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Abstract

The experience of the urban inhabitant in the NOW, is a persistent crisis of time management. In the era of accelerated ecommerce, NOWness fulfills and entangles us further with every synaptic push of an Amazon dash button. Our desire increasingly relies upon a vast, networked engine of tightly coupled information management and material handling, promising to move physical stuff through congested cities with the speed and fluidity of data and capital. Once consolidated and remote, this infrastructure must increasingly make contact with our daily lives, and the frictions therein, to ensure customer satisfaction NOW. Our patience contracts. Time intervals diminish. All mail becomes media mail, and the city is further rationalized into a dynamic field of moving parcels / packets.

At work, is a fundamental redefinition of the basic spatial units of urban life within the space-time rubric of NOW; one predicated on a smoothness of mobility and logistics. New hybrid typologies of temporal infrastructure will mediate material culture, and operate as social condensers to a public which lives, works, and consumes everywhere, and in the NOW. In the process, the egosphere is disaggregated into the urban; segmented into the functional voxels of our mobile life. These Parcels, the components of our urban time / life-support, the requisite volumes of storage, pickup, sharing, consumption and hygiene, proliferate and coalesce at the intersections of distribution networks all for the sake of efficiency. Here, we are enacting a strange form of commons, building cities at scale, NOW.

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socio-technics (cont.)
nascar
remote delivery
undecorated shed
automation
space-time packing orders
FULFILL ME NOW IS AN ARCHITECTURE WHICH PROPOSES TO DO JUST THAT

TO ENACT THE OPPORTUNITIES AND CONSEQUENCES IN THE INFRASTRUCTURE OF OUR ACCELERATED DESIRE.

ITS MAGICAL NONFICTION. THE CULT OF SPEED, OF DATA, OF MOBILITY AND LOGISTICS, ITS SEEMING BANALITY OF FEDEX TRUCKS CLOGGING MANHATTAN’S ARTERIES SO THAT WE MAY GET GLAD NOW WITH GLAD BRAND TRASH BAGS, CHARMIN TOILET PAPER, AND EASY BAKE OVENS.

WE ARE ALL THE BUILDERS OF THIS TEMPORAL INFRASTRUCTURE OF FULFILLMENT, AND SHOULDN'T BE SURPRISED WHEN WE FIND IT HAS REMADE THE CITY, THE HOME, AND US.
Fulfillment in its modern manifestation, smoothens a wide range of seemingly incommensurable urban, informatic, and socio-economic conditions into a continuous managerial pipeline, driven by pinpoint logistical efficiency to put more goods in more consumers’ hands faster. Simultaneously an organization of data, commodities, and bodies, fulfillment as exercised by Amazon.com, instantiates novel questions on the influence of network culture outside, and its transition back inside the contemporary city. As shifting paradigms of global logistical systems increasingly vie for instantaneous gratification, the invisible infrastructure responsible for the circulation for our information and “stuff”, is necessarily reconstructed, out from the hinterlands, and interfacing with us back in our neighborhoods. This transition introduces an important shift of network infrastructure’s reintegration into cities, with myriad cases of vacancies as well as re-occupancies to index our massive shift in consumptive habits.

In Amazon.com’s wake the city is fundamentally altered. Large numbers of brick storefronts sit vacant, unable to compete with an expanding ecommerce behemoth. Mailboxes, loading docks, freight elevators, and trash pickup expand as more commodities course through Amazon’s extranet. Technologies of transport redefine what and how things can be shipped. The challenge to contemporary architects as such cannot be an attempt to “improve” a statistically optimized engineered system through design process, but rather to locate the opportunities and forces at play range of urban consequences of Amazon.com’s growth.


Sloterdijk, Peter. “Cell Block, Egosphere, Self Container.” *Log, No. 10* (Summer/Fall 2007), pp. 89-108

Fulfillment signifies a unique and thoroughly contemporary understanding of the reciprocal relationship between people and technology. In its dual meaning, fulfillment encompasses the complex network of data and commodities instrumentalized to deliver goods to our door instantly, and also form of psychological almost spiritual gratification. Does fulfillment actually fulfill us? The term enacts a fundamental dialectic of contemporary network culture, a ground-zero, of the possibilities in the frictions and interfaces of individuals and networked technology and infrastructure. Within the last several years, this relationship is played out at approaching light speed. The immediacy of our desire for fulfillment corresponds to novel architectural and social opportunities in the modern city for assimilation within social and technical architectures.
What does shopping look like now?

