

Cloud Space:

An Architecture of the Third Environment

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Abstract

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While today's society is becoming increasingly saturated by the technology of digital communication, there are few built traces of these complicated networks.

Undetectable to the human eye and yet palpable in the impact of electronic devices on human existence, these overlapping networks of flowing information form a "third" environment, that exists in addition to those realms dominated by natural and human forces. If "nature" can be

defined as the uncontrollable external forces of climate, atmosphere, plants and animals, the human environment is humans, the internal forces of mankind. The third environment, then, is composed of the invisible forces of information traveling between electronic devices and infrastructure. This thesis argues that architecture can become an interface between the third environment and physical world, and can facilitate a spatial understanding of these complex networks.

cloud space

an architecture of the third environment

To my family.

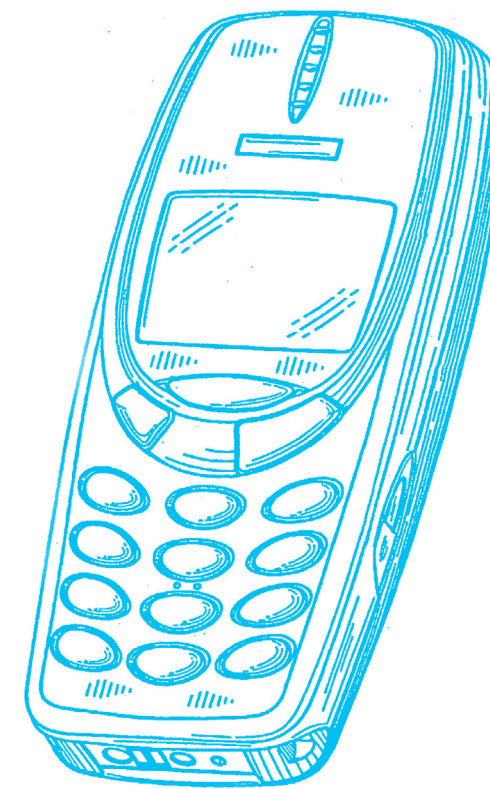


Figure 1 Nokia 3310, the original territory machine

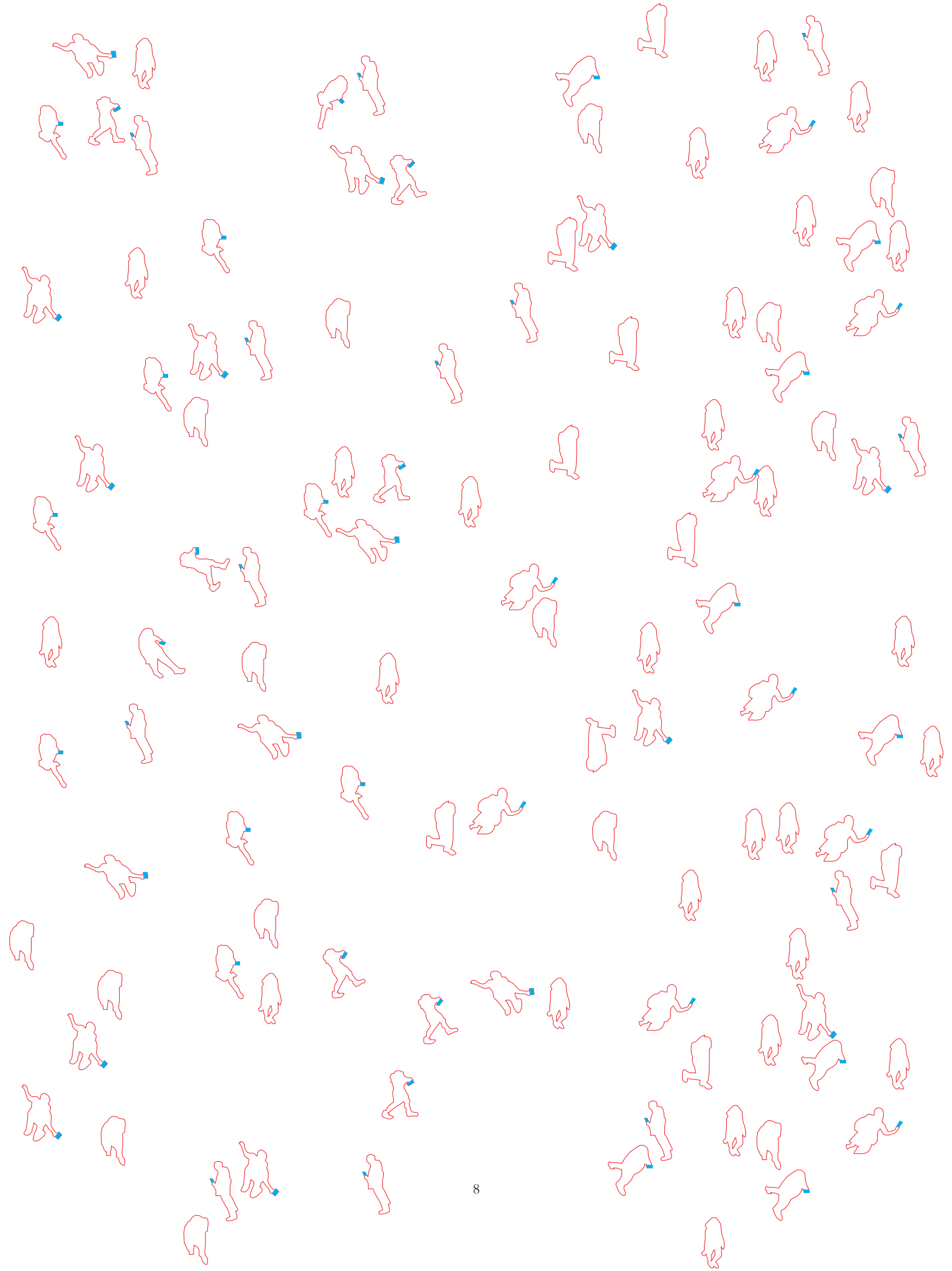


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Introduction

The First Tweet

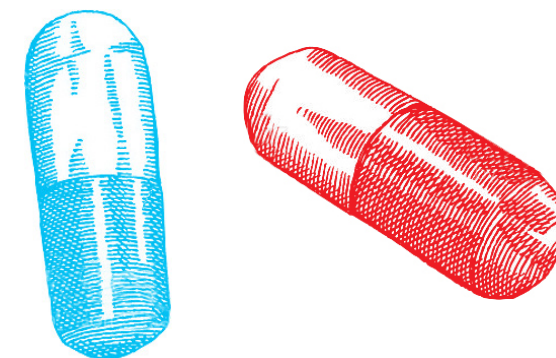
The First Tweet

On March 21, 2006, Jack Dorsey tweeted for the first time: “just setting up my twttr.”¹ This was the start of the social media platform, Twitter—originally called twttr—that enabled anybody with access to a smartphone, or computer, the ability to broadcast anything, as long as it fit within the 140-character limit. Twitter joined Facebook, and shortly thereafter, Instagram, as social media platforms that allowed for constant communication via the internet. Then on August 23, 2007, Chris Messina introduced the hashtag, a type of metadata, aimed to help users find similarly themed posts and like-minded users.² The hashtag is created by the user and relates the unique post to thousands of other posts within the social network. The hashtag, not limited to only Twitter, began to be used across platforms, Instagram, Facebook and other social media sites. These virtual communication platforms began to construct a network, connecting people thousands of miles away to each other.

Today, social media usage has skyrocketed, creating virtual communities within these

networks that exist separate from the physical world. A disconnect begins, small but noticeable, between these invisible networks and physical space. Currently these networks exist seemingly only on users’ smart phone screens. The digital networks do not manifest themselves in physical space and underlying infrastructure (wifi hotspots, high speed internet and data centers) remain invisible.

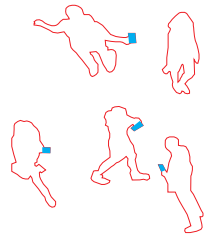
This project examines the intersection of this invisible network, its infrastructure and architecture. Traditionally seen as a defined and physical space, architecture provides an opportunity for interface between the digital and physical. The proposed intervention seeks to make visible the digital communities that are formed within the virtual realm, providing an opportunity to engage with these networks within physical space and beyond the smart phone.



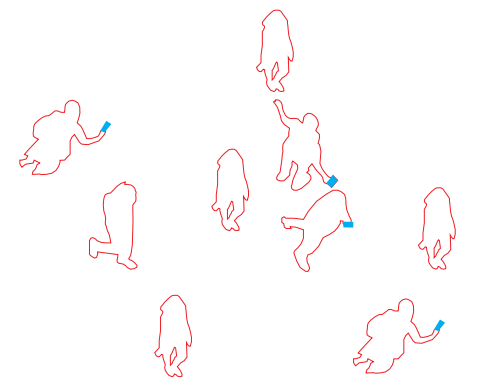
This is your last chance. After this, there is no turning back. You take the blue pill - the story ends, you wake up in your bed and believe whatever you want to believe. You take the red pill - you stay in Wonderland and I show you how deep the rabbit-hole goes.³



Figure 3 Akihabara District, Tokyo



Third Environment



Third

While today's society is becoming increasingly saturated by the technology of digital communication, there are few built traces of these complicated networks. Dense urban areas experience the most exposure to these invisible networks of information, due to both the high levels of usage of electronic devices, as well as the high saturation of visual information. Buildings, vehicles and bodies are simultaneously plastered with both digital and non-digital signage, serving as the most obvious visual manifestations of this technological city. Places like New York City's Times Square or

the Akihabara district in Tokyo are familiar instances of the intense visual stimulation and hectic activity resulting from these invisible communication networks. The exchange between visual, auditory and tactile stimuli creates tangible manifestations of the digital technology realm, seemingly invisible but always present.

Undetectable to the human eye and yet palpable through the impact of electronic devices on the body, these overlapping networks of flowing information form a "third" environment, that

exists in addition to those realms dominated by natural and human forces. If "nature" can be defined as the uncontrollable external forces of climate, atmosphere and living species, the human environment is man himself, the internal forces of man.⁴ The third environment, then, is composed of the invisible forces of information traveling between electronic devices. As Toyo Ito argues in *Tanzans of the Media Forest*, "the city's atmosphere is permeated with insubstantial flows of information, which we may subconsciously perceive, and architecture should consciously represent."⁵ This thesis argues that

architecture must move beyond two dimensional representational solutions, and directly respond to the third environment, creating intersections of awareness between the different layers of these visible and invisible realms.

Environment

This thesis begins by defining the third environment as a concept that has emerged in twentieth century architectural scholarship. This review discusses the relationship between the third environment and architecture. The aim is to first understand how the third environment has been defined in relation to the human and natural realms. Then an understanding of how this concept can be applied to architecture can be established. The concept of the third environment can be traced back to the mid twentieth century, its precise definition shifting with society's' changing relationship with nature and most notably, its definition of technology.

1939

“The term ‘correalism’ expresses the dynamics of continual interaction between man and his natural and technological environments... Architecture thus becomes a tool for the control of man’s health, its degeneration and re-generation.”⁶

In his 1939 essay entitled “On Correalism and Biotechnique: A Definition and Test of a New Approach to Building Design,” Frederick Kiesler also refers to a third “technological” environment. However Kiesler defines this technological environment as man-made objects used for the “increased control of nature.”⁷ Like Fitch, Kiesler argues for the need to control the natural realm through the third environment,

asserting that the latter is man’s tool for total control over nature (*Figure 4*). Tool is defined as “any implement created by man for increased control of nature.”⁸

Kiesler argues that the third environment is man’s response to the first and second environments—the natural and human environments. This technological environment refers to everything from “shirts to shelter,” or anything created by man in response to man’s needs.⁹ It is the technological environment’s duty to protect and respond to man’s needs. Kiesler focuses much of his writings on this aspect of the technological environment, and states that due to this classification of environments, this is the realm within architects must work.

In Kiesler’s view of the interaction between man and his surroundings, the architect must work to respond to “human needs: absolute needs and simulated needs.”¹⁰ He defines design as “not the circumscription of a solid but a deliberate polarization of natural forces towards a specific human purpose.”¹¹ By altering what he considered to be an appropriate response to the environment, Kiesler began to broaden the scope and definition of architecture. In this case, architecture can be considered something beyond the physical aspects of walls and ceilings, rather it could become a more deliberate response to an environment.

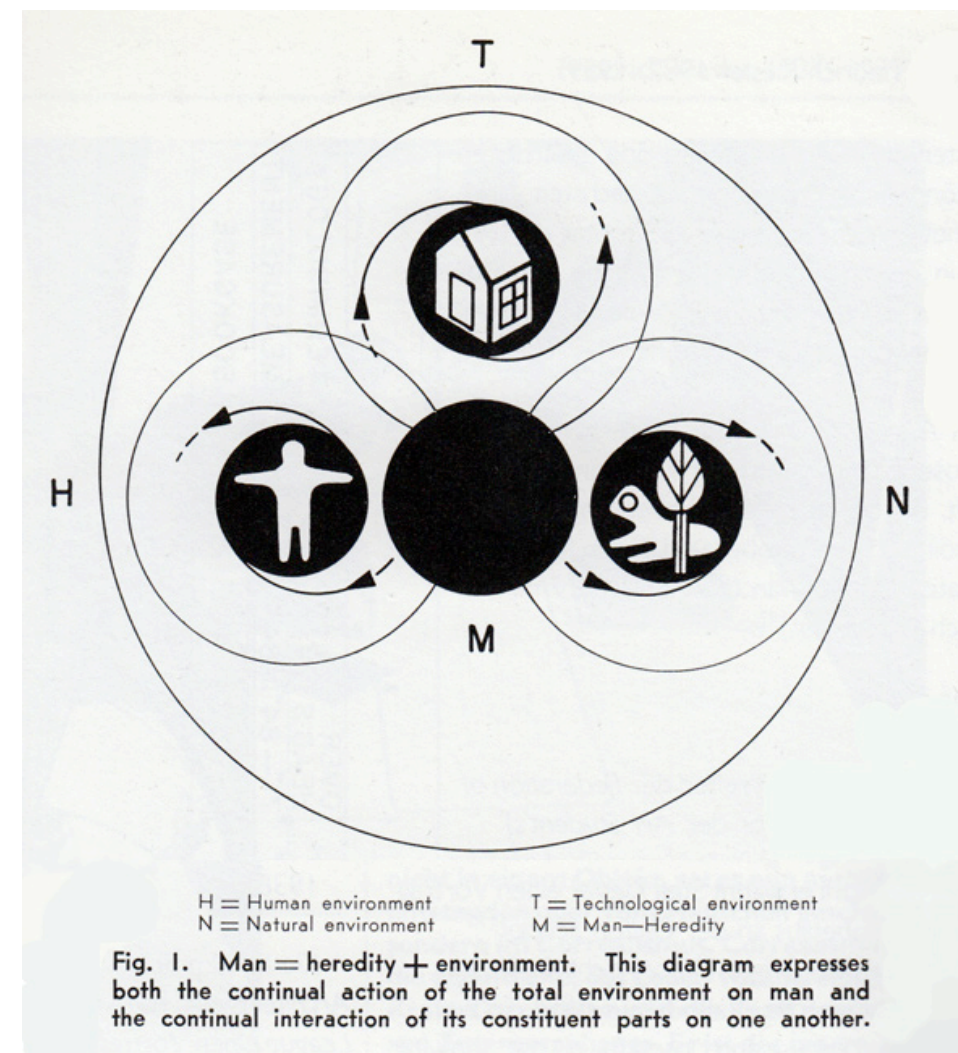


Figure 4 Man’s relationship with the human environment, natural environment and the technological environment.

1965

“By means of it he surrounded himself with a new environment, tailored to his specifications; a ‘third’ environment interposed between himself and the world. Architecture, is thus an instrument whose central function is to intervene in man’s favor.”¹²

In 1965, architect and educator, J.M Fitch made a case for an architecture as the “third environment,” that is as “an instrument whose central function is to intervene in man’s favor.”¹³ In his essay, “The Aesthetics of Function”, Fitch describes architecture as the mediator between man and his external environment, sheltering humans from the forces of the external world. Similarly he calls attention to the way humans respond to their surroundings through their “full perceptual mechanisms” of body and senses.¹⁴ Fitch’s definition of the third environment most closely mirrors the common perception today of the dominant role of architecture in shaping the environment.

Technology, as we define it today, is not addressed in this essay, likely a consequence of the time of its publication. Instead Fitch proposes architecture is the technology that mediates between the human and natural realms, as a third environment, which “surrounds and encapsulates man at every level of his

existence...its outer surfaces [coming] more closely to resemble permeable membranes which can accept or reject an environmental force.”¹⁵ Fitch focuses on the abilities of architecture, as the third environment, to “lighten the stresses of life” by becoming a sort of shield between man and the harsh external environment.¹⁶ He concludes that architecture must react to man’s well-being and attempt to assist in the maintaining his mental health.

relationships between nature and man that Fitch discusses are evident (*Figure 5*). Here the chart recognizes the body’s needs and how those are met through environmental factors. It is clear that biological responses overlap with the wide variety of environmental factors. In Fitch’s case, architecture then falls between the organism and environmental factors, serving as man’s refuge from the physical world.

In the chart created to explain the relationships between man, nature and architecture, the

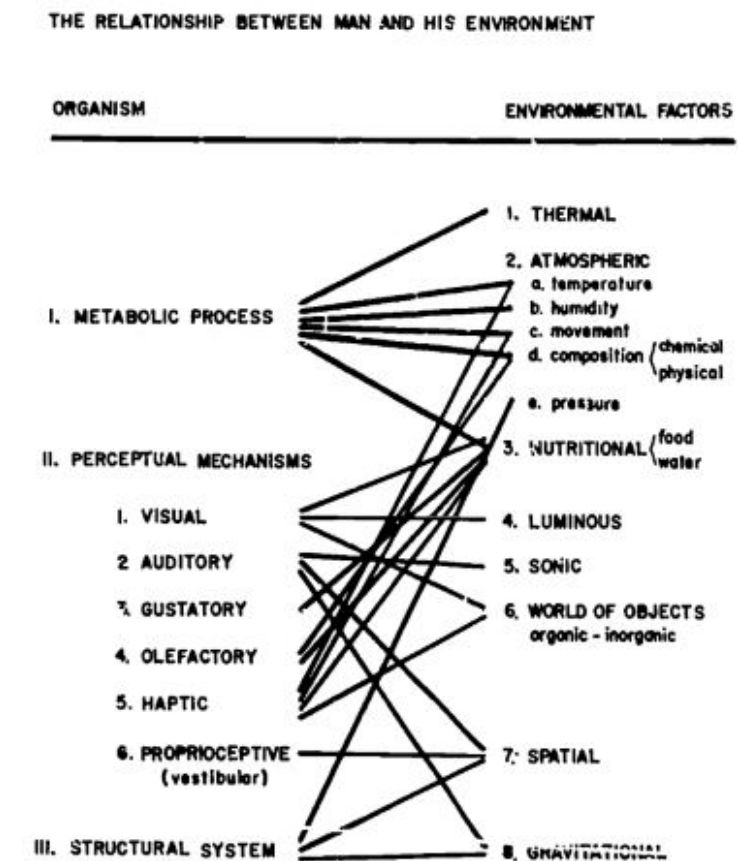


Figure 5 “The Relationship between Man and his Environment”

1988

Architect and theorist, Toyo Ito argues for an architecture that reveals the invisible environments. At an urban scale, Ito focuses on the “design of atmosphere,” where the built environment would be designed to identify these virtual environments that surrounds us daily.¹⁷ He contends that architecture has a larger purpose than simply sheltering man from his natural environment. He states that “the city’s atmosphere is permeated with insubstantial flows of information, which [man] may subconsciously perceive and architecture should consciously represent.”¹⁸ A key point Ito makes is the existing awareness that we, as a society, collectively already have. It then falls to architecture to actually visualize these invisible realms.

Ito argues for a materialization of the third environment, which he reasons as “if nature as we have always known it is to be considered real, then this artificial nature should probably be called virtual.”¹⁹ Ito refers to the third

environment as a type of artificial nature, something that he suggests is inherently man-made. Therefore, architecture, a man-made environment, becomes an interface for these invisible realms. Ito considers more than just the digital realms to be part of this invisible environment. However this thesis aims to focus on the digital realm as it relates to architecture of the 21st century.

