Logical Urbanism: food city

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logistical urbanism

food city

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“Of course the whole point of living in a city is that you don’t have to think about where your food comes from.”

Karrie Jacobs, Back To The Land, *Metropolis*
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public architecture: people

Hunts Point Produce Market

logistical architecture: commodities
It is my contention that by through the collusion of public program and logistical food markets that a new typology can develop that reifies urban food systems and can illuminate issues of urban food crisis, food (in)justice, and urban health. By reconsidering the location and operation of these existing landscapes, the necessity and pleasure of food as public discourse can be reinstated, and re-imagined.

Starting in the mid-1900’s, as cities began to decentralize, logistical infrastructures (such as private big box distribution centers) began materializing in increasingly non-urban areas, in pursuit of cheap and expansive land. This trend spatially and cognitively alienates citizens from the systems of their sustenance, leaving the city teetering on the edge of crisis, with only a day’s worth of food within its limits.

With a requisite of urban proximity, perishable commodities such as fruit and vegetable produce have the potential to challenge this trend. As such, sites of produce logistics offer a testing ground for exploring possible “reapproachments” between logistical facilities, infrastructures, and the urban lifestyles they support.

This project seeks to relocate the New York’s City Hunt’s Point Produce Market to the “shadow of Manhattan”: Secaucus, New Jersey. At a multi-infrastructural site where the movement of vast amounts of freight and people coexist as they move in and out of New York City, this project seeks to visually and programattically integrate a commuter-scape with a facility of logistical transference.
**fresh produce**
mostly unprocessed foods, including fruits and vegetables (produce), meats, and fish that are vital to human health and nutrition.

**foodshed**
analogous to a watershed a foodshed is a loosely defined region in which food is produced and distributed to an urban population.

**infrastructure**
physical or operational apparatus that controls access

**independent (shipper, distributor, retailer)**
link in a private independent food system where each link is owned by a separate entity.

**integrated (shipper, distributor, retailer)**
link in a vertically integrated food system where all links are owned by a single private entity.

**local**
within food systems often defined as a 400 miles (single travel day) radius, here, local food will be defined as the geographically closest available source of a particular food commodity.

**markets**
places of agricultural exchange

  **farmers market**
a collection of farmers that sell their agricultural product directly to consumers.
retail market
market that sells agricultural product directly from merchants and distributors to consumers

supermarket
vertically integrated private market that sells agricultural and processed food products directly to consumers

wholesale/terminal market
central market that serves as an assembly and trading place between producers, distributors, and consumers

networks

centralized
network in which individual nodes are dependent upon a single central node through vertical protocols

decentralized
network in which individual nodes are dependent a middle tier power between the central and local nodes through hierarchical protocols

distributed
centerless network in which all individual nodes are independent, equal, and cooperate through lateral protocols

protocols
rules that govern relationships in a network
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Within the food system logistical spaces and their networked infrastructures are what distribute food from places of production to places of consumption. In urban and architectural history this linkage-space manifested itself in a city’s central market, a place-based public institution. It is in these civic logistical spaces that urban consumers exchanged with rural producers and subsequently had direct knowledge and influence over the production of their sustenance.

The late 20th century emergence of a post-fordist society has led to the privatization, decentralization, and international distribution of food systems. A system in which private (super)market corporations have become the dominant source of fresh food for consumers. In such a system logistical spaces (distribution centers) are privately owned and are removed to the urban periphery where they provide for urban society by excluding it. As such the critical linkage between production and consumption is disconnected.

However, a remnant of the age-old public market still remains within the fabric of the contemporary city. Operating in ‘public benefit’ produce terminal markets are distinct from the supermarket food system and are the primary logistical space that provide to independent retailers such as bodegas and restaurants in the city. As more food is consumed outside of the home (more than half), these urban logistical spaces have a revived role in providing fresh food to the urban populous and being integral to inner-city economies. As such what are the possibilities that this these economically vital sites can gain cultural importance. At these markets is there an opportunity for the economic efficiencies of logistical architecture to collide with the social productivity of public architecture? As defined by Clare Lyster, such a space would be a collisive site:

“moments where excessive accumulation of exchange prevails, that design possibilities emerge, staging opportunities for public space and other programmed landscapes that can further occupy these sites with activities and events other than those that were originally intended.”

It is my contention that by through the collusion of public space into the logistical spaces of terminal produce markets, that a new typology can develop that reifies urban food systems and can illuminate issues of urban food crisis, food (in)justice, and urban health. By intervening onto these existing landscapes, the necessity and pleasure of food as public discourse can be reinstated, and re-imagined.
“Indulgence and hunger coexist in this city of plenty, complicated by a lack of the most basic awareness of food as part of nature—of its sowing and growing, from seed to harvest; of time and place, seasons and soils. The elemental knowledge of what we eat is disappearing. In terms of food, everything from anywhere is available all the time for some, while basic subsistence remains out of reach for others.”