The modern act of shopping is undergoing a fundamental reformulation, or better put, reformatting. We mostly shop at a distance. At your convenience, in your own comfort. The act of shopping, of fulfillment, is now increasingly decoupled from the infrastructure of its reification. The barrier to entry is approaching nothing.
Shopping, and the large apparatuses of fulfillment exhibit rapidly shifting relations to the body. Spanning from pre-modern forms of subsistence, through local markets, suburban shopping malls, and now e-commerce delivery, the event of consumption vascillates in its proximity to the end-user, the individual to be fulfilled.
I want my new possessions NOW. Not in 2 days, 1 day, or in 1 hour but now. The iconography of e-commerce touts immediacy and builds a consumptive culture of temporal crisis.
In Amazon.com Prime NOW, the commodity fetish works at warp speed. In the era of NOW fulfillment, technical and social systems begin to intermingle, both informatically, as well as in urban space. Now reintroduces infrastructure into our lives. The infrastructural artifacts are retooled to reflect this increased intimacy. 

**1 HOUR COLLAPSE**
In the era of e-commerce, the means of our fulfillment is virtually invisible. Tucked away, and out of sight, the expanding milieu of time management proliferates closer and closer to our informatically bundled selves. The interface is rudimentary by design, a click on a screen introduces a brown parcel to your door.

The egosphere is defined as space driven by the individualistic ego within the coisolated environment. The apartment is an atomic or elementary egosphereic form. Here we enact various modes of self-pairing, a form of mediated duality. Within the popular media of e-commerce, the egosphere is the site of fulfillment. In what ways are modern systems of fulfillment changing the egosphere?
All watched over by the cloud, fulfillment uploads desire to databases.
The technics of fulfillment, all laser guided to customer satisfaction construct and traverse myriad networks in the cycle from desire to fulfillment. Logistics is an operation of continuity. Logistists smooths and levels entropic fields of exchange to introduce a hermetic managerial system with a rapidly growing global footprint. Fulfillment is the scientific management of commodities (and goods at large) as data. Here, we see the expansion and integration of global fulfillment systems as a form of telecom infrastructure where the medium of communication is goods.

ALL MAIL IS MEDIA MAIL.
Ecommerce manages matter as though all mail is media mail. The post, comprised of USPS, and a suite of National Parcel Carriers enlists “things” with physical extensive properties as a media which circulates with the speed and fluidity of data and capital. This seeming impossibility is the scope of fulfillment’s technical mechanism. Dematerialization is not the removal of physical artifacts, rather the construction of a cybernetic twin, an informatic parallel, able to be crunched in servers and pinged through fiber optic cables to more effectively coerce its clunky physical counterpart into proper global position.


The network infrastructure which constitutes modern fulfillment formalizes not a notion of virtual reality, rather a state of real virtuality. Commodities, people, and places are formatted, managed, and articulated as data. There exists no infrastructure to deliver this reality, it is being built NOW.
Amazon.com

Welcome to the largest retailer on the planet. The pioneer of the modern fulfillment system.

Amazon.com has two primary faces. Its retail apparatus, and its cloud service. The dual nature of the corporation expresses a simultaneous material / informatic duality.

This logo is for Amazon as a retailer of goods, as a material handling system monitored and maintained by its informatic counterpart. AWS
The overwhelming majority of Amazon.com's profit comes from its cloud service platform. Through Amazon Web Service, the company is a consolidated provider of data management.

Fulfillment lies between these two services. It interoperates between data and material. Through a range of mechanisms, standards, and protocols, Amazon.com fulfills you now.
Amazon.com embodies modern territorial expansion on a global scale.

It’s success is in large part due to its capacity to consolidate and integrate the myriad steps in distribution under a common roof.

Amazon.com is outmuscling every form of shopping which preceded it. What once occupied corner real-estate, main street, shopping malls, and informal stalls is now consolidated in an invisible infrastructure known as Fulfillment Centers.

The siting of these centers constructs new global epicenters.
Run the numbers. Amazon.com is championing a new platform. Prime, is a subscription based fulfillment and media service. It is responsible for the substantial corporate growth of amazon.com, and enlists an increasing number of users in its 1-hour NOW service.

Source: CIRP
In the near future, a plan view of an iconic city, may dismiss extensive limits, footprints, and conventional metrics of space. Instead we see icons which signify a complex ecology of exchange protocols, material handling procedures, supply informatics, and the expanding milieu of international standards of exchange.