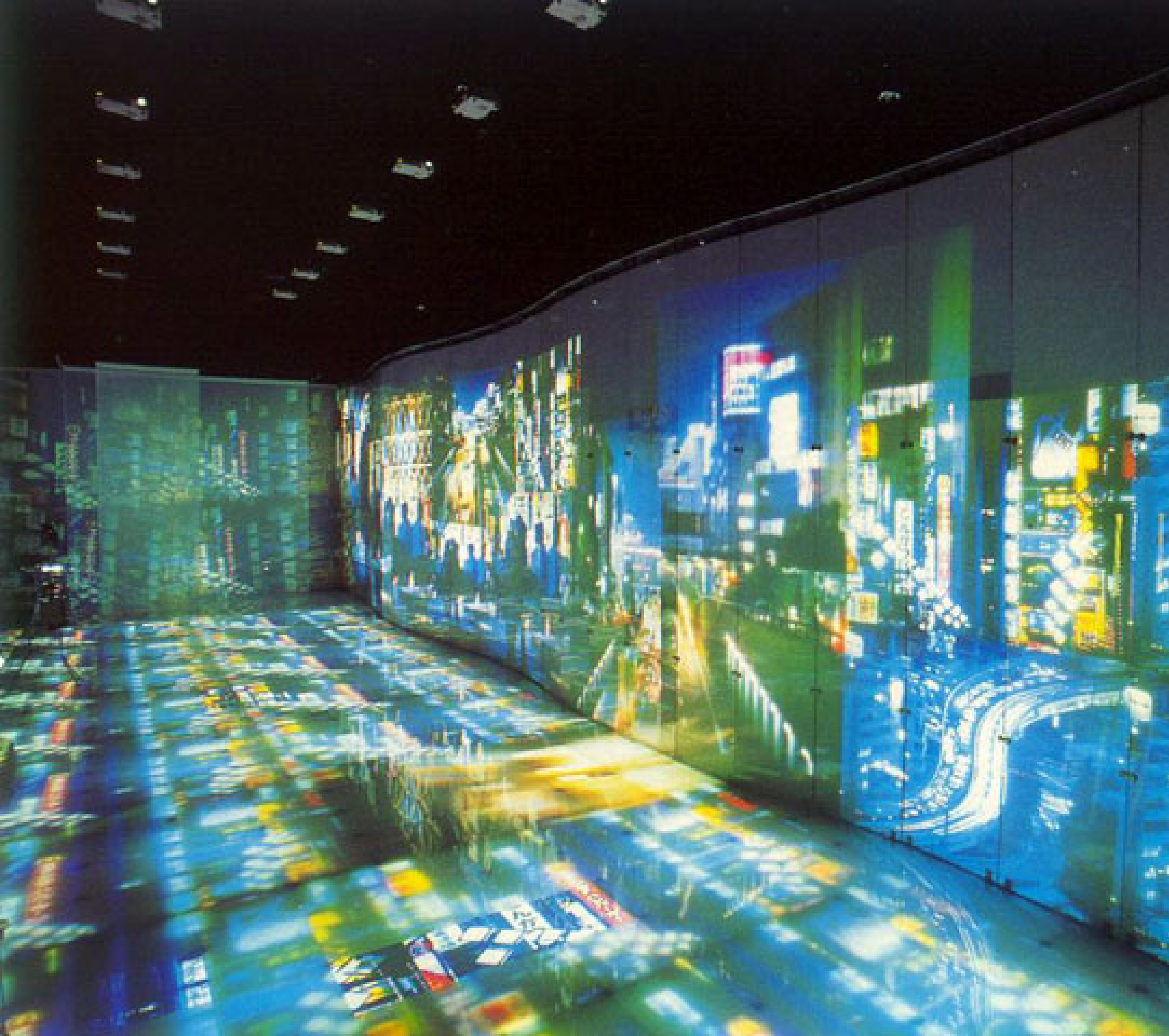
Ito explores this idea of architecture as interface through a myriad of projects; he works through various types of architectural installations, both interior and exterior, from sculptural to functional. What these experiments all have in common, however, is that while the main elements are physical in nature, the ‘architecture’ fades into the background and allows the invisible realm to be visualized. In some cases, Ito uses sound as an additional layer to reveal the invisible environment. However, in all of his iterations, the architecture is designed specifically for the invisible realm (*Figure 6*).

This thesis will focus on how architectural interventions in the existing physical realms can reveal the third environment while highlighting the physical space as well.

“The new technology is not antagonistic to nature. Rather it is creating a new kind of nature. If nature as we have always known it is to be considered real, then this artificial nature should probably be called virtual.”²⁰



Figure 6 Toyo Ito’s Tower of Winds project as the facade reacts to environmental climates.



Kiesler and Fitch define architecture as a response to the natural environment, the biological environment in which human society exists. For Kiesler, the third environment is man's attempt at gaining control through technology or "control of environment by environment."²¹ While both writers define architecture as the third (built environment), neither detail what specific spatial qualities allow it to control nature.

Ito, on the other hand, argues for a more contemporary response to the third environment. He defines architecture as a tool to visualize the invisible realm rather than seeing it as the third environment. He calls for architecture to become that interface or physical tether of the third environment.

What all authors have in common is their conclusion that the built environment has failed to fully respond to the rapidly advancing technological environments that architecture must confront and respond to.

Figure 7 'Dreams' an installation as part of the Visions of Japan Exhibition on display at the Victoria and Albert Museum in 1991.

Architecture as Interface

“Each surface is an interface between two environments that is ruled by a constant activity in the form of an exchange between the two substances placed in contact with one another.”²²

Since the early 2000s Toyo Ito has continued to write about the role of architecture in the “media forest” created by the unending production and consumption of information and images.²³ He argues that just as Tarzan in the jungle developed in relation to his contact with nature, today modern man is immersed in the world of media. Ito argues that architecture can become a kind of skin or “media-clothing” that humans must wear to integrate themselves into this third environment. This electronic or “pixel” architecture seeks to “bring the vitality of the electronic sign into the surfaces of architecture.”²⁴ As argued by Stephen Perrella, these neutralized forms often are confined to the surfaces of built form, relying too heavily on the visual experience. While successful as advertisements they fail to offer a fuller understanding of the three dimensional qualities of the digital realm. As a spatial medium, architecture can provide a much more immersive experience of the invisible, going beyond the visual and creating a more haptic experience.

While efficient in providing information, building signage, both digital and print, rarely reveals the networks of communication it represents. In dense major cities, all these optical stimulations can contribute to a kind sensory over-load, prompting users to look for relief. Paul Virilio writes that “this overexposure attracts our attention inasmuch as it portrays the image of a world without antipodes...a world in which opacity is no longer anything but a momentary ‘interlude.’”²⁵ The architecture of this “overexposed city,” he argues, is often characterized by luminous membranes, no longer responding to the inner logic of structure and function.

This thesis argues that architecture must move beyond this dematerialized state to interact more directly with the rapid technological changes around it. Built works must respond to technology by becoming a means through which these invisible networks can become visible. Toyo Ito describes this conceptual architecture as “sounds, colors, information and odors... mediated by technology and dispersed in the atmosphere, distributed in urban space with changing densities, like floating clouds or mist.”²⁶ While not specifically using the term “third environment,” Ito repeatedly emphasizes the importance of responding to this technological realm: “even if we cannot visualize it, our bodies are unceasingly touching and sensing this

atmosphere of technology, which forms our bodily rhythms.”²⁷ The task of architecture is neither to subdue nor retreat, but to reveal it.

The following projects, Egg of Winds, Kunsthaus, Blur, and Digital Water Pavilion provide examples of the possible variations of the relationship between architecture and the third environment. While some still limit the experience to the exterior façade, others have attempted to go beyond the visual. All these projects provide insight into the possibilities in which the ‘third environment’ can become a multi-sensory event, physically immersing visitors within the virtual networks through specific place.

Egg of Winds

Toyo Ito has experimented with built works that seek to explore the nature of architecture as digital interface. However his experiments primarily focus on the exteriors of built forms that tend to be experienced the exteriors of built forms that tend to be experienced from afar. His 1991 Egg of Winds project is located in a residential complex atop a parking structure in Okawabata River City. The non-occupiable oval structure becomes an experiment in the dual relationship between technology and architecture and between day and night (*Figure 8*). During the day, the mass of the form becomes the focus, however at night, the aluminum skin becomes a surface for digital projections. Flickering images of the city are projected onto it at the same time as images from the inside (*Figure 9*).

Ito states that the simple aluminum egg “is an image object that becomes visible due to the information-suffused surrounding atmosphere.”²⁸ The project is located out of reach of the viewer, above the parking garage.

By only allowing the drivers to view the egg from their car windows, the “object-ness” of the aluminum form and the two dimensional ephemeral quality of the images is emphasized. The object relinquishes much of its three dimensional qualities, when the images appear.

Intended to become a mirror of sorts to the city, the projected images reflect the city. However, the selection of images appears ambiguous to the average viewer. Leaving more questions than answers, the Egg of Winds is an example of architecture as an interface. One key difference, however, is the fact that this structure was designed and built with the sole intention of becoming the backdrop to the images. There is no secondary function to this sculpture installation. While the Egg of Winds is a more successful integration of architecture and image, its reliance on visual impact interfere with its ability to create a more submersive experience.



Figure 8 Egg of Winds stands as an object during the day

Figure 9 At night, the egg disappears, and the images appear in its place

Kunsthau Graz

The use of the façade of a building as a means of communication is also evident in Peter Cook and Colin Fournier's Kunsthaus. Built in Graz, Austria in 2004, the contemporary art museum is unique in that it houses no permanent exhibitions or art, rather showcases contemporary art installations (*Figure 10*). The exterior "blob" form reflects the contemporary nature of the museum's exhibitions, standing in contrast to the surrounding Baroque architecture of the city of Graz.²⁹ The amorphous form and facade contains a series of lights placed between the grid of mullions, providing a slight sense of order to the otherwise ambiguous shape. The lights behind the façade emphasize the organic form of the building, while simultaneously projecting information about the current exhibitions (*Figure 11*).

The lights change color and formation, creating unique images on the facade. The images on the façade, reflect the interior programmatic elements of the museum. Due to the organic

nature of the form, the images created by lights are further morphed based on the shape of the facade. The relationship between the interior and exterior is enforced by the synchronization of the changing exhibitions and façade displays. In this way, the building becomes an instrument of media communication but is confined to its role as an art museum.



Figure 10 Aerial view of the ambiguous form
Figure 11 At night, the facade lights up to reflect the interior exhibitions



Figure 12 Architecture as interface, Akihabara District, Tokyo

Rather than serving as a backdrop for images, architecture has the potential to move beyond the surface to become an interface between bodies and space as seen in the Kunsthaus. Like Toyo Ito, architectural critic Aaron Betsky argues that today buildings have become nodes in networks at the intersections of multiple flows of the digital networks. He argues that this more three dimensional intersection must extend to the interior which can be seen as “paradoxically, an open system that can accept objects and images from the outside and make sense out of them...”³⁰ The flow of information between the inside and outside makes possible

an experience that goes beyond the visual to make use of all the senses. By pushing past the facade, architecture can start to become a filter that “obscures the boundary between outside and inside.”³¹ It is through this interface that digital space can become realized, allowing a stronger and permanent link to be created between architecture and the third environment. Providing access to an understanding of the full scope of the environment, architecture can then become the “mediator between the individual body, the social body, artificial sensations, and nature.”³²

Blur

“For our visually obsessed, high resolution, high definition culture that measures satisfaction in pixels per inch, Blur is understood as a loss.”³³

Designed by Diller Scofidio + Refro in 2002, Blur was part of the 2002 Swiss Expo in the town of Yverdon-les-Bains in Switzerland. The architects sought to respond to the over-saturation of digital technology by creating something devoid of visual imagery.³⁴

Measuring roughly 80,000 square feet, the “building” utilizes a lightweight tension structure at its core (*Figure 13*). The structure has no walls but instead is “constructed” of the fog produced by a lake water pumping system. Boundaries between interior and exterior are blurred, enabling visitors to understand their surroundings through all of their senses, rather than just through sight (*Figure 14*). In emphasizing this haptic experience, Blur brings together the human internal experience of the space and the external one of nature. The project seeks to make a connection between

technology and architecture, showing how architecture can be used as a tool to link the physical and perceptual. The “space” that Blur creates then becomes more about the user’s experience rather than about physical boundaries.



Figure 13 Fog is the main architectural material
Figure 14 Visitors are immersed in the dense fog, forcing them to rely on senses other than visual

Digital Water Pavilion

Designed for the Zaragoza World Expo in Spain, the Digital Water Pavilion is the first of its kind (Figure 15). Carlo Ratti, head of MIT's SENSEable City Laboratory led the design of this digital water architecture. Intended to be an exhibition and information space for the expo, the space is constructed through cascading walls of water that are controlled by a computer.

The building contains 3,000 digitally controlled solenoid valves, several dozen pumps, 12 hydraulic stainless steel piston and a digital control system based on open source software.³⁵ The program allows for the water to be in a constant state of change. The walls become doors and change back to walls. Here, the walls open like curtains to create a doorway and then close back up to become a wall (Figure 16). The water is able to take on many different forms, create patterns, communicate messages.

The sensors detect movement throughout the space, creating an active engagement between

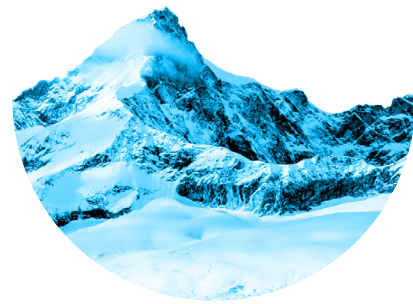
the water and the pavilion visitors. The walls respond to people walking through and around. The water reacts to both mankind and the natural environment.

The only solid piece of the building is the roof, however it is also covered in water. The roof is attached to hydraulic pistons that raise and lower the structure depending on wind patterns (Figure 17).³⁶ The roof can also be completely lowered to the ground, allowing the building to completely disappear.

This architecture exemplifies the responsive architecture that is possible in the 21st century. It is a combined effort of both technology that allows the architecture to directly respond to its surrounding natural and human environments. The building can also showcase messages and patterns, suggesting the infinite possibilities of a collaboration between digital programs and the built environment.



Figure 15-17 Water walls programmed to change patterns as they react to visitor. The roof moves up and down to adjust for wind patterns or disappears completely.



Nature, Humankind, Network

In this thesis, building on historical definitions, the three environments can be understood as the following:

Nature: external forces

Humankind: mechanisms of the body and senses

Technology: invisible networks of information

Architecture has historically defined itself in relationship to the natural environment as a force that must be controlled. At the same time, nature also offers the potential of being extended and supported by the built realm. The environment defined by humankind is more of an internal one—that centers on the body as a physical and perceptual entity. In response to the other two environments, the body relies on five main senses: vision, audition, gustation,

olfaction and somatosensation (touch).³⁷ The internal equilibrium of the human is directly influenced by interactions between natural and technological forces. The third environment, as defined in the 21st century, is the invisible forces of communication between electronic devices.

Figure 18-20 Nature, Humankind, Network

Nature

The biological and external forces. This includes anything that is uncontrollable by humankind. These forces are also unpredictable; forces of nature. Typically, architecture has been used as a barrier between nature and man, providing shelter from the elements.

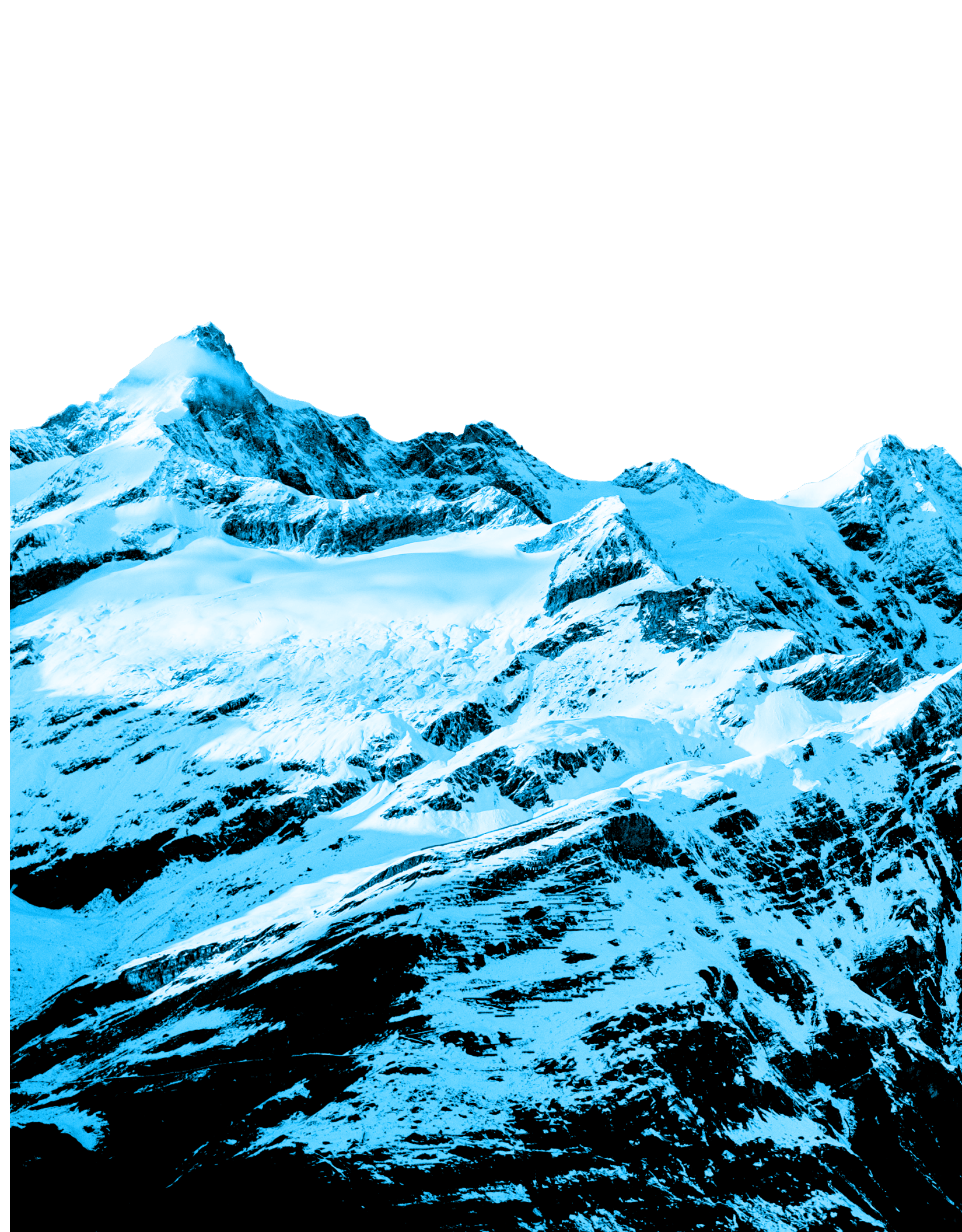


Figure 21 Uncontrollable Nature



Humankind

Both as an individual and as a society.

Humankind's environment is based upon one's own bodily mechanisms. The five senses are vision, audition, gustation, olfaction and somatosensation (touch).³⁸ These are mankind's ways of responding to the natural and virtual environments.

Figure 22 Humankind and the environment created

Network

Invisible communications between strangers and friends. These communications are tethered between mobile phones and data centers, oscillating back and forth between machine.



Figure 23 Network, between the data center and the smart phone

Data Center

Data centers house the physical evidence of the third environment. Architecturally uneventful, data centers are typically large warehouses located outside of dense urban centers (*Figure 24*). Each warehouse requires a high amount of power as well as an effective cooling system. In each warehouse, thousands of servers are housed in rack mounts, metal structures designed to hold around ten servers, each stacked on the next. Large tech companies such as Facebook, Apple and Amazon own a network of data centers across the globe. Each holds data that is generated by users, and stored on the servers. In addition to gathering data based on platform usage, these warehouses can also hold whatever is uploaded onto storage services such as Dropbox and Google Drive.

However, due to the centers' remote locations, there is an inherent disconnect between users and the data that each person generates. It is estimated that every two days, humans generate the equivalent amount of data that was generated between the dawn of civilization and 2003.

Figure 24 Today's data center

Territory Machines

**“So how’s not being in prison?”
“It’s the best, we have these fancy gadgets to look at
when we want to leave a conversation.”³⁹**

Today, the mobile phone is ever present. Dubbed the “smartphone” once internet connection became as common as making calls. Smartphones go beyond providing a way to speak with others across the world. It is society’s personal bank, assistant, and entertainment. Although these machines are designed to only last for a few years, new tools and features are added daily to make our lives even more reliant on this tiny gadget. Not only do mobile phones provide alternative ways of communicating with others—text, social media, email, etc.—but they also provide an excuse to not communicate with others. The social norms of looking down at one’s phone is understood to mean “don’t bother me.”

Drawing upon Kenichi Fujimoto’s writings,⁴⁰ Mark Shepard, describes these mobile devices as “territory machines” which challenge “the technicity of architecture as the primary technology of space.”⁴¹ Whereas these ‘territory machines’ are solely immersive within the mind,

architecture has the ability to provide a physical sense of place through an immersive event.

In today’s society, the mobile phone has enabled users to create an entire personal atmosphere, to the point of unawareness of one’s surroundings. This small, portable handheld device has become the means to create the second factor of the third environment, creating an even more personalized experience of the digital realm. The images and sounds experienced through a mobile phone can transport a user from the subway car to another destination through the invisible connection to a greater network. It creates a private environment within the natural and technological realms, a node within the third environment. The mobile phone combines the visual with the auditory; the screen provides users with images as the audio is conveyed through headphones or speakers. However, the mobile phones also disconnect users from the physical world, creating a dependence on the devices for virtual wayfinding and sense of



“It is enough for us simply to take note of the existence of this invisible landscape of mobile phones as an infrastructure...surpassing in its scope the visible urban and transportation infrastructures of expressways and skyscrapers. This landscape is invisible, but that does not make it ‘virtual.’”⁴²



place. Physical landmarks that were once used to orient oneself have been cast aside in favor of the smartphone. No longer do users rely on recognizable physical structures or imagery, rather there exists a complete reliance on the mobile phone to guide us to our destination.

Mobile phones offer users ways of communication, and of documentation, along with wayfinding, and access to the internet. These devices allow the user to immerse themselves in a different world, neglecting their actual surroundings. Similarly, architectural devices can also act as a way to carve out space or find a path in a dense urban environment.

Together, the data center and the territory machine create the network, or the third environment. Data generated by the phones, whether through social media apps, GPS functions, even health apps, are all sent to data centers to be stored and analyzed. However, there exists a physical disconnect between our understanding of the data users generate, where it is stored, and most importantly, how this data informs.

