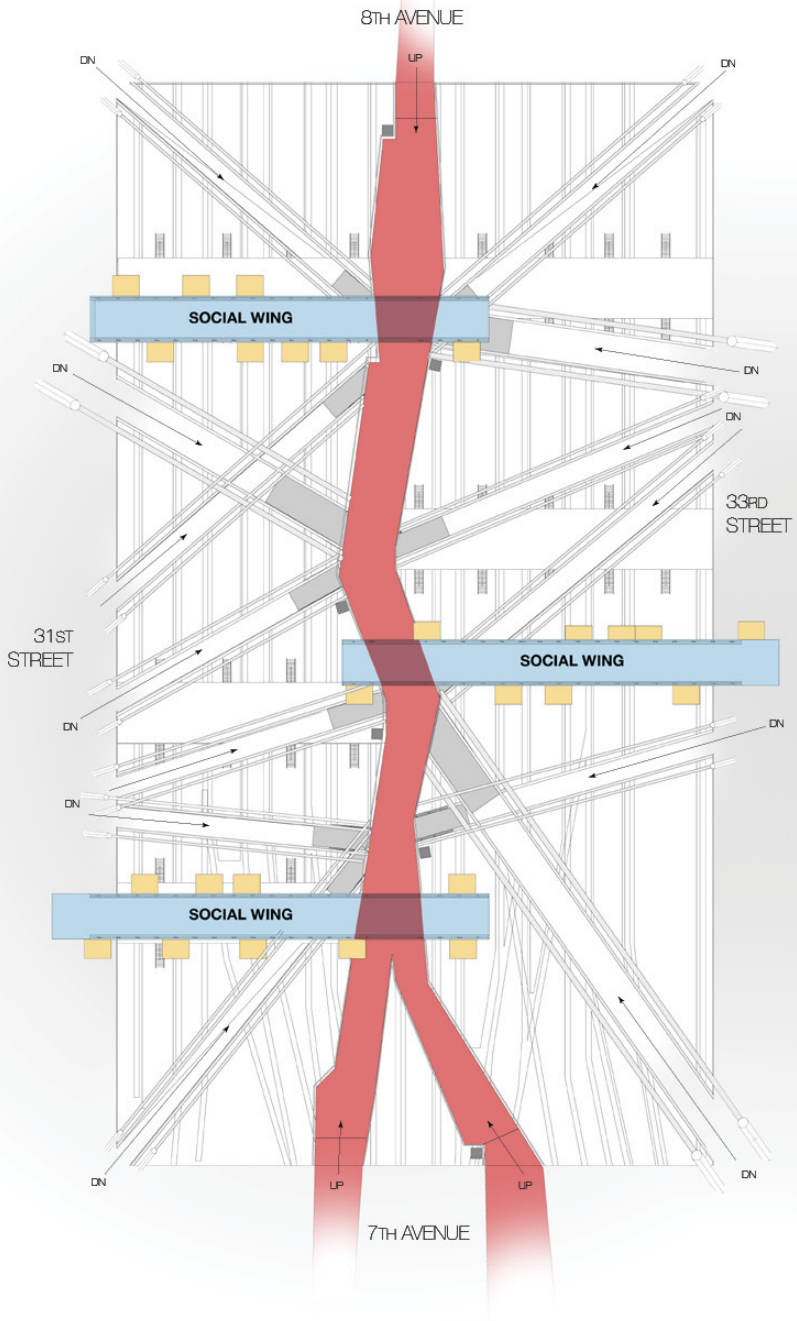
1/32" = 1' SCALE
LOOKING WEST TOWARDS 8TH AVENUE





Street Level

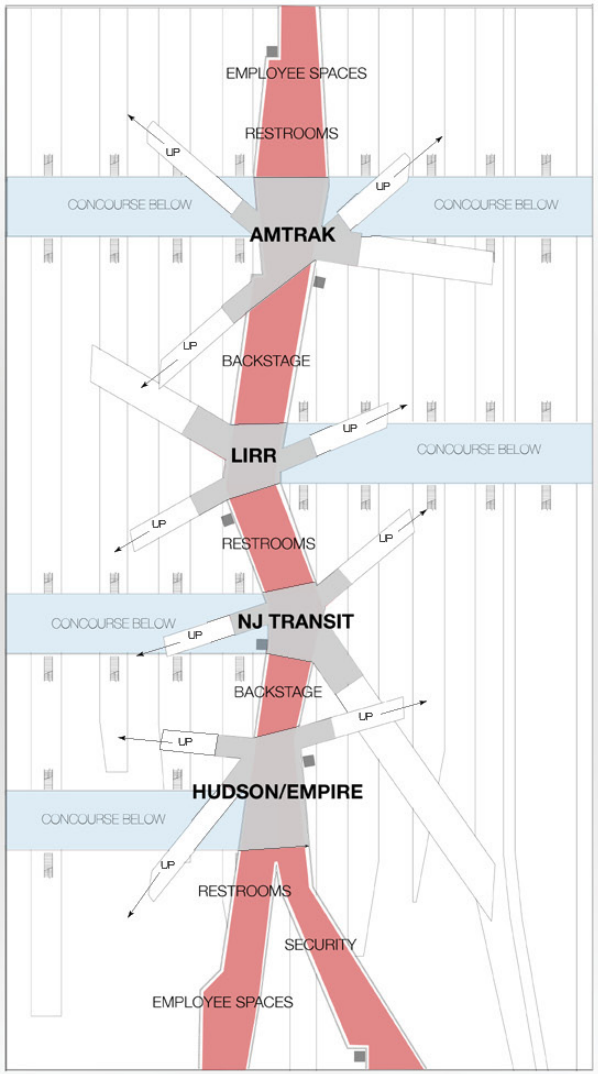
1/64" = 1' SCALE



First Lower Level

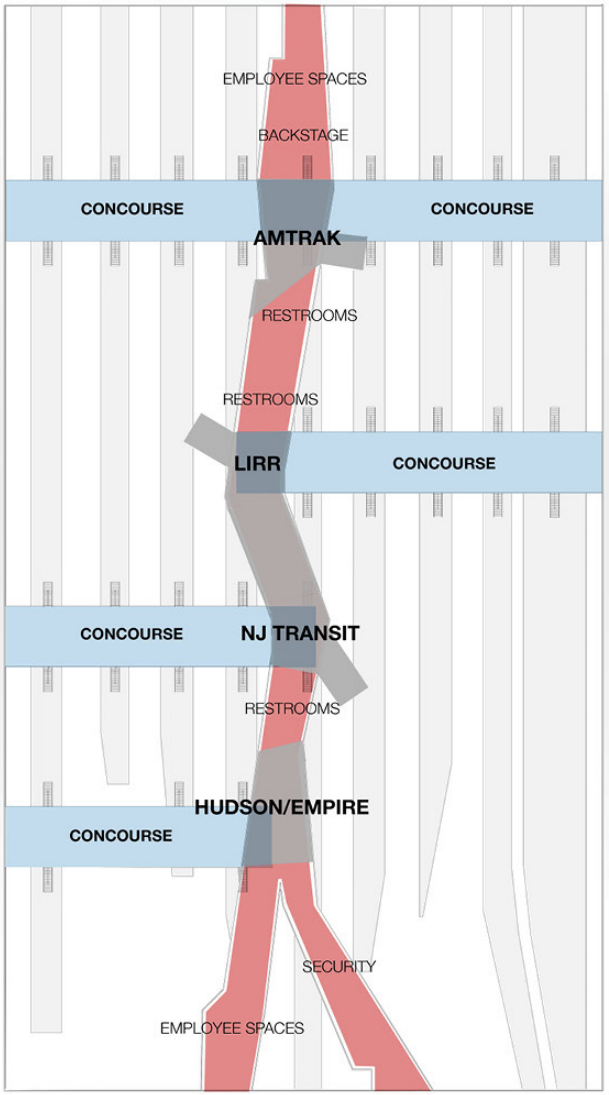
N

1/64" = 1' SCALE
STREET LEVEL -12'



Concourse Level

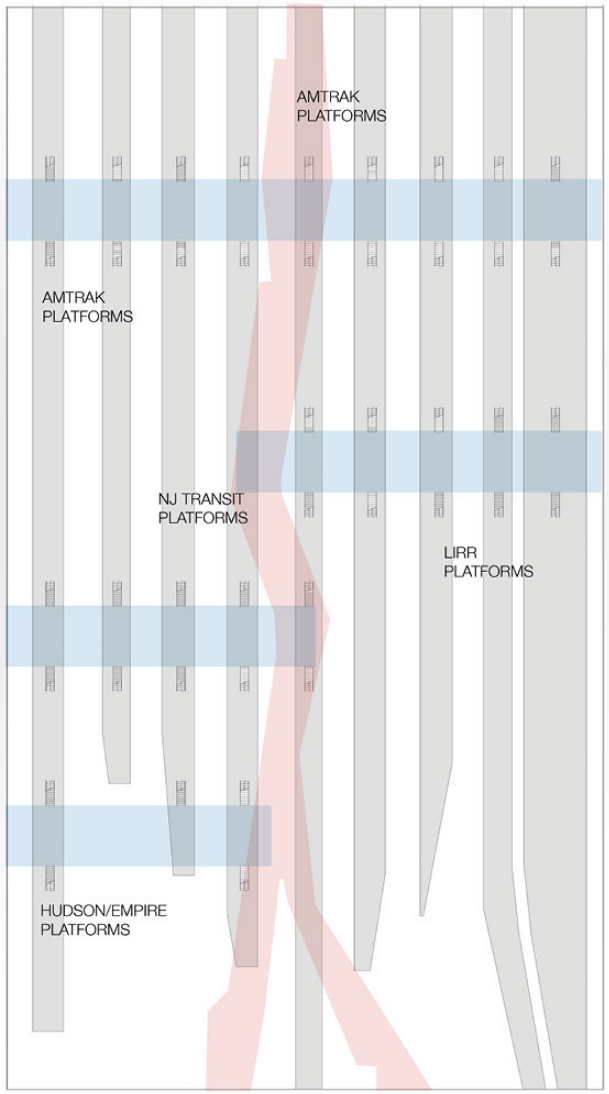
1/64" = 1' SCALE
STREET LEVEL -24'



Track Level

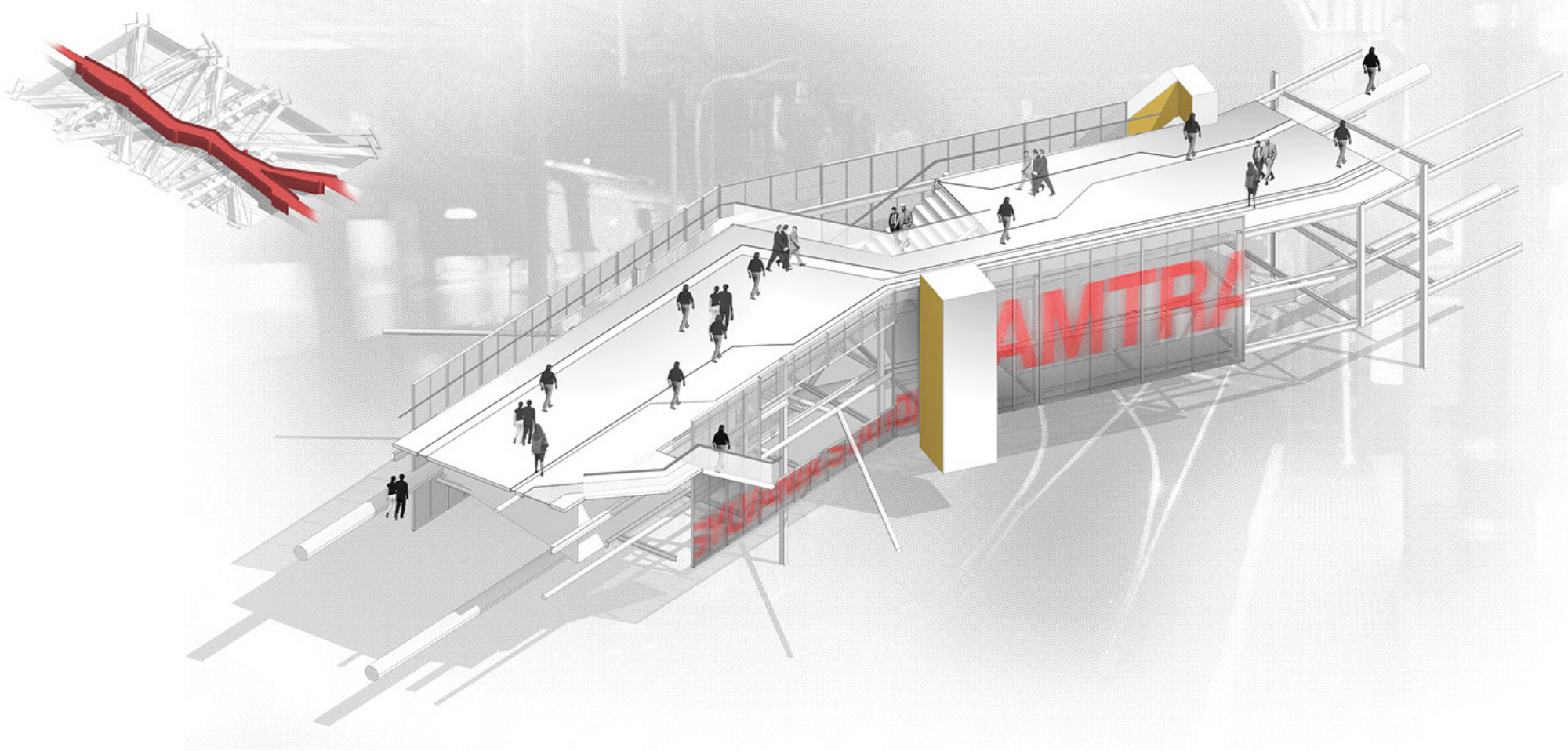
1/64" = 1' SCALE
STREET LEVEL -36'

