A Compass of Architectural Theories in the Tower of the Winds

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Abstract
This article presents a categorisation of both architectural theories and doctoral dissertations. It displays a theoretical model distinguishing two axes of epistemological and pragmatic orientations. It was originally designed to orient doctoral students facing inevitable introspection and doubts regarding the nature of their dissertation in the complex field of architecture. Such a categorisation should prove productive to an understanding of the future of theory, since doctoral students are called to become the theorists of tomorrow. Inevitably, it is an inquiry into the hybrid nature of knowledge production in architectural research. The main orientation of any theory is positioned in reference to two axes defining four quadrants and ultimately eight orientations. The first axis distinguishes typical poles of knowledge production in architecture. The second axis recognises architecture as both a discipline and a profession and it categorises types of projects or ways of making in architecture. The four poles allow for an empirical mapping of theories related to types of knowledge production here qualified as prospective versus retrospective and proactive versus retroactive. While the axis of epistemological objectives locates knowledge between historical narratives and scientific demonstrations, the axis of reflective and prescriptive projects qualifies oscillations between thinking and doing, which are sometimes proactive and sometimes retroactive in their relationship to knowledge.

Keywords
Architectural theory, doctoral dissertations, epistemology, theoretical models, categorisation, analogical thinking

One Sentence Summary
The poles of this compass of theories and theses allow for an epistemological mapping through four types of knowledge production here qualified as prospective versus retrospective and proactive versus retroactive.

Doctoral research considered as a form of theorisation

When professionals trained in the disciplines of the built environment, whether architecture, interior design, landscape architecture or urban design, consider embarking on doctoral studies, they are often faced with an axiological confusion between professional and scientific values. These aspiring researchers pit the virtues of action against those of knowledge if they do not confuse the two horizons. This tension, which is understandable in the early stages of the doctoral process, proves to be counter-productive, delaying the plunge into a scientific approach conducive to the advancement of knowledge in architecture. Such interrogations are persistent. How can a dissertation be considered a project? And, if so, what type of project is referred to in doctoral research, hence in architectural theory?

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The question could be all too easily answered by distinguishing between a PhD in architecture and a Doctorate in design. In the North American context – take the prestigious Harvard University – the distinction is explicitly enshrined in two programme titles. 'Doctor of Philosophy' or 'PhD' degrees are available in fields as diverse as history and theory, architectural technology, landscape theory and the evolution of cities and regions. The natural progression is toward academic or research careers. Conversely, a 'Doctor of Design' or 'DDes' degree leads to applied research and employment in large private or government agencies, as well as industrial groups. In this second case, we can speak of professional training at the highest level. In this example, a PhD in architecture is not a PhD in design and the forms of knowledge construction should not be confused.

However, the polysemy of the term 'design' often allows those trained in any of the built environment disciplines, particularly in the North American context, to imagine that their expertise in project design or 'design thinking' can not only be directly applied within their scientific questioning, but that obtaining a PhD will have the value of highly qualified expertise in project design. Over and above the existing designations, which clearly distinguish the scientific side from the professional side, we first need to question the respective roles of research thinking and design thinking in a scientific thesis. Second, we need to clarify the complex and often tangled nature of project definitions, particularly in European or Latin contexts, which refer to the etymology of 'projicio' as a specific 'mode of anticipation'.[1] These distinctions are salutary, as they have both epistemological and methodological consequences on the very definition of architectural theories. By avoiding confusion between scientific research and professional action, it is possible to encourage candidates to postpone their ambition to act on the built environment, in favour of a commitment to the renewal of knowledge. This suspension does not preclude a subsequent return to professional practice, based on the new knowledge generated by the dissertation.

Yet, up until the mid-1990s, the scarcity of architectural doctoral programmes compelled architects aspiring to advanced studies to hide within the Trojan horse of a seemingly opportune and welcoming discipline: sociology, philosophy, anthropology and art history, not to mention engineering and computer sciences. As it stands, however, the very idea of a doctoral approach to architecture is flanked by professional issues and disciplinary ambitions and finds itself caught somewhere in between. This is particularly visible in the wide range of theses that aim to study the practical aspects of an exemplary building, while rationalising abstract concepts most often borrowed from disciplines other than architecture. In conclusion, I will reflect on the typical case of Peter Eisenman's thesis, presented in Cambridge, MA in 1963, borrowing from linguistics and thinking 'out of history', but in order to do so I need to present the constituent dimensions of this compass of theories.

