

ARCHITECTURAL **CAPABILITY**

Contemporary spatial practice in a globalized context

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Ask not what you can do for architecture;
ask what architecture can do for you.

datascape makes visible the invisible forces that shape building

TRANSURBANISM

ARTIFICIAL ECOLOGY

PEOPLE GATHER IN DENSE SPATIAL ORGANIZATIONS FOR NONSPATIAL REASONS

architecture

context/
mechanisms

sphere of influence

"GLOBALIZATION"

SPEED

social/cultural
formations are
technologically
shaped

CO-CONSTRUCTION

technologies are
socially constructed

The provision of space is the provision of an abstract market that may (temporarily) allow global or transnational flows to (de)materialize. New connections may be formed; existing connections may be maintained or disconnected. In this way, architecture is not only an enabler but also an operator – an operator with capabilities determined by its ever-changing context and conditions.

SPACE/TIME COLLAPSE/COMPRESSION

ASSEMBLAGES + EMERGENCE

The building blocks of emergent entities are not the elements themselves but the relations between the elements. (1+1>2)

A manner of characterizing|representing relationships and connections between things, rather than their geometric, quantitative associations

TOPOLOGY

CAPABILITY

high performance = diverse, well-developed capabilities

SPATIAL PRACTICE

INFRASTRUCTURE

- architecture should propel the future [MF]
- architecture is a device [Winy Maas]
- architecture should perform [REX] (corollary: neither form nor function matter)
- architecture should be a generator of activity (metastability: habitable circulation) [Virilio/Parent: Function of the Oblique]

Feedback: exercising capabilities can effectively change the contextual system and promote|demote new|existing capabilities

The interventions' creations may be exported, making architecture a generator of artifacts, drawing its immediate locale into flows at a larger scale, from regional to global.

How does our evolving conception of space|time alter architectural capability? Are the mechanisms that alter space|time (technology, communication, etc) somehow fundamental to architectural capability? By harnessing mechanisms, do we "open up the concept of the possible," open up what our architecture might be capable of?



Abstract

Architectural Capability



The *theory of architectural capability* purports to understand how architecture—typically static—transforms, negotiates, recombines and participates in global and local flows and ecologies. It is focused on architecture's "sphere of influence."

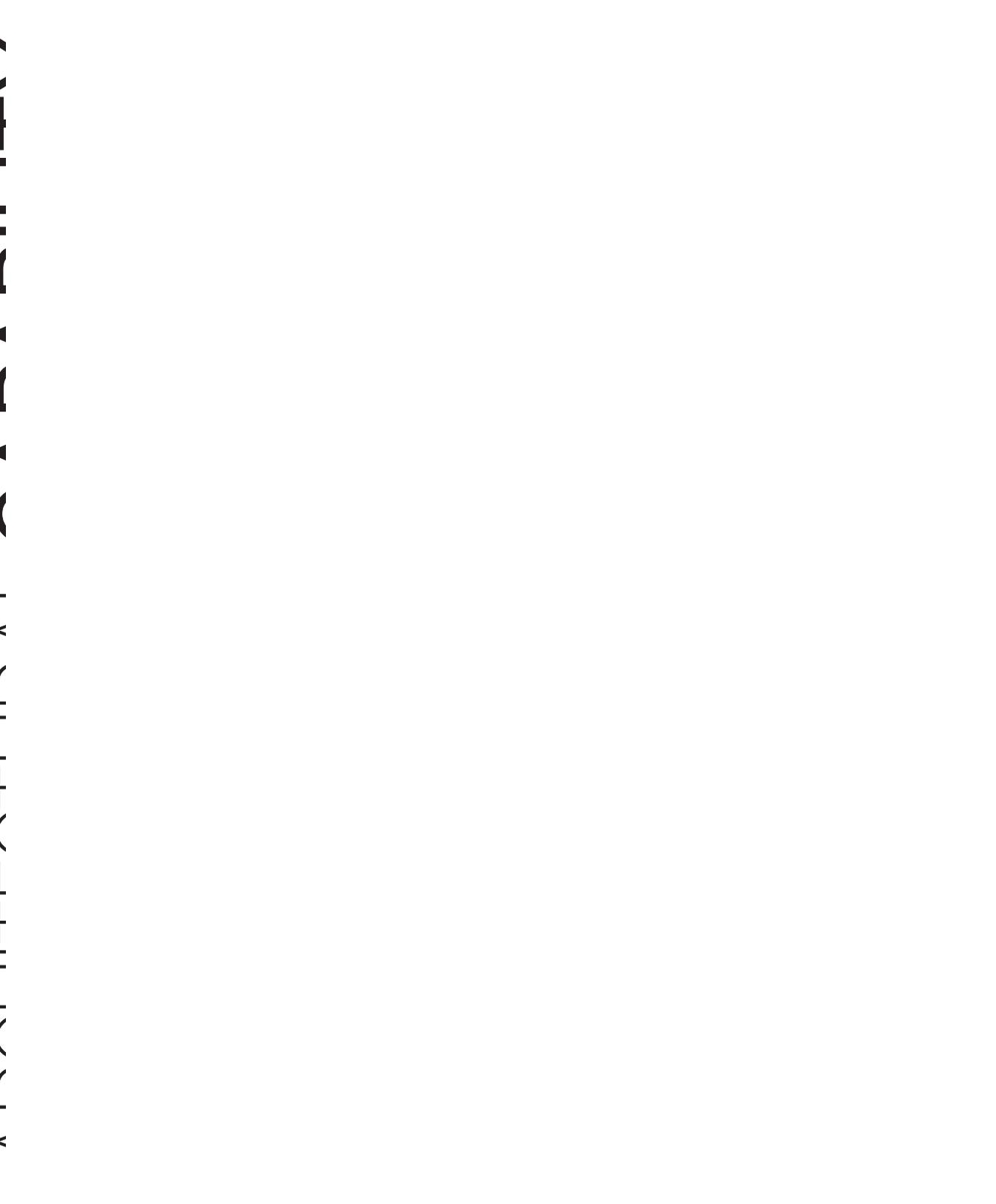
Capability draws in a number of theoretical and practical concerns, from complexity theory, emergence, and artificial ecologies to technological and sociological co-construction, deterritorializing economics, and generally, globalization (more accurately, its resultant time/space convergences, compressions and collapses).

Beginning with a brief overview of the theoretical underpinnings of complex systems, the *theory* is contextualized in the current state of globalized convergence and our evolving perceptions of time and space. This context offers a more practical approach to understanding capabilities: how they come about, how they are exercised, and how they change over time.

A series of architectural precedents are reviewed as both instances and generators of the theory. Seven metrics are established that in turn act as a form of technique or design consideration:

scale,
density,
intensity,
connectivity,
degree of intent|control,
possibility|opportunity breadth, and the
public|private spectrum.

The theory is optimistic, inclusive, and absorptive. It is a theory of an instrumental and reflexive architecture—an architecture with agency.



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1.0 Introduction

1.1 OPTIMISM

Architectural capability is a theory of optimism. This theory intends to synthesize a collection of existing ideas and formalize them into a way of thinking and doing that allows the architect to exploit architecture—as a means of making it truly performative and enabling. These ideas may not be new, but our attitude towards them and their utility can be.

Architecture imbued with diverse, highly-developed capabilities can actively and effectively participate in realms beyond itself. By employing capability as a design methodology, we might ignore architecture's supposedly increasing irrelevance and instead learn to operate effectively within these external systems.

Architectural capability is a way to think about smart development, intelligence and flexibility, and sustainability in its environmental, sociocultural and economic forms. It is about an instrumental and reflexive architecture—an architecture with agency.

1.2 BEGINNINGS — STATEMENT OF THESIS

Information, ideas, and goods are the very stuff of civilization.

The degree to which they are distributed to all individuals within a population stands as an important indicator of human welfare levels—as a measure of cultural and economic income.¹

While it is generally understood that architecture is a *sociocultural formation*, as a product of its context, less attention has been devoted to the mechanisms of its "sphere of influence."

Manifestos past and present allude to these mechanisms: architecture is a device, the plan is a plan for the future, architecture lays ground for the performance of events, and so on. Spatial production inherently entertains these notions, but it is possible that they may be put to greater use if formalized in a *theory of architectural capability*—a way to describe and pursue an architecture that is highly effective at participating in the multi-faceted context that exists beyond itself.

Given the present state of convergence—the tangible outcome of ongoing processes of globalization and internationalization—there has been, and continues to be, a fundamental shift in the manner in which we perceive and experience time and space.

¹ Webber, "Order in Diversity," 81.



Our evolving conception of time and space is fundamentally linked to a persistent co-construction: that social/cultural formations are technologically shaped, and that technologies are socially constructed. Architecture exists in a unique position, being a form of technology *and* a social/cultural formation.

Capability is implicit in spatial production. The provision of space is the provision of an abstract market that may (temporarily) allow global or transitional flows to (de)materialize. New connections may be formed; existing connections may be maintained or disconnected.

How architecture—typically static—transforms, negotiates and recombines global and local flows and ecologies is primarily a question of capability.

1.3 OUTLINE

This current section establishes some very general context for the following discussions.

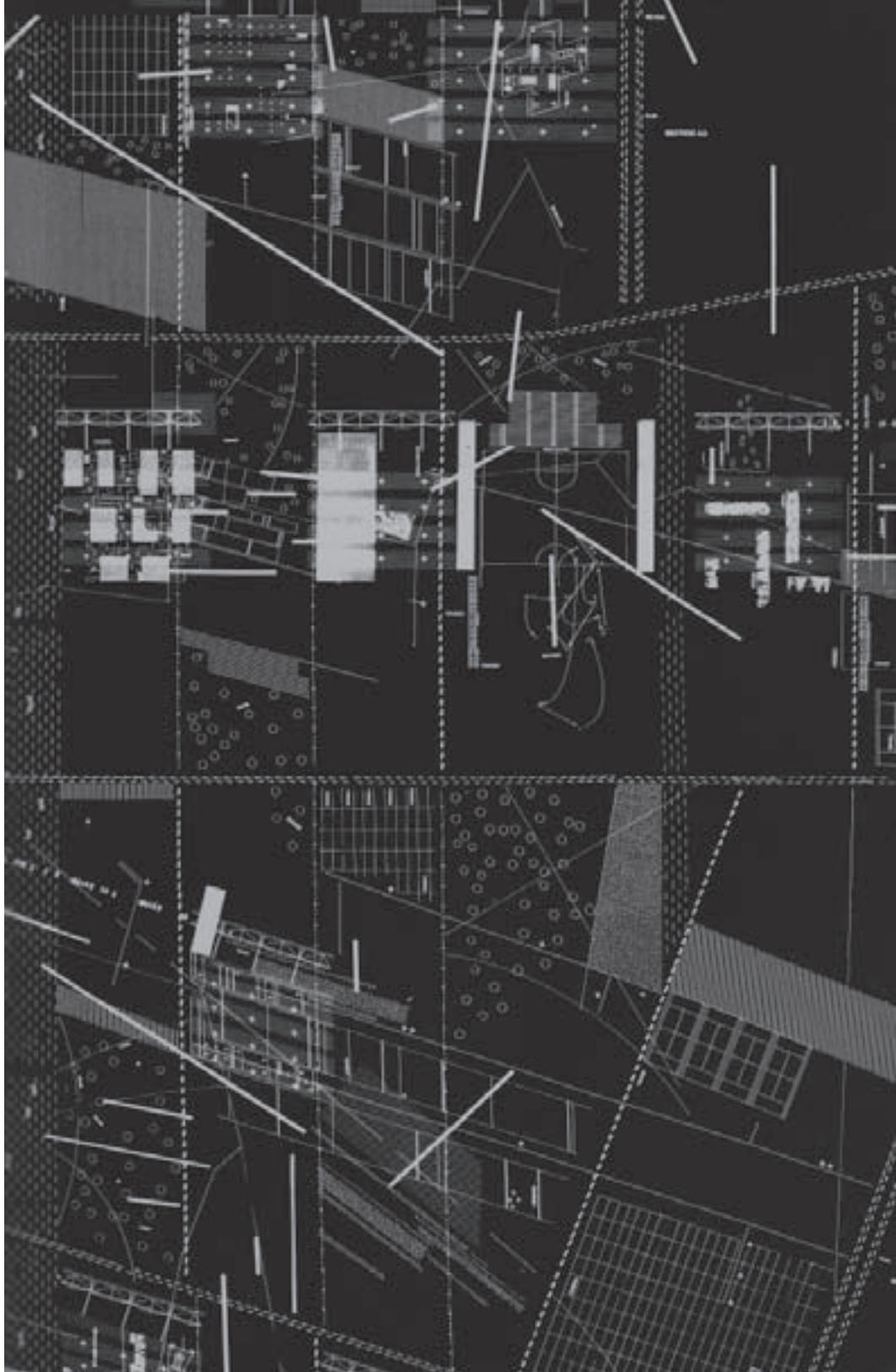
Next, in section 2.0, we pull back into the very abstract, to review existing theories and to present terminology to aid later sections. Capability is *theoretically* associated with complexity, assemblages, emergence, and artificial ecologies—systems where the relationships *between* things are more important than the things themselves.

Section 3.0 outlines the relevant issues for architectural production. Capability is *practically* linked to ideas of globalization, increased mobility, deterritorializing economics, technological and sociocultural co-construction, time/space compression, and infrastructure.

Section 4.0 ties theory and practical concerns together to synthesize a so-called *theory of architectural capability*. A series of capable precedents are analyzed to act as both instances and generators of this theory.

Section 5.0 summarizes and reiterates the laws and corollaries of the theory.

Following these sections are addendums that lay the groundwork for the second part of the MArch Graduation Project (GP2). Preliminary site analysis and program development are included for the Bridgeport Station site in north Richmond, BC. The site presents a unique condition, being the intersection point where the new Canada Line light-rail transit system connects the Vancouver International Airport, downtown Vancouver and downtown Richmond. Also included is a proposed schedule for the GP2 term.



2.0 Artificial Ecologies

Complex relational systems: emergence and assemblages

2.1 COMPLEX RELATIONAL SYSTEMS

Very generally, **a complex relational system is a collection of parts related to each other that acts as a context for its parts but may also operate as a whole within a larger context.** For example, the citizens of a city may ride a bus, which itself is a functional element of the city. Both the citizens and the bus relate to one another and to the city as well, and all participate to some degree in levels of political, social/cultural or economic events. Meanwhile, the city, taken as an agglomeration of all the things that “reside” within it, also participates in other larger contexts (e.g. province/state, nation, etc). And even at this larger scale, we may still discover relationships between the smallest citizen and the largest global realm. When we speak of complex relational systems, it is the nature and type of these complex organizational relationships that are of interest.



While the agents in these systems are certainly important, attempting to reveal modes and mechanisms of a system is better served through understanding the operational relationships between agents. The following sections on assemblages and emergence elaborate on the terminology used later on in the discussion of capabilities.

It is of course not feasible to offer an entirely comprehensive overview of these theories. Instead the intention is to begin with some terms and general concepts needed to establish a robust definition and characterization of capabilities: how they come about, how they are exercised, and how they change over time.

2.2 ASSEMBLAGES

In *A New Philosophy of Society*, Manuel De Landa reintroduces assemblage theory (originally proffered by Gilles Deleuze) as an alternative to the accepted ontologies of the social sciences, especially *taxonomic essentialism*. Taxonomic essentialism is a hierarchical, tree-like organization that bears on the differences between things, and maintains that those differences come from the innate properties (*essences*) of those things. These essences form a “set of necessary and sufficient conditions [for a thing] to belong to natural kind.”² For example, the animal kingdom differentiates between vertebrates and invertebrates, based on the existence of spinal cord. Architecturally, we might

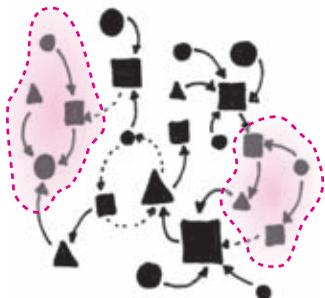
differentiate a school from other buildings by the existence of one or more classrooms, with the corollary that a building without one or more classrooms cannot be a school.

In rejecting taxonomic essentialism's hierarchical nature, assemblage theory instead maintains that **assemblages are nothing more than differently scaled individual singularities** (hacceities). In De Landa's words: "As far as social ontology is concerned, this implies that persons are not the only individual entities involved in social processes, but also individual communities, individual organizations, individual cities and individual nation-states."³ These individual singularities are of course wholes in and of themselves, where the relations between the assemblage's constituent parts are characterized by *relations of exteriority*.

