Contemporary Infrastructure for the Sustainable Mid-Sized City

Christian Martinez

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Christian Martinez
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FAST: Syracuse Project Objectives

Syracuse (the City) recently developed an Energy Master Plan which envisions a 31% reduction in average municipal vehicle fuel consumption, primarily through increased adoption of sustainable alternatives. The City is in a position to leverage money already invested in multi-modal infrastructure projects. There exists an opportunity to increase use of sustainable transportation alternatives by coordinating with the growing residential community, a new hotel to serve the convention center, and the ongoing emergence of the Syracuse Innovation Quarter (SyrIQ). Team personnel have expertise in planning, designing, constructing, and evaluating the performance of multi-modal transportation systems; GHG modeling, qualification, accounting, monitoring, verify, and reporting; research, development, demonstration, and deployment of clean energy innovations; entrepreneurship; and economic development.

The objective of this project is to assess the feasibility of developing, implementing, growing, and promoting three urban mobility systems: (1) human-powered mobility, through enhanced walkability and bikeability; (2) sharing economy, through car- and bike-sharing; (3) public transportation services being better integrated. Envisioned innovation quarter in the downtown area will integrate these systems on three scales: (1) neighborhood, within the quarter; (2) city, between innovation nodes; (3) region, commuters from major nodes in/out of SyrIQ. The expansion of these mobility systems is anticipated to contribute to the City’s GHG emission reduction goals and accelerate the development of the SyrIQ.

A CASE FOR NEW INFRASTRUCTURE

Embedded within the Feasibility Assessment of Sustainable Transportation: Syracuse study’s goals is an interest in urban mobility particularly in mid-sized cities in America. Well referenced texts tend to deliberate on issues of urban infrastructure in great urban metropolises. This presumes infrastructure improvements can universally have a positive impact on urban mobility irrespective of city size. But is it possible for the prosperity of cities to be augmented by virtue of investing in policy and infrastructure for sustainable transportation through following megalopolis biased guidebooks? Vishaan Chakrabarti advocates for a more urban America in “A County of Cities”, because of their ability to foster a better environment and economy thus leading to increased social equity. He suggests that the performance of cities top that of lesser populated establishments. However, when considering the city of Syracuse we see that its performance issues may be partly responsible due to its shrinking population. If larger and denser cities can support new innovative sustainable transportation networks, how are we sure that mid-sized cities can as well?
“Mobility has become a condition for modern life.” Contemporary society is dependent upon mobility and transportation in urban and regional conditions for work, services and increasingly leisure activities.

Transportation infrastructure is regarded as a primary measure of a city’s success. Therefore, the design of it is viewed as a prominent field for investment. Recent changes of perception, has shifted the outlook of mobility using car-centric plans and ideologies toward more sustainable and shared modes. These are regarded as more efficient in terms of air quality, health, and environmental perspective.

Regardless, of the change in perspective, the need for movement into, out of, and throughout a city is foremost. Thus design of urban infrastructure geared for performance and even experience.

**MOBILITY PARADIGM**

**shaping mobility through infrastructure**

What is infrastructure?

“By definition, infrastructure sustains a condition of continuous flux: it generates an urban dynamic and stimulates movement to the limits of its own capacity or the endurance of the settlement it has helped to create. A static object that frames flows, it incessantly needs to renew itself and search for alternatives.”

**Marketing to Radburn, NJ a development designed for car based mobility.**

Image source: www.northjersey.com

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THE MID-SIZED CITY

Defining the mid-sized city is essential for this investigation. City population does not only attribute to make a city ‘mid-sized’ or medium sized. Other aspects that may be included and to be examined are:

- Metropolitan population
- Population density
- City area
- Socio-cultural history
- Urban rates of mobility
CASE STUDY: Syracuse
Since 1950, the City of Syracuse has experienced significant population loss. This has been attributed by the suburban sprawl paradigm that continues to put pressure on transportation infrastructure. The city has recently developed and implemented projects to transform the car-centric urban landscape toward a more sustainable and human scale landscape. Some projects to highlight which emphasized on human-powered mobility and public transportation are the: Onondaga Creekwalk, Connective Corridor, Centro Transit Hub, and Intermodal Transit Center. Each of these projects can be seen as individualized efforts toward improving sustainable transportation in the city, however, there is potential for failure due to a lack of system integration. I will look into these efforts and others planned for Syracuse as one city wide project that is comprised of integrated and complimentary interventions intended to create a comprehensive multi-modal network.
Using the research from the FAST: Syracuse study, this project will push forward into developing a possible architectural application that hosts and supports new and enhanced pedestrian, bicycling, sharing economy, and public transportation infrastructure. This may be investigated through a means of designing a sustainable mobility hub for the proposed active and public transportation network of Syracuse.

