THE HORIZONTAL SKYSCRAPER: reference as a brief genealogy in Steven Holl

The explicit use of references in Steven Holl’s oeuvre allows for the review of his design process, interests and influences. By connecting these to disciplinary imagery, the text dives in those references – both internal and external to architecture – to explain how they define, in Holl’s work, a notion of form and program that is something much more complex than just fulfilling specific requirements of use or function.


**Keywords**
Constructivism
El Lissitzky
Conceptual art
LeWitt
Influences
The word ‘appropriation’ – to take something for your own – is directly related to the rule of property. The legal term ‘homestead principle’ describes how colonization allows for the transformation of a resource under the assumption that its previous owner has abandoned it.

Reference in architecture may be understood as a process based on an idea that has remained in the architectural imaginary – without necessarily being built – until an architect other than its original author finds it, examines it and reformulates it, making the time leap to its recovery. Steven Holl’s design process can serve as an example of this notion. Beyond his use of references, there is a nearly obsessive appropriation by which concepts that have remained on stand-by are collected and transformed through an intellectual method close to that of classical learning in painting. Six of his designs referring to a single concept – the horizontal skyscraper – show how an idea becomes a type and how it is nurtured by multiple references.

**The horizontal interpretation of the skyscraper**

The decision to ‘horizontalize’ a skyscraper, that is, to deny its verticality, may appear as a paradox or a rejection of the typology’s origins, as it occurred in the Soviet Union. Lissitzky, for instance, first developed this concept in 1925 for the Wolkenbügel, finding an immediate echo in Frederick Kiesler’s ‘horizontal skyscrapers,’ and with it, a broad repercussion among the European avant-garde of the period (Fig. 1). Situated on eight crossroads in Moscow, which by facing the Kremlin would act as ‘city gates,’ Lissitzky sought to build a system of structures with a minimal footprint. Rather than understanding them as a horizontal structure, he made explicit that his proposal was “a new type of building susceptible of being considered as a form of skyscraper” (Quintana de Uña, 2006:282).

The Wolkenbügel, in turn, finds an antecedent in the 1914 anonymous postcard “Moscow’s Red Square with Skyscrapers” (Fig. 2), in which the utopian towers that would constitute the future Red Square were interwoven by aerial transport systems that hung from a top rail. This postcard is revolutionary in all respects: it shows the technical possibilities of steel structures; it anticipates the principles of the curtain wall and the free plan that Le Corbusier would propose only a few years
later; as well as the design of fully three-dimensional spaces and buildings which would radically diverge from a mere plan extrusion or the overlapping of horizontal slabs.

Almost simultaneously, in Milan in 1926, Piero Portaluppi developed a visionary image of a set of tall, interconnected buildings called Hellytown (fig. 3) that was a radicalization of Lissitzky’s proposal for the Wolkenbügel.

I. 1925/2009: The horizontal skyscraper as colonizing strategy

In 2009, Steven Holl completed the Vanke Center at Shenzen, China (fig. 4). Defined by Holl as a ‘horizontal skyscraper,’ the building consists of a succession of eight Wolkenbügel – referring directly to Lissitzky’s project – forming a series of open courts that direct the views.

Lissitzky’s project consisted of an office building raised more than sixty meters above the ground, conceived as a horizontal variant of the American skyscraper. It entailed a horizontal ‘H’ shaped piece:

... three office floors supported by a set of stainless steel double beams that would be manufactured by Krupps, and from which structures overhung. These large one-hundred-meter-long beams rested on three crystalline towers that housed a complex system of double stairs and lifts (...) A huge structure by which a new type of building was conceived. It is, therefore, a new prototype, a typological invention rather than a closed, finished and definitive construction (Burgos and Garrido, 2005:21-22).

The Vanke Center is a hybrid building with dimensions similar to those of the Empire State Building. Its program includes apartments, a hotel, offices for Vanke Co. Ltd. headquarters, a conference center, spa and parking lots located under a green esplanade (a tropical landscape...
with hills containing restaurants and a five-hundred-seat auditorium). Each module constituting the building is supported on a stylized translucent base that absorbs height differences and frees the views towards the adjoining buildings, which are lower than the new structure – 35 meters tall. In this regard, Lebbeus Woods writes that Holl “is the master of the large-scale, multi-use building. These projects transcend their generic description and are effectively new building types, as their metaphoric titles proclaim, in sharp and challenging contrast to the usual developer typologies” (Woods, 2011). In turn, Holl defines this project as “a different proposal, since it preserves the site as an open and public tropical landscape. This would not be a smart project for cold climates. The subtropical heat, moist and sun’s angle keep the green of the public gardens beneath the hovering hybrid, which in turn allows free flow of sea breezes. Once inside you can almost forget
that you are in a building suspended from the ground” (Holl, 2016), thus explaining that climate was a key reason for detaching from the ground.