Placing Food, Nina-Marie Lister
Given our constant necessity for it, for much of history civilization has revolved around food. Until recently human existence was principally concerned with the production, protection, and consumption of food. Since the agricultural revolution and the mechanization of food production following the industrial revolution, man has rightfully liberated himself from this laborious burden in the name of progress. **However, with our liberation from food labor comes a liberation from the knowledge of our sustenance.**

Food sustains us. It is at once chemical, historical, cultural, and political but it is also fundamentally spatial. Conceptually, to study food is to study the transference of energy amongst living things. This transference can be analyzed, mapped, designed, and controlled. As most of our food is fixed to the ground, food is inevitably a place-based concept. Therefore to study food spatially is to analyze the relationship between places (of production) and people (in places of consumption). This relationship, managed by logistics, has become increasingly displaced as the spaces of food distribution, that which links production and consumption, have become stretched so thin their visibility has been lost.
“The current global crisis is an assymetrical crisis between centralized, hierarchical powers and distributed, horizontal networks.”

-Alexander Galloway and Eugen Thacker

Food, an object to be transferred to and consumed by a subject, is and has always a networked relationship. Throughout the progression of society, these networks have grown and mutated to adapt to the needs and structure of that society.

Expanded to production, distribution, and consumption, the evolution and current multiplicity of food networks can be distinguished and mapped. While certain networks may dominate a society at a particular historical period, nearly all scales of networks co-exist, albeit in conflict. Despite their similarities, the unhealthy tension between these different network modes is the source for conflict and failure within our food system.
“You will not find it difficult to prove that battles, campaigns, and even wars have been won or lost primarily because of logistics.”

General Dwight D. Eisenhower
**Logistics**: “The process of planning, implementing, and controlling the efficient, effective flow and storage of goods, services, and related information from point of origin to point of consumption for the purpose of conforming to customer requirements”

-Council of Logistics Management

The term logistics originates from the Roman "Logistikas". The logistikas’ were responsible for supplying and managing the resources of the different Roman military legions. Like cities today, the legions, in a relentless drive towards ‘progress’, relied on well calculated logistics to manage food and other essential resources so that the army (the city) could achieve each new progressive goal. So too the city, often sited for reasons beyond the easy availability of food or water, has to find ways of sustaining the daily lives of its inhabitants. In this sense logistics are seen as secondary. They are the routine things that are kept actively hidden and calculably controlled so the primary goal can be focused on and accomplished.

Who are the logisticians of the contemporary global food system and whose ‘army’ do they serve? In such a complex system there are multiple and often competing logistics which are influenced at a variety of scales and serve competing intentions (urban/rural, local/global, public/private, etc). Almost constantly in motion by air, sea, and land the place, the physical spaces, of logistics are increasingly removed and hidden from public life, removing with them the contradictions and complexities of consumption.
We do not have the option to start from scratch. The current food production system is too massive, entrenched, and profitable to be disassembled. Our strategy in this epic endeavor must be to co-opt and adapt what already exists.”

John Knechtel, Food
“Of course, much of the power of agribusiness ultimately depends on farmers and consumers not knowing. If we do not know, we do no act. And even if we do know, the physical and social distancing characteristic of the global food system may constrain our willingness to act when the locus of the needed action is distant or when we have no real sense of connection to the land or those on whose behalf we ought to act.”

Jack Kloppenburg, *Coming in to the Foodshed*

Throughout history different civilizations have had different attitudes towards the ‘right to food.’ Civilizations such as the Romans and Egyptians often rationed food, early forms of public welfare. More recently, the state sponsored public market has often been the space for public food and as recently as the early twentieth century many cities had Departments of Markets. In the US, public markets were even a critical part of New Deal construction. Many of these public markets were wholesale terminal markets that ensured a city’s access to fresh produce.

Beginning with a 1916, Piggly Wiggly, the private self-service supermarket began to radically shift food sovereignty toward the private sector. In recent decades supermarkets have begun vertically integrating, creating their own distribution chains. Corporatization and monopolization of food systems by the private sector leaves communities with little say about their food access often leading to the creation of food deserts.
“What is eaten by the great majority of North Americans comes from a global everywhere, yet from nowhere that they know in particular”

Jack Kloppenburg, *Coming Into the Foodshed*
“Today, localism speaks to the specific alienations and anxieties of globalization (from peak oil through national sovereignty) as well as to a population increasingly cynical about political struggle. Most crucially, it reflects a political condition in which it is only in their role as consumers that Americans can imagine political efficacy.”