This is the software of a city, of a terminus, of a transmissive architecture. The active procedural form devours the object form to birth a more contemporary metric of urban experience and form.
WITHIN, OUTSIDE, ACROSS
From selection to order fulfillment, logistics traverses multiple nets. Amazon’s managerial system organizes these networks into 3 primary forms. The Intranet, the Extranet, and the Internet. Orders placed on the internet, are received within Amazon.com’s intranet. The intranet is an internal network protocol composed of data centers and fulfillment centers, which delivery goods to users via the extranet. The extranet is the network of transport and communication systems which are used but not owned by Amazon. The implementation of International standards and protocols allow such diverse assemblies to circulate globally within a common language.
The fulfillment cycle is a bi-directional flow of information and matter. Information flows from user habit and choice into the intranet, which uses the data to control the flow of goods in the opposite direction.

We click on an interface. Receive an order and product code, which assigns the goods to be packed and transported to us. Such a seemingly banal system underlies larger questions about the reciprocity between information and matter.
The UPC (Universal Product Code) and SKU (stockkeeping unit) mark inventory. As a marker, they are an informatic shadow of an object’s digital twin. The phylogeny of product codes corresponds to the myriad networks of exchange through which various products move.

It is the computer vision of goods, a stamp of uniqueness enabling a particular artifact to reflect a uniquely described digital key.
To achieve immediacy in material and informatic exchange, fulfillment systems redefine the fundamental operations of its architecture. Buildings, are not defined as volumes of enclosure. Walls are a secondary climatic and security driven necessity, ultimately in service to architecture’s role as transmissive node. Architecture is about controlling and coordinating movement.

This is achieved through integrated systems of automation, producing buildings, not used by people, but by automotons. in the pursuit of a frictionless form of conveyance, the historic conventions of archival and organizational technology are reconsidered. The stack should store nothing, rather channel its movement to elsewhere. Fulfillment centers inherited and have reformulated an extensive lineage of storage and inventory architectures, what I refer to as the Stack. The history of fulfillment centers, automation, and self-service are explored more in depth in the appendix of this thesis.


Sloterdijk, Peter. "Cell Block, Egosphere, Self Container." Log, No. 10 (Summer/Fall 2007), pp. 89-108


This is a vending machine. Hardly an architecture. It is an infrastructure at human scale, which inherits the lineage of mechanized, and self-service fulfillment. In pursuit of greater expediency to goods, we segment and scale down our interventions allowing a greater interface and contact. Infrastructure is the tectonic language of fulfillment.
Historically, architectural space is produced through a form of enclosure and delimitation. Walls designate controlled interiors and entropic outsides. From the vantage point of supply chains, of distribution and mobility of people and things, architecture functions less as a mode of enclosure, but rather a site of transmission. The space defined not by what it contains, but what moves through it. A novel form of infrastructural space is produced. One which prioritizes the technics of receival, sortation, and shipping as tectonic drives.

These spaces are nodes, switching stations. They operate as inhabitable electro-mechanical control systems.
Fulfillment centers now, are extremely sophisticated storage and sortation systems. They operate as engines which parse the constituent “stuff” of our lives. Housed in massive sheds, they consolidate and control the range of things once accessible at an urban scale. No one is invited to visit these spaces. They are not for public consumption.
The rack, a vertical stack of things. Speed and mobility designate flat systems, whereas organization and storage grow vertically. The mechanisms of fulfillment work to resolve the speed of horizontality with the organization of verticality.

The stack is more than storage, but an architectonic manifestation of knowledge and data. Our access to them, or better put, their removal from our experience, has generated a whole regime of intermediary technologies to reconstruct our experience in the stack.
The stack stores parcels. Fulfillment segments our lives into boxes which reflect the range of our needs. Our lives are increasingly parceled. The home, a rack with a power plug and a roof.
Tracking the evolution of postal boxes reveals novel tendencies about the way we construct cities and reside. In the era of E-commerce, the mailbox turned locker begins to function at more architectural scales. Its significance as an infrastructural node of increasing importance. The pickup point becomes less individuated, and more collectivized. The box is a cell, the lock and communal mailbox a cell-block.
The individual home, severed from the cell-block is overrun. More of its space and function is preoccupied with the management of fulfillment. The home dissolves into parcels.
In Fall, 2014, Amazon.com purchased a ~400,000 sft office space in midtown Manhattan, despite already operating many acres of fulfillment centers in the adjacent area of Delaware, and New Jersey. In response to the immanent release of Amazon Prime Now, which boasts 1 hour delivery to any address in Midtown Manhattan, the company necessarily reintegrated into the heart of a major city. If network topology dictates the siting of the company’s infrastructure, the constraint of an ever decreasing delivery window time, prohibits peripheral mass consolidation from being the continued dominant distribution model, leaning instead towards a smaller, more decentralized system of fulfillment. Dramatic shifts in the timeline of urban concerns. In short, It has to live in the city, with all its trappings. Now an urban body, managerial efficiency may increasingly rely on cooperative business models with convenience stores, courier systems, and small-scale storage to enact the website’s guarantees of immediate fulfillment. Conversely, internally funded research programs aimed at reinventing urban transit may introduce a parallel yet separate model of circulation. PrimeAir’s work in drone technology, as well as buoyancy / pneumatic conveyance present significant ruptures to the norms of urban material flows. of delivery, thus reconstitute Amazon.com’s urban interface, generating new opportunities for public contact outside the internet, and increasingly in the inhabited world of the extranet, the city.