Between the never-executed Wolkenbügel in Moscow and the “Vanke Center” in China there is an 84-year gap. The political context makes both projects a statement regarding the horizontal skyscraper as a typology for colonization.

**II. 1926/2009: The horizontal skyscraper as suspended superstructure**

In 2009, Steven Holl’s Linked Hybrid (F I G. 5) was completed: a large-scale residential and mixed-use complex in Beijing that refers almost directly to Piero Portaluppi’s project.

At the beginning of the twentieth century, the horizontal interpretation of the skyscraper was intended to free inferior spaces and urban land, and therefore, was constrained by the structural system that allowed its fulfillment. Lissitzky focused on bridge-buildings (extensively developed in the 1920s), giving rise to more complex forms that showed that – for structural and functional reasons – the realization of the horizontal skyscraper was indivisible from its vertical counterpart. One of the most surprising proposals of the time, however, comes from a little-known architect back then.

In Hellytown, Piero Portaluppi creates an elevated superstructure that detaches from the ground to avoid implanting a skyscraper in horizontal historical neighborhoods or contexts. The image clearly shows this intention by representing the urban skyline as a
A blurred mass that supports the city developed above it, forming a net of cantilevered pieces defining threedimensional voids. The reasons behind this raised superstructure are not constructivist tectonic interests, but the conservation of existing neighborhoods and urban scale. The proposal can also be understood as a preservation of a previous order to which a higher city is added, a modern world with a positive and optimistic (moral) condition identified with the use of skyscrapers.

Portaluppi’s vision incorporates infrastructure to the building. A vision that will expand among European architects, who will propose bridge-buildings in several visionary projects. Experiments on skyscrapers and the city will be conceptually developed from a metropolitan consciousness where “urban growth problems had now continental implications,” giving rise to “a disagreement between the possibilities of action and the desires for innovation” (Quintana de Uña, 2006:67); a scenario not that different from the current one.

The Linked Hybrid is a 220,000 m² superstructure. Holl’s proposal turns a closed city block into a semi-open complex through an operation described as the ‘sponge’: a succession of eight towers enclosing a courtyard and interconnected by skybridges, which enables the reading of a single building that generates a new share of public functions on the higher levels.

As in the previous case, this is an eight-core building linked by eight bridges between the 12th and the 18th floor. Located in an industrial area transformed into a residential neighborhood, the project somehow dismisses Portaluppi’s belief of preserving the urban context...
fabric as a condition for its shape; nevertheless, Holl does suggest the notions of homologation and harmony with the context as conditions for an open urbanism.

The unit houses 644 apartments and a multiplicity of programs including commercial and recreational public facilities, green areas, cinema, kindergarten, school, parking lots and a hotel. The architect describes the complex as a new model for urban space, one that is porous and three-dimensional, where all the pieces composing it merge into a single one.

The complex is structured by an exoskeleton – a structural façade – allowing for free plans. Its realization verifies an early twentieth-century assumption: the horizontal interpretation of the skyscraper ends up taking the vertical model one step further, to the point that even the technology to build them is more complex than the one required for the original typology.


During the Soviet Union, conceptual art was developed through illustration, which – following the imposition of 'socialist realism' during the Stalin era – produced an irreverent, essentially ironic art (Groys et al., 2009).

In the United States, on the other hand, territorial and physical spaces (1:1) were explored, subverting the scales of art and architecture.

In 1974, the American artist Sol LeWitt presented his “Incomplete Open Cubes,” an elaborate construction that explores the physical limits of a form. Each ‘cube’ is a three-dimensional structure that loses one to nine of its sides. Its repetition and alteration produces 122 possible variations of a concept. It is an arithmetic conception taken to a logical extreme.

The work, contemporary to Holl’s early projects, can be considered foundational in the architect’s approach to the exploration of the skyscraper’s horizontal variation. It involves a formal revolution and a logical reasoning tool applicable to the architectural project, besides representing an artistic revolution in the 1970s.

