

# Modernist and Digital Design: Parallel heresies?

**Their avant-garde perception of the inhabited vertical plane,  
and their relationship to the Baroque.**

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**Abstract.** *The Digital and Modernist values are arguably different from each other, yet exhibit similarities that sometimes have been neglected; these can be discussed at three different levels:*

*a. Social impact (new paradigms reacting to the norm)*

*b. Character (emergence from a functionalist premise; tectonic treatment)*

*c. Historical connections (implicit associations with the Renaissance and Baroque; internal historical stratifications)*

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## 1. Introduction

This essay will try to discuss certain issues that pertain to the emergence and development of modernist and digital architecture, with the intention to identify common threads which may assist in their future evaluation and theoretical development.

## 2. Social Impact

The criticism sustained by the digital and modernist frameworks is a direct result of the theoretical and philosophical context in which they were formulated:

### 2.1 A lack of respect for the forms of the past

Modernism was born amidst the influence of Humanism and adherence to a Beaux-Arts pedagogy, which delayed its popularity within architectural education and practice; this is explicitly demonstrated in 'The Fountainhead' (Ayn Rand 1947), where the architect-hero's aspirations to build using the 'new' modernist ideals are rejected in favor of the pre-existing imitation of the so called 'older styles' of the Renaissance. The dismissal of historicism is clear in Howard Roark's words:

*'I want to be an architect, not an archaeologist. I see no purpose in doing Renaissance villas...I came here to learn about building. When I was given a project, its only value to me was to learn to solve it as I would solve a real one in the future. I did them the way I'll build them.'*

This radical but innovative claim was not easy to materialize; the commission for most of the projects that Roark bid for was denied, and his drawings remained unrealized - Figure 1 shows Roark examining one of his drawings which is marked 'Not Built' - his work taking several years to be appreciated for the economy of plan and the clean, dynamic volumes.

Modernism did not actually require so long to establish itself as a universal design trend, as Ayn Rand suggests in her novel, but the story manages to capture the fierce skepticism on the part of the existing architectural authority (Beaux-Arts tradition).



Figure 1. Howard Roark (portrayed by Gary Cooper),  
The Fountainhead (1949)

Increase in high-rise construction – thanks to the technology of the structural frame on which this relied and the development of the elevator - facilitated the application of modernist ideas, which remained quite influential in the second half of the twentieth century.

Conversely, today's technology, the ubiquity of mobile computing, the world wide web and the available digital software have greatly enabled the exchange of digital design data and so the digital architecture aesthetic has established itself fast enough to the point where we are talking about a 'post-digital' design.

### 2.2 The naiveté of the digital premise

Early digital designers of the '80s and '90s saw in the experimental CAD and 3d modeling software the same potential which the Howard Roarks of early 20th century envisioned in the application of modernist principles – the opportunity for a new, unrestrained, flexible treatment of the plan and also the skin of the building - but were often seen as mavericks, bordering on dangerous speculative theoretical territory. As a result, the emergence of Digital design during the last twenty years has been treated with scepticism with regards to its 'aestheticist' concerns .

Digital design –for some critics- provides 'a creative potential comparable to the advent of modernity', while others look at it as '...a rupture set on dissociating the project from the materiality of what is actually built' (Picon 2004).

In fact, this claim is not true. Perhaps this was the case in its embryonic stages; a distinction may need to be made between this stage and the more production-oriented phase of 'digitality' now; methodologies manifested through the CNC-fabrication tools allow the object to be examined spherically, while relocating the architect in the centre of production, by facilitating the making of prototypes. Early digital formalisms have given way to a more conscious treatment of process, witnessing a shift towards a functionalist premise. Such is the 'character' of modern and digital design, as we discuss below.

## 3. Character

Modernist and digital thought may be regarded as separate branches of the same Organicist tradition. Modernism is essentially the evolution of Organic Functionalism; while 'Digitality' is partly a result of Post-modernism and seemingly lacks the continuity explicit in Modernist design, very clear functionalist preoccupations are resurfacing in the digital designers' concern for 'performance'; these can be expressed in the way current digital research has branched out towards Biomimicry. To examine function in both the modern and the digital, one may consider their respective treatment of certain primary tectonic elements like the Wall.

### 3.1 The Modern and the Digital 'Wall'

Within their overall flair for functionality, the modern and digital systems have a significant difference: the treatment of planes and perception of enclosure by the archetypal component of the wall.

We will show how the typology of the wall has moved from the early load-bearing wall (wall as structure) to the curtain wall (infill between the structure) to possibly the inhabitable wall (wall, structure and space together), and will argue that this last category may not be entirely novel, but has precedents within modern architecture.

#### 3.1.1 The corporeality of the digital vertical plane

Modern architecture celebrates the wall as planes which are clear dividers of spaces within a larger space (the 'plan libre'), thus expressing the inner functions. Digital design on the other hand, views the wall as possible container of people/ events, and therefore a connector of spaces; this notion is augmented through digital fabrication techniques which allow the production of seamless enclosures that begin to blur the boundaries beyond floor, wall and ceiling/roof.

