Frontier Urbanism: Explorations and Propositions in the Expanded Field

NEW FRONTIERS: INFRASTRUCTURE, MEGAREGIONS, + TERRITORIAL REORDERING

Increasingly, architects and planners are being compelled to address and transform larger contexts and to give these contexts more legible and expressive form. New problems are being placed on designers' agendas (e.g. infrastructure, urban systems, regional and rural questions). Problems that had been confined to the domains of engineering, ecology, or regional planning are now looking for articulation by design.[1]

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The design disciplines are increasingly driven to engage with transformations of the physical environment at scales and levels of complexity that transcend traditional categories such as urban/rural, center/periphery, city/landscape, or internal/external. As the territorial and disciplinary contexts of our practices continue to expand, we must develop new modes of perception, new forms of representation, and new models of transformation that can surpass the limitations of these dualities. While operating at the outer limits of scale and context may push us to exceed the normative frameworks of architecture, urban design, or landscape practice, we can begin to develop methodologies for engaging with these immense spatial dimensions by leveraging the scalability of the tools that are familiar to us and cross-breeding them with methods derived from other disciplines. In this paper I will attempt such a hybridization; borrowing heavily from the conceptual frameworks and cartographic lenses of geography to focus in on the large-scale spatial transformations that are taking place in the South American hinterland, and demonstrate how this perspectival shift can become operational in developing alternative models of design agency on the urban frontier.

We can see evidence of the tectonic shifts taking place within contemporary design discourses on multiple fronts. On one hand, the need to address the twin threats of climate change and massive population movements have renewed interest in the master planning and visualization of spatial transformations taking place at the regional or mega-regional scale. On the other hand, the failure of the global financial system and the impact of increasingly frequent natural disasters have put an intense focus on infrastructure as both a physical site of operation for architecture, landscape, and urban design, as well as an alibi for direct action within the retreat of the welfare state.

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The mounting research on infrastructure is considerable, and a serious body of work is developing around the design opportunities that are to be obtained by re-appropriating it from the domain of the engineer, expanding its social and environmental agendas, and re-imagining its formal possibilities. No less important, though perhaps less apparent, are explorations into infrastructure's potential for negotiating a scalar shift; as a physical artifact that spans the architectural, urban, and regional scales, and as an imprint of social and economic forces that tie the global to the local.

This focus on scalar shift is germane to architecture's recent recovery of geography as a design paradigm, which has been proposed as "an attempt to study the relationship between the social and the physical at a larger territorial scale, but also to attempt a synthesis…"[2] of what has historically been separated into "architecture", "city," and "world." This geographical turn is symptomatic of a renewed desire for architecture to look outside its disciplinary and territorial boundaries, and find places in the world that call out for action.

TERRITORIAL REORDERING IN THE WORLD TODAY

Indeed, the necessity of transgressing scales and categories is especially true in conditions and territories that have been largely ignored within the traditional discourse on urbanism; in particular the vast swaths of lightly settled rural hinterland and wilderness areas characteristic of the coastally-dominant continent of South America. Architects, landscape architects, and urban designers are increasingly called upon to give shape to alternative physical and experiential identities within the kind of large-scale spatial transformations that are reshaping these extra-urban territories. This territorial reordering is occurring at an unprecedented scale in the rapidly developing economies of South America, where accelerated resource extraction and regional infrastructural integration will potentially reconfigure the fragile ecologies and cultures of the continental hinterland.

Over the last several decades, South American countries have embarked on a massive effort to upgrade their infrastructure, both to more effectively exploit the prolific natural resources of the continent's interior, as well as to accelerate their progress into modern nations and enter into the pantheon of countries of the so-called "first world." This effort has been largely led by Brazil, who's investment in infrastructure as the road to the future reaches as far back as Getulio Vargas and Juscelino Kubitschek, and continues today with a renewed ambition under the aegis of the IIRSA.

