

# When Networks Collapse, Gaps Take Over

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## **Abstract**

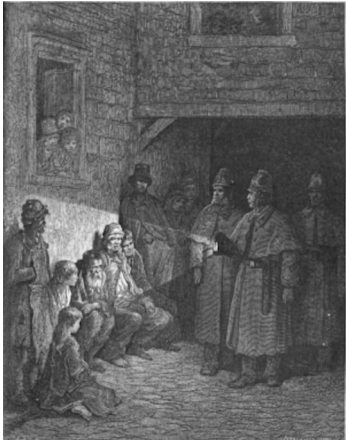
The paper examines the social potentials of network gaps and failures. Starting with the emergence of public lighting infrastructure in early modern London, to the recent Hurricane Sandy case in New York, and finally to a network gap revealed in Cambridge, MA, the paper speculates about the perspectives of public space related to a network collapse rather than fully functional networking systems. Intertwining a historical research with a digital modeling and fabrication, the paper finally proposes an object as a tangible manifestation of the main hypothesis.

## **Author Keywords**

public sphere, locative media, wireless network, data visualization

## **London: From Public Light to Public Wi-Fi**

Among many innovations that early 19<sup>th</sup> century brought to public life, introduction of urban lighting played an especially important role. The city of London was first to change its suspicious and sometimes even dangerous noir ambience. Modern streetlights attracted people, provoked social gatherings and new dialogs. Many used this bright new opportunity to read and discuss news that just got out of the press. Artificial extension of daylight rendered new urban rituals, new modes of communication and significantly reconfigured the sense of publicness.



**Figure 1.** The invisibility of the poor. Gustav Doré, London, 1972.

The infrastructural advancement followed the evolution of public media and the formation of modern public sphere, which was the focal point of a seminal study made by German sociologist and philosopher Jürgen Habermas. In his work, Habermas described historical transition from representational society to participative society engaged in public discourse mainly through public media. Yet, many critics of his work argue that he focused the development of public discourse to *bourgeois* society only, leaving the real political complexity of public sphere out of his reach, somewhere on the tense border between the literate, prominent bourgeois, and illiterate, working class and the poor. In other words, the sense of habermasian public sphere could be situated under the “public light” where ideas are visible, easily shared, discussed and further advanced. But what happens in the urban darkness remains unknown. We do not know it simply because we are unable to see it. The urban darkens cannot produce any visual traces, it is often a refuge of the Other, the subject of prejudice, social injustice and consequently space from which resistance emerge. We realize it only after it aggressively hits the border of light and breaks into the zone of collective visibility.

As the modern infrastructural networks adopted more complex forms, necessity for their visual representation and understanding became more urgent. The urban visibility thus gradually transgressed into the urban data visualization. Proliferation of urban visuals furthermore accelerated the production of data environments along the spiral curve, which in the end brought the habermasian concept of public sphere to another level. To be more illustrative, the early 19<sup>th</sup> century privilege of reading and discussing newspapers in public space and during the night hours became the

ability of generating and sharing news through the public space itself. A Wi-Fi network as an “updated version” of a basic public lighting turned a specific location into a locative media.

If the early modern London has marked the main starting point of this socio-technological curve, New York City is undoubtedly one of its contemporary peaks. Outrageous production of real-time data on the top of the historic urban raster, depicts many dominant urban and technological trends of our era. In the mass pursue for “architecture of well tempered environment”, multiplication of urban meta-geographies creates the data congestion within our personal and public realms. At the same time, this immersive condition points our attention even more to the empirical seduction of the urban systems that seem to be smarter than us. A tangible location loses ground during the endless and unstable process of locating. Social codes emerged out of the habermasian notion of public sphere migrate between the lines of the latest programming code. The city evolves into a robust and seemingly flawless system able to fix any failure that appears within it.

Nonetheless, the contemporary visual understanding of the public data environments reveals only what is within the reach of wireless signals. Existing infrastructure still defines the visible zones. Regardless of many new possibilities for global collaboration and mutual social action through technology, the major hype around the contemporary public sphere still did not leave the old habermasian concept. What is outside the network simply does not exist.

### The Romanticism

Romanticism in some cases evolved into a romance. Nine months after the storm, global media reported about the baby boom along the entire US East Coast, especially in New York City.