The slow rise of doctoral studies has lent increased legitimacy to epistemological questions concerning architectural research and theory. On a personal note, the two questions below were sent to me by the late Jean-Louis Cohen, as an invitation to a symposium on the nature of architectural research held at the College de France in 2015: 1) What is the significance of doctoral research in architecture? 2) Is research in architecture cumulative, or not? An easy answer to the second question, the most difficult in fact, would be to qualify architectural research as neither purely cumulative, like the Baconian ideal of science, nor non-cumulative and forcefully specific, like artistic production, but rather as accumulative. Indeed, research in architecture is both cumulative, in that it involves progression, and accumulative and recursive, as with the arts. Architecture is a historical discipline that can revisit its own theories, sometimes far back in the past: a retroactive gaze, which most modern sciences based on 'progress' usually do not consider a valid mode of knowledge production. Doctoral research, as theory in the making, leans toward archive and history, without disregarding the power of anticipation and reflexivity at the core of the project, its main way of thinking. Jean-Pierre Boutinet categorises the project not in the framework of design thinking, but as a 'blur-type operational anticipation'. Although a psychologist and an expert in education sciences, he recognises the architectural project as an emblematic example of 'conduites à projet'.[2]

Recognising both proactive and retroactive theories is not a refutation of modern science, but it acknowledges the critique of modern rationalism made by Giambattista Vico (1668–1744). Often considered the father of contemporary constructivist epistemology, his *verum factum* principle considers knowledge as a construction. Hence, knowledge in architecture is not only produced through empirical methods; it can also be reconstructed through historical narratives. And like most scientific revolutions, transformation in architecture theory is often destructive to previous paradigms. Architects do not hesitate to redefine concepts in and out of history, often having to wait several generations to rediscover the virtues of an idea or principle. In this sense, architectural research is both scientific, in the modern sense of the term, and prescientific or 'historical'. The fact that architecture books are among the oldest in the rare book collections of our university libraries is somehow a testimony of the historical nature of architectural

knowledge. Therefore, just as Plato and Parmenides are not epistemologically obsolete, it would be unacceptable to state that the works of Vitruvius, Palladio, Viollet-le-Duc or even Le Corbusier have been surpassed by contemporary postmodern and hypermodern theories.

While the rise of doctoral education is, itself, becoming a disciplinary phenomenon, it remains little scrutinised. The vectors of this particular way of mapping dissertations in architecture were originally presented in French, in a 2014 special issue of Cahiers de la recherche architecturale et urbaine on 'doctoral trajectories'.[3] It was carefully presented as a hypothesis, since the objective was to map doctoral productions. It is now presented with a little more confidence through a statement defining the doctoral dissertation as a prominent form of theory. As I have extensively studied the power of analogical thinking to connect projects and theories in the built environment, the second part of my hypothesis says, in essence, that mapping dissertations should be considered analogous – if not homologous – to mapping theories in architecture.[4]

The proposed epistemological model therefore insists on the parallelism between dissertation writing and theoretical writing. Today, in fact, fewer theories are published that were not originally advanced in the framework of a doctoral dissertation. Coincidentally, and since the mid-1990s, there has been a surge in anthologies of theoretical texts – particularly in American universities – pointing to a need for theorisation as much as for a strategic approach within an expanding market for reading lists in architecture. I have not measured how much these new reinterpretations of theory owe to the competition provided by doctoral formation between prominent universities. The process exists and thrives ubiquitously around the world, and today, its large expanse has begun to raise awareness of what could be called the ocean of theories in architecture.[5]

My attempt to categorise the astonishing variety of dissertations in architecture is based on the need for a taxonomy of theories, as these work toward the clarification of the various forms of architectural knowledge production at stake. Thus, the hypothesis for the benefits of such a model is as follows: a categorisation of doctoral research should prove productive to the future of theory; the doctoral students of today are being called to become the theorists of tomorrow.

Theory is not an ornament

Without further proof, the example of the resurgence and avatars of theories on the notion of ornament in architecture could be indicative of this difficulty. If the notion of ornament remains a relatively stable category in art history, the same cannot be said of its role and understanding in architecture. As it appears today, the question of ornament is a good example of recursive – or retroactive – theory.[6] A doctoral conference titled 'The Return of the Ornament', regarding contemporary practice, was held in May 2013 at the Université de Montréal and helped me test an outline of a model for categorising dissertations. Entitled 'Ornaments, Algorithms and Analogies between Cognitive and Technological Operations in Architecture', the meeting brought together PhD students from universities like Harvard, Princeton, Bartlett, Rio de Janeiro, Montreal and Lausanne, as well as French national architecture schools from Nantes, Lyon, Lille and Versailles. Working with a prescribed theme, the conference confirmed, through the comparison of twelve doctoral approaches, that the same questions could lead to a surprising heterogeneity of epistemological aims and research approaches. Again, in September 2013, this mapping was put to the test with sixty selected texts during a second conference called 'Rencontres doctorales en Architecture' at the École Nationale Supérieure d'Architecture de Paris-Belleville. This time, a comprehensive transcontinental variety of dissertations – correlated with the diversity of French laboratories – reaffirmed an interest among young researchers in a mapping of doctoral objectives, while making it increasingly clear that such an ambition to categorise theories in architecture must prepare to confront major epistemological paradoxes. Thus, a historical dissertation on architectural education in twentieth-century France cannot be considered in the same category as a dissertation with the subtitle 'For an eco-friendly and affordable habitat in Saône-et-Loire', nor does it relate to research issues regarding both building cultures and design titled 'Toward an edifying theory of the project'. In fact, a simple overview of the lists of dissertations in most architecture schools welcoming doctoral programmes is simply disturbing, epistemologically speaking, compared to the same exercise in most human and social sciences. This special issue of *Footprint* summarises this challenge clearly: How can one appraise the quality, effect and performance of architectural theories?

