Control Structures and Volatility Engines: Dialectic Design Agents for Glocal Public Space

Information technologies and telecommunications networks are substantial drivers of globalization: time and space are both infinitesimally reduced as the world is compressed to right-here, right-now. Manuel Castells introduced the terms “Space(s) of Flows” and “Timeless Time” to describe this phenomenon in 1989, in opposition to the status quo of “Space(s) of Places” and “Real World Time.”[1] Under Castells’ paradigm one can imagine a world rendered scale-less both spatially and temporally, but this scalelessness extends both ways: “Timeless Time” indicates not only instantaneity, but also perpetuity, and as connections are made at a global scale they may be lost at a local scale (as evidenced by the social obliviousness of smartphone users in close proximity to each other). This is less a removal of barriers than a frenetic relocation; what is lost (or gained) in the shuffle, and how can designers work productively in the space and time of that shuffle to create public space that responds to the demands of contemporary society?

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In the years since Castells described the Space of Flows, the concept of “glocalization”—in which competing processes of globalization and localization shape environment and society—has gained prominence. Sociologist Roland Robertson characterized glocalization as “the simultaneity—the co-presence—of both universalizing and particularizing tendencies.”[2] Robertson’s description is notable in that it proposes glocalization as a work-in-progress: a juxtaposition of top-down and bottom-up forces that constantly makes connections across global and local scales, while maintaining a contrast between them. Whereas Castells’ Space of Flows is scale-less and time-less, glocalization points towards a “Place of Flows” that is multi-scalar and multi-synchronous. This may suggest a productive model for contemporary public space: a dynamic negotiation between material and immaterial pressures, played out simultaneously across a range of scales, that reveals the linkages between the individual and the collective.

This paper examines two proposals for a recent design competition in order to identify strategies for understanding and shaping public space in a

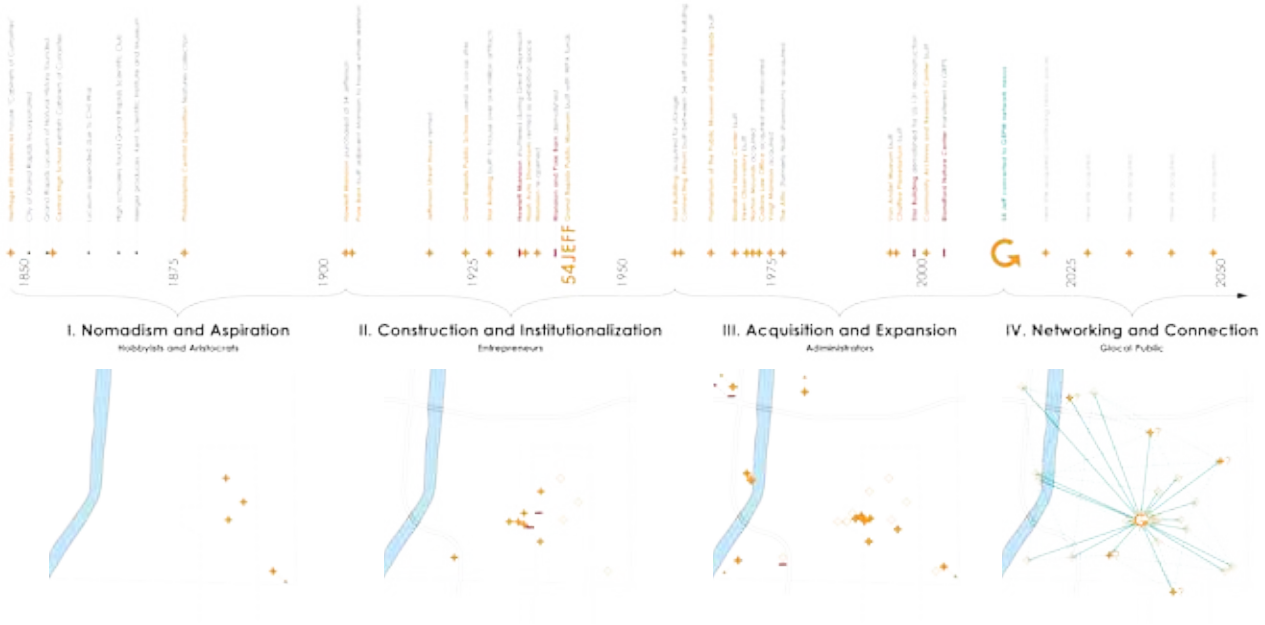
glocal context.[3] In doing so, two types of design agents—*Control Structures* and *Volatility Engines*—are proposed as a dialectic tool for addressing the contradictory demands of the glocal city, and designing for a Place of Flows. Control Structures are entities that purposefully harness, manage, or re-order flows; Volatility Engines are entities that unpredictably disrupt or redirect flows. Both these entities, and the network of flows in which they are positioned, may be either material or immaterial. These dialectics of control/volatility and material/immaterial create a dynamic feedback loop that can create meaningful connections between global and local notions of space.

