

# Wielding a Bigger Hammer: Scaling Up the Instruments of Construction

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Him I call Architect, who by sure and wonderful Art and Method, is able, both with Thought and Invention, to devise, and, with Execution, to complete all those Works, which, by means of the Movement of great Weights, and the Conjunction and Amassment of Bodies, can, with the greatest Beauty, be adapted to the Uses of Mankind: And to be able to do this, he must have thorough Insight in the noblest and most curious Sciences.

– Vitruvius, preface to *Ten Books of Architecture*

The Architect will not have control over or charge of and will not be responsible for construction means, methods, techniques, sequences or procedures...

– 4.2.3 AIA Document A201 *General Conditions of the Contract for Construction* (1987)

## INTRODUCTION

Architects reached the pinnacle of their craft in medieval times, according to John Ruskin and William Morris. The architect knew all: the craftman's trade, the nature of materials, means and methods of construction. He devised means to move "great weights ...with the greatest of beauty" because of his "insight into the noblest...sciences." This holistic method of working is rare today as a plethora of economic, cultural and technological pressures towards a more fragmented approach have only accelerated since Morris' time. Large-scale multinational public works built today involve hundreds of specialists who together determine the program, form, materials, construction cost and method. The direct predetermined connection between thought and built form is no longer as Louis Sullivan describes it.

Throughout this stream of human life, and thought and activity, men have ever felt the need to build; and from the need arose the power to build. So, as they thought, they built; for, strange as it may seem, they could build in no other way. As they built, they made, used and left

behind them records of their thinking...Whatever the character of the thinking, just so was the character of the building.'

When the link between thinking and building lacks clarity, the relationship between design and construction (and by extension, architect and builder) is similarly muddled. When faced with the executing their design, contemporary architects find themselves caught between the Vitruvian ideal and the protective stance of the AIA document.

## HANDS OFF

Since the turn of the century, the role of the architect has become increasingly more specialized. A common condition that architects find themselves in today is not as the sole source of authority on how the building is to be built, but as a design specialist. In residential house design, the architect has been relegated to an increasingly peripheral role. In some cases, design services have such a base value that they are tossed in as "freebies" by the builder. In others, architect is image-maker, designer of skins and perhaps bones, but not of flesh. Name-brand architects like Robert A. M. Stern, in collaboration with *Life Magazine*, offer house plans with a variety of facades that can be viewed over the Internet and ordered for \$495.00 (all major credit cards accepted). The extent of the architect's responsibility spelled out with the disclaimer that compliance with local building codes and site or climate adaptations should be reviewed by a builder. The disclaimer suggests that this can even be done by an architect, should the client "choose to consult with one."<sup>2</sup>

*Life's Dream House* chooses to ignore the very sources of inspiration that form the basis of custom residential design: client and local context (which includes site, climate, local building materials and expertise). Other design criteria become dominant: life-style and image. While it is easy to condemn Stern for forsaking certain touchstone principles, it must be acknowledged that he is offering a valuable commodity. His house is an intelligently designed alternative in an age when professionally competent construction documents for a house can be purchased for \$300.00, and the neighborhood



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# PRACTICES

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Speakable Practices  
Moderator: Doug Garofalo, University of Illinois at Chicago



of the model or drawing.

The idea of investing the context rather than the project produces, within the framework of this paper, an interesting inversion of sorts: architecture may indeed operate as a minor event in the construction of the ground plane. This notion was not lost on land artists, who, as discussed earlier, refused to objectify their work but rather set out to situate it within a greater continuum of space and ideas, constantly privileging the context over the intervention itself. While this paper set out to explore ways in which buildings meet the ground, I am somehow reminded in these models of the primacy of the ground line over various notions of manipulation of the line itself: after all, the line is the project. Only few buildings find true opportunity, indeed make a line out of this encounter with the ground. A true such line is, following Leonardo's definition, revealed only when this very threshold between building and ground, or natural and man-made, is fully acknowledged as a distinct threshold of architectural experience.

## ACKNOWLEDGMENTS

I would like to thank Randy Ott, Stephen Atkinson, Nichole Wiedemann, and Pratana Anuras for their help and insight in the development of this paper.