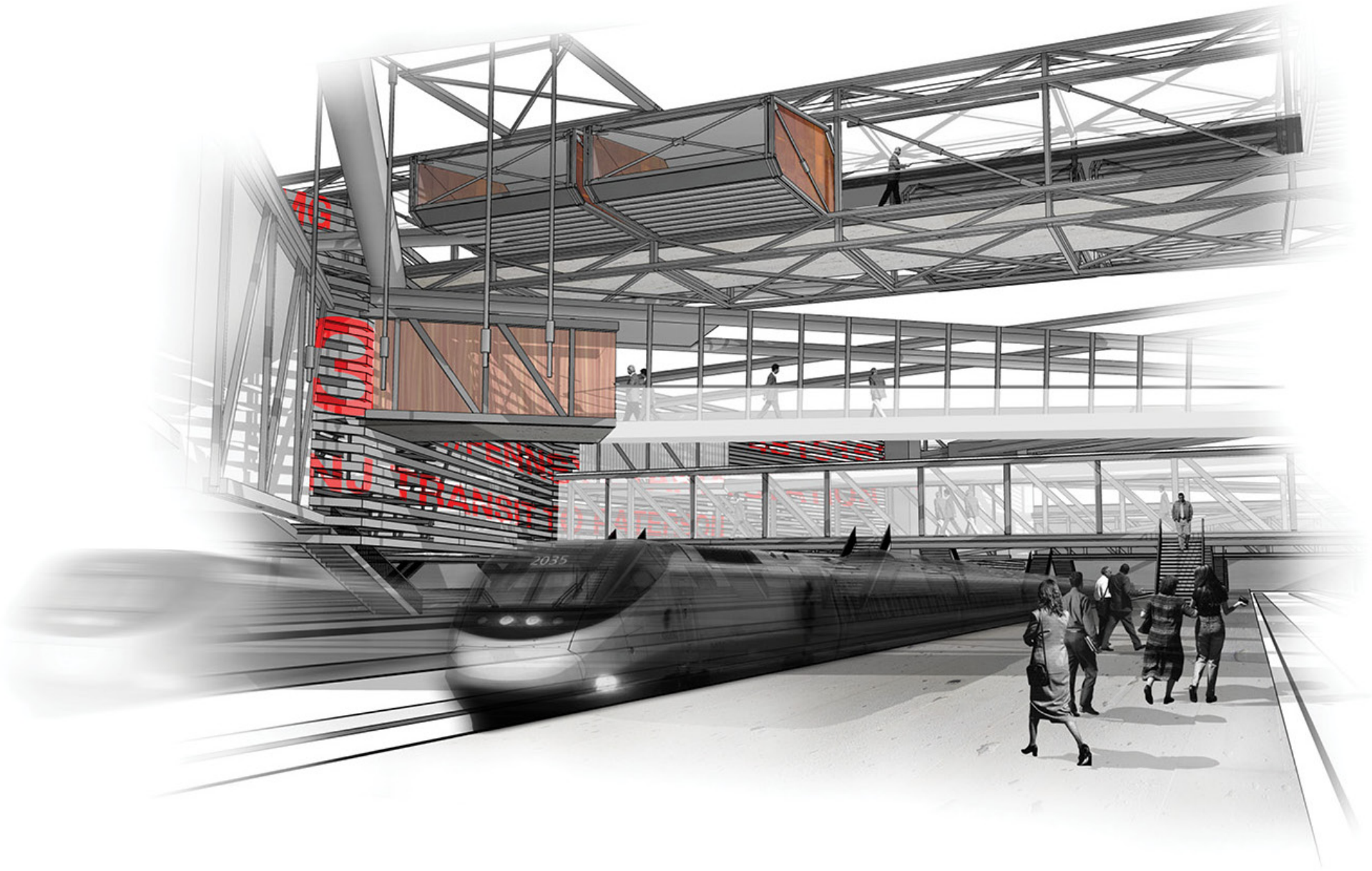
N



Support System

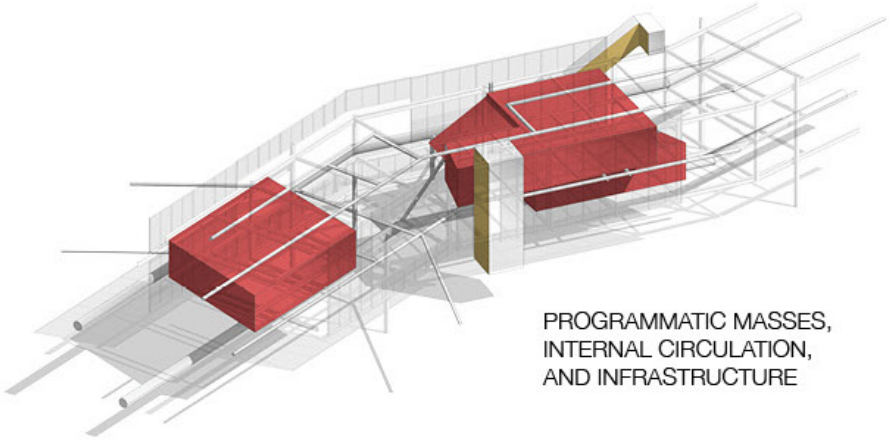
CENTRAL INFRASTRUCTURE
32ND STREET WALKWAY
PROGRAMMATIC SUPPORT



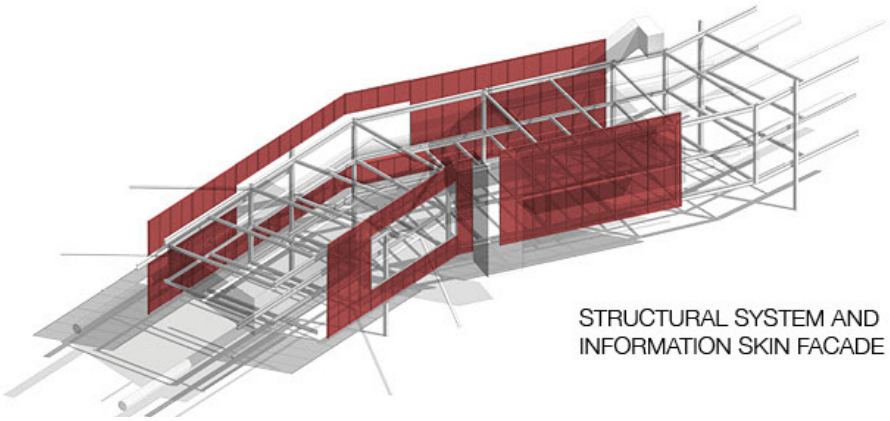

2035

Support Core Components

SUPPORT SYSTEM EXPLODED AXONOMETRIC
COMPONENT ANAYLSIS



PROGRAMMATIC MASSES,
INTERNAL CIRCULATION,
AND INFRASTRUCTURE



STRUCTURAL SYSTEM AND
INFORMATION SKIN FACADE

MATERIAL PATHWAYS -
SPATIAL INFORMATION SYSTEM **07**

STREET LEVEL WALKWAY
WITH STAIR ACCESS **06**

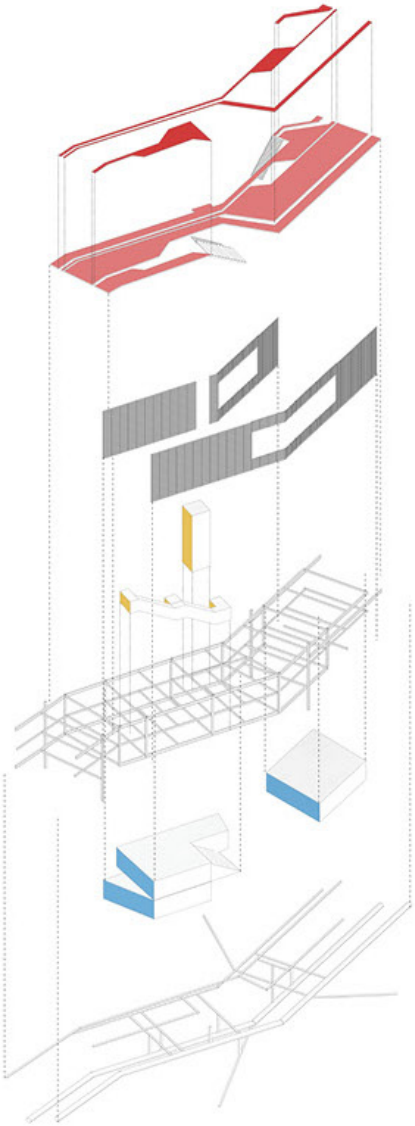
LED-LOUVER FACADE -
TEMPORAL INFORMATION SYSTEM **05**

CONCRETE ENCASED ELEVATORS
AND INTERNAL STAIRCASES **04**

STEEL FRAMED STRUCTURE **03**

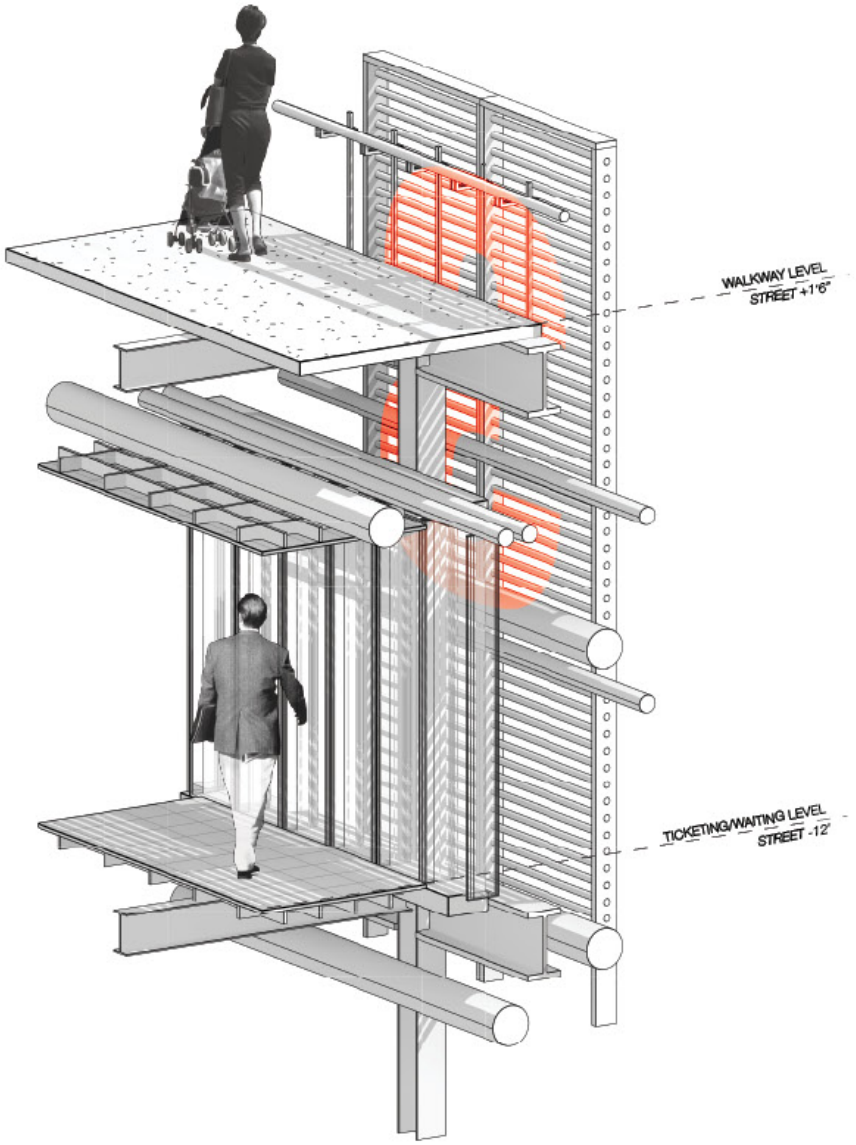
PROGRAMMATIC MASSES -
RESTROOMS, BACKSTAGE SPACES,
SECURITY, EMPLOYEE SPACES **02**

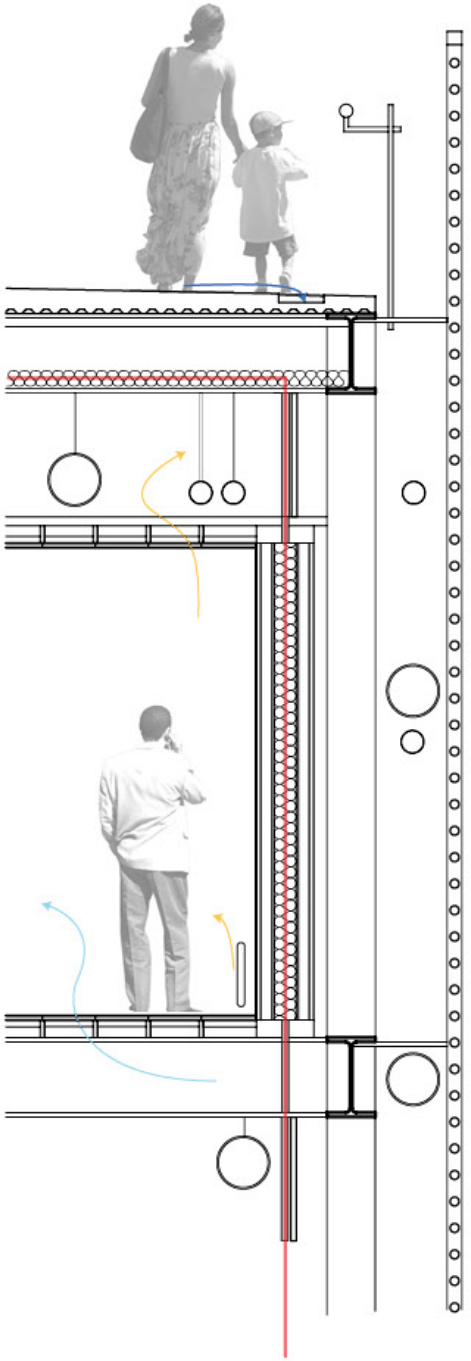
TECHNICAL INFRASTRUCTURE -
PLUMBING, ELECTRICAL, HVAC, DATA **01**



Support Core Wall Section

1/2" = 1' WALL SECTION
AXONOMETRIC ANALYSIS





STREET LEVEL WALKWAY

WALKWAY
Concrete on 3" Metal Deck

MECHANICAL PLENUM

ADJUSTABLE CEILING
Metal Grid Structure
2' x 2' Ceiling Panels

INTERIOR SPACE

RADIATOR

ADJUSTABLE FLOOR
2' x 2' Floor Panels
Metal Grid Structure

MECHANICAL PLENUM

POLISHED STEEL RAILING STRUCTURE
Bolt Connected to Facade Connection Piece

STEEL CONNECTION PIECE
Connects LED-Louver Facade Structure to Core
Welded to Steel Beam

ALUMINUM SHEET ON PLYWOOD PANEL
With Insulation Board

LED-LOUVER FACADE
8' x 24' Prefabricated Panels

CHANNEL GLASS
Pilkington Profilit™ translucent linear channel glass
With Internal Lumira Aerogel Insulation

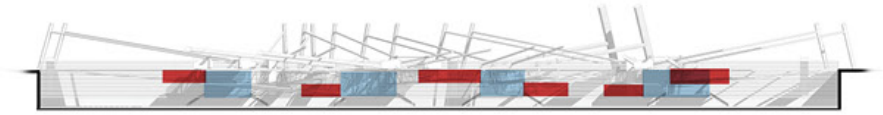
U-Value (glass only): 0.19 (Low-E with 25 mm Lumira aerogel insulation)

STC Rating: 44 dB (with Lumira aerogel insulation)

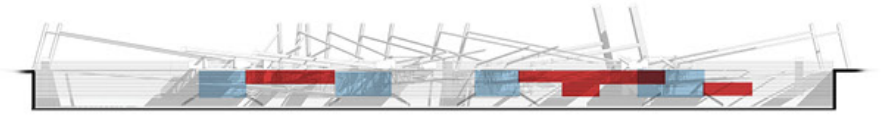
ALUMINUM SHEET ON PLYWOOD PANEL
With Insulation Board