7 West 34th st, is a symptom of the new reurbanizing tendency of a formerly radical deterritorializing force. Amazon.com’s presence as an urban phenomenon grows as its delivery time diminishes, requiring the network to increasingly rely on existing civic physical and informatic infrastructure to carry out fulfillment. The hermetic efficiency of a largely internally managed system, can no longer statistically reduce the architecture of the city to externality, but rather must co-opt, participate, amplify, and partake in growing number of its processes.


Amazon.com bought a lease on 7 West 34th st, in Midtown Manhattan. The question, as the news rippled through public media, was how an internet giant, a symbol for the dematerialization of shopping would grapple with brick n’ mortar.

Amazon is about to open its first-ever physical store in New York City
By David Pierce on October 5, 2014 08:39 pm  Email  @piercedavid

Amazon Signs Lease For Possible Store In Manhattan
The Huffington Post  |  By Alexander C. Kaufman  |  twitter
Posted: 11/20/2014 4:48 pm EST  |  Updated: 11/20/2014 4:56 pm EST

Amazon to Open First Brick-and-Mortar Site
The New York City Location to Handle Same-Day-Delivery Inventory, Product Returns
by Glen Benfield and Jerod Morris
Updated Oct 9, 2014 05:59 pm ET

Amazon is opening a store in NYC, but it’s not really for shopping
by Kevin L. Clark  |  Posted: October 13, 2014

Exclusive: Amazon makes even temporary warehouse workers sign 18-month non-compete
Contract says it can limit jobs across the globe
by Spencer Woodman  |  March 4, 2014 11:34 am

Worse than Wal-Mart: Amazon’s sick brutality and secret history of ruthlessly intimidating workers
by Rebecca Greenfield  |  December 20, 2013 9:46 AM

Amazon warehouse workers fight for unemployment benefits
Online retail giant’s Lehigh Valley temporary-staffing agency fights aggressively to keep workers from collecting unemployment.
The infrastructural pipeline between producers and consumers need only one or two primary intermediary states when the delivery window is left in the frame of 1 or 2 days.

Goods from suppliers are consolidated in fulfillment centers which are then transported to delivery facilities, like post offices and Fedex facilities, serviced by the US postal service, and 3rd Party National Parcel Carriers respectively.

Amazon does not own the conveyance from its fulfillment centers to the destination, rather largely relies on 3rd Party logistics. This reliance on corporate competitors remains an underlying weakness in their control over logistics pipeline of fulfillment.
Fulfillment NOW entails a essential reformatting of distribution infrastructure. One which introduces multiple intermediary spaces to ensure a faster uninterrupeted flow. Following the fulfillment center are sortation centers and Prime Now warehouses. The infrastructure is scaled smaller and smaller and encroaches closer and closer to our domestic space.

The last mile enlists numerous techniques of access, and is the primary site of social intervention through architectural means.
Midtown Manhattan is ground zero for Amazon.com’s quickly growing Prime NOW enterprise.

7 West 34th St is Amazon.com’s new Prime NOW warehouse location. Highlighted in yellow below, it functions as a crucial intermediary between the large fulfillment centers which service borough from New Jersey and Delaware, and the users’ egosphere.

Superimposed at scale, the fulfillment center occupies nearly 2.5 of Manhattan’s long blocks.
Reurbanization shrinks the scale of fulfillment infrastructure, and disaggregates the single consolidated stack into multiple nodes.

Smaller size enable smoother intervention into the already congested urban environment, and allows greater surface area for a consuming public to be fulfilled. Urban reintegration requires a minimization of technical friction in the process of increasing the infrastructure’s social interface.
Typologies of Fulfillment. Heralded as one of the greatest technical challenges of our time, last mile fulfillment describes the final mile a good traverses on its way to its destination. While fulfillment centers champion hermetic closure and frictionless transmission, the last mile is where the pipeline must move through the congested channels of the city.

