CIRCULATION STRUCTURED

BASTIAN SCHUBERT

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PAUL EMMONS, Committee Chair

_____________________________
SUSAN PIEDMONT-PALLADINO, Committee Member

_____________________________
JAAN HOLT, Committee Member

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
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ABSTRACT

Circulation is the way by which people move and interact with a piece of architecture. In public buildings, such as transportation terminals, it is crucial to have a floor plan that allows easy flow of pedestrian traffic. Effective circulation in public areas such as these ensures a visitor can navigate conveniently and efficiently. Also, using circulation elements such as elevators, escalators, and staircases, optimizes the flow of individuals through a building while providing visual appeal as they can be positioned and designed creatively.

Within my thesis I am investigating the relation between the physical presence of architecture and the possibilities to provide order and sensualisation through its circulation system. Humans follow specific quotes of orientation, but architecture can especially offer certain guidelines. Although structural solutions require essential knowledge, this thesis further requests the double use of structure as a circulation pathway in addition. The high-scale urban environment of New York City provides ground for this investigation.
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INTRODUCTION

CIRCULATION STRUCTURED

- **RAMP**
  - public
  - time consuming
  - low physical effort
  - makes place an exhibition
  - interacting
  - large need of space

- **STAIR**
  - private/public
  - physical experience
  - archaic
  - in public sculptural
  - variation of materials
  - common vertical perception

- **ESCALATOR**
  - public
  - no physical effort
  - efficient
  - space experience
  - convenient
  - controlled circulation

- **ELEVATOR**
  - public
  - direct commuting
  - access for disabled
  - absorbed from space experience
  - skyscraper requirement
  - convenient
TRANSPORTATION ACKNOWLEDGEMENTS

Transportation has been a crucial component to human development and communication. Early civilizations used dirt paths and streets to carry goods and send messages by horseback or carriage. Villages were formed around popular trade routes or roads to a frequented location so village inhabitants could sell their goods to travelers en route.

The invention of the first rail transport by James Watt in the middle of the 18th century ushered in a new era of transport and commerce, by which the conveyance of goods and persons became convenient, fast and less labor-intensive. The railroad urbanized villages and towns, which flourished into larger communities when the train became widely used. Formations of complex networks, spanning hundreds of miles across the United States and Europe, crossed not only increasingly developed towns and cities, but also connected these towns with previously nearly inaccessible rural areas.

Large transportation terminals appeared rapidly at the center of European countries and American states, which provided a focal point from which people and goods could cross borders and boundaries, facilitating the exchange of ideas and products.

The commercialization of vehicles in the beginning of the 20th century further contributed to the drastic development of cities. US President Woodrow Wilson initiated the construction of a massive transit system in the 1920’s to aid the transport of military supplies across the country during World War I, which later developed into the interstate system. Large metropolises were formed in the United States around the interstate system once it was open for public use, and other countries quickly adopted similar plans to connect pockets of developed towns through a system that is fast, efficient, and well-maintained.

With cars becoming the preferred method of transportation, the autobus soon became the choice method of transit in urban areas and in some cases rivaled the use of trains, particularly in the 1960’s and 1970’s. An already existing infrastructure of roads combined with being much cheaper than the train also contributed to growth of bus usage.

With the use of planes for long trips, and trains nearly outdated in the United States, the bus still remains a popular choice for transportation in urban areas. Even with the creation of subways and metros, the bus provides a cheaper option. Problems still exist, however, with making the bus system more convenient and reliable in the New York metropolitan area. The thesis proposes new ideas to improve bus traffic within the urban environment of New York City, and elucidates these ideas through the design of a private bus terminal in Lower Manhattan.
EXISTING BUS TERMINALS NEW YORK CITY

GEORGE WASHINGTON BRIDGE BUS TERMINAL

The terminal, located on Manhattan Island in New York City, was designed in 1963 by Italian architect Pier Luigi Nervi. At the intersection of Broadway and 178th street, the structure consists of a covered platform on the upper deck for buses and two lower floors for ticketing and retail. The building sits along the George Washington Bridge, over Interstate 95. The terminal serves as a transportation hub and handles 20,000 commuters traveling between New York City and New Jersey every day.

