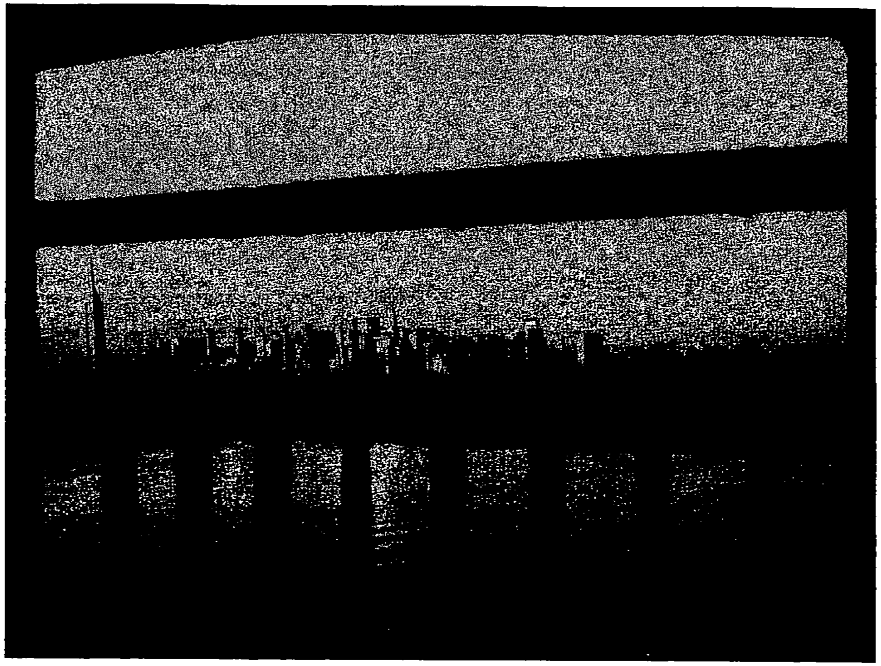
Site Matters

Design Concepts, Histories, and Strategies

Edited by
Carol J. Burns and Andrea Kahn

ROUTLEDGE
NEW YORK AND LONDON



Manhattan Skyline.

11

Defining Urban Sites

Andrea Kahn

How does an urban site gain design definition? What delineates its boundaries? How does it engage its surrounds? What determines its scale? This essay works through the problem of site definition as a necessarily indefinite task, especially when looking at terms of site definition in urban design. As used here, ***urban site*** makes double reference to both the whole city and limited sites within it, since even the smallest urban design intervention always speaks to the project of city-building writ large, and defining applies to both a process and its outcomes. At issue are means of site definition in urban design as well as the site knowledge they produce.

In design discourse, the qualifier "urban" attaches to the concept of site to no significant effect. This should not be the case. When representing urban sites, or relationships between sites in urban situations, designers draw on concepts, terminologies, and graphic conventions that pertain to all kinds of sites, in general. Common terms (*place*, *ground*, *context*, *scale*, *location*, *boundary*, etc.) remain largely indiscriminate with respect to differences in setting or settlement conditions. Without benefit of language expressly applicable to urban sites, their definition, as a subset of sites in general, remains tied to notions of property and ownership, to a physically delimited and containable parcel of land. A site is defined as urban adjectivally, based either on geographic milieu (an urban design site refers to a limited place within an already established urban area or to an urban area in its entirety) or physical size (urban design sites are presumed to be larger than architectural sites and smaller than regional ones).

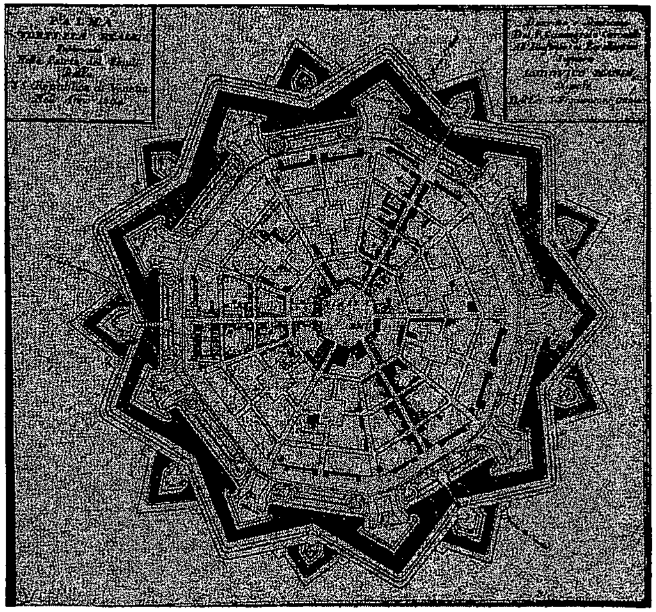


Figure 11.1. Anonymous, Palmanuova Plan, 1713.

To frame a site in explicitly urban terms, I use examples from New York City to lay out an operationally based definition concerned with what a site "does" in the city rather than what (or where) it "is." Then I turn to the role of representation in the site definition process. Finally, I conclude by offering up new terms to address the complexity inherent in urban sites. These terms provide conceptual tools applicable to urban analysis as well as urban design. By representing sites as having multiple boundary conditions and multiple scales, they frame a new conceptual model for describing, interpreting, and analyzing places slated for urban design intervention.

DEFINING URBAN SITES

> The point is not that drawing boundaries is somehow impermissible...but that the permeability of those boundaries has to be constantly reasserted; more than this, that the space in which they are drawn is not a simple plane. Each side folds over and implicates the other in its constitution.[1]

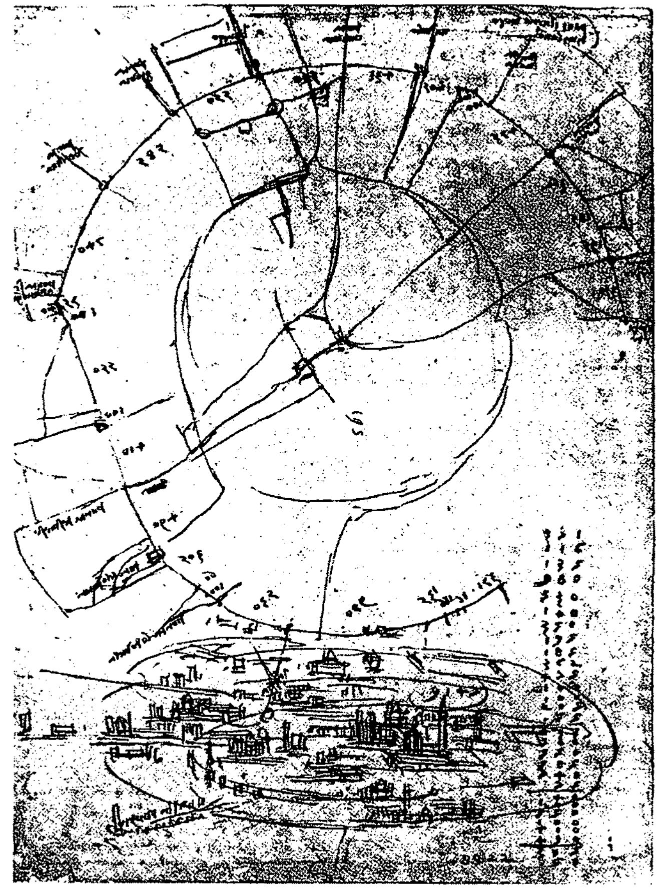


Figure 11.2. Leonardo da Vinci, View of Milan, sixteenth century.