As opposed to *relations of interiority*—in which a part removed from the whole ceases to be what it is, since being that particular part is one of its constitutive properties—**relations of exteriority imply that a part may be detached and inserted into a different assemblage where its relations to the rest of the system may be completely different.**

These relations that the part may engage in are not a function of the properties of that part (what a thing "is"; a denumerable, limited list), but rather depend on the part's capacities (what a thing can "do"; a potentially open list, some of which may go unexercised). A part, while still having the identity of that part in any situation, may have a variable set of capacities that depend on the relational system it has been inserted into or on the circumstances of a particular time and place. "A relation may change without the terms changing."⁴

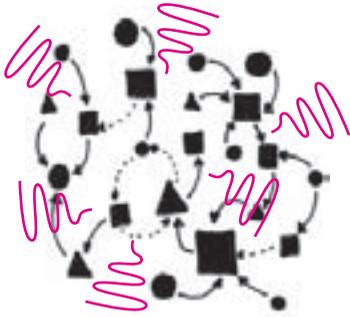
From this we derive the often mentioned maxim that, for complex systems, the whole is greater than the sum of its parts—the basis for emergent properties. In essence, since "relations do not have as their causes the properties of the [component parts] between which they are established," then "the properties of the component parts can never explain the relations which constitute a whole."⁵



3 Ibid.

4 Ibid., 10. Referencing Deleuze.

5 Ibid., 10.



2.3 EMERGENCE

Much literature exists on complex systems and emergence,⁶ and their reference in architecture has become more explicit as advances in computing have allowed architects to experiment with scripting and programming environments that embed intelligent relationships into the system. Of course, the creation of architecture has always involved some sort of implicit complex problem solving; only now, we are able to analyze and dissect these systems, to uncover latent potential and to better understand the repercussions of our actions within them.

It is not necessary to be pedantic here; a basic definition will suffice: **"Emergence refers to the way complex systems and patterns arise out of a multiplicity of relatively simple interactions."**⁷ This is a simple label for a very complex series of interrelations. The exercising of an architecture's capabilities is a form of emergent behaviour, seemingly irreducible to the material realities of concrete, wood, glass, steel—and their geometrical configurations, assembled at a well-defined place for a well-defined duration.

I do not want to spend too much time on emergence but to recognize, or perhaps argue, that it is these relationships—not the agents themselves—that are the building blocks of emergent systems. This is not to discredit the agents *per se* but to say that, in the way a conversation does not exist without two or more parties, behaviours and relations would simply not exist were it not for the coming together of parts.

2.4 ECOLOGIES

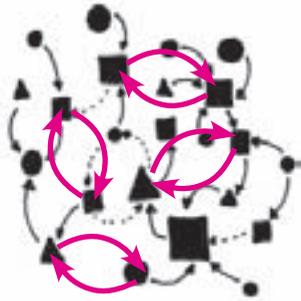
Analogies can and often do break down, and the analogical design process is suspicious (e.g. the city as a biological organism, a circuit board, or a collection of recombinant DNA flows). Nevertheless, generalizing "ecology" from its environmental/biological roots does little harm to the systems it might be applied to—and in fact may be entirely beneficial, if the set of natural systems is broadened to include people, their buildings, and certainly their cities.

Stan Allen writes, **"Ecologies are complex assemblages of resources, species and climates in dynamic interaction."**⁸ Unpacking this succinct definition not

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- 6 The interested reader is referred to any of a number of volumes: The Emergence Group, "Emergence in Architecture," *AD Architectural Design: Emergence, Morphogenetic Design Strategies*, ed. Michael Hensel, Achim Menges and Michael Weinstock, vol. 74, no. 3 (May/June 2004): 6-9; Kevin Kelly, *Out of Control* (available online at <http://www.kk.org/outofcontrol/>); Steven Johnson, *Emergence: The Connected Lives of Ants, Cities, Brains and Software* (Scriber, 2001); and others...
- 7 "Emergence," from Wikipedia. Available online at <http://en.wikipedia.org/wiki/Emergence>. Accessed 26 November 2007.
- 8 Allen, "Artificial Ecology," 87.

only reveals the parts but also the mechanism for relationships. Allen highlights “resources, species and climate”—simply a way of referring to agents/parts and their context—and includes the purposely vague descriptor “dynamic interaction.” The implication is that ecologies are engaged in an endless economy of give/take, cooperation, interrelation, and communication—a system pursuing multiple optima simultaneously based on the needs and desires of its parts.

Ecology also implies a form of *balance* or *equilibrium* in a system. While participants may at times experience gain, they may at other times experience loss while other participants experience gain. On the whole, the system may exhibit “symptoms” that evidence the health of its constituent economies. These high-level behaviours emerge from an ecology’s constituent relations.



2.5 FEEDBACK

Within any complex system, the concept of feedback is integral to the system’s evolution. **Feedback is the mechanism that allows future states to be dependent on the outcomes of past states, either stabilizing or destabilizing the system. It may amplify or attenuate, sustain or alter.**

Architecture is a social, cultural, and technological product of its context and its context’s mechanisms. MVRDV considers much of its work to be *datascares*, tending towards a quantifiable depiction of context and mechanisms: “a visual representation of all the measurable forces that may influence the work of the architect or even steer or regulate it.”⁹ But as is well known, the life of architecture does not end when construction is complete. Architecture itself can be seen as a feedback loop, an operator that lays ground for events and has a certain sphere of influence, allowing a piece of architecture to affect—to feed back into—its context and mechanisms:

BLDGBLOG: There’s also the incredibly interesting possibility that a building project, once complete, will actually change the society that built it. It’s the idea that a building—a work of architecture—could directly catalyze a transformation, so that the society that finishes building something is not the same society that set out to build it in the first place. The building changes them.

LEBBEUS WOODS: I love that. I love the way you put it, and I totally agree with it. I think, you know, architecture should not just be something that follows up on events but be a leader of events. That’s what you’re saying: That by implementing an architectural action, you actually are making a transformation in the social fabric and in

the political fabric. Architecture becomes an instigator; it becomes an initiator.¹⁰

The architect plays a vital role in determining the set of possible events and the magnitude and nature of the sphere of influence. Architecture's capabilities within systems are defined and developed by elaborating on context and embedding the potential for reaction.

2.6 CAPABILITY

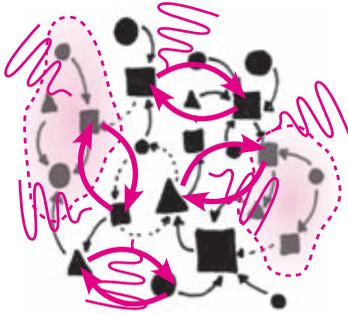
Capabilities are collective productions whose development entails time, making, competition, and conflicts, and whose utilities are, in principle, multivalent because they are conditioned on the character of the relational systems within which they function.¹¹

A few maxims to summarize:

- 1 Complex systems comprise parts, context, and relationships.**
- 2 A specific part's context and relationships have myriad aspects, from other parts to time and location.**
- 3 The compounded relations of many parts interacting with and operating on their context forms the basis for emergent behaviour. Relations are the building blocks of complex systems.**
- 4 Feedback is integral to the evolution of any complex system.**

We pause here to refocus on the goal: By understanding the means and mechanisms of change in complex systems, we can make our actions within such systems more efficacious. In other words, we improve our ability to project change onto the system and draw events out of the virtual and into the realm of the possible or even the probable: to uncover latent potential.

The question of what is possible in a complex relational system is intimately linked to the question of capability. What can an agent



¹⁰ Geoff Manaugh/BLDGBLOG, "Without Walls: An Interview with Lebbeus Woods," BLDGBLOG (2007). Available online at <http://bldgblog.blogspot.com/2007/10/without-walls-interview-with-lebbeus.html> Accessed 5 November 2007.

¹¹ Sassen, *Territory, Authority, Rights*, 7–8. Sassen elaborates in a footnote: "The concept of capabilities has been developed conceptually by a variety of scholars with different questions in mind. Most known and influential are probably the constructs developed by Sen (1999) and Nussbaum (2000). In both these elaborations there is a strong positive valence. My use of the term is simpler, more descriptive, and closer to the word as distinct from the construct. Further, in my use it is multivalent, in that I include what we might think of as negative capabilities normatively speaking: the capacity to destroy what ought not to be destroyed, such as human life or good cropland. Finally, I do not confine the term to individuals, but also include systems."

do? What is it capable of? How might we diversify or specialize an agent's capabilities?

Capabilities are established by the characteristics of an agent, but they depend highly on context. Our abilities reflect our relationships and the limits of the system(s) we operate within. In many ways, our abilities might be hampered or leveraged by our context—for example, the layout of the physical environment or the nature of a political atmosphere. There could be financial limits, or abstract social entities such as discrimination. For architecture, the systems are similar: budgetary and economic constraints, (in)efficient technologies, social structures that pass through or around physical space, political will, building codes or other laws that regulate use, and so on.

However, realizing that feedback always exists, exercising capabilities can effectively change the contextual system and promote/demote new/existing capabilities: "... key capabilities developed in the earlier phase can become foundational to a subsequent phase but only as part of a new organizational logic that in fact also foundationally repositions those capabilities."¹²

2.7 PHILOSOPHICAL FORMS OF THOUGHT

If we accept that a discussion about capability implies a discussion about relationships and actions/reaction, about intent/control/desire/need, we need to formulate techniques to operate on these relationships.

De Landa, in "Deleuze and the Use of Genetic Algorithms in Architecture," a commentary on the viability of using genetic algorithms in artistic design, suggests that genetic algorithms may only be productive if architects adopt three *philosophical forms of thought*: populational, intensive and topological.¹³

The modes of thinking are not only of valuable for genetic algorithms, however. They provide a way of thinking about complex systems and a starting point for the translation of the aforementioned abstract concepts into form.

Population thinking entails never focusing on one or two instances but rather always keeping the 'larger (reproductive) communities' in mind. "... the population, not the individual, is the matrix for the production of form."¹⁴ This is also to remember that populations evolve slowly, as transactions propagate at different rates and at different times.

Understanding *intensive thinking* begins with contrasting intensive properties with the more readily understood extensive



Filipino women working in Hong Kong as domestic helpers gather regularly beneath Norman Foster's Hongkong and Shanghai Bank headquarters.
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Viewable online at <http://flickr.com/photos/stefanirvine/105717200/>

¹² Sassen, *Territory, Authority, Rights*, 15.

¹³ Deleuze enters the picture here. De Landa notes, "Deleuze did not invent these but he brought them together for the first time, and made this the basis for a new concept of the genesis of form." (De Landa, "Deleuze and the Use...", 9).

¹⁴ De Landa, "Deleuze and the Use...", 10.

properties. In contrast to extensive properties—spatial quantities such as length, area or volume, which are adjusted proportionally in response to spatial subdivisions—intensive properties are those that remain unchanged by spatial subdivision, such as temperature, pressure or speed.¹⁵ An important side-effect of intensive properties is that they result in zones that differ in intensity, creating continuous gradients between them. These zones of difference “drive fluxes of matter and energy.”¹⁶

De Landa uses the concept of the biological body plan to preface *topological thinking*. The body plan is an ‘abstract diagram’ that, if stretched, twisted or otherwise manipulated in a continuous manner, results in a variety of geometrically distinct forms that maintain similar characteristics. De Landa illustrates with the tetrapod limb, which through different transformations might become the single-digit limb of a horse, the wing of a bird, or a human hand with an opposing thumb. The body plan of this limb cannot contain any of these specificities but instead is defined or represented in a manner that make all such conditions possible. These ‘abstract diagrams,’ then, must be represented using *topological invariants*: properties that remain fixed through these transformations, such as connectivity.¹⁷

Together, these modes of thought offer a collective and inclusionary vision of complex systems based on qualitative properties and relational connections. This allows a given system to be abstractly mutable and thus capable of being deployed geometrically in space in many ways, some of which may be entirely surprising or counterintuitive yet still uphold the integrity of the generating qualities and connections.

15 De Landa offers the example of a volume of water at 90° divided in two becomes two volumes each at 90° not 45°.

16 Ibid.

17 Using the tetrapod limb example, in all cases, regardless of final form or the final capabilities of that limb, it is always connected at one end to the trunk of the body, and provides a point at any opposing end for digits, with a movable joint somewhere in between.



initial hypothesis



strips



confetti



access & circulation



final layer



3.0 Contextualizing

Globalization, transurbanism, and the perception of space and time

3.1 GLOBALIZATION

I would like to present globalization, as a process, in its most inclusive form. **The label “globalization” is not important, only that it is understood as the proliferation and expansion of any number of interacting ecologies.**

Kristopher Olds offers a suitably comprehensive summary. Referencing Held,¹ Olds claims that globalization refers to two distinct phenomena:

1. *Political, economic, and social activity becoming worldwide in scope.*
2. *The intensification of levels of interaction and interconnectedness between states and societies which make up an international society.*

Going further:

Globalization is a contingent, dialectical, nonuniform, and undulating mesh of processes which do not, contrary to popular opinion, lead to simple homogenization; globalization also initiates a myriad of local interpretations and transformations. Seemingly uniform flows of ideas, images, or capital are interpreted to an infinite degree, creating diverse impacts in similar localities at the same time or in the same locality at different times.²

Globalization implies a set of rather unprecedented changes to our societal framework: the ability for people to travel great distances in short periods of time; the proliferation of migrant workers and the increase in global migration; the ease of moving capital and goods via international channels; the expansion of economic markets for a variety of goods, services and resources; the ease of cultural exchange through various media (film, music, blogs, online news media, etc); the creation of new tourism economies and the expansion of existing ones; new levels of human connection and communication via technologies such as the internet, mobile phones, and satellites; *and so on.*

These changes continue to alter our social and cultural formations and our perceptions and conceptions of space and

Opposite

Parc de la Villette competition entry, OMA:
The process of layering sets out a regimented, logical scheme in which distinct systems are able to operate effectively. But the overlaps create a broad variety of spatial configurations, resulting in an intensive spatial construction.

OMA, *S,M,L,XL*, 1158.

1 Held, "Democracy, the Nation-state and the Global System," 145.

2 Olds, "Globalization and the Production..." 1714.

time. In 'pop' terms, the world is smaller, flatter, more like a 'global village.' These processes present the opportunity for architecture to establish itself as a processor, negotiator and instigator.

3.2 TRANSURBANISM

According to Arjen Mulder, *transurbanism* is "urbanism in the era of globalization."³ When broken down—and especially if one accepts that globalization was happening for a long time before the twentieth century—transurbanism is not such a new idea. Transurbanism, as Mulder presents it, is simply a call for the design of the city to reflect the city:

The design challenge for architecture in this context is, instead of trying to create a single public domain, to create an atmosphere for the establishment and coexistence of a diversity of public domains. Transcontextualize. You cannot design a city, but you can help a city organize itself as a living structure—not by breaking down all barriers to the streams of information and commodities, but by allowing specific obstacles, channels, retardations and accelerations to be designed for individual streams, and thus to be informed by the city itself.⁴

The idea, it would seem, is not to simply accept the networked culture we live in, but to embrace it.

In the same volume, Mark Wigley redelivers a classic 1963 article by Melvin Webber, an urban planning theorist. "Order in Diversity: Community without Propinquity" is a visionary piece that, without resorting to rhetoric, pragmatically argues for an alteration to spatial practice, just as Mulder does 40-some years later (above). Webber attributes the dispersion of the city to evolving communication technologies, and he recognizes that while "cities are physical organizations that enable people to communicate with each other, new systems of communication allow for different organizations."⁵ These "different organizations" are non-hierarchical networks that reject "mass culture" in a "mass society," instead forming a "a maze of subcultures within an amazingly diverse society organized upon a broadly shared cultural base."⁶

As Wigley tells us, the trick to Webber's argument is to say that **people gather in dense spatial organizations for non-spatial reasons:**

3 Mulder, "TransUrbanism," 9.

4 Ibid., 10.

5 Wigley, "Resisting the City," 106.

6 Webber, "Order in Diversity," 68.

In other words, they inhabit a space in order to communicate, but communication is not a spatial phenomenon. On the contrary, it is a kind of subversion or destruction of space. So specific spatial systems are set up in order to facilitate transactions that subvert space. Cities are dense precisely for the purpose of dematerialization or dispersal—for the possibility, that is, for bodies and minds to float towards or away from each other independently of spatial barriers.⁷

The impact of this idea is perhaps not immediately apparent. Wigley notes, it is one that might seem debilitating for the architect, the primary organizer of space: if the organization of our society is premised on the non-spatial, what, then, is the architect to create?

But this question misses the point quite entirely. Despite society's non-spatial motives, we still end up in a variety of spatial formations that, to a varying extent, bear on the abstract topologies of the networks in which we inhabit. Without a hint of hubris, Webber logically states the obvious:

If we are willing to accept the idea that the optimum urban settlement and land use patterns are likely to be as pluralistic as society itself, then the conceptions of spatial order will follow from our conceptions of social order. Our spatial plans, then, will be plans for diversity, designed to accommodate the disparate demands upon land and space made by disparate individuals and groups that are bound up in the organized complexity of urban society. ... One pattern of settlement and its internal land use form is superior to another only as it better serves to accommodate ongoing social processes and to further the non-spatial ends of the political community.⁸

Far from undermining the architect, this is in fact an incredibly enabling realization. Contemporary spatial practice is a truly active, dynamic social exercise that ought to be directly relatable to our conceptions of social order.

3.3 CO-CONSTRUCTION

Co-construction is a label for the idea that neither sociocultural formations nor technology evolve independent of the other. Thomas Misa elaborates:

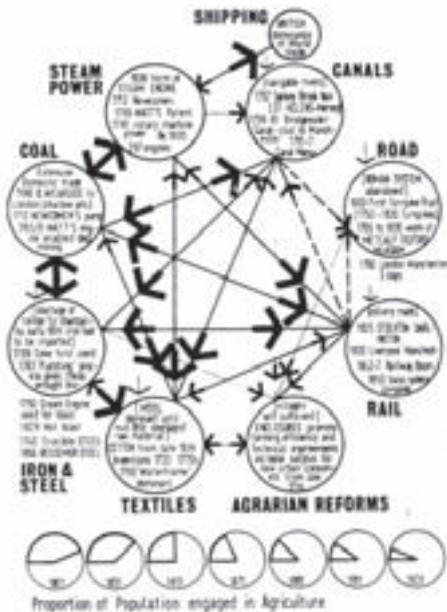
Modern social and cultural formations are technologically shaped; try to think carefully about mobility or interpersonal relations or a rational society without considering the technologies of harbors, railroad stations, roads, telephones, and airports; and the communities of scientists and engineers that make them possible.