## NOTES

- <sup>1</sup> J-Paul Richter, ed., *The Notebooks of Leonardo da Vinci*. (New York: Dover Publishers, 1970).
- <sup>2</sup> LeCorbusier, "The Five Points of the New Architecture." Quoted in Willy Boesiger, *Le Corbusier*. (New York: 1970), p. 76.
- <sup>3</sup> Ludwig Glaeser, "The Farnsworth House," Yukio Futagawa, ed., *Mies van der Rohe- Farnsworth House, Plano, Illinois 1945-1950. Global Architecture no 27*. (Tokyo: ADA Edita, 1974).
- <sup>4</sup> The idea of elevating the building above ground is not a novel formal approach for Mies: this strategy had been first explored in the Resor house project (Jackson Hole, Wyoming, 1938) almost 10 years earlier. The proportions of the Resor house and Farnsworth are quite similar, featuring a one story volume hovering lightly above the ground. Mies came up with this idea following a request by the clients, who had wished to preserve a series of existing stone walls on the site. Mies propped the volume of the house on top of these very walls, giving from certain angles the impression of a firmly grounded building, and at other times that of a levitating structure.
- <sup>5</sup> Says Johnson: "The cylinder, made of the same brick as the platform from which it springs, forming the main motif of the house, was not derived from Mies, but rather from a bumt wooden village I saw once where nothing was left but foundations and chimneys of brick. Over the chimney I slipped a glass steel cage with a glass skin. The chimney forms the anchor." Philip Johnson, "House at New Canaan," *Philip Johnson: Writings*. (New York: Oxford University Press, 1979), p. 223.
- <sup>6</sup> Colin Rowe remarks: "the column is strictly subordinated to a

spatial expression of the flat slab." He also refers to Mies' "sandwich volumes." Colin Rowe, "Neo-Classicism and Modern Architecture II," *The Mathematics of the Ideal Villa and Other Essays*. (Cambridge: MIT Press, 1988), pp.143 & 148. A similar observation is made in Robin Evans, "Mies' Paradoxical Symmetries," *Translations from Drawing to Building and Other Essays*. (London: Architectural Association Publications, 1997).

- <sup>7</sup> Franz Schulze remarks that Mies had underlined the following passage from *The Decline of the West*: "in analogizing the horizon with the future, our age identifies itself with the 'third dimension of experienced space.'" Franz Schulze, *Mies Van der Rohe: A Critical Biography*. (Chicago: The University of Chicago Press, 1985), p. 116.
- <sup>8</sup> Quoted in Gwendolyn Wright, "Frank Lloyd Wright and the Domestic Landscape," Terence Riley, ed., *Frank Lloyd Wright, Architect*. (New York: The Museum of Modern Art, 1994), p. 84.
- <sup>9</sup> Excerpt from a series of conceptual notes developed by Wright on the Prairie Houses. Quoted in William J Curtis, *Modern Architecture Since 1900*. (London: Phaidon Press, 1996), p. 120.
- <sup>10</sup> These are related anecdotes from an architectural tour of Falling Water.
- <sup>11</sup> Kenneth Frampton notes: "Its fusion with the landscape is total, for, despite the extensive use of horizontal glazing, nature permeates the structure at every turn. Its interior evokes the atmosphere of a furnished cave rather than a traditional house." Kenneth Frampton, *Modern Architecture: A Critical History*. (London: Thames and Hudson, 1992), p. 189.
- <sup>12</sup> "As distinct from symbols, Indexes establish themselves along the axis of a physical relationship to their referents. They are marks or traces of a particular cause and that cause is the thing to which they refer, the object which they signify." Rosalind Krauss, "Notes on the Index," *The Originality of the Avant-Garde and Other Modernist Essays*. (Cambridge: MIT Press, 1985).
- <sup>13</sup> The notion of ground a datum has been largely explored in other works of funerary architecture. Also see Pinos & Miralles' cemetery at Igualada.
- <sup>14</sup> For a more extensive discussion of Land Art projects and Michael Heizer works, please refer to Gilles Tiberghien, *Land Art*. (New York: Princeton Architectural Press, 1995).

## ILLUSTRATION CREDITS

Fig.1 Le Corbusier & Pierre Jeanneret, *Le Corbusier- Oeuvre Complète 1929-1934*. (Zurich: Les Editions d' Architecture, 1966), p.84.