Two drawings, a 1713 anonymous plan of the ideal Renaissance plan of Palmanuova, and a sixteenth-century Leonardo da Vinci sketch of Milan, register an often-overlooked but significant distinction in the way designers define site limits as well as how they understand site scale. The Palmanuova plan depicts the urban site as a clearly bounded place. In this walled enclave intended to be impenetrable to attack, the city is described as a fixed object in an open field. The drawing's centered composition, inset textual inscriptions, and heavy dark lines enclosing fortifications reinforce the reading of a city figure afloat in empty space. The plan strongly delineates inside and outside. Inside

the walls of this city rendered as discrete object, everything sits carefully contained in its proper place.

In stark contrast, da Vinci's sketch swirls with the movements of many trajectories crisscrossing an unbounded space. Radiating lines activate the drawing's surface, projecting an image that extends outward beyond the edge of the page. Neither the bird's eye view at the bottom nor the plan above inscribes full enclosure. This drawing, which depicts a set of active interrelations, makes it impossible to locate the edge of the city. What lies inside its boundary and what lies outside is unclear. The limits of this urban site cannot be pinned down in the horizontal or the vertical dimension. Its boundaries remain porous, its figure incomplete.

Comparing these historical images illustrates an important difference between an idea of site linked to conventional notions of place and one disentangled from notions of limited location. The single Palmanuova plan conceives the city as stable and rigidly bounded. The composite sketch of Milan shows an active setting with permeable limits, an urban site comprised of many overlapping spaces. In Leonardo's image no border divides site from situation. Rather than equating boundary with a line of separation, this sketch encourages viewers to ask how an urban site is linked to its outside. Instead of creating divisions that frame simple enclosures, as Palmanuova does, the looser and more porous image of Milan offers an alternative conception of site limits and scale. It captures the complexity found in actual urban situations.

Consider, for example, a high-density residential project on a large lot extending north from 56th to 72nd Street, on Manhattan's Upper West Side. Understood narrowly as legally owned property, this site—developed by Donald Trump—obviously has a fixed boundary line. However, since the urban impact of his development reaches well beyond the edge of his parcel, when considered in urban terms, the significance of this legal perimeter diminishes greatly. Trump City's urban site includes not only the ground under the residential towers, but also those areas affected by their construction. For instance, a subway station three blocks to the east required renovation to accommodate the expected load of thousands of new commuters, and a waste treatment facility eighty blocks to the north in Harlem was built to bear the infrastructural burden of Trump's high-density towers.

Forcing changes to New York City's subway and sewage systems, the property limits of the Trump site are hardly impervious to the many forces that ultimately establish the project's urban condition. Adopting an operational definition of the site—based on how it works in, with, through, and upon its urban situation—alters the understanding of Trump City's "limits."

Treating urban sites as operational constructs recasts their boundedness. Instead of demarcating simple metes and bounds, defining urban site limits requires accounting for co-present, but not necessarily spatially coincident fields of influence and effect. Urban sites encompass proximate as well as nonproximate relations, physical as well as nonphysical attributes.[2] As settings for interactions and intersections that transgress abstract property divisions, urban sites are conditioned by, and contribute to, their surroundings.

Times Square, in New York, easily fits such description: a place whose identity is comprised by interactions between a global circuit of entertainment (the Disney Corporation, Condé Nast), a metropolitan crossroads of commercial developments (Broadway and Seventh Avenue), and a local district of direct and imaginary engagements (Broadway shows, Madame Tussaud's Wax Museum, ABC's *Good Morning America*, the minimal remains of an erstwhile thriving sex industry). The specificity of this urban site is construed through an array of co-present but not coincident operations. Its *reality*—or, more accurately, its *realities*—are constituted through the experience of radically shifting programs in constant interaction. What defines Times Square as an urban site is a function of the crossings of spatial networks, each with its own degree of spatial extension. The determination of its boundary—or again, more accurately, its boundaries—depends on how far afield these networks, and their influence, reach. As an urban site emplaced in numerous local, global, metropolitan, and regional settings, Times Square is tied into diverse scaling processes at one time. While it provides a particularly vivid example of the multiscaled site, urban sites—wherever they are located and whatever their size—will be similarly constituted.

Hell's Kitchen, lying just two blocks to the west, operates at just as many scales. The area is at once a residential neighborhood, a commercial district, and a nodal intersection of transportation

infrastructures. It is the locus of a national highway system (entering midtown Manhattan through the Lincoln Tunnel); regional, cross-country, and international bus lines (arriving at and departing from the Port Authority Terminal); a metropolitan public transit system (subways and buses); global speculative ventures (proposed large-scale development on the far West Side); citywide commercial markets (specialty food shops, restaurants catering to immigrant taxi drivers); local communities (Hell's Kitchen neighborhood, with its own association). Numerous fields of operation converge at this one place, each involving different scales of activity. As such, the scale of this site cannot be characterized as singly or simply urban. Rather, this place operates at local, metropolitan, regional, national, and global scales. As an urban site it is scaled through a set of dynamic functions created by fluid interactions between many differentially extensive processes.[3]

Embedded within, and constitutive of, so many framing contexts, such multiscalar urban sites open to diverse interpretation.[4] They are saturated with difference, permeated with irreducible diversity: heterological, to borrow a term from Mikhail Bakhtin.[5] They offer up myriad dimensions for consideration (economic, social, historical, physical, political, haptic), each of which situates the site within a web of specific associations. In terms of their limits and their scales, urban sites present designers with shifting and potentially conflicting identities. As such, they are best characterized as resulting from "a matrix of forces, impossible to recoup and therefore impossible to resolve."[6] They are crisis objects that destabilize our certainty of the real.[7]

Urban sites are dynamic rather than static, porous rather than contained, "messy" like da Vinci's Milan sketch rather than "neat" like the ideal plan of Palmanuova. Defining them in design terms thus does not come down to establishing some unique identity of a limited physical place, but quite the opposite. It involves recognizing the overlay and interplay of multiple realities operating at the same time, on the same place. How designers give definition to these multivalent and multiscalar urban design sites, however, remains an open question.

REPRESENTING URBAN SITES

> However forcefully the real and the represented world resist fusion, however immutable the presence of that categorical boundary line between them, they are nevertheless indissolubly tied up with each other and find themselves in continual mutual interaction, uninterrupted exchange goes on between them...[8]

Given an operational definition of urban sites as multiscalar, heteroglot settings for interactions and intersections, how do designers think through their complexity and multivalence? This question raises the issue of site study and with it the means, methods, and modes of site definition processes. As in any design process, ideas of site come through making. Designers confront the challenge of defining urban sites through a creative process of representation.

The artifacts of this process, representations such as drawings and models, do not simply illustrate what designers think about (in this case, the city); more profoundly, they reveal how designers think. The identities of an urban site can be construed many ways. Mappings can present each "reality" separately and attempt to position each in relative terms as a function of shared descriptive and analytic parameters (scale, drawing type, categories of information, etc.). Or they can project a heterogeneous urban condition by utilizing representational techniques that actively combine distinct parameters. By bringing different realities into contact and establishing methods to chart their interplay, the process of site representation works as the staging ground of site thinking. It is a place of assembly and a point of departure for constructing relations between and across different forms of site knowledge.