Initiated by former Brazilian president Fernando Enrique Cardoso in 2000 and rapidly endorsed by the eleven other South American nations, IIRSA (the Initiative for the Integration of Regional Infrastructure in South America)—a comprehensive energy, transport, and communications network —is the most aggressive transcontinental integration project ever planned for South America. Through the systematic deployment of ten east-west infrastructural corridors, the initiative is sidelining the Americas' time-honored north-south axis—exemplified by the Pan-American Highway—to provide Brazil, which occupies almost 50% of South America's surface,

Figure 1: The Infrastructual City.
Photo by Lane Barden

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IIRSA Project Portfolio

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access to ports along the Pacific and to give its flourishing economy stronger trading ties with Asia, while providing means of entering to remote regions that have untapped surface and subsurface natural resources. With a projected investment surpassing US$83 billion in June 2010, a total projected investment of $96 billion, and an expansive portfolio of projects (10% are completed, and over 33% are under construction), the scope and ambition of IIRSA is having an unprecedented effect in reconfiguring the urban and rural dynamics of the South American hinterland.[3]

This predominantly Brazilian effort was accelerated under former President Lula da Silva with help two massive economic stimulus plans (the PAC and PACII), and through this effort Brazil has led the continent in channeling heavy investments in infrastructure across these key sectors: from massive hydroelectric dams; to petrochemical and other energy sectors; to mobility infrastructure, especially roads and bridges connecting the country's interior to its major cities and neighboring countries; as well as in mining and other forms of resource extraction, including large-scale industrial agriculture.

Besides providing connectivity, energy, resources, or the efficient movement of goods and people, these large-scale infrastructural projects all have distinct and significant spatial imprints on the Earth's surface, and subsequently re-order and reorganize that surface in ways that have impacts across multiple scales. It is in this sense that they can be said to have a distinct geography, and it is thus that a geographic lens can become productive in our reading and rescaling of these conditions.

Figure 2: IIRSA project portfolio—
map by Victor Muñoz Sanz.

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THE FRONTIER IS URBAN

Still, though one might admire the impressive scale and ambition of this project, we could ask what this has to do with architecture. To answer this we must first begin to examine the ways in which the design disciplines can claim a legitimate role in the planning and development of territory at this massive scale.

In order to begin to operate in these territories, and to claim some degree of agency for design within the context of globalization, we must first expand the domain of our disciplinary turf beyond the confines of the Global City. In his article *The World According to Architecture,* Hashim Sarkis critiques the current discourse on the Urban Age and its over-concentration of effort on the Global City, asking, "Why should the city be considered the ultimate spatial manifestation of globalization?"[4] If as architects we believe that we have a stake in this discourse, indeed, that we have a responsibility to society to take a stance on globalization, then we must reframe this question to ask: why must the entire range of our intellectual and creative abilities be limited to the problematic of the city?

Alternatively, if we expand the definition of the Urban Age beyond a mere statistical condition (i.e., more than half the world's population living in cities), we can begin to encompass a broader understanding of what it means to live in an urban world. Indeed, if according to Michael Hardt and Antonio Negri, the distinction between internal and external has disappeared under the modern globalized political economy, we can open the door to theoretical propositions that consider the entire surface of the world as urban.[5] This is not an entirely new or particularly radical proposition, but its timely reconsideration is essential if we are to move beyond the constraints of the current discourse on cities.[6] As Mirko Zardini has noted, this condition was identified as early as the 1960's by Melvin Webber, who observed that "urbanity" was no longer an exclusive property of the city or citizens, but a much broader and more pervasive condition inseparable from participation in modern life. [7] Zardini extends this observation into an argument that the entire world is now urban, stating:

> …there is no longer a nature or countryside external to the city; it is no longer possible to locate oneself outside the urban environment and the lifestyles associated with it. The old notions of city versus country versus nature are now obsolete. To extrapolate, the only possibility for action now lies within the urban world, a variegated world marked by profound differences. [8]

If we accept this hypothetical condition, we will quickly find that our old models of urbanism, which are predicated on the city as a discrete figure, are also obsolete. The modernist planning paradigms and their current alternatives (whether New Urbanism or other normative frameworks), which rely on the densities and formal legibility of traditional compact cities for their context, are no longer suitable to the more diffuse and fragmented accumulations or lightly settled surfaces once considered "sub-", "extra-" or otherwise outside the domain of the urban. Joan Busquets has acknowledged

Figure 3: Tucuri dam—image by DigitalGlobe

that these diffuse forms of urbanism pose a specific set of challenges for architects and urbanists, noting that they, "...do not follow the patterns of the continuous and / or traditional city" but "...follow a series of rules that are apparently less foreseeable and appearing forcefully in various contexts"[9] such as China, Brazil, and India.