Chad Lavin, *The Year of Eating Politically*

Beyond lower fuel emissions the local food movement is about ‘food sovereignty’ or the right of peoples to define their own food system as oppose to being subject to international market forces. While this has generally been a rural force the rise in urban farmer’s markets brings further validity to the local movements urban possibilities.

While some cities have expansive agricultural hinterlands, newer cities sited far from areas of agricultural production as well as cities whose burgeoning sprawl has wiped out farms are incapable of realizing the local ideal. Cities have outgrown their foodsheds. Unless we redistribute population, the global must be critiqued and optimized to coexist with historic and emergent local food systems
“Food is culture in the sense that it is at once an object, a crafted thing, and a symbol that, when exchanged, cements social relations.”

Fallen Fruit

Ambrogio Lorenzetti, Effects of Good Government on Town and Country; detail of center. Image from SCALA, Florence/ART RESOURCE, N.Y.
Urbanism

Agricultural Revolution

Unleashed by the invention of agriculture, the city’s origins emerge from food. Cities first emerged as points for the collection, exchange, and defense of surplus agricultural product. The agricultural revolution (invention of farming) led to the emergence of the city/country dialectic in which the spaces of food production and food consumption first became displaced.

City/Country Dialectic

As urban society progressed and diversified economically and socially, inventing various new forms of labor, the city began to see itself as distinct from nature.

At once the city/country dialectic has never been more pervasive, as people evacuate the rural for the (sub)urban and the spaces of food production become increasingly distinct from places of food consumption. While land-use and population statistics might support such a claim, the city/country dialectic may now cease to exist. With the dissipation of rural society, the country now exists not as another but as a calculated extension of the city.
food chains

farmer’s market produce chain
1980: 8.4%  1990: 21.2%

local/regional farms

municipal farmer’s market

csa market-less produce chain
1980: 2.8%  1990: 5.7%

local farm
food chains

super market produce chain
1980: 38.1%  1990: 34.6%

terminal market produce chain
1980: 46.5%  1990: 33.0%

urbanism
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Ralph's Grocery Distribution Center outside of Glendale, California
http://www.flickr.com/photos/yemmime/2709298583/
spaces of food logistics

Throughout history the market has served as the space of food in the city. The market was a middle point in the logistical exchange of between producers and consumers, rural and urban. As the scales of production and consumption have increased, this logistical network has expanded rapidly along with the spaces of exchange.

Driven by competition networks of food exchange have become increasingly governed by the efficiencies of logistics, and spaces of food exchange have become increasingly specialized, reductive, and isolated. The evolution of food logistics from open informal public squares, to highly controlled isolated big-box warehouses, reveals this domination. While a variety of food logistic typologies still exist, each offer different scales of exchange (bulk), different distances of scope, and outreach to different constituents.
Throughout history, cities and markets have sustained each other, the former providing location demand, and social context for the latter; providing sustenance, profit, and cultural verve to the former."

(Theodore C. Bestor, Supply-Side Suchi: Commodity, Market, and the Global City)
As places of exchange, the market typology can be traced back to the dawn of civilization. The earliest understood typology developed in the Greek agora. Housed in long open-air colonnaded buildings called stoa, the market was the civic center of the Greek city. The complex also typically included it the economic/cultural center exchange (Tangires 2008). When the Roman empire emerged the agora was recycled into the forum. Throughout the Mediterranean many current public markets and squares are sites which had remained public spaces of exchange since their Roman founding.

Following the collapse of the Roman Empire, as cities shrank and densified, the street, publicly owned and already bounded became the most available site for new markets. While these markets were often temporary informal, the street markets could also be permanently enclosed such as the bazaar’s of the Ottoman empire where whole sections of a city has its streets enclosed with barrel vaults roofs.

Similar to the markets of antiquity, the mercantilist societies that emerged in Renaissance Europe reinstated the market as a civic institution. Many new markets built by municipalities during this period were built as open galleries on the ground level of new civic/administrative structures such as courthouses and city halls. As cities competed with each other for domination of land and culture, the market became a competitive civic architecture symbolizing its power of trade.