Programmatic Components

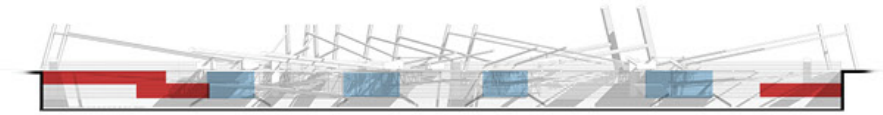
1/2" = 1' WALL SECTION
AXONOMETRIC ANALYSIS



RESTROOMS



BACKSTAGE SPACES
STORAGE, SUPERVISOR OFFICES, ADVANCED TICKET SERVICES, TRAVEL OFFICES, DIGITAL CENTERS

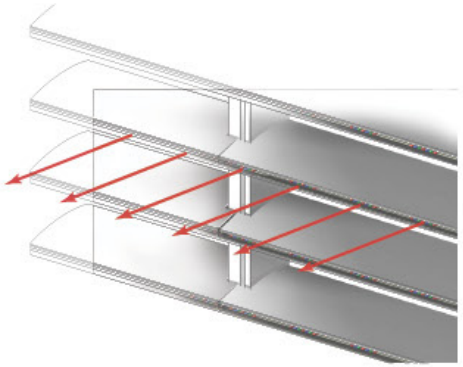


EMPLOYEE SPACES
BREAK ROOMS, KITCHENS, OFFICES, LOCKER ROOMS, STORAGE, MECHANICAL SPACES

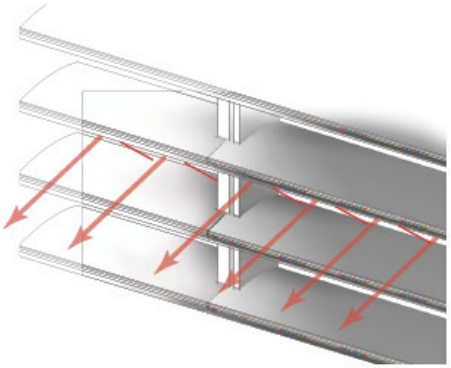
SECURITY OFFICES

LED Louver System

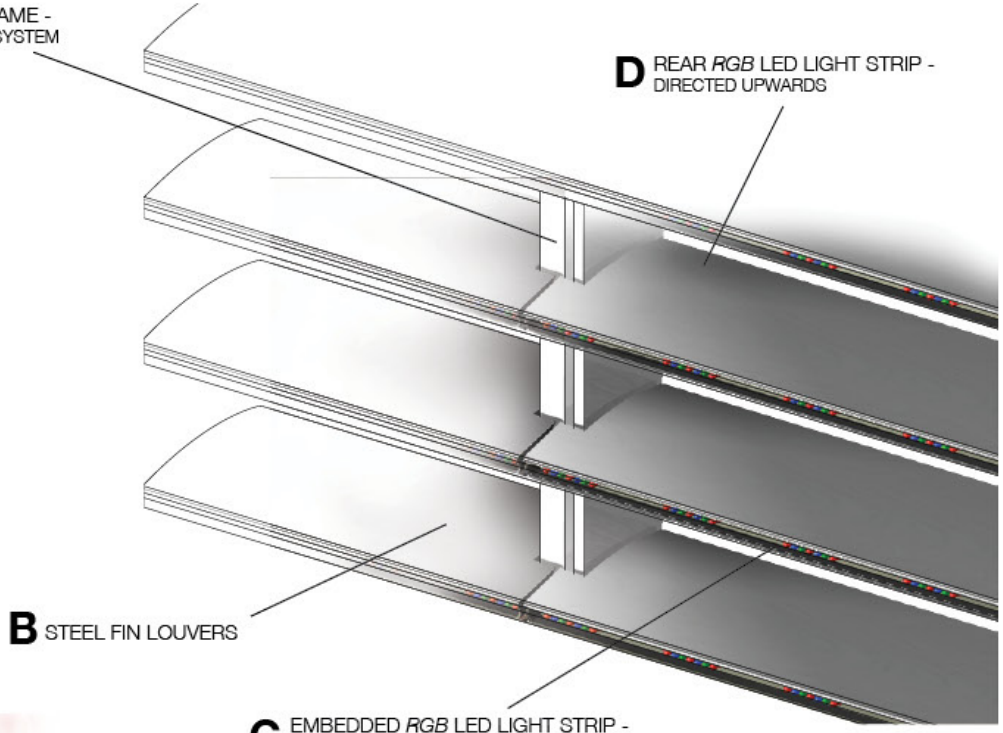
LOUVER DETAIL
LED LIGHTING DIAGRAMS



FORWARD LED LIGHTS
Allows direct light for text messages to be readable

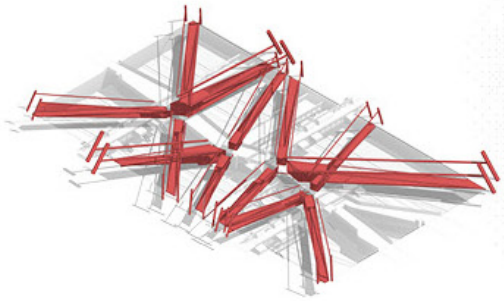


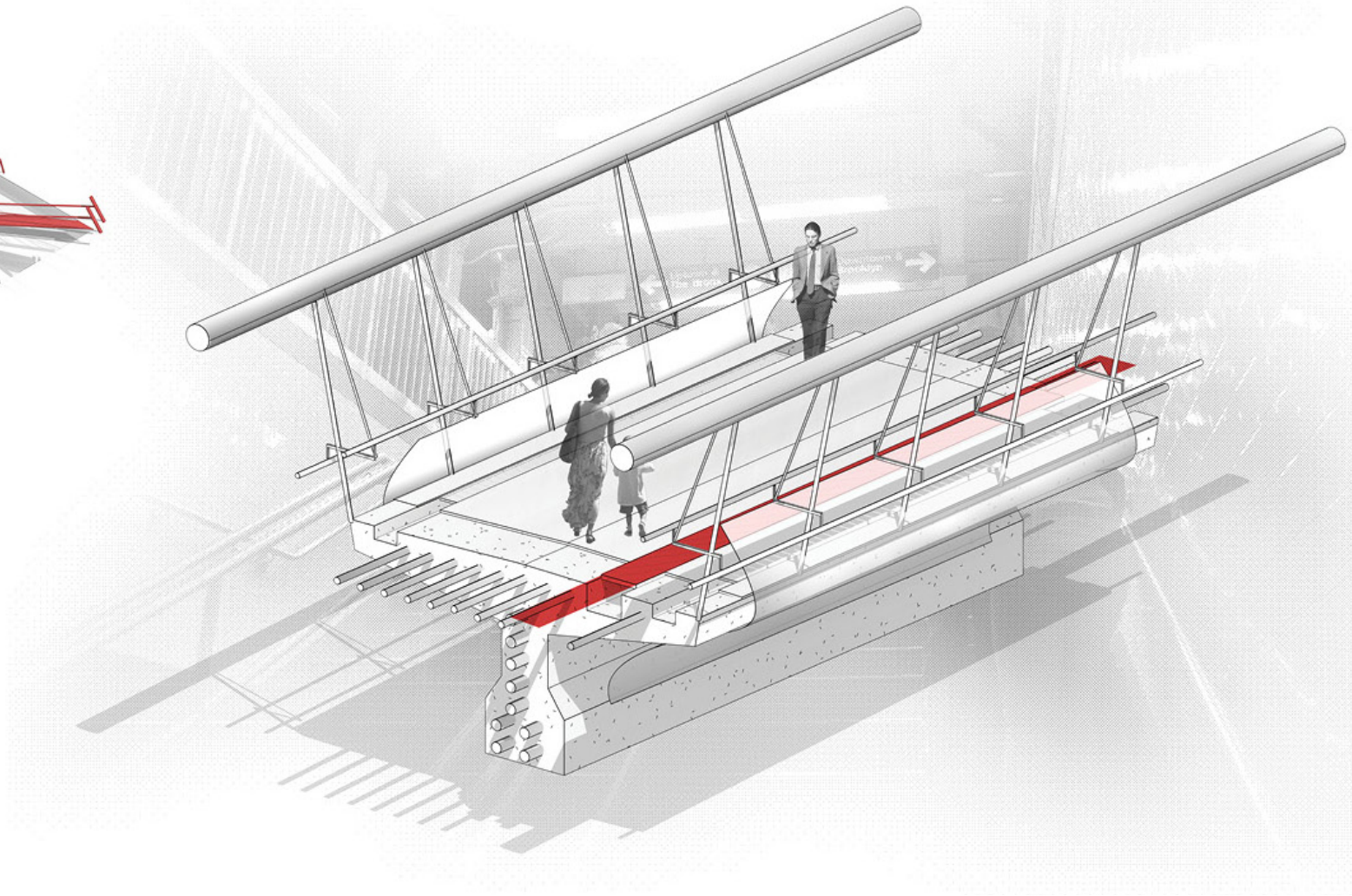
REAR LED LIGHTS
Directed upward so that light is reflected off of steel louvers
Allows for more diffuse light for general coloring