In these places, where there are certainly new cities being planned around more traditional models of urban density, their dependence on fixity and developmental end-states fails to accommodate the massive population migrations and the rapid movements of capital across a globalized surface. If we are to address this condition, we must adjust our vision to identify emergent patterns of use that are more discontinuous and indeterminate, yet therefore more open to a better integration between processes of urbanization and natural systems.[10] While this position is familiar to those steeped in the discourse on landscape urbanism, Busquets nonetheless argues that, "these are plausible hypotheses that could update existing urbanization systems and create a new economic vitality while respecting the fragile and attractive natural environment."[11]

NEW SCALES, NEW MODELS : DIFFUSE URBANISM + TERRITORIAL PLANNING

Operating under this framework, where the hinterland can be conceptualized as an urbanized surface in its own right, it is necessary to explore alternative models of "diffuse" or "weak" urbanism which can be developed to find a better equilibrium between these lightly settled territories and more concentrated centric cities or mega-city corridors.[12] However, these discontinuous, diffuse, and weak forms of urbanization may not be immediately recognizable to us, not only because of the scale of territory that they encompass, but also due to their lack of figural qualities and embrace of emptiness. As Manuel de Sola-Morales states in The Urban Project:

> The empty space between things is the subject, and the protagonism of the empty space is the peripheral alternative to the unifying contiguity that is the great virtue of the traditional compact city. [13]

Here the "protagonism of the empty space" in the mega-region can be made operational in developing alternatives to the historical patterns of settlement in South America, especially their overreliance on dominant coastal cities and the subsequent explosion of informal settlements. By reconsidering the hinterland as a legible and richly textured figure, rather than the empty and unknowable other of the city, we can begin to understand how urbanization can occur within a wider range of spreads and densities than have previously been considered. As well, this figuration of the hinterland is necessary to address the scale of operations at which the continental infrastructures of the IIRSA have been proposed, in order to impose a broader agenda on them than that of the merely efficient engineering of data, energy, and material flows.

Thus, by embracing the emptiness of the hinterland, while harnessing infrastructure's ability to transgress scales, we can potentially develop new urban-landscape hybrids that can relieve cities from the overwhelming
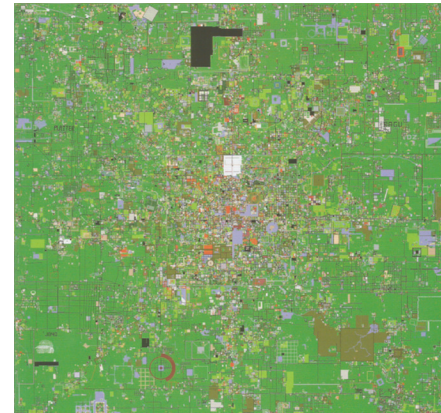
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Figure 4: Urban plan from activeworlds.com

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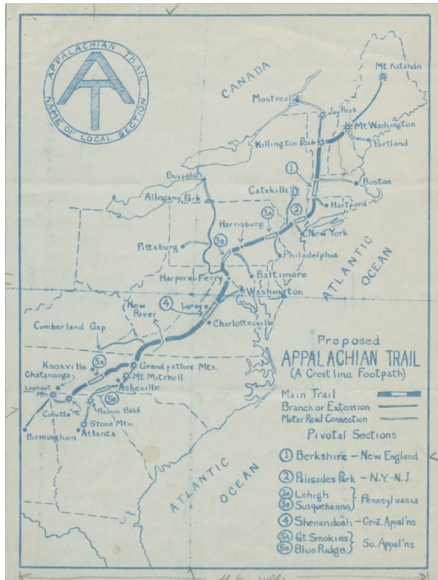
pressures of centrality, while offering alternatives to the exhausted models of density (both formal and informal) and suburban sprawl that have heretofore failed to keep up with extreme urbanization.

THE URBAN FRONTIER

This is of course not an entirely uncharted territory, and certainly not the first historical moment in which architects and landscape architects have turned their sights toward the rural hinterland to propose radical re-conceptualizations of the city. Charles Waldheim's recent "Notes Toward a History of Agrarian Urbanism" examines series of projects from the last century that explored agricultural or rural frameworks to develop a lightly-urbanized field condition, not as a suburban adjunct to the urban center, but as a productive regional landscape ordered by a hybrid of agrarian countryside and decentralized industrial infrastructures.[14] Waldheim revisits Frank Lloyd Wright's Broadacre City, Ludwig Hilberseimer's New Regional Pattern, and Andrea Branzi's "weak work" (including No-Stop City, Agronica, and Eindhoven: Model of Weak Urbanization), framing them within the lineage of intellectual projects that are the progenitors of landscape urbanism, but also anticipate the work of contemporary figures such as Stan Allen, James Corner, Alex Wall, and Alejandro Zaera-Polo.