In common usage, *representation* is a word loaded with meaning; it has political, philosophical, symbolic, and aesthetic dimensions, visual and nonvisual connotations. Even in the relatively focused vocabulary of design, *representation* is a term subject to misunderstanding. Used as a noun, it refers to things made. Used as a verb, it refers to a process of making. But these two meanings still do not make the full extent of representation's role in site definition apparent. Representation is a conceptual tool that orders understanding of the multivalence of urban

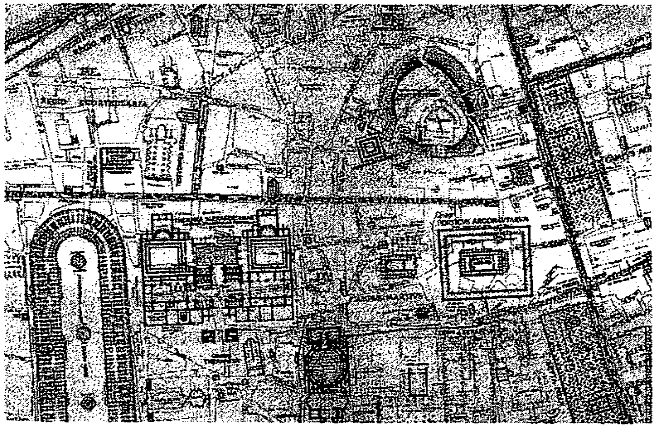


Figure 11.3. Rodolfo Lanciani, *Forma Urbis Romae*, Plate 15, 1893–1901.

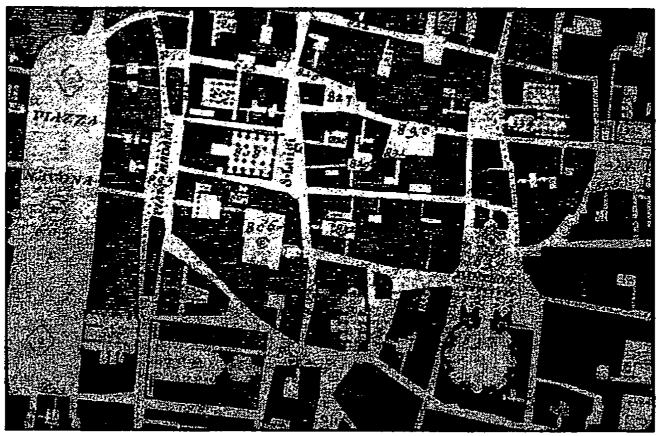


Figure 11.4. Giambattista Nolli, Rome Plan, 1748.

sites. It is a means of literally thinking through their many realities—presencing as well as positioning them in relative terms.

Site representations propose working hypotheses for comprehending and testing working definitions of urban site. To grasp the full import of this idea, one first has to recognize the expansive potential of representation: that in the most profound sense, representation is not about depicting reality, but about making knowledge. For design, it is a mode of conceptual operation, a process of knowledge formation. More than simply amassing and organizing facts, figures, and impressions of a given condition, the descriptions and analyses that

designers produce actually generate the knowledge necessary to engage a given condition as a site. Site representation is not a matter of getting a reality right as much as a matter of constructing forms of knowledge that can cope with multiple realities. In this sense, site drawings, models, and discourses are never mere second-order redescriptions of some preexisting condition as much as they are evidence of thought in formation, a thought about what the urban site might be.

At the most basic level, representation gives definition to the urban site because it is a process in which different ideas of site settle down or settle in—perhaps an idea found through urban history, as in Rodolfo Lanciani's *Forma Urbis Romae* mappings or, perhaps a idea based on city form, as shown by Nolli's well-known figure–grounds of the same city. Each mapping proposes an identifiable site reality, because each operates as a distinctive mode of site thinking. To ask which of two representations depicts the real site is meaningless, just as it makes no sense to ask which of two ways of thinking is correct. Distinct site representations produce different artifacts, but each artifact instantiates a similarly dialogic and creative performance, an "experiment in contact with the real."[9] Site representations construct site knowledge; they make site concepts manifest by design.

FIVE CONCEPTS FOR URBAN SITE THINKING

For urban design, site concepts matter. More than merely discursive, they act as powerful tools to structure site thinking. Yet, without language to discern between different kinds of sites, the ways designers represent and engage with urban sites cannot be situationally derived. Generic concepts only allow for generic site thinking. But design discourse has no specifically urban site concepts on offer. The five new terms outlined in the following sections conceptualize sites in meaningful ways for urban design.

Mobile Ground

Much of urban design, as a field of design action, involves framing constructive conversations among different interests and agents in the city. To be effective, designers at work on projects with urban aspi-

rations must account for and negotiate between many players invested in the future of a particular locale: workers, owners, neighbors, and builders; politicians, developers, and bankers; preservationists, ecologists, and economists, to name but a few. Each interested party construes the urban design site according to its own terms, adopting its own preferred modes of representation.* They all claim to know it, but one player's knowledge rarely conforms to the knowledge held by others. Different lenses filter these understandings.

As concerns shift back and forth between various takes on the same place, these oscillations define a variable field where the constructed and the real are not opposed.[10] They inscribe a *mobile ground* where urban sites are understood as dynamic and provisional spaces, as points of departure to parts unknown rather than places of arrival of fixed address.[11] Conceiving of urban sites as mobile ground foregrounds their provisional condition, reminding designers that sites remain subject to change beyond their control. On mobile ground, urban design actions are best considered in strategic terms—focused on framing urban relations and structuring urban processes.[12] Mobile ground describes a space of progression, slippage, and continual revaluation, where diverse realities tip over, into, and out of each other. It is where site boundaries and site images shift, bend, and flex, depending on who is looking.

Site Reach

The issue of scale is key to the definition of urban sites, influencing how designers understand the context of their work and how they define the geographic extent of their areas of concern.** Because urban sites participate in many differently scaled networks at once, talking about an urban scale, as a singular measure or the attribute of some entity,

* "Multifamily housing sites are missing from most conceptions of suburban landscapes partly because conventional ways of measuring and understanding urbanized areas have obscured their identification. The high densities of apartment concentrations relative to surrounding areas of detached houses, for instance, are not captured by the common mapping tools used by planners and academics. Census tracts, forecast analysis zones (FAZs), and transportation analysis zones (TAZs)—standard geographic units of analysis used for mapping—are simply too large to capture the spatial patterning of suburban development." P. Hess, "Neighborhoods Apart."

** "The definition of a study area can be seen as a subset of the problems involved in trying to define a problem or formulate a solution to a problem, in geographic terms. The first difficulty lies in establishing the criteria by which the relevant geographic boundaries are set. The second lies in the usually implicit and hidden assumptions being made about the nature of the problem and its confinement to such boundaries." P. Marcuse, "Study Areas, Sites, and the Geographic Approach to Public Action."

obscures the multiscalar condition of urban sites. Urban locales register on multiple scalar networks, in some cases at different times, in other cases simultaneously. *Site reach* measures the extent, range, and level of interactions between a localized place and its urban surroundings. It gauges vicinities of exchange and intersection between places, reciprocal and nonreciprocal relations, inscribed within and contributing to co-present urban spatial networks. For urban design, the concept of site reach proposes a much-needed alternative to a conventional, nested, and hierarchical model of scale that identifies different scales with differently sized territories, and as such obscures the multiscalar condition of urban sites. Urban sites are constructed by a complex overlay of distinct but interrelated uses, boundaries, forms, and temporal sequences. In any given locale, variously scaled interactions establish a unique set of linkages to other places. The reaches of a site depend on the spatial and operational extension of those associations and connectivities that tie it to other places. By situating any limited place within the space of the city as a whole, site reach reinforces the fact that any urban design intervention, no matter how limited in physical scope, participates in a project of city-building writ large.