This thesis will consider the proposed mobility network for Syracuse as its framework for the investigation. It will look to incorporate instances for providing links between modes of transportation, sharing economies, and travel destinations.
MOBILITY THROUGH ARCHITECTURE

This thesis aims to identify the role architecture plays in urban transportation infrastructure, mainly how it can enhance, support and/or even initiate improved sustainable transportation modes and change social perceptions of travel within mid-sized cities.

To do so this project will propose an architectural intervention or perhaps set of architectural intervention tailored for mid-sized cities through an investigation of its integration with the vision of a new urban mobility network in Syracuse, NY. This investigation will suggest the need for sustainable transportation within mid-sized cities as well as the potential need for synchronization of urban planning efforts and urban design with the application of architectural mobility actuators.
Fun Palace by Cedric Price. Architectural node as variable structure designed to foster human interactivity. Potentially applicable for mobility purposes.

Image source: (Mathews 2005)

“The Fun Palace was not a building in any conventional sense, but was instead a socially interactive machine, highly adaptable to the shifting cultural and social conditions of its time and place.” (Mathews 2005)

Multimodal transfer facilities of contemporary society have capitalized on the activity they cultivate. Especially in larger cities, these facilities are highly active and often engage in activities beyond mobility and transportation. Mobility and transportation is what brought people there, but this has been supplemented with shopping, sightseeing, meeting, entertainment, etc. At one end of the spectrum, this thesis will look into sustainable mobility but will speculate on the impacts beyond mere transportation for work. The investigation will look into the potential of mobility structures that accelerate leisure activity and a range of urban experiences specific to the mid-sized city.
RESEARCH

MAPPING
PRECEDENT STUDY
SITE SCOPING
Contemporary Infrastructure for the Sustainable Mid-sized City

Clay
Pompey
Cicero
Lysander
Fabius
Manlius
Onondaga
Tully
Otisco
Elbridge
Spafford
De Witt
La Fayette
Camillus
Skaneateles
Van Buren
Marcellus
Syracuse
Salina
Geddes
10 mi
15 mi
05 mi

TOTAL RESIDENTS
TOTAL WORKERS
LIVE HERE - WORK ELSEWHERE
WORK HERE - LIVE ELSEWHERE
LIVE AND WORK HERE

Sprawl travel distances
Mobility for work

Community College
Zoo
Shopping Plaza
Private College
Private University
Hospital
Hospital/University
Shopping Mall
PRIVATE UNIVERSITY
DOWNTOWN SECTOR
TOURIST LAUNCHPAD
Suburban
Dense urban core
Campus/residential
Onondaga Creek and 2.6 miles long between Armory Square and downtown Syracuse University. The city yearned for a segment of a multi-use path for walking, biking, and public transportation in this context. The city then becomes responsible for accommodating these desires into the master plan.

Recent revenue ventures in the city have aimed at introducing new attractions to the city. With the addition of Carousel Mall, the Syracuse City Council is taking on the role of a catalyst improving sustainable mobility for the community. Stakeholders in the city that are not transportation agencies but rather businesses are focused on making the city more business-friendly. This has led to the development of a pedestrian safe zone in the downtown neighborhood to engage in shopping, dining, entertainment, and other leisure activities. Travel along the 5.2 mile stretch between Syracuse University campus and downtown neighborhood is facilitated by the new bus network. The rail network was dismantled and replaced by the bus network when the current stretch of the highway kept the city treading on a path of development around it. Now that the current stretch of the highway is dead, a pedestrian safe zone can finally be developed.

The Syracuse highway system is the most efficient and well connected to other cities but struggles with mobility related to its location in a more suburban condition of the city. It is well connected to other cities but struggles with its location in a more suburban condition of the city. Despite that, people travel in the city. Green transportation in the city has benefitted from the recent growth in alternative fuel options. These options have been considered for parking projects. They include parking projects and the former Regional Transit Center (RTC). Recent updates to the RTC include parking project upgrades and high-speed rail support. This provides access to college campuses and other urban centers.

