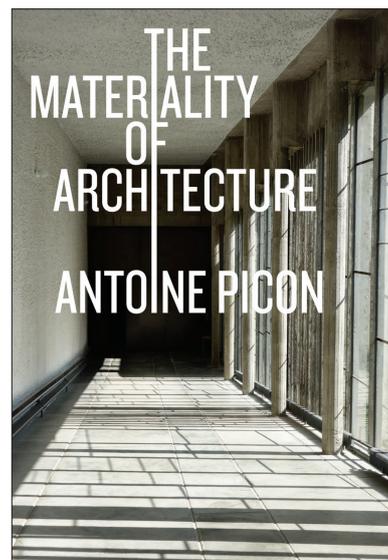


# *The Materiality of Architecture*

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THEORY

***The Materiality of Architecture***  
By Antoine Picon  
Minneapolis and London: University of  
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Offering a fascinating breadth of textual sources, Antoine Picon organizes his recent book *The Materiality of Architecture* into five main chapters which underline the evolution of the notion of materiality, in both its social and dynamic aspects, which is on a par with the evolution of architecture. To elucidate this shared development, Picon borrows from the historian François Hartog's exploration of "regimes of historicity" and brings up the notion of "regimes of materiality" to examine shifts in architectural practice and reasoning concerning the discipline's capacity to render matter expressive. The book, as the author underlines, is not about the material dimension of architecture but about the virtual connection between

matter and humanity through the lens of materiality. It engages therefore with an issue that extends far beyond the realm of matter and materials, emphasizing the relational dimension of architecture.

The first chapter, “From Making to Expression,” revolves around the manifold ways in which the material and the expressive aspects of architecture are bridged, discussing the main principles deployed to organize matter: proportions and structure. Adopting a broad chronological span, this chapter focuses on the ways in which architectural proportions oscillate between technical expression and human perception, illuminating the cultural contexts in which the discussion surrounding proportions and affect took place. In the debate, proportions result as mediators between the “macrocosm and the microcosm,” between the “rules of the universe and those that leave their imprint on bodies and minds.”<sup>1</sup> The analogy between the proportions of the human body and those of the architectural parts – which has permeated architectural works from Vitruvius to Le Corbusier – is a testament to how “the process of ordering matter through proportion is constantly driven by a desire to express – a desire that is linked to the view that architecture can directly address the spectator, just as one person can call out to another.”<sup>2</sup>

The principle of structure, or “tectonics,” – the second key theme of this chapter – similarly deploys the notion of “address.” This chapter traces a novel way of interpreting buildings in the Enlightenment era, through an emphasis on their mechanical properties, as Carlo Lodoli’s teachings and Giovanni Poleni’s perceptive analysis of the dome of Saint Peter’s Basilica in Rome testify. Several structural systems are being deployed here to advance the argument that the appreciation of the structural dimension of architecture needs to be understood on the basis of the performative dimension of structure and the impressions this may generate. From the poet Heinrich von Kleist, who “saw the vault as a legitimate analogy for the Kantian critique,” to Eugène Viollet-le-Duc, who regarded architecture as “a system of rationales” and “a set of spatial devices and constructional techniques,”<sup>3</sup> this chapter discusses in detail the drive to connect architectural constructions with human reasoning.

Analogous to the pursuit for harmony in the definition of proportions, the attention on the structural dimension of architecture, highly influenced by the entangled relation between architecture and the body, likewise produces impressions and stimulates affects; Heinrich Wölfflin’s theory on empathy appears embodied in buildings such as Eduardo Torroja’s Zarzuela Hippodrome and Frank Lloyd Wright’s Fallingwater which, in turn, articulate modernist visions of the body. Picon’s approach to architecture’s expressive potential, however, derives from a radically different perspective to the “timeless corporeality” introduced by phenomenology, as it recognizes the mutable perception and experience of the human body in architectural theories and images through history. The contemporary

demand for a revised structural reasoning with regards to architecture needs to be understood, the author emphasizes, in association with the advances in digital technologies and the neurosciences, further reflected in the growing interest in the cyborg and the post-human.