Historical narratives versus scientific demonstrations

As I describe the basic principles of the model, referred to here as a compass of theories and dissertations, the question arises: What should be placed at the centre of such a turbulent universe? If we accept that every architectural theory, like every dissertation, participates in an ideal, then placing the Island of Utopia (and Thomas More's book) at the centre of the compass would undoubtedly preserve an openness to categorisation. It is therefore not a question of choosing a 'central' theory around which all the others

would revolve. Rather, it is a question of opening up the reflection to the identification of a dynamic that would be dominant in each theoretical text. In the absence of a paradigmatic or normative definition of architectural theory, this model should be left with a vacant centre. [Fig. 1–3]

The first axis, previously referred to as epistemological, contrasts poles of knowledge production. One pole points to theories dominated by historical objectives and methods, while the other points to theories dominated by transhistorical scientific aims, be they associated with the human and social sciences or engineering. On the one hand, some architectural theories identify the role of history in the production of architectural knowledge, while some give primacy to scientific progress, thus relegating history to the background. This axis therefore segregates ways of producing knowledge in architecture between retrospective and prospective gazes or aims.

It goes without saying that history is not a homogeneous discipline, and that methodological currents and schools should be distinguished. The fact remains, however, that certain works in the history of architecture are often at odds with the recognised categories of art history, and are, strictly speaking, kept at a distance from these historical circles, without being automatically compatible with the scientific objectives of the humanities or engineering sciences. To take two examples that are deliberately incompatible in terms of the historical theses they support, how can we locate the works of Manfredo Tafuri and Alberto Perez-Gomez? The main works of history and theory by Tafuri (1935–1994) cannot be classified in the strict register of art history, without considering that they are based on political positions and analyses closer to cultural anthropology and Marxism than to event history or historiography. In another theoretical and ideological register, the positions on the nature of theory, strongly defended by Alberto Perez-Gomez (1949–) at McGill University from the end of the 1980s and up to 2020, correspond to a peculiar disciplinary autonomy. Among their merits, said positions have enforced this median territory, also referring to 'history and theory', but far from Manfredo Tafuri's political and theoretical positions on the relationship between history and theory.[7] Perez-Gomez systematically directed any contemporary questioning in architectural theory to the hermeneutic search for its origin in an authoritative 'ancient text of the discipline' and, at the same time, to the phenomenological acknowledgment of embodied knowledge.

The first epistemological axis therefore separates the disciplines of history (art history, architectural history, the history of science) and their typical historical questioning. The history of science comes with a narrative way of producing knowledge, which differs from the demonstrative way in use in the humanities and applied sciences. This last group may look heterogeneous, but it is scientifically coherent in that these modern sciences are largely dominated by empiricism and induction. For example, the history of social housing through the ages would be a different theoretical endeavour than the sociology of social housing or even the comparative analysis of various models of social housing in post-war Germany. In these three types of theory, a production of knowledge is at stake, but this knowledge is not homologous and not simply architectural.

Consider now Joseph Rykwert's imposing undertaking on the theories of the early moderns (*The First Moderns*, 1980), which can be said to stand on the borderline between architecture history and art history. In deliberate contrast, this historian's work does not approach the objects of architecture in the same way as Jean-Nicolas-Louis Durand's first architecture course at the brand-new École Polytechnique in 1802. Durand's rationalist and fundamentally forward-looking stance, already embodied in the transhistorical comparative nature of his *Recueil et parallèle des édifices de tout genre anciens et modernes* (collection and comparison of all kinds of ancient and modern buildings), which he had published two years earlier, prompts me to place Rykwert's and Durand's books at two opposite poles of the compass. Adopting this first distinction, which accords a specific role to history in architecture, we can now see more clearly that Quatremère de Quincy's *Dictionnaire historique d'architecture*, which appeared from 1832 onwards, would place itself on the side of historical aims, somewhere between a purely historical approach and the 'Island of Utopia' at the centre of our compass). As a 'Historical Dictionary of Architecture', Quatremère de Quincy's endeavour remains more retrospective than prospective. [Fig. 2]

On the other hand, Claude Perrault's 1673 translation of Vitrivius's *De Architectura* was a departure from the medieval transcriptions of Cesare Cesariano (1521). It was meant less as a commentary in the medieval tradition than as a scientific translation by a seventeenth-century architect, who was also a *homme de science* and a physician. It was a deliberate attempt to define a 'modern' architectural theory. In this sense, Perrault's translation becomes a theory that is no longer essentially historical, but a demonstration, in the modern sense of a scientific demonstration. For this last reason, it should be placed on the side of scientific rationalisation and prospective theory, like that of Durand, as well as, to keep our previous clarification, on the side of the most typical contemporary sociological approach to social housing. Perrault's translation is a rationalisation of Vitruvius's principles.