PROMPT: REEVALUATING PUBLIC SPACE

The competition centered on an existing building known as *54 Jefferson*, which formerly housed the Grand Rapids Public Museum (GRPM) in downtown Grand Rapids, Michigan. Constructed in 1938 as one of the last WPA-funded projects under the New Deal, the building represented a golden age of urban public space: the iconic art-deco structure was open and free to the public, and generations of schoolchildren came to see its exhibits, which emphasized natural history but also featured a wide range of artifacts from Grand Rapids' history. The building was vacated in 1994 when its collection was relocated to another of GRPM's many properties; it is currently owned by the city, with the GRPM acting as its steward. Today the building embodies the dilemma of how to handle the physical and cultural remnants of public institutions at a time when their civic role and relevance are in question, challenged by the simultaneous emergence of virtual institutions and disappearance of federal funding. Competition entrants were asked to consider new uses and spaces for the building that would re-engage both the public, and public space. Each of the proposals for 54 Jefferson described below took a different approach to multi-scalar systems, material and immaterial flows, and control and volatility to re-envision the role of this building in a glocal context.

PROPOSAL 1: GLOCALIZED DATA

The first proposal used an analysis of the GRPM's broader institutional history, which pre-dates 54 Jefferson by almost 90 years, to clarify the relation between the building and its parent institution. For 160 years and counting, the GRPM has steadily accumulated artifacts with great enthusiasm, and without much curatorial focus: well over a million artifacts range from the historical to the contemporary; from art to technology to natural history; from the local to the regional to the national; from the significant to the questionable. To keep pace with this burgeoning collection, the institution has maintained another growing collection: a multitude of sites to store and display these artifacts, extending well beyond city limits (Figure 1). Similar to its collection of artifacts, the only thing linking these sites is that they belong to the GRPM (though many citizens don't know that these sites exist, or belong to the GRPM). At the heart of this problem lies the institution's struggle to balance spaces of storage and spaces of display—storage has historically consumed as much or more of its resources than display, and GRPM continually invests land, buildings, staff, and energy in something it doesn't want the public to see. This proposal declared the sum of these artifacts and sites to be less than their parts—a collection of collections without an identity, purpose, or audience.



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Instead of attempting to consolidate these collections, the proposal embraced them as a heterogenous ecosystem in need of networking and accessibility. The existing building was proposed as a hybrid storage/display facility that could not only handle the sheer volume of GRPM's artifacts, but could take advantage of that density to create a new form of exhibition: warehouse and lobby in one. Furthermore, this facility would serve as a physical and virtual gateway to the institution's collections of collections, allowing visitors to get a sense of GRPM's mission, and pointing them towards other sites of interest.

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To accomplish the dual goals of storage and display, all existing partitions would be removed from 54 Jefferson, and replaced with a network of suspended tracks supporting mobile vitrines containing the GRPM's collection. These vitrines would serve as modern day "cabinets of curiosities," in which seemingly discordant artifacts were arranged and rearranged following changing systems of categorization. The movement of these vitrines would be directed by an algorithm fed by a multi-platform search engine: museum visitors as well as those searching the collection over the web would collectively compile trending themes and related searches, not unlike the recommendation algorithm used by Amazon and Netflix. The curation of the collection is crowd-sourced from a network of users, rather than by museum administrators (Figure 2).

Figure 1: Timeline of GRPM development

Figure 2: Curation algorithm diagram

While the algorithm works imperceptibly fast to order and direct the search results, the vitrines themselves move almost imperceptibly slowly and deliberately, creating a subtly shifting field of light. The lag between the speed of data and the slowness of material, coupled with the variety of different visitors' searches, creates a disjunct for those entering the curated hall of light, where they would encounter curious juxtapositions that could spark new interpretations of interconnectedness across time, geography, and discipline (Figure 3). At the same time, RFID tags on each vitrine referenced the spatial configuration of artifacts back to a real-time map of GRPM's collection, providing a cloud-like visualization of curatory juxtapositions online.