Modernization is a process by which capitalism uproots and makes mobile that which is grounded, clears away or obliterates that which impedes circulation, and makes exchangeable what is singular.

—Crary, *Techniques of the Observer*, 10

⁷ Wigley, "Resisting the City," 106.

⁸ Webber, "Order in Diversity," 90–91.



'The main factors which contributed to the Industrial Revolution and an indication of their interaction.' Dotted linkages are negative effects; small arrows significant existing efforts prior to the Industrial Revolution proper.

From AEJ Morris, "History of Urban Form," *Official Architecture and Planning* 34/2 (February 1971): 141.

At the same time, one must understand that **technologies, in the modern era as in earlier ones, are socially constructed**; they embody varied and even contradictory economic, social, professional, managerial, and military goals. In many ways designers, engineers, managers, financiers, and users of technology all influence the course of technological developments. The development of a technology is contested and controversial as well as constrained and constraining.⁹

Architecture exists in a unique position, being both a social/cultural construct and a form of technology—evolving together simultaneously. As architecture experiences technological progress, it becomes capable of exporting new social/cultural formations; new social and cultural formations initiate advancing technologies that architecture may exploit, subvert, provide, or alter.

In doing both, architecture's success at co-construction is some indication of the effectiveness and extent of its capabilities. Its ability to be reflexive and reactive reflects its ability to incorporate and/or promote sets of technologies and social formations.

3.4 SPEED & SPACE/TIME COLLAPSE/COMPRESSION

Technological progress enhances our ability to transgress space and time. New transport technologies such as mega-capacity airliners, high-speed trains and self-driving vehicles allow greater numbers of people to move more quickly at continually lower costs. Communication technologies like real-time high-definition telepresence, multi-functional mobile phones and collaborative internet-based software applications allow for business and personal contact to happen from anywhere, at anytime.

Paul Virilio invented **dromology**—"the study and analysis of the impact of the increasing speed of transport and communications on the development of land-use"¹⁰—after working with French architect Claude Parent in the 1960s. The two had collaborated on 'the function of the oblique,' a topological theory of space steeped in the concepts of disequilibrium and motive instability, or *metastability*. An oblique (non-orthogonal) architecture produced "habitable circulation" and made architecture into a generator of activity: the body navigating against gravity. As it turned out, constructing such architecture at the time was overly difficult, and after a falling out following the May 1968 demonstrations in Paris, the two went their separate ways.

9 Misa, "The Compelling Tangle..." 10. Emphasis added.

10 Virilio, "Architecture Principe," 13.

Architects are not into speed as such. Rather, they make slow objects that make speed visible.

— Wigley, "Resisting the City," 119



580kph: Japanese MLX01 Maglev prototype
<http://www.n-sharyo.co.jp/business/tetsudo/images/linear1.jpg> Accessed 7 November 2007.



2150kph: Supersonic Concorde
http://www.xtraakt.muc.kobis.de/sin_clubs/Kinder/Thomas-J/concorde_landing.jpg Accessed 7 November 2007.



>921000kph: Cisco's TelePresence on 24
 Screen capture from episode of 24, available online at
<http://www.cisco.com/web/solutions/telepresence/fox/index.html> Accessed 7 November 2007.

In 1975, Virilio released his seminal work, *Speed and Politics*, its central thesis summarized here by Bob Hanke:

Speed is central to transportation and communication, and communication at the speed of light is as integral to world warfare as it is to global capitalism. Speed is fabricated by the machinery of culture; the techniques for handling, recording, storing, and transmitting information induce speed.¹¹

As one of the first comprehensive analyses of speed, the extended essay elaborated on the functional relationship between speed and culture, demonstrating that "the relation between technology and culture is a geophilosophical, environmental and urban issue."¹²

Since the publication of *Speed and Politics*, Virilio has further elaborated and developed dromology, adapting it to suit the world's changing states. In a 1995 piece,¹³ still ahead of the widespread availability of the internet in the form we are now familiar with, Virilio comments on our approach toward the light speed barrier and the advent of *real time*: immediacy and instantaneity.

The *perspective of real time*, of cyberspace, is a new form of perspective, says Virilio. "It is a fully new perspective, free of any previous reference: it is a *tactile perspective*. ... to reach at a distance, to feel at a distance, that amounts to shifting the perspective towards a domain it did not yet encompass: that of contact, of contact-at-a-distance: tele-contact."¹⁴

He continues on in a manner that might seem alarmist to many today who find their everyday attachment to 'cyberspace' commonplace: a "loss of orientation" accompanies this new perspective, a destruction of the "here and now," "a stereo-reality of sorts threatens," "history is going to unfold within a one-time-system." Yet the realization that time could supersede space, disconnecting the temporal from the spatial, supremely alters the nature of experience: the capacity for physical speed draws disparate spaces closer together in experience; the capacity for instant communication and contact, however, merges space almost seamlessly—a complete transgression of spatial experience.

Media are agents of spatial decentralisation and temporal implosion that (de)construct our environment. The more we live in a world city existing in global time, the more real-time responsiveness and

11 Hanke, "Speed," 2.

12 Hanke, "McLuhan, Virilio and Electric Speed," 151.

13 Virilio, "Speed and Communication: Cyberspace Alarm!"

14 Ibid. Emphasis in original.

control will tend to replace the height, breadth and depth of our environment.¹⁵

3.5 PERCEPTION & REPRESENTATION

The history of the evolution of spatial perception often falls to art historians who track the understanding of spatial construction through art.

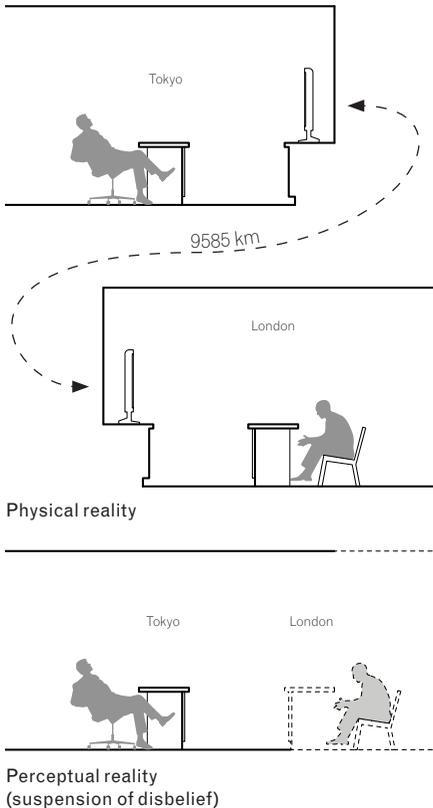
The invention of the viewpoint, or the observer, accompanied the 'invention' of perspective. This realization associated a specific location in space (and in time) with the execution of events, and allowed for the abstract dissection and representation—and thereafter, manipulation and reconstruction—of spatial experience.

Jonathan Crary's *Techniques of the Observer* (1990) uncovers an alternate history of vision and of the observer through the nineteenth century, one that is "inseparable from a massive reorganization of knowledge and social practices that modified in myriad ways the productive, cognitive, and desiring capacities of the human subject."¹⁶ As he later elaborates:

Whether perception or vision actually change is irrelevant, for they have no autonomous history. What changes are the plural forces and rules composing the field in which perception occurs. And what determines vision at any given historical moment is not some deep structure, economic base, or world view, but rather the functioning of a collective assemblage of disparate parts on a single social surface.¹⁷

Eventually, technology enabled the advent of shared, objective vision—for example, 3D models or virtual reality—which could be commonly experienced by countless people, irrespective of location. However, these technologies severed certain tangible realities once associated with the viewpoint of the observer. "The loss of touch as a conceptual component of vision meant the unloosening of the eye from the network of referentiality incarnated in tactility and its subjective relation to perceived space."¹⁸

Today, the severing of tactility from vision is made acceptable by the fundamental enabling of basic communication over otherwise not easily surmountable distances. However, accompanying this communication is an associated 'suspension of disbelief' that belies the physical reality of the situation. Of course, this is only for the time being, and it can be fully



¹⁵ Hanke, "McLuhan, Virilio and Electric Speed," 151.

¹⁶ Crary, *Techniques of the Observer*, 3.

¹⁷ *Ibid.*, 6.

¹⁸ *Ibid.*, 19.

expected that, as Virilio worries, the experience will only become more seamless.

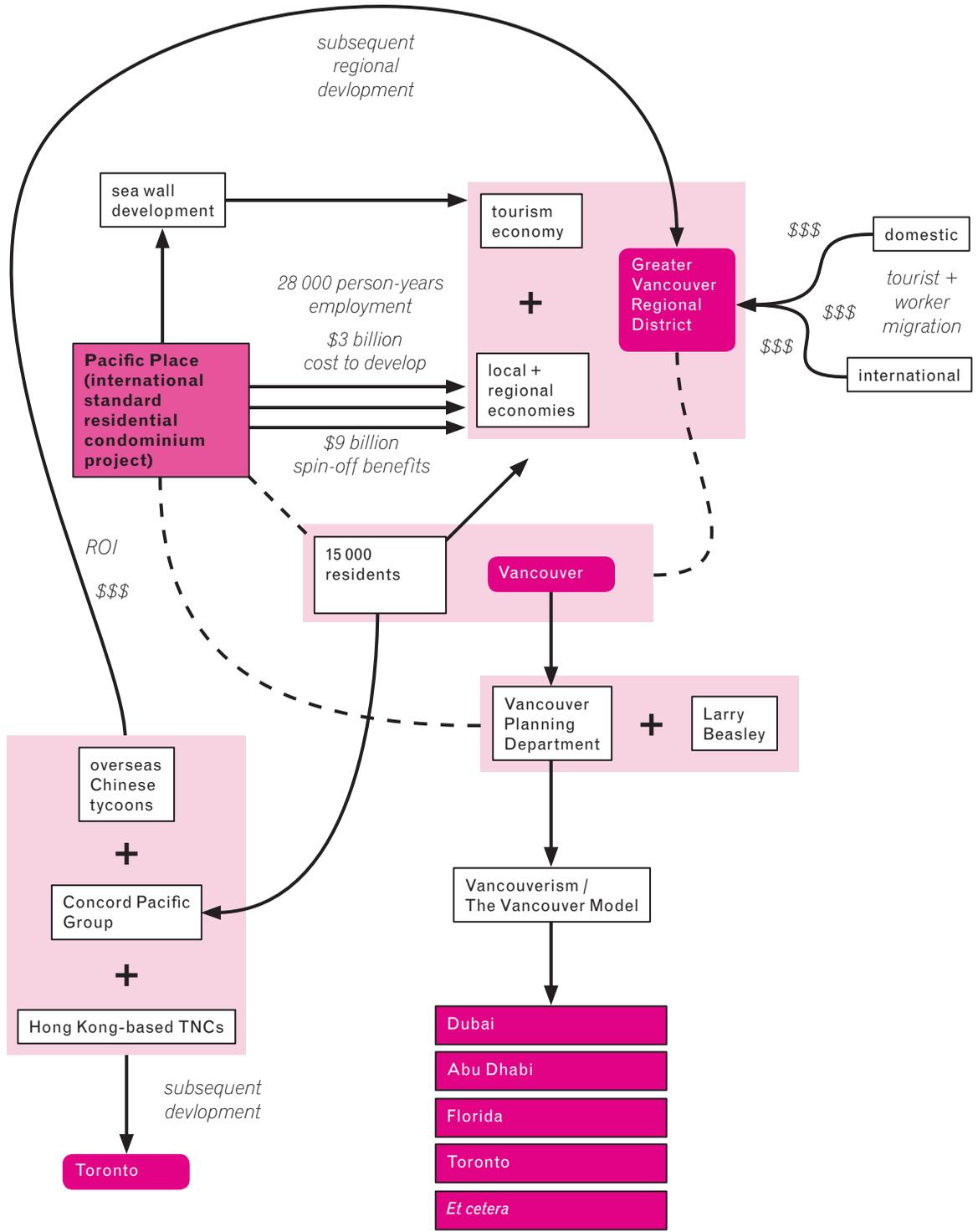
The creation of spatial experience is fundamental to the practice of architecture. Enabling technologies have altered the manner in which we perceive space, giving rise to frequent and extended suspensions of disbelief while permitting communication to penetrate ever greater spatial and temporal boundaries. If this subversion were interpreted as “social material” to be exploited, perhaps our architecture, as a social construct, can leverage our expectations and perceptions to become more capable.



Albrecht Durer's *Man Drawing a Lute*, 1525
<http://www.usc.edu/schools/annenberg/asc/projects/comm544/library/images/626.jpg> Accessed 25 November 2007.

In North American technocultural studies, much attention has been paid to space and spatiality; yet this is only half the story of our experience of time-space compression. For speed is not merely a matter of the overcoming distance or the rate of dissemination and retrieval of information; it is also a matter of mobility, the perception of the visual world, the construction of time, how we measure value, the synchronisation of everyday life and how people are disciplined within the political economic order. Ultimately, speed is also a question of desire and of how power is organised in society. “To possess speed,” write Millar and Schwarz, “is to be modern; to control speed rather than to be controlled by it is perhaps the most important form of contemporary power.”¹⁹

¹⁹ Hanke, “McLuhan, Virilio and Electric Speed,” 123–124. Here, Hanke references Jeremy Millar and Michiel Schwarz, eds., *Speed—Visions of an Accelerated Age*, London: The Photographer’s Gallery and the Trustees of the Whitechapel Art Gallery, in association with the MacDonald Stewart Art Centre, Guelph and the Netherlands Design Institute, Amsterdam, 1998; p. 17.



4.0 A Theory of Architectural Capability

Mechanisms and metrics

We can learn from found situations, and we can engineer designs or even design guidelines that produce conditions closer to those spontaneous ones that fascinate us and everybody else, rather than fix a set of principles that will never be able to trigger unpredictability.

—Farshid Moussavi, quoted in "Urban Design Now," *Harvard Design Magazine* (Fall 2006/Winter 2007)

4.1 MECHANISMS

Mechanisms are instances of capability being exercised. They tap into existing ecologies, drawing activity into the spaces provided by architecture so that it may, by its quantities and qualities, participate. The list of rhetorical verbs is long: architecture performs, generates, propels, enables...

In general, architectures operating within complex relational systems fall into two classes: (1) actual physical node points in networks, and (2) the provision of space(s) that act as nodes in networks. In either case, we are practically speaking of the provision of space as the provision of an abstract market that may (temporarily or more permanently) allow global or transnational flows to (de)materialize. Architecture offers a place for the exchange of—social, economic, cultural, and political—customs, goods, capital, ideas, and so forth. New connections may be formed; existing connections may be maintained or disconnected. By exercising its capabilities within given contexts, architecture operates. Architecture gains agency.

