Re-Centering the Periphery

Geoffrey Thun, Kathy Velkov, Colin Ripley | RVTR

What has traditionally been defined within urban discourse as ‘the periphery’ has in fact become the dominant urban formation of North America’s emerging megaregions. These unstable, thinly urbanized territories are shaped by the contingent and ad-hoc forces of mobile capital, market economies, services, logistics, information, infrastructures, energy distribution networks, and aberrant ecologies. How might designers begin to apprehend the scale and complexity of relations within this field and project new formats of intervention? RVTR examines situations within the Great Lakes Megaregion and proposes a series of fittings intended to retool the larger ecologies at work. The Detroit Windsor Corridor, an emblem of rust-belt shrinking cities, is recast as a strategic and pivotal point of inflection within megaregional systems.

“The prediction that ninety percent of the world’s population will be living in cities by 2050 is by now a familiar trope among architects, urbanists, planners, environmentalists, and sociologists alike. Whether concerned with the development of more sustainable and energy-effective urban footprints or more socially-just heterogeneous enclaves, the image of the city that accompanies related conceptions of future urban possibilities is usually based upon images of hyper-dense variations on existing central cities; the future earth portrayed as a globe comprised of megacities resembling versions of Tokyo, New York, or Hong Kong, each replete with a legible and memorable urban image and center. However, the pattern of urbanization that has in reality been proliferating is somewhat different. Major urban centers are indeed densifying and expanding, but vast territories between and adjacent to these centers are also being urbanized, creating multicentered continuous agglomerations of built form. This urban formation was first identified by French geographer Jean Gottman in his 1961 book Megalopolis, and is now more commonly referred to as the ‘Megaregion’: Tokaido, the Flemish Diamond, the Blue Banana, Sechon, BTT, Eurocore, Ganges Delta, BosWash. The physical reality of the megaregion dissolves the traditional relationship of center to periphery; metropolitan boundaries become increasingly fuzzy and what manifests instead is a territory of variably constructed densities and intensities of activity, shaped primarily by the ad-hoc forces of mobile capital, entrepreneurial economics, market development, services, logistics, information, and management (environmental and otherwise). Politics and governance become increasingly complicated as human, infrastructural, and economic networks defy and rewrite jurisdictional boundaries.

In North America, this urban formation is specifically characterized by the highly distributed network of highways and the diffuse low-density postwar urbanism – a result of the economic, political and social instrumentality of the subdivision and planned distribution policies related to national defense. Denigrated as ‘sprawl’ this is in fact where the majority of the urban population in North America lives and the primary landscape of their experience.

What’s important to realize is that this is the legacy of built form that any future manifestation of the city must build upon. The reality of urban structures and infrastructures is that they have incredible inertia built into their form; we continue to live in urban patterns and formations constructed by societies hundreds of years ago – and in some cases thousands. The objects, structures, and property divisions of our current urbanism, though they may have been hastily constructed, constitute the patterns and characteristics that will now form the basis for future urban development.

Of the emerging North American megaregions, the Great Lakes Megaregion (GLM) is the most populous, and also the most geographically vast. It spans the national boundaries of the US and Canada and includes the cities of Chicago, Detroit, Toronto, Montreal, Buffalo, Toledo, Pittsburgh, Cincinnati, Milwaukee, Columbus, Indianapolis and St. Louis, as well as adjacent territories dominated by landscapes of heavy industry, manufacturing, energy production, storage, and logistics. It is also where certain forms of suburbanization have been perfected: this is the birthplace of Fordism as “a technical and spatial system”; here in the 1960s Victor Gruen built some of the first regional shopping malls in a ring around the city of Detroit; and Detroit itself has become the exemplar of the dispersed suburban city, with a population of under one million inhabiting the city limits, an area that easily swallows the cities of Manhattan, San Francisco, and Boston. The constructed territories of the GLM are punctured with geological systems that prefigure, support, and also disrupt the urban accretions of the megaregion – most significantly, the five great lakes and the hydrological basin that drains into them, but also mineral deposits, coal seams, and fertile areas of agricultural land.

City

The conceptualization of contemporary urban processes is highly influenced by what may be termed the ‘ecological paradigm’: based in cybernetics, complex systems, and general systems theory, this has, in the latter half of
the twentieth century, come to dominate the conceptual frameworks of not only the sciences but also fields such as economics, philosophy, politics, and the other humanities, as well as culture at large. Cities are currently being recognized as products of emergent processes, catalyzed by multiple agents and practices, and are increasingly being understood as constructed ecologies in complex interdependency with biophysical systems, economies, and politics.