But in turn, LeWitt refers to the “Spatial Constructions (third series)” developed by the Russian
artist Alexander Rodchenko between 1920 and 1921. About 25 equivalent forms intended to show “the great variety of structures that could be generated from simple elements following a set of simple construction rules” (Lynch, 2005:62), and which had the purpose, according to Rodchenko, “to demonstrate the usefulness of the proposed forms and the deterministic logic of their combinatorial properties, along with the universality of the principle of equal forms, which can be applied to a great variety of constructions in different systems, types, and functions” (Rodchenko, 2002:103). Following the genealogy from LeWitt to Rodchenko, it was inevitable for the “Incomplete Open Cubes” to lead Holl to Lissitzky⁶ and, as we shall see, to a radical sophistication of form. This allows us to assess not only the adoption of a reference, but also the evolution in the variation of its form.
The 1988 design for the Amerika-Gedenkbibliothek in Berlin (FIG. 6) sought to organize an open access library on the basis of a continuous circuit that, surrounding the building as a kind of public corridor, would make visible and give access to the entire collection. The shelves themselves were both furniture and systems of interior organization where the concept of ‘incomplete cube’ was enunciated in the ordering of the building and in the will of spatial experimentation. The plan and the disposition of the complex were intended to define a public level that contained a tower absorbed in a set of assembled structures. The topics that would later define Holl’s research began to be stated.

Holl’s work referencing Sol LeWitt’s oeuvre, as mentioned above, is clear in the 1989 project Spatial Retaining Bars, located in Phoenix, Arizona (FIG. 7). He explains the project as “...high-rise lofts, to live and work, that overlook towards the virgin desert under the concept of ‘retaining bars,’ seeking to stop suburban expansion and preserve the natural landscape. A site-specific landscape exercise” (Holl, 2016).

The Spatial Retaining Bars were to become a built succession of LeWitt’s variations on the incomplete cube, forming a series of spatial frames in the Arizona desert. A variation on the idea of a city boundary that, located on the outskirts of Phoenix (FIG. 8), was meant to house a mixed residential use, whose section would frame the views of the mountains and the desert surrounding the city, pushing the skyscraper typology further while at the same time returning to explorations that are simultaneously horizontal and vertical.

This geographic belt brings it even closer to Lissitzky’s Wolkenbügel original idea, those eight aerial buildings that would indicate the urban limits of Moscow’s expansion, located in nodes visible among them.

Holl’s project introduced a new spatial resource for city planning, added to the genealogy of the discovery: conventional urban elements are complemented by Portaluppi’s high void. However, what makes the project something absolutely original is its sequential nature: a radical differentiation from Lissitzky and LeWitt’s proposals, one which is part of the path an idea must follow before becoming real.

In 2013, Steven Holl completed the Nanjing Sifang Art Museum in China, which materialized the Wolkenbügel and Sol LeWitt’s “Open Cubes” in a building both unique and extraordinary in its relationship with the ground and the landscape, demonstrating Holl’s obsession with those works (FIG. 9). Yet, unconstrained by the urban context, the museum becomes a landscape landmark – approaching LeWitt’s conceptual work in its objective sense and Lissitzky’s work in its clear formal similarity – where the idea of an elevated pavilion raised on a base is even more radical than in the case of the Vanke Center.

These three projects show the synthesis process that Holl has sought from his two main references – Lissitzky’s Wolkenbügel and LeWitt’s “Incomplete

Open Cubes” – its merger resulting in a building type that refers to both concepts while completely detaching from them, generating a complex (and misleading) familiarity originated in form.

IV. 1929/1977: The horizontal skyscraper as a bridge

The more than 80 years separating the cases presented above, allow for the consideration on the period of time in which an architectural innovation is constituted and how, through a genealogy of references, architecture is shown as a process that entails a significant amount of time in order to go from a theoretical conception to the actual physical execution of a design and its potential embodiment as type, without that process being necessarily completed by a single architect.

With the project for the Gymnasium Bridge over the Harlem River (1977), Holl approaches for the first time the bridge-like building or horizontal skyscrapers’ type (FIG. 10), initiating with it his professional practice. The project “encapsulates meeting activities, physical recreation and work in a structure that simultaneously formed a bridge between the community of the Bronx and the park on Randall Island” (Holl, 2016). Its debt to Constructivism – even in terms of graphic representation – is evident, being this a complex revision of Barsch & Vladimirov’s design for the Communal House developed in 1929 (FIG. 11), a ‘social condenser’ that would already mark Holl’s interest in hybrid programs, which had a
building section that summarized the communist ideals with the Taylorism prevailing at the time.⁹

The Gymnasium Bridge is a hybrid building where "the building’s architectural form is a form of bridges over bridges" (Holl, 2016). This shows the full potential of the reference: from the understanding of a program and its physical resolution, to its temporal and geographical translation.