It may be helpful to provide examples of the relational systems in which a specific piece of architecture may participate and its associated mechanisms. These examples might include, but are certainly not limited to, the following:

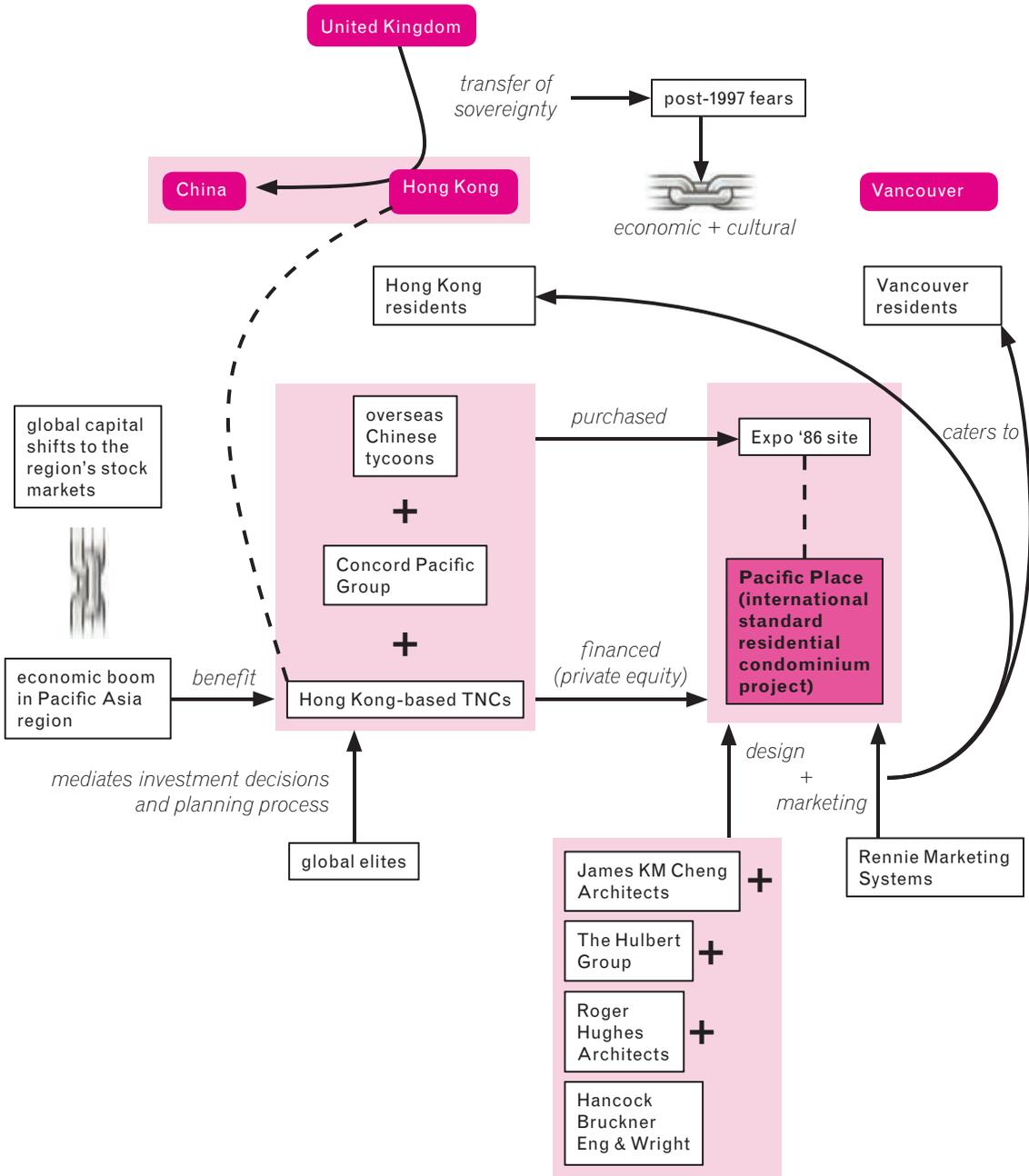
mobilities — Falling in either class, this primarily indicates a node in a transportation network, permitting the expedient movement of people from one place to another. Architecture here is often a place of pause, not a destination. Site selection is a prevailing limiting factor, typically determined by pre-existing infrastructures (roads, rail, built structure). e.g. railway station; bus stop; parking lot; escalator, ramp, hallway; platform, waiting room

business (local, regional, international) — Recent technologies permit the functioning of business in almost anyplace, almost anytime. The provision of space is somewhat irrelevant, since communication and transactions are predominantly non-spatial activities. Or, at very least, their success depends little on a particular

Opposite

'Concord Pacific Place: sphere of influence' Based on the unique and various conditions that made this Vancouver residential development possible, its subsequent completion set a number of other process in motion in realms beyond the north shore of False Creek. For more, see page 59.

Sources:
http://www.concordpacific.com/aboutus/about_us.html
 Accessed 3 October 2007.



spatial configuration. e.g. provision of internet; mini-office workspace/teleconference room; sleeping cells; conference/meeting facilities; office; water cooler

infrastructures — Not interpreted as strictly large-scale public works, infrastructural architecture enables a set of activities broader than the architecture itself. Architecture literally plots an eventspace. Reference the seven propositions for infrastructure in "Infrastructural Urbanism" (Allen, 1999). e.g. powered/watered market space; grids/patterns; "division, allocation and construction of surfaces / provision of services";¹ roads, rails, paths, sidewalks

social/cultural development — The provision of certain spaces from the certainly generic to the highly specific allow for the acting out of cultural and social traditions, norms, values, etc. These spaces permit gatherings that are formal, informal, or both. e.g. cafeteria; sidewalk; theatre/auditorium/performance space; 'social condenser,' gym; town square; monument

tourism economies — Tourism requires numerous support structures, and architecture may be a vehicle or a destination. e.g. hotel/motel/holiday inn; access to points of interest: nature, art, history, etc; airport; leisure amenities, museum/gallery; monuments, spectacles, superlatives: biggest, tallest, longest, etc

ad nauseum

It is of course important to understand the role of site and context in determining capabilities and their sphere of influence: as much as architecture is a product of its context, the effectiveness of its capabilities relies on the receptiveness of its context. What works well for one site may not be appropriate elsewhere. A common sense observation perhaps, but the relentless proliferation of inappropriate, 'violent' space might beg to differ.

Richard Lloyd, a colleague of Saskia Sassen, "posits the possibility that local space in a global city can, under specific conditions, incorporate a mode of spatial practice that materializes at the intersection of global economic forces and postindustrial restructuring."² His analysis follows the post-industrial development of Wicker Park, previously a blue-collar

Opposite

'Concord Pacific Place: context and mechanisms'
As with any endeavour of this scale, Concord Pacific Place was the result of a complex and contingent series of events at the local, regional, and global scales.

Sources:
Olds, "Globalization and the production of new urban spaces," 1722-24.

1 Allen, "Infrastructural Urbanism," 54.

2 Sassen, *Deciphering the Global*, 9.

residential neighbourhood in Chicago. After an early influx of students and artists, Wicker Park attracted developers eager to exploit its bohemian character. MTV subsequently chose to film its reality-based show *The Real World* in a Wicker Park loft, making the community a fixture in a globally shared TV-scape.

While it is easy to consider these events as capitalism unrecognizably altering the local, Lloyd argues instead that the local can and does actively participate in the global, and that Manuel Castells' assertion that the *space of flows* overwhelms a *space of place* is not universally applicable:³

[Wicker Park] is not an empty container in which social processes unfold. Elements of the neighbourhood's cumulative character, including its old brick buildings, are a source of opportunity and constraint that actively structure a trajectory of activities across time, even as such activities transform the neighbourhood. ... These practices [i.e. the aforementioned post-industrial developments] are directly linked to the contemporary moment of capitalism; they express a relationship between a mode of accumulation that is global in scope and spatial outcomes at the local level. This does not mean that Wicker Park directly expresses the global economy; 'the macro-micro link refers not to such an expressive totality, but to a structured one in which the part is shaped by its relation to the whole' (Burawoy 2000, p. 27). This is not to be confused with models that posit the subsumption of the *space of place* by the *space of flows* (Castells 1989). Instead, the place idiosyncrasy of Wicker Park, generated by local history and long-standing tropes of the urban cultural milieu, and the deracinated economy of global commodity exchange operate in a kind of tandem. Wicker Park is not merely strip mined by global capital; its neo-bohemian economy is simultaneously local and global in its costs and its rewards.⁴

These are apt realizations, relevant when observing the upcoming established precedents. In each case, there is to some extent an empowerment of the local, an ability to engage in transformative transactions.

3 Lloyd here refers to Manuel Castells, *The Informational City: Information Technology, Economic Restructuring, and the Urban Regional Process*. (Oxford, UK; Cambridge, MA: Blackwell, 1989).

4 Lloyd, "Postindustrial Bohemia," 26–27. Lloyd here references Michael Burawoy, "Introduction: Reaching for the Global," in *Global Ethnography. Forces, Connections, and Imaginations in a Postmodern World*. Edited by Michael Burawoy (Berkeley: University of California Press, 2000), and Manuel Castells (see note 3, above).

4.2 METRICS

This section simultaneously presents a set of metrics by which capabilities might be “measured” and a related set of techniques (for sourcing and developing capabilities) evidenced by precedents. These metrics should make each project’s mechanisms and makeup more apparent, and allow for rough comparisons. Listed, in brief:

- Scale
- Density
- Intensity
- Connectivity
- Intent/Control
- Possibility/Opportunity Breadth
- Public/Private Spectrum

This collection of precedents aims to elucidate the specificities of architectural capability—most importantly, both its foreseen or unintended mechanisms of participation.



Scale

4.2.1 Scale

There is a correlation (as we might expect) between the scale of an architectural intervention and its sphere of influence. Perhaps obvious, larger scale lays a wider ground for events. This scale may be programmatically monolithic, multivalent, or somewhere in between. On a more local or community-oriented level, a coffeeshop or pocket park may provide the space necessary for meaningful interaction, despite being singular. On a global scale, the urban megaproject may attract a diverse set of interests, from business to leisure, and establish a greater number of external connections. However, it is possible that overly multitudinous relations may be weaker, or less robust than univalent relations.

A caveat with scale is a large area filled with monolithic or tightly controlled program. A decent density of variegated programs provides a fertile space for the interaction and multiplication of activities and flows—the mechanism for the instantiation and development of spatial capabilities.



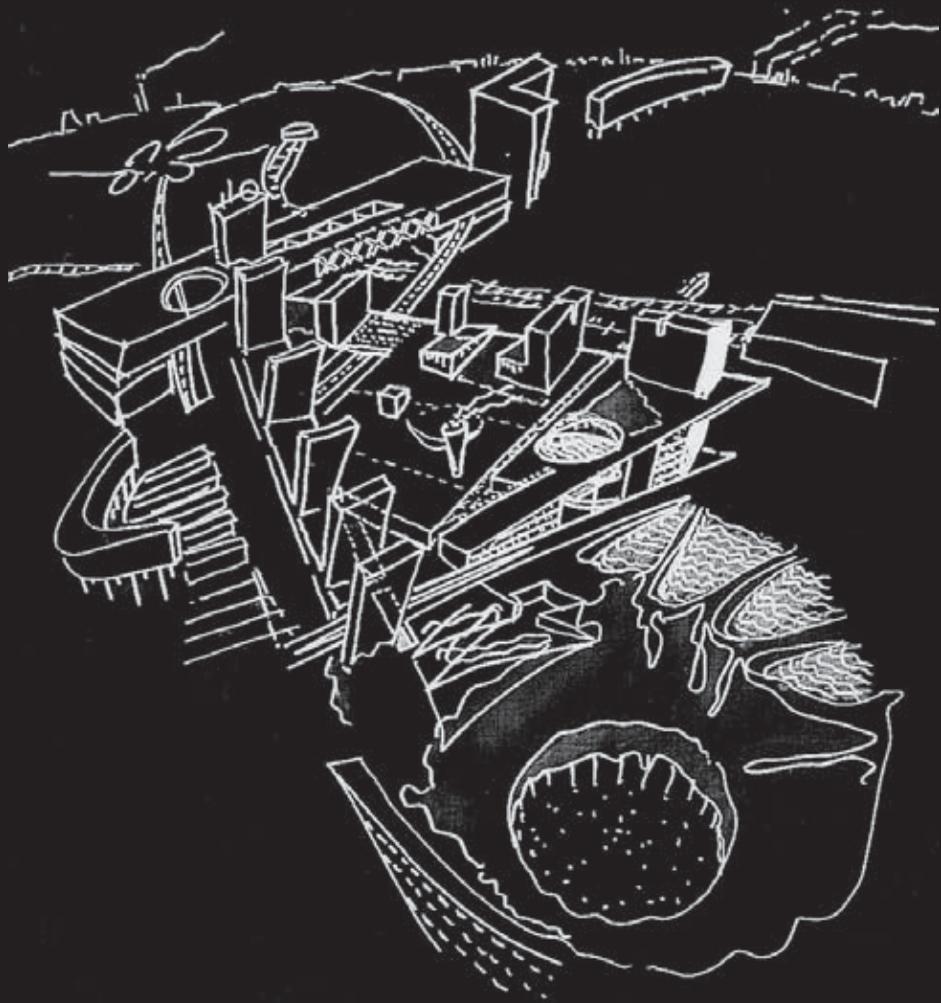
Density

4.2.2 Density

Density is a packing of possibility. Increasing density increases the need for population thinking. Density may supplement or detract from the local density around it. Dense agglomerations exert densificational forces and attract further density. Recalling Wigley, the density of cities is what allows bodies to move toward or away from each other with ease.

Low densities require stronger transactions to maintain communication. Higher density can benefit agents engaged in weaker or subtler transactions, and allow for a more continuous, topological space of possibility. If space is a temporal impediment to a transaction, high density may enable a more vigorous exchange market and the rapid development of diverse capabilities.

Of course, certain transactions that completely transgress spatial distance by means of technology can subvert the relevance of density.



Euralille

OMA/Rem Koolhaas
Lille, France — 1994

scale

large+

density

medium

intensity

medium/high

connectivity

high

intent/control

high+

(directly linked to scale; design brief required one big move, which set off a chain of related decisions; is an exercise of power and placement)

possibility/opportunity breadth

broad but well controlled, regimented

public/private spectrum

20

40

40

Megaprojects at such a scale are explicit about their futures. Euralille⁵ is an entirely constructed event and sets forth in no uncertain terms how its future will play out—what its capabilities are and how they will be exercised. In fact, this brutality, characteristic of large infrastructural developments, is acknowledged by Koolhaas as a sort of coping mechanism. Elegance and thoughtfulness give way to overt engineering functionalism and efficiency.

Euralille was the brainchild of a public/private partnership comprising a massive 800 000m² program—including shopping, offices, service businesses, parking, TGV station, hotels, residential and leisure space, a concert hall, and ‘congress accommodation’—on a 120 hectare site. Masterplanned by OMA (most of the actual structures were designed by a handful of prominent architects), the project was “based on the hypothesis that the ‘experience’ of Europe will change beyond recognition through the combined impact of the tunnel that links Britain and the Europe, and the extension of the French TGV network to include London.”⁶

The extension of the TGV line altered the perception of physical space in Europe by connecting, in a very “fast” way, Paris, London, and Brussels. Euralille, then, became the “theoretical center of a new superagglomeration.”⁷ But it also includes Lille as a collateral destination that can now easily and efficiently participate in the exchange of goods and capital among a large population. Koolhaas offers examples: a Japanese company wanting to “conquer” northern Europe will start in Lille; if you want to hold a Frank Sinatra concert, you do it in Lille; an English company might set up office in Lille, being closer to central London than some parts of greater London.

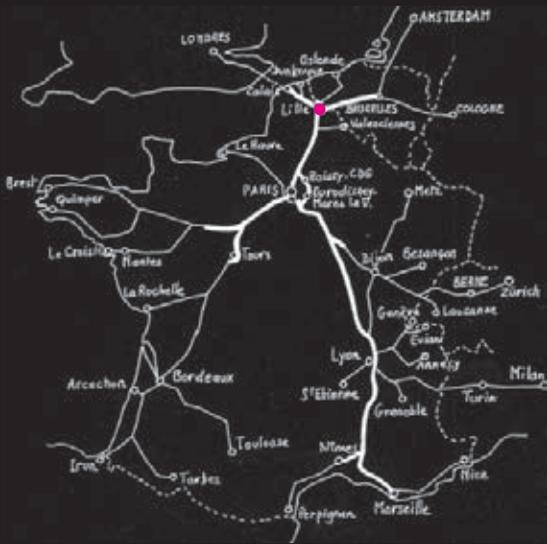
Euralille's location and transportation connections enable its other capabilities—its ability to participate in regional and international business and tourism economies and to step-up as a collector and distributor of cultural development.

Opportunities to transform reality on an extremely large scale are rare. Here, capability is implicit in the scale of the act and the instigating parties are well aware of their actions toward a desired outcome: “We had to insert an entirely new city ... in a complicated urban condition. This synthetic new city is and isn't part of the old town. ... It has not been spawned by Lille; it has landed there.” As titled by Koolhaas in *S,M,L,XL*: “Quantum Leap.”

5 Euralille is fairly well documented in Koolhaas, *S,M,L,XL*, 1156–1209 and *Euralille: The Making of a New City Center* (edited by Espace Croisé). See the bibliography for the full bibliographic references.

6 OMA, “Lille Masterplan” project page.

7 NAI, “Euralille and the Grand Palais.”



The French TGV network; Lille highlighted in pink
<http://palf.free.fr/sujetsdivers/bep/cmc/reimg2002.htm> Accessed 22 October 2007.



'Europe transformed'
 Koolhaas, *S,M,L,XL*, 1158.

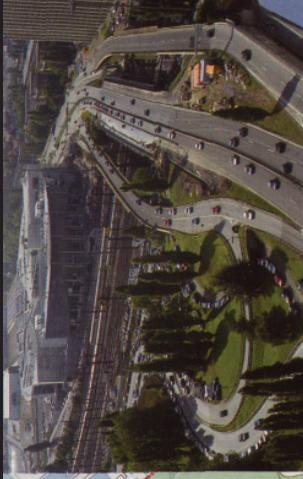


Above
Euralille, aerial view
 OMA, "Lille Masterplan," image set.



Left
View of TGV station and office towers
http://www.axter.fr/images/References/EURALILLE_LILLE.jpg
 Accessed 5 December 2007.

Opposite
Site plan
 Koolhaas, *S,M,L,XL*, 1182-83.