The rapid growth of cities during late eighteenth and nineteenth centuries coupled with material advancements in iron and glass led to a building boom of new central markets. Meant to modernize many cities chaotic food systems, these new markets exemplified by Les Halles in Paris and Covent Garden in London, were massive iron spanning, glass, and masonry structures that attempted to regulate urban food systems through a central node that could be monitored by city administrations (Tangires 2008, TenHoor 2007). In the politically volatile industrial city, central markets allowed municipalities to carefully monitor and regulate the prices and availability of food. As cities continued to grow and food systems were further modernized by refrigeration and automobile and rail transportation, markets began to see an increase in wholesale over retail exchanges. No longer the point of direct exchange to the public, the market could be liberated from the city center. In line with the City Beautiful movement in planning, city administrators and food distributors supported the establishment of wholesale markets near urban peripheries, where they could expand in size without causing urban congestion, where they could better access emergent infrastructures of global trade systems such as highways, rail, and sea and air ports, and where they would allow the center city to freed of the filth of food (Donofrio 2007). No longer reliant on the grandeur of public architecture to attract customers and harness public life, the wholesale terminal markets became purely logistical spaces, whose architecture was governed by material efficiencies and commodity flows (TenHoor 2007).
produce markets

Public Market

With a lineage traced back to the Greek agora and the Roman forum, markets have often been physically and programmatically linked to public institutions. To ensure food supplies and avoid civic disorder the marriage of civic/political institutions and the logistical/economic space of the market was common in western cities up until the mid-twentieth century. Most commonly the ground floor was relegated to the food market while the floor(s) above would include market regulatory offices, as well as city administrative offices, police departments, or theatres. Like ottoman mosques, market revenues would pay off the construction costs of the municipal programming above.
Los Angeles Grand Central Market built in 1917

http://www.los-angeles-world-class-city.com/images/Grand_Central_PUBLIC_Market_Los_Angeles-222.jpg
produce markets

Public Market

Lights:
Lights dropped from the ceiling illuminate large market spaces at ground level and focus light on the produce that is display.

Product:
Fruit and vegetable products are unpackaged and at waist level so buyers can examine the product. The quality of the such product advertises itself.

Signs:
Each merchant (tenant) has a large uniquely designed sign hanging above their stall for wayfinding and company branding.

Prices:
Bright daily handmade signs are displayed at eye level identifying the product, its price, and allowing buyers to compare prices.
produce markets

Open Air Farmer’s Market Shed

Formally, a direct lineage of the colonnaded basilicas of the classical and renaissance periods, the market shed has been modified little over time. The elongated market shed was a covered market, removing rain, snow, or excessive sunlight for the cheapest price. Additionally as most farmer’s markets were owned by the city, the elongated form fit easily into wide public streets, property already owned by the city. Farmer’s market sheds, typically have a center isle that operates as a public concourse for exchange while the exterior of the shed is the service access for the farmer. At these markets farmers often would sell produce right out of the bed of their trucks.
produce markets

Open Air Farmer’s Market Shed

Windows
Whether closed or open-air, farmer’s market sheds often have clerestory or skylight windows. This allows for natural light plus energy saving during the markets off hours.

Temporary Tables:
Farmer’s markets typically display produce on temporary tables and stalls allowing for the space to altered or re-programmed.

Wayfinding
Hanging maps, identify location in the market and access to public services.

Farmer Access:
Often a direct relationship between the produce, the means of distribution, and the farmer is clearly displayed and promoted.
produce markets

supermarket distribution center

The rise of the grocery store/supermarket following Clarence Saunders 1916 Piggly Wiggly, began a transition of power in city food systems from municipal institutions to private companies. Closely associated with suburban growth, not restricted by space or capital, supermarkets could compete in these less dense newly affluent real estate markets. Unlike the public market, supermarkets are not markets in the sense they do not provide for linkages between production and consumption. Rather their regional distribution centers provide this service. These facilities have large storage volumes to ensure stock at all dependent supermarkets.

Penn Traffic DC, Dubois, PA, 1988
supermarket distribution center

Flood Lighting
Designed without windows, the large spatial volumes of distribution centers are lit from large flood lights that cast a neutral light throughout the space at all times of the day.

Machines
Spaces are laid out for automation equipment. Most human movement is assisted by forklifts due to the size of the space and the size of the product being handled.

produce markets

Racks
All product is kept on racks where it is meant to be stored, not necessarily to be displayed. Racks multiple stories tall further displace product from shippers and buyers.

Packaging
Fresh or non-perishable most product is boxed and/or shrinkwrapped to ensure protection when moving in bulk. Buyers and shippers cannot access the product directly.
produce markets

wholesale terminal market

As central market wholesaling became more common to serve expanding urban regions, the old public market sites no longer allowed for growth. Newly sitted near rail and air transportation, cites and regional governments began building massive terminal markets near the edge of the city that would serve as regional logistical food hubs, relaying food from farm shippers to retail distributors. Like farmer’s market sheds the structures were often long bars which allowed for rail unloading and cross docking. Typically the ground floor included docks and the various produce companies storage space, while the upper floors contained bookkeeping, offices and service programs.
Hunt's Point Terminal Produce Market
http://www.flickr.com/photos/nevincohen/4592387758/in/photostream/
Expeded Structure
Designed for economic efficiency terminal markets rarely have surface finishes. Typically the steel and concrete structural elements are left raw and bare.