PORT AUTHORITY BUS TERMINAL

As the major public bus terminal of New York City, the Port Authority Bus Terminal serves 200,000 commuters every day. Located on 8th Avenue between 40th and 42nd street, the terminal possesses a large waiting area, direct connections to the subway platform, and an intricate system of ramps that connects the west side of the building with the Lincoln Tunnel directly. The original art deco style of the terminal was replaced by a steel-glass structure in the late 1970s. The terminal also has two layers of bus parking slots placed above popular retail space.
Traditionally New York City has a reputation of being a transitory city, but its small geographic size lends to an efficient organisation of public transportation networks, especially in tightly-knit Lower Manhattan. Eight private inter-state bus organisations provide service at individual locations around Chinatown. Long distance busses approach the Manhattan Island through the Holland Tunnel, arriving from the mid-Atlantic. The bus station design I propose is called the Lower Manhattan Coutilural Council (LMCC) Bus Station, a bus terminal with convenient access to local public transportation. The prominent site is at the intersection of Canal Street and Varick Street, which is a convenient location for travelers. It is accessible by bus from the Holland Tunnel and the Avenue of the Americas while also providing subway access.
**DEMAND BUS STATION**

- **Natural light**
  - Transparency
- **Dynamic Structure**
  - Technology is not hidden
- **Space**
  - Clarity of orientation
  - Wide public entrances
  - Interior concourse
  - Waiting rooms
  - Brightly lit at night
- **Comfort**
  - Part of urban fabric
- **Security**
  - Public transport

**REQUIREMENTS TRANSPORTATION TERMINAL**

**RESEARCH BUS TRANSPORTATION**
The heterogeneous environment of the future Bus Station consists of a variety of scales, architectural styles and years of construction. The LMCC Bus Station will contribute to the overall neighborhood character of Canal Street. As it will provide an essential public service, the station will connect two residential neighborhoods previously difficult to travel between: Tribeca in the south and Soho to the north. Further east, the site serves active Chinatown, with its predominantly pedestrian environment.

The location remarkably accommodates busses traveling from the Holland Tunnel into the traffic circle on Varick Street. From the northeast, busses will reach the terminal through Canal Street and from the east side at the Avenue of the Americas. The entrance ramps are located on former Grand Street, below the new construction to store rented bikes and where the new bike lane begins. The entrance to the subway lines is integrated into the design and easily accessible.
THE SITE

View from Varick Street north  

View into Canal Street east

View into Duarte Park  

View from Varick Street/Canal Street

Subway plan Canal St Station
**Urban Surrounding**
- difficult urban situation
- connector of districts Soho and Tribeca
- flaky chinoiserie meets busy financial district
- variation of heights, ages and uses of surrounding buildings
- bus Station needs interaction on Street level
- Canal Street offers busy traffic on 6 lanes and access to Holland Tunnel

**Horizontal Skyscraper**
- makes park forecourt of Bus station
- gives identity to park
- creates presence of public building
- offers similar circumstances of light and view for inhabitants
- private life on horizontal Platform
Pattern of Utilization

- Entrance Area
- Retail Area (Newspaper, Food Court, Internet Cafe, Bike Rental)
- Hanging Exhibition Space
- Waiting Area Long Distance Busses
- Boarding Area Long Distance Busses
- Artist Housing
The main terminal appears as a transparent grand hall with sacral dimensions. Within the ground floor, commuters will find the ticket booth, retail stores and a bicycle rental shop. The busses circulate within four stories underground to reach their parking lots in the center of the terminal. Moving bridges connect the lots with the waiting platforms, which appear as a series of gigantic stairs. In addition to the terminal, the complex hosts housing units for artists within an elevated structure. The flat, horizontal corpus bridges across Canal Street in order to extend the number of residential units to an economical value and strengthen its presence as public institution. Additionally, the triangular park on the south side of Canal Street is incorporated as the terminal’s foregrounds. Three-story housing units on top of the bus station are organized as an urban village, consisting of small streets and courtyards, a nod to the historic architecture within the area. A steel screen enwraps the housing corpus in order to unify its presence and support its private character. The artist village extends into the bus terminal with a hanging exhibition space, which can be entered through escalators from the main retail plaza.
Evolution Housing Design Diagram

Housing Floor 1 Plan 1/1000

DESIGN LMCC BUS STATION


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