Though starting from different intellectual and political positions, both Wright and Hilberseimer were driven by a search for new patterns of urban settlement based on automobile transportation and low-density mixtures of residential and industrial uses, counterpoised against the perceived ills of the 20th century metropolis. Wright's Broadacre was built on a faith in the freedom and democratizing power of automobile transportation, woven into the fabric of the Jeffersonian grid, which reified the principles of decentralization and dispersal upon which Henry Ford built his automobile industry. Hilberseimer's New Regional Pattern was similarly organized around transportation and communications networks in a dispersed, horizontal, and hierarchical structure, but, "…did not defer to the abstraction of the grid; it was informed by the natural environment—by topography, hydrology, vegetation, wind patterns, et al. It conflated infrastructural systems with built landscapes and used environmental conditions to produce a radically reconceived type of North American settlement."[15]

Branzi's work is a more recent and much more politically-sharpened critique of these same forces of decentralization and thinly-spread development. Though Branzi and his colleagues in Archizoom drew from post-war urban theorists such as Hilberseimer, they turned it in the service of practicing urbanism as a form or social critique. Thus Branzi's "weak work" seeks not so much to propose utopian visions as to illustrate the "relentlessly horizontal spread of capital across thinly settled territory, and the resulting 'weak urbanization' that neo-liberal economics has enabled."[16]

THE PROJECT OF FRONTIER URBANISM

While all of these projects "illustrate the city as a continuous system of relational forces and flows, as opposed to a collection of objects," and in this respect are highly influential in contemporary discourses on landscape and

Figure 5: Benton MacKaye's early map of the Appalachian Trail

New Constellations New Ecologies

ecological urbanism,[17] what is important to glean from them is how they "mis-used" infrastructural and agricultural systems to generate proposals for non-figural conceptions of urbanism. Thus our examination of these precedents is productive in demonstrating how design-driven research projects can potentially yield a set of propositions that can be wielded as a double-edged sword; allowing us to utilize them as a critical filter for describing the forces that are shaping the region, but also transposing them into a series of models that attempt to turn critique into concrete propositions.

Here we can begin to outline a project for what can be provisionally called "Frontier Urbanism", where these more diffuse and ecological models of urbanism to can be applied to the particular conditions surrounding the development of the South American hinterland. In this case, by amplifying these spatial models through the lens of geography, we can interrogate their potential to channel the continental-scale extension of infrastructure into a generator of urban-landscape hybrids that can protect and preserve the fragile ecologies and natural resources of the frontier. Furthermore, by laminating an urban-architectural project onto the narrowly conceived agenda for this thin (and often invisible) fabric of logistical networks, it can be thickened and made visible in a way that is more critical than oppositional, and potentially relieve development pressures that are arising as Brazil and other nations reach across the continental interior.[18]

Though the sheer immensity of this territory exceeds the normative frameworks of architecture, urban design, or even landscape, it is not beyond reach of design to develop frameworks for engaging with the spatial dimensions of large-scale economic and social forces. More than 90 years ago geographer and ecologist Benton MacKaye conceived of such a mega-regional ordering device when he proposed the Appalachian Trail as the backbone for a new recreational and infrastructural network that would invert the traditional hierarchies of infrastructure and transportation development along the entire East Coast of the United States.[19]

The trail was proposed as a linear spine organizing a rationalized network of hydroelectric power plants, factories, agricultural lands, transportation lines, and urban developments that would challenge the dominant power of the metropolis and counteract its concentric growth. Critically, MacKaye's trail proposed no master plan for the region, but rather would function as a kind of public utility or reservoir of natural resources and thereby become an ordering principle for a new economy. It would broadcast a field of influence and become a new mechanism for organizing the patterns of human settlement as well as the economies of production and distribution.

Utilizing a similar conflation of national parkland, ecotourism, and recreational systems, and laminating them to the infrastructural corridors and logistical landscapes of the global economy, the project of Frontier Urbanism explores how alternative spatial models can be utilized to project a similar field of influence over the movements of populations and the production and distribution of material goods and space in the remote heart of South America.

ENDNOTES

1. Hashim Sarkis, "The World According to Architecture: Beyond Cosmopolis," in *New Geographies 4: Scales of the Earth* (Cambridge: Harvard University Press, 2011), p. 107.