Ecological thinking requires a breakdown of artificially created boundaries – conceptually, politically, and functionally. In determining the appropriate scales of consideration for design at the urban scale, the concept of the shed becomes a useful means for conceiving of systemic extent and interrelation as a geospatial boundary. Sheds (watersheds, for example) define geographies within which elements of a particular system retain a high degree of interconnectedness and interdependency yet can be recognized as being distinct from adjacent systems’ characteristics. Interactions within a shed can be understood through the ecological frameworks of hierarchically organized, nested systems that operate through the self-organizational principles of complexity.

Over the last several centuries, human activity within the GLM has resulted in a number of overlapping and intertwined shed geographies of material and resource flows which, beyond spatializing conditions fundamental to current and future urbanization patterns, also underscore the necessity of more reciprocal and inter-regional agreements between local and national jurisdictions on issues such as energy policy, resource use, transportation, and urban development. Cargo-Shed, Economy-Shed, Enviro-Shed, and Energy-Shed geographies (figures 2-5) describe a territory that reinforces the interconnections of the GLM and its coherence as a distinct territory (although, as in all ecologies, boundaries are necessarily elastic, contingent, and nested within larger systems). These shed cartographies spatialize not only the material ecologies of flows and exchanges but also begin to reveal critical nodes and synergies within these networks. The Cargo-Shed (figure 2) demonstrates the intensity of physical flows carried by existing mobility systems. As the region grows in population, commodity flows are expected to double in the next twenty to thirty years, escalating pressure on related infrastructural systems. When the Cargo-Shed is read relative to the Economy-Shed (figure 3), the high level of infra-regional exchange becomes increasingly apparent relative to the vectors of movement, as well as the pressure on certain routes, such as Southern Ontario’s Highway 401, the only direct line between the Detroit/Windsor border and the metropolitan regions of Toronto and Montreal. Also revealed are other vectors on which valuable commodities travel, such as resource-based cargo from mining and forestry in Northern Ontario, or the geography defined by the growing pharmaceutical industry within the region.

The Enviro-Shed (Figure 4) constitutes an assemblage of the most highly problematic and sensitive sites affecting biotic ecosystem health within the region. When understood relative to the distribution of productive agricultural, tourism and resource-critical lands, the Enviro-Shed points to the need for increased broad-based consensus in strategic site remediation and protection measures. The Energy-Shed (Figure 5) spatializes exist-
ing and potential sites, sources, and underlying geographies of electrical energy production within the GLM. While some of the shed mappings demonstrate a regional interconnectedness that seems to defy existing political boundaries, the Energy-Shed underscores the differences in underlying geography linked to energy policy, practice, and implementation between the US and Canada: while both countries depend heavily on nuclear power, as well as on the lakes for cooling, US electricity production is dominated by access to the coal seams in the south of the region, while Canadian electricity production is dominated by hydroelectric generation, harnessing the power of the many rivers that drain from the north into the basin. In addition to current production, this shed also maps the potential capacities of solar energy as well as the vast resources of wind energy in and around the Great Lakes.

Within this geography, an area of particular focus becomes the zone surrounding the Detroit-Windsor corridor (DT_W) at the Canada-US border. The city of Detroit, although termed a ‘shrinking city’, with vacancy rates of 20–60 percent in many neighborhoods, also occupies a strategically important position within North America’s infrastructural and trade network. Located strategically within the NAFTA trade corridor, and at the geographic center of the GLM, it is a vitally important site for mobility, transfer, and exchange. Approximately 28 percent of Canada-US surface trade passes through the DT_W. This area is also home to the North American automobile industry, with major production and assembly facilities and interconnected just-in-time production logics that require as many as seven cross-border transactions per vehicle.