### New York: When Networks Collapse, Gaps Take Over

After it severely damaged east coast of the United States, on the late afternoon of 29<sup>th</sup> October 2012, hurricane Sandy finally hit New York. The subway system was flooded along with most of the road tunnels entering Manhattan. At least 53 people died and around 2 million people lost electricity. All urban networks including phone and Internet collapsed, major blackout took over a half of Manhattan in just a matter of seconds.

Immersed in the total information darkness, immediately after the storm the city started to re-plug its own capacities. Neighbors with broken surveillance systems organized guarding shifts in their apartment buildings, people initiated car-sharing groups in order to get in and out of Manhattan, many pedestrians relied on their existing mental maps of the city, while the other entered the newly formed groups that collectively moved through the dark. Romanticism of pre-modern era has unexpectedly popped-out of the fallen giant. The mayor data gap appeared in the center of the progressive urban system, transformed everyday social interactions, produced an entirely new urban geography and rendered an operable urban alternative.

Even though the early modern infrastructures gave an important new context for exploring and extending the possibilities of public communication, a specific urban location and public media were still two separated entities. Ubiquitous computing and an overall "smartification" of the urban environment fused those two into a new form of locative media. What remains of it after the major urban infrastructures collapse? The New York case showed that in this condition

locative media dissolves, leaving a specific location to be socially reinvented beyond any existing networks. When all networks collapse, data gaps take over, setting up their own rules and propelling their own social dynamics.

Trans-historical nature of these gaps can take us back to murky streets of pre-modern era, but it can also lead to unpredictable urban futures with parallel utopian and dystopian potentials.



**Figure 2.** Locations of geo-tagged tweets in Manhattan on October 29<sup>th</sup> (blue) and October 30<sup>th</sup> (yellow), showing otherwise-active areas that lost power or suffered other damage because of Hurricane Sandy. Visualization: Eric Fisher, 2012. Basemap: stamendesign.com

### The Dome

The Felton St. data gap reflects an iconic rendering of a dome over Manhattan by Buckminster Fuller and Shoji Sadao (1960). Their proposal was a circular tensegrity structure over 3 km high, that would cover over 50 blocks of Manhattan and partly disengage an entire city from its surroundings. Fuller stated: 'From the inside, there will be an uninterrupted contact with the exterior world. The sun and moon will shine in the landscape, and the sky will be completely visible, but the unpleasant effects of climate, heat, dust, bugs, glare, etc. will be modulated by the skin'.

Interestingly, this utopic project covers about the same surface of Manhattan that has been cut out during the Sandy storm.

### Cambridge: Reveling the Gap

With a vibrant start-up community, Harvard University on one side and Massachusetts Institute of Technology on the other, the city of Cambridge, MA is an urban environment that continuously challenges the boundaries of interaction with and within our technological spheres. However, even in a surrounding like this, there is a site that can take us far away from any contemporary technological trend. In Felton Street situated between Harvard and MIT, all wireless signals disappear for unknown reasons. Entering the street turns smart devices into obsolete artifacts. The data gap opened in the very heart of the advanced system, blends pre-modern urban condition with some of the burning questions about our urban future.

Is it really possible to step into an island of isolation without radical dislocation from our everyday environment? Where is the threshold between anxiety of isolation and romanticism of solitude? Are we allowed to keep anonymity inside the system frantically obsessed with generating, connecting and tracking our profiles? Finally, how can we design with and within these data gaps, while having in mind general tendency to fix and fill any gap that appears in the system?