Site Construction

Although considered a predesign activity, site analysis inevitably prefigures and reflects design intentions.* The logics and values structuring initial site observations are always and already prescribed by ideas about the future modifications imagined for a place, and conversely, the analysis process initiates a way of thinking about place that resonates through all subsequent phases of design.**

* "As often as not, an architect's description of an existing context will soon underpin a subsequent series of decisions to intervene in that context. A characterization of context smuggles into the design process a set of confirming values camouflaged as a description of existing conditions and observed facts; the details of any description of context will usually indicate whether the speaker aims to respect or reject it." S. Isenstadt, "Contested Contexts."

** "Site analysis, at a large scale and recorded through detached rational mappings, has given way to site-readings and interpretations drawn from first-hand experience and from a specific site's social and ecological histories. These site-readings form a strong conceptual beginning for a design response, and are registered in memorable drawings and mappings conveying a site's physical properties, operations, and sensual impressions." E. Meyer, "Site Citations."

In urban design, more often than not, sites are actively produced. *Site construction* is a site study process that yields a designed understanding of site through consciously selective viewing. The site definitions it produces are distinct from the design decision that results in establishing project boundaries (the determination delimiting where design actions physically take place).[13] This site study method embraces design agendas and asserts the interpretive basis of any site viewing process.

To define a site as urban, the process of site construction accounts for multiple fields of influence and effect, each with distinct spatial limits that in concert construe a territory of design concern. It recognizes, but does not attempt to reconcile, heterogeneous urban orders and logics. By not oversimplifying site complexity, this method of site study initiates and supports nonreductive urban design actions. These site analyses underscore the multivalence of urban sites, making of it a key issue for urban design attention. Regional, metropolitan, and local architectural; moving or static; large and small scale; close and distant: each vantage point brings different aspects of a site to light and each way of organizing site information (politically, economically, formally, historically, spatially, etc.) results in a distinct site configuration. Individually, these expose a predilection toward some combination of the city's myriad characters.* Drawn together, the many approaches begin to approximate the multivalence built into the urban landscape. Rather than conceive of sites as having one single bounding condition, site construction posits that site boundaries shift in relation to the position—the physical location and ideological stance—of their beholder. It dispels the illusion of the city as either containable or controllable by hypothesizing the urban situation as a porous and shifting space.[14]

Unbound Sites

Any design action for a limited site in a city is at once influenced by, and has consequences for, the city as site. The impossibility of isolating one urban locale, operationally, from its surrounds, lends urban design its inherently public dimension, and acknowledging this public dimension prompts a critical reassessment of how site boundary is typically understood in design. Irrespective of whether rights to a limited development parcel are privately, publicly, or jointly held, design actions in urban contexts have consequence beyond narrowly construed limits of legal metes and bounds. The unbound site uncouples the definition of site boundary from notions of ownership and property. It views site limits as open to configuration according to various forms and forces of determination.* Rather than drawing a line between urban and site (equating boundary with a line of separation) urban designers need to ask how many ways sites are linked to an "outside," to spaces, times, and places beyond their present and immediate control.** Defining site boundary in terms of a single property line produces a circumscribed figure, contained, isolatable, and controllable (the site defined as entity under design control). Designers need instead to recognize border porosities and to treat scale as a measure of boundary permeability. In this sense, the urban site is unbound by virtue of its having many different structuring limits simultaneously in play, not because its boundaries are simply effaced. Urban sites are comprised of multiple fields (areas under design control, areas of influence and areas of effect) each delimited according to its own operational horizons.[15]

* "Part of preparing a place to become a site involves the formation of new narratives. Familiar to anyone who observes real estate development is the narrative onslaught that begins almost immediately as developers and real estate brokers tout the benefits, for example, of their proposed apartment building, its compatibility with urbane lifestyles, and its prestigious address. Planners and designers are complicit in this process. Their presence indicates a seriousness of purpose and even inevitability to the project. Their reports and images portray and publicize the new place. The first act of real estate development is the narrative remaking of the site." R. Beauregard, "From Place to Site."

* "Grounds operate with great nuance. They resist hierarchy. There are no axes, centers or other obviously explicit means of providing orientation. Single, uncomplicated meanings are rare. Instead, there are open networks, partial fields, radical repetition, and suggestive fragments that overlap, weave together, and constantly transform. Within this textural density edges, seams, junctures, and other gaps reveal moments of fertile discontinuity where new relationships might grow. Relationships among grounds, are multiple, shifting, and inclusive. They engage the particular and the concrete rather than the abstract and the general." R. Dripps, "Groundwork."

** "Over the past thirty to fifty years, theories in the science of ecology have been reconsidered in at least three major areas: first, with regard to whether local ecosystems can be considered "closed" to larger-scale flows of materials and energy or whether the influences of these larger flows should be considered integral to local systems (I will refer to this as the spatial scale paradigm shift); second, in the degree to which local and regional history influences contemporary ecosystem dynamics (i.e., the temporal scale shift); and third, in the explicit consideration of physical landscape patterns as an important component of ecosystem functioning (i.e., the pattern shift). These developments have broad implications for ecologists who now think differently about relationships between local observations and events (or local spatial arrangements) and relationships that are neither local nor recent." K. Hill "Shifting Sites."

Urban Constellation

Context is what the site is not. Yet urban sites exist and participate in many contexts.* How, then, to define the confines of urban sites? The traditional idea of context implies that sites derive definition from their larger situation. Seeing a site "in context," however, depends on maintaining a clear distinction between inside and outside, thereby obscuring the difference between the boundaries of a building lot and the limits of an urban site.

At once a concept and a process, *urban constellation* blurs the line between context and site by demarcating site interactions across multiple fields of urban operation. It refers to a dynamic relational construct—formed by myriad interactions between variable forces (physical, social, political, economic, etc.) animated across multiple scales (as embedded in local, metropolitan, regional, and global spatial networks)—and the process through which that construct is defined. The process of urban constellation involves integrating knowledge of local place-based urban characteristics with knowledge of larger-scale spatial logics that underlie contemporary urbanism in all its forms. It problematizes the received idea of context as some outside, impassive backdrop.

Constructing urban constellations is not simply a matter of enlarging the contextual frame through which a particular place may be viewed. Rather, the concept of urban constellation requires that designers situate their urban sites in multiple contextual, or scalar, frames simultaneously. Constellations foreground context itself as a variable. Further, by projecting site and context as mutually implicated in the other's constitution, urban constellations reinforce understandings of site as a relational construct.

* "Few cities or buildings are more thoroughly documented than Paris and the works of Le Corbusier. Maps and aerial photographs of the sectors of Paris where Le Corbusier's projects are located are as readily availaable as the ubiquitous, published versions of the building plans, sections, and elevations. Yet, no documentation exists of this architect's work as it relates to its urban site. This simple, yet huge omission in the otherwise endless sea of information and speculation on Le Corbusier is astonishing. It demonstrates the pernicious obstinacy of a narrow framing of subject matter, which goes hand in hand with the modern concept of categorization. Categorization tends to distinguish and isolate, rather than relate. The 'phenomenon of concordance' referred to by Le Corbusier occurs in the interstices between building plan and city map. It is here that the story of the 'action of the work' on its surround is recorded, and where the 'environment brings its weight to bear.'" W. Redfield, "The Suppressed Site."