Historically, the typology of the post office navigates the urban context. However, increasingly, their distribution and inability to handle bulky goods have put them at a major disadvantage.

What would a modern post office resemble?
The community scale, the geography of a neighborhood is a novel destination for lastmile fulfillment. For expediency, door to door delivery will fail, and the opportunities presented in a block scale terminus more fruitful.

Consolidating the end point of fulfillment to a neighborhood scale terminus is an architectural opportunity. One which introduces novel conditions of social intervention without compromising the cult of speed in the NOW.

What if we built community-scale network infrastructural nodes that reflected our physical and informatic selves. A new kind of infrastructure of time management. One which wedded our global networked selves, with a notion of place grounded in tangible delivery of physical things. Fulfillment offers insight into the scale and distribution of networked centers in the city. Community centers negotiate the technical conveniences of access with a mode of informatic transparency.

Who needs help moving a heavy couch, what property is on the market on your block, and what is the asking price, what are the policies of candidates for local office? An informatic / delivery hub at the level of the community block reformulates the agency of the local within global networks.


In New York City, a parallel yet separate infrastructure fills us now. Convenience stores, or regionally called bodegas, service our crisis of time management.

Convenience stores are opportunistically located at the intersections of transport offering a range of urgent services.

In Chelsea, bodegas play an important role. They operate as urban condensers at the neighborhood scale. They are often open 24 hours.

NEW YORK CITY - 10001

- Pop - 16,129
- # Houses + Condos - 12,768
- # Renter Apartments - 6,582
- Cost of Living Index - 154.9
- Area - 0.3 st. mi
- Pop Density - 50,381 / mi
- 66% renting
- Home Resale - $675,000
- Commute Time - 24.1 min
- Age - 24-40

THE CONTEXTS OF CONVENIENCE
At 23rd st and 8th ave in Chelsea Manhattan, Chelsea Deli and Bakery straddles the MTA pedestrian, and truck traffic. It is located at the intersection of 3 distinct neighborhoods, each with their own unique temporal patterns, demographics, and zoning.
TYPOLOGY - INDUSTRIAL / WHOLESALE
DAY / NIGHT CYCLE - HIGH
CONCIERAGE - HIGH
SOCIOECONOMIC - WEALTHIEST

WEALTH & CRIME
ABOVE AVERAGE
50%
USE PUBLIC TRANSPORT
27%
WALK TO WORK
72%
NON FAMILY HOUSEHOLD
70%
BOTH PARENTS IN LABOR FORCE
75%
20 HOUSING UNITS
84%
HOUSING OCCUPANCY
1.72
AVG PEOPLE/HOUSEHOLD
94%
HIGHSCHOOL DEGREE
23%
FOREIGN BORN
50%
NON CITIZEN
45%
BUILT BEFORE 1939
70%
RENTAL
45%
MOVED 2000-2009
2%
WORK IN WHOLESALE

TYPOLOGY - PUBLIC HOUSING
DAY / NIGHT CYCLE - MID
CONCIERAGE - NONE
SOCIOECONOMIC - MIDDLE LOWER

TYPOLOGY - HIGH END RESIDENTIAL
DAY / NIGHT CYCLE - HIGH
CONCIERAGE - MID
SOCIOECONOMIC - WEALTHIEST

Pop - 16,129
# Houses + Condos - 12,768
# Renter Apartments - 6,582
Cost of Living Index - 154.9
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66% renting
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Commute Time - 24.1 min
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NEW YORK CITY - 10001
BODEGA
FULFILLMENT + CONVENIENCE
THE NEIGHBORHOOD
The transition to NOW delivery and access shows how global and urban networks are segmented and scaled to best penetrate into the last mile of fulfillment. The parceling of infrastructure and city reciprocates the parceling of the human subject, of the user, of the customer.

The urban denizen in the NOW, is entangled and segmented across numerous dependencies, brand loyalties, lifestyle life-supports, and habits. The networks of fulfillment work to discretize the individual, and hone highly calibrated lifestyle campaigns, engineered to accommodate the range of our subsistence.

Fulfillment parcels time-space. It voxeizes the built environment. The needs and imperatives of an urban denizen in the NOW, may no longer rely on conventional architectures of domesticity. Not only goods, but people are increasingly mobile, living working, eating everywhere. How might the egosphere and infrastructure merge?