Boxed Product
Most produce is kept in pallets or boxes. The product is only examined at the point of sale to ensure quality and USDA testing. Buyers rely on box labeling to identify produce.

produce markets

wholesale terminal market

Signs
Signs identify the different suppliers and distributors along the dock. Signs are typically standardized to ensure market equality.

Machines
Pedestrian space is shared with machines space as fork lifts transport pallets from storage to trucks along the dock.
central market  
mexico city, mexico  
327 hectare site

rungis  
paris, france  
232 hectare site

hunts point food distribution center  
mexico city, mexico  
24 hectare site

tsukiji  
tokyo, japan  
9 hectare site
ontario terminal market
toronto, ontario
6.7 hectare site

philadelphia regional wholesale market
philadelphia, pennsylvania
6.3 hectare site

new covent garden market
london, united kingdom
6 hectare site

carrier dome
syracuse, new york
7 hectare site
Hunt’s Point Food Distribution Center
23 million people in the fed daily
hunts point produce market

1. hunts point terminal market
   - employees: 10,000
   - food retail space (sq ft): 660,000

2. new york city food bank
   - employees: 100
   - food retail space (sq ft): 900,000

3. cooperative meat market
   - employees: 2400
   - food retail space: 1,000,000

4. fulton fish market
   - employees: 650
   - food retail space (sq ft): 400,000

hunts point food distribution center:

- employees: 13150
- food retail space (sq ft): 2,150,000
- retailers: 0-999
- 0
- retailers: 1000-4999
- 0
- retailers: 5000-9999
- 0
- retailers: 10000-249999
- 1
- food retailers: 250000-
hunts point produce market

Located in the South Bronx, the Hunts Point Produce Market - formerly known as the Hunts Point Terminal Market - is New York City’s centralized wholesale terminal market. Receiving fresh produce from the northeast region, the southeast and west coast, and internationally, the market is a quick stopover for the produce before it is rebought by buyers who then distribute and sell the produce to supermarkets, institutions, retailers, restaurants and bodegas throughout the city.

As such, the market is the source of almost 23 million people’s produce in the New York Metro area and beyond. The market is a public/private collaborative as the land market is owned by the city, leased to the market cooperation, which in turn then leases to each of the 48 different food distributors who lease a percentage of the facilities ‘boxes’ (cold storage units). Structured primarily by 4 long bars, each lined in a linear dock space with the cold storage boxes spanning the gap. Above the docks and part of the cold storage space are company offices and a long 1700 ft corridor, considered the longest in the world.

Completed in 1962 with several renovations to date, the market continues to be plagued by a lack of space, failing infrastructure, and a lack of contemporary cold chain compliance as the docks are open air.
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sites of food logistics

Ranging from the historical cities central public market to the contemporary cities peripheral distribution center, as food logistics alter so do the sites and contexts for their spatialization.
Designed by French architect Victor Baltard in 1859, the iron and glass market at Les Halles replaced Paris’s former market Halles au Ble. Part of Haussmann’s modernization of Paris, the market was the largest enclosed market in the world. Known as the belly of Paris it was located at the heart of the city center. Over time the market became crowded as Paris grew rapidly around it, and it became too difficult for wholesalers to reach the central market. In 1969 a new state-of-the-art market was built in the then countryside town of Rungis near a new airport. Strictly a wholesale market, the market was designed purely for the efficient movement of food commodities (TenHeer 2007).
Le Halles

- Market Type: Central Market
- Construction Completed: 1859
- Site: 25 acres
- Floor Area: over 600,000 sq ft.
- Number of Buildings: 10
- Operation: Municipal
- Services: Wholesale, Retail
- Tenants: 26
- Dock Doors: unknown

Marché International de Rungis

- Market Type: Wholesale Distribution Center
- Construction Completed: 1969
- Site: 573 acres
- Floor Area: 5,382,000 sq. ft.
- Number of Buildings: 1199
- Operation: Nationally owned, privately run
- Services: Wholesale
- Tenants: 295
- Dock Doors: 295
Mexico City, Mexico

1863 Population: 8,000,000
1982 Population: 14,000,000

Mexico City’s first modern central market was built in 1863 close to the city center and the seat of the country’s government. From the outset the market served as a regional and national food market and as such it quickly outgrew its facilities. Despite multiple expansions the market became congested. Additionally it was notorious for prostitutes, filth, and was considered detrimental to the life of the city center. In the 1980’s Mexico began a new massive national system of wholesale produce markets culminating in Mexico City’s Central de Abasto. Soon after its completion, the market was handling 80% of Mexico’s food. Designed for such a massive scale of distribution the proliferation of privately integrated international supermarket companies has lowered the market’s total volume to 30%. While the volume has decreased the size of the market still ranks it as the largest in the world. (Twilley 2010)
**La Merced Market**
- **Market Type**: Central Market
- **Completed**: 1863
- **Site**: over 30 acres
- **Floor Area**: 450,000
- **Number of Buildings**: 1 + street stalls
- **Operation**: Unknown
- **Service**: Wholesale, Retail
- **Tenants**: 300 / Stalls: Unknown
- **Dock Doors**: NA

