Microwaves bounce between cell phones. Credit cards — all 0.76 mm thick — slip through the slots in cash machines anywhere in the world. Computers synchronise. Shipping containers calibrate the global transportation and production of goods. Nearly identical buildings and urban arrangements proliferate globally. All these ubiquitous and seemingly innocuous features of our world are evidence of global infrastructure.

The word "infrastructure" typically conjures associations with physical networks for transportation, communication or utilities — a hidden substrate or binding medium. Yet the technologies comprising these networks consist not only of underground grids of pipes and wires or tangles of fibre-optic cable on the bottom of the ocean, but also pools of microwaves beaming from satellites, atomised populations of electronic devices and shared technical platforms. Far from hidden, infrastructure is often the overt point of contact and access, where the underlying rules of the world can be clasped in the space of everyday life.

Making another, perhaps more important observation, buildings, and even whole cities, have become infrastructural technologies. From the fields of repeatable suburban houses and traffic-engineered highways of the mid 20th century to the malls, resorts, golf courses and big-box stores of contemporary culture, repeatable formulas make most of the space in the world. These buildings are not singularly crafted enclosures, but reproducible products — spatial products. The discipline of architecture is only responsible for a trickle of the world's spaces while a fire hose blasts out the rest. A familiar confetti of brightly coloured boxes nestled in black asphalt and bright green grass tells elaborate stories about Starbucks coffee, Beard Papa cream puffs and Arnold Palmer golf communities. This all too visible cartoon of abstract logics shapes most of the space in which we are

swimming. Now not only small communities and resorts but also entire world cities are constructed according to a formula, usually a formula that replicates Shenzhen or Dubai anywhere in the world.

However familiar this mise-en-scène, popular culture has not yet found a compelling way to express the collapse between object and background. Some essential distinction between what is positive object and what is matrix must be dissolved: infrastructure is not just the urban substructure, but the urban structure itself — the very parameters of global urbanism. We do not build cities by accumulating singular masterpiece buildings. The constant flow of spatial products and urban formulas is more infrastructural. Architecture is making the occasional stone in the water. The world is making the water.

IT IS ALMOST AS IF VICTOR HUGO
WOULD HAVE THE MAKINGS
OF A REALLY GOOD TED TALK

In *Notre Dame de Paris*, a 19th century novel set in the 15th century, Victor Hugo famously observed that "… architecture [like that of the cathedral] was developed in proportion with human thought; it became a giant with a thousand heads and a thousand arms, and fixed all this floating symbolism in an eternal, visible, palpable form." But speaking through the character of an archdeacon in the novel, he also predicted that Gutenberg's new technology threatened that giant. The printed word would usurp architecture as the vessel of cultural imagination and steal its supernatural power: "This will kill that. The book will kill the edifice."

At first, the contemporary evidence of urban space as an infrastructural technology might seem to confirm Hugo's assertion about the death of architecture. And there is no doubt of an ongoing textual information explosion. Yet, at this juncture, Hugo has a chance to step into the 21st century and make an astonishing reversal. He can recuperate the power of space as the carrier of an unspoken, undeclared cultural imaginary. He can demonstrate that the mystifying giant with a thousand heads and thousand arms is alive again, in the explosive growth of a heavy, material, non-textual medium: the matrix space of global infrastructure. The new giant is also the secret weapon of the most powerful people in the world. It cannot be petted or tamed, but it can be manoeuvred and exploited. Doing so requires a political art — an art found in what was presumed to be an artless background. Spatial technologies might even have the power and currency of, not text, but software: an updating platform for shaping the city. Hugo could author another cultural meme on the

order of "this kills that". Architecture, killed by the book, is reincarnate as something more powerful still — *as information itself*.

It would take a bit of handling from the TED people. Hugo would have to be a little more upbeat. It's the *disposition* of the performance that matters — who says it, how they say it, who repeats it and to whom. This entrepreneurial Hugo wouldn't be talking to an audience of architects. The 19th-century Hugo provided architecture with a staple of rhetorical angst about its lost mystical powers, and the discipline has nearly worn out this section of his novel with hand-wringing and soul searching. No, the 21st-century Hugo, if he is properly coached, is talking to another audience, angling for the elite players in the room who, perhaps because they are not involved with architecture culture, really understand something about the power of space. Architectural arts are the very thing that is needed and yet part of the riddle of Hugo's performance is why he must step away from architecture in order to return to it with a more robust audience.