Architecture on any scale can act as an identity marker that provides wayfinding within a dense urban fabric. The architectural territory machine provides an immersive experience, carving out a moment in the dense third environment. The built object can operate at the human scale, mediating between the third environment and the handheld mobile device. The architectural

Figure 25 (previous), 26, 27 Territory Machines



territory machine becomes a vestibule for memory, standing as the permanent expression of the third environment, a visual connection to the invisible realm.

An architectural territory machine is an interface for memory, both as a memory to time and place, but also for storage of the third environment, a place to store and hold immense amounts of data. Stationary and ever-lasting, the architectural territory machine becomes a monument to the third environment. A series of these architectural monuments become important wayfinding and data markers for a physical understanding of the digital world. What was once segregated and hidden is now revealed and inviting interaction. These monuments of the third environment are physical manifestations of the digital realm, a remnant of the rapid innovation and usage that is the digital technology.

This thesis proposes that architecture can move beyond the 2D representational visualizations and directly respond to the third environment, becoming 'territory machines' between different layers of surroundings. Architecture becomes an intersection that provides another layer to the spatial richness of the immersive third environment experience, acknowledging that this smaller environment becomes an instance within the greater built realm. The architectural

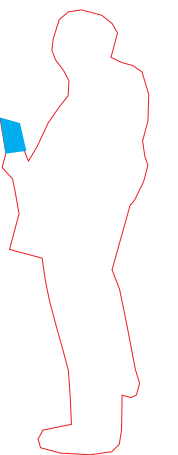
'territory machine' responds spatially to the third environment's need of place, becoming a physical monument within a larger building where these environments intersect. Mark Shepard's 'territory machines' allow the user to become indifferent to his or her surroundings. Similarly, architecture provides a spatial interpretation of the third environment, connecting a user to physical and digital place.

This thesis argues that architecture can become an interface between the third environment and physical world, facilitating a spatial understanding of these complex networks. Drawing upon the work of Toyo Ito, Diller Scofidio + Renfro, and Carlo Ratti, this thesis aims to use architecture as a physical tether to the third environment. The digital realm, constantly surrounding society, becomes even more magnified at a place of movement and travel, zeroing in on the ways in which people communicate over digital platforms. Once placeless, these digital communications begin to create a new sense of place through architecture.

This thesis recognizes the temporal nature of this intervention. The rapid rate at which technology changes and evolves creates a constraint for this project. Intended to be temporary, this project focuses on the digital networks created rather than the technology of the visualizations. The overarching thesis aims

to discover untapped potential relationships between the built and digital realms.

The digital environment provides opportunities that would not be possible with traditional building methods, and encourages new innovations through the fusion of data and architecture.



An aerial, high-angle photograph of a dense urban landscape, likely Tokyo. The image shows a vast expanse of buildings, mostly multi-story residential and commercial structures, packed closely together. The color palette is muted, with various shades of grey, beige, and light brown. The sky is overcast and hazy, blending into the distant city. The overall impression is one of a highly populated and vertically oriented city.

Tokyo

Figure 28 Tokyo cityscape

Tokyo

“The overriding sense of Tokyo...is that it is a city devoted to the new, sped up in a subtle but profound way: a postmodern science fiction story set ten minutes in the future.”⁴³

The stereotypical images of digital networks, as popularized by television and media, portray these communication networks as chaotic swirls, unable to be tamed. As Paul Virilio writes, this environment “constructs an imperceptible order that, even though invisible, is just as practical as masonry or road and highway systems.”⁴⁴ Architecture, then can provide the visual organization needed in order to better understand the complex networks that make up the third environment. As Virilio writes, it can serve as the visible intersection that “brings disparate parts and functions, pieces and people, structures and relations together at one open intersection where [architecture] establishes, if even for fleeting moments, a sense of coherence.”⁴⁵

In today’s society, humans are immersed in the “culture of speed” that exists not only within the digital world, but within every environment. This ranges from the speed of physical movement to speed of one’s digital connection. Today’s society is a culture that thrives on productivity, requiring the fastest time in order to be the most efficient.

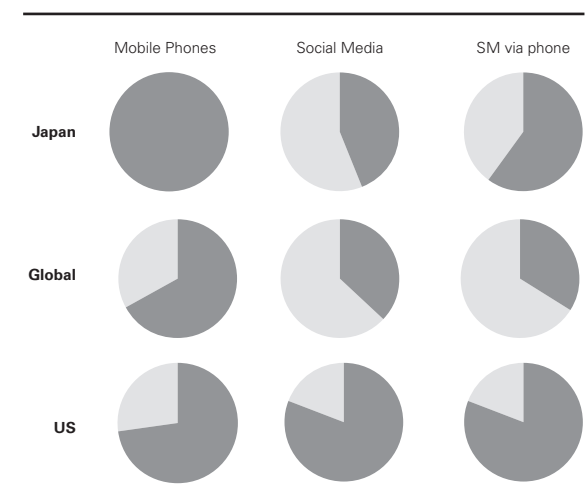
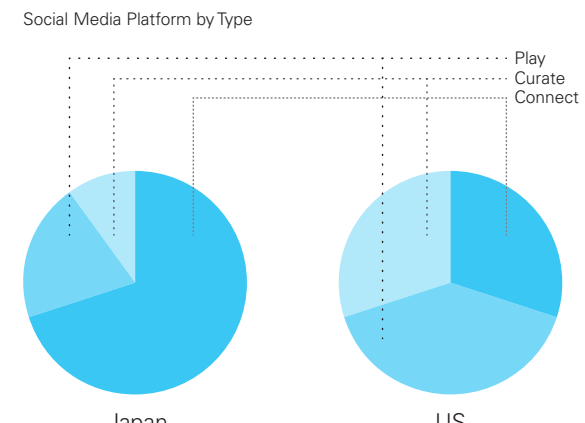
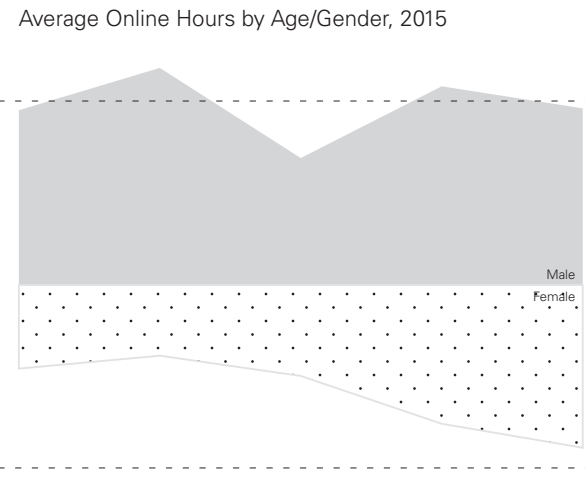
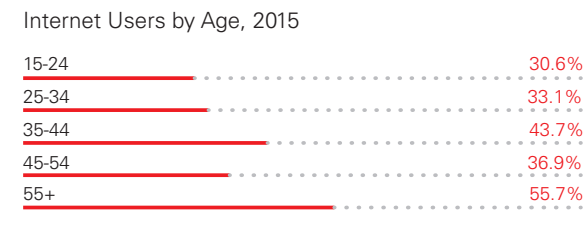
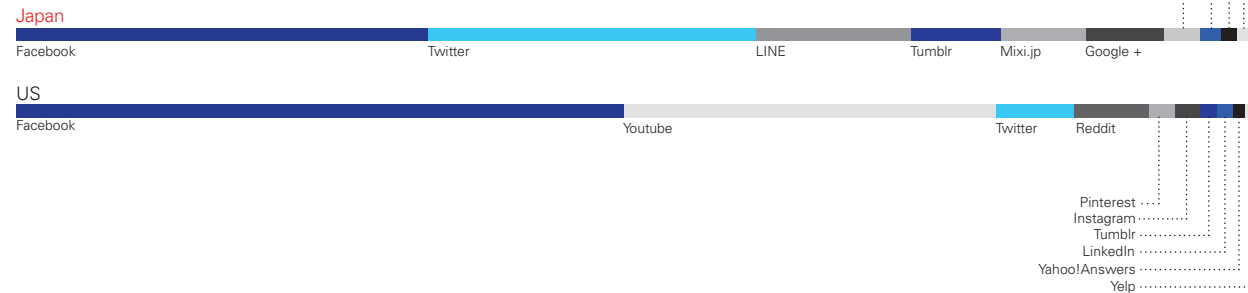
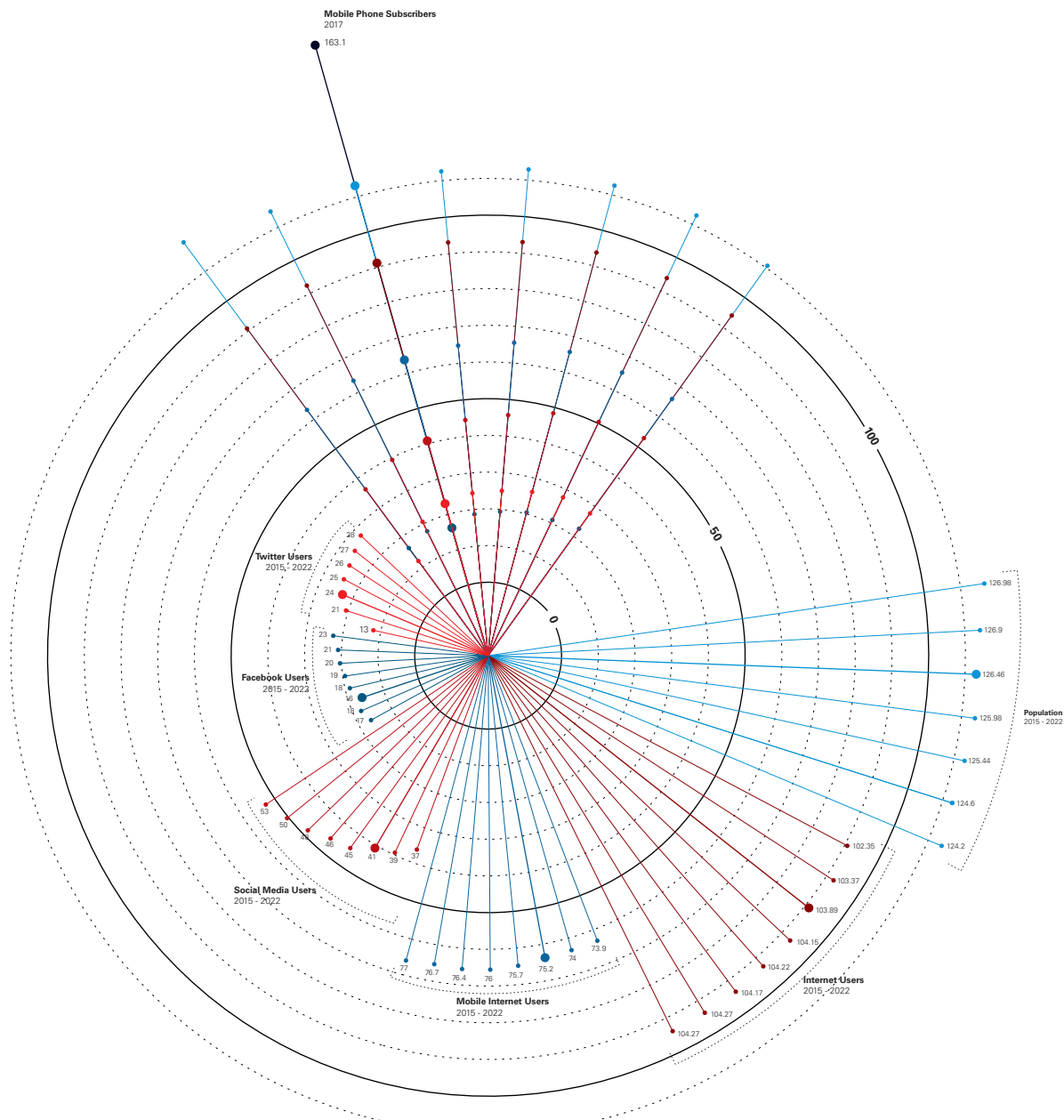
The city of Tokyo is known for its technological advancements and hyper-connectivity, embodying the spirit of the third environment. It is a city of speed that is reliant on the speed of technology and transportation. In its transportation and communication systems, Tokyo is moving at hyper-speed, reflected in its built environment. David Rakoff has described Tokyo as “a city devoted to the new, sped up in a

subtle but profound way: a postmodern science fiction story set ten minutes in the future.”⁴⁶

The architecture of Tokyo and greater Japan has a tendency to only last for approximately five years before it is torn down to create room for new developments. However, each iteration of the architecture continues to push the limits of architectural innovation and ideas. Even in comparison to other highly dense cities, Tokyo is constantly rebuilding at a much faster rate. The demand for the newest technologies, much like other high-density urban cities, is apparent. Today, it is estimated that there are more mobile phones than people in the city of Tokyo.

The population of Japan is currently experiencing a slow decline that is expected

Japan

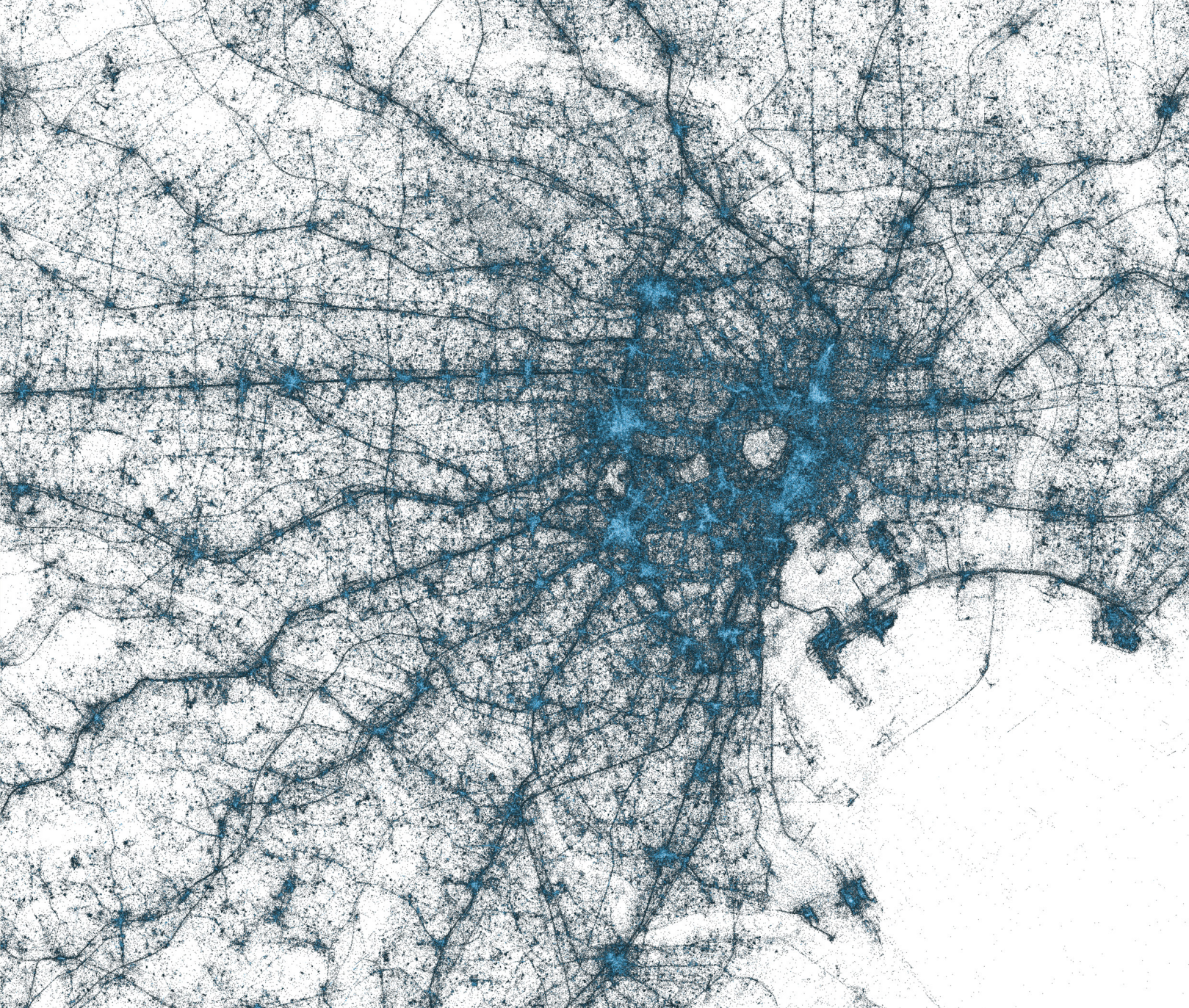


to continue until 2022.⁴⁷ A timeline compares Japan's population decline versus internet connectivity and social media usage (Figure 29). Facebook and Twitter, specifically, experienced a high increase in one year, indicating the preference to communicate via online platforms. It is clear that even though the population is steadily declining, online network users are quickly rising.

Despite the decrease in population, there is an even distribution of Internet users by age as well as by average hours online, indicating that the Internet and social media platforms are consistently accessed regardless of age and gender (Figure 31).

Social media platforms that focus on communication, such as Facebook and Twitter are among the highest accessed apps in Japan (Figure 30). The top ten apps in Japan include both social media and online game playing apps, with communication apps see the highest amount of users in Japan as compared to the US, which sees an even distribution between social media, online game playing and curatorial sites such as Tumblr or Pinterest (Figure 30). Compared to global statistics, Japan holds the

Figure 29 (top left) Timeline comparing the declining population of Japan versus the rise of social media
 Figure 30 (bottom left) Comparison of social media platforms with the highest users in Japan versus the United States
 Figure 31 Set of diagrams illustrating the internet usage in Japan, as compared to the US and globally.

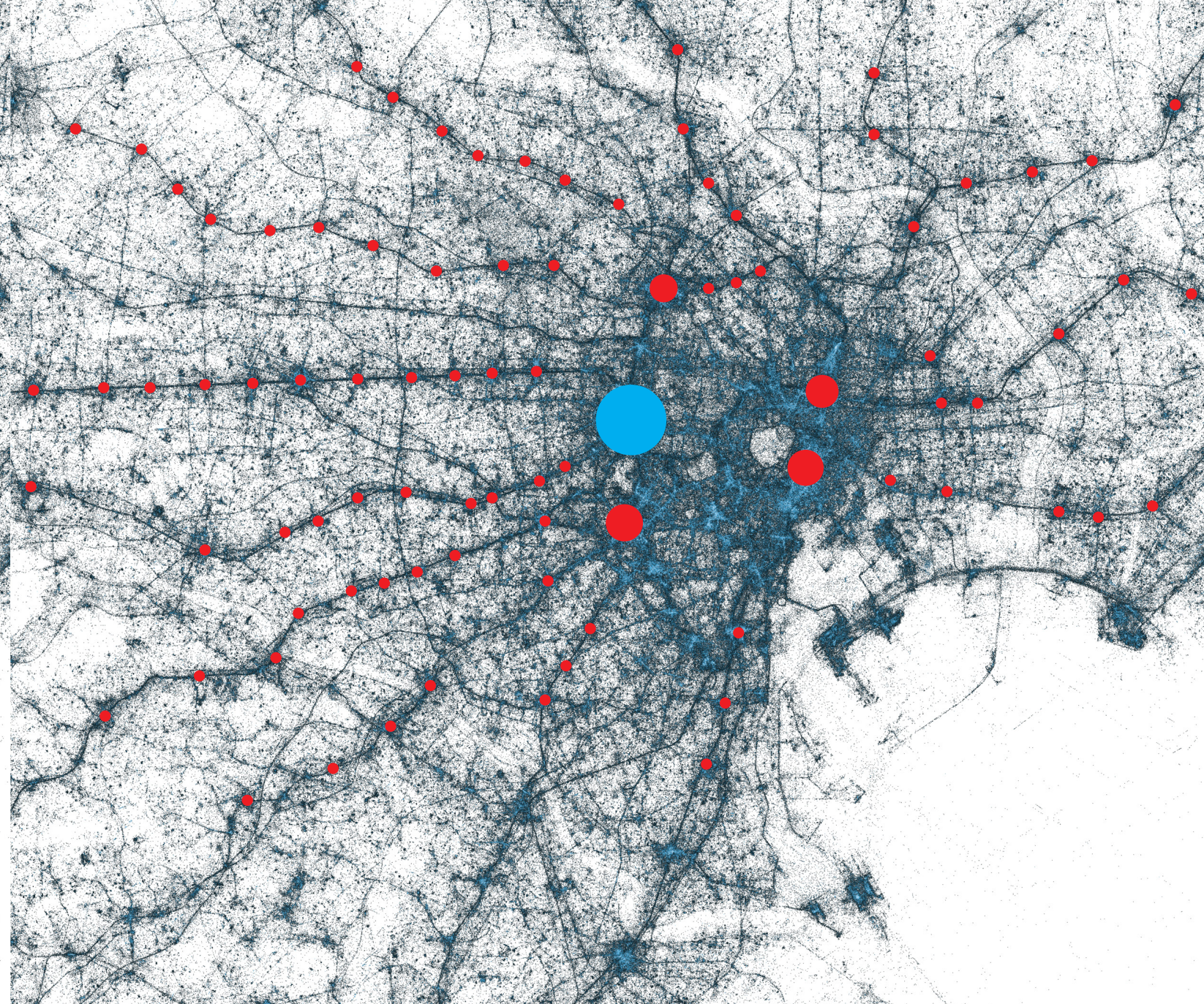


greatest amount of mobile phones, indicating a dependence on the hand held machine for the population.

A map of tweets organized by geotagged location created by the data scientists at Twitter, Inc (Figure 32). Each point represents one tweet. It is evident that a majority of the tweets are located within the city center. The white circular

void in the middle of the densest tweet zone is the Imperial Palace. This would suggest a focus on the physical place. However after closer examination, the points appear to localized around the train station locations (Figure 33).