Insofar as built structures cannot be separated from the prevalent visions of the human body in the era of their erection, architecture's search for expression cannot be reduced merely to its rational aspects. The intrinsic quality of a material may also be attributed to its will for expression, preceding the application of "tools like proportions" and "notions such as structures."<sup>4</sup> Materiality – as this chapter claims – articulates our simultaneous distance and proximity to architecture; buildings such as Paul Rudolph's Yale School of Architecture and Wang Shu's New Academy of Art in Hangzhou by means of their tactile and symbolically-charged surfaces, respectively, allude to the ways in which the perception of buildings is not limited to material expression alone.

The chapter "Architecture and Language. An Incomplete Encounter" highlights the antagonism between the opaqueness of matter and its wish for expression in the context of architectural experience. Focusing on the relation between architecture and writing, Picon traces an ongoing distance between the material productions of architecture and the writing constructs that seek to define what exceeds architecture's materialisation. He offers a lucid discussion of the "distancing and absence" that arise as an essential part of the discipline. "The process of putting matter into order that architecture initiates is not reducible to what a rigorous system of syntax and vocabulary entails,"<sup>5</sup> and Étienne-Louis Boullée's proposal for a French national library is deployed here as a good example of this statement.

The relationship between architecture and language, in consequence, emerges as highly ambiguous. By juxtaposing Frank Gehry's "gesticulation far removed from sobriety" and Mies' "less is more" dictum, the study hints at the fragile balance between insufficient and overabundant expression.<sup>6</sup> The term "gesticulation" may be understood, in this context, through the analogy between the contemporary gestures of architecture and the Enlightenment's "language of action" notion which associated the latter with the eloquent movements of the body, as a precursor of speech. On the other hand, the "temptation to write is just as dangerous and flawed when it leads to a reliance on stereotypical vocabulary, motifs, and compositions;"<sup>7</sup> the neoclassical architecture outputs, largely uninfluenced by the specificities of the context, are telling of this inadequacy.

The discussion of ornament resurfaces again in this part of the book as it is integral to the issue of expression having articulated, over time, different meanings of language. The excessive use of ornament in Giambattista Piranesi's *Parere sull'architettura* (1765) and the radical

absence of any form of ornament in Le Corbusier's Dom-ino may seem unbridgeable at first, but their juxtaposition serves here as a vehicle to argue that architectural ornament should remain incomplete: It "must initiate the progression that leads to language without ever completing that progression."<sup>8</sup> This part therefore leads to the suggestion that architecture "searches out expressive potency all the while avoiding an excess of effects and symbols that might compromise its vitally material essence."<sup>9</sup>

In approaching contemporary architecture, certain claims – such as Jesse Reiser and Nanako Umemoto's theory of the "assignifying signs" and Farshid Moussavi and Michael Kubo's "antisymbolic stance" – support that language remains absent from architectural agendas. Conditioned by the proliferation of digital tools, architecture's current pursuit of the production of complex forms alludes to the late eighteenth-century ambition to deploy means of expression that anticipates language, Picon argues. Conversely, the contemporary proliferation of texts and symbols testifies to the fact that neither language nor meaning have become extinct. The "tension between the opaque stability of matter and the revelatory light of language"<sup>10</sup> – this chapter concludes – is ever more tangible. Next to this contradiction, today's material turn is also characterized by ambiguity, as it "seems unable to escape the question of language and its extension to the nonhuman realm."<sup>11</sup> It is possible then to extract that "the specificity of the architectural discipline could very well reside in the intensity of architecture's longing for expression as well as in its refusal to let its productions truly speak."<sup>12</sup>

