Environmental & Architectural Phenomenology

This *EAP* begins our 20th year. We thank readers renewing their subscriptions and include a reminder for "delinquents." It's hard to believe that the idea for *EAP* arose serendipitously some 20 years ago when interior-design educator Margaret Boschetti, philosopher Robert Mugerauer, and *EAP* editor David Seamon were having breakfast at an annual EDRA meeting!

This issue includes two feature essays. First, British writer Simon Wright describes his experience, as an outsider, of coming to know the Brazilian city São Paulo. His account emphasizes the near impossibility of transforming messy, ever-changing, firsthand encounter with place into fixed, accurate, verbal description.

Next, architects David Wang and Amber Joplin consider the role of design intelligence as it might help to clarify certain aspects of educational psychologist Howard Gardner's theory of multiple intelligences. Wang and Joplin argue that what they call a "design substrate" underlies Gardner's eight types of intelligence and contributes to their particular lived expressions.

Back issues of EAP now On-Line

All back issues of *EAP*, 1990-2008, are now on-line as PDFs. We've had a number of requests to make copies digitally available, and scanning of back issues was done this past summer. The files for the earliest issues were produced by scanning paper copies, while more recent issues were entirely available in digital format.

It is a thorny problem as to how a publication maintains subscriptions yet provides on-line access. Our plan is to place the most recent year of *EAPs* on-line at the end of that calendar year. In other words, paper copies will be provided to subscribers at the regular times—winter, spring, and fall. At the end of the year, those three issues will then be placed on-line. We hope this approach will work. If readers have any alternative suggestions, we would be glad to consider them. For back issues, go to: http://www.arch.ksu.edu/seamon/back_issues_EAP.htm.

Below: Vices and passageways in a typical Gothic church. "One of the innovations of the Gothic builders was to introduce a kind of permanent, built-in-scaffolding of stone: passageways that thread through the upper levels of the buildings. These were reached by spiral staircases called vices, which were tucked away in corners and buttresses with their entrance doors hidden. They gave access to remote parts of the building not only for clerics but also for builders making repairs. They could be invaluable if part of the building caught fire, both for evacuation and for carrying water to the flames. The walls of Chartres are laced with nine vices onto the upper levels...." (from Philip Ball's Universe of Stone: A Biography of Chartres Cathedral—*see p. 3).*
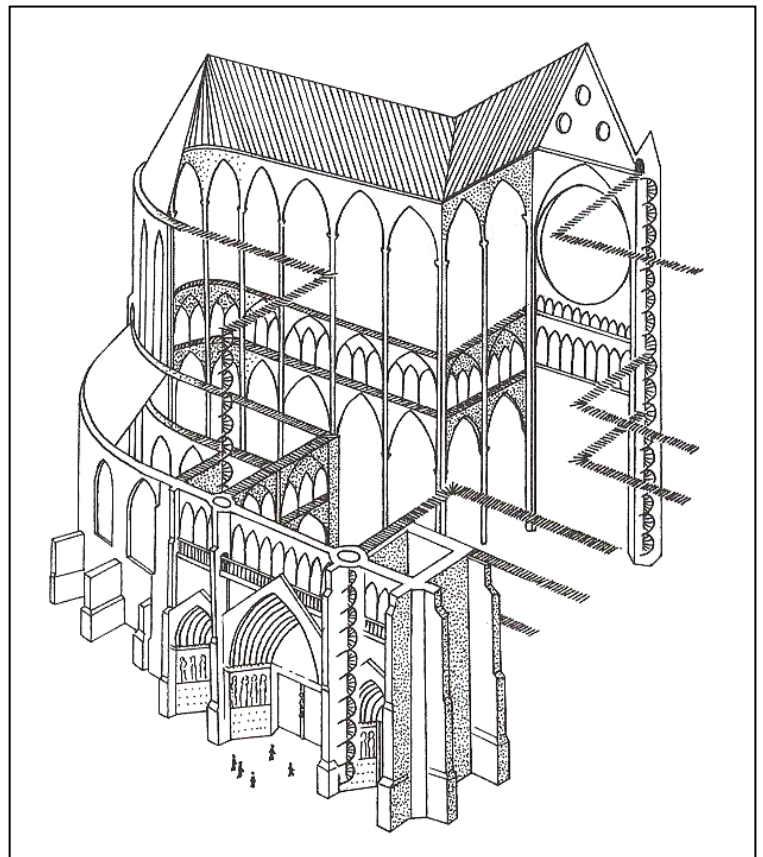
Donors, 2009

We are grateful to the following readers contributing more than the base subscription for 2009.

Scott Aker	John Baker
Julio Bermudez	Margaret Boschetti
Carol Cantrell	Linda Carson
Andrew Cohill	Ryan Drum
Kirk Gastinger	Marie Gee
Arlene Hopkins	Sara Ishikawa
Evelyn Koblentz	Patricia Locke
Clare Cooper Marcus	Anne Niemiec
Jenny Quillien	Christine Rhone
Miles Richardson	David Saile
Philip Stafford	Matt Thompson
Peter Walker	Justin Winkler
Ian Wright	

Items of Interest

The fall 2008 on-line issue of the *International Human Science Research Newsletter* is now available and includes information on upcoming International Human Science Research conferences as well as "book and conference notes." Note that the next U.S. IHSR conference will be held at Seattle University, 4-8 August 2010. The conference theme is "Giving Voice to Experience." This issue of the newsletter provides a set of useful web links to phenomenologically-related organizations & networks. http://www2.seattleu.edu/artsci/psychology/Default.aspx?id=3492.

The annual conference of the **International Association for the Study of Environment, Space, and Place** will be held at Towson University, Towson, Maryland, 24-26 April 2009. The conference theme is "Forbidden Places." Abstract deadline is 15 January 2009. www.towson.edu/iasep.

The **Third International and Interdisciplinary Conference on Emotional Geographies** will be held at the University of South Australia in Adelaide, 2-4 April 2010. Papers are invited that examine emotion, society, and space from diverse disciplinary and multidisciplinary backgrounds. Potential topics: Embodiment and emotions; affective attachment and the other-than-human; affective spaces and the transnational; indigenous knowledge and emotion; emotional architectures and landscapes of emotion; affect, sense, sensation; and queer spaces of affect. www.sseas.org/conferences.html.

The **Architectural Humanities Research Association** (AHRA) is a non-profit academic organization that provides an inclusive and comprehensive network for researchers in architectural humanities across the United Kingdom and overseas. It "promotes, supports, develops, and disseminates high-quality research in the areas of architectural history, theory, culture, design, and urbanism. AHRA raises public awareness of the social, cultural, economic, and political value of research in architectural history, theory, culture, design, and urbanism. It provides access to a body of knowledge and informed opinion to statutory bodies and the academic community, as well as the wider public and the media, helping to set the terms of reference for debates about the quality of the built environment." www.ahra-architecture.org/index.php.

PhDiA (PhD in Architecture) is a forum for discussion of issues related to the education of doctoral students in architecture. Membership is free and includes a "coalition of leading voices from academia, the profession, and doctoral students." PhDiA's aims include: to establish a clearinghouse for doctoral programs in architecture; to assist faculty and administrators in doctoral programs; to provide a forum for doctoral students; to elevate doctoral studies and the role of research and advanced scholarship; and to support doctoral alumni working in the profession. A first international PhDiA conference is planned for June 2009, in Los Angeles. Contact: Prof. Douglas, USC School of Architecture, 204 Watt Hall, Los Angeles, CA 90089-0291; dnoble@usc.edu; www.phdia.org.