The Japanese transportation systems are infamous for their punctuality and speed. The bullet train, known as the fastest train system in



the world, as well as the rest of the Tokyo Metro subway system, transports millions of people daily. The transportation system is extremely punctual, to the point where the train companies apologize for being 20 seconds early.⁴⁸ The speed and efficiency at which the trains move is unparalleled, reflecting the pace of the city as it propels itself into the future.

The train station experiences high flows of passengers and trains on a daily basis. Just like any other urban transportation system, the train station becomes part of a network of stations, connected by the movement of the trains.

Figure 32 Twitter map of geotagged tweets in Tokyo
Figure 33 Train stations highlighted as location in Tokyo that experience the highest amount of tweets

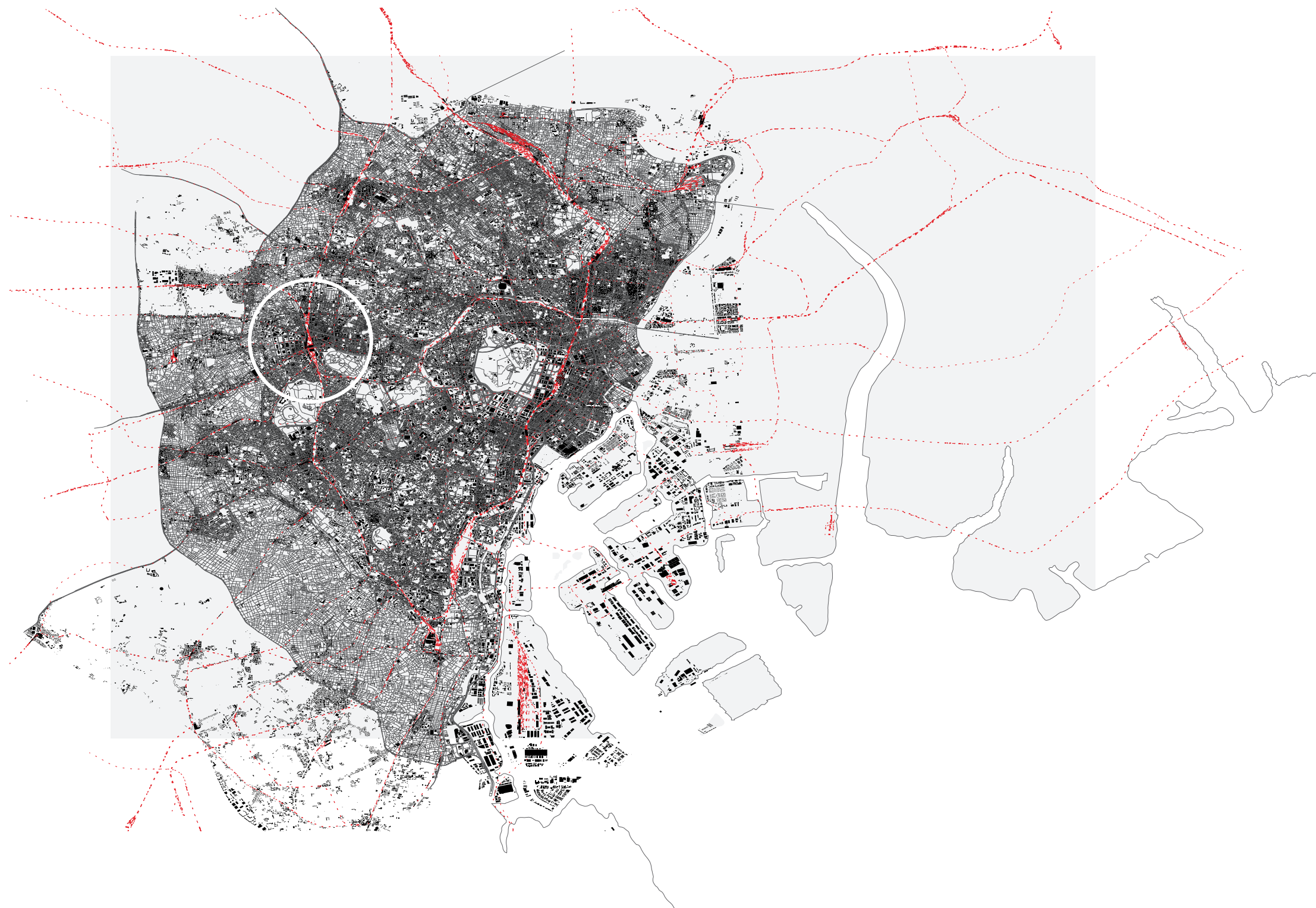


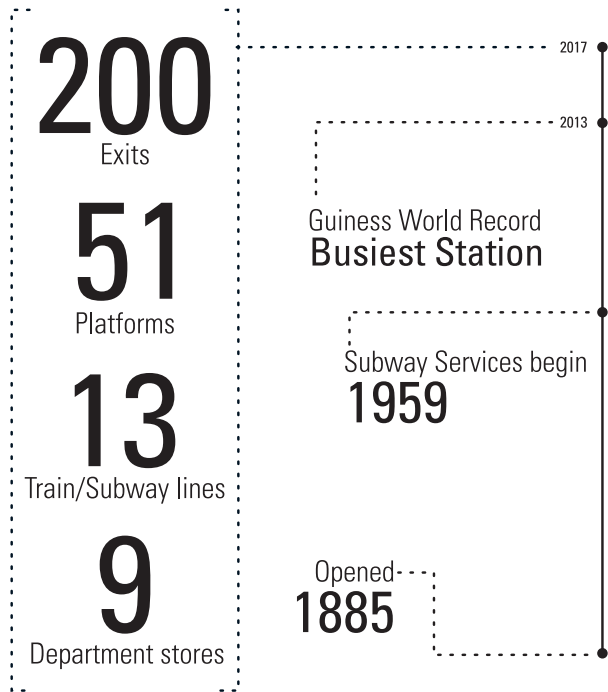
Figure 34 Map of Tokyo

In a similar sense of the third environment, The station then becomes an appropriate choice for an overlap between the built environment and third environment.

In this instance, Shinjuku Station will be highlighted as the first major intervention for this thesis. The train station is also a place for waiting, providing an optimal opportunity to look at a smartphone. Free wifi is provided in train stations to assist tourists and passengers find their way. Access to free wifi is limited throughout the city, making train stations a popular destination for a stronger signal and faster connection. Smartphones are used in stations to communicate, navigate and entertain. Passengers use these hand held devices to call for rides, post a status update and navigate through the complex labyrinth of tunnels below ground.

This thesis will propose an intervention on the site Shinjuku Station, located towards the city center, just north of Shibuya Station. Shinjuku Station. The project will act as a catalyst for additional interventions of similar nature, and demonstrate that the third environment can be visual.

Shinjuku is a ward within Tokyo, which can be compared to boroughs of New York (*Figure 34*). The Shinjuku ward is known for its train station and the government buildings. As of 2015,



Shinjuku's population was just over 337,500, which translates to roughly 18,517 people per km². That is roughly 3% of Tokyo's overall population.⁴⁹

The ward consists of a large commercial area surrounding the station. A popular tourist destination, Shinjuku offers a wide variety of restaurants as well as entertainment. Centrally located, Shinjuku provides easy access to many parts of the city.

Shinjuku Station is located at the epicenter of the city. The station is known as the busiest station in the world, winning the Guinness World Record for busiest station for seven years in a row since 2010.⁵⁰

The station opened in 1885, with the Tokyo

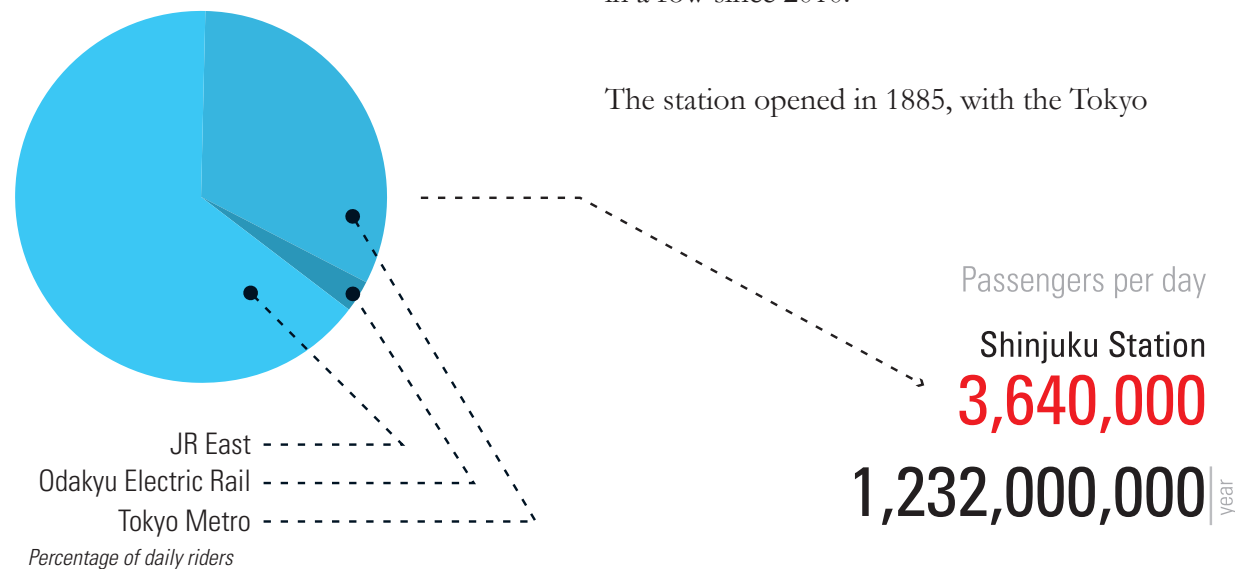
Metro services beginning in 1959. The original station was intended as a smaller station, a short stop between Shibuya and the Tokyo Station.⁵¹ Once Shinjuku became a larger commercial district, and the governmental services moved into the ward, the station began to grow. The station also became a transfer station, with enough platforms and trains connecting passengers to all corners of the city. The response to the growth of the station allowed the local commercial districts to grow in response, making Shinjuku the popular destination that it is today.

Today, the station boasts over 200 exits and entrances, with 13 train and subway lines operating on over 50 platforms.⁵² The station concourse connects passengers to nine department stores via underground

passageways. The concourses are lined with additional restaurants and retail shops, creating a second cityscape under Tokyo.

Shinjuku Station has three different train companies, both private and public, operating across the 50 platforms. The JR East, a private company, runs train lines that extend beyond the city limits.⁵³ It also operates the infamous bullet train, however while there are no bullet trains that currently stop at Shinjuku Station, there are plans for a line to connect Shinjuku to Osaka. JR East trains experience the highest number of passengers, with approximately two thirds of the daily passengers. Tokyo Metro, the city's public subway line, serves the second highest number

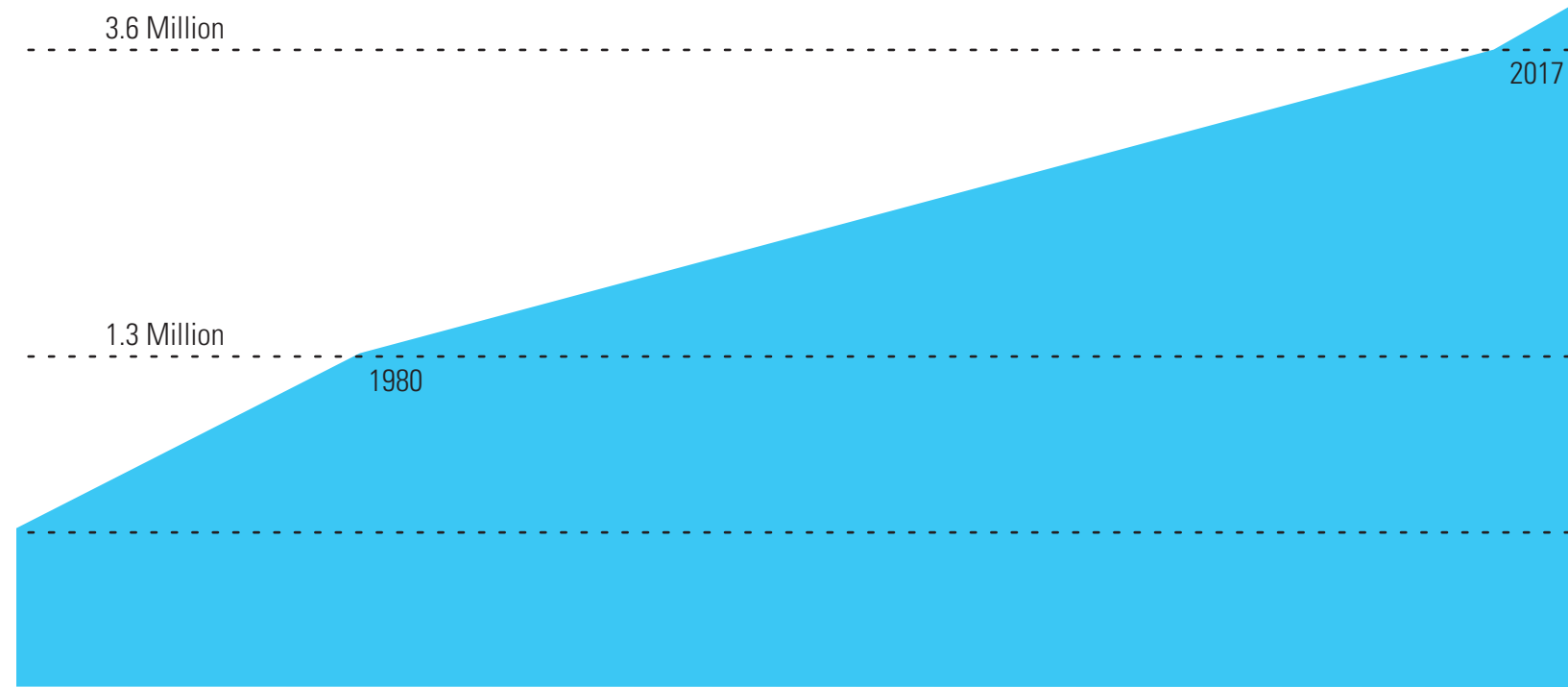
Figure 35 Series of diagrams illustrating Shinjuku Station in data form. A numeric breakdown of the station crafts a visual image of the complex architecture.

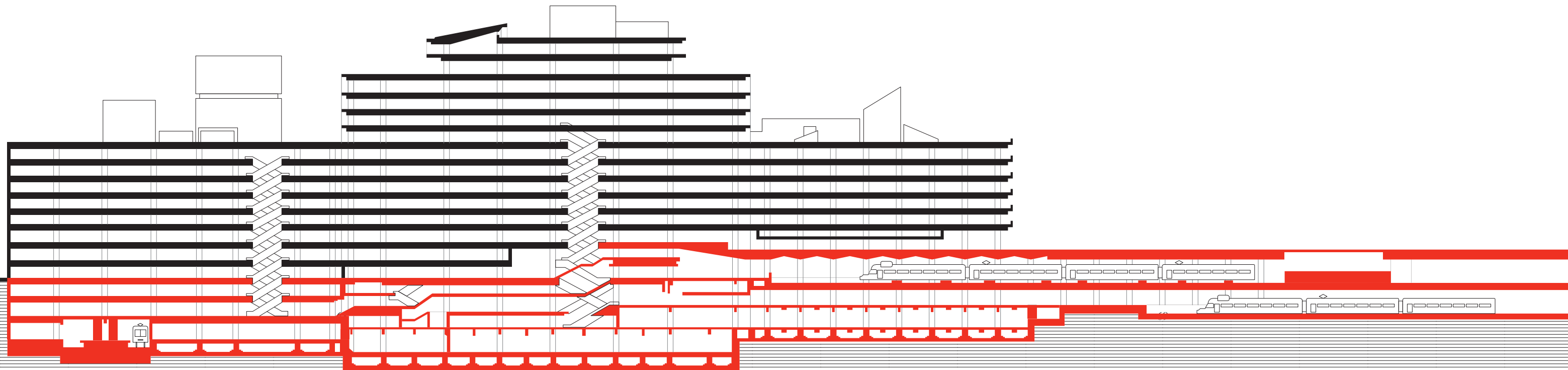


Gare du Nord, France
510,000

Penn Station, US
960,000

Union Station, Canada
250,000





of passengers with Odakyu Electric Rail serving the least amount.

On a daily basis, Shinjuku serves approximately 3.6 million passengers daily. That equates to over 1.2 billion passengers annually.⁵⁴ In comparison, other notoriously busy stations such as Penn Station in the United States and Gare du Nord in France experience less than 1 million passengers per day. It is important to note, however, that the total number of Shinjuku Station passengers includes the longer distance train passengers rather than solely the subway commuters. This could account for some of the difference between the stations.

Architecturally this translates to an spatially complex and intricate structure (*Figures 35 through 42*). At some points of the station, the platforms can be multiple floors below ground. Shinjuku Station sometimes reaches up to 7 floors below ground, with trains arriving and departing from all platforms. Passages take passengers up and down through the station, depending on connecting train platforms, destinations and exits desired. Additionally, department stores are also located throughout the lower levels of the concourses, providing additional floor space for the stores.

The station, as a typology, can be broken down into three main components: street, concourse and platform. These three components highlight

the procession passengers experience traveling to and from the station.

Figure 36-43 (previous top) Architectural examples throughout the station, above and below ground.
Figure 44 (previous bottom) Section of Shinjuku Station (highlighted in red) cut through the Lumine department store



STREET

The street component of the train station consists of everything that is above ground. As seen in the map above, this includes entrances and exits to the station. The large building at the center are the main entrances where ticket counters and information booths are located. This is also where passengers can find connecting public transportation stops such

as buses and taxi services. The station is also located within the dense commercial district, with Meiji Shrine and Shinjuku Gyoen National Park located within walking distance. The scale and proportion of the street level station does not indicate or relate to the below ground space, rather conforming and fitting in with the surrounding cityscape.



CONCOURSE

Below the street exists a complex network of passageways that connect passengers to platforms and the street. What was once thought of as simply a series of tunnels has expanded into a second streetscape below ground. The concourse is lined with retail shops and restaurants. Department stores are located within the concourse, connecting passengers to above ground levels within the store. Similar to

other station and connections in urban centers, the department stores offer a landmark in the complex tunnels. The pathways do not conform to the city streets, rather form based on the train. It is lively throughout the day, with no indication of the outside world. Time is suspended, solely relying on the train timetable for information.



PLATFORM

The platform is a threshold between the station and the train. Here, passengers wait for their train, a place to pause. It is the first and last space that passengers experience of the train station. It is the connection between stations, welcoming new flows of passengers every two minutes.

The utilitarian architecture of the platform

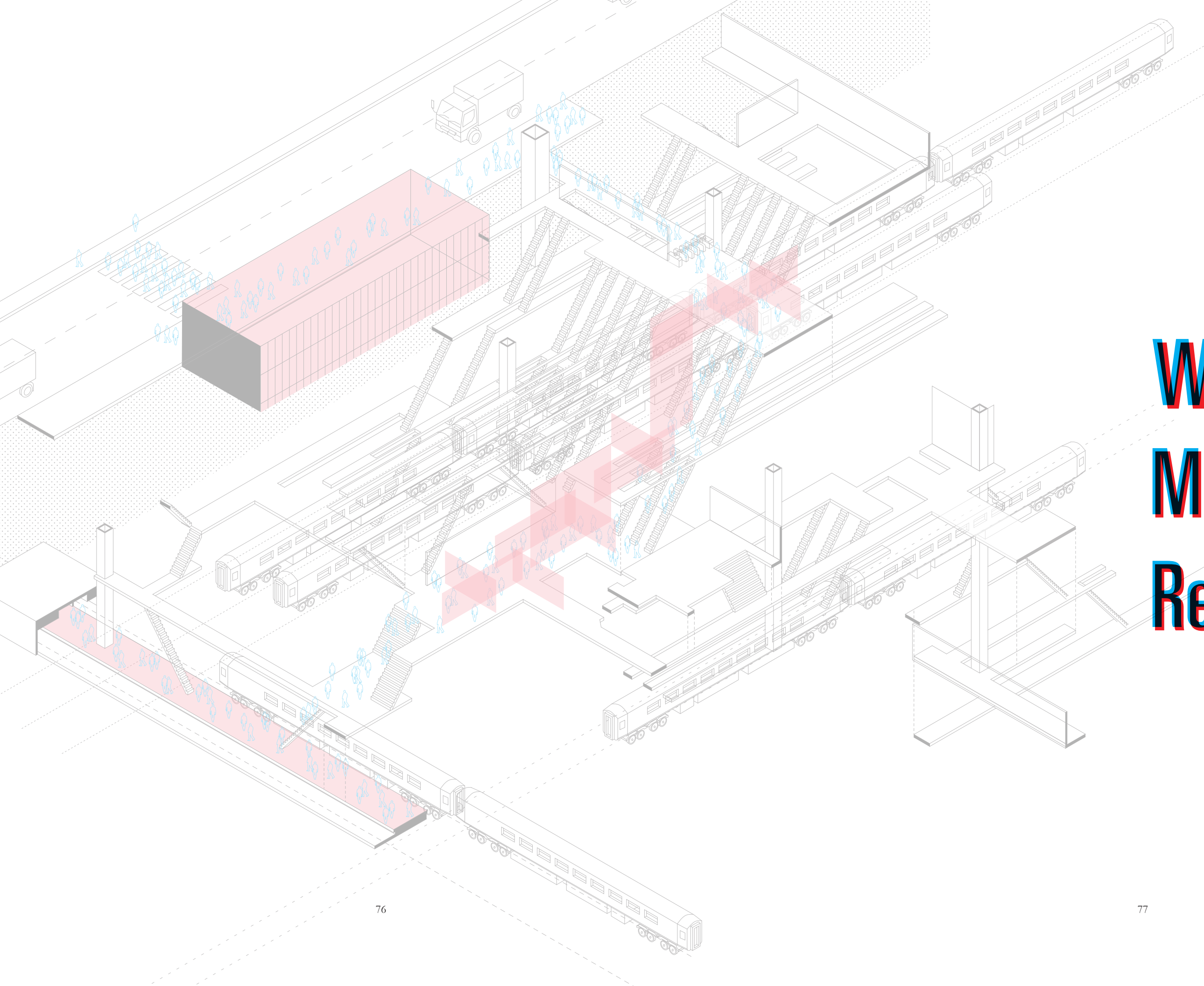
inspires passengers take a moment to use their mobile phones, passing the time while waiting for the train. However, the architecture of the platform is constantly in flux. The space changes due to the arrival of the train, almost creating a second layer of space. Unique jingles are played to indicate a specific train arriving, echoing through the tunnels. The train arrives and the doors open, waiting precisely for two minutes.