The most ordinary spaces have to be rendered magical, but Hugo can do magical. It's why he would keep the beard. "Architecture is information itself". It needs a lot more explanation, but it sounds good. Inscrutability can work. As long as he has a body mic and a publicist, Hugo can aim to be the guru who is a little bit cryptic — or even a little bit florid and evangelical. "Impassioned" will be the word to use in promotional blurbs and dust jacket copy. It sells, and a hush will fall over his various audiences as they creep up to his knee to receive imponderables. "Architecture is information". Hugo becomes an industry. The TED digital flourish.

THE GIANT IS GLOBAL
INFRASTRUCTURE SPACE

The TED audience will recognize Hugo's supernatural giant with a thousand heads and a thousand arms as an apt model for the role of space in global politics. Some of the most radical changes to the globalizing world are being made, not in the language of law and diplomacy, but rather by contagious spatial formulas. Often at a remove from familiar legislative processes, these infrastructures generate *defacto* forms of polity faster than official forms of governance can legislate them.

For example, the infrastructural model for Dubais and Shenzhens — the free trade zone — provides one glimpse of the giant. In the early 20th century, the free trade zone was a fenced compound for storing custom-free goods. As those compounds began to incorporate manufacturing, the United Nations Industrial Development Organisation began to promote the form as an industrial installation to kick-start the economies of developing countries. With administrations that are separate from their host state, the zone offers exemptions from taxes, labour laws or environmental regulations. While the exemptions were designed to avoid local bureaucracy, soon every corporation and every urban function wanted in. As a test of free market principles, China adopted the form for an entire city, first and most notably in Shenzhen, and incentivised urbanism has since become a global addiction. HITEC City in Hyderabad or King Abdullah Economic City in Saudi Arabia join scores of other similar zone "cities" around the world. Many adorn their corporate office parks with glittering skyscrapers and ecstatic signals of national pride as they celebrate entry into a network of similar zones. Growing exponentially, zone cities appear in almost

every country — some a few hectares, some a few kilometres in size. The zone has swallowed the city.

The zone is then the shibboleth of the global marketplace. It is the perfect vessel for corporate "externalizing" — the means by which corporations eliminate obstacles to profit. Corporations like Halliburton, for instance, massage legislation in their home country but shelter from law by locating their headquarters in Dubai. While touted as a free market strategy, the zone is itself an instrument of market manipulation proffered by the "Washington Consensus" of the World Bank and the IMF. It is a suboptimal economic instrument, but the zone is so popular that major cities are developing their own zone doppelgangers, their own non-national territory. Navi Mumbai is a Shenzhen double of Mumbai. New Songdo City shadows Seoul. Surpassing irony, in Kazakhstan, Astana is a zone as national capital — a zone representing the state from which it is purportedly exempt, filled with paleo-Genghis imagery cooked up by famous architects: the pyramidal Palace of Peace and Reconciliation, or the gigantic microclimate tent that houses the Khan Shatyr entertainment centre. With the zone, the state can design a trap door out of its own laws and a proxy to engage in undisclosed and potentially lucrative dealings. ("Jawdropping", in TED-speak.)

A second vantage point with a good view of the giant is the global urbanism of broadband communications, and it is also often the easiest place to spot the remote or indirect forces that we have not trained ourselves to see. In 2000, there were less than 800 million cell phones in the world. By 2010, there were over 5 billion, and a majority of them were in the developing world.[1] Broadband is written into the platforms of national governments and into the development goals of international organisations like the World Bank and the UN. Access to mobile telephony — what the World Bank has

— 10 —

called "the world's largest distribution platform" — is treated as a right, akin to the right to water or food.[2] New entrepreneurs identify multipliers and borrow crowd-sourcing techniques to penetrate the market in densely populated countries that are experiencing staggering increases in mobile telephony growth. In those countries where the phone is the internet link, Web 2.0 is changing farming, banking, medicine and education with corresponding changes to urban arrangements. In a country like Kenya, one of the last to receive international fibre-optic submarine cable, the position of that fibre is hotly contested. It is not clear whether it will reinforce existing urban development on a corridor between Mombasa and Nairobi, generate zone-like enclaves, or penetrate rural areas to sponsor development and education. A state or any of the ballooning numbers of non-state players (such as NGOs, service providers, multinational enterprises, regulatory agencies), in any combination, may control this infrastructure space and create a monopoly or bottleneck within it. "A 2010 Leadership Imperative: The Future Built on Broadband," (ITU, The Broadband Commission for Digital Development, 2010). Mohsen Khalil, Philippe Dongier, and Christine Zhen Wei Qiang, "Overview," in *Information and Communications for Development: Extending Reach and Increasing Impact*, ed. World Bank. Development Data Group. and World Bank. Global Information & Communication Technologies Dept. (Washington, D.C.: World Bank, 2009).