To overcome this, CENTRO offers a bus line that connects bus travelers to other cities. The mall set up a vast array of parking for travelers from a busy commercial area. This has led to the development of new attractions to the city. The Syracuse City Council has decided to reinvigorate the city through the lens of contemporary infrastructure for the sustainable mid-sized city.

When the bus network replaced the rail network, Salina Street was opened for various uses. When the rail network was removed, the street was opened for various uses. The street was opened for various uses and divided the city and hindered potential development. Now that the current stretch of the highway is dead, a pedestrian safe zone can finally be developed.随后，文章继续讨论了各种交通和城市发展的相关问题。
The city yearned for a segment of a multi-use path that connects the downtown area to the Waterfront. To do this, the city turned to the stakeholders to the project in bridging that separation. For the transportation hubs serving another purpose in providing an alternate way of recreational use, it can serve as a useful route for immediate context and site. For the transportation hubs that its location in a more suburban condition of the city and the changes its range of opportunities for intermodal mobility, tourism developments provide a large area for designated car parking and low effort to fill improve walking, biking and public transportation in this context. The extent of the project does not go beyond the immediate context and site. For the transportation hubs we find that they also rely on car travel to get to them despite the their great ability to connect to other cities outside of reason through other means of travel. Separation from the downtown core spans less effort by the stakeholders of the project in bridging that separation.
Conventional forms of public transportation in Syracuse claim presence in the urban landscape by adapting to the infrastructure laid by the automobilized collective. A prominent rail transit network was stripped away to make space for the rise of car travel. A bus-based network followed in its shadow to serve a population in need of mobility throughout the city. Working as a fluid and adapting to the landscape of the city, public transportation rarely reaches its own architectural form. It serves as a connector between modes of the city. This proves difficult because of the reliance on the destination to promote and make public transportation a more viable option for its population. Architecture may allow it to become more lived as we have seen in the transit hub example but it will only serve its own purpose. It remains infrastructure without becoming infrastructure space.

The Syracuse highway system is the most efficient the city has seen. In the 1950s, it had the most efficient means of auto transport infrastructure in the city. The city has benefitted from the infrastructure investment of a $3 billion expenditure in the 1950s and 1960s. This infrastructure has not served the city well. It is a direct example of infrastructure laid by the automobilized collective. A mid-sized city like Syracuse would have to overcome the convenience of car travel. Moving infrastructure has functioned for this purpose through the shadow of the interstate that spans at the border of the downtown area is near its peak the NYSDOT is working on an environmental impact study decide what actions to take.

Infrastructure laid by the automobilized collective. A mid-sized city like Syracuse would have to overcome the convenience of car travel. Moving infrastructure has functioned for this purpose through the shadow of the interstate that spans at the border of the downtown area is near its peak the NYSDOT is working on an environmental impact study decide what actions to take.
Transportation in Syracuse is dominated by its dependence on individual car ownership and use. The nationwide phenomenon to make our cities green by optimizing transportation and has recently made its way to Syracuse. Efforts across the city led by major stakeholders have gained up to improve the modes in which people travel in the city. Green transportation in these new infrastructure spaces are made to appear more convenient, cheaper, and healthier than conventional car use. Stakeholders in the city that are not transportation engineers have geared up to improve the modes in which people travel in the city. This university led project not only benefits its own population it extends its use from a private entity to a semi-private entity. The parking lot is designed to be a pedestrian and bicycle only thoroughfare. This project lead to sustainable mobility in the city. However, the effects are not drastic and not nearly quick enough.
Amsterdam Arena Transferium

Rob Schuurman
Amsterdam, Netherlands

Source: photovoltaik.eu
Parking Plus
LTL Architects
Westbury, NY, USA
Amsterdam Arena Transferium
Rob Schuurman
Amsterdam, Netherlands

Source: www.rsaud.com
Haluchère Mobility Hub
AUP
Nantes, France

Source: archdaily.com

Intermodal City Shed
Västerås Travel Center
BIG
Västerås, Sweden

Source: dezeen.com
Nørreport Station
GPA & COBE
Copenhagen, Denmark

Source: archdaily.com

Intermodal City Plaza
Jersey Corridor Project
Michael Graves & Peter Eisenman

Urban Linear Megastructure
Lower Manhattan Expressway Project
Paul Rudolph
Lower Manhattan Expressway Project
Paul Rudolph
REFERENCES


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