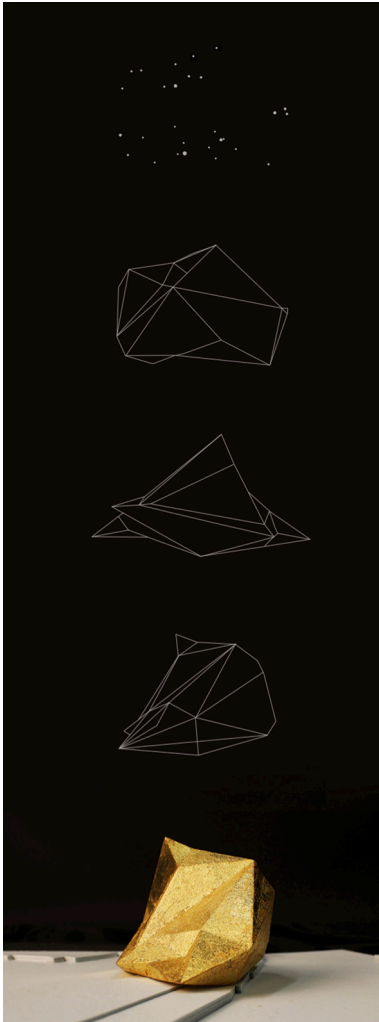
Regardless of our pursuit for efficient and sustainable cities, new data cracks will keep opening. The New York blackout showed that "architecture of well tempered environment" obviously outgrows our current understanding of the cities. Our approach to the urban space as an environmental dataset that can be mapped, measured and responsively visualized in real-time, does not correspond with an uncanny nature of these gaps. Therefore, we either deal with them on the

most functional way – by treating them as errors that need to be fixed; or we deny their existence, keeping them as murky, mythic spaces outside the personal comfort zone and beyond our usual urban trajectories.

The Felton Street data gap is a counter-networking artifact shaped exactly by the complex socio-technological realities of our time. It is a site of speculative post-technological futures that primarily operate with the social and political dimensions of space, disturbing and questioning the lines that divide habermasian notion of private and public spheres.



**Figure 3.** Drawing: The Dome, Buckminster Fuller, Shoji Sadao, 1960.  
Basemap: stamendesign.com



**Figure 4.** Modeling the Gap, 2011

### **Fabricating the Theoretical Object**

The “Felton Street Gap” project seeks to digitally scan, model and fabricate the invisible space where all wireless signals cease to exist. It uses iPhone as a basic wireless signal sensor to mark the silent-spots. Every time when signal disappears, iPhone flashlight turns on, marking a specific silent-spot. Each of these spots was photographed from the same position and the photos were later mashed in a single composite image which visualizes a simple point-cloud object? of the site-specific data gap. The position of the each point was digitalized and turned into a triangulated 3D model. The model reveals the shape of data gap floating in the digitally thick urban environment.

The gap is an opportunity for conscious disconnection from the world of total connectedness. At the same time real and imaginary, it is a space of disappearance that induces transition from our profile back to our body, from the logic of controlled contacts to uncertainty of physical touch. Navigation within this space reduces the ephemerality of the locative media to the physicality of the specific location. Digital forms of “climate, heat, dust, bugs and glare” which pollute our personal hyper-space, stay outside the invisible skin of the gap. Its interior is a space of solitude and intimacy, but opened to all at any time. This “public-private” tension preserves the uncanny nature of the space adding a bold political charge to its romanticist passivity. In other words, anonymity and invisibility inside the gap transform nothingness into an active space where solitude becomes empowered to resist the outside conditions. This kind of data-resilient bubble has potential of rendering an entirely new public space

beyond pre-existing social codes and dominant public discourses.

Printing the gap model in 3 dimensions as the final stage of its fabrication, transforms the invisible and unbounded space of freedom into another tangible object. When the gap adopts architectural tectonics, freedom and openness vanish in the name of social prestige and reborn hyper-visibility. The new object becomes a part of all those networks from which it tried to escape at the first place. The uncanny space turns into a fully graspable object of desire. Is there anything more exclusive than the vacancy where one can hide from the hectic of its own world in just few steps? When emptiness becomes architecture, public becomes private and nothingness turns into gold. The empty space is finally filled.

The 3D modeling became a theoretical operation that translated the Felton St. Gap from a relic of utopian future into a piece of trans-historical dystopia. Our current urban condition is thus not positioned between the concepts of wasteful, “dumb” cities and sustainable, “smart” cities. Responsive networks we build on the top of the urban territories bound and direct rational thinking about the complex world we live in. But just as any other, urban networks are constructed out of nodes and in-between gaps. While the nodes tend to embody and visualize the logic of our reality, the gaps stay outside our rational scope. When all “reality networks” fall down, we will be left only with knowledge and humanism stored in these unreal, empty gaps. We better keep their “un-reality” safe and vital, for “reality is a nice place to visit, but no one ever lives there.”



**Figure 5.** Scanning the Gap, Felton St. Cambridge, MA. 2011

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