News from Readers

David Kermani sends word that *Rain Taxi,* an on-line review of books, currently features a special section devoted to American poet John Ashbery's domestic environments. Several writers, artists, critics, and friends investigate the poet's homes in New York City and in upstate New York. Rain-Taxi publisher Eric Lorberer emphasizes that Ashbery's work incorporates "a finely tuned exaltation of spatiality." Go to: www.raintaxi.com. Additional materials can be found on the Ashbery Resource Center website at: www.flowchartfoundation.org/arc.

Landscape architect **Madeleine Rothe** writes that a Baltimore sacred garden she recently designed is featured in *Open Spaces, Sacred Places*, an edited collection featuring "public spaces of respite." Projects featured include a meditation garden inside the walls of a prison, a sculpture garden built by at-risk youth in the inner city, and a therapeutic healing garden at a rehabilitation hospital. Images of a sacred garden by Rothe can be found at: http://www.friendsnipg.org/. Contact: mcrothe@verizon.net.

Citations Received

Philip Ball, 2008. *Universe of Stone: a Biography of Chartres Cathedral.* NY: HarperCollins.

"There are few buildings in the world that exude such a sense of meaning, intention, signification—that tell you so clearly and so forcefully that these stones were put in place according to a philosophy of awesome proportions, appropriate to the lithic immensity of the church itself…. We have to come to Chartres prepared to admit that there are many things we do not and may never know, and that such answers as we have are not always simple or secure." The drawing on p. 1 of this issue of *EAP* is from Ball's book.

Herbert Bangs, 2007. *The Return of Sacred Architecture: The Golden Ratio and the End of Modernism.* Rochester, VT: Inner Traditions.

This designer argues that "the architects of the modern human landscape must find the deep-felt connection to the cosmos that guided the inner lives of those who built the temples of the past."

Roger J. Crum & John T. Paoletti, eds., 2006. *Renaissance Florence: A Social History*. Cambridge: Cambridge University Press.

This volume might have been better called *Lifeworlds and Lived Places of Renaissance Florence*. Includes several excellent essays on the city's lived geographies, including J. M. Najemy's "Florentine Politics and Urban Spaces;" and S. T. Stroccchia's "Theatres of Everyday Life." See sidebar, right.

Michiel Dehaene & Lieven De Cauter, eds., 2008. *Heterotopia and the City: Public Space in a Post-civil Society.* NY: Routledge.

The 23 chapters of this edited collection deal with urban spaces that involve "multiple, fragmented or even incompatible meanings," including malls, museums, theme parks, holiday resorts, gated communities, wellness hotels, and festival markets.

"A set of connected stages, backdrops, and viewing frames"

The shared use of spaces [in Renaissance Florence] for social, sacred, commercial, and civic purposes had several important consequences. It gave urban space much of its daily dynamism; it vested urban spaces with multiple meanings; and it established relationships of meaning both within and between particular spaces.

Central to the Florentines' own conceptualization of their city was the notion that urban spaces were "open" not merely in a physical sense but also in terms of their meanings. Open space did not necessarily imply empty space; streets, squares, gateways, and bridges were neither neutral voids nor merely places of passage and encounter. Rather, for urban dwellers open spaces brimmed with layered meanings and clusters of associations.

The particular character of urban space at any moment depended on two interdependent features: first, on the people or objects moving through a space, charging it with symbolism and energy; second, on an audience of spectators—visual consumers—who viewed and evaluated these shifting scenes. If "spaces speak"… they did so here through the bodies and behaviors of those who acted, watched, and remembered. The diversity of Florentine society meant that residents viewed urban space through a variety of lenses. Meanings might differ depending on the spectator's class and gender, age and learning, occupation, length of residence in the city, or marginalized status as a Jew or foreigner. Spaces "spoke" in ways that were far from uniform, conveying meanings that ranged from the densely collective to the deeply personal.

Besides having multiple meanings and uses, Florentine urban space also was characterized by a theatrical potential that inhabitants creatively exploited. By this I mean that Florentines used urban spaces and structures as a vast stage setting, within and against which they played out both elaborately scripted ceremonies and the ordinary stuff of everyday life.

The Renaissance city functioned as a set of connected stages, backdrops, and viewing frames that permitted many different venues for social actors, which in turn afforded various angles of vision for their audiences. Florentines visually connected elements of the urban landscape and linked their meanings by kinetic activities, such as processions and crowd actions, as well as by more static means, like the strategic placement of family emblems and public monuments. The main argument proposed in this essay is that Florentines experienced the urban environment as an adaptable stage setting, whose visuality and meanings could be transformed and put to various uses (pp. 55-56).

—From Sharon T. Strocchia, "Theatres of Everyday Life," chap. 2 in *Renaissance Florence,* R. J. Crum & J. T. Paoletti, eds. (see full reference, left).

Mark Dowie, 2008. *Conservation Refugees: The Hundred-Year Conflict between Global Conservation and Native Peoples.* Cambridge, MA: MIT Press.

This is a "'good guy vs. good guy' story," this journalist writes. "The indigenous peoples' movement and conservation organizations have a vital common goal—to protect biological diversity—and could work effectively and powerfully together to protect the planet and preserve biological diversity. Yet for more than a hundred years, these two forces have been at odds. The result: thousands of unmanageable protected areas and native peoples reduced to poaching and trespassing on their ancestral lands or 'assimilated' but permanently indentured on the lowest rungs of the money economy."

Jeremiah Eck, 2006. *The Face of Home: A New Way to Look at the Outside of Your House.* Newtown, CT: Taunton Press.

This architect presents "simple hallmarks of good design for house exteriors." He writes: "What we need is a new way of looking at our houses, one based on basic design principles that collectively serve as a reference in assessing house exteriors. These are the hallmarks of good design, characteristics that all well-designed houses share no matter the particular architecture style or materials used to build them. If we begin to look at houses in a fresh way, we won't need misleading or simplistic labels. We'll gain a deeper understanding of how a successful exterior is assembled and how inside and outside can relate to each other, to the site, and to the plan." Eck's five "hallmarks" are: (1) site and house as one; (2) mass and scale balanced; (3) the plan as guide; (4) parts in harmony; (5) details springing from whole. Well chosen examples beautifully photographed.

Mike Hansell, 2005. *Animal Architecture.* NY: Oxford University Press.

Though incorporating no phenomenological awareness or interpretation, this book is an important contribution to the study of animal lifeworlds in that it explores the central question of how animals make place. This biologist argues that "construction behavior occurs across the entire spectrum of the animal kingdom and affects the survival of both builders and other organisms associated with them…. The book recognizes three broad categories of built structures: homes, traps, and courtship displays."

A.S. Kubat, O. Ertekin, Y. Guney, & E. Eyuboglu, eds., 2007. *Proceedings, 6th International Space Syntax Symposium.* Istanbul: Istanbul Technical University Faculty of Architecture, 2007, 2 vols.

This collection of conference papers includes David Seamon's keynote address, "The Lived Hermetic of People and Place:

Phenomenology and Space Syntax." Though most of the research is analytic in concept and method, there are also included a number of paper groupings that include qualitative perspectives—e.g., papers on "religious architecture," "architectural theory," and "phenomenology and space syntax." Papers in the last group include Stephen Read's "Deep Landscapes: Constructing Urban Landscapes for Inhabitation;" Luki Budiarto's "Senses of Place: Understanding Urban Location as an Organisation of Places;" Irini Perdikogianni's "From Space to 'Place': The Role of Space and Experience in the Construction of 'Place';" and Hazem Ziada's Kinesthetic Foundations of Spatial Concepts and Configurations." All papers in the proceedings are available on-line at: http://www.spacesyntaxistanbul.itu.edu.tr/papers.htm.