The wall of the digital house assumes, a more corporeal presence, due to its inherent geometries: folding towards itself, it creates 'niches' of activity, possible vantage points over the space, or mere opportunities for introspection. It is formed not by bricks, but 'components'; each component being a prototype, it can slightly vary from each other in shape, material, porosity, thus creating changes in form, texture, density, augmenting or decreasing light or physical permeability (Figure 2).

From a sociological perspective, the wall of the digital space can take Peter Marcuse's vision of an ideal society without walls or boundaries further: '...inhabitable interfaces act as a new means of social interaction – unifiers, rather than dividers; mechanisms of individual liberation, rather than of social imprisoning; interfaces with which we can interact and merge' (Marcos Cruz 2005).

#### 3.1.2 Modern 'digital' precedents(?)

Early modern architects usually employed projections from the surface of the building to express the structural capabilities of the concrete frame as cantilever; in the Moller House (Vienna 1928), Adolf Loos introduces a projection with spatial intentions (Fig.3); due to its location within the larger ground volume it becomes a 'system of control', causing a condition which Beatriz Colomina defines as 'domestic voyeurism': 'There is a raised sitting area off the living room with a sofa set against the window... comfort in this space is

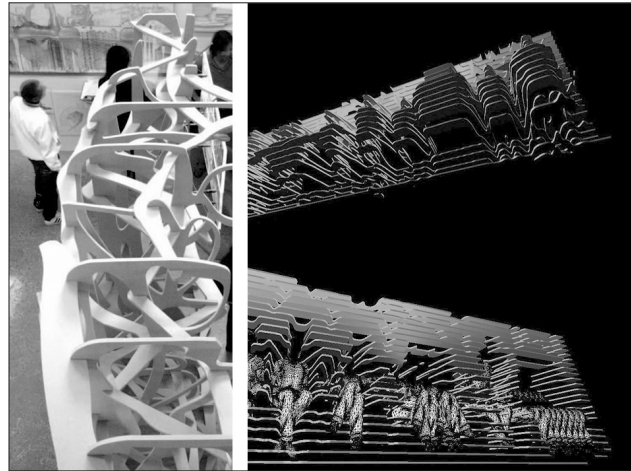


Figure 2. 'Nurbster': CNC-fabricated wall (marcosandmarjan, 2004).

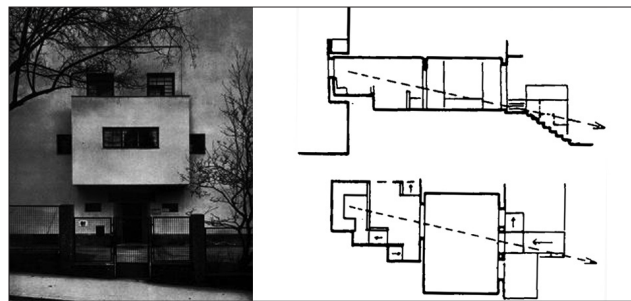


Figure 3. Façade; Section & Plan of the Moller House (A. Loos)

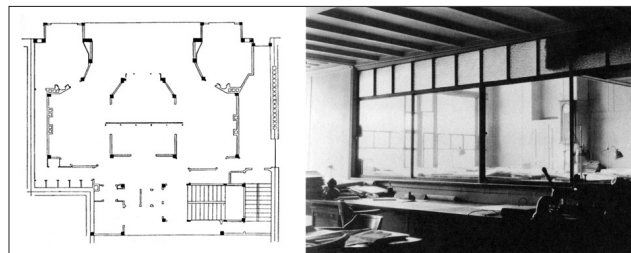


Figure 4. Apartment plan & office interior - 25, bis rue Franklin (A. Perret)

more than just sensual, there is also a psychological dimension. A sense of security is produced by the position of the couch, the placement of its occupants, against the light. Anyone who, ascending the stairs from the entrance, enters the living room would take a few moments to recognize a person sitting in the couch. Conversely, any intrusion would soon be detected by a person occupying this area... (Fig.3) (Colomina 1992)

The nature of this niche dictates it be 'comprehended by occupation', and therefore approximates the notion of the wall as a container. Furthermore, the

built-in furniture – what is known as 'immeuble' – prevent access to the window and direct the occupant's actions (compare with fig.2). This notion of containment reminds us of Loos's 'Law of dressing' (Gesetz der Bekleidung) which aims to create a sensory play through 'the folds, twists, and turns in an often discontinuous ornamental surface' – a description by M. Wigley which is very close to the organic behavior of digital surface (Marcos Cruz 2005).

The wall as divider/connector appears in an earlier residential building by Auguste Perret (Paris, 1903). 25, Rue Franklin is the first residential building to use ferroconcrete and therefore replace load-

bearing walls. The walls are in principle, mere partitions; and yet, the main spaces are realized as boxes creating a negative space on the facade where a 'courtyard' is negatively affirmed (walls as 'connectors').