DEFINING THE INDEFINITE

The concepts outlined in the preceding sections consider urban design sites as relational constructs. In so doing, they oblige relational site thinking. They invite designers to consider how urban design sites differ from architectural ones on more than simply locational or dimensional grounds, emphasizing that limited locales in cities incorporate urban processes, systems, and logics that qualify and extend to the city as a whole.

In lieu of adopting topology (or topography) to generate schematic site representations, these new concepts set up a site definition process grounded in tropology.[16] Slippages in meaning between the terms intentionally figure urban sites as dynamic and processive. Their purpose is not to stabilize meaning, but to challenge the very idea of a stable urban site. These tools frame a new conceptual model for thinking about, and thinking through, urban sites. They construe the process of urban site definition as one of defining the indefinite. Instead of defining site in a narrow lexical sense, these concepts activate gaps between sign and meaning to characterize urban sites as spatially elastic and temporally provisional. Each recasts received ideas of boundary and scale in a slightly different way, yet all rebound around the same underlying point: that for urban design what matters is gaining understanding of the city *in* the site.

Notes

1. Derek Gregory, *Geographical Imaginations* (Cambridge: Blackwell, 1994), 72.
2. Melvyn Webber, "Urban Place and Non-Place Urban Realm," in M. Webber et. al., *Explorations in Urban Structure* (Philadelphia: University of Pennsylvania, 1964).
3. Neil Brenner has written extensively on the issue of scale and scaling processes. For a discussion of urban scale, see "The Urban Question as a Scale Question: Reflections on Henri Lefebvre, Urban Theory and the Politics of Scale," *International Journal of Urban and Regional Research* 24 (2000): 361–378. For a discussion of the fluidity of scale, see Erik Swyngedouw, "Neither Global nor Local: 'Glocalization' and the Politics of Scale," in K. Cox, ed., *Spaces of Globalization* (New York: Guildford Press, 1997), 137–166.
4. See Nigel Thrift on the definition of context as "active" and "differentially extensive" in *Spatial Formations* (London: Sage Publications, 1996), 3.

5. On heterology, see Tzvetan Todorov, *Mikhail Bakhtin: The Dialogical Principle* (Minneapolis: University of Minnesota, 1998), 56.
6. On heteroglossia, see M. M. Bakhtin, *The Dialogic Imagination,* trans. C. Emerson and M. Holquist (Austin: University of Texas Press, 1981), 291.
7. The notion of the city as a "'crisis-object' which destabilizes our certainty of 'the real'" comes from Robert Shields, "A Guide to Urban Representation and What to Do about It: Alternative Traditions of Urban Theory," in A. King, ed., *Re-Presenting the City: Ethnicity, Capital and Culture in the 21st Century Metropolis* (New York: NYU Press, 1996), 227.
8. M. M. Bakhtin, *The Dialogic Imagination*, 254.
9. Gilles Deleuze, *Foucault* (London: Athlone, 1988), 12.
10. On the constructed and the real, see Bruno Latour, "Whose Cosmos, Which Cosmopolitics? Comments on the Peace Terms of Ulrich Beck," *http://www.ensmp.fr/~latour/articles/article/92-BECK-CK.html* (April 2004).
11. "Places are best thought of not so much as enduring sites, but as moments of encounter, not so much as presents, fixed in space and time, but as variable events, twists and fluxes of interaction." Ash Amin and Nigel Thrift, *Cities: Re-Imagining the Urban* (Oxford: Polity Press, 2000), 30.
12. See my Aarden Hank, "Nomadic Thoughts 1: LA" *LAFORUM Newsletter* (September 1992): 5; and "Nomadic Thoughts 2: NJ," *LA FORUM Newsletter* (February 1993): 7.
13. On determining urban design site boundaries, see Edmund Bacon et al., "The City Image," in Elizabeth Geen, Jeanne R. Lowe, and Kenneth Walker, eds., *Man and the Modern City* (Pittsburgh: University of Pittsburgh Press, 1963).
14. For a more extensive discussion of site construction, see my "From the Ground Up: Programming the Urban Site" in *Harvard Architectural Review* 10 (1998): 54–71.
15. For a more elaborate discussion of the different areas of a design site, see the editors' introduction, "Why Site Matters."
16. On the theory of tropes, see Hayden White, *Metahistory: The Historical Imagination in Nineteenth-Century Europe* (Baltimore: Johns Hopkins University Press, 1973), 31–38.

12

High-Performance Sites

Carol J. Burns

DYNAMIC ROLE OF THE SITE IN BUILDING

Not fixed or static, the role of the site in the design disciplines has altered over time. This essay, an exploration of the changing status of site in design and construction of buildings, assumes the site to be both material reality and a cultural construct. As a material reality, the site endures in lowly earthiness, but as a living form it regenerates continuously in triumphant potency. As a construct of culture, the site is comprehensible only insofar as it is touched by human practices. We know the site because we make and shape it, socially, economically, and politically. Both of these viewpoints, realist and idealist, inform my argument, which traces three fundamentally dissimilar renderings of site in architecture. The first characterization of site is that of source for building materials and energy for construction. The second depiction is that of repository for building materials and energy imported from far afield. Finally, drawing on an emerging environmental impetus, the site is portrayed as linked interdependent systems combining intrinsic and extrinsic resources. These versions of site have risen to importance, respectively, in three different eras: the first beginning in prehistory and continuing today; the second beginning with industrialization and modernism; and the third beginning in the present time,

characterized in developed economies as postindustrial. Though distinctly dissimilar, each version retains its currency today. Examining them provides insights into the dynamic status of the place of site in design disciplines as ascribed within changing social norms and professional values.

SITE AS A SOURCE OF MATERIALS AND ENERGY FOR BUILDING

For centuries, local sites provided the materials used in construction. Materials were limited to those readily available in nature: stone, clay, wood, straws and grasses, sod, masonry, concrete, and elemental metals. Some basic chemical transformations had been understood for thousands of years, including, for example, brick and tile from clay and concrete from cement, lime, and aggregate. However, few such transforming combinations were in use before the mid-nineteenth century.[1]

Transportation was difficult and expensive prior to industrialization. Therefore, construction materials typically came from locations on or near the building lot. The immediate or proximate site served as stock for basic material supply. The plot provided space for stockpiling and storing materials both preceding and following extraction or harvesting. The construction site—the area disturbed and transformed by building the structure—served as the platform for building fabrication. The energy for building—fuel for construction as well as human food sources—was limited and came, similarly, from the immediate area.

Autochthonous construction, using materials and building practices at hand, has remained remarkably unchanged for centuries. Techniques developed through trial and error, were handed down through craft and tradition. Construction, transportation, and craft all took time and evolved slowly.