The subsequent chapter, "Animation and Materiality," offers a detailed discussion of materiality's role in the architectural discipline as a catalyst for a more global apprehension of the relation between language and the pursuit of expression. Picon's thesis centers around the fact that "while the architectural animation of matter has typically found expression in ornament and décor [...] such animation has altogether more ambitious aims: to establish a world that is simultaneously related to and distinct from both the dwelling place of the gods and the natural kingdom."<sup>13</sup> The necessity is therefore underlined for matter to be animated whilst claiming further that such a process ought to "remain incomplete," oscillating between expression and making. Accordingly, the "art nouveau" of Antoni Gaudí, Hector Guimard and Victor Horta does not "even come close to monopolizing the animation that is architecture's target" as it exceeds the "structures, surfaces, skeletons taken from the plant and animal kingdoms."<sup>14</sup>

The relationship between humanity and matter as expressed through forms is key, for Picon, in understanding contemporary architecture, as "the animation of matter" is not exclusive to the phenomena of "identification and projection," associated with the "psychological basis for the notion of empathy."<sup>15</sup> This chapter identifies four main aspects as determining for the formation of distinct regimes of materiality: the "use of materials," the "systems of proportions," the "techniques of

assemblage,” “structural intuitions and practices.” Besides technological and scientific knowledge these embody information about how “materials are experienced and understood in relation to cultural and social values;”<sup>16</sup> the theory of “ephemeralization” coined by Buckminster Fuller, for instance, further to inducing “doing more with less material,” it further entailed “a profound redefinition of the relation of humanity to the resources of the planet and the lifestyle derived from it.”<sup>17</sup>

Although materiality remains fundamentally connected to quotidian utilitarian materials, the ways in which architecture deploys and orders matter have changed significantly in the past decades. If the proliferated use of iron at the turn of the nineteenth century revealed a significant shift in the way people immersed themselves “into a world of objects whose precise contours modified their perception of the surrounding environment,”<sup>18</sup> in the face of today’s environmental concerns, atmospheric phenomena such as humidity and temperature are “taking on a more tangible character than they did previously.”<sup>19</sup>

The main underlying theme of the relation between materiality and animation, however, appears to be the architectural fascination for the machine: an element which significantly impacts our experience of materiality. If the rise of “temperature and humidity [as] the new dimensions that design could factor in” through the “diffusion of the thermostat” and “cold storage” are a testament to how “modernism was influenced by many other instruments, machines, and technologies,”<sup>20</sup> as Michael Osman’s study has demonstrated, then today the “connected objects and the Internet of Things” are similarly revealing of a historical shift regarding humanity’s relation to the physical world.<sup>21</sup>

One of materiality’s inherent traits – Picon emphasizes – is its mediatory state between humans and the material world, the sensory realm and language, as it “contributes to the emergence of subjectivity as simultaneously opposed to and close to matter.”<sup>22</sup> Materiality therefore operates at a larger scale than architecture, “once it is understood as engaged in the simultaneous [...] coproduction of the radical nonhumanity of matter out of which things are made and a subjectivity that is conscious of what both unites it with and distinguishes it from what is exterior to it.”<sup>23</sup> Of all the tensions associated with materiality discussed here the constant conflict in the human, ill-fated attempt to take a distance from the material world and the realization that “the escape from such ties is imperative if we are to perpetuate the prospect of a specifically human destiny,” emerges as the most telling of architecture’s blurring of “the boundary between making and expression.”<sup>24</sup> To the aforementioned factors influencing the relation between animation and materiality, the notion of ornament is added: closely linked to the arrangement of matter, it is appreciated as the materials’ symbolic expression and, “supposed to function at a collective level,” primarily allows for “humans to inhabit buildings and cities.”<sup>25</sup>

Taking a historiographical stance, the fourth chapter, “Architectural History and Regimes of Materiality,” reveals the core of the book: Materiality is deployed as an alternative lens in order to reconstruct the history of architecture, for it allows to surpass the dichotomy between the intellectual/artistic and the social/technical dimensions of the discipline.