**Epilogue**

In this brief review of Steven Holl’s forty-year practice, the reference becomes the thread that allows seizing his work, understanding ‘time’ as a concrete material and bringing us back to a persisting question: when is something in architecture actually new?

In an interview with Álvaro Siza (2013), following a question about his relationship with referents and how ‘lasting’ their influence on an architect can be, he – 80 years old at the time – answered: "When is it over? Never. When we grow up we start seeing a lot of things and the influence comes no longer from a single architect. In that sense, when you have a thousand influences inside your head it is no longer an influence, it is your mind that has absorbed all that. It’s no longer a copy, instead it is within us.”

---

**FIG 11** Barsch & Vladimirov. «Communal House», Moscú. 1928-1930

Pilar Pinchart
pilar.pinchart@utem.cl

Architect, Pontificia Universidad Católica de Chile, 1997. Doctor in architecture projects, ETSAM, Madrid. She has taught at the Istituto Europeo di Design in Madrid (UPSAM) and at the Pontifical University of Salamanca, at the Madrid campus (UPSAM). Architect and curator of the Chilean Pavilion at the Biennial of Architecture in Venice in 2012. She currently teaches at the UTEM School of Architecture in Santiago, Chile.
1 A principle for legitimizing informal colonization (equivalent to the Spanish notion of 'tomar'), originated in scarcity of resources – mainly of land.

2 Until the late twentieth century, painting was learned through "copy exercises." One of the most relevant cases of this exercise and its evolution is that of Goya on the work of Velázquez.

3 During Communism, the word 'skyscraper' became taboo for the countries under the regime – as it was considered an American concept that referred directly to North-American capitalism – using instead all types of euphemisms or designations.

4 Simultaneous to a series of similar visionary images of the period where the city overlaps different levels of possible programs in a high-rise metropolis, conceiving buildings as potential support for transport infrastructures, especially located in New York.

5 Possibly derived from the oldest three-dimensional vision of this kind made in 1902 by Kazarin, who raised over Moscow a railroad heading to the new 'high station,' which would be located in front of the St. Basil's Cathedral, also on Red Square (Smurova, 1991:63).

6 In spite of the temporal coincidences, there is no explicit reference to the fact that Lissitzky ever had contact with Rodchenko's spatial constructions. The sculptures were kept and stacked on a shelf behind his desk. Could it have been possible that Lissitzky, then professor of Vkhutemas, had seen them? Rodchenko abandoned this work, leaving it incomplete and never exposed or published it, even though he photographed it from low angles, which suggests that he saw it as a potential architectural model, leaving behind a series of drawings and writings stating that the future of the city would be vertical and that the 'upper façade' of the city would be the most important, somehow anticipating Le Corbusier fifth façade.

7 See the Moscow Plan with the eight "Wolkenbügel" facing the Kremlin. Published by Asnova in 1926. Original photography by Nag Kas & Emil Roth. ETH Zürich (Pinchart, 2013: 96).

8 On this genealogical relationship between Lissitzky's Wolkenbügel and Sol LeWitt's Incomplete Open Cubes, supplemented by the relationship between this work, Rodchenko's Spatial Constructions (1920-1923), and Steven Holl's Gymnasium Bridge, see Lynch (2005).

9 See Taylor (1985), whose influence was decisive in the ideological process of Lenin, who considered that the application of the concepts of work-time management and production chain, together with the Russian cultural tradition, were capable of producing an economic power based on Bolshevik principles.

Bibliografía / Bibliography

Burgos, Francisco; Garrido, Gines: «Nubes metálicas sobre Moscú».


Holl, Steven. «Entrevistado por Pilar Pinchart». Diciembre de 2016. Inédita.

Lynch, Peter. «Una reconstrucción imaginaria del cielo sobre Moscú».


siza, Álvaro. «Close-up. Alvaro Siza» Entrevista de Pilar Pinchart.

Smurova, Nina. «Urbanistische Phantasien in der künstlerischen Evolution is that of Goya on the work of Velázquez.