**Central de Abasto**
- **Market Type**: Wholesale Distribution Center
- **Completed**: 1982
- **Site**: 808 acres
- **Floor Area**: unknown
- **Number of Buildings**: 3,755
- **Operation**: The Federal District Government
- **Service**: Wholesale
- **Tenants**: 90,000 / Stalls: Unknown
- **Dock Doors**: Unknown

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**urban market history**
Located in the Lower West Side on Washington St. New York City’s Washington Market was in operation from 1812 to 1960. Renovated and expanded, for much of the 19th century the market served as the predominant market for agricultural imports for the entire United States. Congestion and lack of space for expansion eventually made the city-run market unprofitable and shortly after its destruction the city developed Hunt’s Point as the new food distribution hub. The large tract of previously undeveloped land was conveniently located to rail, water, and highway infrastructure. The market has expanded its facilities from strictly produce to include meat, and fish markets. (Tangires 2008)
urban market history

Hunts Point Market
- Market Type: Wholesale Terminal Market
- Completed: 1962
- Site: 113 acres
- Floor Area: 1,000,000 sq ft.
- Number of Buildings: 6
- Operation: Non profit C-Corp Cooperative
- Service: Wholesale
- Tenants: 50 / Stalls: NA
- Dock Doors: 900

Washington Market
- Market Type: Central Market
- Site: unknown
- Floor Area: 40,250 + 147,600
- Number of Buildings: 2 + private wholesalers
- Operation: Non profit C-Corp Cooperative
- Service: Wholesale, Retail
- Tenants: unknown / Stalls: 900
- Dock Doors: NA
Sectional Swaths

LOGISTICAL CITY

CULTURAL CITY
Historically, New York City’s growth was fueled by the deep water port of the Hudson and East River estuary. From Harlem south both rivers were lined with piers and warehouses serving the freight and passenger traffic upon which the city relied. Manhattan was wrapped in a logistical membrane in which goods passed from ships to warehouses and then would be carted into the city to sold and consumed.

Included in this logistical membrane was the city’s Washington Market, in which a majority of the city’s produce entered the city.

After WWII national movements of urban renewal, environmentalism, and the Federal Highway Act of 1956, joined to transform inner city industrial waterfronts into parks and highways. Following the establishment of major port facilities in the 1940’s to the southwest in Newark Bay New Jersey, the port area became a corridor for new highway and rail infrastructures, attracting former Manhattan warehouses and distribution facilities. A new logistical city formed, serving the cultural core but spatially autonomous from it.

Meanwhile in 1962 rather than moving to the newly forming ‘logistical city’, Washington Market was moved from the Manhattan waterfront to the north east to Hunt’s Point in the Bronx.
Logistical landscapes, comprising distribution centers and storage facilities, are reliant upon freight infrastructures to move goods. In the case of food New York City’s fresh food system these freight infrastructures include airports, seaports, intermodal facilities, rail corridors, highways, and freight accessible surface roads.

Hunt’s Point Produce Terminal’s less than optimal relation to these infrastructures. First off, as an east coast city, nearly all of New York City’s domestic produce arrives from the south and west, forcing the produce to cross the Hudson River on its way to the South Bronx market. Since the closest freight rail crossing is 140 miles north of New York City in Selkirk, New York, 95% of all produce arriving at the current market site has to cross the George Washington Bridge via truck. Additionally once crossing the bridge the trucks have to go on grade through the residential neighborhoods of the Hunt’s Point Peninsula, not only slowing travel time but heavily produce the residential neighborhood. Like the Washington Market before it, the Hunts Point Produce Market and its logistical needs seem to have outgrown its site.
Hunts Point Market: 1962-2011
Washington Market: 1812-1960
Produce City Market: 2011-?
This project proposes relocating the produce market to a logistical optimal site in the ‘logistical city’. Specifically, the proposed site is located in Secaucus, New Jersey on a triangular lowland of marsh and capped landfills. Located in the heart of the logistical city, this new location would help redistribute the logistical loads on New York City’s regional infrastructures by lessening the volume of traffic across the George Washington Bridge into Manhattan, utilizing nearby intermodal yards where 25% of all of Hunt’s Produce is currently unloaded in trailer off of flatcars and trucked a short distance to the market, and where it can utilize recent infrastructural excesses.