Agents
Urban form, representation and practice do not exist in stable relationships, especially across time. The majority of contemporary urban development outside of historical centers can be read as a physical index, a materialization of specific economic and management policies. However, within any existing urban formation, the ways in which structures, infrastructures, and cities operate over time is only partially due to their physical form: cultural, legal, and economic practices and frameworks that operate societally within the physical infrastructures are equally important and entail the ‘software’: the “formal and informational rules for the operation of the systems.” The study of these agents – practices, codes, policies, regulatory and economic frameworks – can provide powerful insight into the formation of current urbanisms, and also might expose ways in which new urban patterns and uses might emerge. For example, in 2009 the province of Ontario legislated Bill 150, also known as the Green Energy Act, which includes an aggressive renewable energy feed-in tariff plan for both large and small-scale producers with an overall aim to accelerate a distributed energy supply for the province. In three years, this bill has transformed the landscape of Southern Ontario, now beginning to resemble parts of Northern Europe, with, as of early 2012, 1,413 megawatts of land-based wind farms installed, with an additional 719 megawatts in development, and 242 megawatts of photovoltaic installations approved. Given these types of acts, codes, and agencies already active in forming our primary urban conditions, how might they be leveraged to produce new urban formations and imagine new possible futures for the region? To what end and for whom?
Figure 6 DT_W: GLM composite shed system detail at the Detroit-Windsor Zone; contrary to the global imaginary associated with Detroit, there is no more strategic location within the region with respect to inflection of existing logistics, infrastructural, or environmental intervention.
RVTR’s Conduit Urbanism project identifies the transnational line of the Highway 401/I-94 within the GLM as a site of infrastructural retooling and strategic leverage that could radically recast the capacity and potential of the entire region. The proposal entails a restructuring of the highway’s constituent DNA from a simple, single-purpose, and single-access surface (asphalt, accessible to tire-based vehicles traveling at approximately 100km/hr) to an intelligent network of bundled modes of mobility that can provide access for multiple vehicle types, conveyances, and speeds: cars and trucks (conventional or hybrid fuelled); renewable-grid-tied high speed maglev rail that could accommodate both infra-regional commuters but also specialized freight and personal lightweight vehicles; renewable power transmission; high capacity data transmission; fresh water supply; and waste conveyance. This retooling is accommodated within the physical space of the current highway right-of-way, eliminating the need for elaborate property acquisition by transportation authorities. We propose three primary paradigm shifts within which this new system operates: a regional governance and policy framework that coordinates infrastructure, energy, and transportation; a regional priority for more ubiquitous regional access for multiple populations; and an infrastructural system based not on the principles of carbon-based fuel mobility, but rather as an interface for multiple urban resources and renewable energies aimed toward urban resilience.

Leverage

In her seminal text *Leverage Points: Places to Intervene in a System*, Donella Meadows outlines twelve points, in order of increasing effectiveness, where a small shift in a complex system (a corporation, an economy, a living body, a city, or an ecosystem) might produce massive systemic change. Due to the interconnected nature of urban ecologies, small-scaled adjustments in technology, new performative or typological constructs, or a reorganization of constituent elements or fittings, may often have significant repercussions in the mechanics of the entire operation. This approach has the potential of producing ‘disruptive’ transformations perhaps more effectively and ubiquitously than large-scale or traditional planning.

Figure 7 DT_W Actor Network Diagram: infrastructural, ecologic, logistic and social actors and agents implicated in the situation of the DT_W Crossing.
The proposed DT_W Crossing is located south of the current bridge, and (somewhat symbolically) enters the US adjacent to the infamous Zug Island; a still operational island that since the early 1900s has been entirely dedicated to the once dominant regional industry of steel manufacturing. The multiple Superfund sites along the banks of the Detroit river will constitute a critical field of activity that will be mobilized by law once ground is broken to construct the bridge abutments, with site remediation activating the currently contaminated land, producing a finer grained block development for new occupations, and providing public access to the waterfront. As an international border site, this nodal development takes advantage of defining a new extra-jurisdictional territory that both capitalizes on its strategic infrastructural position while also defining a new megaregional polity. At the base of the crossing, a port territory and free trade zone will service the underutilized St. Lawrence Seaway connection to the Atlantic as well as facilitate the increasing growth of large-scale hi-tech manufacturing industries underway across the region. The viaduct structure assembles, within its section, an infra-regional research hub, interface with attendant programs, parking, and an internal skytrain for local access. A regional medical complex, linked via the high-speed rail to the burgeoning pharmaceutical and medical research corridor within the GLM, offers health treatments and medical specialization that currently comprise a significant economy of trans-border medical tourism.

Bridge

Within the DT_W, the privately owned Ambassador Bridge has been the only international bridge-based commodity crossing since it was completed in 1927. In a seemingly continual state of repair due to its age, and cited as a security risk, the Ambassador Bridge crossing also suffers from severe limitations in infrastructural capacity, especially on the Windsor side, where miles of truck lineups causing multi-hour delays are not uncommon and severely impact the economies of both countries. A recent study estimated that delays at this location have added 800 dollars to the cost of every new vehicle produced in the region, and annually cost the combined US/Canadian economies 13.6 billion dollars in lost production. Although mired in political and special lobby group snafus, a second international bridge crossing and customs facilities are currently being planned for construction. The project represents a major investment in public infrastructure and offers an opportunity to develop a wider vision and scope that will not only impact regional infrastructure performance, but also leverage the sheer scale of its undertaking to benefit a range of situations local to its footprint and regional in its constituency. RVTR’s proposal for the DT_W Crossing couples a densely-bundled viaduct and interchange, combining multiple modes of mobility within the structure of the crossing, and imagines the development of a new regional center that can reassemble various infrastructural, logistical, environmental, and political actors within its formation and urban development.