Intensivi

ity

4.2.3 Intensity

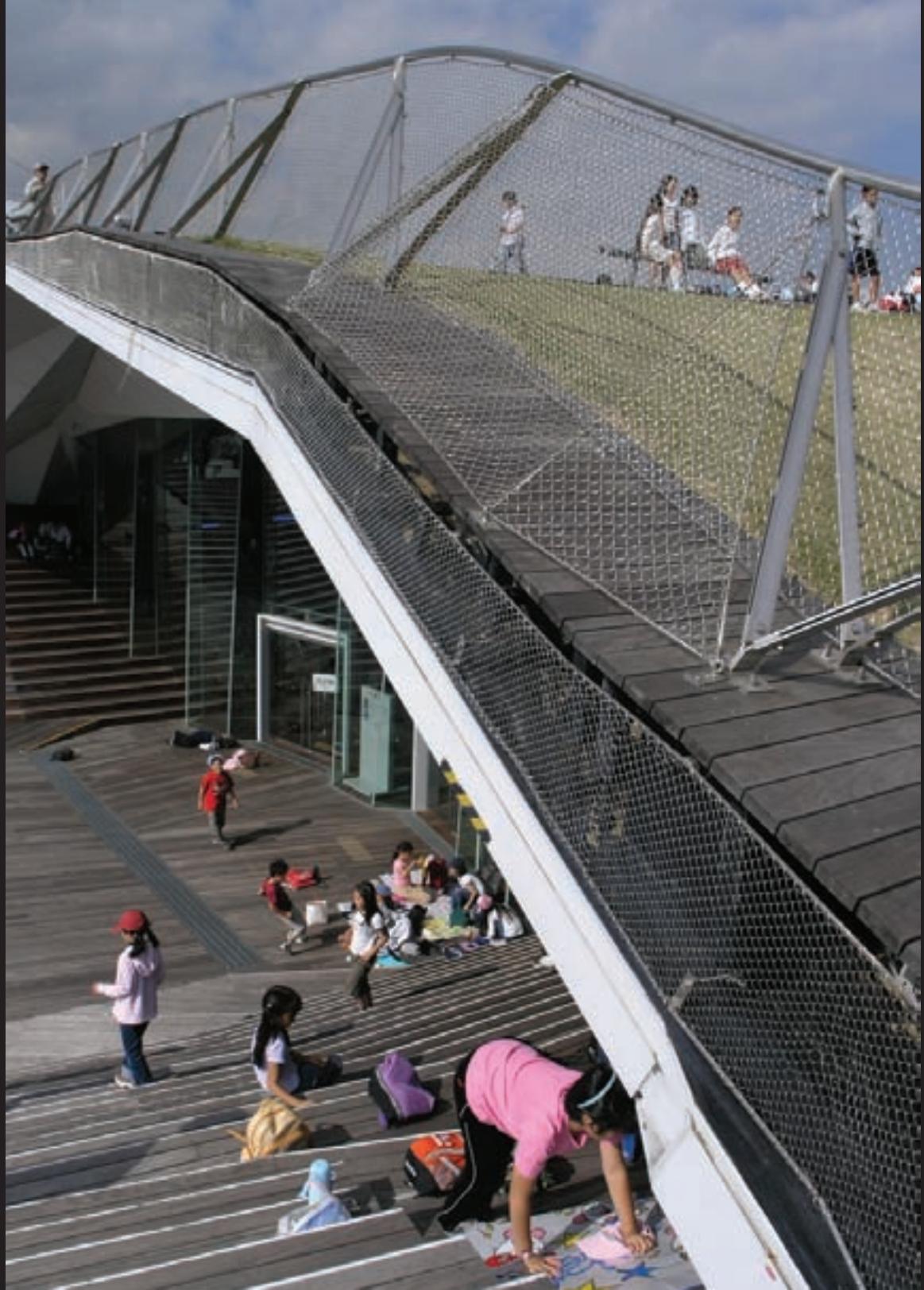
Referring back to De Landa (section 2.6), intensive properties are those that remain invariant under various transformations, like temperature or pressure. Here, these properties are interpreted as elements that determine the qualities of a space, rather than its quantities.

Intensity refers to *intensive space*: "... the kind of spatiality where the capacity of the space is not directly related to its size, and where the quality of the space varies differentially, rather than as a discontinuity. ... [It] offers multiple conditions in a continuum. ... The potential of intensive space is to set up a degree of specificity without delimiting extensions."⁸

Intensity leverages the topological profile of a site and its program. It is the connective tissue between qualitative aspects. Inevitably, these topological relations will be translated in quantifiable real space, but the implications of those topological relationships will remain.

Moments of specificity in intensive space are like sparks—instigators at specific places and times become the generators of events and thus of capabilities. The continuity of intensive space makes for ambiguity at points of intersection and exchange, and may invent hybrid capabilities.

8 Foreign Office Architects, *Phylogenesis*, 232.



Yokohama International Passenger Terminal

Foreign Office Architects
Yokohama, Japan — 2002

scale

medium

density

low

intensity

high

° connectivity

medium/high

° intent/control

low

(form is highly deliberate yet its topological profile allows for a highly interpretable space; form does not exist here for the sake of itself)

possibility/opportunity breadth

moderately broad and loosely controlled; many areas are highly public and accessible

public/private spectrum

60	20	20
----	----	----

FOA's Terminal in Yokohama forces the burden of public space upon the highly regulated space of an international migration checkpoint. Valuable for its formal and topological attributes as much as its programmatic and construction innovation, the Terminal represents a contemporary version of a networked, global node.

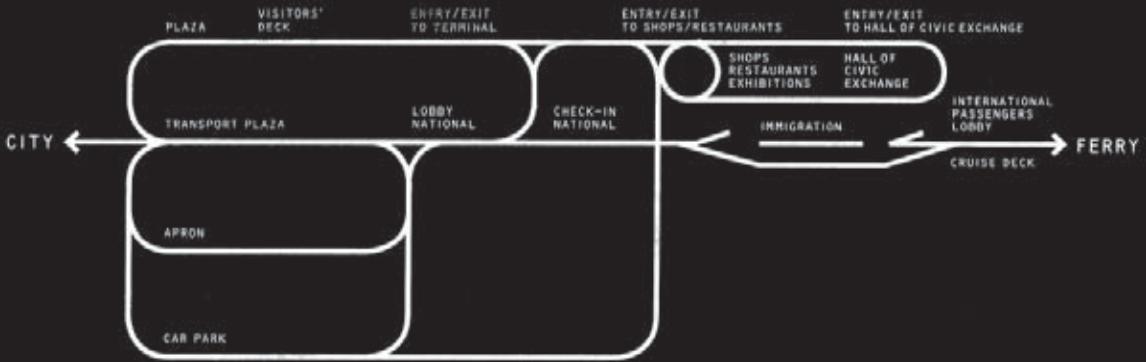
The initial interest was in space generated from a circulation pattern (the no-return diagram; see overleaf). FOA notes in *Phylogenesis* that transportation buildings are particularly interesting "because of the brutal limitations they have, and the many determinations the program automatically imposes on space."⁹ Here, however, they wanted to create a building that was less like a gate (input/output) and more as a "field of movements with no structural orientation."¹⁰

While fascinating as a formal, construction feat, it is perhaps more relevant to the current concerns to reveal what the structure makes possible. Formal manoeuvres (bifurcations) in the circulation sequence create residual, yet prominent, spaces: an outdoor amphitheatre, a banquet hall, elegantly sloping hills, a stepped plaza, a lobby that doubles as a public performance space and mini-mall, a maritime interface for not only ships but also floating theatres or a golf driving range.

The manner in which these programs are gracefully integrated into a singular continuous form is an excellent example of intensive space. Highly controlled areas retain their identity while still feeling intimately connected to publicly accessible areas, and a diversity of spatial arrangements unlocks the terminal's programmatic potential.

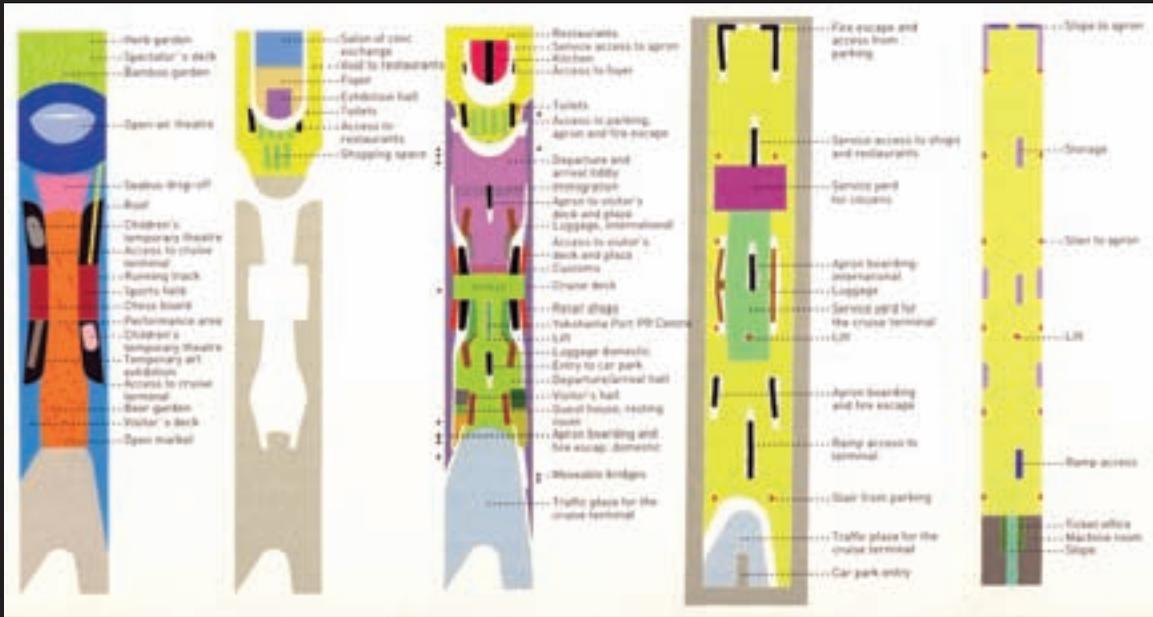
9 FOA, *Phylogenesis*, 228.

10 Ibid.



No-return diagram

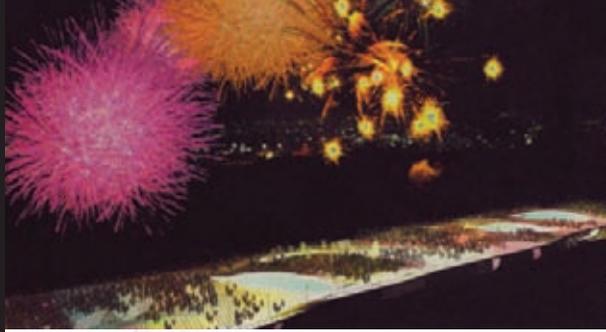
FOA, *The Yokohama Project*, cover/10.



Above
Schematic program distribution
FOA, *The Yokohama Project*, 16.

Left
Aerial view
FOA, *The Yokohama Project*, 304.

Opposite
Schematic collages (top to bottom):
festivals, sports, concerts, conventions,
cultural shows and gallery
FOA, *The Yokohama Project*, 258–263.



Connect

tivity

4.2.4 Connectivity

Connectivity refers to the topological profile. This does not mean only physical and infrastructural—that is, spatial—connections; economic links, cultural connections, political histories and sociological networks are equally applicable. All such connections may be weak or strong and may carry variable densities.

Connectivity is a measure of a system's ability to initiate and maintain connections to things beyond itself. This kind of capability enriches the space of possibilities; it associates disparate parts by mediating difference and consequently implements a versatility in dealing with, or agility in navigating, the space of possible flows.

Referring back to the early theoretical bases, relations would not exist if not for connectivity.



Interface-Flon Railway and Bus Station

Bernard Tschumi
Lausanne, Switzerland — 2001

scale

small

density

medium

intensity

high

connectivity

high

intent/control

medium

(highly specific purpose but with interpretable/occupiable areas)

possibility/opportunity breadth

fairly narrow as a result of scale, but loosely regimented and quite public

public/private spectrum

70

20

10

Interface-Flon is the beginning of an infrastructure that links Lausanne's center to its suburban periphery. Four commuter services converge here (train, bus, vehicle, pedestrian). The original masterplan included several "inhabited bridges" that linked the lower industrial warehouses with the upper historical city. The masterplan was discarded after a change in political leadership and only this one bridge was eventually constructed, although with an extended program.

Tschumi notes: "The different parts of the station are conceived as movement vectors in a dynamic circulation system that carries Lausanne's citizens and neighbors through a complex of transportation, commerce, and civic enlightenment. The parts of this system are multivalent: bridges are walkways and departure area, the trainside platforms serve as streets, the public plaza provides an urban garden."¹¹

"Functioning not as an end point, but rather as a momentary pause along multiple routes," *Interface-Flon* facilitates movement but also provides programmatic opportunity to those "in pause."¹²

Connective convergence enables crossed paths and short circuits. Enhanced communication increases awareness and response time.

While in this case, the design primarily designates physical connectivity. But it also provides spaces where other connections may be formed. Parts are conceived as ambiguous spaces that present possibility while still effectively carrying out their functional purposes.

Top

Local vertical elements (elevator, stairs) connect the upper levels of the old city to the lower industrial lands. The station integrates bus and rail service at this point in space and provides access to both the city and waterfront.

http://ead.nb.admin.ch/web/biennale/bi06_A/Bilder_Tschumi/flon/9502.PH.429.PM.jpg Accessed 30 November 2007.

Bottom

The grassed plaza makes the Interface's sectional connectivity apparent.

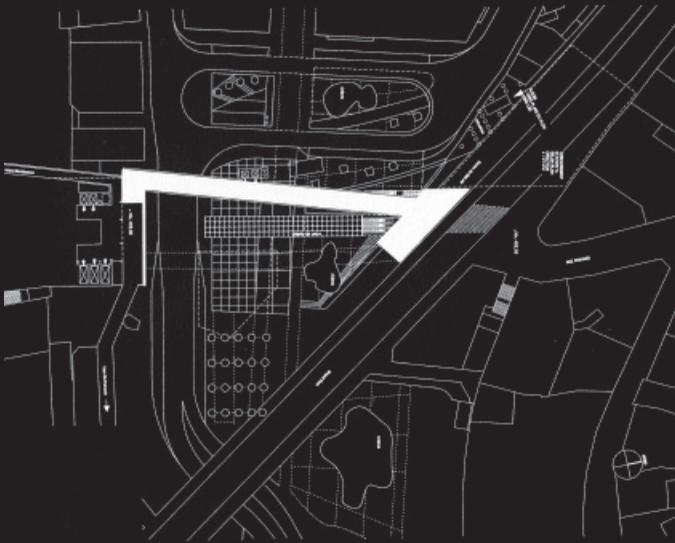
http://ead.nb.admin.ch/web/biennale/bi06_A/Bilder_Tschumi/flon/9502.PH.403.jpg

11 Tschumi, *Interface-Flon* project page. See bibliography.

12 Tschumi, "Vector as Infrastructure," 267.



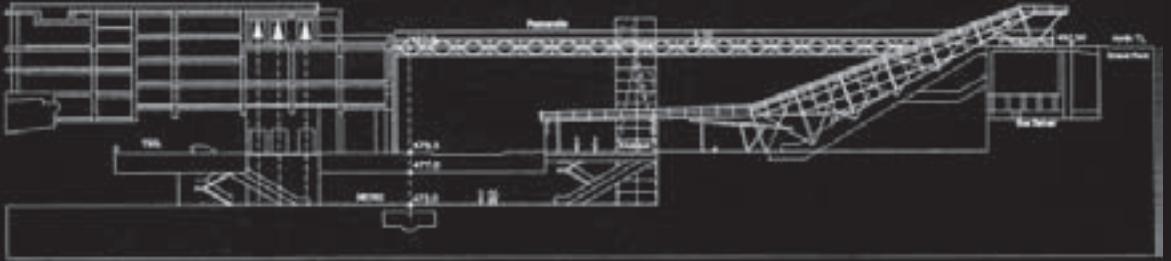
'Nothing but movement vectors.'
Upper street level (+12m)
Tschumi, Event-Cities 2, 271.



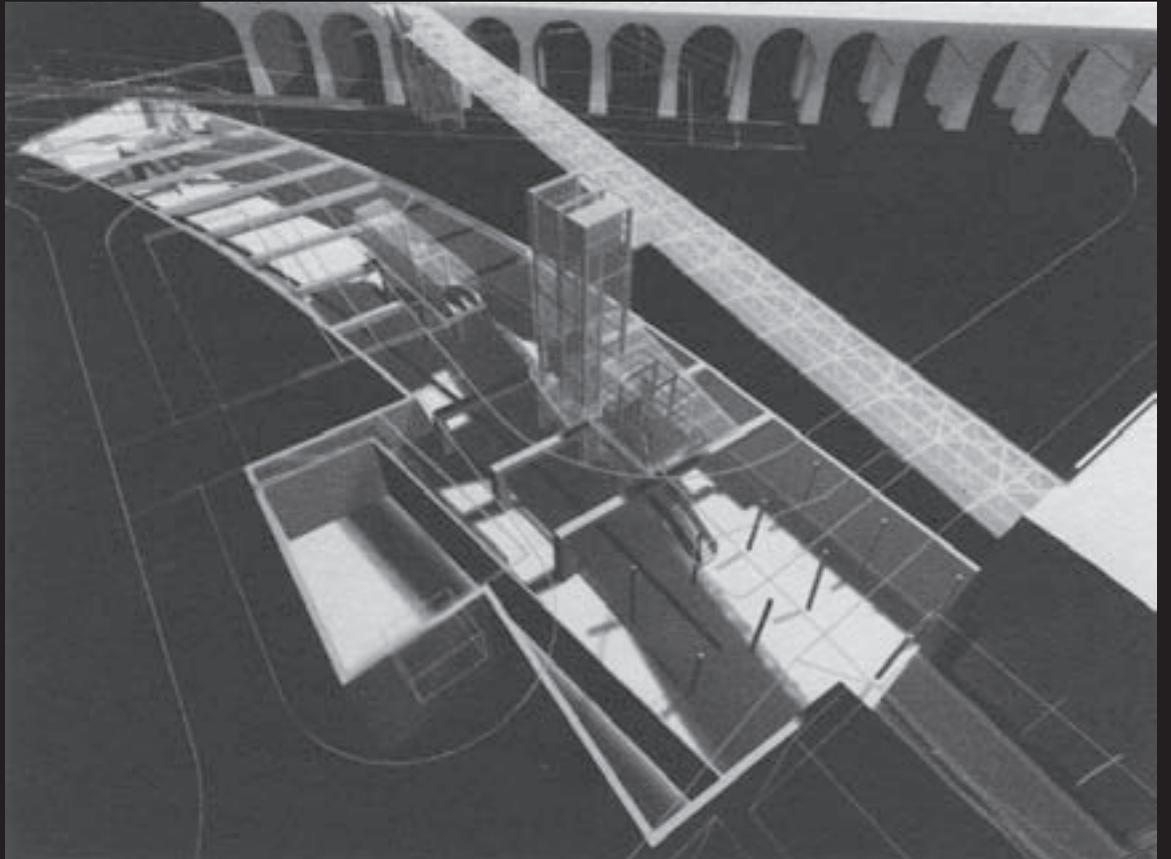
'Designing a new infrastructure with program:
two regional railway lines, one subway line,
several bus lines, taxis, cars, pedestrians.'
Ground plan (0m)
Tschumi, Event-Cities 2, 269.