Figure 45-47 Maps depicting street level station, concourse and platforms within Shinjuku Station.



Figure 48-50 Architectural examples of each station typology.



Witness
Manipulate
Replay

META

In this thesis, the smartphone is as much a part of the project as the architecture. The smart phone allows passengers and users to interact and communicate across their social media platforms, but it is also that way that the “material” for this intervention is generated. Without the smart phone, or territory machine, this thesis would not be possible.

A greater network is created via the use of the smart phone. Shinjuku Station opens up to places around the world.

Of course, this project would not be complete with an app designed to work in tandem with the data projections seen throughout the station. Meta is programmed to receive the data generated in the station and translate it into useful transit information.

Based on the frequency of social media posts geotagged to specific locations, Meta determines which concourses are experiencing higher levels

of traffic and indicates that on the “Station at a Glance” page. Meta also cribs data from the train station systems, using it to show how far away a specific train is (*Figure 51*).

The data generated by the smartphone is then replayed back on the phone but in a different iteration to allow for a more informative experience of the data, one that will allow passengers to navigate the station successfully.

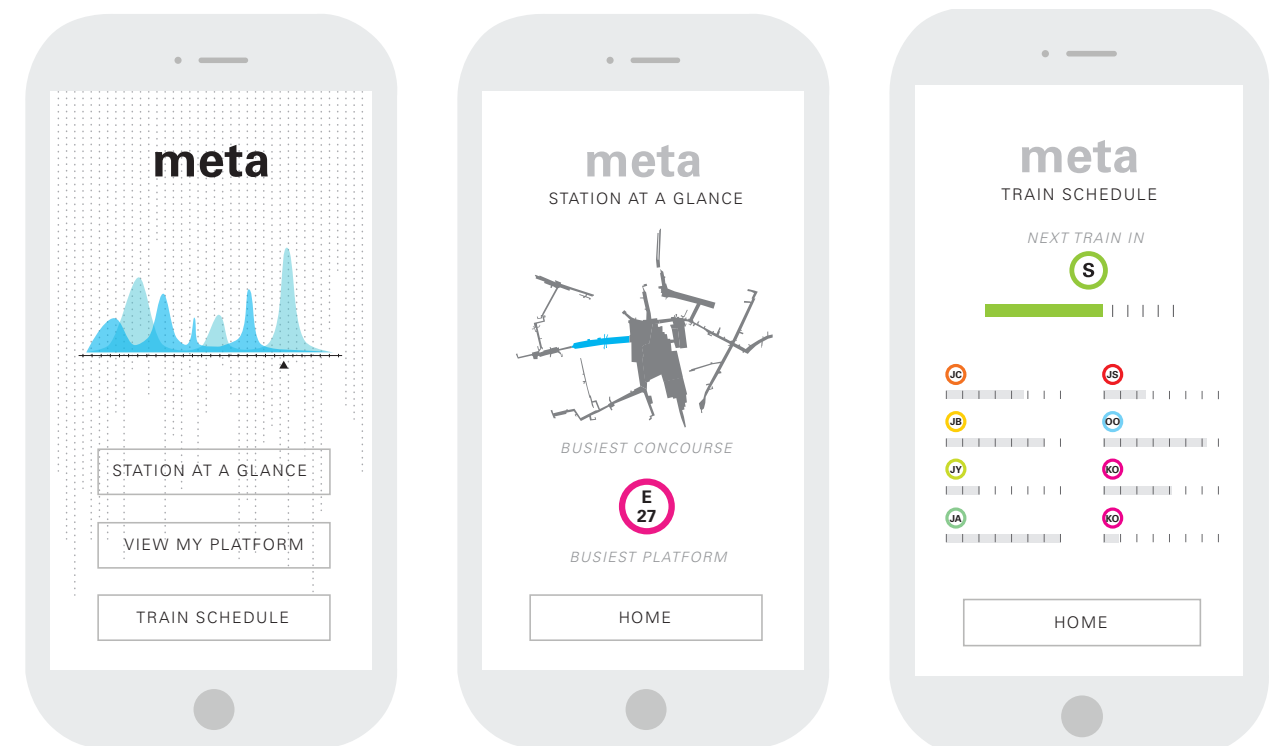


Figure 51 Meta app provides train information

“Architecture is a kind of ‘spray’ that coats and thereby reveals the spectral outlines of the informational field.”⁵⁵

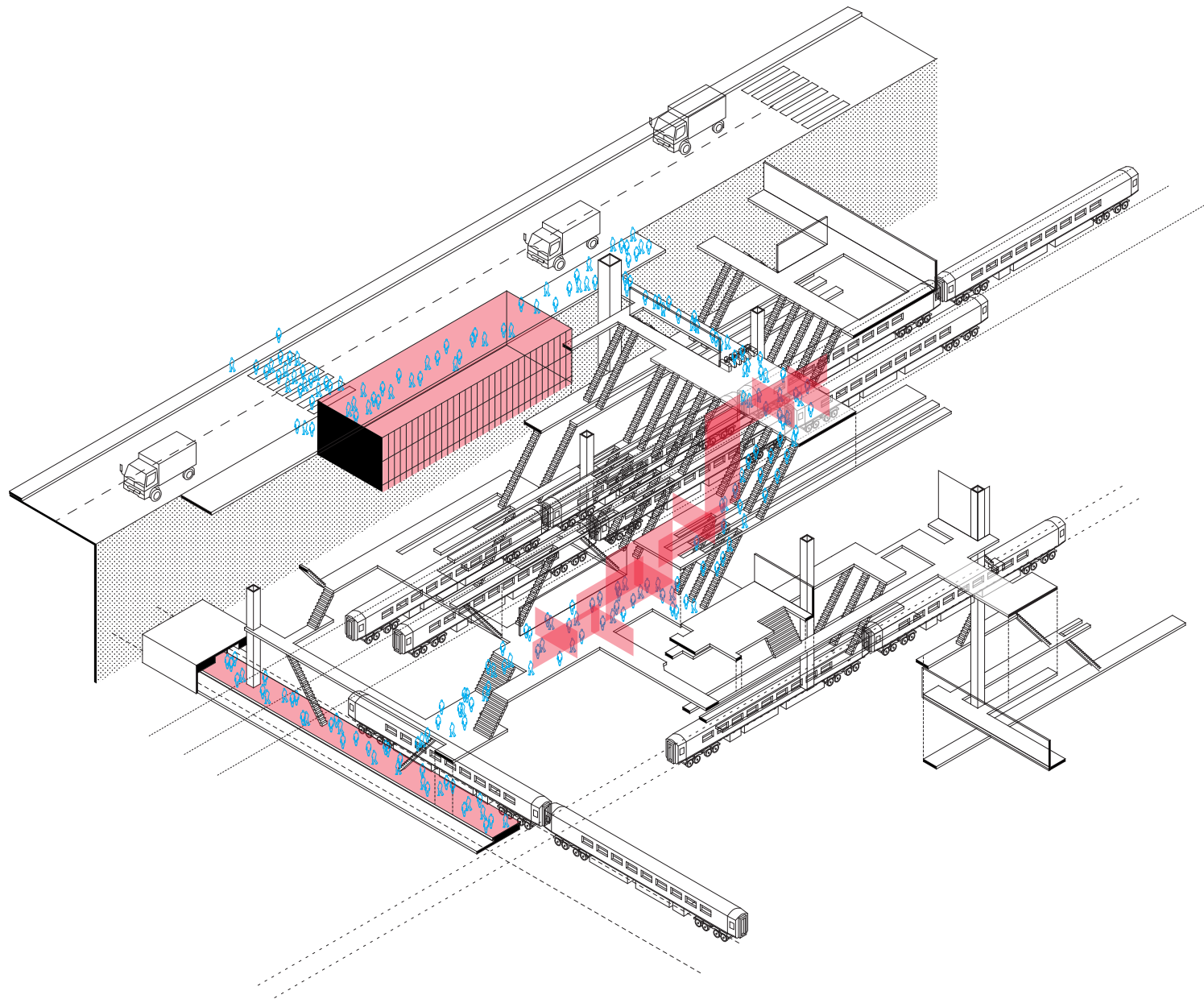


Figure 52 Station interior axon.

This project is divided into three interventions—street, concourse, platform—responding to the individual station typologies. The interventions are intended to highlight the procession between the street to the platform, emphasizing and responding to the speed of each space. The third environment is everywhere; this project seeks to highlight a portion of the third environment at Shinjuku Station. It translates and interprets the invisible flows of information that permeate the station walls and ceilings, which flow through and beyond the train tracks. It responds to the movement between the street, concourse and platform, showcasing the variety of patterns and places that passengers exhibit daily. The station becomes an interface of the third environment, a temporary installation that is meant to visualize the digital networks and users present within the station.

The territory machine is an essential component of the intervention, allowing users to become active participants within the project. It provides

the tool with which users can download and upload data.

These three interventions work together to produce a cyclical process, one that can be experienced whether arriving at the street or ascending from the platform (Figure 52). Each intervention emphasizes a different aspect of the third environment, responding to both the digital and physical environments, while merging the two.

Welcome to the third environment.

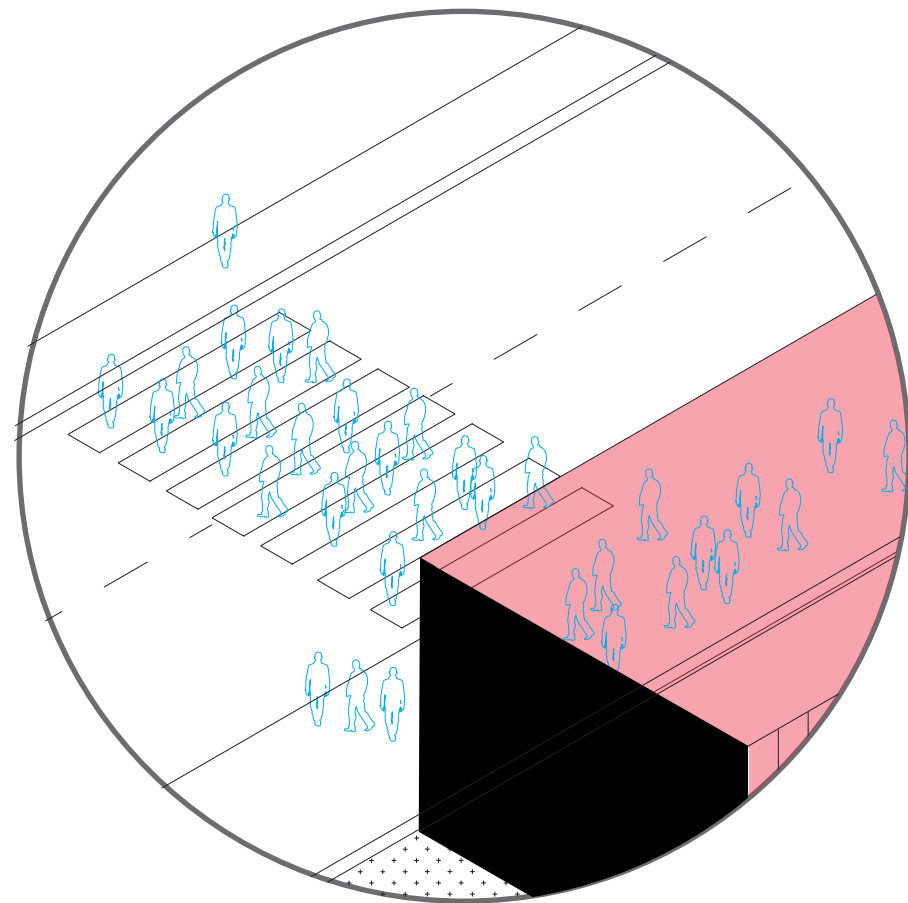


Figure 53 Witness

WITNESS

The first intervention is a data center. Located at the street level of the station, the data stands as part of the urban fabric, integral to the architecture of the station. The data center stands as the physical manifestation of our current understanding of the third environment (Figure 53).

Rack mounts, holding multiple servers are stacked on top of each other to create a multi-story structure. Unlike typical facilities located in rural sites, the urban data center is constrained by the dense fabric of the city. The servers store the data generated in the station and within a five meter radius of the street level station. The stacked solution uses less ground level area but still provides enough storage for the station and surrounding area. Covered by a thick glass barrier, the servers are visible from the street. Passengers are able to walk around the multi-story structure, confronting the data center and its contents.

The data center stands as an object in space, not only functional, but as a symbol of the third environment. It is the architectural and functional response to the third environment.

Located at three major entrances and exits to the station, passengers are forced to confront the data center. Each data center is located at a location where a different confrontation is experienced. At the northernmost location, passengers view the data center from the buss terminal drop off area. At the middle location, the data center sits adjacent to the main pedestrian entrance off the sidewalk, inviting passengers to walk up close to the data center (Figure 54). The southernmost location stands taller than the surrounding buildings, to be viewed from the car. As the car approaches, the data center stands in front of the station, asserting its position as a symbol within the built environment. Here the data center is set above the urban cityscape, but still as an object rather than a building. Each data center stands as an

object, but invites inquiry and examination.

No longer is the idea of the “cloud” an ephemeral metaphor for data storage; passengers are able to physically understand what the data center is and how the third environment is represented.

This is a temporary installation. Over time servers begin to break down, due to their short life space. Rather than replacing them, the data center will begin to shut down completely, slowly reverting back to its original state as an object. The data center will have no actual function beyond being a physical sculpture representing a moment in time when data centers were the only symbol of the third environment. It is expected that the technology used to collect and store data will change faster than this installation allows. The data center is able to withstand the technological advancements due to its primary function as a symbolic object, rather than as an operational center.

Figure 54 Data center located at Shinjuku Station entrance.



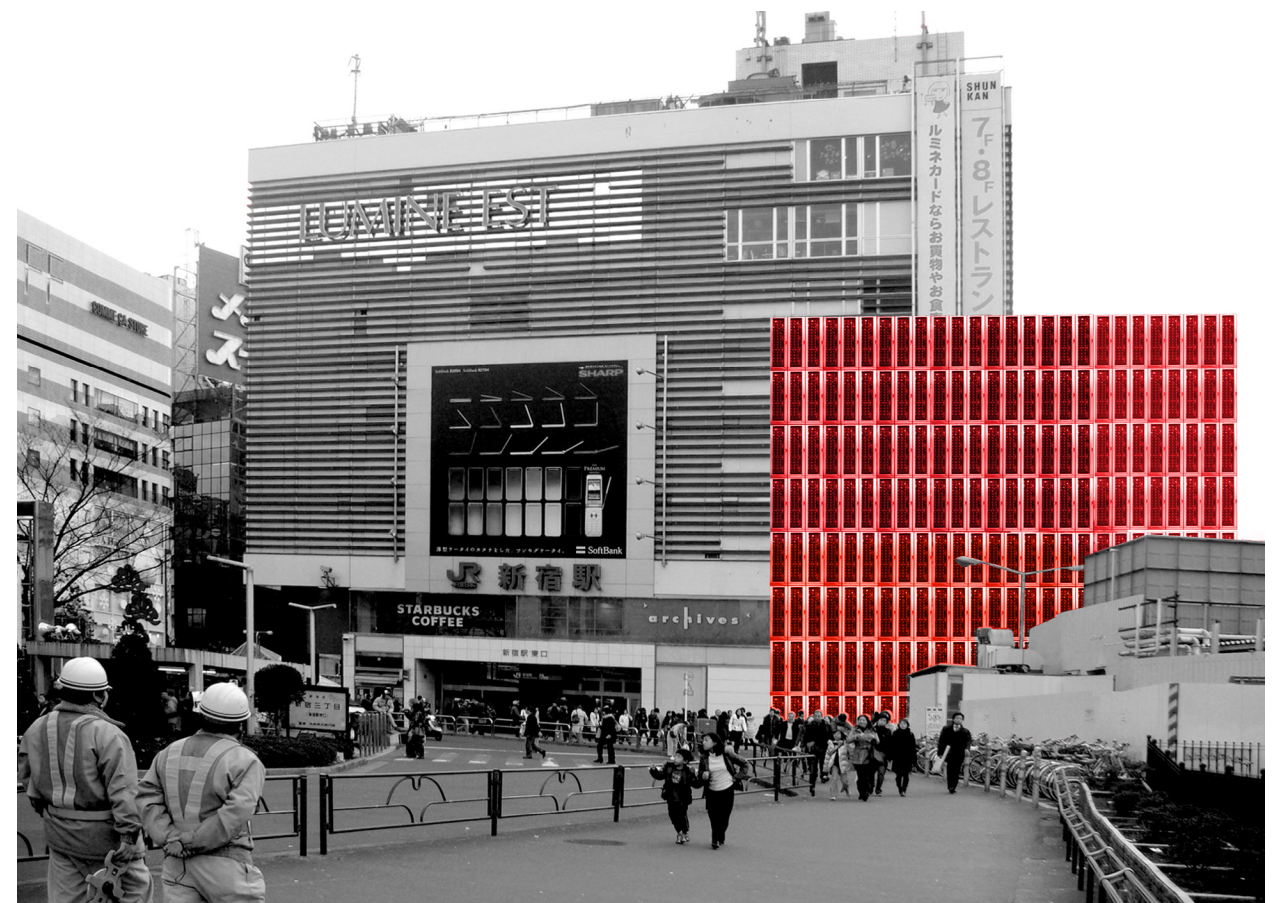
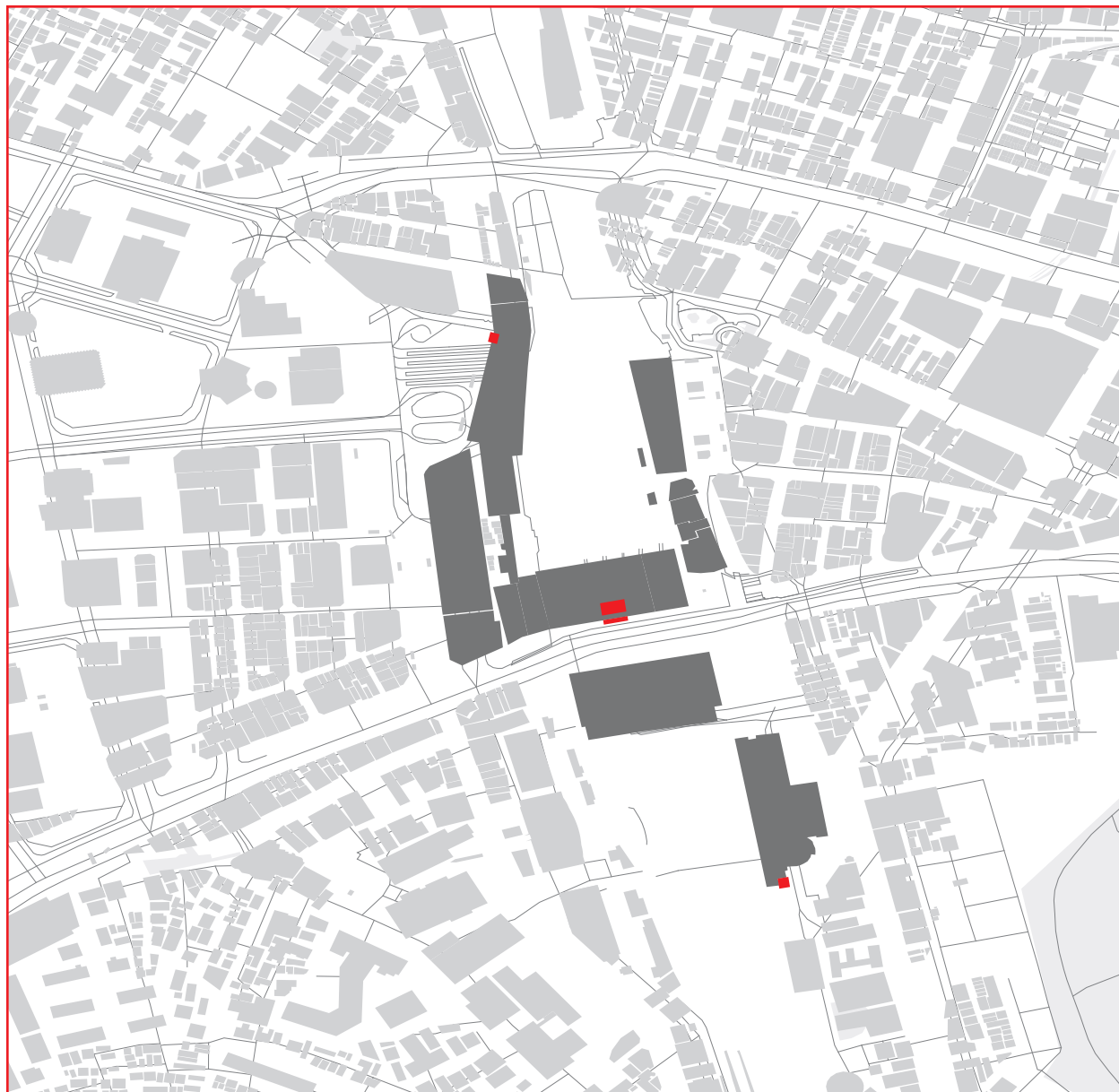


Figure 55-56 (opposite) Data center site context map, two scales.