With both zone and broadband urbanism, the overt policy declarations are all about free market, free trade or open access, but the arrangements on the ground are the work of a wilder Leviathan for which we have no studied political response. The zone remains under the radar, avoiding laws and side-stepping political declarations that might add friction to the otherwise lubricated condition.

Broadband urbanism is a fluid game of interdependent players who can concentrate power or simply remain camouflaged within a complicated constellation of governance. There is no correlation between these consequences and published intent. Like a smuggling ring in which a number of people carry out chores but leave behind no sense of the entire organisation, there is a currency of actions decoupled from policy declarations — a currency of actions that can even outpace law. The result is a cell phone that still costs too much in Nairobi, or a world that seems composed primarily of segregated exurban formations, but it is not entirely clear why. This is the giant's magic, or sleight of hand. The question is not just, "who is making the rules?" It is something more like, "Who or what is making the milieu in which some things are possible and others are not?" Even if the giant can be detected despite its ephemeral activities and relationships, the question remains, how can it be manipulated, and what are the political implications? Important clues reside in the spatial arrangements themselves, but it is extremely difficult to locate the toggles and dials that created them.

After TED, there will be a trip to Davos in it for our Hugo. To the beard, body mic and publicist, add a pair of loafers and there could even be some expensive seminars where, for a price, our Hugo would explain what he really meant by the idea that "architecture is information" or "infrastructure is a medium of polity".

ACTIVITY IN INFRASTRUCTURE SPACE
IS INFORMATION,
OR " THE ACTION IS THE FORM"

Evidence of the giant can be found in the field, but it can also be
detected by adopting a new way of thinking. Marshall McLuhan's
"the medium is the message" set out new territory by provoking just
such an altered habit of mind. It was repeated so often that everyone
at least pretended to know what it actually meant. Maybe Hugo's
"architecture is information" is, similarly, a cultural meme sufficient
to hold the idea of this new giant and allow it to circulate. McLuhan
wanted to foreground, not the content, but the behaviour or
repertoire of each medium from print to radio to T.V. Content was the
"*juicy piece of meat carried by the burglar to distract the watchdog of
the mind".*[3] We parse the world with minds trained to name and
declare. Only the content, the spoken story on the radio, is palpable.
The behaviour of the radio itself and the way it organises its listeners
is harder to name: it is as if we can only know about the stone in the
water but not the water.

Marshall McLuhan, *Understanding Media: The Extensions of Man*
(New York: McGraw-Hill; London: Routledge & Kegan Paul, 1964,
2001), 19. The quotation: "For the 'content' of the medium is like
the juicy piece of meat carried by the burglar to distract the watchdog
of the mind."

    Understanding the idea that "architecture is information", or
making palpable the water, requires a mental journey similar to
recognizing the behaviour of the radio, but it must also overcome
associations with the word information. Information, especially in
digital culture, is text or code — things that come up on screens to be
interpreted through one sort of language or another. The more

ubiquitous these devices become, the harder it is to see spatial technologies and networks that are independent of the digital. The world has become an "internet of things" — an interplay between smart buildings, smart cars and countless mobile phones and computing devices. Almost every discipline in the 20th century was in the thrall of information science, bent on determining and quantifying cybernetic *systems* of information with some degree of predictability. Architecture was among those disciplines, as the work of Cedric Price or Christopher Alexander and others might demonstrate. Late 20th century gurus like Kevin Kelly, celebrating the success of digital capital, ask culture to imagine cars as "chips with wheels", airplanes as "chips with wings, farms as chips with soil, houses as chips with inhabitants. Yes, they will have mass, but that mass will be subjugated by the overwhelming amount of knowledge and information flowing through it."[4]

Kevin Kelly, *New Rules for the New Economy* (New York: Penguin Books, 1998), 76.

Yet for some mid-20th century cyberneticians, those who foretold the digital revolution but who were not yet surrounded by all of its products, it was perhaps easier to understand that anything — dumb, inert, human, non-human, non-digital — could be a carrier of information and that the physical arrangement of infrastructure space is itself information. The social scientist and cybernetician Gregory Bateson saw information as the elementary particle of exchange in the practices of tribes in New Guinea, a meeting of Alcoholics Anonymous, or the communication of dolphins. (He theorised that the clicks of dolphin language were like ones and zeros.) Bateson would have no trouble seeing activity and information exchange in inanimate objects, and he would also speculate about the temperament or political bearing inherent in their arrangement. "Information is a

difference that makes a difference", he famously wrote.[5] He used the example of a man, a tree and an axe as an information system. There is nothing "supernatural" about this power.[6] The objects do not need to be enhanced by digital technologies or coated with sensors. To the degree that they "make a difference" in the world, they create influence, intention and relationship that constitutes *information*. The information manifests, not in text or code, but in *activity*. For Bateson, any of the world's infrastructure spaces might be — like the man, the tree and the axe — producers or organisers of information. In some ways, his perspective is all that is needed to understand Hugo's claim that "architecture is information".