The Renaissance, an era deeply influenced by antiquity, marked the passage to order and significantly transformed the rapport between man and the material world, through the rise of new techniques, centered on the processes of measuring, mapping, and surveying, and the emergence of a “new rational thought that was spreading through the arts and sciences,” promoting design as a “conceptual production rather than as the mastery of a series of skills.”<sup>26</sup> The remarkable shift in approaching the material world, registered during this period, can neither be separated from “anthropomorphism,” which regarded “the ideal human body as the measure of everything,” nor from the separation between “monocular gaze” and “the physical world,” which saw the “enshrinement of the human gaze in the perspectives mechanism.”<sup>27</sup>

While the Renaissance introduced new understandings of humanity’s relation to physical reality, the Enlightenment was founded on a technological optimism, marking yet another milestone in the relation between materiality and architecture, reflected in the rise of new, malleable, resistant materials and in the progressive separation between ornament and structure. Notably, constructions of this period, such as Jean-Rodolphe Perronet’s bridges and Jacques-Germain Soufflot’s Church of Sainte-Geneviève, received critical acclaim, enforced by the notion of solidity rooted in the Vitruvian proportions.

Picon – borrowing from Pierre-Jean-George Cabanis’ observation that “everything in nature is in constant motion: all bodies are in continuous flux”<sup>28</sup> – discusses the attention placed on the process of circulation. Combined with the calculation method, circulation offered a novel apprehension of *firmitas* and was related to the concept of structure. The notions of “structural truth” or “truth to materials” subsequently reflected the belief that to each material corresponds a certain type of structure that uses its mechanical properties most efficiently and were telling of a regime of materiality “based on the contradictory intuitions that matter is both closer and more inscrutable to humans than what has been posited and experienced before” giving rise to the question as to whether structural truth was related to “an ethical value or was it more akin to a natural principle, or perhaps both.”<sup>29</sup>

Ornamentation, discussed previously as “one of the primary means at architecture’s disposal to animate matter,”<sup>30</sup> resurfaces in this chapter: It emerges as closely linked with the shifting regimes of materiality, reflecting also a changing approach towards language. In this regard, modernist architecture holds a central role in this chapter’s historical account, for it appears profoundly characterized by a changing approach towards

materials, ascribed to new technological advancements, and towards ornamentation, largely replaced by structure as an alternative means of animating matter. As the seemingly pliable concrete shells of Torroja and Robert Maillart affirm, matter was, on the one hand, perceived as “a resource that could be mobilized at will,”<sup>31</sup> and the “truth to materials” notion, conversely, “implied the existence of principles or even rules that bounded the imagination of designers”<sup>32</sup> such as “physical laws,” “social statistics” and “the experiential apprehension” of architecture’s basic principles.<sup>33</sup> Marked by contrasts and contradictions regarding its approach toward nature, man, and the past, the ambiguous character of modernist architecture appeared haunted by the question “is it really possible to renounce ornament and thereby find liberation from linguistic temptation?”<sup>34</sup>

In the fifth chapter, “Architecture and Materiality in the Digital Era,” Picon sheds a light on contemporary architecture and the recent shifts within the realm of design practices after the proliferation of digital technologies. In discussing the complexity of the impact of digital media on the ways of conceiving, practicing and theorizing architecture, the chapter incorporates a broad range of references from the “relations between natural processes and algorithms” as the embodiment of “material computation” by Achim Menges and Jenny Sabin to the new approaches to the materialization and structural reasoning of architecture by Matthias Kohler and Fabio Gramazio, to the explorations into “parametricism” and into the aligning of “design techniques” with “social, political, and economic aspirations” by Patrik Schumacher. In so doing, he sets the point of departure for this study on digital tools. He borrows from Sheila Jasanoff’s remark on “the ‘coproduction’ of society on the one hand and information and communications technologies on the other,”<sup>35</sup> so as to explore processes and phenomena inherent in the current cultural context that defines the sensory as a primary concern. The distance from the rise of the figure of the cyborg in the 1950s, driven by visions of an intimacy between the technological and the human, to Gregory Bateson’s suggestion that “the contemporary individual should be understood as an ecology,”<sup>36</sup> in his insights about cybernetics, hence emerges as small, testifying to the long history of the present regime of materiality.