In addition to being adjacent to the freight heavy New Jersey Turnpike (Interstate 95), the site utilizes the recently completed exit 15X, cost over 250 million dollars and is the least use exit along the turnpike in the state of New Jersey. This robust 4 lane exit can easily accommodate Hunt’s Point truck load (up to 2000 a day).

Interestingly, while the site is optimal for accessing major existing freight corridors it also happens that over 300,000 pass the site daily commuting in and out of New York City from New Jersey. In addition to commuter traffic on the turnpike almost 200,000 people use 2 commuter rail lines that pass the site intersecting at the recently completed and under used Secaucus Junction Station.
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strategies of food logistics

Unlike domestic and public spaces, logistical architectures are governed not by human usage, but rather, by the dimensions of the particular modalities and infrastructures in which they must engage. These dimensional guidelines are the protocols that govern the design of logistical architecture.

Like the paricularity of the protocols of design, logistical architectures each posses and respond to unique programmatic requirements based of the logistical processes they perform.
REFRIGERATED BOXCAR

VOLUME
CUBIC FEET: 6211.5 ft³
PALLETS: 2 x 12 = 24
PALLET STACK HEIGHT: 12'-0"

TRANSPORTING
AVERAGE SPEED: 55 mph
FUEL EFFICIENCY: 410-460 ton-miles per gallon
LABOR: 1 person/24 pallet-volume-cars
TRACK WIDTH: 4’6”
VEHICLE LIFE SPAN:

LOADING
FLOOR HEIGHT: 4’-0"
LINEAR DOCK SPACE: 58’-4”
Currently and in the new proposal, Hunt’s Point Produce Market is serviced by rail and road infrastructures. The rail infrastructure provides for refrigerated boxcars to access the markets docks directly. The road infrastructure permits a range of vehicles types, but principally allows standard 53 foot and 24’ refrigerated tractor trailers to access the market.

Determining the turning radius of each modality is critical in designing site circulation. Additionally the dimensions of each vehicle determine the design of the interface (the dock) of the market.
53’ REFRIGERATED TRUCK......

VOLUME
CUBIC FEET: 3500 ft³
PALLETs: 2 x 13 = 26
PALLET STACK HEIGHT: 8’-5”

TRANSPORTING
AVERAGE SPEED: 55 mph
FUEL EFFICIENCY: 80-110 ton-miles per gallon
LABOR: 1 person/26 pallet-volumes
LANE WIDTHS: 11’-0” - 12’-0”
VEHICLE LIFE SPAN: 5-7 years

LOADING
FLOOR HEIGHT: 4’-4”
LINEAR DOCK SPACE: 12’-0”
24’ REFRIGERATED TRUCK......

VOLUME
CUBIC FEET: 1680 ft³
PALLET: 2 x 6 = 12
PALLET STACK HEIGHT: 8'-5”

TRANSPORTING
AVERAGE SPEED: 55 mph
FUEL EFFICIENCY: 100-130 ton-miles per gallon
LABOR: 1 person/12 pallet-volumes
LANE WIDTHS: 11'-0" - 12'-0"
VEHICLE LIFE SPAN: 5-7 years

LOADING
FLOOR HEIGHT: 4'-4"
LINEAR DOCK SPACE: 12'-0"
Like the modalities, each program at a logistical facility is heavily dependent on the infrastructure and modality upon which it must interface. Currently the Hunts Point Produce Market consists primarily of cold storage programming, with a large amount of office and dock space as well. Given its massive size, and the large number of employees and customers at the site at any given time (more than 3000), the market hosts several service programs including restrooms, restaurants, a barber, and a convenience store.
Commuter-scape

Given this project's intention of integrating the market with an urban public, what urban public does a logistically optimal site such as the one chosen for this project in Secaucus, New Jersey permit?

Provided the 300,000 commuters who pass the site daily on commuter trains and on the New Jersey Turnpike, this project will attempt to integrate programs into the market that would appeal to this particular transitory urban public. By integrating a commuter-scape into the market the market can serve as a commuter destination, a sort of highway/rail restop in which shopping, eating, and recreation co-exist with market.
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Part market part retail and recreation, the programmatic combination of commuter-scape and logistics-scape claims the logistical as an armature or framework for urbanism. This coupling intends to be mutually beneficial bringing increased exposure and profits to the market, while the commuterscape utilizes the large horizontal structure of the markets docks, and its teeming life of logistical transference as a backdrop for urban activity. With the 24 hour activity of the produce market, the commuterscape is always adjacent to an active urbanism.
### PRODUCE CITY MARKET:
#### WHOLESALE DISTRIBUTOR TOWERS