Fig.2 Maurice Besset, *Le Corbusier*. (New York: Rizzoli, 1976), p.76.

Fig.3 Yukio Futagawa, ed., *Mies van der Rohe- Farnsworth House, Plano, Illinois 1945-1950. Global Architecture no 27*. (Tokyo: ADA Edita, 1974), pp. 18-19. 1994), p. 265.

Fig.4 Terence Riley, ed., *Frank Lloyd Wright, Architect*. (New York: The Museum of Modern Art, 1994), p. 234.

Fig.5 Philip Jodidio, *New Forms*. (Köln: Taschen, ), p.164.

Fig.6 Drawing by the author.

Fig.7 Gilles Tiberghien, *Land Art*. (New York: Princeton Architectural Press, 1995), p.88.

Fig.8 Project and photograph by the author.

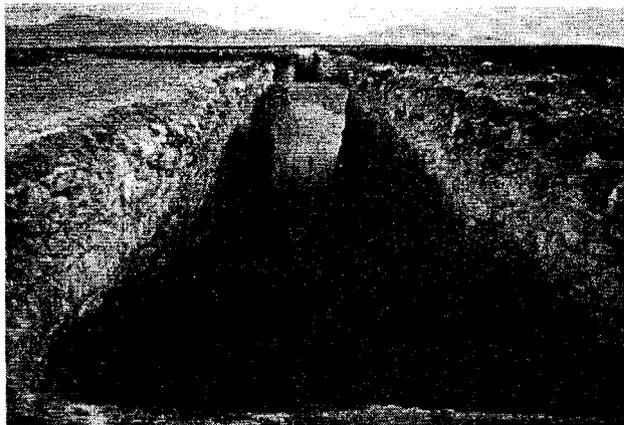


Fig.7 Michael Heizer, Double Negative, Mormon Mesa, Overton, Nevada.

(the single cut of Double Negative and formed earth mounds of Effigy Tumuli are several hundred feet long bulldozer-type enterprises), the bold moves acquire, in contrast with the vastness of the landscape beyond, great finesse, becoming almost imperceptible.

#### **CONCLUSION: AN ARCHITECTURE OF THE GROUND LINE.**

To parallel the development of this article, I became interested in applying some of the major ideas collected in this paper as the basis for a personal design project. A work in progress, the project has up until now evolved into a series of study models which explore the idea of making space at the very crust between earth and air, with particular focus on concepts at the center of this article: notions of carving and shifting, of faceting and layering, of parallelism and formal separation from, or integration with, the ground plane. While there was no specific building program to start from, the formal and spatial development in each model seemed to suggest very distinct possibilities of inhabitation and geography which, at this time, have yet to be fully developed.

The strategy for appropriating the ground plane presents itself as a hybrid of sorts. From a distance, these buildings