Figure 57 (top) Rack mount storage system is human scale

Figure 58 (bottom) Data center as object in the landscape

MANIPULATE

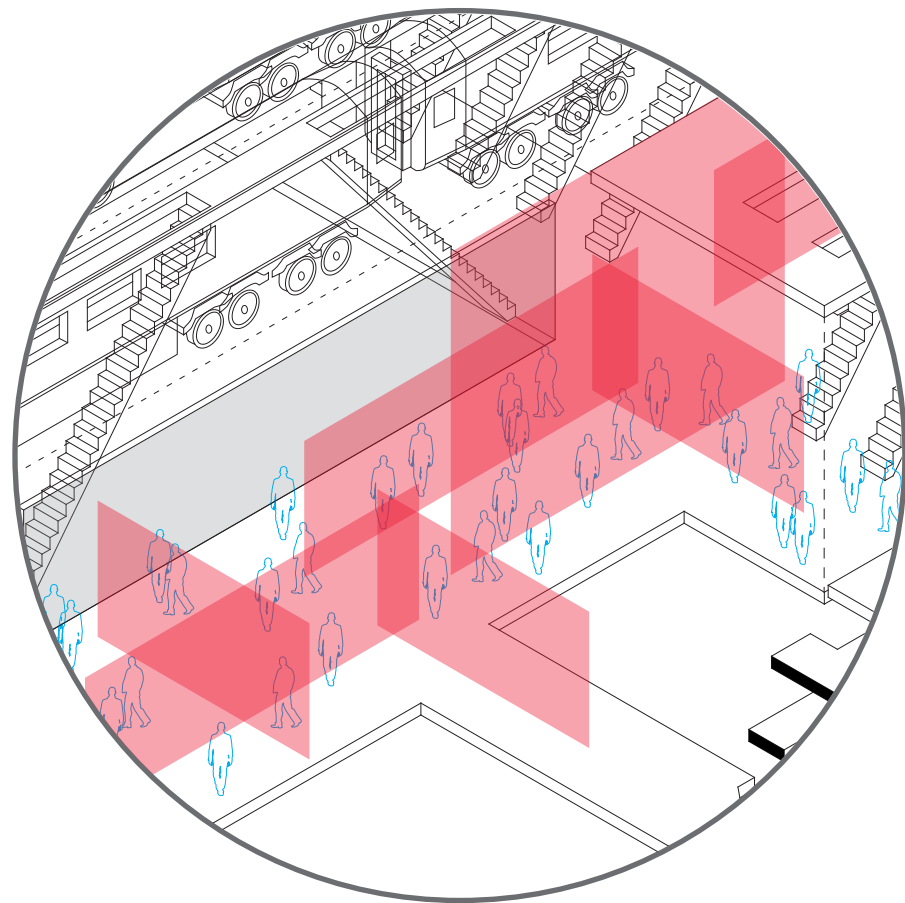


Figure 59 Manipulate

“In architecture, there are no spectators: there are only participants.”⁵⁶

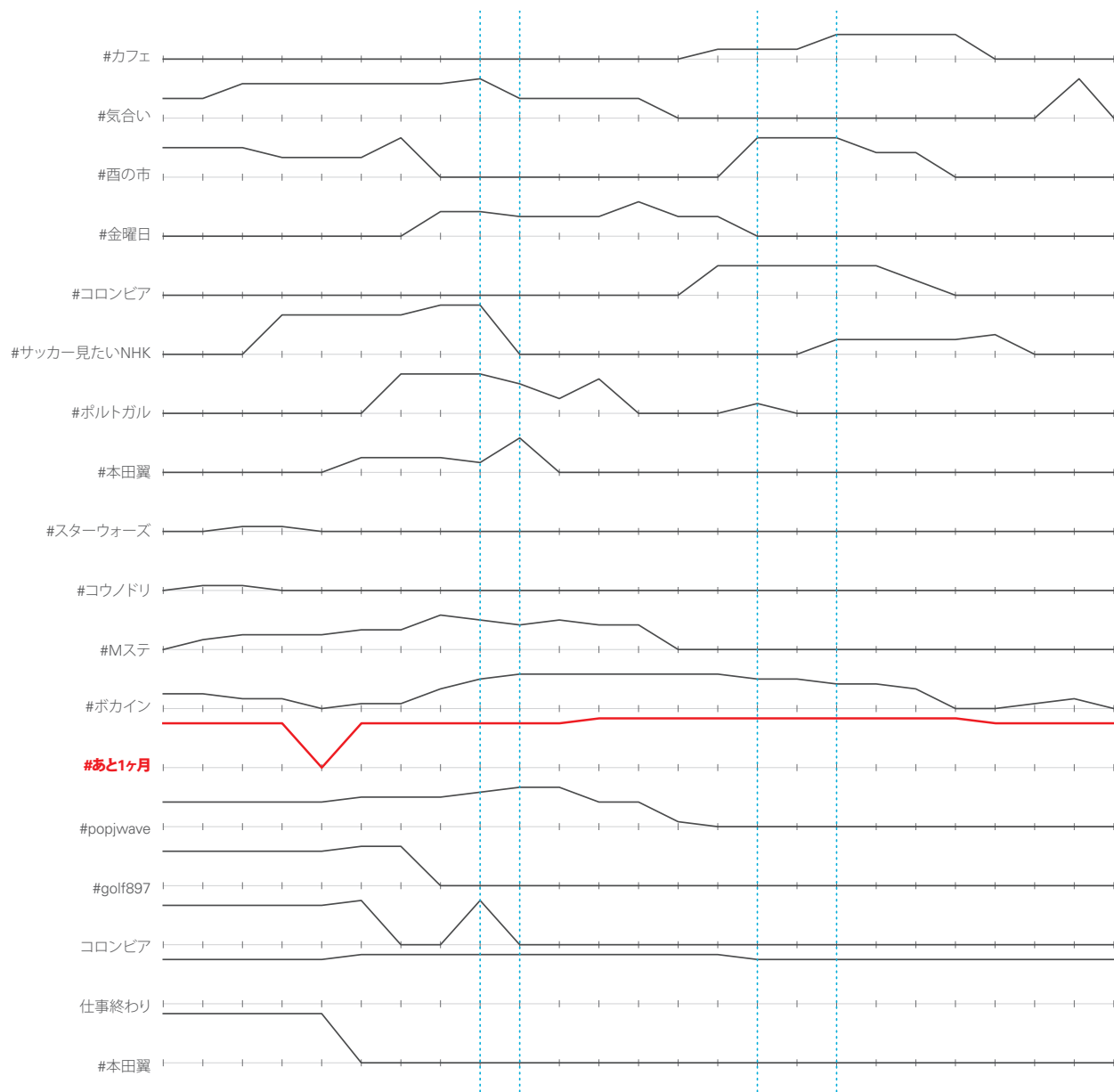
The thesis proposes a second intervention entitled Manipulate. The concourse is a place of perpetual movement—passengers are walking to and from the platform, to their next destination, and shoppers cutting through the concourse to the department store. The concourse is an intermediary space that fosters these paths of movement (Figure 59). The connecting tunnels contain information regarding train arrivals and departures. Digital and physical signage communicates messages regarding the trains as well as advertisements for local businesses. The concourse is bustling.

While in the concourse, passengers and pedestrians use their smartphones to call, text, post on social media and use their GPS apps, generating gigabyte after gigabyte of data. The data is then stored in the data centers at the street level of the station.

This intervention will focus on data generated by hashtag, specifically through the social media platform, Twitter, the most highly used communication app on social media.

Manipulate focuses on cataloging data generated by passengers and pedestrians, and projecting the data back on the concourse. The data is presented as two dimensional images are projected into space, forming three dimensional space. Each “surface” projects a different portion of the data generated.

Passengers become active participants in this three dimensional space through their social media activity. Their usage of different hashtags directly affects the information projected into space, therefore constantly manipulating their environment. Going back and forth between projection and mobile phone, the third environment comes to life via a catalog of the data that is communicated via the Internet and social media.



In this iteration of Manipulate, the top ten hashtags form the red surfaces which are then projected into the concourse. The projects stand alone in addition to conforming to the physical space of the concourse, seen on the ceiling of the concourse in the figures above.

The red text in the projects represents hashtags that are currently being used within the station, found by geotagged tweets tethered to Shinjuku Station.⁵⁷ The blue hashtags are then those that are part of the top ten hashtags in the area, the trending hashtags of the moment (Figure 60, 61). However, as mentioned above, the hashtag data changes constantly even by the hour, the hashtag performance changes rapidly throughout the day (Figure 62). The diagram illustrates how each hashtag performed over the course of the day in terms of the top ten (Figure 63). This iteration

Figure 60 (previous) Trending hashtag projection frame
 Figure 61 (top row) Concourse projection frames illustrate Manipulate intervention
 Figure 62 (opposite) Hashtag performance mapped by hour
 Figure 63 Top ten trending hashtags throughout the day



1-2
りんかい線
RINKAI LINE

1-4
埼京線
SAIKYO LINE

1-4
池袋駅有楽町線
IKEBUKYO STATION YAMANOTE LINE

5-6
有楽町線
YAMANOTE LINE

5-6
有楽町線
YAMANOTE LINE



7-8-11-12
有楽町線
YAMANOTE LINE



有楽町線
YAMANOTE LINE

池袋駅有楽町線 池袋へ約5分 渋谷へ約6分 恵比寿へ約8分

池袋駅有楽町線 池袋へ約5分 渋谷へ約6分 恵比寿へ約8分



12

12

13
有楽町線
YAMANOTE LINE

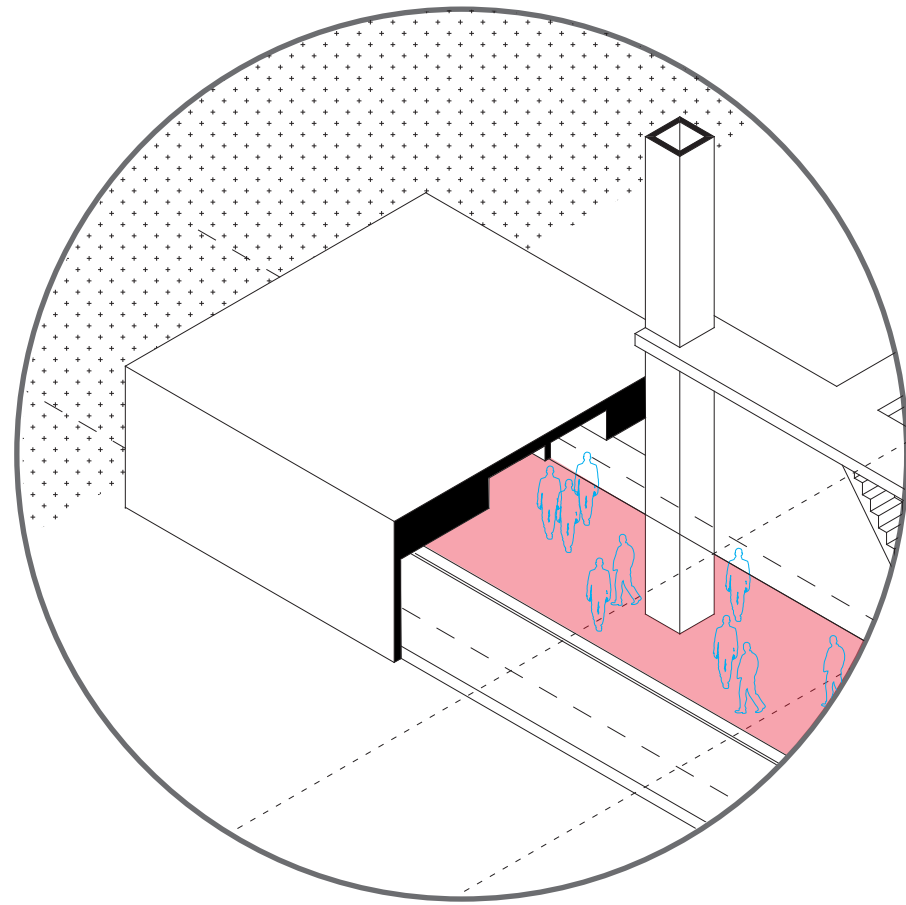


Figure 68 Replay
98

REPLAY

Located on the train platform, this last intervention reconfigures the stored data from the station and Replays it onto the platform space.

The projected data conforms to the surface of the architecture, simultaneously highlighting the third environment and the physical space. More importantly, the third environment becomes a physical space, merging with the platform to create a new place and experience. The short iterations of each projection respond to the wait times in between train arrivals and departures, occasionally using the changing space as the train is arriving as part of the installation.

The platform projection is intended to correspond with the arrival and departures of the train. The smaller scale space provides the interface for a more personal experience of the intervention.

This intervention is intended to use the platform

as the interface for the third environment, projecting data generated and continually manipulated by passengers, but in a new, more spatially focused way. Users are still able to manipulate the data even down on the platform. Here the third environment becomes a place rather than being suspended, placeless.

These Replay iterations highlight the communities created through the third environment and how the architecture of the platform can enhance that experience in the physical world.

Replay becomes more than just a catalog of the data generated throughout the station, it aims to highlight those invisible digital realms that exist within the station but are not understood or visualized in the physical world. The platform allows for these communities to have a physical presence and continue the conversation with even more participants.

1st 5:14 Local DT 27 Chuo-rinkan
2nd 5:28 Local DT 27 Chuo-rinkan

渋谷方面
for Shibuya 1

歩きは危険です



半
は
Han

半
は
Han

渋谷方面 1
for Shibuya 1



On the platform, passengers check their phones, waiting for the train to arrive. The platform is bustling with activity, more and more passengers arrive, all awaiting the next train. Announcements are heard over the loudspeaker. A unique jingle is played to signal the current station. A digital sign displays time and arrival information. Vending machines offer hot drinks and salty snacks. The lights dim, and movement is seen on the platform ceiling. Dotted lines are traveling across the ceiling and moving down the wall, slowly onto the platform. The lines cover any solid surface until it reaches back up to the starting point.

This intervention fully immerses passengers on the platform. What was once a static, stationary space becomes animated with projections. The projection - animated dotted lines begin to highlight the physical station space (Figure 69). Using every available surface, the projection follows the section of the platform, transforming it into one continuous surface.

The third environment is made visible but also becomes a spatial iteration of the digital realm. In this iteration, the third environment projections are intended to be a spatial experience. The third environment uses the platform as its interface but then recreates the architecture of the platform through the overlaying of the digital projections. One continuous surface of the pattern re-imagines

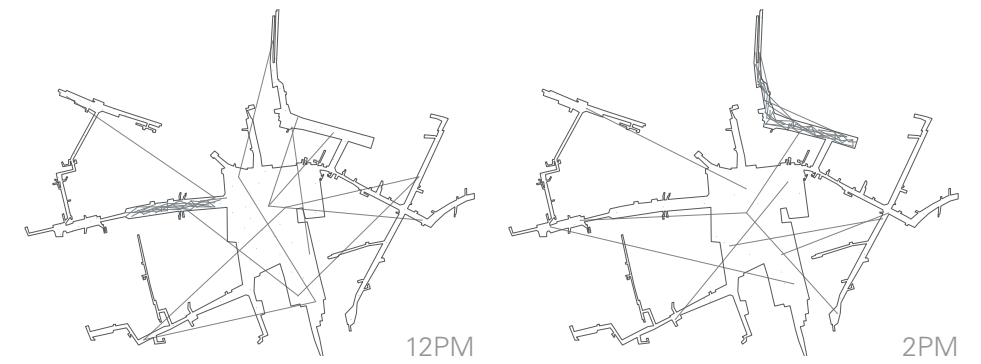
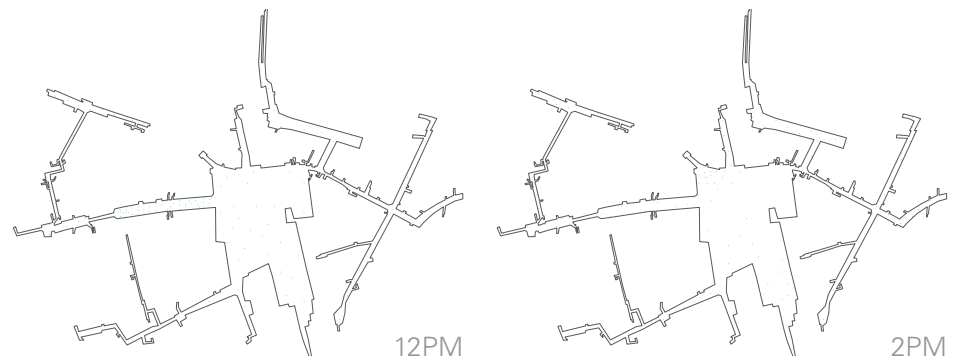
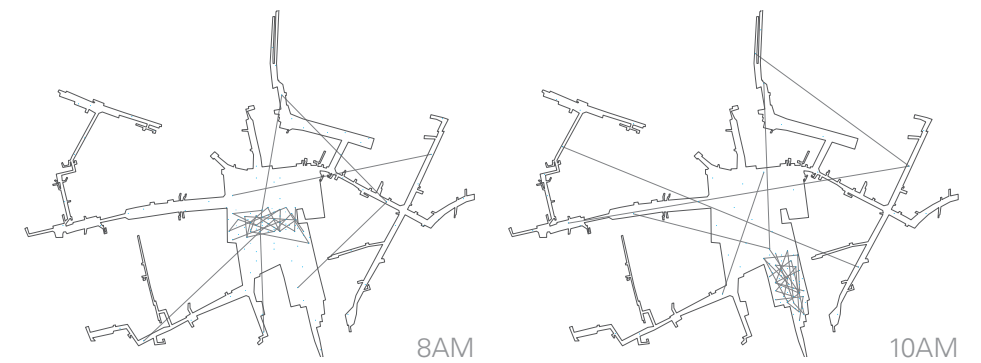
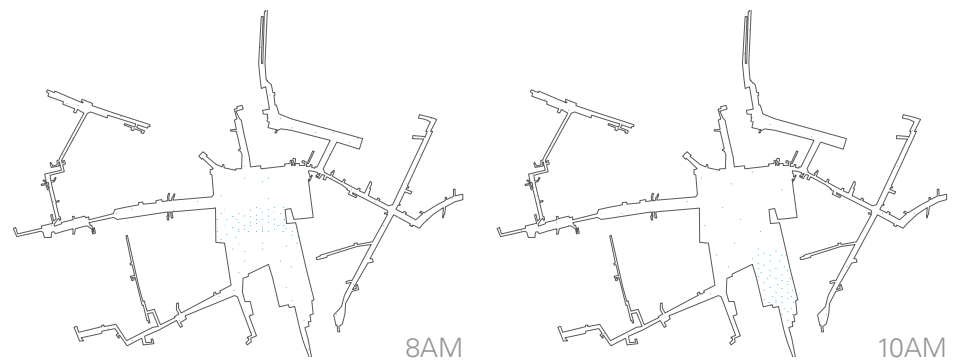
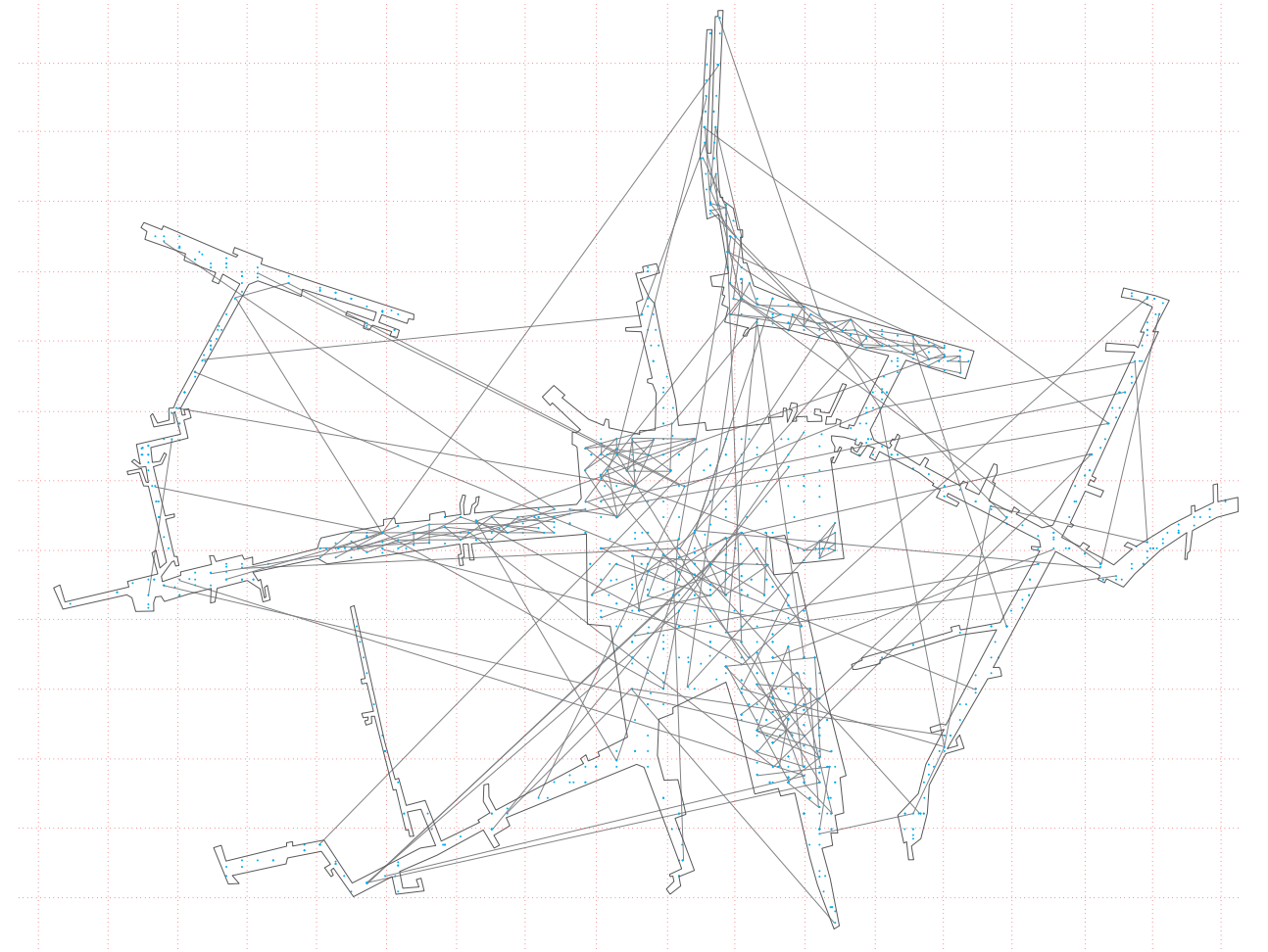
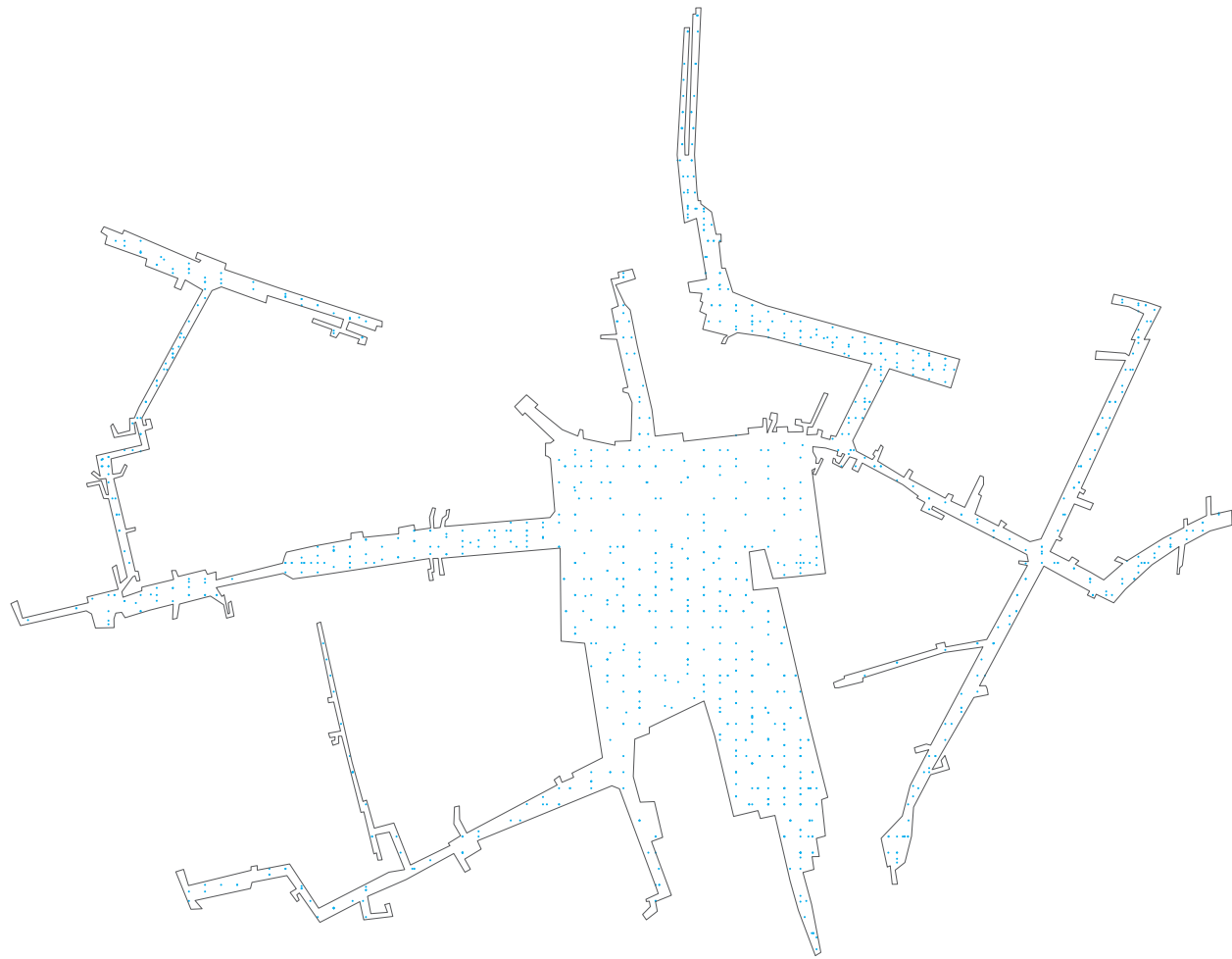
the platform as the virtual realm.