Sloterdijk, Peter. “Cell Block, Egosphere, Self Container.” Log, No. 10 (Summer/Fall 2007), pp. 89-108


We are tangled nets of relationships. We are parcelled in the rubric of fulfillment. Just as the city, and egosphere are discretized, so are we.
How might architecture emerge from a volumetric parsing of the city; the 2-Dimensional square foot replaced with the cubic foot. A parcel of 3-Dimensional space reflecting the dimensions of packaging. As the city is voxelated into mobile parcels, how might we own or subscribe to a cubic foot of Midtown Manhattan?

The parceling of the city is an opportunity to redefine conventional notions of ownership.

Could you subscribe to a unit of the city which was not your home nor your work? Rent by the year, month, day, hour, minute?

$1 \text{ Square Foot} = \$55.41$

$1 \text{ Cubic Foot} \approx 1 \text{ Package} + 1 \text{ sft Service Program}$
Gathering information from real estate sources, we can ascertain how much it might cost to rent a cubic foot of space in Manhattan. The space may be open programmed, open source. To service these voxels the gross square footage must reflect an array of service programs which move, receive, display, and remove.

For approximately 9.50$ / month, an individual can rent 1 cubic foot of space in Manhattan. What are the opportunities therein?
This kit is a life support system. A designed product reflecting the encapsulation of modern life, exchangeable voxels of human need. Its a kind of software, which runs in various architecture.

The egosphere is disaggregated, into spatial units. These units may in turn populate the city. They accumulate in the intersections of transportation infrastructure, hitch a ride, lie waiting for you to pass on your commute elsewhere.

Ranging from large to small, the units contain the rudimentary means for storage, subsistence and hygiene.
Our lives are packaged and parceled in a new fururist rubric of 3-Dimensional time space.

What isn't packaged?
Fulfillment on demand, instantiated NOW, requires more and more of our lives to be parcelled under its rubric. Below we find an elemental shelter, with walls composed of parcels. In the era of e-commerce, this is the domestic space of a networked homo-economicus.
At 254 8th ave in Manhattan is Prototype 1.0. The kit is uploaded to the hardware of the bodega. Architecture is a kind of service provider, running applications within urban infrastructure. It is a hybrid infrastructure of time management, located with maximum adjacency to transportation infrastructure, enabling a collective form of storage, display, rental, and pickup. This prototype is an engine, fueled by the volumetric parcels of urban life. A foam at very high refresh rate.

Bus, truck, and train are its auxiliary extensions, connecting and severing from the building many times a day. As an architecture of transmission, the project is a social condensor, a micro-mega. It integrates the prototype fuses the operations of the convenience stores and the post to generate a new typology. Its function is a form of software, the kit runs within existing spaces, allowing the operation to financially benefit local businesses who serve as the intermediary between large scale e-commerce and the community members. Fulfillment NOW mandates an infrastructural retooling of the city, one which champions a dual informational and material transmission locus at the scale of the community.


An engine of urban parcels.

The architecture is an extension of transportation infrastructure.

Occupying the zone of a bodega deli, it is serviced by a bodega counter in the front, and a pizza parlor in the rear.

The center receives goods and loads them on vertical carousels for storage upstairs.

The carousels correspond to different voxels of the kit. Unique carousels carry refrigerated units.

The interface at the entrance of the building alerts users to deals, gigs, and social events in the community. It functions as a neighborhood scale interface, wedding our informative selves to a sense of localized place.
A city at scale.

The second floor of the prototype is a micro-mega, a series of carousels feeding stacks which store parcels of the kit. Ranging in function and dimension, the stacks are a foam of particulated egospheres, a cell block, a micromega.

Plug and play architecture at scale, allows the boxes to be an open platform for use.

Surrounding the stacks are programmatic bays, corresponding to various forms of self-pairing.

They are, an interface, waste sortation, microwaves, changing rooms and mirror, work stations, benches, laundry, and folding station.
Fulfillment, and the culture of immediate delivery forms the basis for the growth of this new infrastructure. However, at its core, the space is an open platform allowing users to display, share, rent, store, and pickup things.

Users may rent units for a range of time. From a year down to a minute. Renting voxels, dismantles conventions of the ownership of urban space. The parceling of the city through fulfillment allows people to use and occupy much smaller parcels aligned to their mobility and needs.

Its function is of logistical convenience, and to serve as a dual informatic and material transmission point at the scale of the community.
In spaces of high exchange, of temporal opportunism, and informal assimilation, how does one define program? Civic infrastructure has long operated as unofficial community centers without a precise prescription of spatial program.