<table>
<thead>
<tr>
<th>Volume: 80,196 ft³</th>
<th>AFL Hothouse</th>
<th>Surplus Area: 844 ft² (2)</th>
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<tr>
<td>Dock Length: 45 ft</td>
<td>Tower Height: 45 ft</td>
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<table>
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<tr>
<th>Volume: 84,375 ft³</th>
<th>Surplus Area: 1,125 ft² (2)</th>
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<tr>
<td>Dock Length: 25 ft</td>
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</table>

<table>
<thead>
<tr>
<th>Volume: 253,125 ft³</th>
<th>Surplus Area: 2,531 ft² (2)</th>
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</thead>
<tbody>
<tr>
<td>Dock Length: 50 ft</td>
<td>Tower Height: 50 ft</td>
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</table>

<table>
<thead>
<tr>
<th>Volume: 1,283,149 ft³</th>
<th>Surplus Area: 4,996 ft² (2)</th>
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</thead>
<tbody>
<tr>
<td>Dock Length: 100 ft</td>
<td>Tower Height: 100 ft</td>
</tr>
</tbody>
</table>

### WHOLESALE DISTRIBUTORS:
#### HEIGHT GROUPINGS

<table>
<thead>
<tr>
<th>380’</th>
<th>350’</th>
<th>300’</th>
<th>260’</th>
<th>200’</th>
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<tbody>
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<table>
<thead>
<tr>
<th>190’</th>
<th>166’</th>
<th>150’</th>
<th>142’</th>
<th>125’</th>
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<table>
<thead>
<tr>
<th>118’</th>
<th>100’</th>
<th>95’</th>
<th>75’</th>
<th>71’</th>
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<table>
<thead>
<tr>
<th>68’</th>
<th>50’</th>
<th>48’</th>
<th>45’</th>
<th>25’</th>
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<tbody>
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</table>

<table>
<thead>
<tr>
<th>24’</th>
<th>22’</th>
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</thead>
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<td></td>
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</table>

### Additional Information:

- Dock Length: 22 ft
- Tower Height: 22 ft
Hunts Point Produce Market consists of 48 produce distribution companies, each primarily consisting of a horizontal cold storage space. The spaces are filled with racking up to 30 feet allowing access to the palettes on each shelf by conventional forklifts. With the desire to manipulate the layout of Hunt’s Point in order to integrate commuter-scape programming additional space within this layout needed to be made. Given that each company only has one or two doors in to their cold storage box in order to ensure security, theoretically, each volume could be rotate into a vertical position.

Utilizing clad-rack high-bay construction techniques in which the racking itself creates a structural matrix, the towers can cheaply be built up to heights of 150 ft and beyond. Rather than using forklifts, these vertical cold storage towers use automated sliding cranes to access the produce pallets. The verticalization of the towers creates a surplus interior space, a courtyard, which can be filled with new program.
The produce terminal market program is placed in two bars that share a rail line as a central spine. The bar is placed parallel to the New Jersey Turnpike and Northeast Rail Corridor to provide maximum visibility while avoiding Little Snake Hill to the south.

The site is bordered by the high volume Northeast Rail Corridor Line and the New Jersey Turnpike, and Laurel Hill Park to the north. To the east the site is bordered by New Jersey Turnpike Exit 15X another commuter rail line, and Secaucus Junction Station. To the south and east lies the Hackensack River.

The two bars are bent around Little Snake Hill perpendicular to the Hackensack River creating a connection between the commuter rail station and the river. Additionally by bending the bars, the building can be viewed obliquely when approaching along the New Jersey Turnpike and the Northeastern Rail Corridor. The bend also allows the termini of the buildings to be viewable from any point along the building.

The bars spread apart on their southern end to permit rail access and accommodate a rail staging area for incoming freight cars.

The bars are spread apart at their northeaster terminus to permit truck access from New County Road/Exit 15X. A 200 ft. wide tarmac follows the outside edge of the bars to allow for truck docking and staging.
The produce market is laid out to isolate rail and truck dock access. A single rail corridor runs down the center of two mirrored bars, creating the spin of the market, while the peripheral linear edge contains the truck interface. While the rail and truck docks run continuously down the outer edge of both bars the interior of each bar alternates between towers and the surplus space remaining after their vertical rotation.

The logistical protocols that determine the form of the market and space requirements for retail and recreation programming are paired together determining tower location based off a programmatic tapering from retail to recreation moving outward from Secaucus Junction Station.
Upper Level Plan
Lower Level Plan
Section Perspective 1: Typical Cross Section
Section Perspective 2: Cross Section at Outdoor Amphitheatre

food city
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**Food Production:**


**Food Consumption:**


**Food Distribution:**


Urban Society:

Markets:


**Logistics:**


**New York City Food Logistics**


**Hunts Point Produce Market**


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