Anastasia Loukaitou-Sideris & Renia Ehrenfeucht, 2007. *Sidewalks: Conflict and Negotiation over Public Space.* Cambridge, MA: MIT Press.

"Drawing on historical and contemporary examples as well as case study research and archival data from five cities—Boston, Los Angeles, New York, Miami, and Seattle—these [planners] focus on how the functions and meanings of street activities have shifted and have been negotiated through controls and interventions. They consider sidewalk uses that include the display of individual and group identities (in ethnic and pride parades, for example), the everyday politics of sidewalk access and larger political actions (including Seattle's 1999 anti-globalization protests), and examine the complex regulatory frameworks that manage street and sidewalk life. The role of urban sidewalks in the early 21st century depends… on what we want from sidewalk life and how we balance competing interests."

Simon Parker, 2004. *Urban Theory and the Urban Experience.* NY: Routledge.

This book is "a critical examination of the ways in which different urban commentators, investigators, and visionaries" have understood the nature of the city and urban experience over the past 150 years." Chapter themes include social reform and the empirical tradition in classic urban studies; so-called "utopian visions" (from Garden City to New Urbanism); urban studies; the capitalist city; and urban representations. No coverage of space syntax, Christopher Alexander's theory of urban design, Daniel Kemmis' ideas about urban place and politics, or an urban phenomenology, but a useful overview of several other conceptual approaches for interpreting the city and citiness.

Graham Pullin, 2008. *Design Meets Disability.* Cambridge: MIT Press.

This digital designer examines how design and disability can inspire each other. Why, he asks, "shouldn't hearing aids be as fashionable as eyewear? What new forms of Braille signage might proliferate if designers kept both sighted and visually

impaired people in mind? Can simple designs avoid the need for complicated accessibility features? Can such emerging design methods as 'experience prototyping' and 'critical design' complement clinical trials?"

David A. Rehorick & Valerie M. Bentz, eds., 2008. *Transformative Phenomenology: Changing Ourselves, Lifeworlds, and Professional Practice.* Lantham, MD: Lexington Books.

The chapters of this book are said to display "ways in which a scholar-practitioner's life and work may be changed and enhanced by exploring phenomenological pathways and applying phenomenological techniques." In defining phenomenology, the editors write: "Phenomenology directs us to the fullness of experience rather than a remote or pro forma accumulation of information and facts. The creative capacity is enhanced by the opening of vision resulting from immersion in the subject matter rather than limiting the researcher to the traditional mode of observation of data gathering at a discrete distance. The aim of the study of phenomena… is to bring about awareness and understanding of direct experience. Unlike traditional methods of research, phenomenology involves the researcher in an enriched awareness of her own consciousness. It challenges one to let phenomena reveal themselves, rather than predetermining what phenomena are. Phenomenology seeks to portray the essential, or necessary structures of phenomena, and to uncover the meaning of *lived experience* within the *everyday lifeworld.* Phenomenologists use the term *lived experience* to connote the direct feelings, thoughts, and bodily awareness of actual life…."

Jason S. Shapiro, 2005. *A Space Syntax Analysis of Arroyo Hondo Pueblo, New Mexico: Community Formation in the Northern Rio Grande.* Santa Fe, NM: School of American Research Press.

Using the perspective and methods of space syntax, this archeologist "takes a fresh look at architectural data" from Arroyo Hondo Pueblo, a 14th-century Rio Grande site to "explore what it might reveal about people's social lives. Noticeable differences exist in the way that Ancestral Pueblo peoples organize space… during the two periods of occupation, including a significant shift toward a greater residential 'privacy' during the later period." Shapiro shows similar changes for other contemporaneous pueblos as well as for the 20th-century Acoma Pueblo. Shapiro includes a useful "primer" chapter on space syntax analysis.

Adam Sharr, 2006. *Heidegger's Hut.* Cambridge, MA: MIT Press.

In 1922, Martin Heidegger occupied a small cabin in the Black Forest of southern Germany. Here he wrote some of his most famous writings, including the start of *Being and Time.* Sharr writes: "The hut remained a constant dialogue partner for Hei-

degger from 1922 onward. He seemed to feel most at home in this small building, which conditioned a milieu that sustained thinking for him. In the structure and the motions of its surrounding landscape can be seen reflected the circumstances of his work. The hut thus offers opportunities for considering his life and his writings, as well as challenges to his thought." Scharr also gives brief attention to Heidegger's larger urban residence in Freiburg, where he lived from 1928 until 1971.

Sharr concludes: "If Heidegger's hut might make some contribution, it appears to lie in the memory of its centering power for the philosopher's life. The small building was the philosopher's datum, its particularities delineating the particularities of his life and work. Arguably, the greatest potential of the hut lies in the hope that such centering power need not be invidious or exclusive. Why cannot every life hold out hope for a resonant, centering datum? This need not keep others at bay, cast them as strangers, or be situated outside the city.

"The hut's memory suggests strategies for making such a datum. It might frame in rich and multiple ways itself, its inhabitants and their relationships, its equipment, its social context, the theater of passersby, the sun and tracking shadows, glimpses of the sky, breeze and wind, rain and snow, flora and fauna…. It might encourage reflective moments of thought at a slower pace…. Such centering may arguably be achieved more easily in a rural setting. However, the challenge posed by the hut's memory, particularly for architects, is how so powerful a datum might be achieved—without exclusion—in urban conditions."

Robert Tavernor, 2007. *Smoot's Ear: The Measure of Humanity.* New Haven, CT: Yale University Press.

"Different types of measures form the subject of this book, from body-related measures to the abstract scientific measures of non-physical derivation. I shall introduce the principal standards of measure, from those that once referred to the feet and inches of ideal bodies, to Enlightenment attempts at creating a truly scientific system of measures, the metric system, based on the dimensions of the earth. Metrification is regarded by some… as a malformed progeny of the French Revolution, and counter-reactions will be provided of attempts—by artists, architects, and philosophers—to humanize its being. My book concludes with another beginning, humankind's journey into outer space, and the first direct encounter with the unfathomable measure of the universe."

Sherry Turkle, 2008. *Simulation and its Discontents.* Cambridge, MA: MIT Press.

This scholar of technology considers the history of simulation over the last 20 years and provides four "in-depth investigations of contemporary simulation culture": space exploration, oceanography, biology, and architecture.

Encountering São Paulo: Moving Outside in

Simon Wright

Wright is a writer living in Bristol, England. This essay is part of a larger work that uses observation and encounter to explore ideas relating to space and place, architecture and the city, and philosophy and everyday life. He explains: "Brazil is an emotive subject for any writer and one particularly prone to the seductive and spirited Dionysian daydreams that, more often than not, the country has come to represent. I went to Brazil to write but ended up rejecting all the excesses. I decided instead to write a book rooted in a normal street in an average portion of the (un-average) city of São Paulo. It was in this 'Brazil'—of the ordinary and everyday and away from the beaches, the crime, the color, and the carnival—that I found enough inspiration to last a hundred lifetimes." simonwrig@hotmail.com. © 2009 Simon Wright.