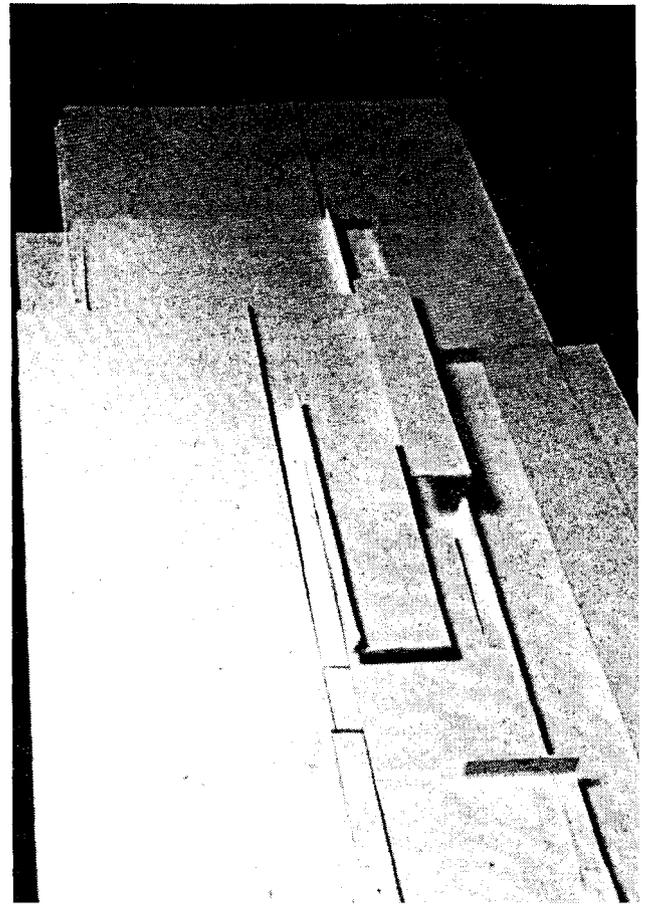


Fig.8 Tectonic / Ground series; project by the author.

may appear as slight shifts along a strong datum, studies in relief of sorts. Each model privileges a strong parallelism with the ground plane: the buildings are elongated, low to the ground, vertically compact yet thick structures. Vertical planes are minor occurrences in this system. These characteristics are not without reminding the flat elongated structures of Wright, the sense of blurring indoor and outdoor spaces. Yet they also borrow from Mies the predominance of the slab over the wall, the hovering nature of the planes elevated lightly above the ground, their complicity with the horizon. From Heizer, the projects adopt the strong, relentless and unmistakably man-made cuts into the ground. The ground surrounding the buildings shifts slightly in plates, evoking the light shifts of Maya Lin's Vietnam Veteran Memorial, as well as Diebenkorn's seemingly agrarian landscapes and erasures of the Ocean Park paintings.

While developing these models, it quickly became apparent that a substantial effort, calculated in terms of building materials, went to develop the ground plane, and very little to the project itself. Indeed, the project itself occupied very little space in the model: I discovered that any spatial manipulation of the ground plane to create space only became significant when it occurred as a minor event relative to the overall scale

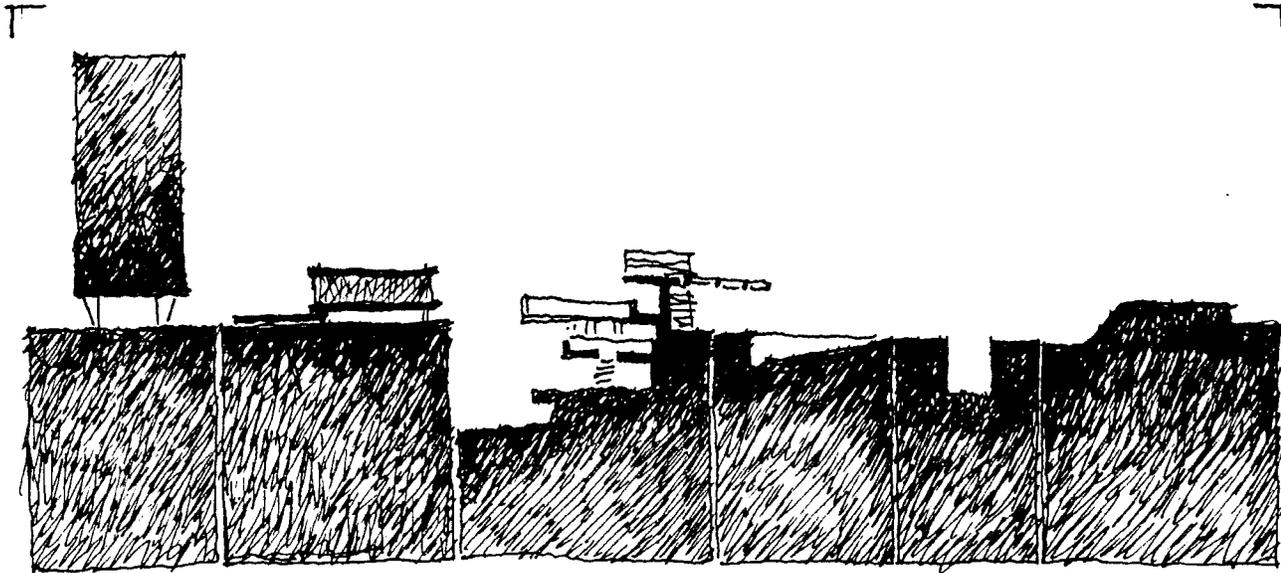


Fig. 6 Synthesis: appropriating the ground line. Frames, from left: Le Corbusier & Pierre Jeanneret, Unité d' Habitation, Marseilles; Mies Van der Rohe, Farnsworth residence; Frank Lloyd Wright, Falling Water; Maya Lin, Vietnam Veterans Memorial; Michael Heizer, Double Negative & Effigy Tumuli earth mounds.