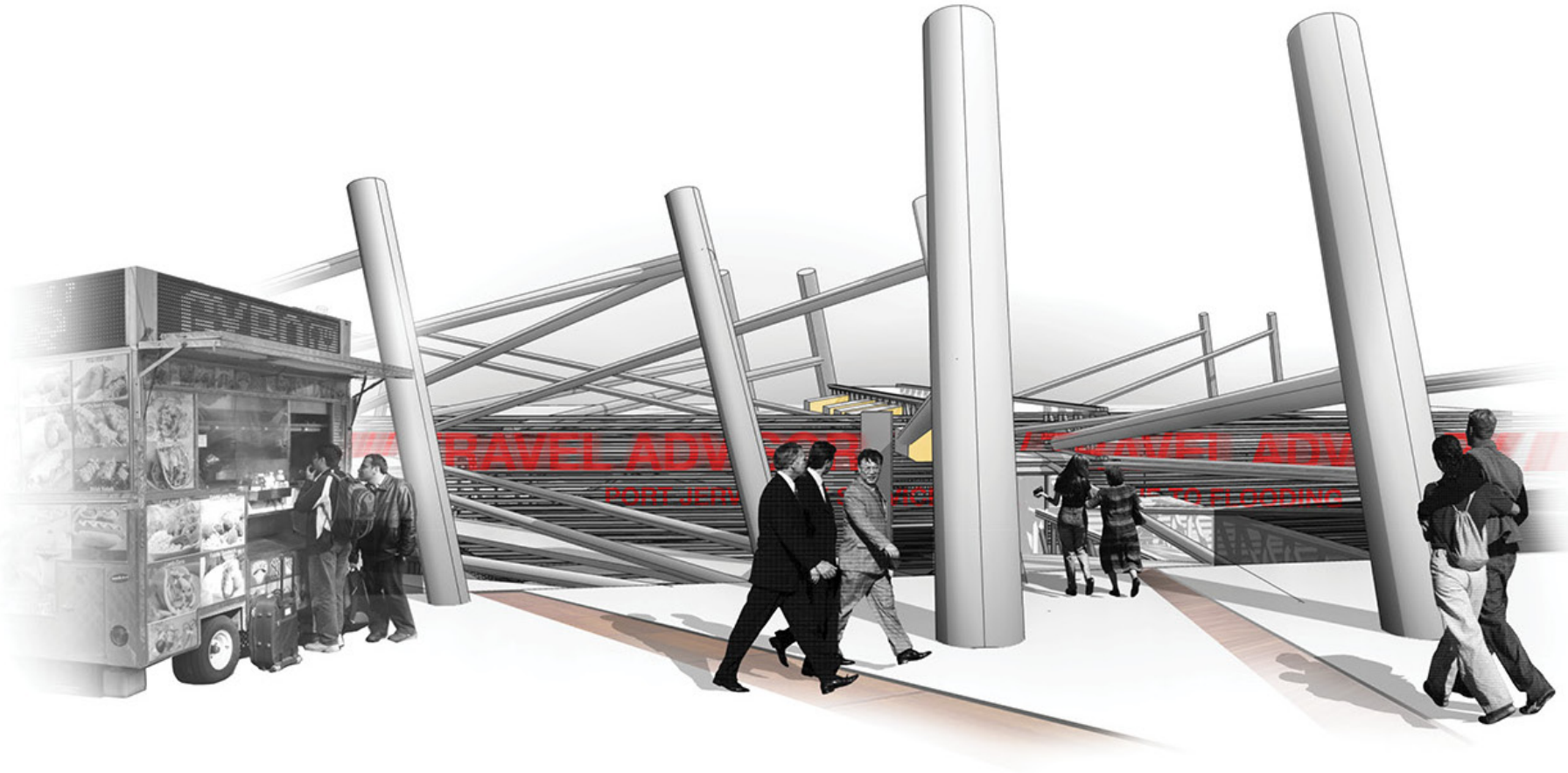


User System

CIRCULATION PATHWAYS
STRUCTURAL SUPPORT

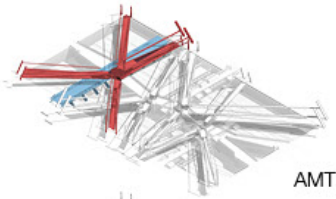




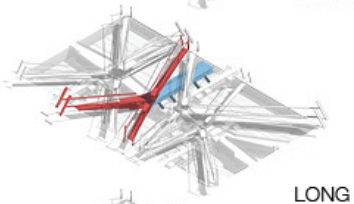


Rail System Pathways

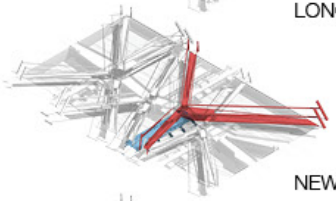
STREET TO STATION PATHWAYS
CONCOURSES AND ACCESS TO PLATFORMS



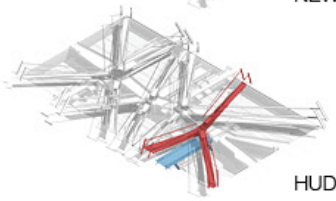
AMTRAK



LONG ISLAND RAILROAD



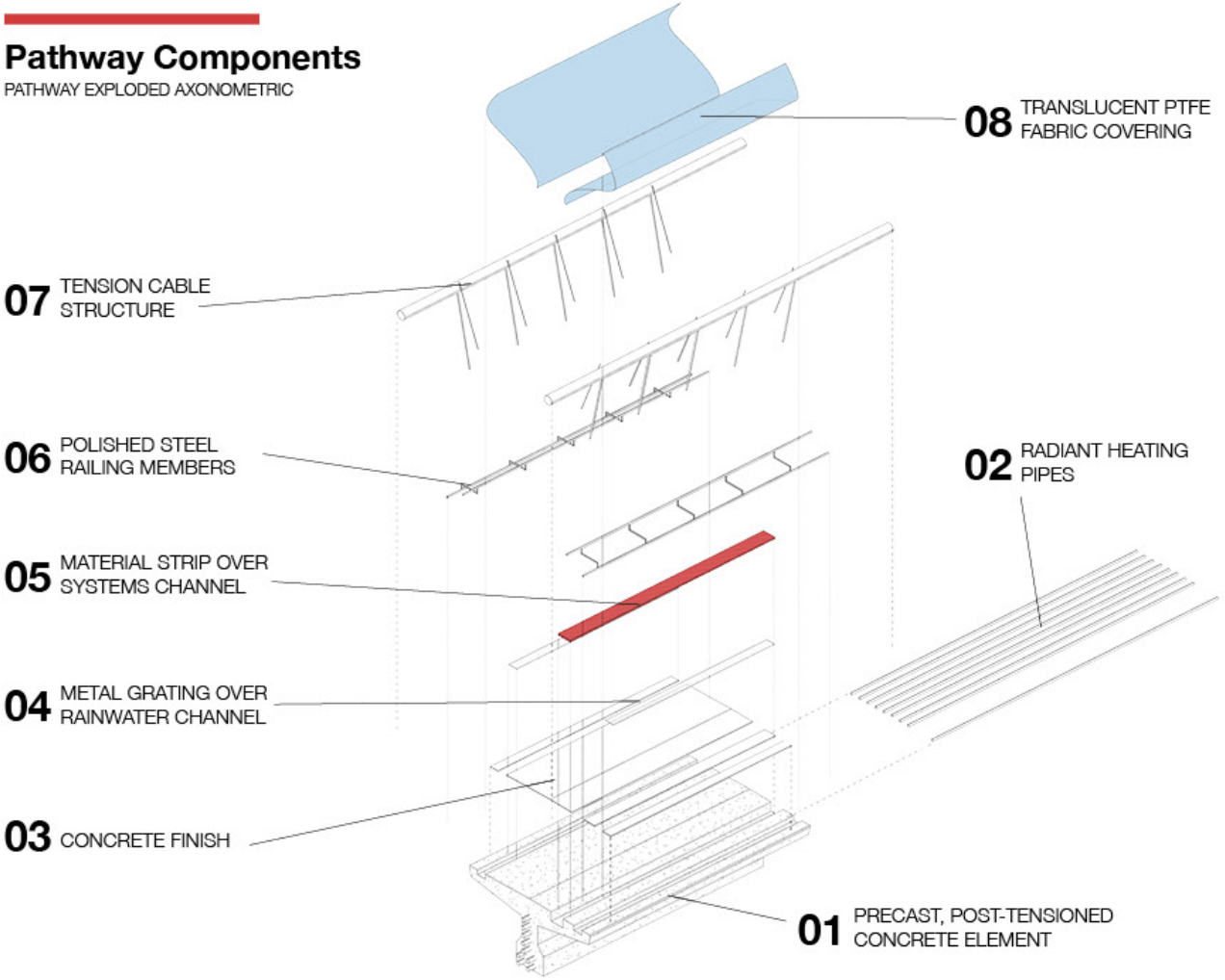
NEW JERSEY TRANSIT



HUDSON / EMPIRE SERVICE

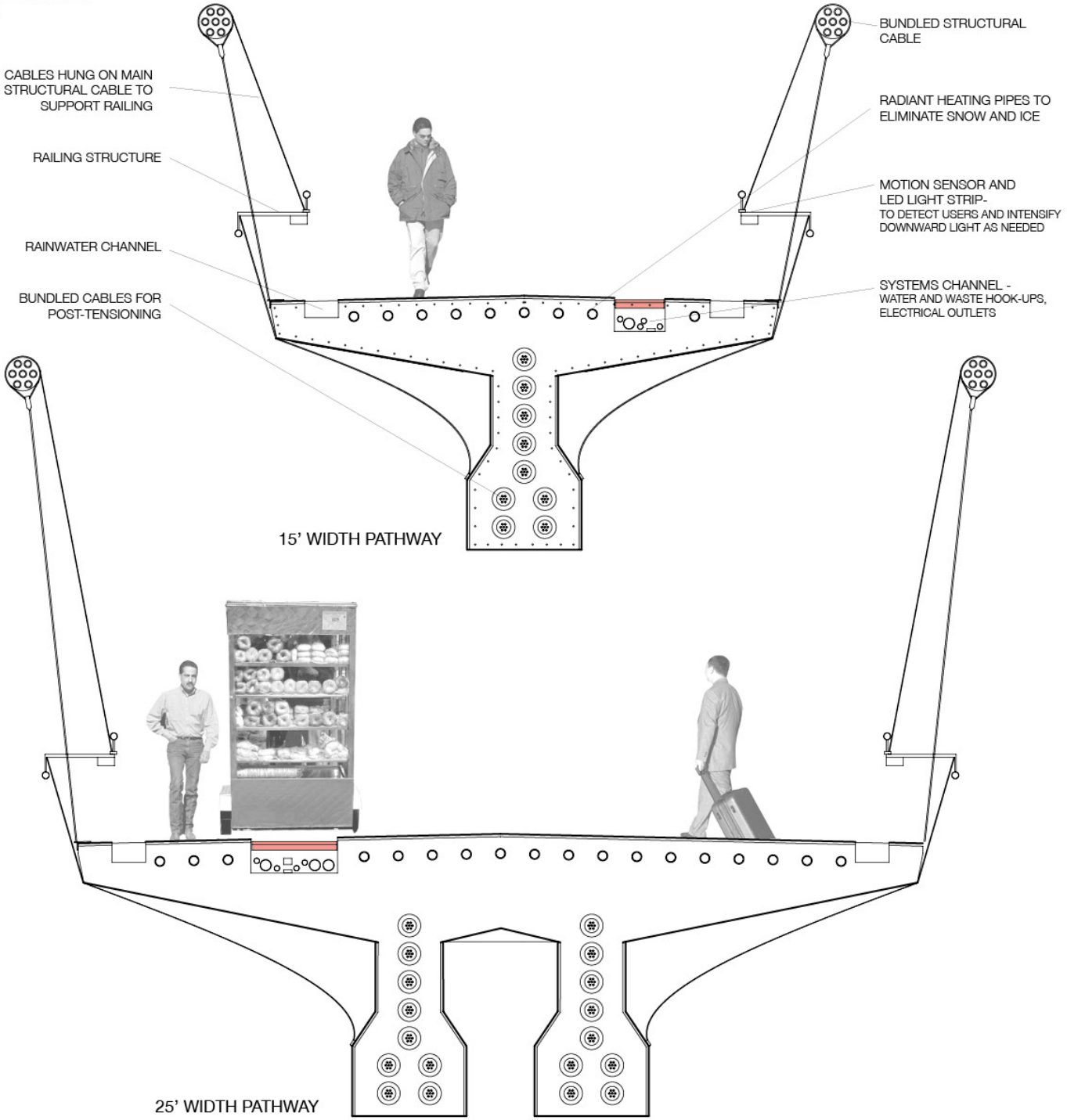
Pathway Components

PATHWAY EXPLODED AXONOMETRIC



Pathway Sections

1/2" = 1' SECTIONS



Tension Structure

FORCE DIAGRAMS
CLEVIS DETAIL

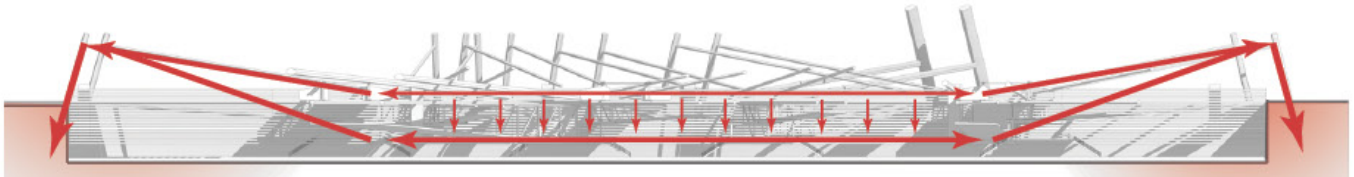
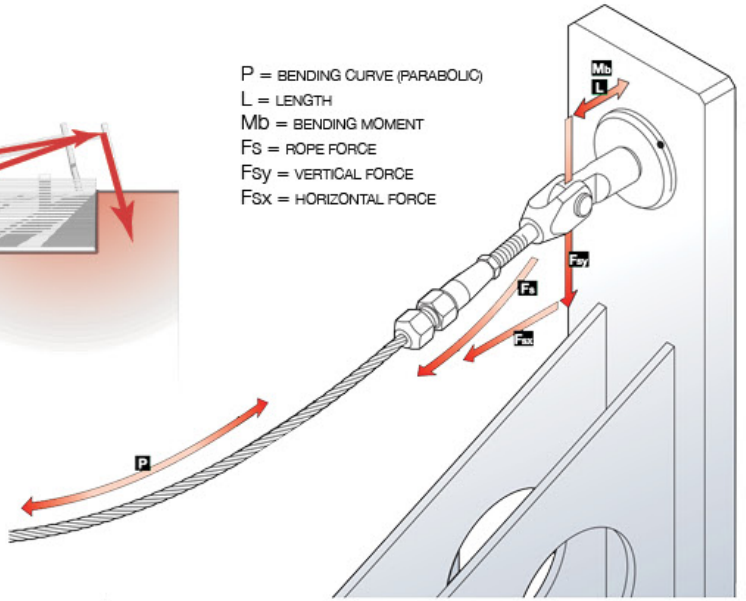
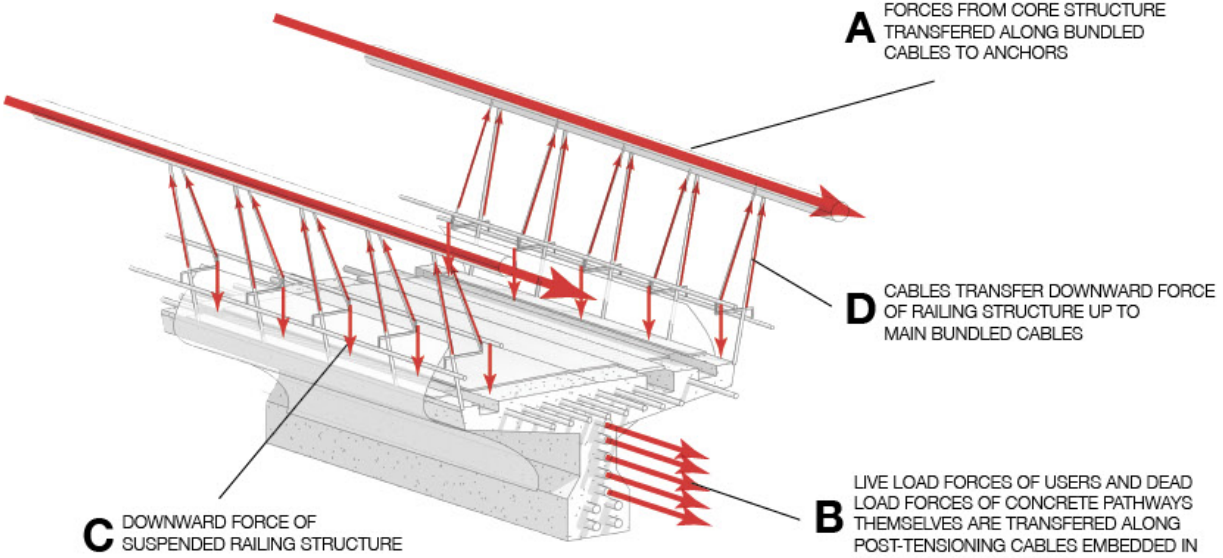