I'm sitting alone on São Paulo's subway on my way into downtown, on the hunt for a few bits and pieces we need for our new apartment. I look around me, at the rows of plastic chairs, chocolate brown, buffed by overuse. I note the generous floor space and the no-nonsense boxiness of the carriage. I watch the pleasing geometry of chrome as it forms and un-forms configured conduits that dart around the space.

São Paulo's Metro is a parallel urban universe, a portal through the city, off limits to everything that makes the urban, urban. Locked firmly onto rails, we're breezing through suburbs under smooth control, sweeping human litter from elevated platforms, gliding to our well-timed destination, cutting unmolested swathes over and under the edges of the 'real' city. This train mocks the resistant rage of São Paulo's buses. It's their rational, honed, predictable Other, and it seems to ridicule the city, negating it by showing it to me slyly from a distance as detailless, innocuous piles of stacked-up giant cubes. This detachment is reiterated through the train's last-minute decision to burrow underground on our approach to the chaotic center of the city.

I look at the impossible mix of faces all around me: Some belie distant shores, others the more typical complexions that distinguish North from South Brazil, while yet others are simply exotic, but in an ordinary way—a fascinating gene-pool puzzle into which I've placed my own. I glance above the doors at the diagram, a red string of exotic locations and then out at the blurred urban landscape that rattles and races across the windows of the train.

I first visited Brazil in 2000, and I'd used the Metro then. Nothing's changed. All these things were here then exactly as they are today. But now I see things all so differently. I'm buffeted to and fro and realize how 'everyday' it's become, as I sit here processing mundane concerns, trivially preoccupied and looking around disinterestedly. I've been living in São Paulo for only two months, yet how I'd seen it then, seven years ago, so wide-eyed and wary.

I've internalized something about Brazil and find it easy to locate the uniqueness of the São Paulo flavor. I've built up an immunity to 'strangeness', and I'm shrouded in a Brazilian comfort zone, a blanket of domesticity and everyday routine—a structure missing from my life while on the road the previous eight months.

I'm relishing this comfort now. I look around and feel pleased by the thought of my newly perceived confidence. I feel at home. I'm not looking at everyone and everything with a concealed curiosity, nor anymore registering with pin-sharp clarity everything that happens. No, not anymore. Now I'm so far along I can tell without looking the name of the next stop, even how many people are likely to get on and off. I've learnt the places where the train rocks and lurches as it shifts tracks, and I've absorbed its rhythms and the distances between stops. I know the busy interchanges, when it gets crowded, where it's likely to be delayed. I see, feel, know these things without really having thought about them. I've internalized them slowly, unintentionally.

But I'm in Brazil. An outsider, a foreigner, a gringo who not so long ago had been trampling

round its shores and cities, living through a world of difference. This is an intense strength of feeling—so at home yet in a foreign land.

So what was São Paulo to me that first time when I came here, and what's it now? What frames of reference, what structure of attitude and feeling did I work through then and how do they differ from what I use to work through this place now? In what idiom, through what concepts, ideas, and devices—imaginative, symbolic, subconscious, sensual—did I phrase and form this city that's the one I know today? There's no doubt I'm using the discrepancies arising through contact with another culture as a deliberate tactic, a catalyst or amplifier that makes explicit and sharpens my awareness of place.

I'm interested in my movement from the outside in—first the tentative borrowings, then the retentions of the cultural pieces—the sinuous journey that leads to a sense of constructed belonging. I focus on that movement, that journey, that process—not the end itself which, anyway, is a mirage whose chimerical qualities I acknowledge.

These understandings are slowly cultivated from patterns of thought and feeling that shift the city imperceptibly as though a mental fault-line was running through its heart. It's due partly to the weight of time, but not duration in a linear sense or the accumulation of experiences culminating in a final understanding. It's not something that hardens and ossifies like geographical knowledge. It's more lateral and informal, more mutable and protean. A dialectical motion with residues and blanks, amplifications and extensions, oscillations back and forth—overlapping, simultaneous, diachronic, uncertain, unsteady—a lived process with no teleology to underpin the mutations of its shifting shape.

We pull up at Sé. I step off the train, and the feeling's gone, forgotten, dispersed already, somewhere among the crowds.

Eighteen Stories

The eighteenth floor of my apartment, looking westward back across São Paulo. Fine July winter morning, wonderfully blue sky—so fresh. I'm lucky. The *Avenida Paulista* runs across the skyline in the distance. I hunt out the *Banespa* building. I've worked out the relationships. There it is.

Closer now. Hard to see the activity, but I hear it humming. The street below. Strange angle—acute, extreme. Up here I dance down sidewalks, over skylines, drift and rest on buildings. From here I read the city like a page, swallowed in flowing sequence line by line. This tidiness is a temptation. There's someone walking and small movements between the crevices. Up here a sea of passages lap senseless at my door. Noise from the construction site opposite. A flash of sun illuminates a stairway, the spiral vertebrae around its growing spine. Soon to be entombed forever—dark kernel of domestic bliss. Movement restrained, subdued, mechanical.

My viewpoint is prejudiced. Omit the background, go for the particular, events through details. Lived experience doesn't deliver the urban this way. São Paulo everywhere. Interlocking roofs, terracotta scales rising, sliding, pitching down below.

Backyard. Half in sun, half in shade. Black tracksuit hanging on the line, bucket in the middle, three pillows placed along the wall, a towel—all drying in the sun. Someone walks into the adjacent yard, turns, disappears. To the right, lithe blocks of commerce divide the distance beyond the river *Tietê*. Oversized slabs contrasting the intricate motif of a dominating domesticity.

September now, back at the window—this time evening. Poured a *cachaça* and sit sipping it, looking out. A bird tweets its chorus overhead. A warm breeze blows balmy, summer's early breath. Once all this was *Matta Atlantica,* Atlantic rainforest stretching out as far as the eye could see. I'll take that one on trust, I'll have to. So utterly inconceivable from here.

Once more off again. The excavations of my mind's quiet murmurings are underway. The intellect injected till all the magic's gone. That bird and this breeze. Nature's presence in the city. The qualities of an originary place persist: watercourses, hollows, escarpments, gentle inclines, wind patterns, trails becoming roads then thoroughfares.

Natural conditions find responses in the cityscape. Irony? São Paulo? This glittering paradigm of synthetic urban sprawl. I get taken in by it all. Indulgence and the privilege of panorama. Both soporific and intense, close to dreaming. Tune in, let go. Myth of totality, comes, goes, explodes.

Small occurrences going on down there. I could make an endless list that would always lag behind. Each event equivalent to 15 million others going on around me as I look. The evidence becomes a supposition. Then a fact. I let the streets regress again. Into the distance, turning indecipherable shades of grey. Mountains on the horizon to the right. They stave the terror—a reminder that the madness ends.

I take pictures of the setting sun. The sky begins to quiet. Settles to cool blue. The city glistens in reply. Evening easing, slow and steady. The highway *Radial Leste* to the left, its busy headlights on.

The evening flickers magically with mystery. Benignly, it's equally mundane. In the city's half-light, the cosmic hands over to the human. Lights go on and off and headlamps bleed through all the streets. I appreciate the release. As daylight fades, it's comforting somehow, the way things loosen up.

I sit, sipping my *cachaça*, not thinking. When it's actively pursued, the city refuses you. There's no way to keep with the flux if you pause to represent it. But you can't. Not without the break, the hesitation, the creation of some new reality.