In the framework of the discipline, Picon rightly claims the importance of situating such a “shift in attitude toward the physical world” within the context of the “multisensory world” in which contemporary design practices operate, given that “digital technologies reflect the joint transformation of the perception of the physical world and the interpretation of what constitutes the human,”<sup>37</sup> hence admitting a significant influence on the multiple modes of understanding materiality. The reflection on the relation between architecture and expression takes a different turn, centered on the question: “Instead of seeking to animate matter in a perfectly artificial way, how might designers facilitate its spontaneous expressive capacity and thereby channel this potential in such a way as to align it with formal intentions?”<sup>38</sup>

The crisis of the long-established approaches towards the principle of structure is evidence of the various evolving attitudes towards materiality. Given the recent advances in material technologies and in the nanotechnologies, the focus is increasingly on the “development of materials whose properties are defined in advance instead of toward the design of structures that fulfil functions that can be integrated into the very substance of matter.”<sup>39</sup> The rise of design tools in architecture, for instance, cannot be separated from the rapid increase of concerns regarding environmental sustainability, as both phenomena inform architecture’s inquiry into new material substances. Despite their different approaches to architecture’s environmental dimension, Picon compares the research of Iñaki Ábalos and of Philippe Rahm, which prioritizes a “shift from mechanics to thermodynamics” and atmospheric phenomena over structure, to point to the possibility of a novel comprehension of tectonics, in the light of the growing concerns of energy efficiency.

Architectural form is identified in this section as the aspect which has been most strongly affected by the rise of digital tools: Attention accordingly shifts from the architectural structure to the skin, from issues of form to aspects of performance, thereby influencing a reconsideration of the ornament. The building exterior becomes “complex and thick” due to the processes it assumes and the interfaces it integrates. In a context that envisages a rising crisis of the tectonics, a new apprehension of architectural form is proposed “as a catalyzer of situations rather than as an occurrence or event.”<sup>40</sup>

The pursuits of this chapter inevitably revisit the relationship of matter to both ornament and language, as the study reveals valuable connections among certain historical turns through the lens of materiality. The crisis of symbolism in contemporary design practices does not differ greatly to modernism’s rejection of ornament: they both articulate the utopian theory that architecture may be expressive without alluding to linguistic connotations. According to Picon, such a crisis may confront two “dangerous obstacles” from which the discipline needs to distance itself in the future: “naïve gesticulation” and “the desire for uncompromising objectivity.”<sup>41</sup> For him, architecture needs to maintain, or perhaps reinvent, its agency in the light of the growing social challenges, as “the intractable materiality of architecture does not preclude its deeply human essence.”<sup>42</sup>

The concluding chapter, “Situations and Décors. Toward a Politics of Architectural Materiality,” offers an in-depth discussion of how, from the viewpoint of materiality, the relation between architecture and politics may be redefined. In this chapter Picon provides the most valuable contribution to the study of the materiality of architecture from a historical and theoretical standpoint, by focusing on the notions of situation and décor, in order to discuss architecture’s agency as a means of production which is essentially both material and symbolic.

Picon puts forward the claim that the “true political agency of architecture” lies in what it can achieve as a discipline on a collective level; in its potential to enable specific built and spatial arrangements charged with symbolical and political meaning. He therefore discusses two key notions: “theatricality and the staging of human presence in the world” and “invisibility versus visibility.” (Fig. 1)

Regarding the first, Karl Friedrich Schinkel’s definition of architecture as an “ennobler of human relationships”<sup>43</sup> is deployed – backed up by an illustration of the second-floor entrance of the 1828 Altes Museum in Berlin – so as to elucidate architecture’s capacity to “generate situations that constitute incentives to orient action in certain directions.”<sup>44</sup> Regarding the second, two contemporary design references – Rahul Mehrotra’s office tower in Hyderabad, Southern India and Jeanne Gang’s Aqua tower in Chicago, Illinois – bring into play architecture’s ability “to create [on the other] immersive environments that reinforce the feeling that human action can be meaningful.”<sup>45</sup>



Figure 1. Façade detail of Aqua Tower in Lakeshore East development, Chicago, Illinois, designed by Jeanne Gang (Studio Gang Architects), 2007-2010.