DIAGRAM SHOWING TRANSFER OF FORCES FROM STEEL FRAME STRUCTURE TO CABLES AND GROUND ANCHORS

P = BENDING CURVE (PARABOLIC)
L = LENGTH
Mb = BENDING MOMENT
Fs = ROPE FORCE
Fsy = VERTICAL FORCE
Fsx = HORIZONTAL FORCE



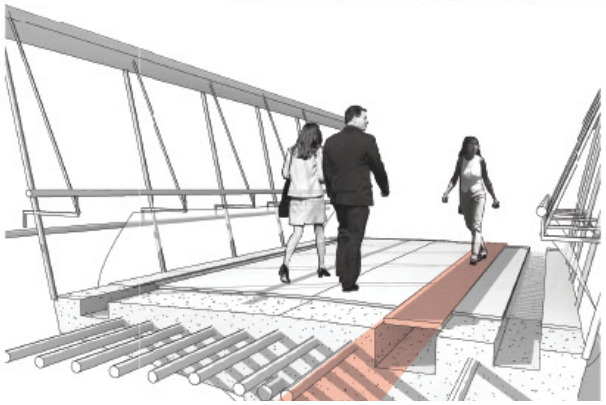


A FORCES FROM CORE STRUCTURE TRANSFERED ALONG BUNDLED CABLES TO ANCHORS

D CABLES TRANSFER DOWNWARD FORCE OF RAILING STRUCTURE UP TO MAIN BUNDLED CABLES

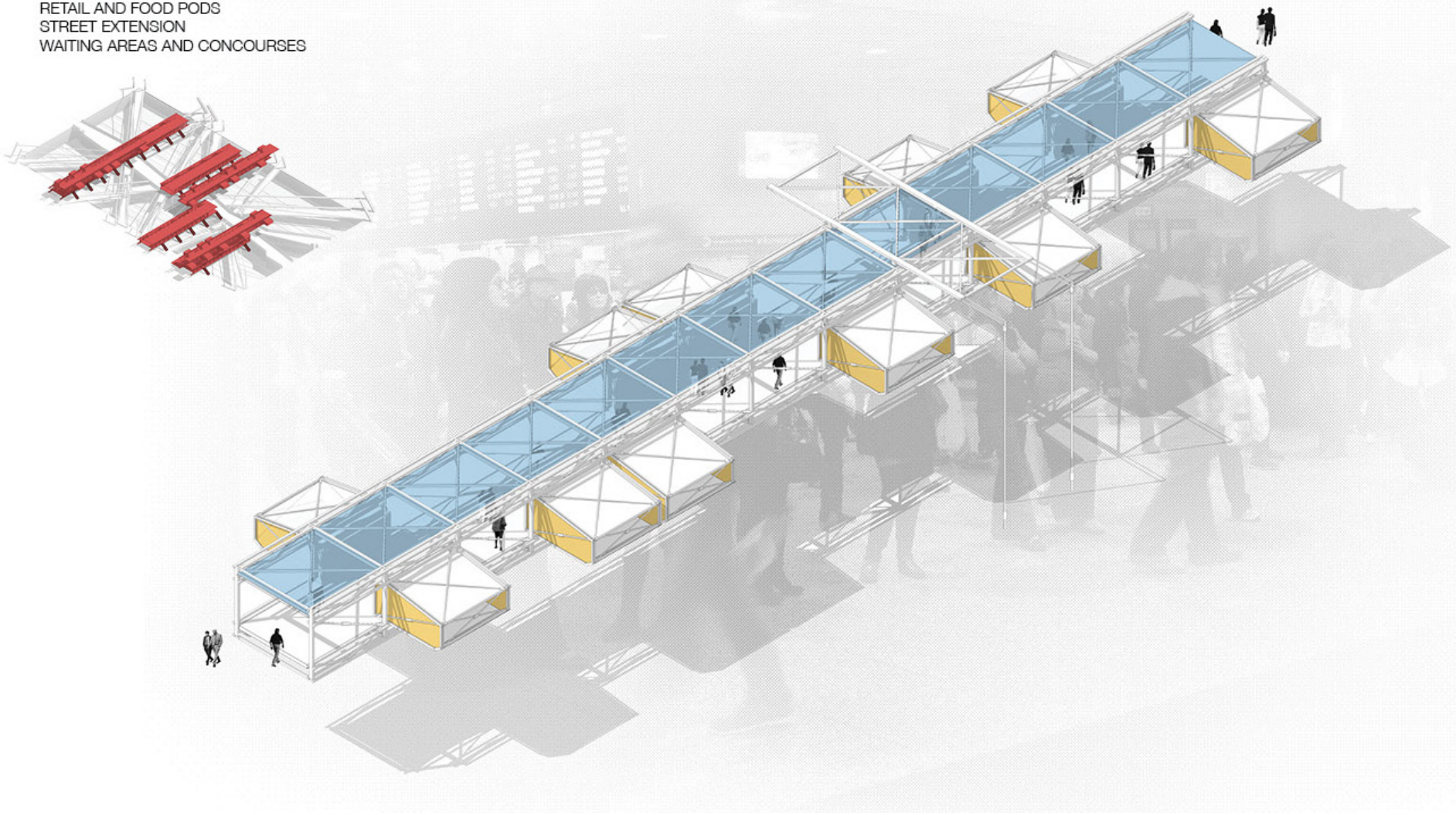
C DOWNWARD FORCE OF SUSPENDED RAILING STRUCTURE

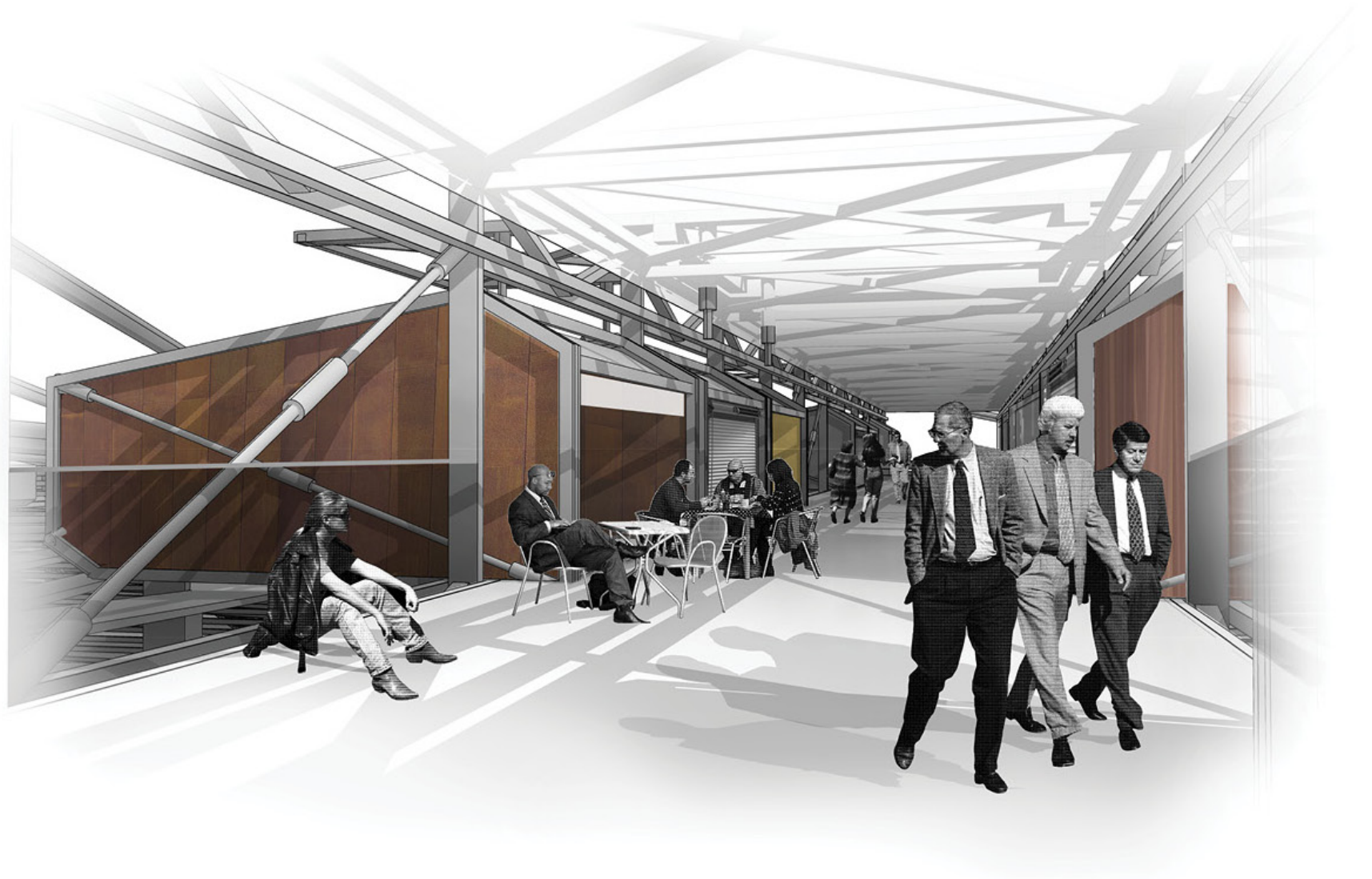
B LIVE LOAD FORCES OF USERS AND DEAD LOAD FORCES OF CONCRETE PATHWAYS THEMSELVES ARE TRANSFERED ALONG POST-TENSIONING CABLES EMBEDDED IN THE PRE-CAST ELEMENTS



Social System

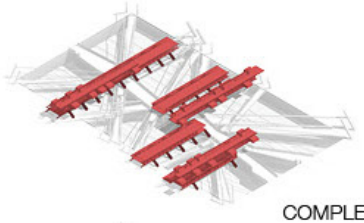
RETAIL AND FOOD PODS
STREET EXTENSION
WAITING AREAS AND CONCOURSES



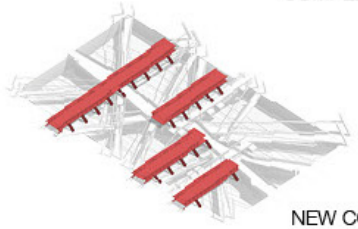


Social Wing Components

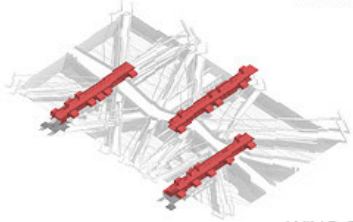
SOCIAL SYSTEM EXPLODED AXONOMETRIC
COMPONENT ANAYLSIS



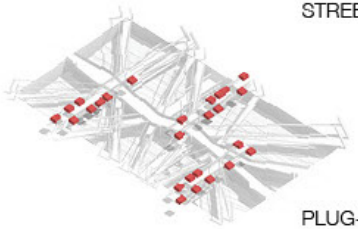
COMPLETE SOCIAL SYSTEM



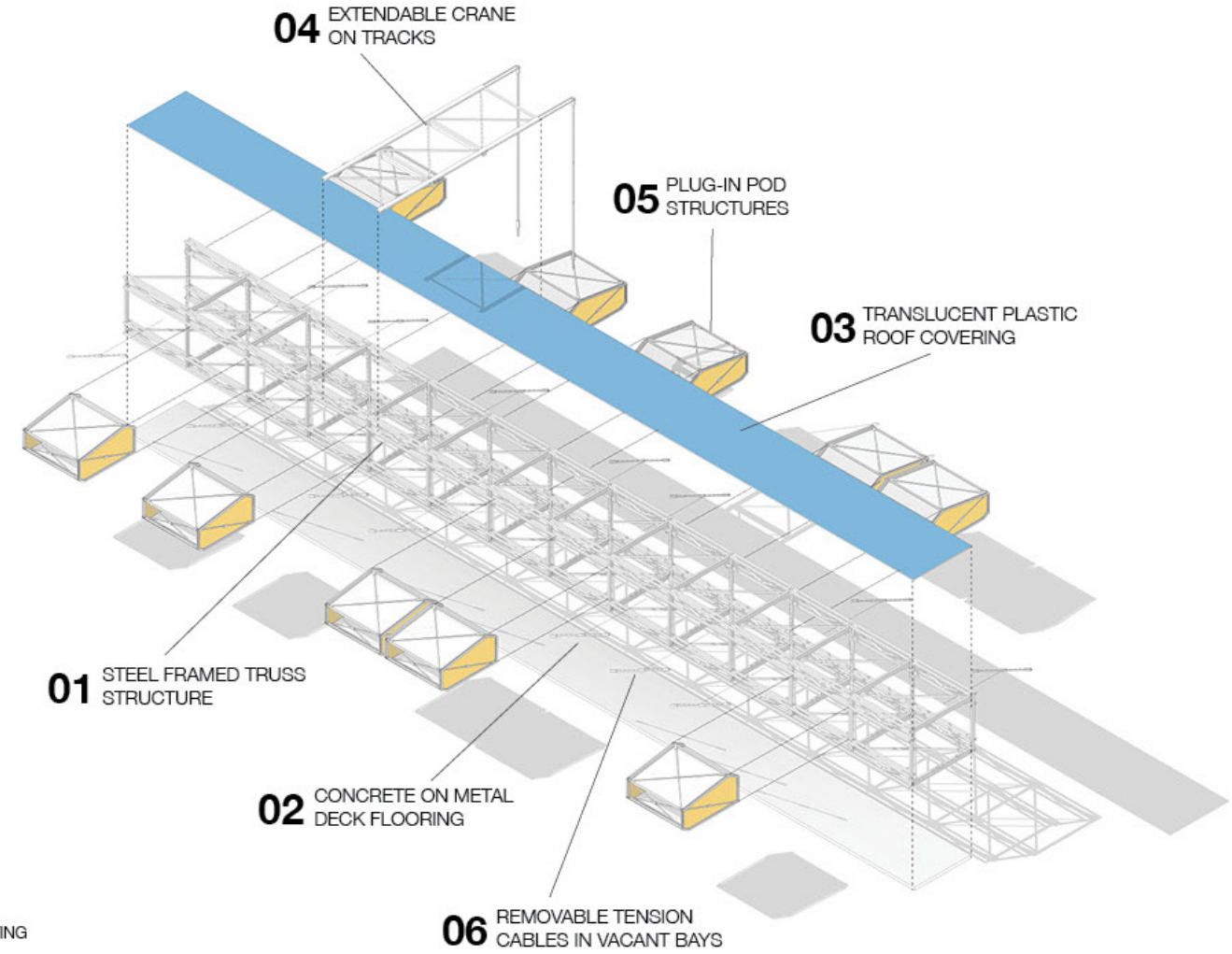
NEW COVERED STRUCTURES
OVER EXISITING CONCOURSES



WING STRUCTURES CONNECTING
STREET TO CORE AND WALKWAY



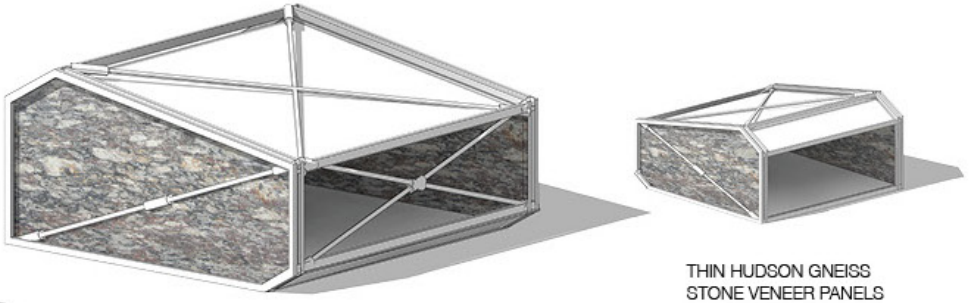
PLUG-IN SOCIAL PODS -
COMMERCIAL ACTIVITIES, RETAIL, FOOD, MEETING



Plug-In Social Pods

1/2" = 1' WALL SECTION
AXONOMETRIC ANALYSIS

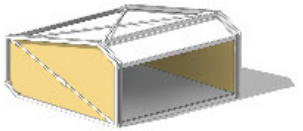
NATIVE RED CEDAR WOOD



THIN HUDSON GNEISS
STONE VENEER PANELS

CORRGUATED ALUMINUM

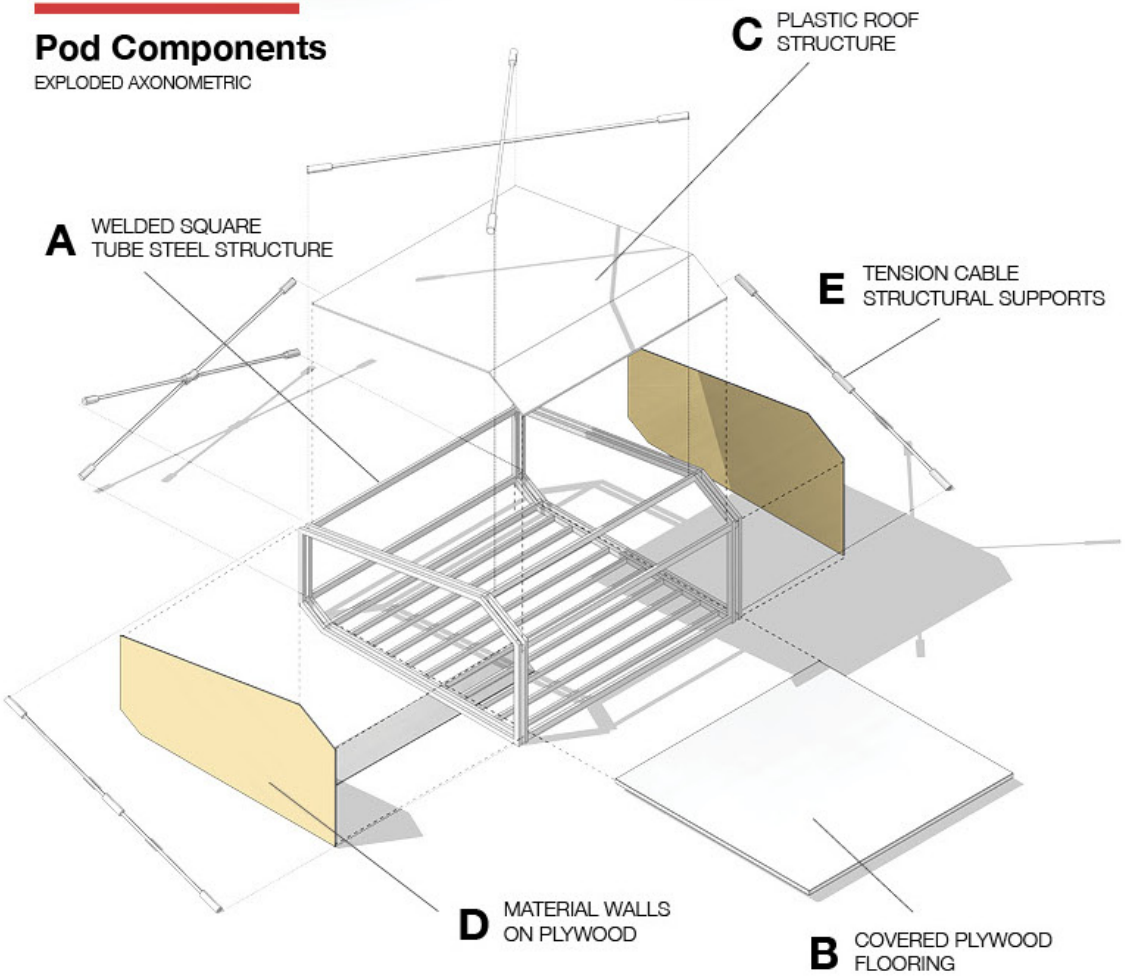
COR-TEN PANELS



COLORED WALLS

Pod Components

EXPLODED AXONOMETRIC



Relationship to Street

Activity from pods flows into social wing and out to the core walkway and adjacent street. Conversely, activity from the street seeps into the station through the social wings and user pathways