'Architecture as infrastructure.'
Underground station plan (-6m)
Tschumi, Event-Cities 2, 273.



Section
Tschumi, *Event-Cities 2*, 277.



Cutaway render showing subway station
Tschumi, *Event-Cities 2*, 272.

Intent/Co

4.2.5 Intent/Control

The design of the built environment strikes a fine balance between control and enablement. A diverse range of variables can individually be highly regimented or left unspecified. Certain types of regimentation might be highly enabling but only with respect to a narrow set of interests. Too much ambiguity might result in space that does not provide enough cues for appropriation and use, resulting in a broad set of weak capabilities lacking the resources to evolve.

The degree of intent and exercised control can be a measure of power exerted, both in the design of a space and in its post-construction regulation. A building owner who strictly regulates spatial usage limits the development of diverse capabilities. But this is not to say that those in the position of regulating space ought to absolve themselves. Regulation should instead come in the form of prompts and encouragement, to direct program but leave open the door to unforeseen possibilities that may be entirely beneficial.

Space may also be socially, culturally or politically self-regulating, with respect to its context. Space representing shared values or norms automatically enforces certain behaviours and thus limit capability, although perhaps in some cases, in a manner beneficial to inhabitants that share those values.

ontrol

Possibilit

Opportu

ity/
nity

4.2.6 Possibility/Opportunity Breadth

This metric is related to intent and control. It is also in some ways a summary of other metrics. The creation of possibilities and opportunities is in some ways purely functional and quantitative (i.e. Is the space big enough? Is there enough light?) and in other ways very qualitative (i.e. Is holding such-and-such activity appropriate here? Do the qualities of the space enhance or detract from a user's intention to occupy it?).

Systems offer a spectrum of broad/narrow opportunities that may be highly/loosely regimented. Within this, there are questions of how open the system is: Can it absorb difference? Is it mutable? Does it encourage variation or specificity?

This 'capacity to absorb' is limited by smaller scale and enhanced by higher density, intensity and connectivity. Wide degrees of variation in occupants or use are indicative of developed or developing capabilities.



Schouwburgplein

West 8 / Adriaan Geuze
Rotterdam, Netherlands — 1991

scale

small/medium

density

low

intensity

low

connectivity

low

intent/control

medium

(intended to be highly opportunistic
but is in fact rather limited due
to a lack of obvious cues)

possibility/opportunity breadth

narrow but loosely regimented;
narrowness limits possibilities

public/private spectrum

80

10

10

Schouwburgplein¹³ is a public square in Rotterdam adjacent to the City Theatre and City Concert Hall. Portions of the area include a grated ground plane, suitable for running electrical and water services up from below for various purposes. Mechanisms for attaching tents and fences for temporary events are also included. Four hydraulically driven mechanical light standards flank the square and are user-positionable.

The square's ground plane is raised slightly above that of the surrounding city, creating the 'city's stage': a place for public interaction and impromptu occupation. Fifteen-metre tall ventilation stacks (from the parkade below) are virtually only vertical elements, aside from the surrounding city structures.

Although providing near limitless opportunities for occupation, this ends up being one of its major downsides. A sincere lack of suitable prompts or any type of meaningful permanence limits Schouwburgplein's capacity to access the flows it exists within. Clearly, the combination of low density, low intensity (lack of spatial diversity), and low connectivity make for an unfortunate, sporadic eventspace that requires significant effort to occupy.

The unprogrammed void is more a diagram of, rather than an active vehicle for, community interaction and occupation.

Opposite (top to bottom)

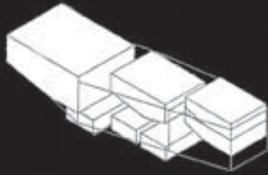
West 8's Schouwburgplein in Rotterdam
at night, conspicuously vacant

Schouwburgplein during a lively event

A more typical day in the city's 'public square'

All images viewable online at West 8 online project archive, <http://www.west8.nl/projects/all/schouwburgplein/>. Accessed 28 November 2007.

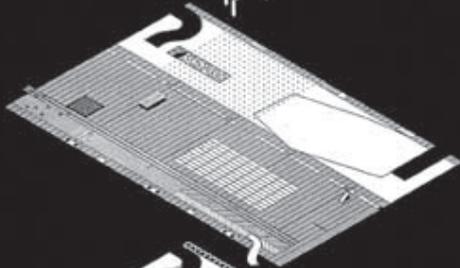
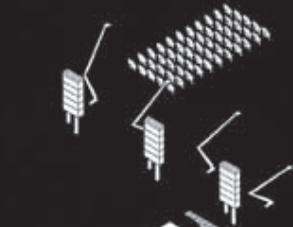
- 13 General references used here include the following:
West 8, "Schouwburgplein," <http://www.west8.nl/projects/all/schouwburgplein/>
West 8, "Schouwburgplein Rotterdam: Design of a Public Square," *netzspannung.org: Media Arts & Electronic Culture*, <http://netzspannung.org/cat/servlet/CatServlet?cmd=netzkollektor&subCommand=showEntry&lang=en&entryId=124581>
"Schouwburgplein," *Great Public Spaces: Hall of Shame at Project for Public Spaces*, http://www.pps.org/great_public_spaces/one?public_place_id=918



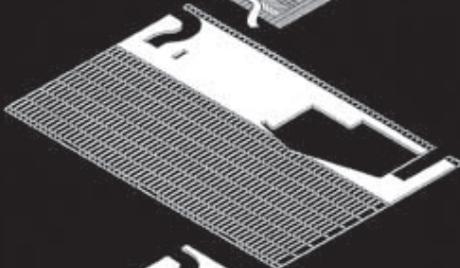
lighting mast and ventilation towers

Movable light mast; conceptual sketch

[http://netzspannung.org/cat/servlet/CatServlet/\\$files/217914/Schouwburgplein4.jpg](http://netzspannung.org/cat/servlet/CatServlet/$files/217914/Schouwburgplein4.jpg) Accessed 5 December 2007.



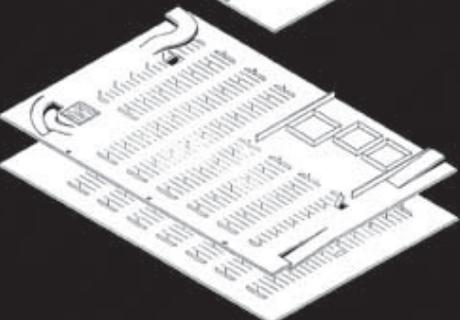
floor



understructure



parking garage roof

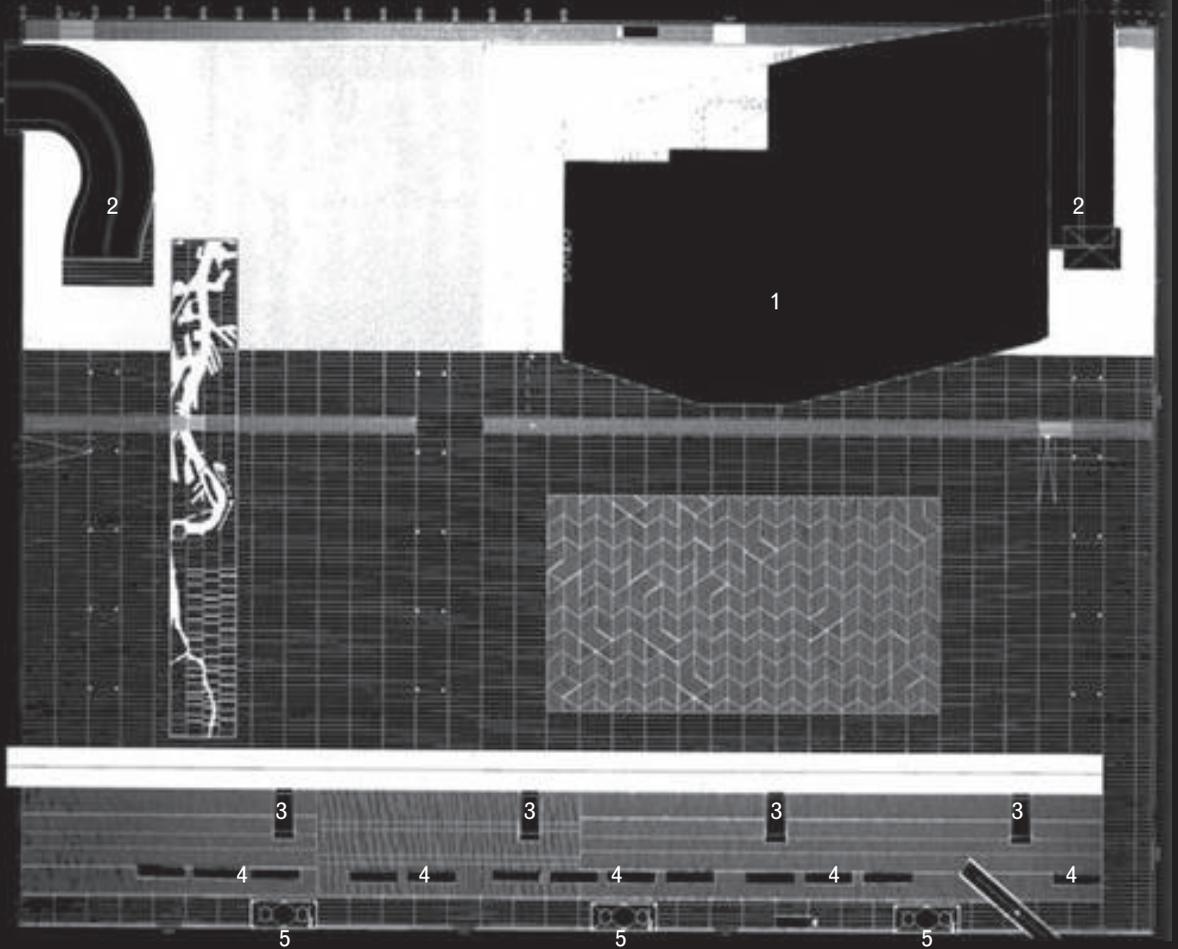


garage 1

garage 2

Layers

[http://netzspannung.org/cat/servlet/CatServlet/\\$files/217924/layers.jpg](http://netzspannung.org/cat/servlet/CatServlet/$files/217924/layers.jpg)
Accessed 5 December 2007.



Plan

http://co.163.com/neteaseivp/resource/paper/doc/2005711121061559225/clip_image003.jpg Accessed 28 November 2007.

- 1 Pathé Cinema
- 2 parking entry
- 3 movable light mast
- 4 wood benches
- 5 ventilation tower



Abstract conceptual diagram

[http://netzspannung.org/cat/Servlet/CatServlet/\\$files/217939/scan_groot.jpg](http://netzspannung.org/cat/Servlet/CatServlet/$files/217939/scan_groot.jpg) Accessed 5 December 2007.

Public/P

4.2.7 Public/Private Spectrum

To make this usual dichotomy useful, we must transform it into a spectrum. At each end are the usual suspects. The private is solitary and isolating, singular in nature. The public is connective and distributing, multiplicitous in nature. The spectrum ought to reflect the varying nature of real space and be able to interpret spaces that misidentify themselves (e.g. so-called 'public' space in and around office towers that are actually private spaces with controlled securities).

In reality, the spaces we interpret as public tend to open themselves up to possibility, while private spaces tend to maintain focus on more singular or well-defined executions of reality.

As the public engages private infusions, a degree of specificity is injected into a disorganized inefficient system. These injections are the beginnings of trends within the system, and act as the sources for the development of capabilities. At the other end of the spectrum, public sprinklings in rigid private spaces and the mutations needed to evolve or diversify an existing system.

This mechanism is subtle yet immensely important. Here, the public and private are not static entities—essences of spaces. They are instead processes of (de)territorialization that affect the flows that move through them, flows that may also be (de)territorializing. At the point of contact, mediation and negotiation occurs. The outcome is multiplication of capability and feedback.

Private



Downtown Vancouver aerial: before (top) and after Concord Pacific
<http://concordpacific.com/condominium-for-sale/history.htm> Accessed 5 December 2007.



Concord Pacific Place segregates itself from the city and the city from the water
<http://maps.google.ca/maps?l=49.272,-123.124&spn=0.009058,0.019376&t=h&z=16> Accessed 5 December 2007.



Typical Vancouver skyline
<http://www.eskimo.com/%7EEnanook/images/vancouver-090604/vancouver3-big.jpg> Accessed 25 October 2007.

Concord Pacific Place

James KM Cheng Architects,
Hulbert Group, et al
Vancouver, Canada — 1995

scale

large

density

low/medium

intensity

low

° connectivity

low-medium

° intent/control

high+

(highly specific purpose and highly controlled areas; no ambiguity)

possibility/opportunity breadth

narrow and highly regimented; 'safe'

public/private spectrum

10	10	80
----	----	----

Located on the old Expo '86 grounds of the False Creek waterfront, Concord Pacific Place is "North America's largest master-planned community"¹⁴ and was a hugely successful impetus for (re)populating Vancouver's downtown core. Premised on providing suburban amenities in an urban environment, the result is a collection of mid-/high-rise residential towers housing 15 000 people, settled amongst parks and paths masquerading as public space but maintaining high degrees of regulation by design.

Concord Pacific Place is highly territorialized and, through urban design techniques, is able to 'protect' itself against the 'chaos' of the adjacent city. These highly private spaces, however, are clearly desired by large segments of North American and various Asian communities. These structures are highly capable at very specific tasks with very local focus (e.g. maintaining the safety of its inhabitants and the integrity of their property and assets), but its intentional, masterplanned nature is unable to absorb anything beyond the limited program that was set for it.

While having relatively dense 'nodes,' the community is still touted as a spacious, low-density residential district. There is a substantial discontinuity in the urban fabric at Concord Pacific's boundaries. The gap prevents meaningful connections back to central downtown, not only in the physical sense, but also in the impossibility for a continuous, diversified social and cultural fabric to develop. This simple fact severely limits its capabilities to what it now does best: maintains the *status quo*.

14 <http://www.concordpacific.com/vancouver-condo-for-sale.htm> Accessed 28 Nov 2007.



5.0 Conclusion

Techniques, protocols and operations: approach and working methodology

We envision information in order to reason about, communicate, document, and preserve that knowledge. ... all the history of information displays and statistical graphics—indeed of any communication device—is entirely a progress of methods for enhancing density, complexity, dimensionality, and even sometimes beauty.

— Edward Tufte, *Envisioning Information*, 33

The so-called *theory of architectural capability* supplies the designer with a base of seven interrelated considerations, which may be added to at will. These metrics provide a criteria for design and testing.

In GP2, each will be independently investigated with respect to the Bridgeport site in north Richmond, BC (refer to section 6.0). Scenarios for each will be developed, investigating the potential (limits) of the site. These scenarios represent mechanisms for how the site might draw systems into it and how it might development a unique set of operational capabilities for each.

The conflation of scenario layers form a reading of the site and context (i.e. the city) and isolate a specific proposed programmatic outline. The scenarios, metrics diagrams and associated program outline become generators of explicit form—a translation of their topological relationships into geometry.

The schematic design phase will incorporate 2D/3D mapping and diagramming techniques, physical and digital 3D modelling, and likely film/video representation. Design development will entail an iterative design process that develops 2D drawings, digital 3D models, and physical models simultaneously in an effort to synthesize the schematic design research and developed design strategies/implementations for the site.



6.0 GP2 Site and Site Analysis

6.1 RICHMOND NORTH GATEWAY / BRIDGEPORT STN

The Canada Line—a new light-rail transit line operating between downtown Vancouver, downtown Richmond, and the Vancouver International Airport (YVR)—is slated to begin operation in 2009, just prior to the 2010 Winter Olympics.

Bridgeport Station marks the intersection where the southbound Canada Line from Vancouver will split, with one arm headed to the airport and the other to Richmond. The area around the station is currently used for light industrial and business but is expected to be developed as multi-use space in the future. Already, a large 'casino resort' has been constructed across the street from the future station location.¹

As the City considers the Bridgeport Station area to be the 'north gateway' to the city, it was recently transitioned from the Bridgeport Planning Area to the City Centre Area Plan, giving it a renewed focus. The most recent development proposals for the area generally involve mid-rise mixed-use development with the addition of moderate parkspace.