Lights come on. Others go off. Metal shutters closing over windows. Lights sprinkled across the *Avenida Paulista's* heavy haze. Something so achingly revealing. The *cachaça's* starting to take hold, the evening feels special. I'm glad and thankful to have witnessed it. Don't want to have to think. Just want to sit and soak it up. Let it wash all over….

Back next morning, coffee in hand. Seven-thirty. The builders have banged since seven—my wake-up call. Quick scan: a few people on the way to work. Cool breeze this morning. Prelude to the day confirmed down there at the pool, the *zelador,* or caretaker, preparing it. Thanks for the platitude.

A woman walks her dog. He anticipates what's coming. He knows the route: The other dog that barks at him from the doorway and the lamppost where he'll urinate. I wonder if we're any different. Time to think ahead, to plan, arrive. Coffee's taking effect. I start daydreaming—still waking up, no doubt. Same for them down there: Locked routines of hopes and dreams. The elevator at the construction site rises. Twelfth floor, thirteenth, fourteenth, still rising. Changing landscape. A burst of sunlight crawls timidly toward me, recedes and dies away.

This youthful city, blessed with spatial amorality, with no regard for rooted place, succeeds and fails through hotchpotch trial and error.

But listen hard, the voice of Heritage and Patrimony still whispers liturgies of sacred sites and loric spaces for citizens and tourists: Luso-Iberian settlers, the Jesuits, Loyola and Anchietta, founding fathers, founding lights. I harbor an inclination to record the low-lying houses down there for posterity. I know what fate has in store for them just around the corner. I'll be a long-lost guardian holding these city secrets in a distant foreign clime.

Knowing São Paulo

Situated to the east of the city's geographical center, my neighborhood, or *bairro,* is part of the larger area of *Tatuapé,* one of a mass of community clusters that throb intensely all over the larger city that subsumes them. On a map, my *Tatuapé* neighborhood appears neatly enclosed in a rectangle but, on the ground, only three of its four sides have clear physical features: On the north, the east-west axis of the river *Tietê;* on the south, the tracks of the Metro paralleled by the *Radial Leste* highway; and on the west, the *Salim Maluf* highway. The north and south edges can be crossed but only by a number of bridges and overpasses. On the west, the *Salim Maluf* highway requires endurance-testing deference to a complex configuration of traffic lights.

The eastern boundary of my neighborhood is different because I don't perceive a clear boundary, mostly because I rarely venture in that direction. The considerable distance of that edge from my flat means the clear geometry of my neighborhood lacks easy resolution in experience. My home is simply too far west. My sense of any eastern border involves a richly textured residential area with no fixed margins or acknowledged bounds and verges. The imprecision of this edge works through a series of intensities and lulls, in ambient shifts that bind some streets but not others in a lattice-like embrace.

There's one feature—the *Avendia Celso Garcia*—that cuts a swathe through my *bairro.* This street is my neighborhood's premier artery and captivates me most. Running north and south through *Tatuapé's* center, the *Avendia Celso Garcia* forms a border of sorts. This border, however, is an incision,

a bisecting vortex that does not encircle and contain but, rather, penetrates, separates, and drives right through. This street both divides and gathers the activity of surrounding streets and squares into uneasy resolution. These streets and squares cling to *Avendia Celso Garcia*, feeding off its teeming life. A shifting landmark, defining, unifying, and undoing the territory it tears through almost by default.

Following the *Avenida Celso Garcia* west from my flat, I cross the *Avenida Rangel Pestana* and go on to *Praça da Sé,* at the city's heart. I experience concentrations of action and activity as a rhythm of peaks and troughs gathered and concentrated in waves along the streets. When I reach the *Largo da Concórdia*, I pass over the railway line that brought the city's immigrants from the port of Santos. I go up onto the *Viaduto de Março* along a tightrope thread of sidewalk. All around and below me, the city whirls with elevated highways and merging intersections, rising, falling, circulating with ceaseless traffic. From here, the views—and the *Banespa* skyscraper—are iconic in their encapsulating São Paulo's vertical and vigorous beauty.

Not only at this crucial orbital point but also less spectacularly at others, the center-periphery paradigm is inadequate to describe São Paulo. Bustling places are interspersed and linked by quieter, more soporific areas of disuse, abandoned industry or residential enclaves with public spaces always shy of people. The distortions of a shifting suburbia create new patterns of segregation and separation, division and exclusion through fortified enclaves that increasingly close down public spaces and heterogeneous local centers. At the same time, inner-city areas experience post-industrial restructuring and the speculative forces of gentrification. Even as I sit here writing, these and related processes rearrange São Paulo's spatial logic irrevocably.

Cartography affirms the center-periphery model, but experiencing a city involves movement *through* space, not projections *on* space. Enmeshed and entangled within the tumultuous city, my bearings assemble themselves through engagement with real spaces. My mental map radiates from home to link sites through lifeworlds experienced on the move, constructed by legs and feet, by travels via subway, bus, or car—a cartography of shifting sensations accumulated through contact with the city.

Mastering São Paulo geographically has complemented, in some ways, the fits and starts I've had with learning Portuguese. In coming to know a language, one constructs sentences slowly around key verbs that then dissipate into vagueness round the edges. In a parallel way, orienting oneself spatially, moving from place to place, establishing routes and pathways, making use of transport infrastructure—all these efforts involve a kind of 'phrasing' or 'sentencing' constructed around prominent geographical and architectural features—buildings, monuments, bridges, metro stations, and the like.

These features act as key 'punctuation' points that locate and situate through repeated use until a more intense level of familiarity extends outward and links all the pieces of place together in new ways. As with discovering the subtlety of new words, the learner of place initially overlooks the environmental subtleties because he or she is oblivious to the deeper contextual associations that "natives" understand unself-consciously.

For the newcomer to a city, elements of the built environment evoke a certain 'feel' or 'ambience' and project perceptual generalizations that ignore the nuanced, particular reality of specific neighborhoods. In São Paulo, these elements include door types, entrances and exits, bars and shutters, aluminum window frames, bricks and brickwork, building proportions, color repetitions—all seen with a blurred uniformity that confers a 'thereness' on place but no clear 'whereness' beyond the loose geographical abstraction of "São Paulo" as a name.

Experience and memory make connections across the urban landscape, and the rhythms they generate paint lived patterns that color perceptions of place. Rhythm implies motion and flow, which are an integral part of how a city is experienced and lived. In short, there is no one conception of the city. Rather, the stasis and rigidity of urban forms dissolve into the infinite mosaics of real-world places sustaining ordinary and extra-ordinary life.

Once again I digress. Before I know it, I find myself emulating São Paulo's wandering logic where no ends meet. Just tangled trajectories going everywhere and nowhere.

The Design Substrate: The Phenomenological Unity Enabling Howard Gardner's Theory of Multiple Intelligences

David Wang & Amber Joplin

Wang is Professor of Architecture at the Interdisciplinary Design Institute of Washington State University, Spokane. With Linda Groat, he has written Architectural Research Methods *(Wiley, 2002). Joplin is a first-year doctoral student in Wang's program.* davewang@wsu.edu. *© 2009 David Wang & Amber Joplin.*

Educational psychologist Howard Gardner first proposed his theory of multiple intelligences in his 1983 *Frames of Mind,* which outlines seven categories of human intelligence: Spatial, logical-mathematical, linguistic, bodily-kinesthetic, musical, interpersonal, and intrapersonal [1]. In 1999, Gardner added an eighth category: Naturalist intelligence [2]. The theory challenged the dominant view of intelligence as a general, uniform level of mental competence: If intelligence is indeed multivariate, the educational project could not be considered a one-size-fits-all task.