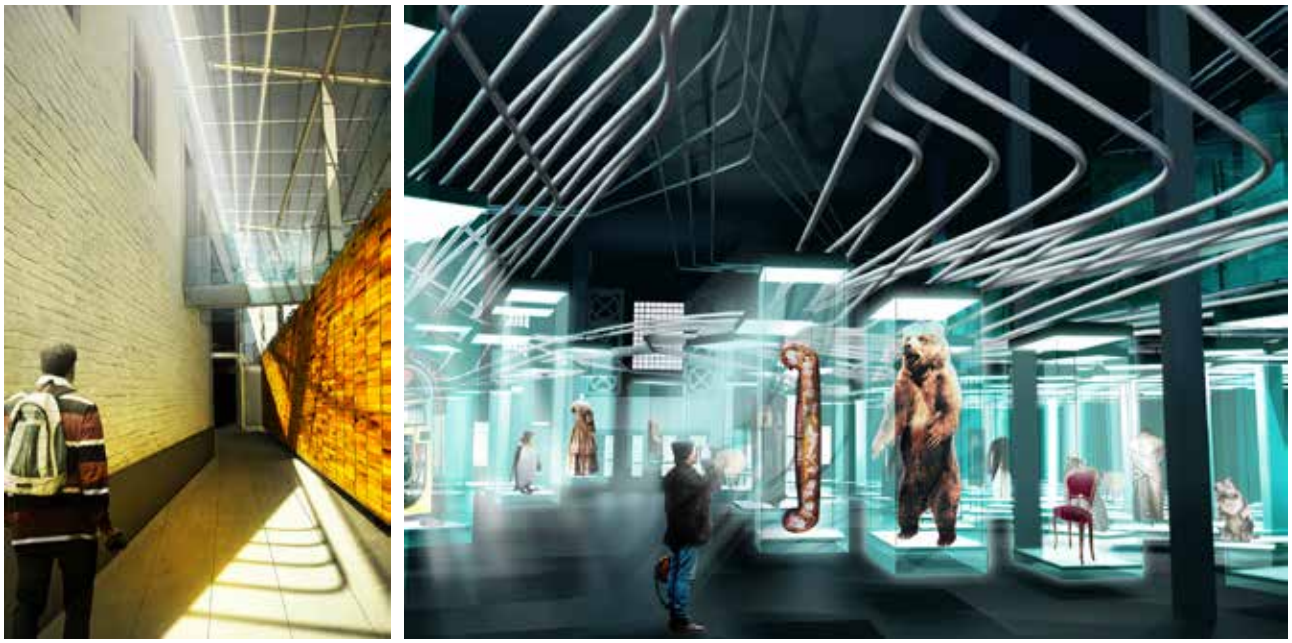

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Figure 3: Entry Sequence into Great Hall