This is further reinforced by the architect's use of glass-blocks on the back, where windows are not possible. Can this pioneer use of glass-block as wall material be analogous to the digital wall's ability to connect interior as well as exterior spaces?

On the ground floor of the same building, the architect's studio features an interior plate-glass partition wall – the *fenêtre en longueur* – which functionally divides the space but, is in fact, a visual connection allowing light to penetrate the adjacent room (Fig.4). In any case, the building brings up a few points of interest regarding the character of the partitions, especially considering its time of erection (1903).

## 4. Inherent historical dimensions

Modern and Digital have been criticized (within their respective time-frames) as a-historical cognitive systems preoccupied with formalism. In its early stage, Modernism was viewed as an escape from restricting impositions of the existing theoretical dogmas of the past; digital design emerged in the aftermath of post-modernism on a seemingly technological premise; yet, one may identify several levels of historicism throughout both the modernist and digital design (what we will refer to as 'external' and 'internal').

### 4.1 External historicisms

Modernism: A historicism can be initially detected in, among other examples, the mannerist analysis of Colin Rowe, and Frank Lloyd Wright's influence by Froebel blocks, a system of architectural toys whose principles can be traced back to the Baroque. The blocks are sold with instructions on creating combinations of hexagonal rotations (C6 geometries), a device which had been quite popular for the design of dome interiors and other elements during the Baroque (Hersey 2000). These rotational symmetries are present in Wright's 1927 project for a cathedral in NYC, a project with explicit references to Borromini's work.

Digitality: As G. Hersey wrote, '... Baroque architecture was above all mathematical', and architects of this period were often also mathematicians. Today, digital 3d models are expressed by mathematical functions in the form of spline curves; digital designers are often trained in computational tools and parametric modeling, much like the 'mathematical' Baroque architect.

Beyond the obvious analogy, this expertise has provided a tool of further understanding Baroque geometry through scripting, creating a reciprocal relationship between Baroque and Digital. In fact, as I have discussed elsewhere, there is possibly a deeper link: the Baroque period may have greatly contributed to a conceptual basis for digital design through the development of Projective geometry.

### 4.2 Internal historicisms

But equally important is the development of a historicism that was 'internal' - referring back to modernism itself - What Nikolaus Pevsner had dismissed for existing to 'such a degree as to choke original action and replace it by action inspired by period precedent'. Pevsner referred to the 'neo' versions of modernism in Italy, or for example, Ronchamp by Le Corbusier, criticizing the new relationship between interior/exterior which 'does not convey a sense of confidence in their well-functioning'. And still, buildings like Ronchamp allowed the surface experimentation towards the notion of the first inhabitable walls discussed earlier.

For digital design, the fast pace of its development may cause similar re-evaluations to happen much faster, already mapping a sort of history of itself: early digital formalism (blobitecture) gave way to

more conscious treatment of surface materials and assembly (digital fabrication) and a re-definition of the architect's role, and currently a consideration for cross-disciplinary integration (post-digital).

In their similarity, digital and modern remain different in their historicist inclusions: for modernism, a historicist approach involved dangers which do not pertain to digital design, because it has been preceded by the eclectic, less historical ideological framework of Post-modernism! Still, a need remains for reference to its internal historical development, which will allow the grounding of an autonomous digital ideology.

## 5. Conclusion

It may be worth to question, in retrospect, why a comparison of Modern and Digital is beneficial. There is a clear relevance for determining whether aspects of one may have evolved from the other and how their respective attitudes towards the design of the wall may come conceptually closer.

Historically, the individual modern and digital conceptual basis is somewhat nonconformist; this ties them both ideologically to the 17th century. Perhaps one can anticipate risks in the future of the digital framework by tracing the evolution and transition from modern to post-modern, but also by examining their affinities with the Baroque.

The prevalence of the pejorative meaning of the word 'Baroque' – meaning 'irregular' - is analogous to the criticism of the early blobby digital forms, but irregularity has proven to be valuable for the digital designer. In fact, the Baroque also had a profound effect on 17th century society; it managed to weaken, through its inherent theatricality, the public perception of monarchy as portrayed in the architecture of royal edifice. Lastly, the non-structural treatment of walls in modern architecture enabled the use of 'pilotis' - as a social device, the pilotis 'disengaged space from the conventional feudal associations of land' (Jeff Kipnis 2008).

This delicate relationship with authority may be the key to the success of these systems, a relationship of love and hate, but nonetheless one which needs to be nurtured; the submission to a particular historicism let the Baroque develop insofar as this occurred within the controlled theoretical guidelines of Classicism (Muschamp 2000). Should this restriction have not been imposed, and considering the absence of today's software, is it conceivable that the Digital Forms of today would have begun taking shape in the 17th and 18th centuries?

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