Both notions introduced by Picon lead to the definition of the agency of architecture as “the creation of situations that can either reinforce or disrupt the usual dividing lines in society,”<sup>46</sup> marking a transition from what architecture is composed of (material dimension) to what architecture may influence (performative/affective dimension). Hence the “regimes of materiality” conceptual tool becomes strongly connected also with Jean Rancière’s concept of “aesthetic regime,” as both concepts “involve vision as a social construct.”<sup>47</sup>

For Picon, décor is the culmination of materiality’s expression and needs to be regarded as a dynamic process which suggests that “the most profound signification of ornamented architecture, its true symbolic power, was never fully disclosed.”<sup>48</sup> The affinity between the sensory and the symbolic dimensions is brought up here in order to illuminate the relations between architecture and politics; materiality therefore needs to be understood as a mediator to foster the articulation of these two dimensions. It becomes clear, in conclusion, that the study’s intention – to recount “a history of architecture from the perspective of the changing regimes of materiality” – may also be interpreted, as Picon reveals, as “a history of the successive interpretations of the political fostered by the architectural discipline.”<sup>49</sup>

Demonstrating a breadth of scholarship that weaves together meaning from different historical eras and cultural environments, the book makes a significant contribution to a broader corpus of recent works that focus on the lens of materiality from a historical perspective. Drawing upon his previous researches on the topic, Picon illustrates in a striking manner how we are constantly defined, conditioned, and shaped by architecture’s material constructions, while at the same time the discipline as such “acts as a constant reminder of the limits of language and of the power of things.”<sup>50</sup> The novelty of Antoine Picon’s study lies in its remarkable ability to interweave knowledge from the architectural theory and history, and from a wide range of further epistemological fields, among them philosophy, science and technological studies, performance art, and neuroscience, so as to illuminate how the notion of architectural materiality has evolved, enabling us to establish our relation to the physical world as well as to others.

## Notes

1. Antoine Picon, *The Materiality of Architecture* (Minneapolis MN, USA and London: University of Minnesota Press, 2020), 25.
2. Ibid.
3. Ibid., 29.
4. Ibid., 36.
5. Ibid., 43.
6. Ibid.
7. Ibid., 45.
8. Ibid., 48.
9. Ibid., 50.
10. Ibid.
11. Ibid., 51.
12. Ibid.
13. Ibid., 57.
14. Ibid.
15. Ibid., 60.
16. Ibid., 66.
17. Ibid.
18. Ibid., 63.
19. Ibid., 60.
20. Ibid., 69.
21. Ibid., 71.
22. Ibid., 72.
23. Ibid., 75.
24. Ibid., 76.
25. Ibid., 77.
26. Ibid., 82.
27. Ibid., 83.
28. Pierre-Jean-George Cabanis, as cited in Picon, *The Materiality of Architecture*, 89.
29. Picon, *The Materiality of Architecture*, 91.
30. Ibid., 99.
31. Ibid., 95.
32. Ibid.
33. Ibid., 102.
34. Ibid.
35. Sheila Jasanoff, as cited in Picon, *The Materiality of Architecture*, 112.
36. Gregory Bateson, as cited in Picon, *The Materiality of Architecture*, 115.
37. Picon, *The Materiality of Architecture*, 114.
38. Ibid., 117.
39. Ibid., 122.
40. Ibid., 132.
41. Ibid., 133.
42. Ibid.
43. Ibid., 147.
44. Ibid., 143.
45. Ibid.
46. Ibid., 148.
47. Ibid.
48. Ibid., 150.
49. Ibid., 154.
50. Ibid., 20.

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