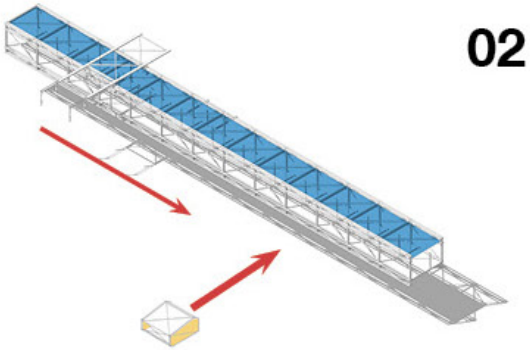
PODS AT RAMSEY ROUTE 17 STATION

Pods can connect social interaction and commerce from distant points back to the station

Pod Moving Sequence

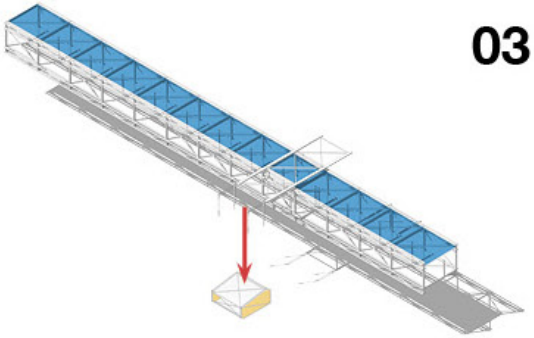
PLUG-IN PROCEDURE

01



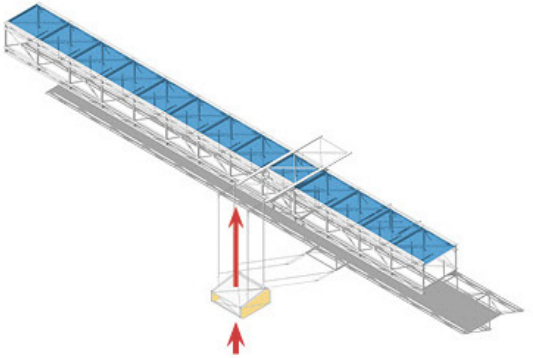
PODS ARRIVE ON TRAINS AT TRACK LEVEL AND CRANE MOVES ALONG TRACK ON SOCIAL WING

02



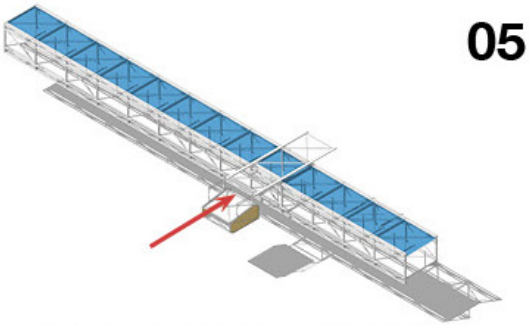
CRANE LOWERS CABLES, ATTACHING THEM TO POD'S STRUCTURE

03



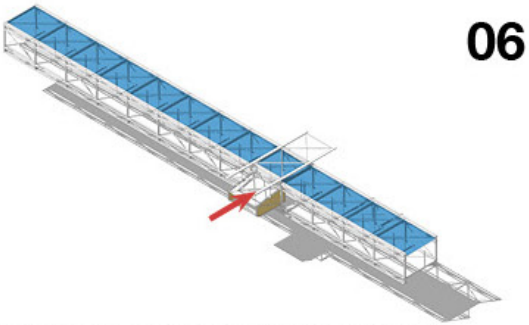
POD IS LIFTED BY CRANE UP TO STREET LEVEL

04



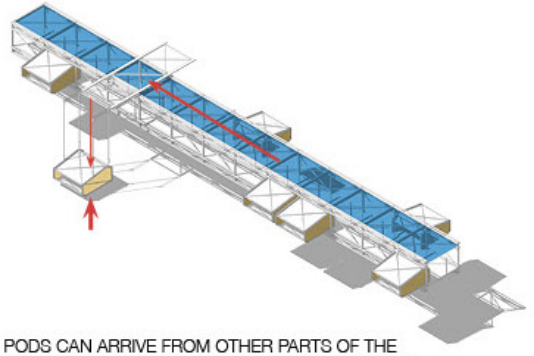
CRANE RETRACTS, DRAWING PODS INTO SOCIAL WING STRUCTURE

05



POD IS ATTACHED TO SOCIAL WING STRUCTURE AND CRANE CABLES ARE REMOVED

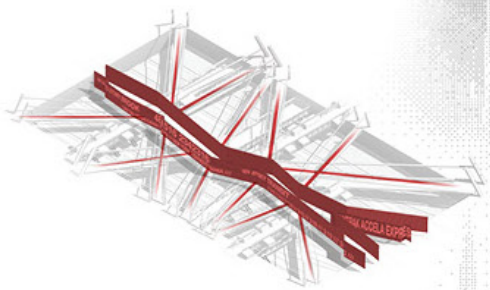
06

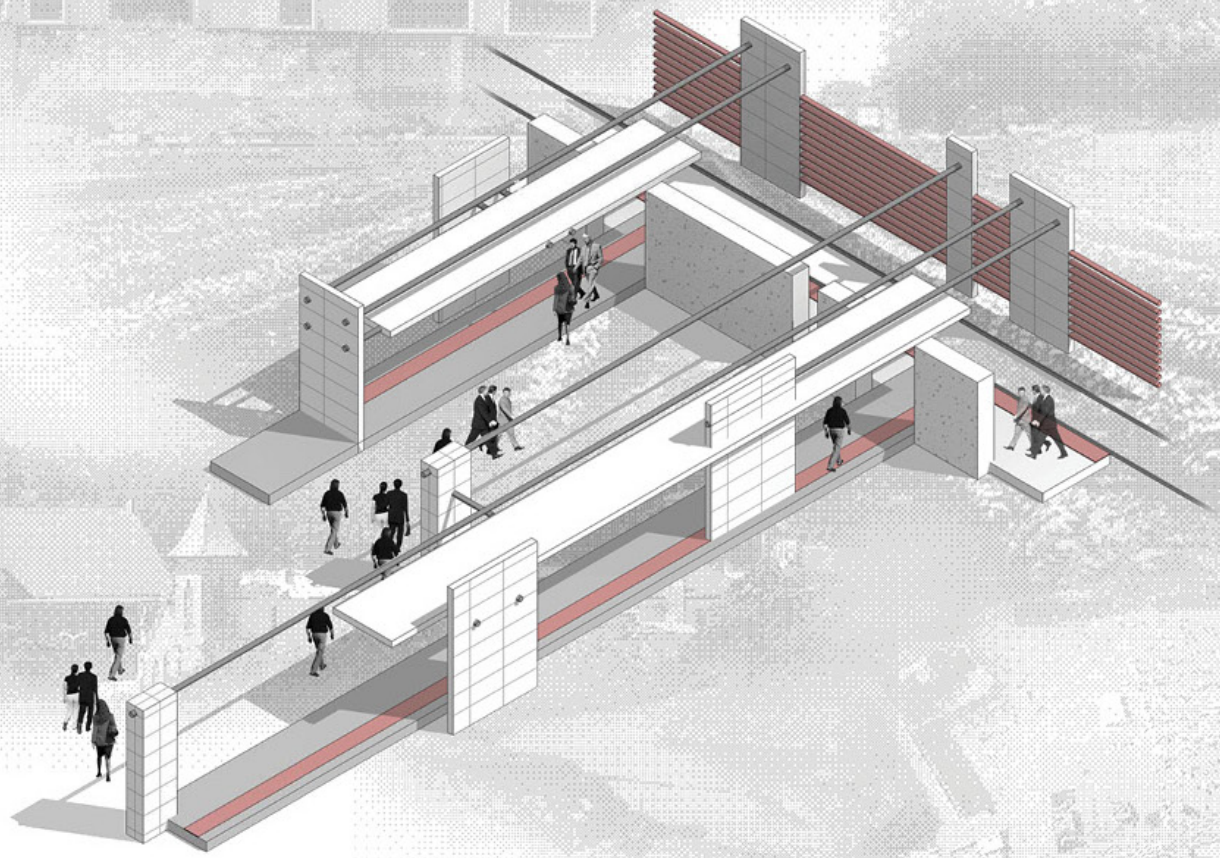


PODS CAN ARRIVE FROM OTHER PARTS OF THE NETWORK AND CAN BE REMOVED AND TAKEN BY TRAINS TO DISTANT POINTS

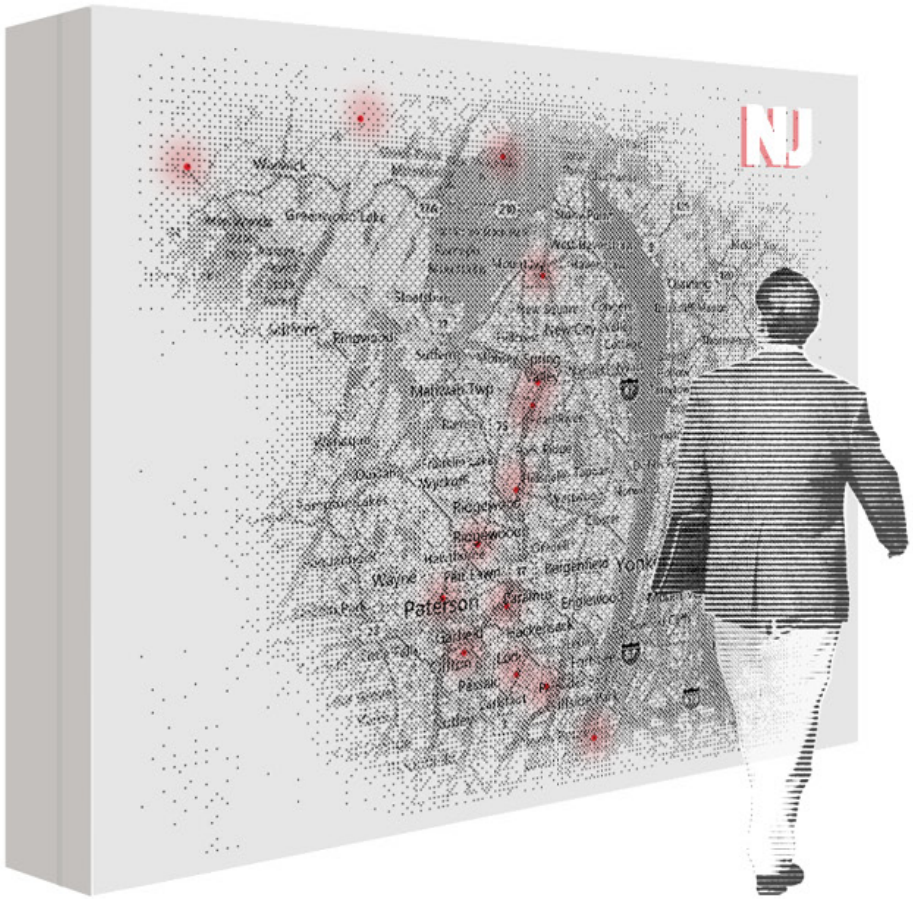
Information System

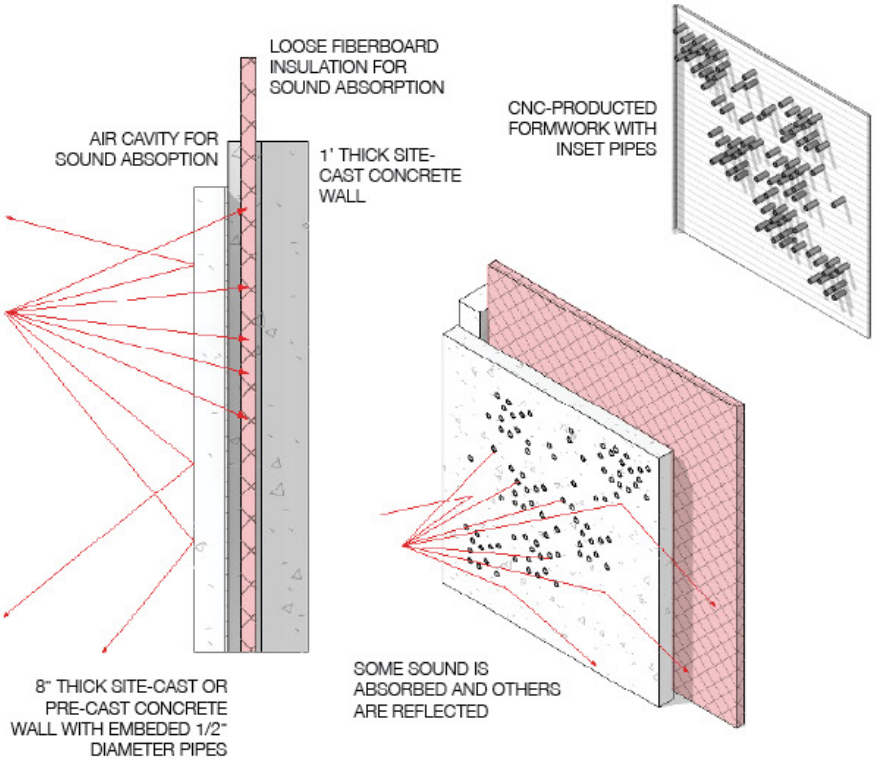
TEMPORAL INFORMATION SYSTEMS
SPATIAL / MATERIAL SYSTEMS
DISTANT CONNECTIONS





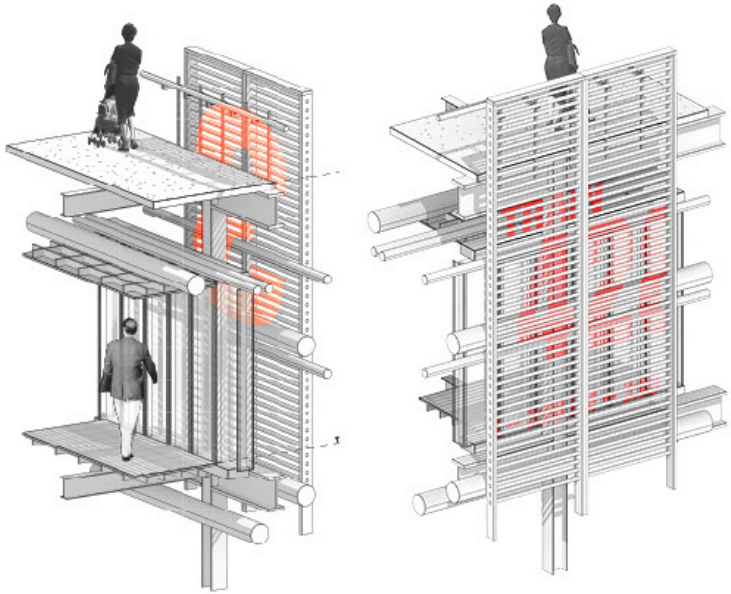
MIDDLETOWN, NY DISTANT STATION


NJ
Paterson


LOOSE FIBERBOARD INSULATION FOR SOUND ABSORPTION
AIR CAVITY FOR SOUND ABSOPTION
1' THICK SITE-CAST CONCRETE WALL
CNC-PRODUCTED FORMWORK WITH INSET PIPES
8" THICK SITE-CAST OR PRE-CAST CONCRETE WALL WITH EMBEDED 1/2" DIAMETER PIPES
SOME SOUND IS ABSORBED AND OTHERS ARE REFLECTED