2. Sarkis, "Beyond Cosmopolis," 107.

3. "Symposium: South America Project: Hinterland Urbanisms" posted August 26, 2011, http://www.sap-network.org/search/label/hinterland%20urbanisms

4. Sarkis, "Beyond Cosmopolis," 105

5. Hardt and Negri *Empire*, as paraphrased by Mirko Zardini in his introductory essay in *Actions : What to Do with the City* (Montreal: Canadian Centre for Architecture, and Amsterdam: Sun Publishers, 2008), p. 12.

6.   In addition to contemporary theorists like Mirko Zardini and Hashim Sarkis, we can trace this conception of a "city-world" to the theories and proposals advanced by earlier figures such as Jean Gottman, Konstantinos Doxiadis, and Buckminster Fuller.

7.   Zardini, *Actions,* 12.

8.   Zardini, *Actions,* 12.

9.   Joan Busquets, introduction to *Catalunya Continental: Rail Infrastructure as the Backbone of Development*. (Harvard University Graduate School of Design, 2008).p. 18.

10. ibid.

11. ibid.

12. I am, of course, referring to Andrea Branzi's decades-long exploration of "weak urbanism" and "diffuse urbanism," codified in his 2006 Skira publication *Weak and Diffuse Modernity: The World of Projects at the Beginning of the 21st Century* (Milan: Skira, 2006). Though the terms certainly have distinct nuances, here I am using them interchangeably.

13. Manuel de Sola-Morales, "The Urban Project" quoted by Alexander D'Hooghe in "Platforms for a Permanent Modernity" in *New Geographies 0* (Cambridge : Harvard University Press), 72-85.

14. Charles Waldheim, "Notes Toward a History of Agrarian Urbanism" in *Bracket 1: On Farming*, edited by Mason White and Maya Przybylski. (New York: Actar, 2010).

15. Waldheim, "Agrarian Urbanism," 21.

16. Waldheim, "Agrarian Urbanism," 22.

17.Ibid.

18. In this case, "critical" means architecture's particular facility to project ideas onto the plane of the formal and aesthetic, enabling alternative realities to be reflected back onto the social (and thereby political) realm.

19. Keller Easterling, "Subtraction Inversion Remote: The Appalachian Trail" in *Organization Space: Landscapes, Highways, And Houses In America* (Cambridge: MIT Press), 13-72.

20. Alexander D'Hooghe proposes that this can, for instance, occur at the scale of the "Mega-ensemble" as articulated by Manuel de Sola-Morales:

     Testing proposal for clusters of buildings, models of settlements…with enough formal personality as to understand the territory as a landscape form…these peripheral establishments must be based on the concept of "interesting distance"—positive separation…

21. "The geographic aesthetic suspends architecture between autonomy and total immersion to explore different means by which the exchange between architecture and its context could happen. This exchange is no longer guided by the "mimetic impulse" of contextualism but by the very displacements that allow forms of art to interrogate forms of life." Hashim Sarkis, "New Geographics: Notes on an Emerging Aesthetic" in *New Geographies 0* (Cambridge: Harvard University Press,), p. 108.

22.   Ibid.

If MacKaye's spatial model and heuristic device was the line or linear backbone, we will explore how other spatial paradigms (networks, grids, mosaics, rings, nodes, etc.) can provide alternative readings and visualizations of this mega-region, which we can develop into a scalable set of strategies that allow more localized tactical operations to emerge. These tactical operations are critical to the development and legibility of the broader agenda that design can bring to these phenomena, for operating within this geographic paradigm does not mean that methods of architectural figuration do not find their appropriate scale of operation.[20]

On the contrary, we must strive to develop new models of urbanism that can be conceived of not merely as two-dimensional tools of planning, but as three-dimensional conditions that have distinct architectural and formal characteristics. For in this way, this expansion of territory can become doubly productive; by developing architectural expressions that have a renewed relationship to context beyond the exhausted strategies of autonomy or mimesis present in the current dialectic between architecture and the city.[21] The intent is thus to develop a formal "geographic" aesthetic that can connect the vertical perceptual experience of places and objects to the more horizontal conception of the region as a totality.[22]

Our agenda for this Frontier Urbanism is thus to:

Develop new modes of perception and forms of representation so we can "see with new eyes" (the expanded field)

Identify alternative models for development and infrastructure that can reconcile the processes of resource extraction, urbanism, and ecology

Address the scale of operations at which the integration of continental infrastructures have been proposed in South America

Demonstrate that the design disciplines can impose a set of broader agendas onto infrastructures that can steer their immense spatial reordering toward a greater good

Reinterpret these large-scale systems through the lens of geographic spatial models to develop a formal language that transcends both the non-figurative 2-d and the objectified 3-d. ◆