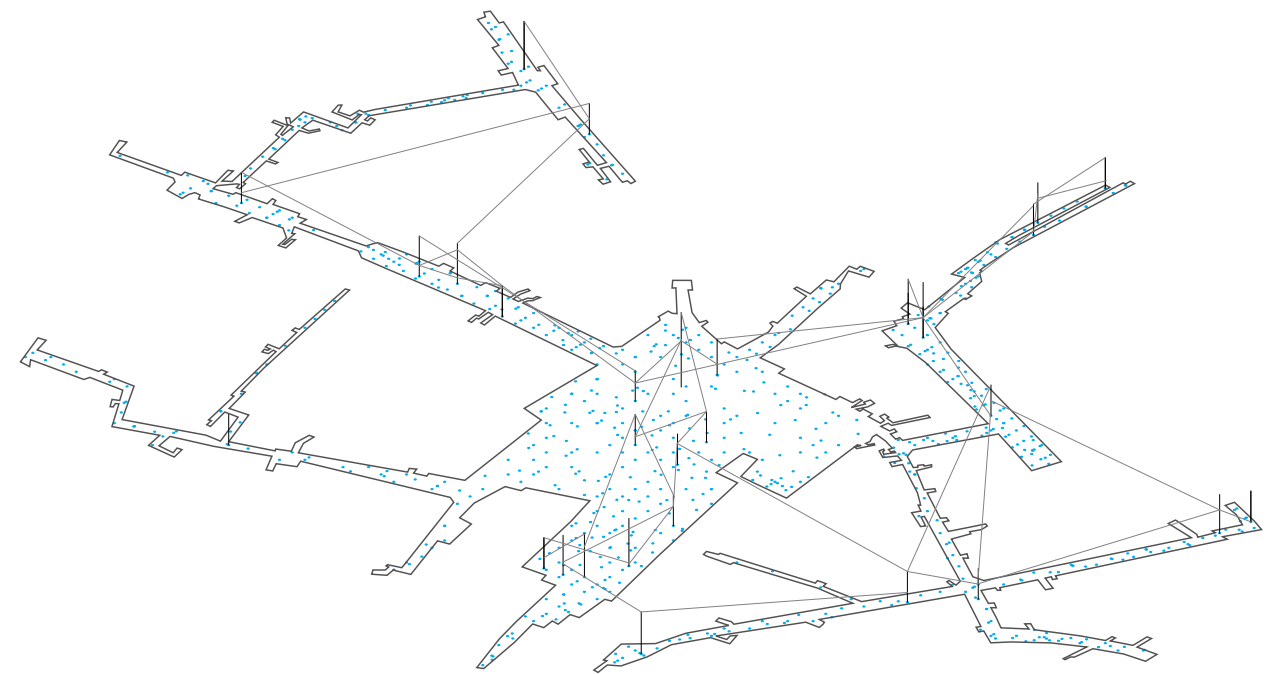
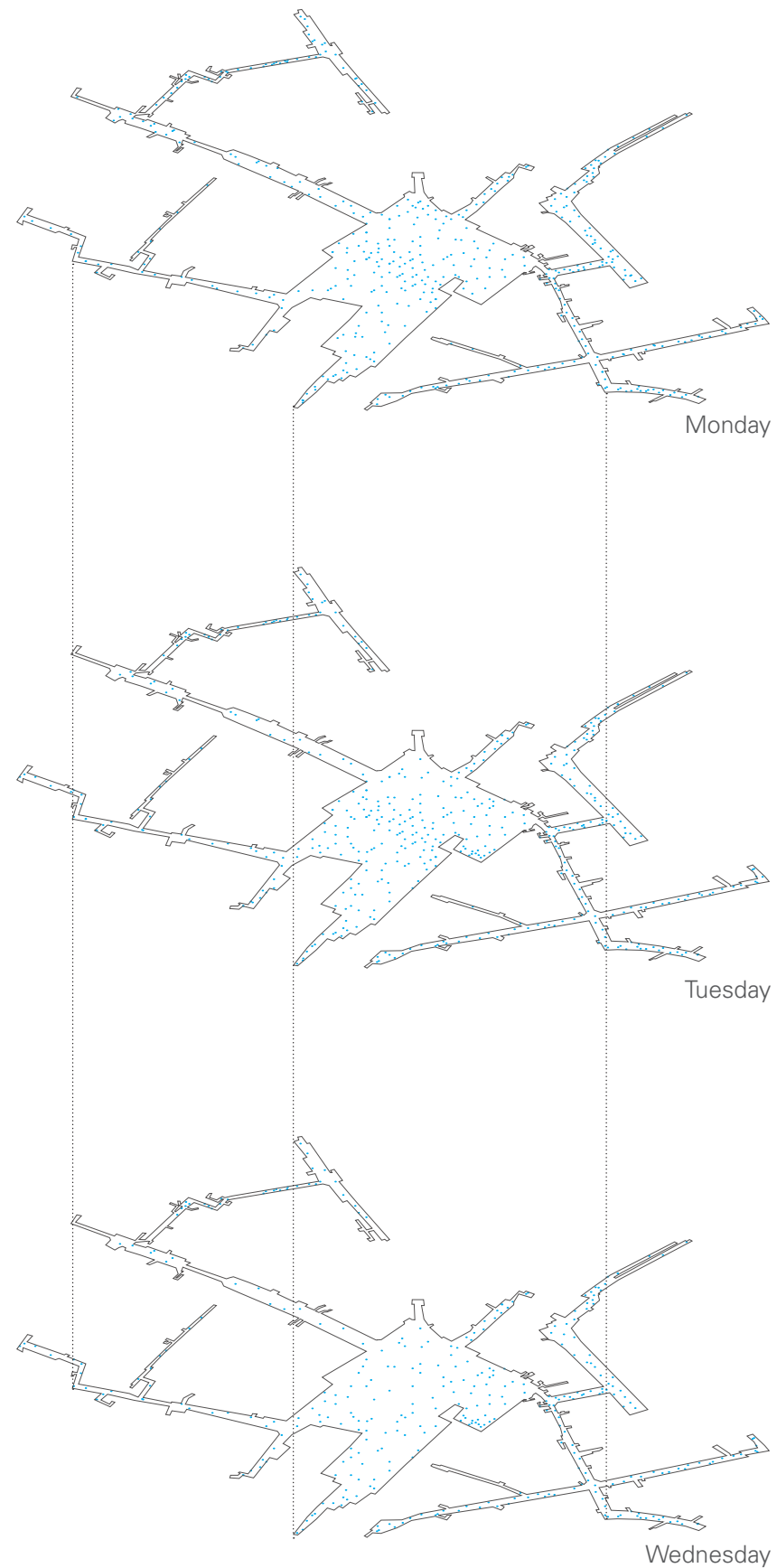
What is displayed is generated from the same data that is gathered throughout the station. Each dot represents one person or post.

Social media posts are organized first by location. Each post geotagged throughout the station is then divided into groups based on time. Through this organization, a new station begins to emerge, suggesting unexpected events or new restaurant opening. New locations throughout the station are highlighted based on a higher frequency of posts. The physically complicated station becomes easily understood and organized through passenger perspectives (Figure 71). A new layer of place is uncovered through analyzing this digital network.

The data is analyzed a second time for hashtag commonalities. The hashtag (#), a digital organizing tool used primarily on social media platforms, highlights common themes among users' posts across place and time. This creates a second layer of place, one that highlights communities in the digital realm (Figure 73). Through similar posts, the data uncovers commonalities between station passengers, beyond being in the same location (Shinjuku Station). Here the common bond is understood

Figure 69 (previous) Replay conforms to the platform
 Figure 70 (opposite) Replay projection captured frame by frame





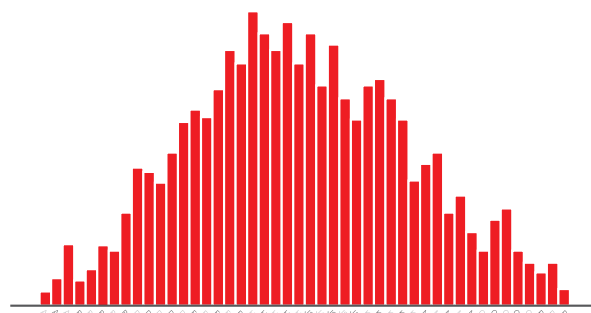
through the hashtag. Naturally, when layering the geotagged map over the hashtag map, common subjects and places begin to emerge.

The combined data, organized by day, is stacked on top of each other, representing one week of generated data (Figure 75). Social media posts made in the same location result in the formation of taller columns due to the higher frequency of posts. Common themes, or hashtags, are again connected across time. The diagram becomes an active timeline, with similar hashtag usage across time, crafting a three dimensional diagram.

The stacked posts, grouped by the same

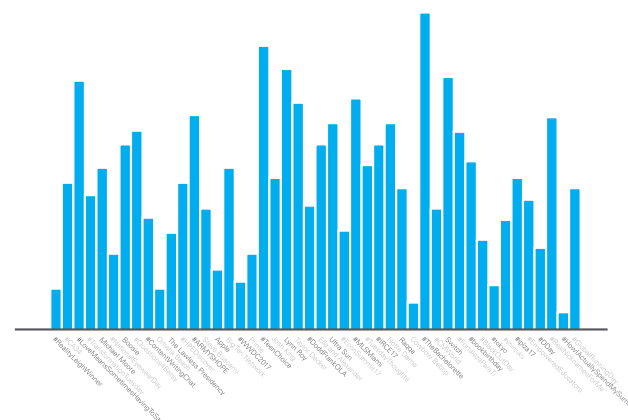
geotagged location, are then organized by location and replayed on the station platform. The third environment, organized by location and time, are then experienced in a more spatial and immersive architecture. It also highlights commonalities between digital strangers that may not have come to light in the station or physical world.

Figure 71 (previous left top) Cumulative tweets by location
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 Figure 76 (above) Geotagged tweets for one week demonstrate similar themes across space and time, which begin to form three dimensional space



Posts can also be organized graphically based on location versus hashtag. When organized by location, a clear pattern emerges that reflects areas experiencing the higher frequency of posts is in the main concourse of the station, while further passageways see less posts (Figure 77). This could be due to the fact that some of these tunnels simply connect passengers to exits rather than platforms. When organized by hashtag, the data becomes more randomly distributed (Figure 78).⁵⁸ The reason for a trending hashtag can vary based on a variety of factors, including specific events happening, well-known people, or common efforts. If organized further by time of trending, additional data could be conferred and translated. However, organizing the social media posts based on both location as well as hashtag indicates the variety of types of data that can be associated with the third environment.

Once the top ten trending hashtags are established, they can be projected or “announced” on the platform. However, the



digital aspect of the project allows for the hashtag to be scaled to fit the station, again highlighting both the third environment and the physical space of the station while also creating a temporary new space in the process. The text is abstracted and conforms to the platform surfaces, allowing passengers to understand the hashtag as both information and as spatial entity (Figure 80). Overlapping with additional hashtags, the light alters the hashtags to become more object-like than a simple word. The flickering hashtags constantly change the architecture of the space, uncovering new experiences on the platform that would only be possible through a combination of the third environment and architecture.

In addition to using the generated data to inform the projections, the train station information can

Figure 77 (top left) Station tweets organized by location
 Figure 78 (top right) Tweets organized by hashtag
 Figure 79-80 (opposite/below) Animation frames depict trending hashtags conform to platform surfaces, are distorted and create a new spatial experience of the station.





5:18 代々木上野線
5:55 代々木上野線

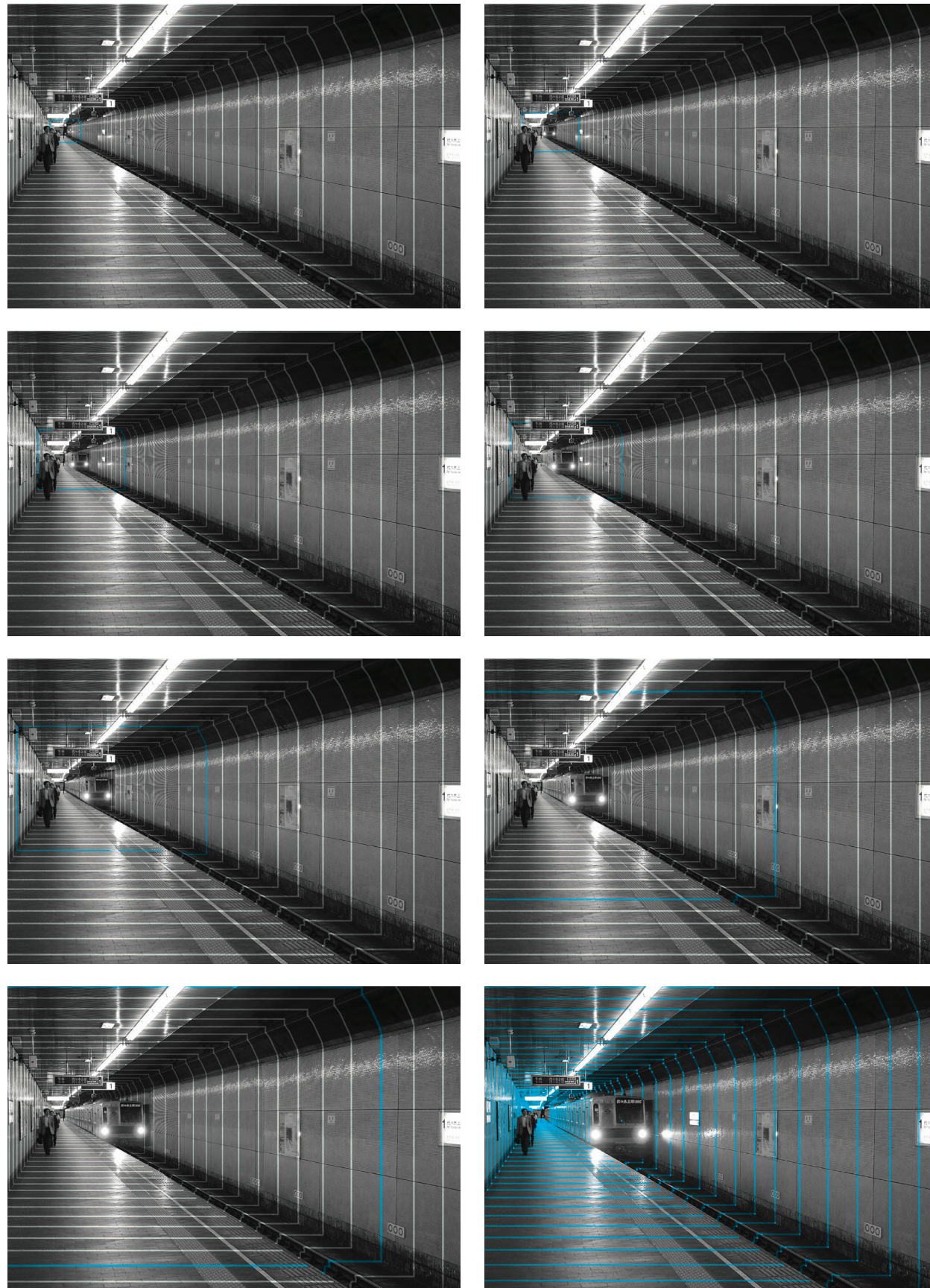
1

1 代々木上野線
for Yamanote Line

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000

000



also begin to inform the intervention. The space and projections allow for the architecture to become more responsive to the movement of the trains. In this example, train arrivals are tracked via the rings lining the station. Starting with a series of lines, which conform to the architecture of the station, the lines light up when a train approaches the platform. The movement of the lights tracks the movement of the train to become a fully synchronized event (Figure 81). The ease of the digital project also allows for slight alters to the basic design of each projection. Color can be used to signal a specific train is arriving.

The stripe design of the train arrival projection highlight the architecture of the station. Similar to the social media intervention, the projection design follows the platform surfaces, emphasizing the specific architecture of each individual platform. When the train arrives at the platform, the immediate architecture of the platform changes, as the train adds an additional number of surfaces to the platform, forcing the projections to realign with the new space. The environment changes and the projections feature that change.