In this prototype, program is stripped to essential elements reflective to the needs of its turnover. Future sites which hybridize the city, infrastructure, and the home will generate numerous new forms of program, elusive to us today.

The scope of this project is not to explicitly designate spatial usage, but to allow zones of the architecture to have a kind of disposition towards social access and usage.

By fostering opportunism, the architecture autogenerates program. The character of this program may shift across the capricious timeline of the day, creating a single space with multiple uses.
5:25 am
Nap between shifts.
First train delivers extra coffee filters
10:45 am
Hourly gigs and community bulletins on entrance screen. Neighbor drops off sweater for purchaser a block over.
1:35 pm
Laundry over lunch break. UPS delivers groceries for rush hour pickup.
5:25 am
Nap between shifts. First train delivers extra coffee filters
10:45 am
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socio-technics (cont.)

nascar

remote delivery

undecorated shed

automation

space-time packing orders
The technics of fulfillment
a graphic exercise
The sociality of fulfillment
a graphic exercise
PERSONAL FULFILLMENT

FULFILLMENT

The final and most essential element of success is good relationships. Everything else flows from it and is nourished by it. Without its cooling water, we may find success but never fulfillment.
Interiors of Fulfillment Now. The hikikumori are a phenomenon where individuals do not leave their room. The walls of their egospheres so fortified, that they never need to physically leave.
The culture of fulfillment NOW is analogous to Nascar. Consumer network culture exhibits a parallel close coupling of speed and media endorsement. The act of last mile fulfillment is increasingly a consumer spectacle, where we watch the cycle churn continuously around the track.
The Mail-order catalog is the conceptual predecessor to fulfillment via e-commerce. The Sears Roebuck catalog was a paradigm shift in remote access shopping, and the essential formulation of the socio-technics of fulfillment. The catalog itself, is a 2-Dimension interface which mediates our access to essentials as a surrogate to brick and mortar storefronts.
Rural Free Delivery Mail

A campaign by the USPS to provide free mail service to customers in rural locations. RFD began the growth of an outreach infrastructure, which tethers remote geographies to the center through delivery infrastructure.

In Fulfillment NOW, the source of our materials is often now located in rural settings, with the destination in the city. The relation has been inverted.
The RFD Mailbox.

Rural Free Delivery, necessitated an intermediary point between the suppliers and the end users. Like the catalog itself, the mailbox served as an interface between people and infrastructure, a mediator to consumer desires.

The mailbox is a surrogate house, the catalog a surrogate store. These two artifacts constitute the essential underlying infrastructure of fulfillment (approaching) NOW.
The CBU, or Cluster Box Unit, is common in high density residential sites, as well as in highly distributed, low density sites.

Consolidation of the end points of delivery, satisfies technical constraints of efficiency and speed, introducing a communal form of input / output.

The CBUs pictured here are designed for flat mail (envelopes). Today, volumetric mail must be delivered as exceptions to 2-Dimensions kinds.
Topology vs topography.

What is the geographic center of the US? According to the technical metrics at play, its near memphis Tenessee. This is the unaccidental site of the Fedex headquarters, and the first installment of large scale fulfillment centers by Amazon.com.

Memphis is not a geographic, but rather a topological center. With its western counterpart in the Inland Empire of the Los Angeles outskirts, these two sites are the closest proximate ports for national scale distribution hubs.

Topography is defined by geographic proximity, however the metric of spatial displacement, is an inaccurate metric for the identification of centrality within infrastructural terms. Many considerations, including weather patterns, aeronautical traffic, state tax policy, and transportation infrastructure redefine geography in topological terms. Ones which consider a complex net of concerns in defining infrastructural adjacency.

Again, in the United States, as in the global scale, E-commerce as a mechanism of fulfillment consolidate widely distributed spaces into centralized zones which may be more hermetically managed and value engineer to maximize profit.