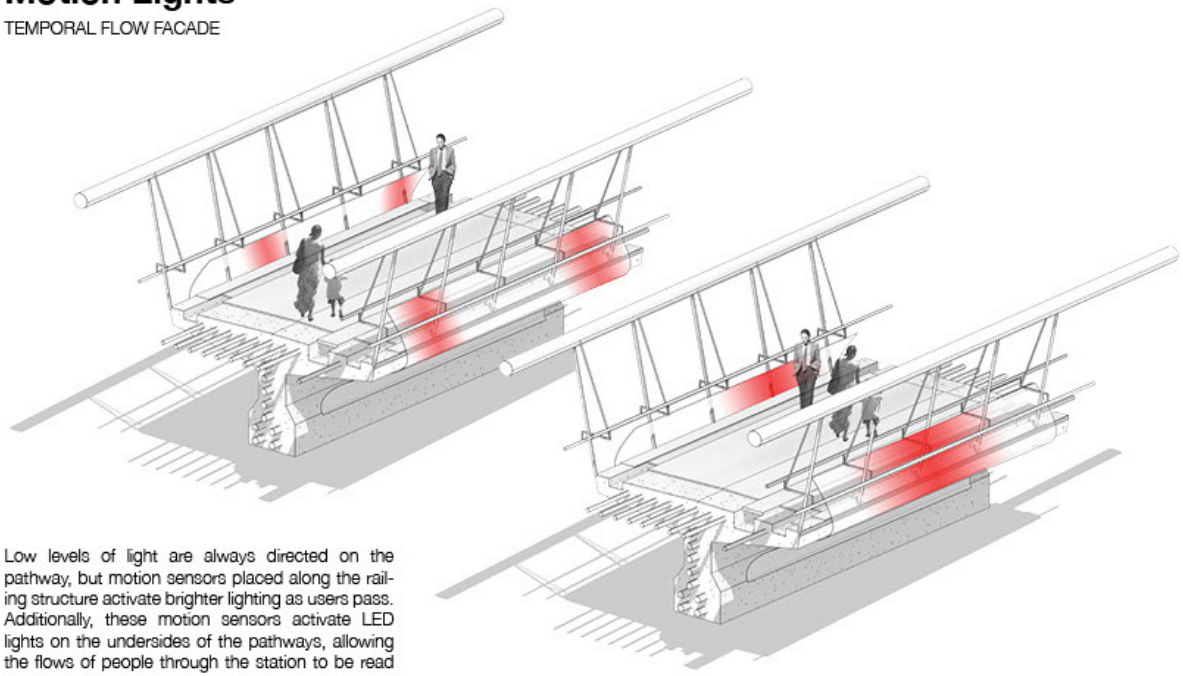
LED Louver Skin

INFORMATION FACADE



Motion Lights

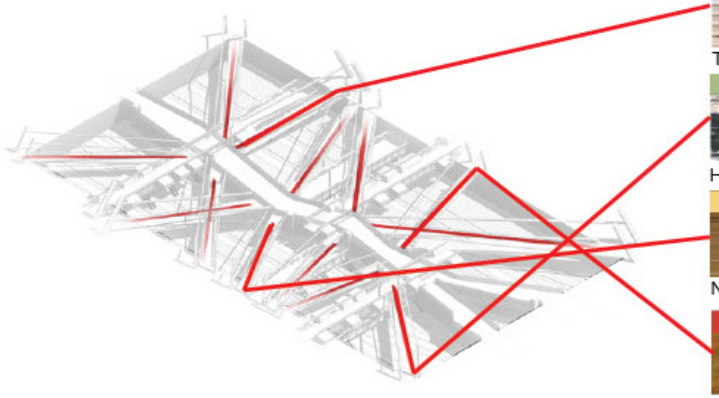
TEMPORAL FLOW FACADE

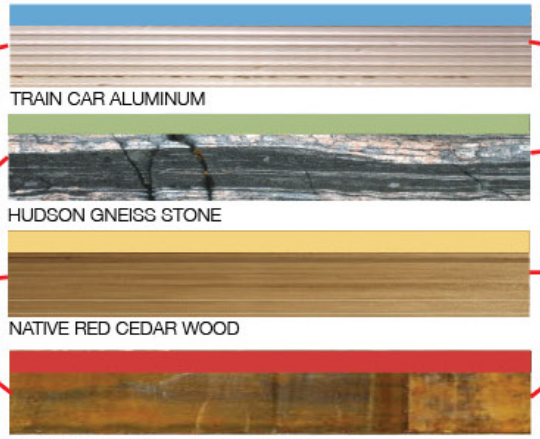


Low levels of light are always directed on the pathway, but motion sensors placed along the railing structure activate brighter lighting as users pass. Additionally, these motion sensors activate LED lights on the undersides of the pathways, allowing the flows of people through the station to be read from a distance

Material Connections

MATERIAL DRAWN INTO SYSTEM FROM DISTANT POINTS
DIFFERENT LOCAL MATERIALS TO REPRESENT EACH RAIL SYSTEM





AM
AMTRAK

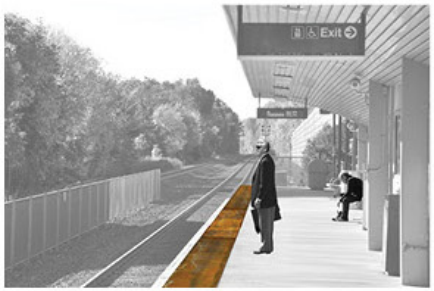
H/E
Hudson/Empire Service

LI
Long Island Railroad

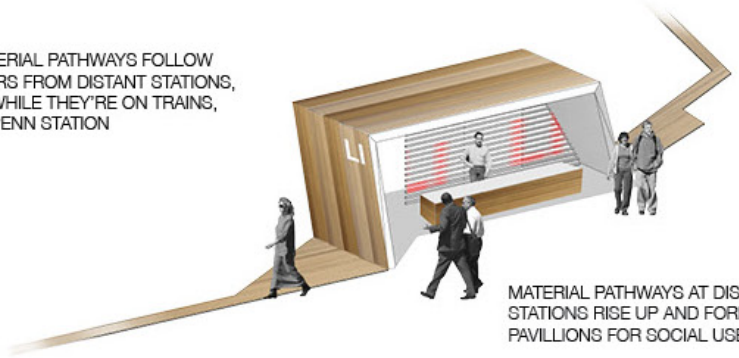
NJ
New Jersey Transit

Material Applications

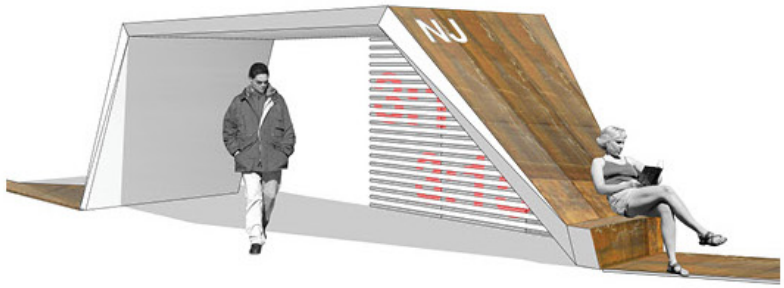
MATERIAL LINES INDICATING SYSTEMS
PAVILLIONS AT DISTANT POINTS
PLUG-IN SOCIAL PODS



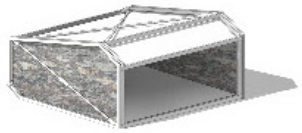
MATERIAL PATHWAYS FOLLOW USERS FROM DISTANT STATIONS, TO WHILE THEY'RE ON TRAINS, TO PENN STATION



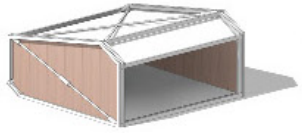
MATERIAL PATHWAYS AT DISTANT STATIONS RISE UP AND FORM PAVILLIONS FOR SOCIAL USE