space architecture and Land Art projects. The emergence of conceptual art, and specifically of the Land Art movement in the United States, coincides with the general period of cultural and social turmoil of the late 60s. Artists were then beginning to bring into question the institutionality of the museum and art gallery: there existed a growing sense in the art community that works of art were given privileged status, indeed became works of art, simply by placing them in a gallery or museum. Simply defined, movements in conceptual art such as Land Art emerged in challenge of these assumptions, redefining the very nature of the work of art in a twofold strategy: first, by creating and displaying art safely out of the gallery or museum; second, by opening up typical categorizations in works of art (painting, sculpture, etc..) in favor of new criteria .

The movement of Land Art reinvested these ideas with particular focus on the natural environment. As their program, artists began exploring the idea of intervening directly in the landscape, using nature both as material and subject to create a subtle and often political commentary on man's appropriation of their natural surroundings.<sup>12</sup>

Works by land artist Michael Heizer and architect Maya Lin provide fresh new insight into such strategies for dealing with the ground plane. " My interest in such works lies in the idea that the notion of a line (or absence thereof) distinguishing between building and ground, an idea enforced by Mies at Farnsworth and reinvested by Wright, may here have simply become superfluous: the ground itself is conceived of as *poché*, as material to be molded. Space-making interventions operate *from within* the ground itself, without the addition of any new materials, through either the subtraction of existing earth material or the re-shaping of the ground plane.

Maya Lin's Vietnam Veterans Memorial In Washington DC constitutes perhaps the most evocative example of this strategy. For Lin, a simple *shift* in the ground plane allows for the creation of a space – a wall revealed- suspended between above and below ground, between the present and the past, between the living and the dead.<sup>14</sup> The retaining wall mediates the shift between the newly created depressed plane and the datum of the existing ground level: from one side, the wall is completely invisible; on the other, its exposed surface constitutes the space of inscription and memory, a collective tombstone. Access to the walls is along the depressed plane. The linear aspect of the project encourages a continuous procession from end to end. The wall recedes progressively in height as one moves away from the center, where the shift is tallest, only to become completely absorbed by the ground at both ends.

Whereas Lin's project operates in the public realm, the work of land artist Michael Heizer is geographically remote and strangely monumental. For Heizer, carving and shaping of the ground plane become ways of appropriating the very outer crust of the earth, and making space at the interface between air and ground. Heizer draws motivation from the landscapes in which he intervenes: the earth mounds in Heizer's Effigy Tumuli project are inspired by Indian earth mounds; similarly, the large earth cut featured in Double Negative evoke nearby quarry sites. A common approach in Double Negative and Effigy Tumuli is the strong contrast formed between existing natural land forms and Heizer's new rational lines and patterns: because of an already strong thematic continuity with the landscape, the powerful linear geometry constitutes, in effect, the only true evidence of intervention. Heizer's lines are a subtle presence in the landscape: while they may appear brutal at the level of detail

*pilotis* and in Mies Van der Rohe's Farnsworth residence, the notion of establishing an open space at ground level to establish and firmly clarify the interface with the building. The second part of the paper will highlight key projects by Frank Lloyd Wright, land artist Michael Heizer and others, featuring instead a conceptual ambiguity in the making of the building-ground relationship, blurring, and at times simply erasing, this particular distinction.

### 1. A SPACE SEPARATING BUILDING AND GROUND: LAYERING THE FLOOR/GROUND THRESHOLD

Succinctly defined, the notion of transition between ground and building typically is one of continuity: thresholds are created by lining up along a single datum the outside ground plane and the building floor plane. By evening out differences in elevation between floor and ground, such thresholds allow for entering and exiting buildings with relative ease. Typically the ground level is located at a slightly lower elevation than the interior floor level so as to allow drainage away from the building. The first part of this paper will contrast, in works by Mies and Le Corbusier, conceptual strategies for dismantling this very threshold, in which ground and floor are not lined up but rather operate in superimposition, and where the building is clearly (or at least appears to be) elevated *above* the ground plane.