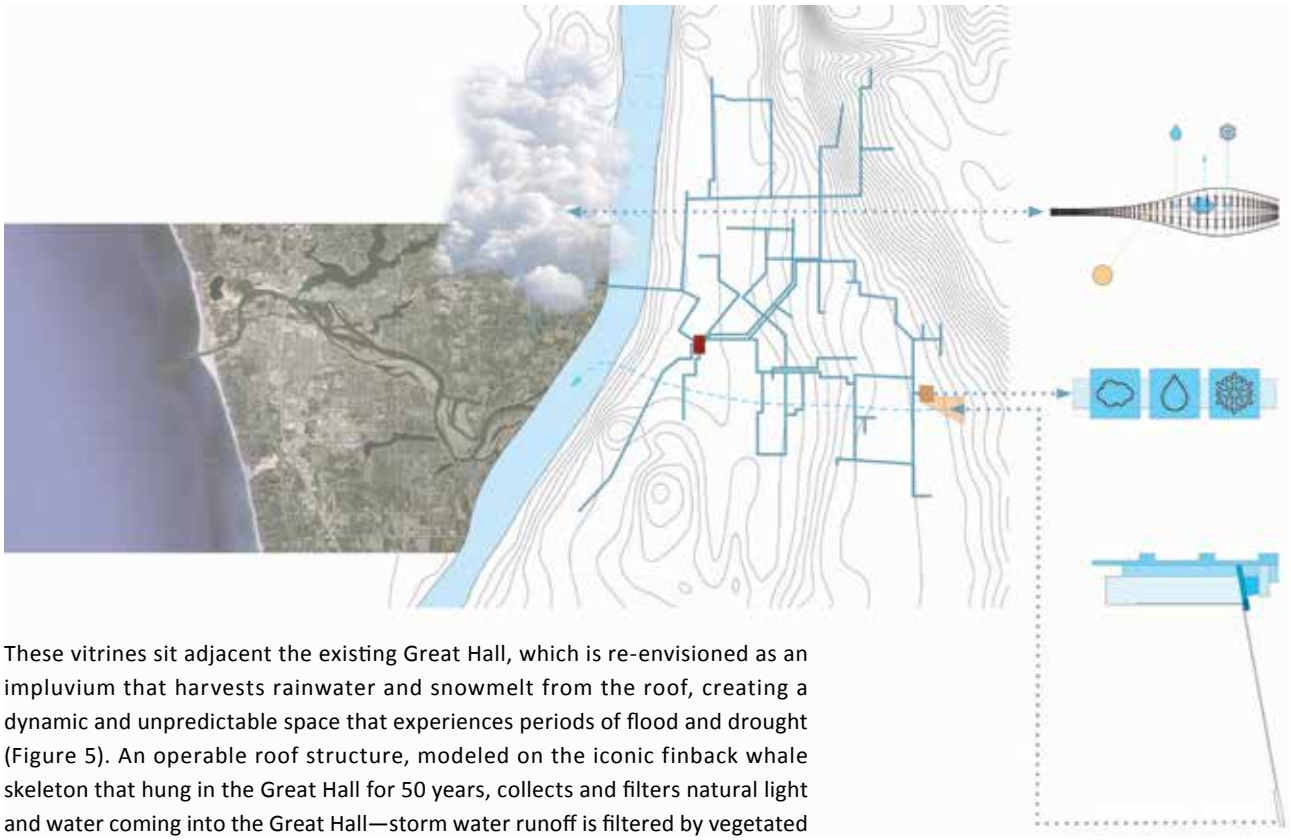
In this proposal, the curation algorithm could be viewed as a virtual Control Structure, gathering data from local and global visitors and translating it to a spatial configuration of artifacts, experienced both in-person and remotely. The simultaneous input of many GRPM visitors serve as a Volatility Engine that overwhelms and disrupts the neatness of this process of translation, resulting in a space constantly in flux as it seeks to make unforeseen connections.

PROPOSAL 2: GLOCALIZED WATER

The second proposal focused on Grand Rapids' primary resource: water. Like many cities founded along a river, the history and future of Grand Rapids can be told entirely through the central role of water in infrastructure, industry, public health, art and recreation. Water's necessity and ubiquity render it nearly invisible, and it is often taken for granted in a water-rich region. Grand Rapids is situated within a number of natural and man-made hydrological systems, including an underground steam network that has served the majority of the city since 1888, and currently serves 54 Jefferson (Figure 4). Approximately seven miles of pipe provide steam used for heating, humidification, domestic hot water, snow melt, and cooling (with the aid of steam absorption chillers). This proposal provided a place to rediscover the story of Grand Rapids through the lens of water, and to understand it in regional and global contexts. It proposed an institution for the hands-on research, education and overall enjoyment of water

in all its physical states: resident artists, scientists and the public could explore linkages between geology, meteorology, biology, chemistry, art, history, and daily life, using water as a common medium.

The proposal centers upon two contrasting experiences of water and weather, one very controlled and the other in a constant state of flux. The first of these is a series of three inhabitable vitrines in which H_2O is experienced as solid, liquid, and vapor, respectively; steam supplied by the city steam heat network is run through a microcosmic hydrological cycle on full display to visitors. Each of these vitrines exists in a state of suspended animation foreign to Michigan's constantly changing seasons, providing opportunities for asynchronous weather: while an inhabitable snow globe would be unremarkable in January, it may be in high demand during a heat wave in July.