Gregory Bateson, *Steps to an Ecology of Mind* (Chicago: University of Chicago Press, 2000), 381, 462, 315, 272, 21.

Ibid., 472, 464.

Still, the idea that information is carried in activity, rather than systems of code, must struggle against cultural habits. How does one assess activity or information exchange in the static arrangement of familiar spatial infrastructures like a highway system, an electrical grid or a suburb? Spaces and urban organisations are usually treated, not as actors, but as collections of objects or volumes. Agency might be assigned only to the moving cars, the electrical current or the inhabitants. We are less accustomed to seeing that activity also resides in the relationship and relative position of the various parts of the organisation.

Yet, looking more closely at the familiar field of mass-produced suburban houses, the organisation embodies a distinct activity that is very apparent. The developer is not making 1,000 individual houses, but a kind of agriculture of houses — 1,000 slabs, then 1,000 frames, 1,000 roofs and so on. The house, as seen in pictures or stitched into needlework, is akin to McLuhan's content; it distracts us from what is

really being made. The field of houses is enacting a propensity to organise all activities across a population of houses. It privileges these repetitive activities and renders the act of making an individual house into a marginal gesture. What is really being made is something like a protocol or a non-digital spatial software that is both shaping and generating the activity of making houses. The relative changes in this organisation are, as Bateson would say, "differences that make a difference". The organisation is *doing* something, and changes within it constitute information. If we focus only on the house, this larger process remains as a kind of ghost or ghostly giant in the background. The architect who has only been trained to make enclosures will always rush to design the single house, so as to have something to show, only to be outwitted by the equivalent of McLuhan's media or Hugo's reanimated giant.

While the activities of an organisation may remain undeclared, we can still look squarely at what *is* declared: at the scripts, stories and promotion it produces. A script may simply direct the use or application of a technology, as in the choice to use electricity for lighting. A script may also set the ideological course for a technology or become the promotional story that serves as content — like the Cape Cod cottage or the Arnold Palmer Village. Highways have historically been associated with redemptive qualities or political destinies such as freedom, democracy or patriotism. The free zone is associated with openness and streamlined bureaucracy — a one-stop shop for global business. In broadband infrastructure, mobile telephony is associated with prosperity and open access to global networks of information. In any infrastructure network, the script may be the thickest strand — virtually bending and shaping the technological instrument. Examining these scripts helps to make clear the activity that either exceeds them or is discrepant from

them, like the developer agriculture that overwhelms the individual house.

The giant of infrastructure space might be analyzed in this way, foregrounding the medium of activities that remain unnamed but are nevertheless consequential. This space composed of action does not render form-making impossible but rather points to an additional mode of form-making with special powers. Forms composed as activity (the agriculture houses) shape a population of forms composed as objects (houses), in accordance with certain scripts. If architects are often making a stone in the water while the world makes the water, the stone is an object form while the water is what might be called the *active form*. A better McLuhanesque meme might be: the action is the form.

INFRASTRUCTURE SPACES ARE
PERFORMERS OR ACTIVE FORMS

When Hugo's celebrity gambit works, the notion that "the action is the form" could be an attractive subject for the popular essay as detective story of ideas (or what we might call *The New Yorker* treatment). These treatments usually follow a similar formula. A narrator, writing in the first person, and with varying degrees of egotism and modesty, encounters a number of thinkers. Each encounter provides clues to the comprehension of an idea. Immediacy is essential. It is a crisp autumn day when the narrator meets the thinker who is really hard to understand. Or the narrator meets the thinker who is really hard to understand in an airy New York apartment, and the airiness of the apartment helps the reader to finally comprehend global finance. Or the narrator sits across from the particle physicist, who has tousled sandy hair that is parted on the side. With descriptions such as these, the reader has a better chance of understanding things like string theory. It really works.