The proposed DT_W Crossing is located south of the current bridge, and (somewhat symbolically) enters the US adjacent to the infamous Zug Island; a still operational island that since the early 1900s has been entirely dedicated to the once dominant regional industry of steel manufacturing. The multiple Superfund sites along the banks of the Detroit river will constitute a critical field of activity that will be mobilized by law once ground is broken to construct the bridge abutments, with site remediation activating the currently contaminated land, producing a finer grained block development for new occupations, and providing public access to the waterfront.

As an international border site, this nodal development takes advantage of defining a new extra-jurisdictional territory that both capitalizes on its strategic infrastructural position while also defining a new megaregional polity. At the base of the crossing, a port territory and free trade zone will service the underutilized St. Lawrence Seaway connection to the Atlantic as well as facilitate the increasing growth of large-scale hi-tech manufacturing industries underway across the region. The viaduct structure assembles, within its section, an infra-regional research hub, interface with attendant programs, parking, and an internal skytrain for local access. A regional medical complex, linked via the high-speed rail to the burgeoning pharmaceutical and medical research corridor within the GLM, offers health treatments and medical specialization that currently comprise a significant economy of trans-border medical tourism.
of the Detroit river – is the Center for Great Lakes Governance. This new, publically accessible body dedicated to regional governance, will be able to assemble policy and action on matters of environment, energy, water resources, transportation, labor, and other issues of regional import that may require cross-border collaboration.

Accessible equally to citizens of both countries via private vehicle, high-speed rail, municipal transit, and pedestrian access, the DT_W Crossing places in symbolic and operational relation multiple publics and multivalent subjectivities within the megaregion. It both smooths out flows, but also complicates them: it redraws and questions where borders exist, juxtaposes ‘spaces of flows’ with ‘spaces of place’, agglomerates public programs along a line of mobility (a space typically of highly restricted and specialized access), and identifies the site of the border itself as an accessible space for politics and negotiation. The project speculates on the potential of urban architecture to not only engage urban processes (infrastructure, capital, logistics, flows, environmental remediation, and governance) but also for the potential of urban form to structure experience at the scale of megaregions.

RVTR would like to thank the following individuals for their contributions to the work presented in this publication: Mary O’Malley, Dan McTavish, Adam Smith, Lisa Sauvè, Zain Abuseir, Matt Peddie, Matt Storus, Maya Przybylski, Michael Vortruba and Sonja Storey-Fleming. Special thanks to students at the University of Michigan, the University of Waterloo, and Ryerson University who have helped advance related thinking through seminars, studios, and thesis work. The FCH / Conduit Urbanism Project has been supported by funding from the Social Sciences and Humanities Research Council of Canada (SSHRC) Research/Creation Grant Program, and the Taubman College of Architecture and Urban Planning and the Rackham Graduate School at The University of Michigan.

1 For the early history, see Jean Gottman’s 1961 Megalopolis, Constantinos Doxiadis’ 1968 “The Emerging Great Lakes Megalopolis” as well as the regional planning visions of Lewis Mumford, Clarence Stein, and Benton MacKaye. Institutes currently studying and publishing literature on megaregions include: The Brookings Institute, the Lincoln Institute, the Regional Plan Association, the Metropolitan Institute at Virginia Tech, researchers at the Urban and Regional Planning Program at the University of Michigan, as well as the Martin Prosperity Institute at University of Toronto’s Joseph L. Rotman School of Management.


4 Easterling, 1999, op. cit.


Figure 10, 11 The Center for Great Lakes Governance: suspended mid-span within the extra-jurisdictional zone of the DT_W, the infrastructural interior landscape juxtaposes form, speed, and the "space of flows".

10 Pierre Belanger, ‘Landscape as Infrastructure’ in Landscape Journal, 28:1, 2009: 79 – 95
13 Jesse Ausubel and Robert Herman eds., Cities and their vital systems: infrastructure past, present, and future. (Washington DC National Academy Press, 1988) 1
18 Donella Meadows, Leverage Points: Places to Intervene in a System. (The Sustainability Institute, 1999).
19 A ‘disruptive’ technology is one that that creates an entirely new market and value network as opposed to building on incremental change of existing technologies. See Clayton M. Christensen, The innovator’s dilemma: when new technologies cause great firms to fail. Harvard Business School Press, Boston, 1997.