The effort invested in making anything—a city, a house, a piece of furniture—was too significant to waste. The cost of materials was a greater component of economic value than the direct labor costs of building. Every artifact therefore was used, reused, and adapted until it wore out, and even then the parts were recycled. This mode of production conformed to the economic pattern of traditional societies: circular consumption sequences in which parts fit into interlocking wholes, each necessarily as efficient as possible. Vernacular buildings surviving to the present provide striking material evidence of deep abiding connections between places and human artifacture.[2]

In the vernacular approach, the operations of a building also functioned as an integrated system. Dynamics between building and site provided input for the building system, with the building fabric mediating between internal and external climates. Each aspect of the physical building fabric—the orientation of elements, the weight and thickness of walls, the size and placement of windows—fits together in interlocked relationships with processes of nature bearing on the site, including the sun, the wind, atmospheric pressure, and precipitation. Slow in production, simple in operation, the building and the site functioned as one integrated system. This simple design was intended to optimize the potential for comfort and habitability, though these were difficult to attain within the limits of available knowledge and technique.

This model—direct integration of site and building materials and energy—persists widely today. It depicts the available approach to building for the still-significant portion of the world's population that has not undergone industrial modernization. Within developed economies, these local rudimentary practices inform small-scale operations and structures, including the self-help programs supported by government in many emerging economies and, to a degree, the do-it-yourself ethos of renovation in North America. Fundamental aspects of this basic knowledge inform but do not fully comprise what is later described here as high-performance sites.

SITE AS A DEPOSITORY OF MATERIALS AND ENERGY FOR BUILDING

In the late-nineteenth century, an explosion in new technologies and materials began to transform architecture and construction. Materials and composites invented during this period include steel and reinforced concrete. Development of new materials continued to accelerate in pace, including a plethora of synthetic and sheet goods in the 1950s

and continuing to the present day with new and expanded categories such as reinforced plastics, new adhesives, and alloys and metals including titanium. These goods typically require considerable transformation and processing. With origins in elementary matter extracted from the earth, construction materials increasingly take form and shape through industrial processes.

The development of new construction materials has depended on related parallel advances in transportation technologies. The harnessing of steam power in the early-nineteenth century brought with it mechanization, urbanization, the factory system, and product economies of price. Raw goods shipped by rail and steamboat supplied producer and consumer markets within and across regions. In the immediately ensuing phase of industrial revolution, electric power accompanied mass production, mass consumption, and the continual search for economies of scale.[3] Production and consumption of new construction materials depended on more elaborate transportation networks.

Though the building site remained a platform for construction, the source of materials and the site of fabrication for building components multiplied and dispersed. Specific geographic areas took on specialized roles, some as the source for resource extraction, others as the locus of processing, and still others as the location of labor for assembly or fabrication. The materials and components of buildings were gathered and assembled from across numerous sites of accumulation prior to delivery to the construction site. Concurrently, material production became rationalized with respect to standard building systems, and the formulation of building codes became more uniform. Thus, mechanization in conjunction with seemingly unlimited access to fossil fuels superseded the locally based handcraft approach of producing building materials and components. The direct labor cost became a greater component of economic value than material costs of construction. Production of goods and materials for all sectors occurred easily and, arguably, to excess.[4]

The invention of machinery for heating, cooling, and ventilating buildings led to innovations in controlling the interior environment in ever-larger structures, including new building types, such as the skyscraper. However, by the time of the Modern Movement in Europe, as Reyner Banham describes, the use of this new technology for "improved environmental quality was most ruthlessly sacrificed on the altar of a geometrical machine aesthetic and the honest expression of everything."[5] The vernacular model of differentiated structure to mediate between interior enclosed space and exterior site space was repudiated, for ideological rather than practical reasons.[6] Le Corbusier said, "Every nation builds houses for its own climate. At this time of interpenetration of scientific techniques, I propose: one single building for all nations and climates."[7] Le Corbusier's advocacy of what came to be known as the International Style carried into the building's interior climate as well: "The buildings of Russia, Paris, Suez or Buenos Aires, the steamer crossing the Equator, will be hermetically closed. In winter warmed, in summer cooled, which means that pure controlled air at 18 degrees C. circulates within forever."[8] Admitting that "Le Corbusier's position of unrivalled esteem among architects makes him too convenient a target for criticism," Banham posits Le Corbusier as

> no worse than the rest of his generation....The whole generation was doubly a victim; firstly of an inability of its apologists and friendly critics to see architecture as any more than a cultural problem, riding upon a conventional view of function that had not been related to twentieth-century needs; and, secondly, of its own (apparently willing) submission to a body of theory more than half a century behind the capabilities of technology, still preoccupied with problems—such as the use of metal and glass in architecture—that had been propounded...and effectively solved by an earlier generation.[9]

With this as introduction to Le Corbusier's concept of *machines à habiter*, Banham examines in detail the mechanical and environmental dimensions of several buildings by Le Corbusier, along with his awareness of environmental problems, characterizing them as a "machine-age aesthetic."[10]

Developments in technology for control of building environments proceeded in a series of piecemeal solutions responding to piecemeal problems, evolving so that buildings today, worldwide, have mechanical systems to mediate between human beings and local climate, providing for habitability and comfort. Building mechanical systems often

must compensate for factors in a building's orientation or fabric—poor siting or excess glazing—that have not been designed from an environmental viewpoint. This approach prioritizes invention and propagation of sophisticated "state-of-the-art" equipment. Increasing mechanization, including the invention of computer controls in the 1970s, reinforces the commitment to sealed interior building environments.[11] The site, exteriorized from the experience of the building, is also repositioned in sensibility and social norm. This site has become a source of discomfort.

Buildings have become more technological, as an increasing portion of building cost, often as much as 50 percent, goes toward mechanical systems, rather than toward the fabric of enclosure—structure, walls, and roof. Emphasizing mechanical systems and functional independence, the currently prevalent model of building depends on a linear metabolism, by which fossil energy goes in and waste and energy are expelled. The building operates as a collection of different unrelated systems.

For market-based buildings designed by architects, conventional design processes tend to reinforce the tacit understanding of the site as a source of discomfort. Methodologically, designs are schematized and developed sequentially from architect to engineer to subconsultant. The process of design, having become more specialized and splintered, delivers buildings that, designed as if isolated from their sites, consume more energy. Among those designing different aspects of the building, the architect has remained focused on the appearance of things.[12]

BUILDING WITH SITE: HIGH-PERFORMANCE DESIGN

Many today—including building owners, contractors, environmental groups, professional designers, and research institutes—question the performance level of typical development and construction practices in relation to the environment. The critique of standard practices does not call for a return to traditional construction as that would address neither practicalities nor ideals. Though vernacular architecture does the best with material at hand, in comparison with "modern urban standards of scale, amenity, safety and permanence...vernacular architecture is often unsatisfactory."[13] Rather, energy- and resource-efficient

projects that reap meaningful cost savings, including important benefits, that are commonly known as "green" or "sustainable." Here, the characterization of such projects as "high-performance" speaks to a new understanding of the relationship between building and site within environmental design: the observance of limitedness in an economy of means within an industrial framework.[14]

In brief background, the Rio Earth Summit in 1992 brought together heads of state who committed their nations to exploring ways of achieving "development which fulfills current needs without compromising the capacity of future generations to achieve theirs."[15] Three principles of sustainable development ground this concept: consideration of the "life cycle" of materials; increased use of natural raw materials and renewable energy sources; and reduction in the materials and energy used in material extraction, transportation, product manufacture and use, and disposal or recycling of waste. Though the Rio summit marks the rise of more widespread awareness of these issues, consciousness of the need for an environmentally based architecture had been growing for decades.