There is, however, a conflict in the Gardner literature in that almost all of Gardner's qualifiers for what constitutes an intelligence require empirical measures (e.g., psychometric findings, isolation by brain damage, experimental psychological tasks, and so forth). When a qualifier largely depends on *qualitative* interpretation (e.g., evolutionary plausibility), Gardner calls it "sheer speculation" [3]. The conflict lies in the fact that Gardner is criticized precisely because many of his empirical parameters have not yet been demonstrated [4].

We propose that addressing the unclear role of "design" in Gardner's system lends a degree of clarity to this conflict. Even though Gardner has done much with art [5] and creativity [6], it is striking that design is not itself an intelligence category in his system. This omission leads to such curious outcomes as Albert Einstein having a clear home within an intelligence category (logical-mathematical) [7] but not Frank Lloyd Wright, who is not even mentioned in *Frames of Mind.*

This omission seems to refute one of Gardner's chief theoretical claims, which is that intelligences, as bio-physical realities, are recognized and indeed thrive within *domains*, which are social-cultural constructions. If the domain of architecture is not a social-cultural domain as clearly as physics is, then either some fundamental logic in Gardner's analysis is askew, or he has identified something quite significant. Our view is that Gardner's system suggests something unique about design, but that uniqueness needs to be highlighted more explicitly.

Our proposal is that design—what we define as the design *substrate*—is a pre-empirical phenomenological reality permeating *all* of Gardner's intelligence categories and thus contributing to their "end state" manifestations. Design, therefore, cannot be neatly subsumed under one category. Positing design as a phenomenological substrate not only clarifies the role of design more clearly in Gardner's system but also sheds light on the empirical-but-not-empirical conflict in Gardner studies in general.

In making this argument, we first define design, drawing from the consensus in the literature. We then provide a summary of Gardner's theory, explaining why it inadequately accounts for design. Next, we outline a proposal by Nigel Cross, who posits design as its own Gardnerian intelligence category. We explain the limitations of this proposal on phenomenological grounds, and suggest why the design substrate is a better theoretical model. We

conclude by identifying some benefits the design substrate brings to Gardner's theory.

What is Design?

The literature on this question is diverse, but there are common themes. One is that design ability is resident in all persons. Victor Papanek argues that:

All [human beings] are designers. All that we do, almost all the time, is design, for design is basic to all human activity. The planning and patterning of any act toward a desired, foreseeable end constitutes the design process [8].

Herbert Simon is in accord with this view: "Design (of any kind) is concerned with how things ought to be, with devising artifacts to attain goals" [9]. Similarly, William Muller contends that: "Anyone attempting to transform an existing situation into a desired new situation performs an activity that we call design" [10]. Andrew Harrison summarizes this view well by observing that design is involved in thinking and making in general:

Design appears to be a fundamental means of inquiry by which [humankind] realizes and gives shape to ideas of dwelling and settlement. Furthermore, design is a practical form of inquiry insofar as it is concerned with making and a certain commonplace usefulness, quite apart from its more esoteric benefits [11].

Our use of the word "design," then, focuses on this general ability possessed by all persons. In fact, "ability" may not be the best word because it suggests the individual has or does not have a capacity to do a particular task. "The planning and patterning of any act toward a desired … end," however, is so ubiquitous in all human activities that design ability is better rendered as a design *substrate* enabling all intelligence categories. Our provisional definition of design and design substrate is, therefore, as follows:

Design involves innate processes by which inarticulate needs achieve articulate expressions in social-cultural life. As a noun, "design" denotes the designed object itself or the act of design. But as a verb, "design" reveals itself to be much more than discrete acts but, rather, includes the inarticulate processes enabling such acts leading to designed objects. It is the phenomenological unity of these inarticulate processes that we call the **design substrate.**

Gardner's System

Gardner specifies eight key traits for a distinct intelligence: (1) potential isolation by brain damage; (2) the existence of idiot savants, prodigies, and other exceptional individuals; (3) an identifiable core operation or set of operations; (4) a distinctive developmental history, along with a definable set of expert "end-state" performances; (5) an evolutionary history and evolutionary plausibility; (6) support from experimental psychological tasks; (7) support from psychometric findings; and (8) susceptibility to encoding in a symbol system [12].

For example, musical intelligence [13] is evidenced by prodigies (2) or by brain-damaged persons who nevertheless possess exceptional musical abilities (1). Core operations (3) and "end-state" conditions (4) in musical intelligence are also easily recognizable: we need no more than imagine a performance of pianist Vladimir Horowitz. As for (6) and (7), Gardner documents evidence from various psychological tests. For instance, musical abilities are shown to be "lateralized to the right-brain hemisphere" [14], and music involves a symbol system (8) defined as "culturally contrived systems of meaning which capture important forms of information" [15]. Gardner contends the only qualifier for musical intelligence is "wrapped in mystery" [16] in evolutionary history, but he also claims this category is necessarily speculative in the first place.

We can now take a closer look at the distinction between intelligence and domain, a distinction that Gardner refined after *Frames of Mind*. Again, while intelligence is rooted in the individual, domains are cultural venues within which intelligences can (or cannot) thrive:

… an intelligence is a bio-psychological potential that is ours by virtue of our species membership. That potential can be realized to a greater or a lesser extent as a consequence of the experiential, cultural, and motivational factors that affect a person … In contrast, a domain is an organized set of activities within a culture, one typically characterized by a specific symbol system and its attendant operations. Any cultural activity in which individuals participate on more than a casual basis, and in which degrees of expertise can be identified and nurtured, should be considered a domain [17].

This difference is important because Gardner's focus is on "end-state" manifestations of intelligences: Given an appropriate cultural domain, an appropriate intelligence will thrive. Gardner is much less specific, however, on the generative *beginnings* of these intelligences. He mentions "basic essences" making up intelligences but does not systematically list these essences. Another of Gardner's terms is "sub-intelligences" but, again, he offers no taxonomy for sub-intelligences [18]. Table 1 [see p. 15] is our attempt at such a taxonomy on our way to revealing these sub-intelligences as the very material constituting the phenomenological substrate enabling all end-state intelligence categories.

From Table 1, it can be argued that one characteristic common to all sub-intelligence operations is the proclivity to, in Papanek's words, "…plan and pattern toward desired … ends." In other words, the realm of Gardner's sub-intelligences *looks very much like our general observations above regarding the nature of design and design activity*.

Another aspect of Gardner's approach is his use of cross-cultural examples of intelligence categories. Take, for instance, logical-mathematical intelligence: Do cultures less dependent upon propositional (Cartesian) scientific method exhibit this kind of intelligence? Indeed they do, says Gardner, but in different ways. Examples he gives include calculations related to hunting, estimating numbers of stones in a pile, or strategic maneuvers in games requiring up to 300 moves [19].

Gardner's interest in documenting these non-Western examples is to demonstrate the universality of his categories. For us, however, the significance is that the "end-state" manifestations of these intelligences may be much less delineated one from another in these other cultures but, rather, *exist in a kind of aesthetic whole—and that this holism is perhaps more reflective of the phenomenological unity of the sub-intelligence substrate.* For example, in hunting—a group activity—how exactly are the interpersonal and intrapersonal intelligences separated from the logical-mathematical? Does it even make sense to insist on such separations?