The area has (or will have) a number of significant mobility links. The extended site is roughly bordered by waterfront to the west and north, the Oak Street Bridge/Highway 99 viaduct to the east, and Bridgeport Road to the south—with YVR on Sea Island directly to the west. While proximity to YVR is beneficial (15 million passengers pass through annually²), there are downsides. The West Bridgeport area falls in a zone that discourages noise-sensitive land use (e.g. residential, schools, or hospitals). As well, maximum building height is limited to 45m.

The Bridgeport area faces a number of development challenges, including lack of access to the waterfront, large infrastructural 'barriers' (bridges, railway, major roads, rights-of-way), and under-servicing of utilities, amenities and commercial services. Richmond's Official Community Plan outlines the general hope for the area's future development: "There will be a shift away from traditional industrial activities toward more technologically based and environmentally sensitive industries, with higher value added products. As well, new industries will be more labour and capital intensive."³

- 1 The same company that owns the hotel/casino complex has applied for a development permit and rezoning for the area immediately surrounding the station to build a five-storey park-n-ride facility topped with a 192-room seven-storey hotel.
- 2 "City of Richmond Fast Facts." 3. http://www.richmond.ca/___shared/assets/pp_hf_236257.pdf Accessed 7 December 2007
- 3 "Bridgeport Area Plan," 7. See entry under Other Resources in the bibliography.

6.2 RICHMOND PROFILE

Geography

Latitude	49°10' N
Longitude	123°8' W
Elevation	~2.5m
Richmond Total Municipal Area	130km ²

Climate

temperate:	January average temperature	2.5°C
	July average temperature	17.3°C
	average annual rainfall	1113mm

Population

Richmond is the fourth most populous municipality in the GVRD, after Vancouver, Surrey and Burnaby

Greater Vancouver Population

2.1 million (735.6 per km²)

Richmond Population

185 400 (1420 per km²); 8% of GVRD total

Average growth rate

+2900 people/year (1.6%/year)

Projected Population (2021)

212 000

Land Use

Mix of residential, commercial, industrial, agricultural lands, waterways and natural areas; 90 parks totalling ~1400 acres plus 200 acres of recreational trail system; 38% of city area is reserved for agriculture in the Agricultural Land Reserve (ALR)

Industry

Supports over 100 000 jobs in services, retailing, tourism, technology, light manufacturing, airport service and aviation, agriculture, fishing, and government; two international seaports

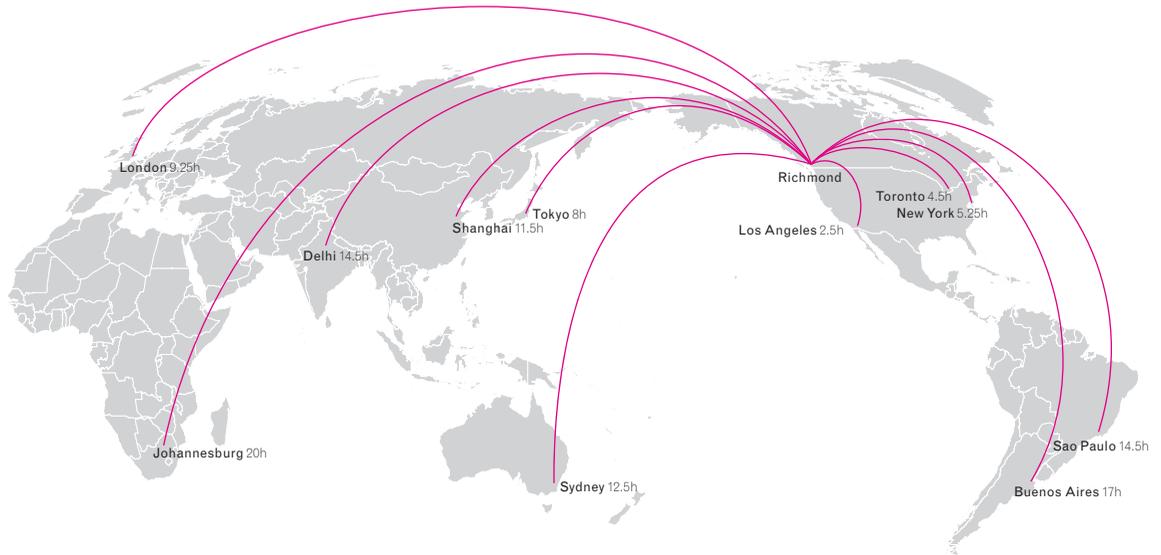
Sources: <http://www.richmond.ca/discover/about/>



Opposite

Mini-wetland between the River Rock Casino and the Casino parkade: Being an island, nearly all of Richmond's waterfront along the Fraser River is considered environmentally sensitive.





'Richmond to ...' flight times

Source: http://www.tourismvancouver.com/pdf/map_flying_times.pdf
 Accessed 5 December 2007



Richmond location in Metro Vancouver

Source: http://en.wikipedia.org/wiki/Image:Richmond%2C_British_Columbia_Location.png
 Accessed 6 December 2007



Richmond neighbourhood location map

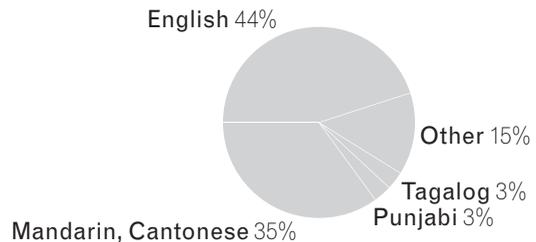
Source: "City of Richmond Population Fact Sheet," 2.
http://www.richmond.ca/_shared/assets/pp_hf_16248.pdf
 Accessed 7 December 2007

Physical Links

- *Vancouver International Airport*
- *regional transit connections to Vancouver, Burnaby, Surrey, and other GVRD municipalities via bus and (soon) light-rail*
- *provincial connections via air and inter-city bus*
- *two major highways feed city; 25min to Canada-US border; effective terminus of the US I-5 corridor, connecting Vancouver by highway to Seattle, Portland, and northern California*
- *two deep-water seaports*

Source: <http://www.richmond.ca/busdev/econdev/access.htm>

First Languages (percentage by population)



Source: "City of Richmond Languages Fact Sheet." http://www.richmond.ca/_shared/assets/pp_hf_176251.pdf
 Accessed 7 December 2007 Note: 2006 Census data, which pegs Richmond's foreign-born population at 60%, is not yet incorporated into these figures.

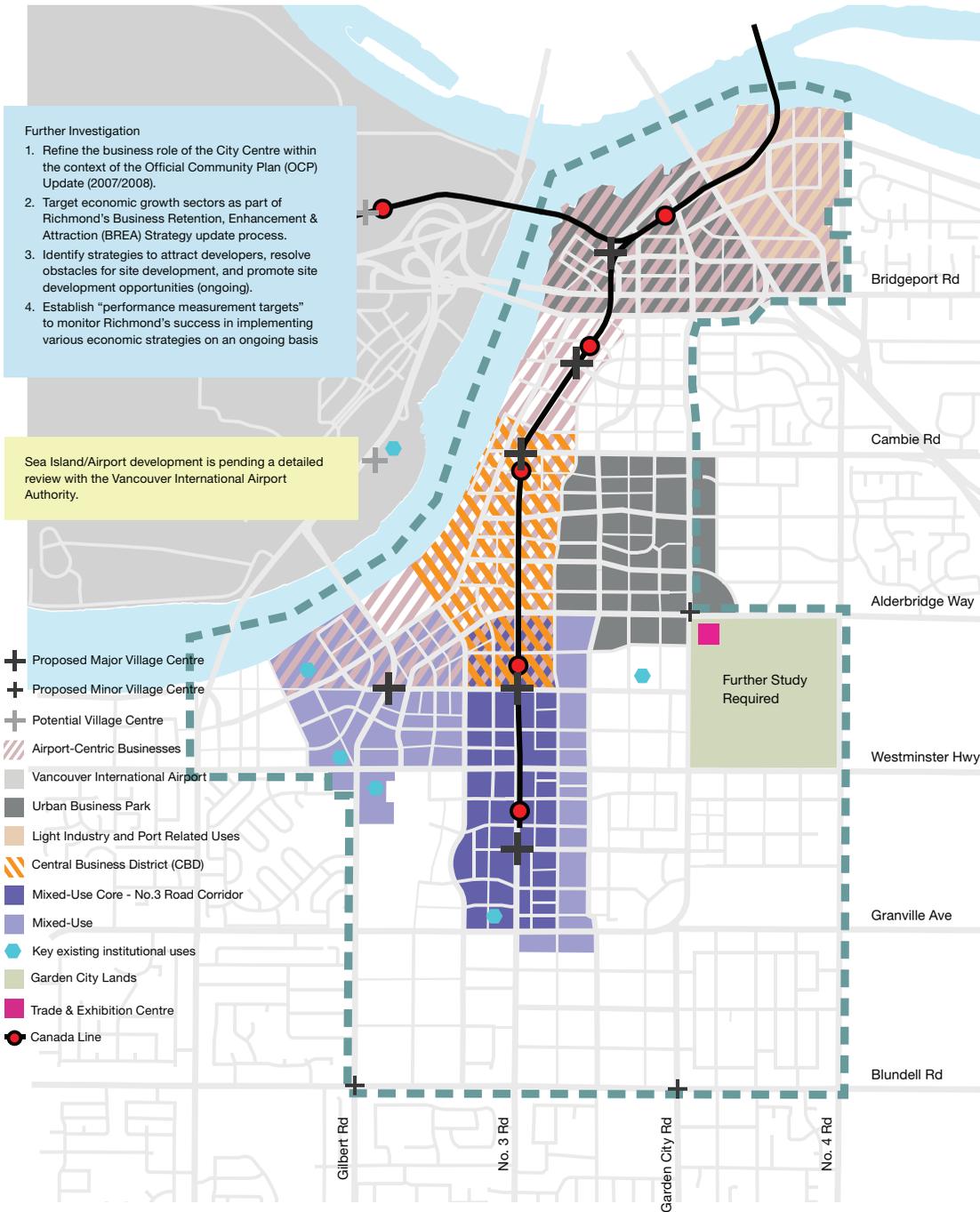


Bridgeport Station / North Gateway, Richmond, BC
Orthophoto (1:1000)

50M
200FT

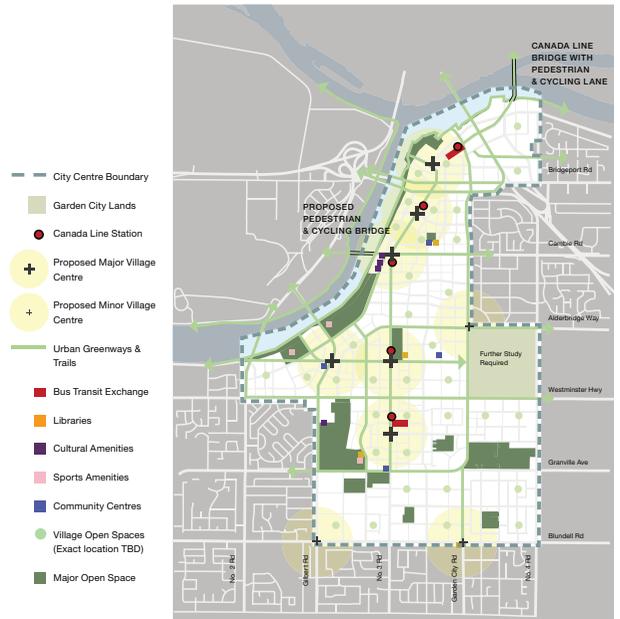
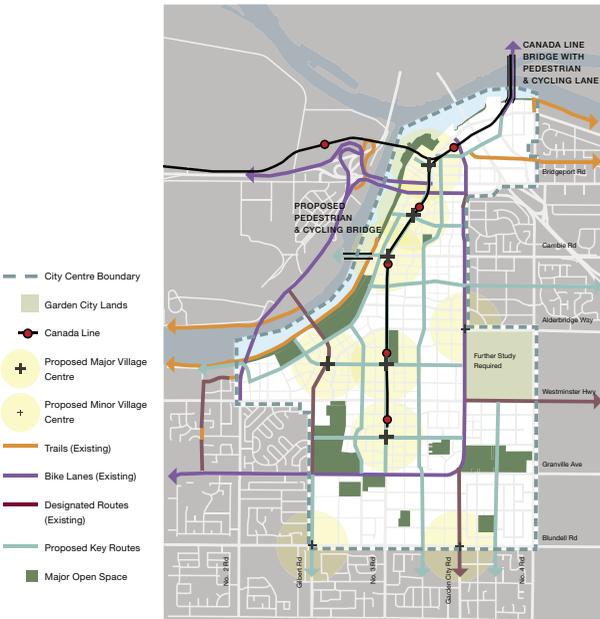
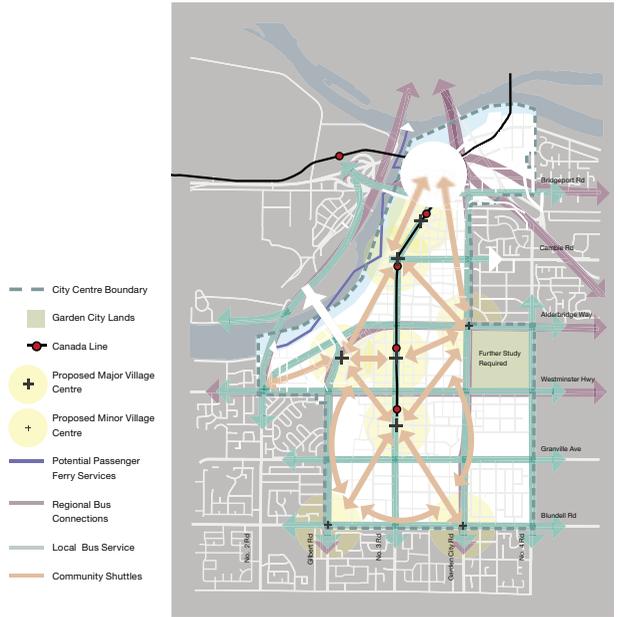
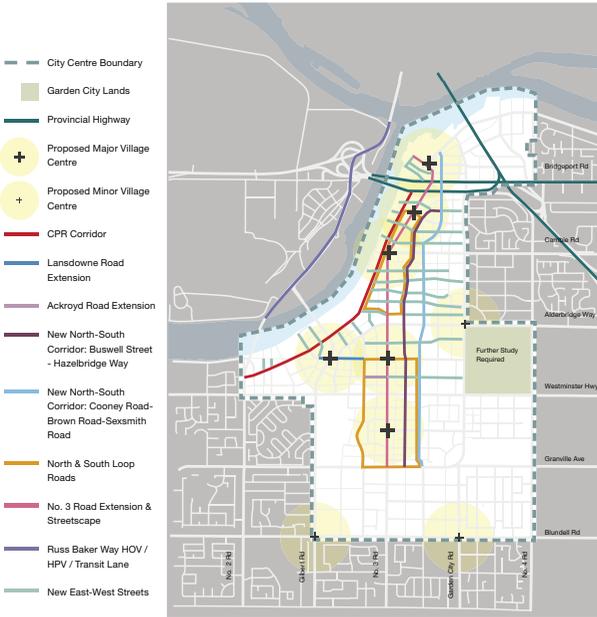






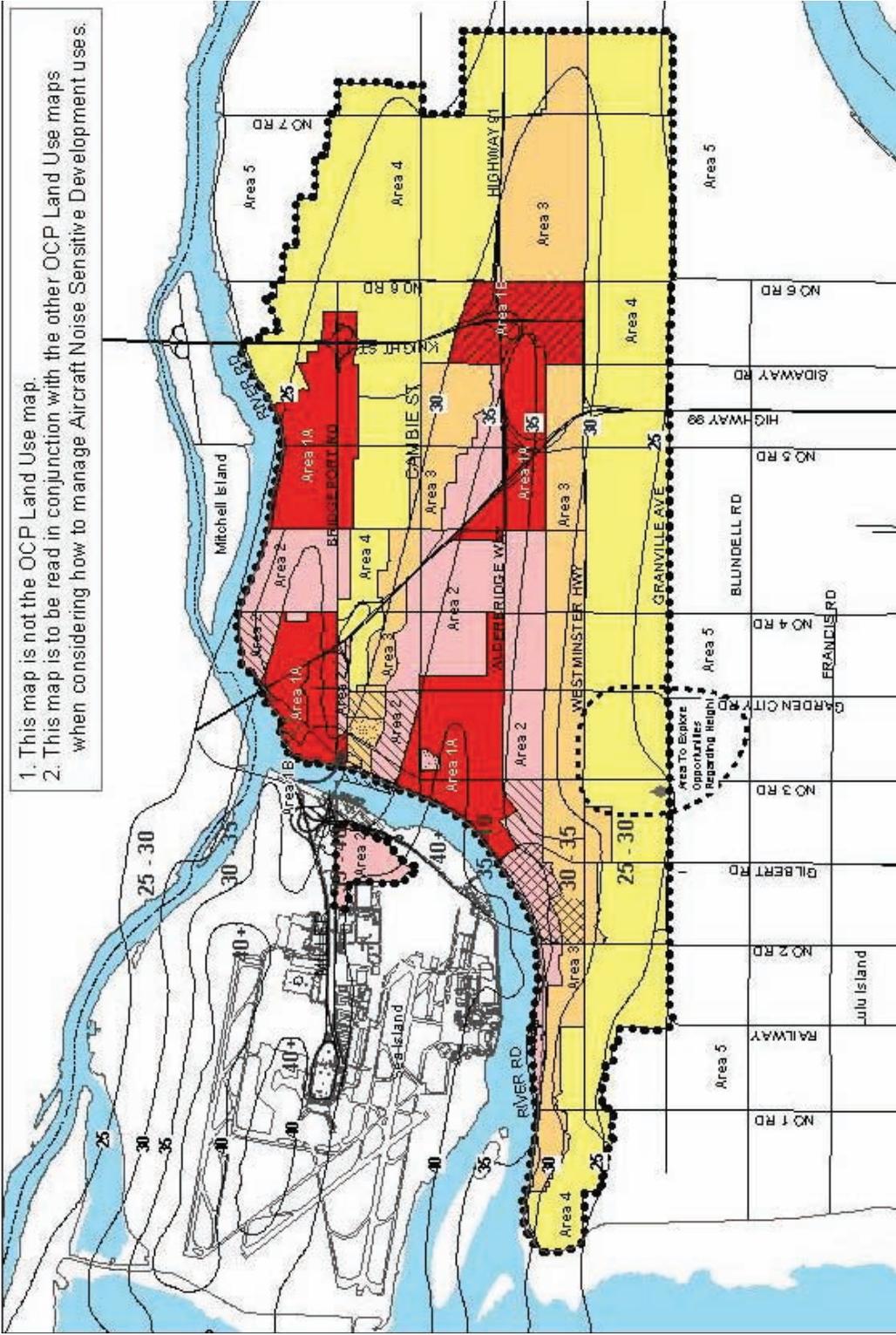
Richmond City Centre proposed 'jobs and business' development:
 Future development in the west Bridgeport area is expected to be a mix of (airport-centric) business, light industrial, limited entertainment, and non-residential arts district.