As early as the 1970s, following the first global oil embargoes, a number of designers, mostly in housing and small-scale cultural and institutional buildings proposed environmental alternatives. Pioneers of low-technology green structures include Joachim Eble in Germany, who designed projects in timber, and Sverre Fehn in Norway, with projects using earth. The most notable proponent of a low-technology approach is Paolo Soleri, working in Arizona with a concept of *arcology*—a fusion of architecture and ecology that proposes a highly compact urban form using indigenous materials—that can well be characterized as within the first model described here, "site as source."

At the opposite end of the technology spectrum, architects including Norman Foster, Renzo Piano, Richard Rogers, Thomas Herzog, Francoise-Helene Jourda, and Gilles Perraudin came together to form the READ Group—Renewable Energies in Architecture and Design. The group received official recognition and backing from the European Economic Union in 1993 at a conference in Florence.[16] The landmark eco-tech buildings to date are the Commerzbank Tower in Frankfurt and the dome of the remodeled Reichstag in Berlin, high visibility projects both designed by Foster and Partners. Media coverage of path-

breaking projects has had a positive effect mobilizing support as others follow in their wake. Various techniques used in these projects, such as double-skin glazed façades, have been applied to other, smaller projects with considerable success. The promise of the highly technological approach remains to be more fully pursued, particularly regarding temperature control in summer and energy saving in winter.

Between the extremes of high- and low-tech design, an emerging middle way is distinguished by well-considered combination of traditional materials and innovative industrial products. As early as the 1970s, Gunter Behnish produced buildings and urban projects integrated with landscape. Stefan Behnish characterizes the position of Behnish, Behnish and Partner this way:

> There are basically two schools of sustainable architecture. The Norman Foster school, where environmental problems are solved by bringing in technology; and the Soleri school, which rejects technology. We fall somewhere between these two; but my sympathies are more towards Soleri. I don't want to go back to the stone age, or to change the way we live now—but so long as we are prepared to accept that we will be warmer in summer and cooler in winter, then I am convinced that we can achieve an acceptable level of comfort by following the laws of nature.[17]

The U.S. Green Building Council has begun to suggest the direction of a middle path in the United States. This consortium of building owners, suppliers, contractors, government agencies, architects, engineers, and others formed in 1993 with the purpose of promoting a mainstream change in the industry toward sustainable facilities. The group developed an uncomplicated rating system to evaluate building practices, LEED (Leadership in Energy and Environmental Design). Created through a consensus process, LEED is seen as a transition document to help move the U.S. building industry toward more sustainable practices. Formally introduced in 2000, the system measures performance relative to a series of prerequisites and credits in five areas: sustainable sites, water, energy and atmosphere, materials and resources, and indoor environmental quality."

Updated regularly, it is rigorous, transparent, and easy to use. Design team members track progress toward earning a LEED rating,

with no need for specialty consultants. The system includes four levels of performance depending on the number of credits earned, and design teams must verify that all the prerequisites and at least 40 percent of the credits have been met to get a basic rating (bronze). As such, the system functions to promote and guide comprehensive and integrated high-performance building design. Most of the credits are performance based (rather than specification based, as are most building codes), meaning that they measure the degree of improvement relative to a recognized standard, rather than requiring the use of specific strategies or technologies.

Within the hierarchy of factors in high-performance design, issues of siting a structure play a central role. In a guidebook to sustainable design written under the auspices of one of the largest architectural firms in the United States, the itemization of "Ten Simple Things You Can Do" includes nine items that refer to the site (the tenth advocates recycling).[18] High-performance design draws on principles used in older building practices. Manipulation of land features, building forms, and exterior materials takes the climate into consideration in order to get the most out of a site and building fabric *before* drawing upon electrical and mechanical assistance from mechanized energy-driven systems.

High-performance design favors "appropriate technology" over sophisticated "state-of-the-art" equipment. Sophisticated building components now conventionally available—such as wired building components or highly technical windows—increasingly address hybrid functions, manifold demands, and complex requirements. An integrated or whole-building design approach requires thinking about the building, its materials, its components, and its site as a series of interlinked and interdependent systems. In this sense, the building is conceived not as an object but as a set of processes interacting within and across the processes of the site. In this model, a single design refinement might simultaneously improve the performance of several building systems.

Basic objectives of this approach include maximizing operational energy savings, providing healthy interiors, and limiting the detrimental environmental impacts of building construction and operation. Compelling side benefits include improvements to occupants' health and well-being attributed to better daylighting, artificial lighting, and indoor air. Worker productivity-gains in a number of completed high-performance commercial structures have been documented in measures

that dwarf the combined capital, operations, and maintenance cost expenses.[19]

Because such benefits are difficult to quantify, the full value of high-performance buildings can be underestimated by traditional accounting methods that do not recognize "external" costs and benefits. High-performance building cost evaluations should address, in some measure, the economic, social, and environmental benefits that accompany green design.

Building construction costs, similarly, do not measure the adverse environmental impacts of construction-related activities. Today's design decisions have local, regional, and global consequences. According to the Worldwatch Institute, almost 40 percent of the 7.5 billion tons of raw materials annually extracted from the earth are transformed into concrete, steel, gypsum board, glass, and other building materials. One quarter of the annual wood harvest is used for construction. At the level of building operations, globally, buildings use about 16 percent of total water withdrawals; in the United States that amounts to about 55 gallons per person daily. Buildings consume about 40 percent of the world's energy production and produce about 40 percent of the sulfur dioxide. The high cost of inefficient practices carries into the interior environment. Indoor air pollution constitutes one of the top five environmental risks to public health, found in up to 30 percent of new and renovated buildings. Many industries have a growing appreciation that sound economic and environmental choices are not mutually exclusive, but instead are compatible, even interdependent. This suggests that high-performance building practices increasingly will be market driven as the economic advantages of environmentally sound design and construction gain recognition and support.

Continued development of lightweight, high-strength, high-performance materials offers the prospect of economy, efficient transport, reuse, and less waste. The development of new materials has continued to accelerate in pace. Existing categories of materials have transformed and expanded (such as titanium, aluminum, and ceramics). New categories of materials have emerged (including polyaramids such as Kevllar and Goretex, or foamed materials. A vast array of new composite materials holds potential for high performance (reinforced plastics, polymers threaded with glass fiber, or thin films applied to fabrics). Producing the materials and fabricating them within architectural components requires environmental and technical controls exceeding those provided at the construction site. The trajectory of materials development suggests a continued increase in off-site fabrication of building components delivered to the site as prefabricated elements or modules.

The emergence of high-performance design prompts reconsideration of models for design decisions. The old decision model based on factors of cost, quality, and schedule, mandated the protection of the health, safety, and welfare of society; the emerging model also considers the health, safety, and welfare of the environment. Issues of ecology consider the local site as well as the local environment. In this sense, light, air, and solar inputs can be deployed as building resources, and though inexhaustible, are similar to the use of resources extracted within the preindustrial model of building.

High-performance outcomes demand a much more integrated collaborative approach from architects, engineers, and other designers of a building project. A unified, more team-oriented design and construction process brings together various experts early in the goal-setting process. This interdisciplinary approach, in effect, quickly coordinates various types of professional expertise at the start of a project, rather than in sequential development, making a departure from past practices. During design development, input from users and operators can accelerate progress, eliminate redundant efforts, engender commitment to decisions, reduce errors, and identify synergistic opportunities.