The sociologist Bruno Latour has dark hair that is parted on the side. He speaks with a French accent. His studies amplify the notion that "the action is the form". In what he calls Actor Network Theory (ANT), he proposes that socio-technical networks, like infrastructure space, are created by both humans and non-human technologies and that the technologies themselves are actors or "actants" in this process. Actants are "doing something".[7] Technologies influence the desires of social networks that reciprocally shape them: humans develop the computer but the computer, in turn, changes the way that humans think. Humans design the technology for the suburban field of houses and that environment, in turn, shapes human interaction. By studying what a technology is doing, Latour studies not only the

declared story or script but also the activity in an organisation —
what the infrastructure is saying as well as what it is *doing*. Latour
argues that this interaction between script and technology is
indeterminate, like a flow of information or a flow of water. He
variously describes action as a "surprise" or "mediation".[8] It is
"borrowed, distributed, suggested, influenced, dominated, betrayed,
translated".[9] Social forms are not something to be taxonomised and
fixed. They are "under-determination" in an ongoing process.[10] To
determine this information, to give it a name or boundary, is to
negate it or stop the flow.

Ibid., 46.

Ibid., 45.

Ibid., 46.

Ibid., 44.

Turning to theatre, where constructing indeterminate activity is a
completely ordinary or practical matter, Latour writes about the use
of the word "actor" in social studies:

> "It is not by accident that this expression, like that of 'person',
> comes from the stage … Play-acting puts us immediately into a
> thick imbroglio where the question of who is carrying out the
> action has become unfathomable."[11]

Bruno Latour, *Reassembling the Social: An Introduction to Actor-
Network Theory* (Oxford: Oxford University Press, 2005), 46.

An actor adheres to an explicit script, but the scripted words are
considered only to be traces or artefacts that provide hints of an
underlying action. While performing, actors rarely deal with states of
being that can be named. Actions are the currency or the carrier of
information. An actor would not play "being a mother" but rather

"smothering a child". Actors are also at ease with discrepancy, the way that action escapes text to remain indeterminate. The character saying, "I am pleased to meet you" may actually be expelling someone from society. The character saying, "I don't love you" may actually be straining to connect. Action cannot be declared and it can be decoupled from declaration. Finally information about the character emerges from a string of actions. Similarly, infrastructure space is performing, and the changing shape of that stream of activities constitutes information.

In the interplay between scripts and technologies, this activity seems almost to emerge as a third thing. Looking past the declared script in infrastructure space, the undeclared or decoupled activities emerge more distinctly. In the suburban field of houses, the buyer of the Colonial Cape Cod dwelling or the Arnold Palmer Villa is buying a script, when what is really being delivered is a development process that remains undeclared. A story about decentralization may accompany an electrical utility or mobile telephony network while its arrangement actually allows it to harbour monopolies. DARPAnet, scripted as a stealth network, becomes the internet commons. The free zone, heralded around the world as the instrument of openness and anti-bureaucratic trade networks, creates new forms of bureaucracy. Facebook, scripted for innocuous social networking on a college campus, unfolds in the Arab Spring as an instrument of dissent.

In these cases, information resides not only in the script or the technology alone but also in some immanent activity or capacity that escapes explanation — what we might call the *disposition* of the matrix. It is information that is not delivered by means of the familiar mechanisms of text and code. This undeclared *disposition* that remains as a ghost to declared script has perhaps lent some unwarranted mystery or magic to the giant.

DISPOSITIONS AND ACTIVE FORMS
OF INFRASTRUCTURE SPACE
CAN BE DESIGNED

While he was alive, philosopher Gilbert Ryle spoke with a British accent, smoked a pipe and wrote philosophy in a droll, charming and conversational tone. He is perfectly cast as the next encounter in *The New Yorker* treatment of "the action is the form". Ryle was especially keen to point out the "ghosts in the machine" or the logical fallacies harbouring in everyday language. Disposition was, for Ryle, one of those ghosts, and his work further demystifies the magic of ghosts and giants with a practical art that might also guide the design of infrastructure space.

Ryle wrote about disposition as something we already understand and use in common parlance: an unfolding relationship between potentials — a tendency, temperament or property in either beings or objects — a propensity within a context. The disposition cannot be proven as a definite "occurrence". Ryle used the example of glass that does not need to shatter to possess a brittle disposition. (Like Latour and Bateson, Ryle considered dispositional qualities in both human and non-human subjects.) The shattered glass is not a "ghostly happening, but because it is not a happening at all".[12] A ball on an inclined plane possesses disposition that is stored in relationship and geometry.[13] The ball does not need to roll down the inclined plane to possess the disposition to do so. A function in calculus is an expression for the behaviour of a number of values; knowing all of those values is less important than understanding the disposition of the function to form a curve with a particular amplitude. Reinforcing Latour, Ryle argues that, given this latency, disposition is indeterminate. Yet this indeterminacy is not necessarily mysterious. Ryle wrote:

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в интернет-магазине
«Электронный универс»
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