Source: "CCAP Concept / B: Jobs & Business." *City Centre Area Plan Update Study* (June 2007).
http://www.richmond.ca/_shared/assets/CCAP_Jobs___Business_Display_Boards16486.pdf Accessed 7 December 2007



Draft City Centre Transportation Plan Vision (clockwise from top-left: street improvements, transit, walking, cycling)
 Source: Draft City Centre Transportation Plan Vision (June 2007).
http://www.richmond.ca/_shared/assets/CCTP_Draft_Vision_-_July_200717956.pdf Accessed 7 December 2007

1. This map is not the OCP Land Use map.
2. This map is to be read in conjunction with the other OCP Land Use maps when considering how to manage Aircraft Noise Sensitive Development uses.



Aircraft Noise Sensitive Areas: Areas 1A/1B discourage future noise-sensitive land use

Source: "City of Richmond Official Community Plan: Section 5.4", 5.26. Available online at http://www.richmond.ca/_shared/assets/64_noise/0206.pdf. Accessed 7 December 2007.



This map is a public document. It is not intended to be used for any other purpose. The City of Richmond is not responsible for any errors or omissions. The City of Richmond is not responsible for any damages or losses resulting from the use of this map. The City of Richmond is not responsible for any claims or liabilities resulting from the use of this map.

In progress...



Bridgeport area evolves from a "mostly wood products industrial area to a diverse community with a variety of industrial and commercial developments and a well established residential neighbourhood."



1997 Transfer of the sovereignty of Hong Kong from UK to China

2004 Aberdeen Centre opens

present

2010 Vancouver hosts 2010 Winter Olympics

6.4 MAPPING AND SITE DOCUMENTATION

The following pages represent first efforts towards a comprehensive understanding of the site. This information will be expanded and improved in the first stages of GP2.

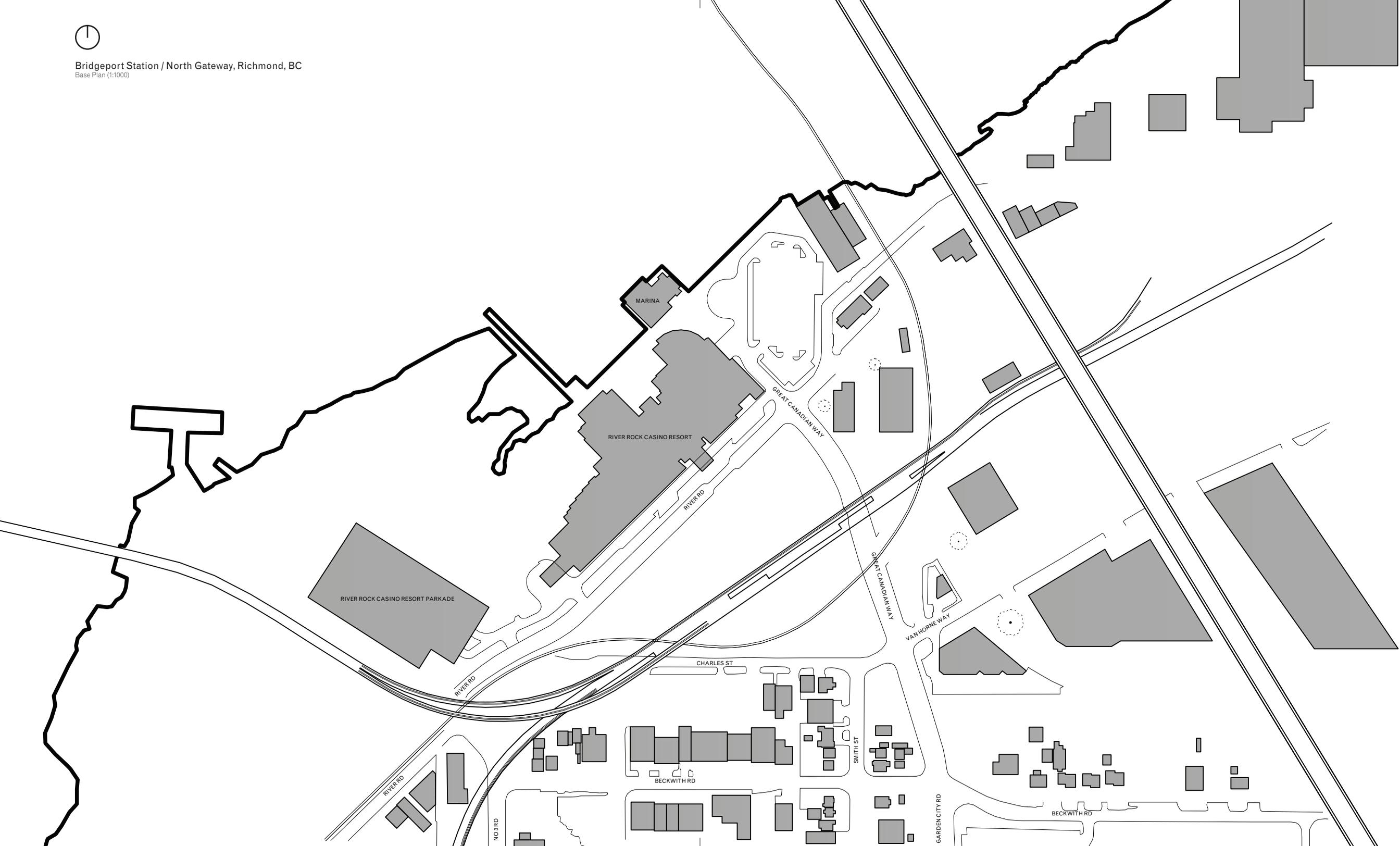
Site photos of the future Canada Line station (under construction) and the site context are included. As well, a handful of preliminary site plan drawings/mappings are available.



River Rock Casino Resort street frontage along River Road: The existing hotel presents a fairly staid facade to Bridgeport Station.



Bridgeport Station / North Gateway, Richmond, BC
Base Plan (1:1000)





Bridgeport Station from the south:
decommissioned rail line crossing
at Great Canadian Way





Bridgeport Station / North Gateway, Richmond, BC

Program Adjacencies (1:1000)

*(intention of reacting to programmatic proximities;
reinforces continuity and draws program into the site; integrates)*

- residential
- commercial
- industrial





Bridgeport Station / North Gateway, Richmond, BC
Movement Vectors (1:1000)

*(magnitude and direction of movement around
and through the site: air, train, vehicle, pedestrian)*





Bridgeport Station from the west:
top level of the River Rock Casino Resort parkade





Bridgeport Station from the southeast





Existing adjacent development to south:
west (top) and east streetscapes along Smith
Street show an eclectic mix of residential,
commercial, and light industrial



Typical existing structures directly south of
Bridgeport site along Charles Street



Typical existing structures directly south of Bridgeport site along Charles
Street

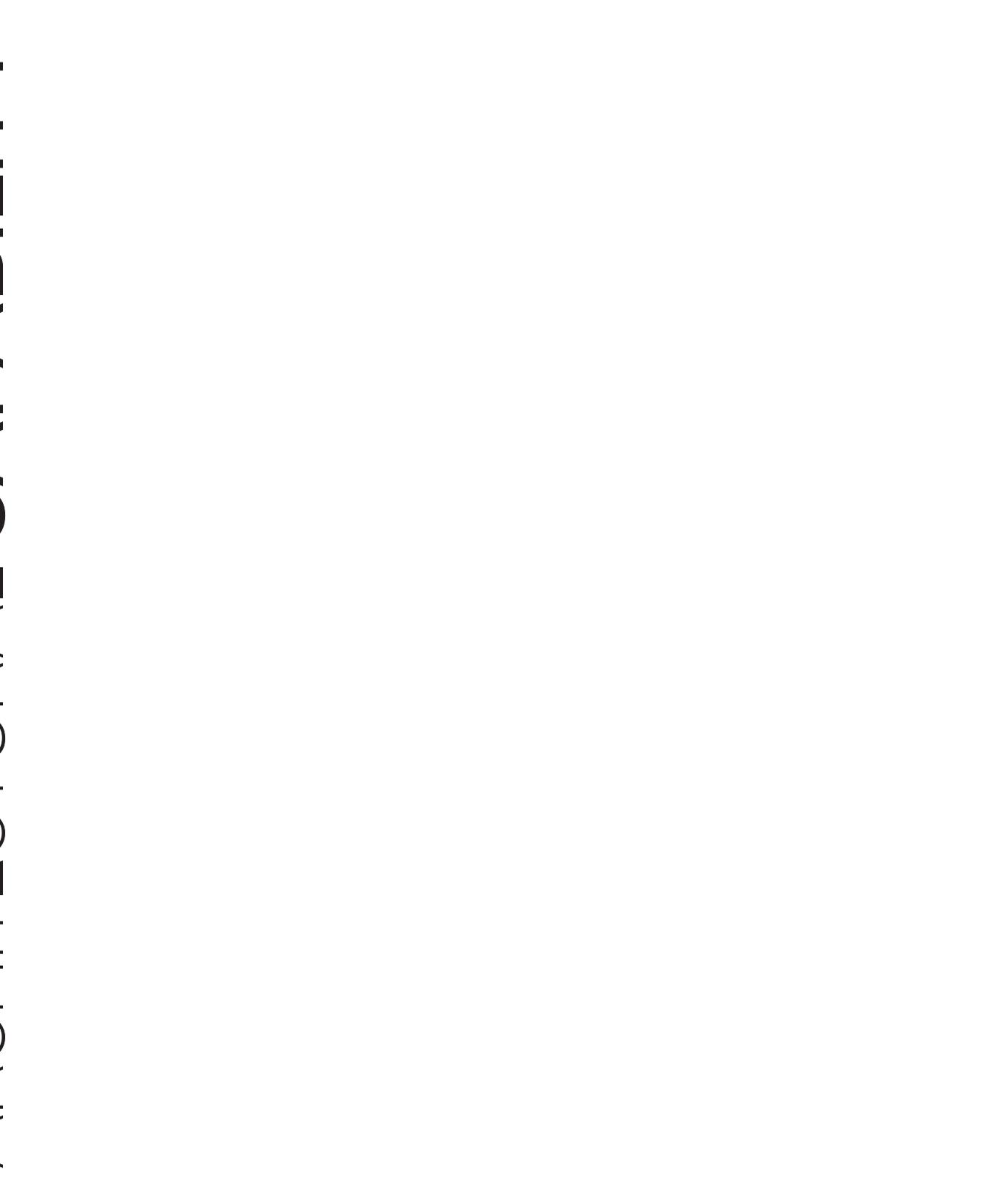




Typical existing structures along Beckwith Road

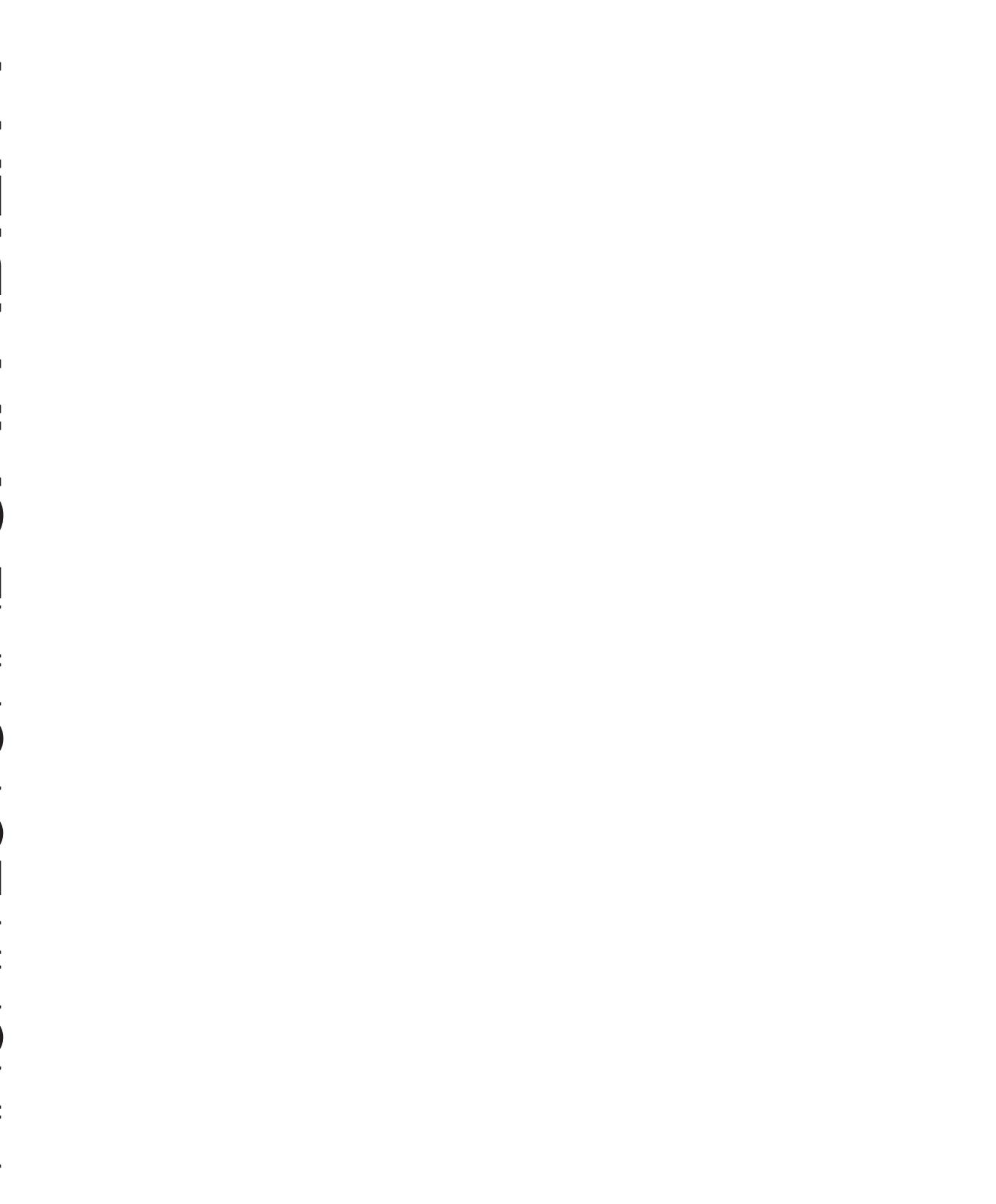


Typical existing structures along Beckwith Road



7.0 GP2 Schedule

WEEK	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
		JANUARY				FEBRUARY				MARCH				APRIL				
TASKS	DEC 10-14	JAN 7-11	JAN 14-18	JAN 21-25	JAN 28-FEB 1	FEB 4-8	FEB 13	FEB 11-15	FEB 18-22	FEB 25-29	MAR 3-7	MAR 10-14	MAR 17-21	MAR 24-28	MAR 31-APR 4	APR 7-11	APR 14-18	APR 21-25
schematic design																		
site analysis/design research																		
metrics mapping/scenarios																		
committee meeting #1																		
schematic models/diagrams																		
clarify and distill program																		
committee meeting #2																		
<i>interim review production</i>																		
design development																		
design research review																		
revise program & schematics																		
3D/physical models																		
2D drawings																		
committee meeting #3																		
design research review																		
revise program & schematics																		
committee meeting #4																		
<i>final production</i>																		



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