Within the high-performance model, the site of the building is considered reiteratively at many scales: at the scale of ecology and multiple generations, at the scale of the property, at the scale of the building, and at the scale of building systems and components. These are integrated across the site, and linked on out to regional and global scales. Conceived not as objects, the site and the building systemically are brought into existence together. The new methods have created a number of different sites in design: one that is intellectual and based on prior principals of design methods and forms; another that is based on a site seen as ecological, but without constitution as a physical locality; one, along with others not listed here, called the physical site.[21]

THE UNSETTLED SITE

At stake here is an understanding of architecture as participating in a world of living systems and entities. The organization of cultural/physical systems is not reducible to a set "base" or "core" of patterns or structures, or to such structures found "behind" contexts or settings. Rather, in this view, order in design is embedded within dynamic context. Design includes the processes by which participating components organize local lived situations. These mutually constitutive dynamics include processes, which are living entities, being constituted by the very processes of living.

Dynamics regarding site performance have been articulated here in the terminology of professional design. In further opening up this territory for future rethinking of relationships in design, frameworks established by theorists in other disciplines offer concepts and terminology for describing and analyzing mutually empowering relationships. Material can be explored within those disciplines that have articulated a mutually constitutive approach to understanding living systems, traditionally including the biological sciences, philosophy, and the social sciences.[19] The number, range, and breadth of disciplines that bear on this subject speak to the multiple registers of the site.

Conceptualizing architectural sites within processes of living change, this argument begins with the premise that the site is both a cultural construct and a material reality. The two exist in parallel, but they are not, and never can be, the same thing. Both halves of this double definition implicate dynamic change. They define from the outset that site is not settled.

As models, the notions of site outlined here—as source, as depository, and as interdependent systems—are sufficiently at odds to suggest that they are mutually exclusive. In the physical world of sites, they can and do coexist. Duration and overlap of these notions of site show that new developments of different times overlay those of prior eras, without canceling or negating each other. Unlike ideology, which moves to exclude alternative positions, the environment incorporates contradictions.

As a relational process within a physical, spatial, and cultural framework, a site is not a bounded, fixed, or even singular entity. In questioning the stable ground plane as a firm site for architecture, so too does the object building inserted in an abstract landscape come up for critical reconsideration. The unsettled site—conceived as the building and the site in a set of interacting processes—means that even the most amorphous or degraded setting, including the ubiquitous commercial strip, can yield meaningful content for design.[20] This view of design extends beyond production to the complete life cycle of that which is produced.

Methodologically, this view advocates for dissolving, not reinforcing, boundaries between thinkers and makers. Rather than focusing on design or engineering of artifacts, the goal is the design of processes. Tools for thinking and for learning therefore should be based on simulation or modeling rather than simply on representation. Through this can be discovered new relationships with natural and social processes and histories, including but not limited to new relationships with the ground.

Notes

1. Issues of building materials are discussed in relation to fabrication on and off the site in Stephen Kieran and James Timberlake, *Refabricating Architecture* (New York: McGraw Hill, 2004).
2. See, for example, Bernard Rudofsky, *Architecture without Architects* (New York: Museum of Modern Art; distributed by Doubleday: Garden City, NY, 1964).
3. An abbreviated history of these forces as related to the built environment can be found in Peter Rowe, *Modernity and Housing* (Cambridge: MIT Press, 1993).
4. For a more detailed critical assessment of cultural factors contributing to environmental sustainability, as well as the wide variety of architectures claiming it, see Susannah Hagan, *Taking Shape* (Oxford: Architectural Press, 2001).
5. Reyner Banham, *The Architecture of the Well-Tempered Environment* (Chicago: University of Chicago Press, 1984), 125.
6. Hagan, 106.
7. In Banham, 159.
8. In Banham, 160.
9. Banham, 143.
10. Banham traces what he describes as Le Corbusier's abandonment of the attempt to extract symbolic values and cultural performance from the application of advanced technology—along with the common-sense orientation of all-glass walls to construction in the early 1930s of the Cite de Refuge and, more notably, the Pavillon Suisse.
11. Hagan, 106.

12. Several architects have taken up the issue of the site as conceptual material for project. These include, for example, Steven Holl, with a notion of "anchoring"; Stanley Saitowitz, who has designed a set of geological projects; and Peter Eisenman, who has worked across a complex of site-inspired concepts and metaphors. Notwithstanding the concern with site phenomena and tectonics, these projects tend to work with site at the level of image.
13. James Marston Fitch, "Vernacular Paradigms" in ed. M. Turan, *Vernacular Architecture* (Sydney: Avebury, 1990), 267.
14. The nomenclature of performance, with connotations of measurability, supersedes and subsumes the various and conflicting interpretations of "green" and "sustainable" architecture. For example, the *High Performance Building Guidelines,* published by the City of New York Department of Design and Construction (April 1999), were written to support additional collaboration required for high-performance buildings defined as those that measurably "maximize operational energy savings; improve comfort, health, and safety of occupants and visitors; and limit detrimental effects on the environment."
15. In Dominique Gausin-Muller, *Sustainable Architecture and Urbanism* (Basel: Burkhauser, 2002), 13.
16. For a more detailed discussion of the history and issues of the environmental movement, focusing especially on European practice, see Gausin-Muller.
17. In Gausin-Muller, 17.
18. Sandra Medler and William Odell, *The HOK Guidebook to Sustainable Design* (New York: John Wiley & Sons, 2000).
19. Salient references from the social science include: Pierre Bourdieu's perspective of "habitus" and "practice"; Anthony Giddens's exploration of relationships between agency and structure; Martin Heidegger's phenomenological perspectives; Maurice Merleau-Ponty's focus on social life as lived; and formulations of indexes, indexical meanings, and "referential" meanings offered by Charles Peirce, Wesley Jakobson, and Jane Bachnik.
20. I use the term *unsettled* with different meaning than does Wendell Berry in *The Unsettling of America,* in which his concern for land focuses on agribusiness. However, this text shares with his the understanding that the land and the products of the site—artifacts as well as agriculture—are the fundamental expressions of culture.
21. I am indebted to Ed Robbins for this formulation.

Engaging the Field

William Sherman

FIELDS IN FLUX

In the field of physical design, disciplines evolve. As ideas change about what design entails, the relationships between design disciplines transform as well. Ever since the early Renaissance moment marking the birth of modern abstraction, when Leon Battista Alberti codified *disegno* as a formal operation, architecture and landscape architecture have been defined in formal terms, distinguished from each other based on their associated scales, and materials, of operation. Today, however, we look at design differently, calling such distinctions into question. We comprehend design as operating at many scales simultaneously, and understand design materials in terms of performance rather than appearance. A common concern for ecology has altered design thinking, binding disciplines together in significant new ways. The boundaries formerly dividing areas of design concern become places of fertile cross-disciplinary invention.

Architecture and landscape architecture comprise part of this field in flux. Designers in both areas now investigate the materials and workings of cultural and ecological networks at multiple scales, challenging previously accepted disciplinary limits. Through a close reading of the contemporary city, new relationships between ecological processes and cultural practices become evident. For example, environmental transformation or deterioration cannot be considered as separate from socially and economically determined patterns of land use.

More often than not, the assumed boundary between architecture and landscape architecture has been identified with the line of the building envelope. This gross oversimplification masks great complexity. How designers construe where the building meets the land has