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These vitrines sit adjacent the existing Great Hall, which is re-envisioned as an impluvium that harvests rainwater and snowmelt from the roof, creating a dynamic and unpredictable space that experiences periods of flood and drought (Figure 5). An operable roof structure, modeled on the iconic finback whale skeleton that hung in the Great Hall for 50 years, collects and filters natural light and water coming into the Great Hall—storm water runoff is filtered by vegetated bioswales on the roof. The roof structure also vents steam and heat from the Great Hall, allowing it to operate in tandem with the vitrines as a climate control device. In periods of heavy rainfall or snowmelt, the ribs may be periodically opened or closed, building anticipation of a precipitation event. Small changes in floor elevation create a series of flood plains in the Great Hall, which collect and store water from the vitrines and the roof structure. The incremental stepping of these flood plains visually amplifies the effects of drought or flooding over time. When the ground plane reaches its capacity, water travels down a small filtering channel into the landscape, where it may slowly percolate back into the ground.

Narratives of the history and future of water are subtly woven into this experience throughout the building and landscape. The story of Grand Rapids and the Great Lakes region is distributed throughout the building and landscape as a series of engraved surfaces: flooring, benches, walls, guardrails, and the back

Figure 4: Hydrological systems map

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sides of vitrines. Content is located based on the degree of human intervention: as visitors move from landscape to building, they progressively see how water is harnessed, resisted, abused, and celebrated in industry and culture. In the face of global hydrological challenges such as climate change, catastrophic weather events, rising sea levels, and alternating flood and drought conditions, this proposal provides an experiential link between local, regional and global systems, in the past, present and future.

In this proposal, the water vitrines, the operable roof structure, and the constructed flood plains act as Control Structures in varying degrees; when

Figure 5: Seasonal shifts in Great Hall impluvium

the water source is stable (steam heat infrastructure), it is persistently forced through a series of phase changes to create a fairly scripted sequence of experiences. When the water source is more volatile (weather events), it exposes the constancy of these spaces, and triggers more responsive Control Structures to create spaces that are both wild and habitable.

CONCLUSION: STRATEGIES FOR MANAGING FLOW (OR, NOT)

In both the proposals described above, an extensive system that is largely hidden—whether composed of data or water—is momentarily laid bare at a human scale. The goal of these proposals was to carefully reveal and frame that process to create an experience that connects local and global actions and consequences. In the data-centric proposal, those processes revolve around a rapidly changing user network, and a more slowly evolving institutional network; in the water-centric proposal, those processes are both natural and manmade.

Castells asserted that "The global city is not a place, but a process," but the glocal city is dependent on both: processes need to observed, accessed and managed from places that ground them in the messiness and unpredictability of the physical world.[4] Designing physical or virtual structures that control these processes is a comforting and profitable endeavor, but a fully-resolved system is static and unresponsive. Embracing unpredictability in the design process requires giving up a degree of control, and in turn, a degree of authorship. For over a decade, social media sites of "Web 2.0" have served as a prime example of this redistribution of authorship, describing themselves as "platforms" that allow for constant content generation by a vast network of authors, and the steady stream of weird surprises for which the web is known.[5] However, these platforms are structured and regulated to make that network accessible and personal.

The combination of Control Structures and Volatility Engines create an experience that simultaneously seeks to make sense of the world, and to create unexpected moments of personal delight and discovery. Our local actions have global repercussions, whether we see them or not—part of an architecture of flows is to make that transaction evident. Flow is only evident if we see it in a broader context than our immediate field of vision. Sometimes technology actually enables action across incredible distances, but equally important is how technology expands our field of vision—we understand the impacts of our actions, and also experience the impacts of others'. It is important both to control the flow, and occasionally to ride the wave.

ENDNOTES

1. Castells, Manuel. *The Informational City: Information Technology, Economic Restructuring, and the Urban Regional Process.* Oxford: Blackwell, 1989.
2. Robertson, Roland. Conference on "Globalization and Indigenous Culture," 1997.
3. Both competition proposals were prepared by the author, with assistance from Cal Poly second year architecture students. Mariana Diaz and My-Linh Pham served as research assistants for the "Data" scheme; Matt Catrow served as research assistant for the "Water" scheme.
4. Castells, Manuel. *The Rise of the Network Society.* Oxford: Blackwell, 1996.
5. The term "Web 2.0" was coined by Darcy DiNucci in her 2009 essay "Fragmented Future" in *Print 53*; it gained widespread use after Timothy O'Reilly organized the Web 2.0 Conference in San Francisco in 2004.