The Unité d'Habitation constitutes perhaps the most pure and refined examples of a building elevated above the ground plane. The *pilotis* had been defined by Le Corbusier as a device to clear the ground plane of built form in an attempt to establish greater continuity of space with the surrounding landscape:

#### Pilotis

A house on columns. A house is stuck on the ground, which is dark and often damp. Reinforced concrete has given us the column. The house is in the air, far from the soil; the garden spreads under the house?;

While they had clearly been formulated by Le Corbusier as part of his *Five Points* strategy, and used in a composite way in earlier buildings like the Villa Savoye and the Pavillon Suisse at the Cité Universitaire in Paris, the *pilotis* reach with the Unité d'Habitation a conceptual as well as formal clarity as part of the whole. Most of the space at ground level which, at the Cité Universitaire and Poissy, had only been partially open to outside air, at Marseilles has been almost completely cleared. Furthermore, the mature *pilotis* do not extend structurally into the upper volume of the building the way the continuous load-bearing columns of the Villa Savoye had, thus further enhancing their identity as a distinct architectonic element. Behind in the shadow, two rows of sculpturally expressive *pilotis* supporting the massive building above stand slightly recessed from the facade, lending the building a floating allure and dramatic instability.

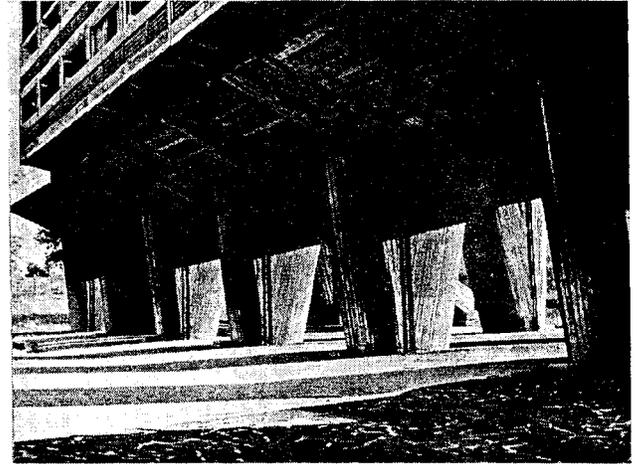


Fig.2 Le Corbusier & Pierre Jeanneret, Unité d'Habitation, Marseilles

#### Pilotis, Plan Libre, Toit-Jardin

The notion of *pilotis* constitutes perhaps the paradigm of Le Corbusier's notion of free plan, a seminal concept behind the *Five Points*. The idea of free plan lends a conceptual clarity to both the column and wall: acknowledging the load-bearing role of the column essentially frees up the wall from any gravitational constraints but to support its own weight, allowing it to divide space independently of any structural considerations. By picking up the weight of the entire building above, the *pilotis* allow for a quasi-complete removal of any building walls at ground level except for vertical access cores leading to the upper stories of the building. The minimized plan footprint of the building at ground level allows for greater permeation with the surrounding landscape.

The *pilotis* conceptually reclaim lost open space and landscape at ground level. While firmly grounded buildings are essentially robbed of the very space which they are sitting on, Le Corbusier's *Five Points* interestingly reclaim this space not once, but twice: the notion of *toit-jardin*, which features at building roof level grassed areas, pool, and game areas, works in complement with the *pilotis* at ground level, effectively doubling the open area proportional with the building footprint.

An interesting series of questions emerge: are the *pilotis* an integral part of the building or do they mediate between building and ground? Does the building begin at ground level with the *pilotis* or with the first elevated floor above the ground? Is the space at ground level a part of the building or of the landscape? On the one hand, the massiveness and strong volumetric clarity of the building overhead, contrasted with the slenderness of the *pilotis*, constantly in the shadow, seem to suggest that the building is clearly raised from the ground plane. On the other hand the newly created space between building and ground seems to operate simultaneously as both part of the building and the landscape: it is part of the landscape because the entire space at ground level is exposed to open air, and because there is very little floor/