Although some commonalities may be a bit banal--someone will be late for dinner--what this data also and perhaps, more importantly highlights, is that we are not alone. The more commonly used hashtags and the projections are

intended to showcase the invisible network that begins to form over time, through the continual use of the same hashtags.

Figure 81 (opposite) Frames depicting train arrival simulation
 Figure 82 (following) Blue line moves as the train arrives



5:46 代々木上原
9:55 代々木上原

1

1 代々木上原
for Yamanote Line

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META

In addition to the train schedule information, the Meta app provides passengers a way to quantify the data that is being experienced on the platform. Not only an art installation, the projected images on the platform communicate an organized version of the data collected throughout the station. The app enables passengers to further understand the third environment and how they are experiencing it (Figure 83).

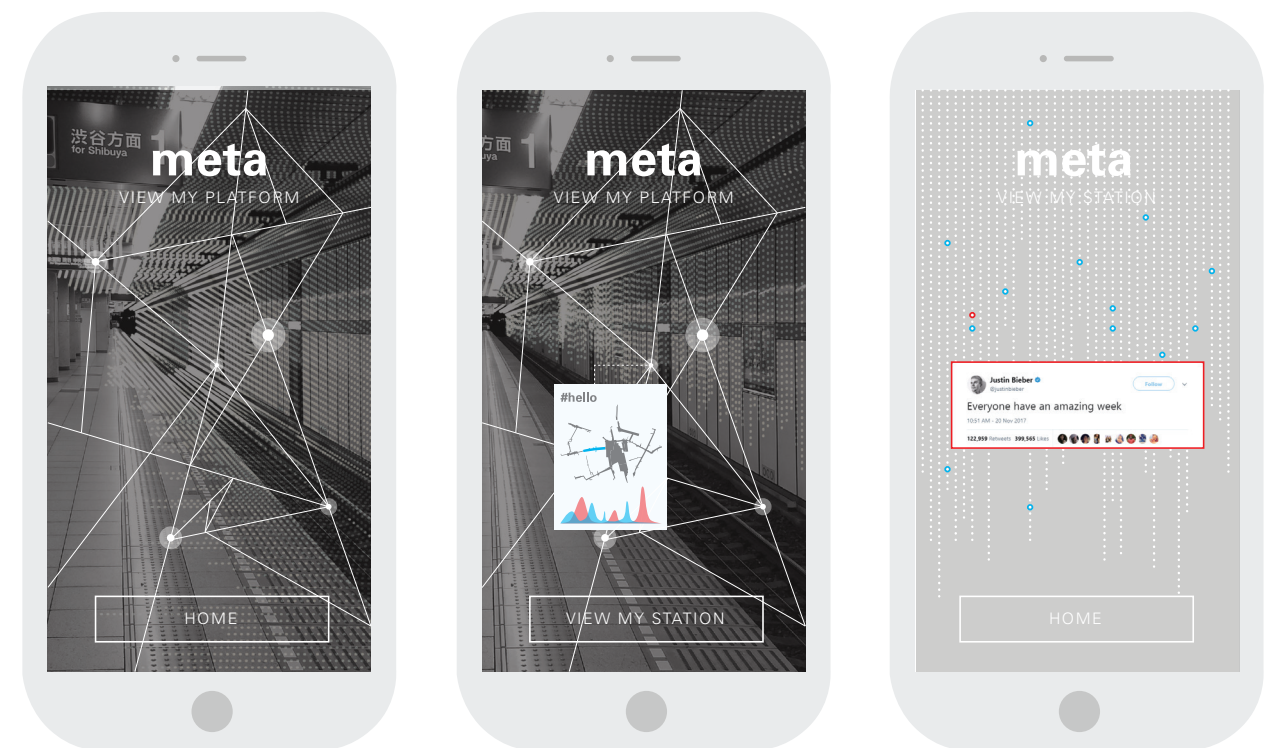
Passengers may use their smart phones, and point their cameras towards part of the projection (Figure 84). The app registers the location of the projection and information viewed. It then gives the user the option of selecting specific lines of data, referencing unique locations within the station. General statistics related to the data selected are displayed, including the location of the posts and how the hashtags of the post performed versus other trending hashtags at the time. Users are then able to go deeper into the data by

selecting individual posts and seeing that actual post and user. From there, it is up to the user to determine how to proceed. The app enables users to sync with their personal social media accounts in order to continue conversations or reach out to those who are expressing similar emotions and interests.

This app enables users to understand the third environment, first as a spatial experience and second as a larger community. Using the same data that is generated throughout the station, the app is able to translate that into useful train arrival and departure information as well as providing users a way to understand how the data has affected the architecture.

Figure 83 Meta app translates the third environment projections for the user

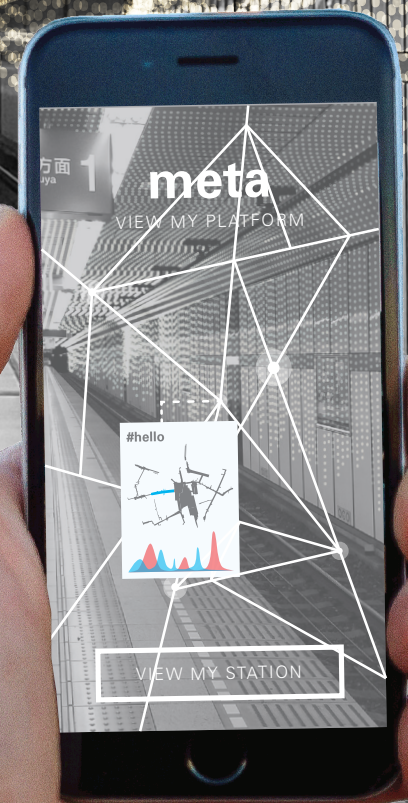
Figure 84 (following) Meta app in the platform



1st 5:14 Local DT 27 Chuo-rinkan
2nd 5:28 Local DT 27 Chuo-rinkan

渋谷方面 1
for Shibuya

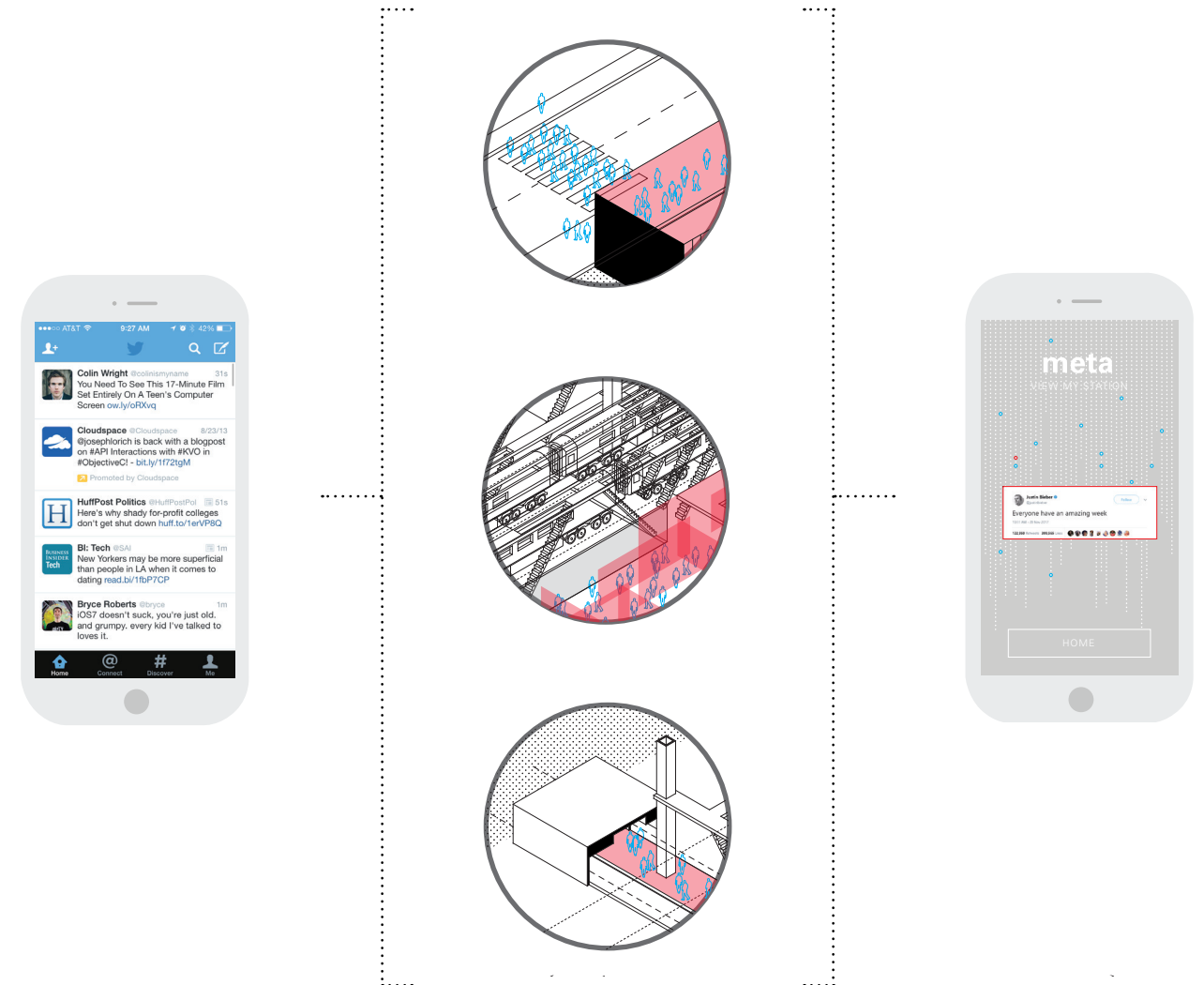
歩きは危険です

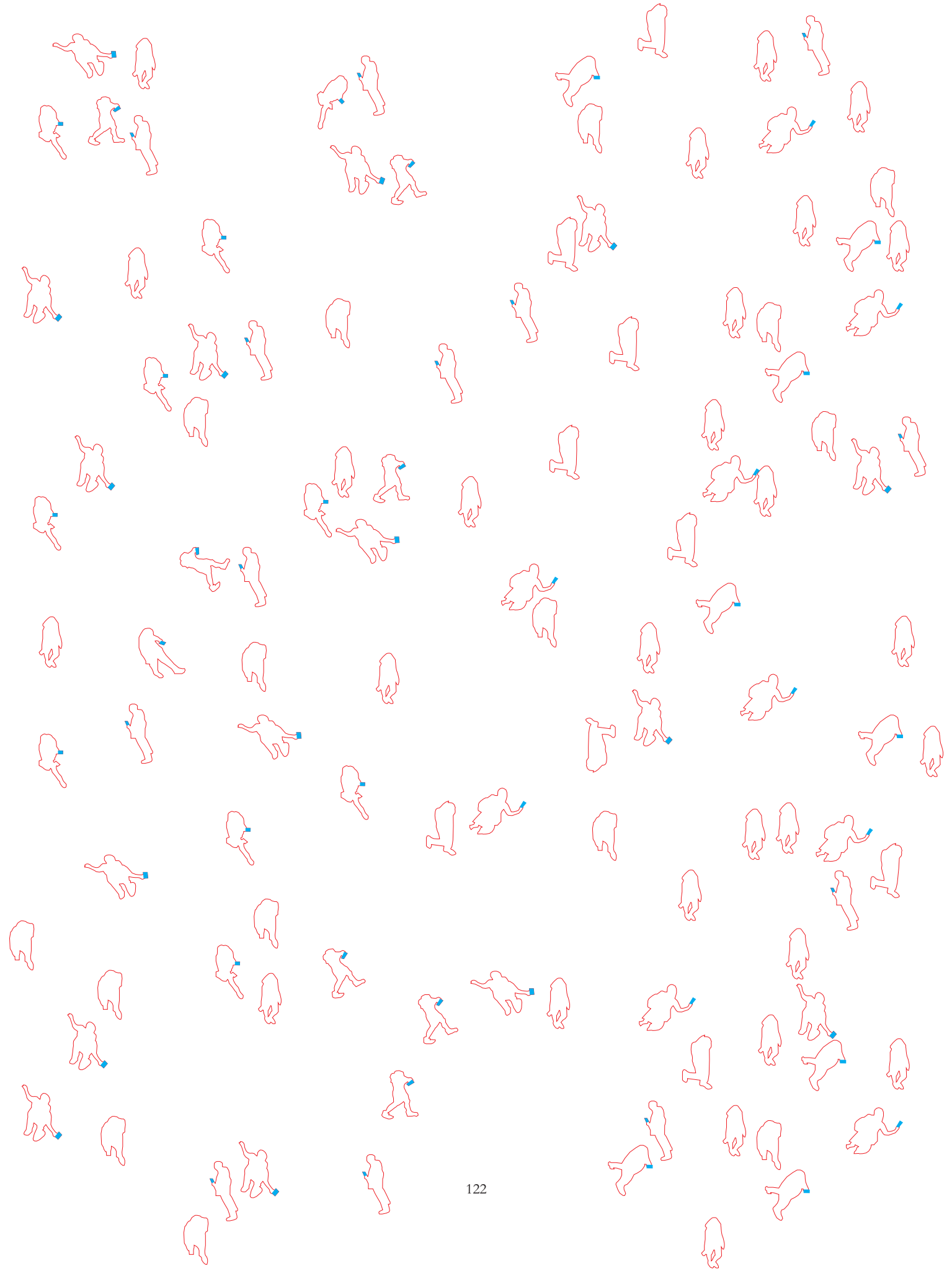


This project begins and ends with the smartphone (*Figure 85*). As the “territory machine,” the smart phone plays an integral role in the visualization of the third environment. It becomes a tool enabling the passenger to actively participate in the data and space creation.

What starts as an individual activity, posting on social media, becomes part of a larger community, spanning across time and space. The invisible communities are then visualized, first presented as a catalog of data gathered in the location specific concourse, then replayed as a spatial experience. However, in order to understand the spatial experience, users must again use their territory machines as data translators. The territory machine becomes much more than just a personal territory device, it becomes a device that is capable of processing a larger realm of data, one that is generated by space. It also allows users to create the data, alter the environment and subsequently translate the environment back to data.

Figure 85 (opposite) Cyclical process, illustrating participating via the smartphone throughout the station





hello, world

Hello, World

The initial goal for this thesis was to explore architecture as a meaningful interface of the digital realm that surrounds us. The thesis then evolved from the realization of the massive affect that social media movements can have on in the physical world. In today's rapidly changing society, technology has enabled advancements in digital communication that allow for strangers across the world to connect instantly. These invisible connections should be present in the physical realm, connecting humanity on a scale similar to that in the digital realm. Architectural interventions might transform the built environment and create a medium through which the third environment—the ubiquitous digital networks—can be manifested.

While some may say that trending social media conversations typically only revolve around banal subjects, it is important to acknowledge that large groups of people can connect through ideas without knowing each other personally. The use of architecture as an interface for the

third environment provides a larger, physical platform, for these social media messages. It creates a sense of “civic empathy,” knowing one is not alone.

The creation of the hashtag back in 2008 across social media platforms provided an easy way to view other like-minded posts. By simply selecting a hashtag, one is able to view the most recent posts related to that hashtag, as well as the most popular posts that contain that hashtag.

Perhaps the most powerful and well-known instance of movements started by a hashtag is the on-going #metoo movement. Started in 2007 by activist Tarana Burke, the #metoo hashtag was a way for women to publicly condemn sexual harassment.⁵⁹ Reignited in October 2017, the movement has inspired millions of women to post their own stories using #metoo. It has spread to over 85 countries, and has gained support, not only in the digital hemisphere but has been able to

leave impactful effects on the “real” world and might transform social conditions.⁶⁰ The hashtag provided the connection between women across the world and enabled them to feel connected through their stories. The movement has been so powerful and groundbreaking that this year's (2017) Time's Person of the Year was awarded to the Silence Breakers of the #metoo movement.⁶¹ The hashtag has created a strong movement empowered by a large (and growing) digital community.

The significance of social media could be much larger than when confined to solely the digital realm. This thesis proposes that the third environment to not only have an association with place but also provides the starting point for a physical manifestation not only of the trending topics, but of digital conversations. The architecture then becomes part of that physical association and one that can expand outward.

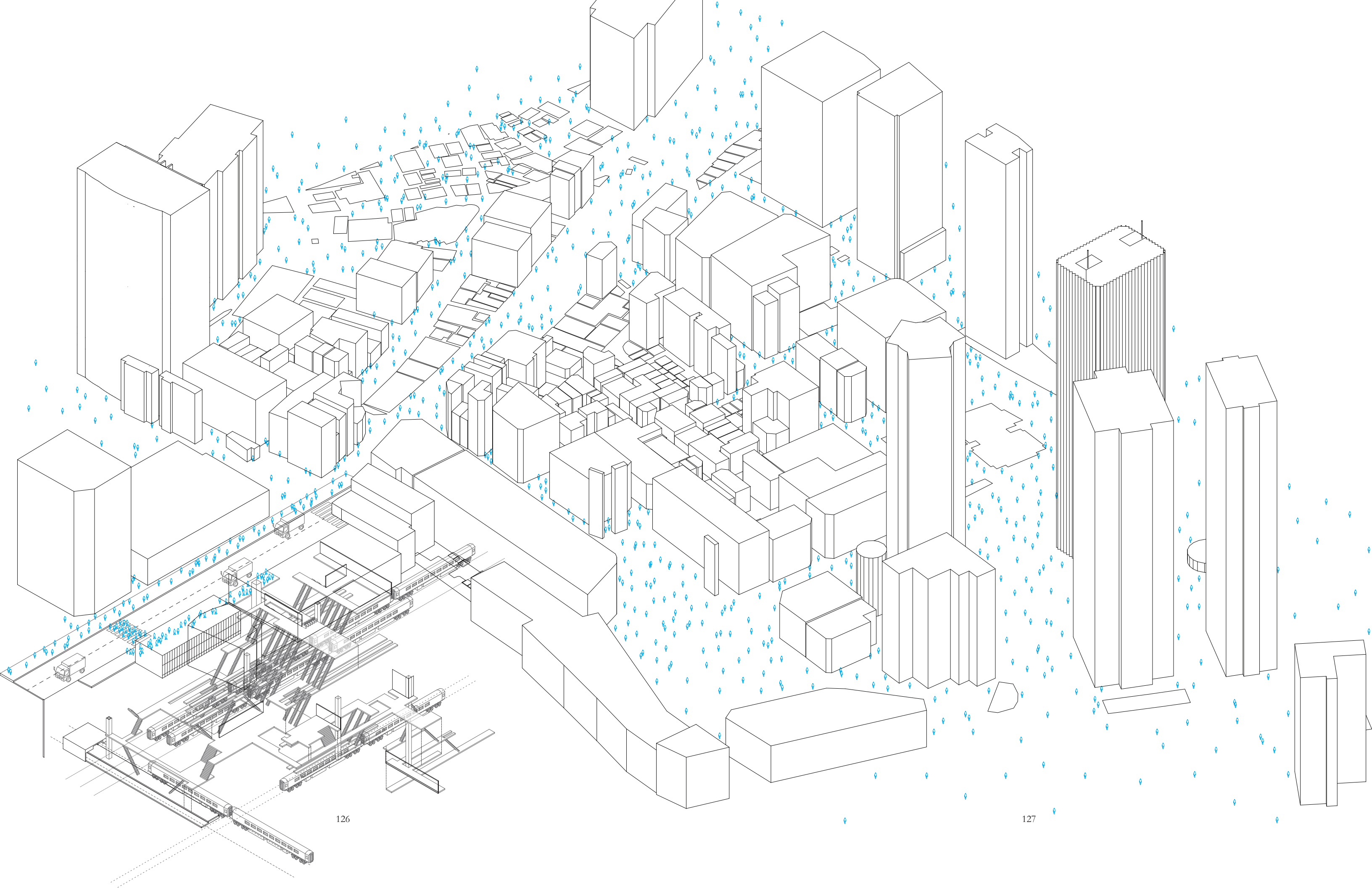
The proposed interventions in physical space itself allow for complete strangers to partake in the wider digital community and interact with like-minded people in the physical world.

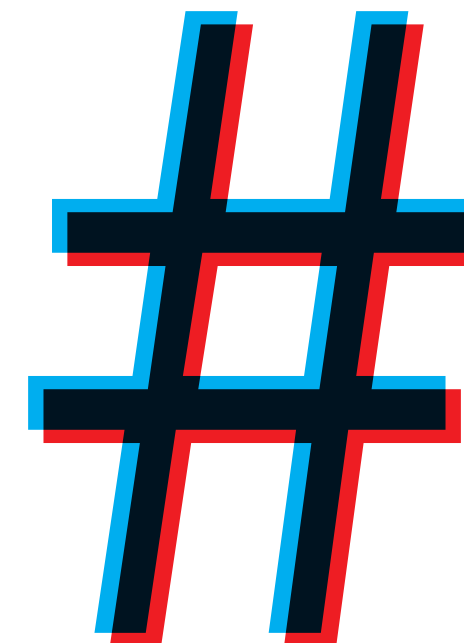
Of course, with technology changing as fast as it does, this proposal recognizes the temporality of the intervention. However, this thesis uses that to its advantage, proposing not a permanent installation but interactive projections that can be adapted as technology changes. Above all,

this thesis intends to be a conversation start that proposes ideas which will continue to expand and evolve into the urban landscape.

This thesis does not call for people to stop looking at their phones, but rather poses the question as to how architecture can help individuals to actualize their digital selves in the physical world. Not only is architecture what differentiates man from nature, it could be what brings mankind and the third environment together.

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