We suggest that even the need to delineate seven, eight or *N* intelligences comes out of the European scientific outlook, which tends to stress

discrete profiles of what optimal end-state manifestations might look like. In this process, not only is the phenomenological holism enabling any of these intelligences discounted—the term *sub*-intelligences itself betrays a judgment of value—but such discounting also ignores the essential *aesthetic* unity of these sub-intelligences as a whole. By aesthetic, we mean what Gardner himself has claimed repeatedly—that sub-intelligences tend to be indeterminate and hence resistant to empirical measures; as such, they tend toward holistic realities better appreciated as images than as propositions:

In the end, just where to draw the line between intelligences, on the one hand, and other essential psychological processes, on the other, will probably remain a judgment, indeed, an aesthetic judgment [20].

Gardner seems to accept the indeterminacy of these "beginning-state" sources as a settled matter, perhaps on the assumption that generative conditions are by definition hazy. Our view is that, because of Gardner's empiricist lens, he may not fully appreciate a feature about these beginning-state sources that is indeed coherent and graspable, but phenomenologically rather than empirically.

Table 1 suggests that the sub-intelligences behave in a way not unlike Papanek's definition of design as "patterning of any act toward a desired… end." We call this common tendency in all sub-intelligences the *design substrate*. Because all sub-intelligence processes operate in just this way, it would be difficult to regard design intelligence as one discrete category, which is the position taken by Nigel Cross. We now turn to considering Cross's proposal, and we explain why our proposal for the design substrate is a better way to clarify the role of design vis-à-vis Gardner's system.

Design as Intelligence

Cross reasons that spreading design activity across the intelligence categories leads to awkward classifications. For example, Gardner's placement of inventors "alongside the dancer and actor… does not seem appropriate." To rectify this problem, Cross posits design as its own intelligence category, appealing to Gardner's empirical measures for intelligence: Design can be located in discrete regions of

the brain; design has core operations; it has a developmental history; it has an evolutionary history; it has its own encoding systems; and it can be tested as psychological tasks [21].

But restricting design to its own intelligence category also leads to inappropriate results. Inventors, dancers, actors as well as scientists, musicians, and so forth, *all* engage in processes that "pattern… toward a desired… end." Each translates inarticulate inputs and impulses into articulate productions with cultural value. At the level of these translational processes, there is in fact little difference among inventor, actor, dancer, or musician.

Take, for example, a visionary leader like Mahatma Gandhi, whom Gardner places in the interpersonal intelligence category [22]. To be successful, such a person must possess the capacity to understand human intentions, motivations, and desires; he or she must access underlying capacities of sub-intelligences such as conflict-resolution and discerning other people's moods, desires, and motivations. This is the design substrate at work "patterning… any act toward a desired… end" in this intelligence category. But again, all end-state intelligence categories show evidence of this designing substrate: timing, calibration, and fluency in direction for bodily-kinesthetic intelligence; or distinguishing differences in species and skill in interacting with them for naturalist intelligence, and so on.

Cross's approach fails in that it assumes design as ultimately an end-state intelligence distinct from other intelligences on empirical grounds. The irony is that, in the analysis leading up to his proposal, Cross recognizes the inherent "ill-defined" nature of design problems [23]. We suggest that they appear "ill-defined" because design problems are still unreflectively viewed from an empirically biased (categorical) point of view. Put another way, if design must be confined to a specific knowledge domain, then the presence of processes that *look like* design processes (because they *are* design processes) in all intelligence categories may be why design problems appear as ill-defined problems.

But if "patterning … toward a desired … end" is understood as something that *all* intelligence categories have in common at their generative sources rather than at their various end-state manifestations, then design is not an ill-defined reality at all. But because it is pre-cognitive, the way to recognize the coherent unity of this design substrate is not by empirical measures but rather by the theoretical underpinnings of phenomenological inquiry [24]. Whether it is through Husserl's eidetic reduction [25] in which only essences of objects and processes are brought to the fore, or by focusing on the intentionality of consciousness [26], the innate human ability to pattern inarticulate phenomena into articulate expressions can be seen as a phenomenological unity enabling all intelligence categories.

We return to the aforementioned empirical-but-not-empirical conflict in Gardner studies. Because the locus of the design substrate is pre-empirical, experimental measures will never be able to completely "prove" Gardner's theory of multiple intelligences. This is at once the strength as well as the weakness of Gardner's work. Its strength is that his theory indeed discerns that human relationships to the cosmos are enabled by a wide variety of ways of knowing, informed by a wide variety of capacities that *can* be called intelligences.

But the weakness of the theory lies in the insistence that empirical measures are the only means to ascertain veracity. At the end-state condition, this weakness is exemplified, for instance, by never-ending questions on exactly how many distinct intelligence categories there are. Is spirituality an intelligence category? [27] Should *cooking*—yes, culinary ability—be its own intelligence category? [28]. The discourse can become picayune, without grasping that the very need for explicit silos of intelligences is itself a cultural limitation of analysis.

It should be further remarked that Gardner is theorizing through his *own* intelligence lens. Which lens that is does not concern us; our point is that assessing the same material through a non-empirical lens might give more focus to the phenomenological nature of the beginning-state sources of Gardner's theory. For his part, Gardner has actually expressed antipathy toward phenomenology as an explanatory resource for his theory [29].This may be one reason why the empiricist attitude renders the entire sub-intelligence realm a "sub" realm. But again, when assessed phenomenologically, Gardner's tangle of sub-intelligences forms a strikingly

unified whole characterized by a power to "pattern [all inputs] into … desired ends." Gardner himself has acknowledged the inherent unity of this beginning-state holism and its power to enable all intelligence categories:

I justify my small set of intelligences on the basis of parsimony and usefulness. If I were to write about dozens of sub-intelligences, I might be more accurate scientifically, but the construct would then be unwieldy for educational uses. *Moreover, there is evidence to suggest that sub-intelligences often work together and support one another,* and for that reason, too, it makes sense to speak of eight or nine intelligences rather than one or a hundred… [30].

Additional Benefits

There are three additional benefits to what we propose. One is that Gardner's theory derives largely from sociological, psychological, and neurobiological sources. It is safe to say that, while his reliance on the empirical methods used in these disciplines is expert, the empirical-but-not-empirical conflict in the Gardner literature is evidence that his theory has not yet given design and design process, which are more clearly explained by phenomenological considerations, the place they are due. Incorporation of the design substrate into Gardner's theoretical base strengthens the overall conceptual framework of multiple intelligences.

Second, our proposal contributes to the *design* fields in that Gardner's theory serves to justify the inherent interdisciplinary nature of these fields (we have in mind architecture, interior design, landscape architecture, industrial design, and so forth). Ever since the Roman theorist Vitruvius, architectural education, for example, has called for exposure to a broad range of knowledge—from music to medicine [31]. The design substrate gives theoretical clarity to this breadth of exposure. It explains that the need to "pattern toward desired ends" permeates all intelligence categories. At the domain level for disciplines for which patterning toward desired ends is the explicit goal—the case in all design fields—it is no wonder that grasping how patterning toward desired ends in *all* disciplinary domains should be an integral part of design education.

Finally, the design substrate even clarifies why Einstein, more than Wright, can indeed be more comfortably situated in a discrete intelligence cate-

gory. We suggest it may have to do with the nature of how "profession" and "discipline" are understood in our cultural worldview. Profession and discipline, after all, are sociological constructions relating more to domains than to the ontological features of intelligences. If a culture deems the productions of some endeavors *particularly* significant or meaningful for the broad populace, it is much easier to situate exemplars within those domains. Musical performance easily situates Horowitz within its domain; Physics, or scientific pursuit in general, easily offers a home for Einstein.