ALUMINUM FROM TRADITIONAL AMTRAK TRAIN CARS



GNEISS STONE FROM THE HUDSON RIVER VALLEY



RED CEDAR WOOD NATIVE TO LONG ISLAND AND THE SURROUNDING REGION

COR-TEN STEEL FROM NEW JERSEY'S INDUSTRIAL HERITAGE

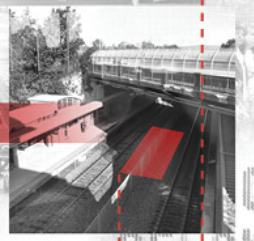
Cognitive Compression

DISTANT CONNECTIONS
MATERIAL EXPANSION, IMMATERIAL COMPRESSION
CONTINUOUS MENTAL BUILDING

MIDDLETOWN, NY

FARMER'S MARKET
COMMUTER PARKING LOT
ACCESS TO COMMERCIAL STRIP

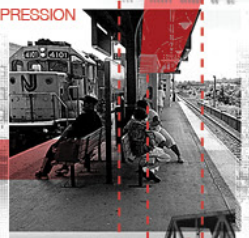
MATERIAL EXPANSION



RAMSEY ROUTE 17

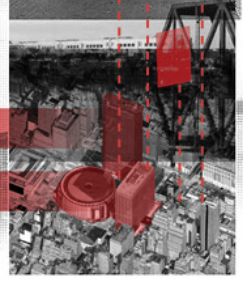
PARK-AND-RIDE SERVICES
COMMUTER PARKING GARAGE
ACCESS TO LOCAL BUS TRANSIT

IMMATERIAL COMPRESSION



PATERSON

LOCAL DOWNTOWN ACCESS
PUBLIC PERFORMANCE SPACES



MEADOWLANDS

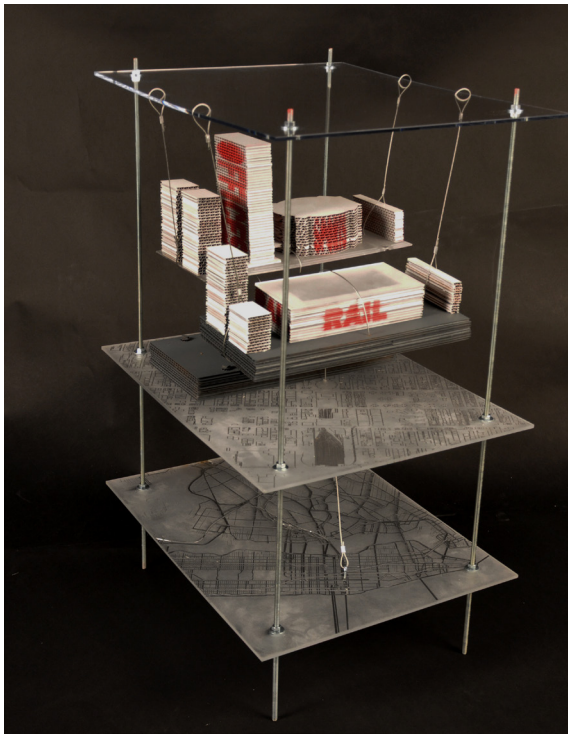
WETLANDS PRESERVE

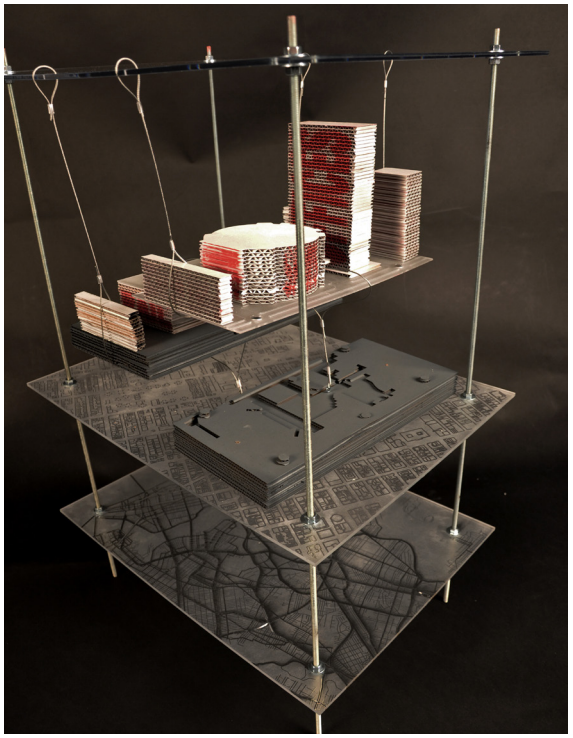
NEW YORK PENN STATION

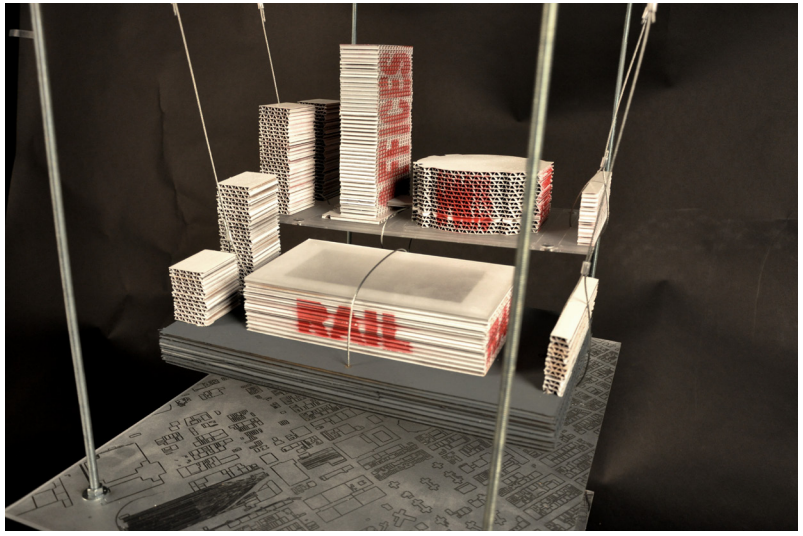
TRANSIT HUB

PENN STATION
PAST, PRESENT,
AND FUTURE


RAIL


RAIL

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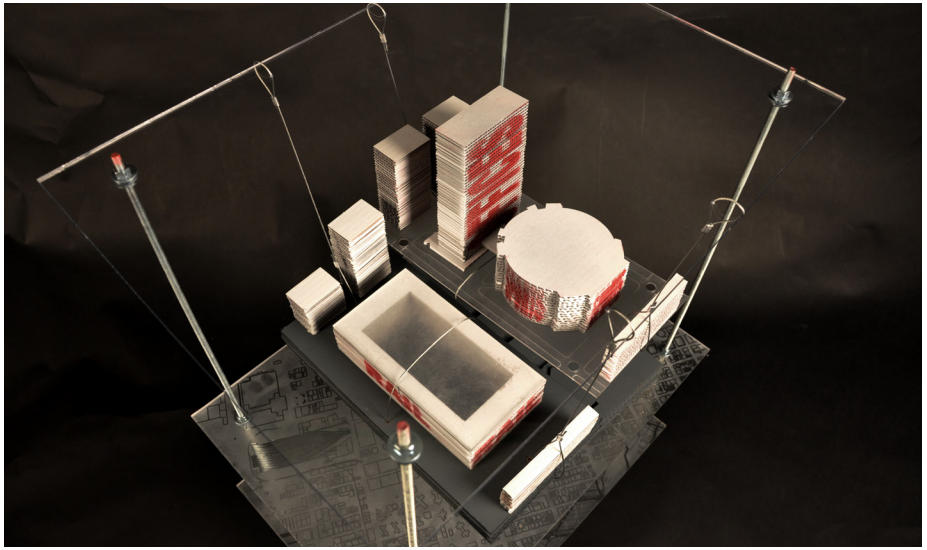
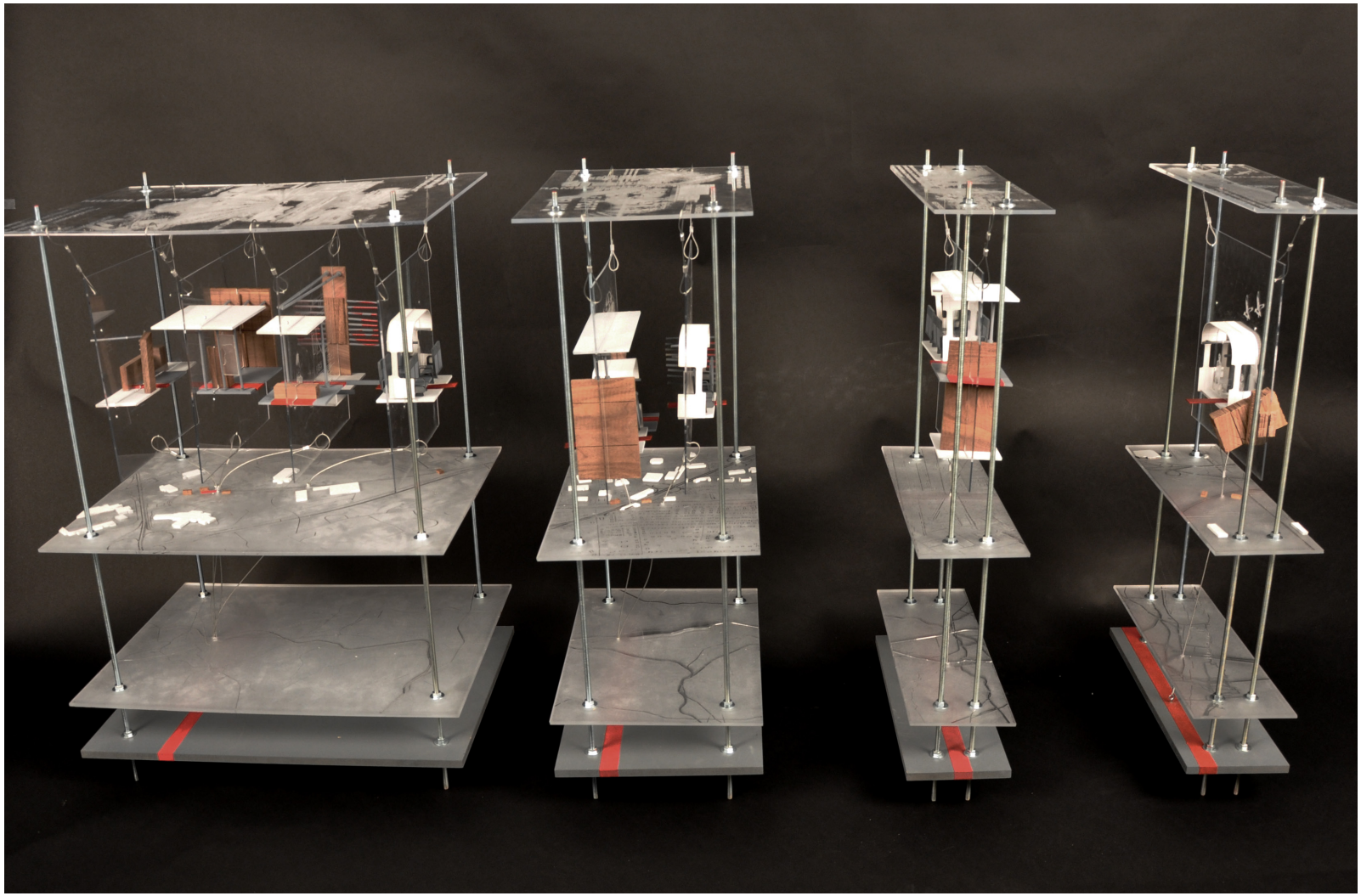
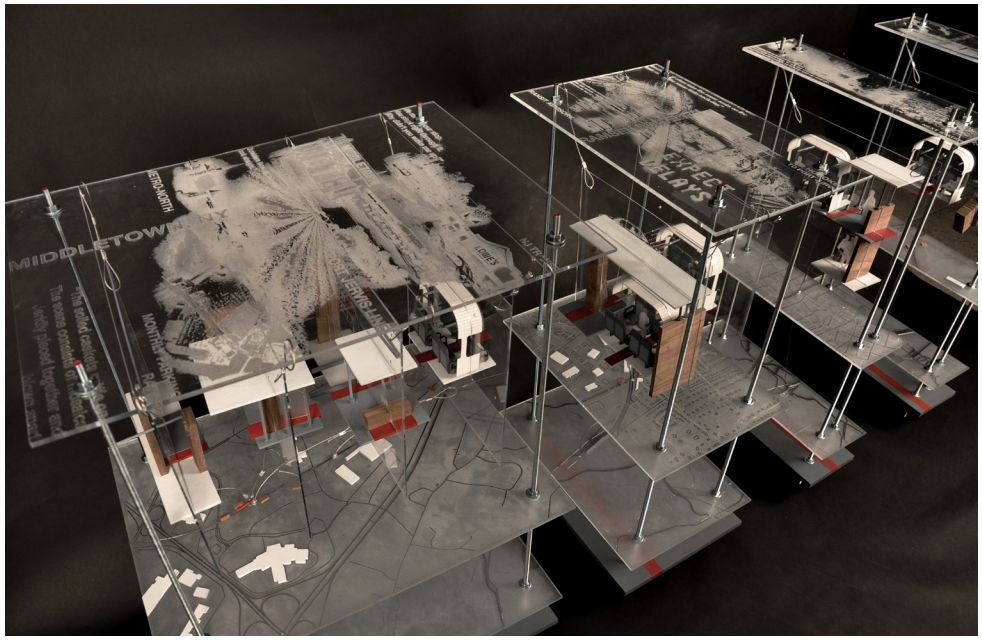
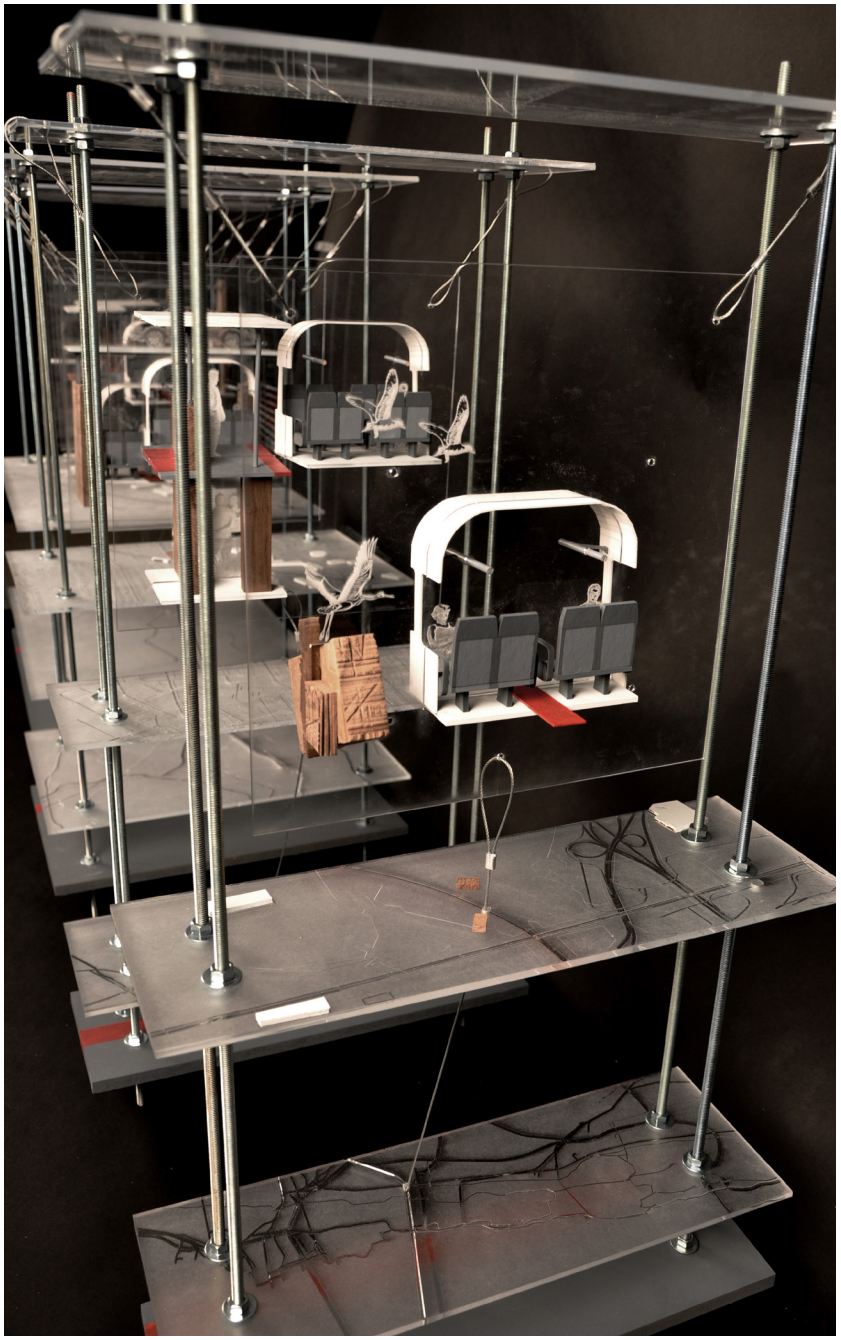





MIDDLETOWN



PROJECT REFERENCES

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Alexander, Christopher. The Timeless Way of Building. New York: Oxford UP, 1979. Print.

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Corbusier. Toward a New Architecture. London: Architectural, 1965. Print.

Hillier, Bill, and Julienne Hanson. The Social Logic of Space. Cambridge [Cambridgeshire: Cambridge UP, 1984. Print.

Horan, Thomas A. Digital Places: Building Our City of Bits. Washington, D.C.: ULI-the Urban Land Institute, 2000. Print.

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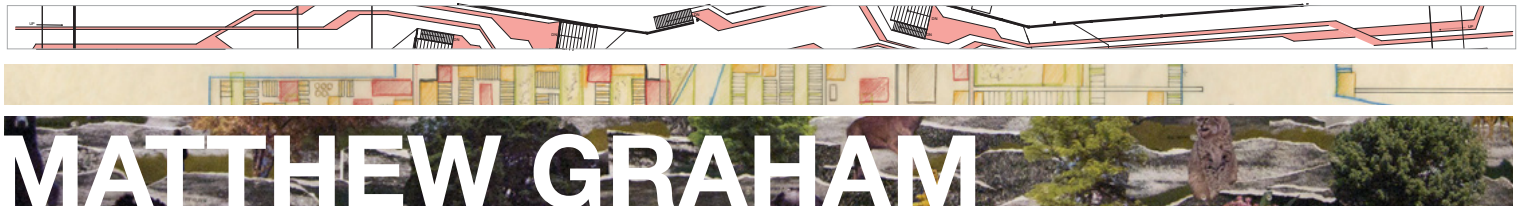
Porphyrios, Demetri, and A. Papadakas. Classicism Is Not a Style. London: Architectural Design, 1982. Print.

ACADEMIC VITA



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EDUCATION

The Pennsylvania State University 2007 - 2012
College of Art and Architecture + Schreyer Honors College
Bachelor of Architecture *(May 2012)*

EXPERIENCE

CS Arch Architecture | Construction Management Summer 2010
Newburgh, NY - Architectural Intern
Inspected and documented education buildings
Prepared Building Condition Reports
Designed graphics and presentations in Adobe Creative Suite, AutoCAD

Greater Newburgh Habitat for Humanity Summer 2011
Newburgh, NY - Volunteer and Leader
Work in Framing, Demolition, Flooring, and Preservation
Led groups of volunteers and was interviewed for a community documentary

ACADEMIC VITA

ORGANIZATIONS

American Institute of Architecture Students (AIAS) 2008 - 2012
2009-2010 AIA-Community Liaison, Attended National Forum in Minneapolis

OXFAM at Penn State 2009 - 2012
2009-2012 Executive Committee Member, Graphic Designer,
Hunger Awareness Dinner Chairperson

Students for Environmentally Enlightened Design (SEED) 2010 - 2012
Shipping Container Library Design Team

ACCOMPLISHMENTS

Paul M. Kossman Senior Thesis Award Winner	2012
AIA Henry Adams Certificate Recipient	2012
Stewardson Fellowship Finalist	2012
Arturbain International Competition Finalist	2011
Penn State Design Excellence Award Winner	2009
Ewing Cole Endowed Award	2011
Pantheon Institute Rome Program	2011
Stenman Award (Highest Architecture GPA)	2009
Corbelletti Competition Finalist	2009
Schreyer Honors College Entry and Scholarship	2007
Eagle Scout Service Project - Planning and Construction of Sept. 11 Memorial	2007
Odyssey of the Mind World Finalist (3rd Place)	2007