The management of NOW, promises an endless array of goods at your fingertips, able to arrive at your door within the hour. This is where we are headed. Amazon.com's apparatus is in the business of fulfillment. It coordinates the backend to our instantaneous consumptive habits. Our desire for fulfillment is insatiable, and with corresponding momentum, ecommerce corporations more deftly organize, territory, architecture, people, and goods into increasingly effective managerial regimes of time. The dominant force constructing our present-day urbanism, is not geography nor space, but rather temporality. The temporal connectivity of infrastructure, dictates our geography, and increasingly our planning principles. Bandwidth and connection to transit hubs become drivers of infrastructural development, which has up until recently, meant that Amazon's many 1 MILLION+ sft distribution centers lie far afield, as undecorated sheds of massive commodity consolidation.
Packing labels convert geography to code. While product codes designate the unique product identity, geographic codes define space, source, destination, etc.
Fulfillment centers are an enigmatic and largely invisible global logistical infrastructure. What we find in popular media, are typically detached aerial photographs of enormous undecorated sheds whose content, program, and circulation remain invisible. A material counterpart to data centers, fulfillment centers service our network desires behind security fences, surveillance technology, and non-disclosure contracts. What we are left with are abstract white slabs in remote industrial landscapes photographed from above.
Corporate icons reveal a lot about how we think at the societal scale. This is one is banal, a network diagram. We see various interfaces, with screens, disks, fans, and housing all tethered to a globe.

This globe is an absent center. As though the earth, a naturalist ecology coheres a range of technological infrastructures. We know there is no universal center. The technical net defines the globe of fulfillment.
These architectures are not for people but things. They are electro-mechanically controlled sortation and storage systems clad as blank boxes.

Mechanized architecture operates at the urban scale down to the human scale. Clad-Racks, conveyor belts, and storage carousels occupy enormous areas of the built environment, in a form so unsuspecting, that we question the applicability of the term architecture. It it beyond the scope of this thesis to undergo a proper investigation of distribution warehouses, and mechanized architecture, however their development is essential to the underlying processes of contemporary network culture.

Service mechanisms automate the fulfillment process, generating an architecture largely without people.
Racks with High Refresh Rate

In the era of fulfillment NOW, storage is to be minimized at all costs. Fulfillment and Sortation Centers direct technology to minimize the friction of object turnover. The racks must always be loading or unloading. Nothing should just sit.

Angles allow a gravity fed delivery system, disallowing any stored item to sit in place.
OPERATIONAL ARCHITECTURE

Operational architecture is not meant for human consumption. They are tectonic systems optimized for technical transmission far away from our gaze.

Fulfillment within the rubric of Amazon.com’s ecommerce converts an ever increasing percentage of the built environment into operational architecture. Our only contact with them is a brown box, meticulously marked with a lineage of transmission technics.
The home and the distribution center merge.

INFRASTRUCTURAL DOMESTICITY
Increasingly, transportation infrastructure must penetrate into architecture. The means through which buildings interface with the city may soon become a dominant driver of architectural design.
Amazon pickup locker locations reflect a distributed urban system that functions at strategic points across the city.
INSIDE / OUTSIDE THE STACK

Fulfillment centers compile the numerous objects which mediate our lives in the forms of commodities into remote stacks serviced and experienced by a select few. The “stuff” of urban life is pulled out of the city.

The user no longer explores the stacks directly. We rely on interfaces as mediators to them.

Fulfillment necessitates that goods have been removed from our sight (site), and thus require a new distribution infrastructure for us to be reaquainted. Websites, consumer reviews, delivery men relink us to the stack.
Invisible Archive

The New York Public Library buried its stack below ground. In doing so, it replaced the experience of "stuff" with an interface in the form of a librarian. Hiding the stack necessitates automation technology and interfaces to reconstruct the experience for the user. Both the fulfillment and data centers functions as complex material and informatic stacks kept at greater and greater distances from their end-users.
Self Service merges the stack and user interface to produce autonomous nodes for consumption. The mechanical systems which services large warehouses, operate at the human scale to fulfill desire without the inconvenience of spatial isolation. Human interface is replaced by a spectacle of automation.
Keydoozle, and other automat stores merge merge self-service with historic models of the urban shopping experience. Under the promotion of efficiency and hygiene, self serve shopping embeds fulfillment mechanisms back into the end-users experience.

Most automats of the 19th and 20th Century failed, in large part due to the difficulty of maintaining complex service mechanisms coupled with the difficulty shoppers encountered in using them. They were too complicated, challenging the users to understand and engage goods as components of electro-mechanical sortation systems. Carousels and gravity fed conveyors take the place of human-human interaction.
infrastructure pervades all spaces.
Pacels come in every dimension needed to reflect our desires. Is this the inadvertant kit of future city construction?
We pack, optimize, coordinate, and meticulously manage our parcels. The boxes no longer need to store goods or commodities, but are abstract parcels of space in the abstract.
The land is grided 2-Dimensionally, and we pack our living units within the rubric.


Stoll, Katrina, Scott Lloyd, and Stan Allen. Infrastructure as Architecture: Designing Composite Networks. Berlin: Jovis,