But quite aside from Gardner, it is significant that architects have always been regarded as *generalists*. It is much harder to situate a generalist in a single category. And the design substrate, that general underlying capacity that informs all patterning toward desired ends, tells us why designers like Wright, whose task is nothing other than patterning toward desired ends in the form of built environments, are generalists that are more difficult to classify under a particular Gardnerian intelligence.

Notes

1. H. Gardner, *Frames of Mind: The Theory of Multiple Intelligences* (NY: Basic Books, 1983).
2. In *Intelligence Reframed: Multiple Intelligences for the 21st Century*, (NY: Basic Books, 1999), Gardner added an eighth category: Naturalist intelligence.
3. Gardner, *Frames of Mind, op. cit.,* p. 65.
4. L. Waterhouse, 2006, Multiple Intelligences, the Mozart Effect, and Emotional Intelligence: A Critical Review in *Educational Psychologist*, 41(4):207-225.
5. Gardner, *Intelligence Reframed, op. cit.,* p. 28, pp. 108-109.
6. H. Gardner, *Creating Minds: An Anatomy of Creativity as seen through the Lives of Freud, Einstein, Picasso, Stravinski, Eliot, Graham, and Gandhi.* (NY: Basic Books, 1993).
7. Gardner, *Frames of Mind, op. cit.,* pp. 149-151; Victor Papanek, *Design for the Real World: Human Ecology and Social Change.* (Chicago: Academy Publishers, 1985 [2000]), p. 3.
8. H. A Simon, *The Sciences of the Artificial*, 3rd ed., (Cambridge: MIT Press, 2001), p. 114.
9. W. Muller, *Order and Meaning in Design*, (Utrecht: LEMMA Publishers, 2001), p. 13.
10. A. Harrison, *Making and Thinking: A Study of Intelligent Activities* (Sussex: Harvester Press, 1978), p. 1.
11. Gardner, *Frames of Mind, op. cit.,* pp. 62-67.
12. *Ibid.,* pp. 99-127.
13. *Ibid.,* p. 118.
14. *Ibid.,* p. 66.
15. *Ibid.,* p. 115.

16. Gardner, *Intelligence Reframed, op. cit.,* p. 82.

17. "I have always acknowledged that the intelligences represent not basic essences but my best effort to make sense of a complex terrain. I stated quite explicitly in my first book that each intelligence is composed of sub-intelligences (music, for example, contains rhythmic, melodic, harmonic, timbre aspects); and that a full list of intelligences or sub-intelligences would add up to several dozen. The decision to list a manageable handful is just that—an effort to introduce people comfortably to a terrain that would be unwieldy if one had to absorb it in fullest detail. Who could talk sensibly of forty, let alone four-hundred intelligences?" Howard Gardner, Replies to My Critics. In Schaler, J. A. (ed.). *Howard Gardner Under Fire: The Rebel Psychologist Faces his Critics.* (Chicago: Open Court, 2006), pp. 277 – 344.

18. Gardner, *Frames of Mind, op. cit.,* pp. 159-164.

19. Schaler, *Howard Gardner Under Fire, op. cit.,* p. 307.

20. N. Cross, "Discovering Design Ability" R. Buchanan & V. Margolin (eds.), *Discovering design: explorations in design studies* (Chicago, Univ. of Chicago Press, 1995), pp. 116-117.

21. Gardner, *Frames of Mind, op. cit.,* p. 239.

22. Cross, *op. cit.,* pp. 109-111

23. We assume that the readership of this journal is generally aware of the theoretical underpinnings of phenomenology. For a map of the domain, see:
   http://www.phenomenologyonline.com/inquiry/1.html.
See also: D. Wang & S. Wagner, 2007, A Map of Phenomenology for the Design Disciplines, in *Architectural and Environmental Phenomenology, 18* (3):10-15.

24. For a map of the various reductive phenomenological methodologies, see:
   http://www.phenomenologyonline.com/inquiry/14.html

25. Wang and Keen have written on intentionality in relation to the design process; see D. Wang and J. Keen, 2001, Intentionality and the Production of Architectural Design(s): An Application of Section 37 of Husserl's *Ideas*, in *Architectural and Environmental Phenomenology, 12* (3):12-15.

26. Gardner, *Intelligence Reframed*, op. cit., pp. 53-66.

27. *Ibid.,* p. 47.

28. "I do not believe that an intelligence should be confounded with an individual's phenomenological experience." In H. Gardner, *Multiple Intelligences: New Horizons* (NY Basic Books, 2006), p. 20; rev. ed. of *Multiple Intelligences: The Theory in Practice* (NY: Basic Books, 1993).

29. Gardner, *Intelligence Reframed, op. cit.,* p. 103.

30. *Ibid.,* italics added.

31. Vitruvius, *Ten Books on Architecture,* (Trans. M. H. Morgan) (Cambridge: Harvard Univ. Press, 1914). Retrieved from:
   http://books.google.com/books?id=Vyzg2CAoP7UC

Table 1. Eight sub-intelligences described by Gardner in his writings. FM = *Frames of Mind* (1983); UF = *Gardner Under Fire* (1998); IR = *Intelligences Reframed* (1999).

Linguistic	Logical-math	Bodily-kinesthetic	Spatial	Musical	Interpersonal	Intrapersonal	Naturalist
Sub-intelligences	Sub-intelligences	Sub-intelligences	Sub-intelligences	Sub-intelligences	Sub-intelligences	Sub-intelligences	Sub-intelligences
Phonology, Syntax, Semantics, Pragmatics (FM 1983, p.77). "Sensitivity to spoken and written language… Reading, naming and learning foreign language" (IR 1999, p. 213).	Symbol-manipulating (FM 1983, p. 132). Numbers, mathematics, logic, science (FM 1983, p. 134). "Capacity to analyze problems logically, carry out mathematical operations, and investigate issues scientifically" (IR 1999, p. 42).	"Control of one's bodily motions and the capacity to handle objects skillfully—as the cores of bodily intelligence" (FM 1983, p. 206). Timing, calibration, direction, fluency (FM 1983, pp. 208-209)	Capacity to perceive the visual world accurately; perform transformations and modifications upon one's perceptions; recreate aspects of visual experience (FM 1983, p. 173). Capability to produce a graphic likeness (FM 1983, p.176).	Rhythmic, melodic, harmonic, timbre (UF 1998, p. 93). "…have tones, rhythms. Larger musical patterns in his head" (FM 1983, p. 10). "Skill in performance, composition, appreciation of musical patterns" (IR 1999, p. 42)	Ability to notice and make distinctions among other individuals, in particular to their moods, temperaments, motivations, and intentions; read intentions and desires; influencing others (FM 1983, p. 239) "…work effectively with others" (IR 1999, p. 43).	Access to one's feeling life; label, enmesh in symbolic codes, draw on them to guide one's behavior. Detect and symbolize complex sets of feelings (FM 1983, p. 239) . "To have an effective model of ones self—including one's own desires, fears and capacities" (IR 1999, p. 43).	Recognize instances as members of a group; distinguish among members of a species; recognize existence of neighboring species and relationships between them. Talent for interacting with, taming, caring for living creatures (IR 1999 p. 49).