Therefore, this first axis is not so much about extracting history from the realm of scientific knowledge, as it is

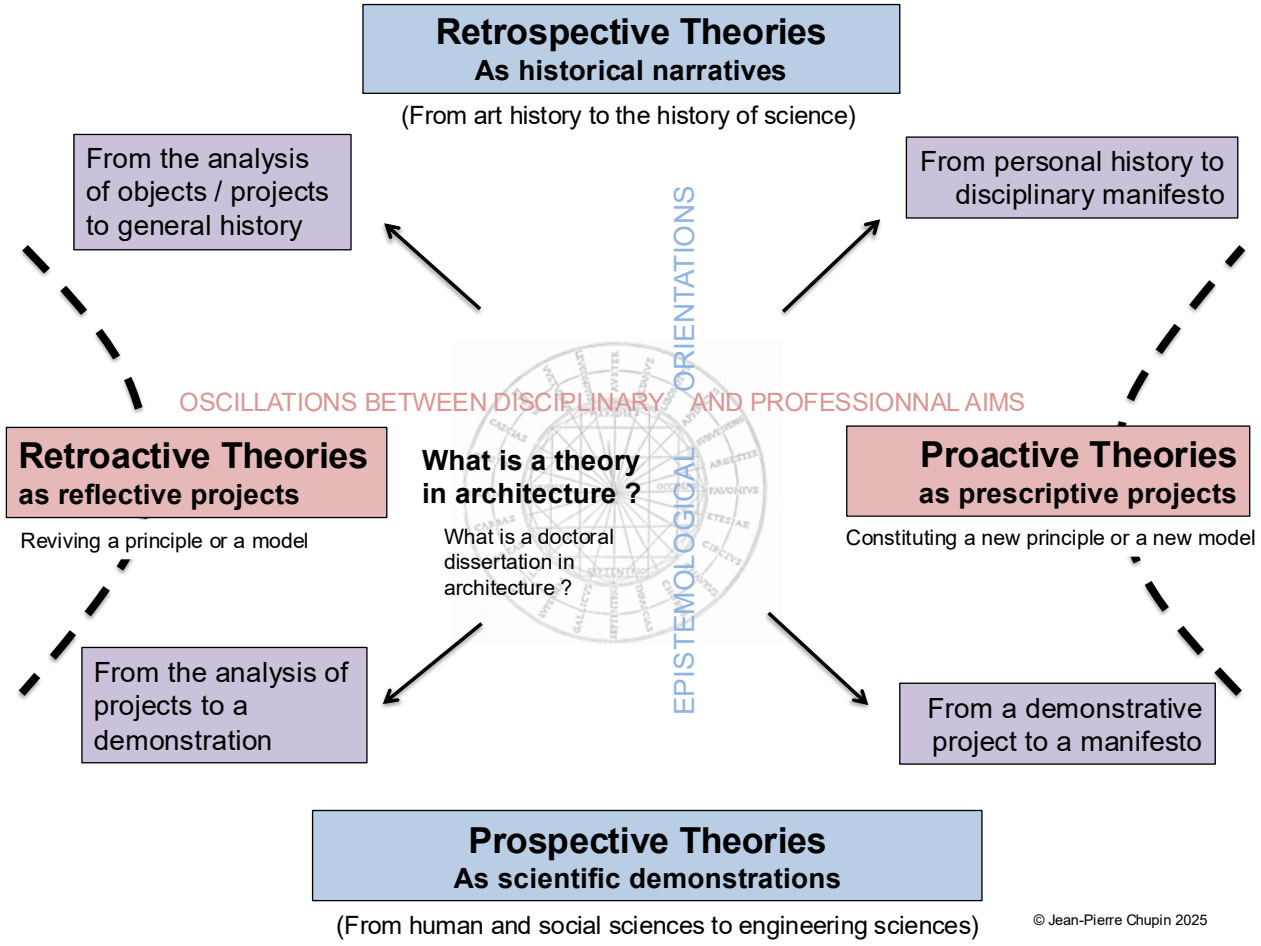

Fig. 1: Compass of architectural theories with eight orientations. Diagram: author.

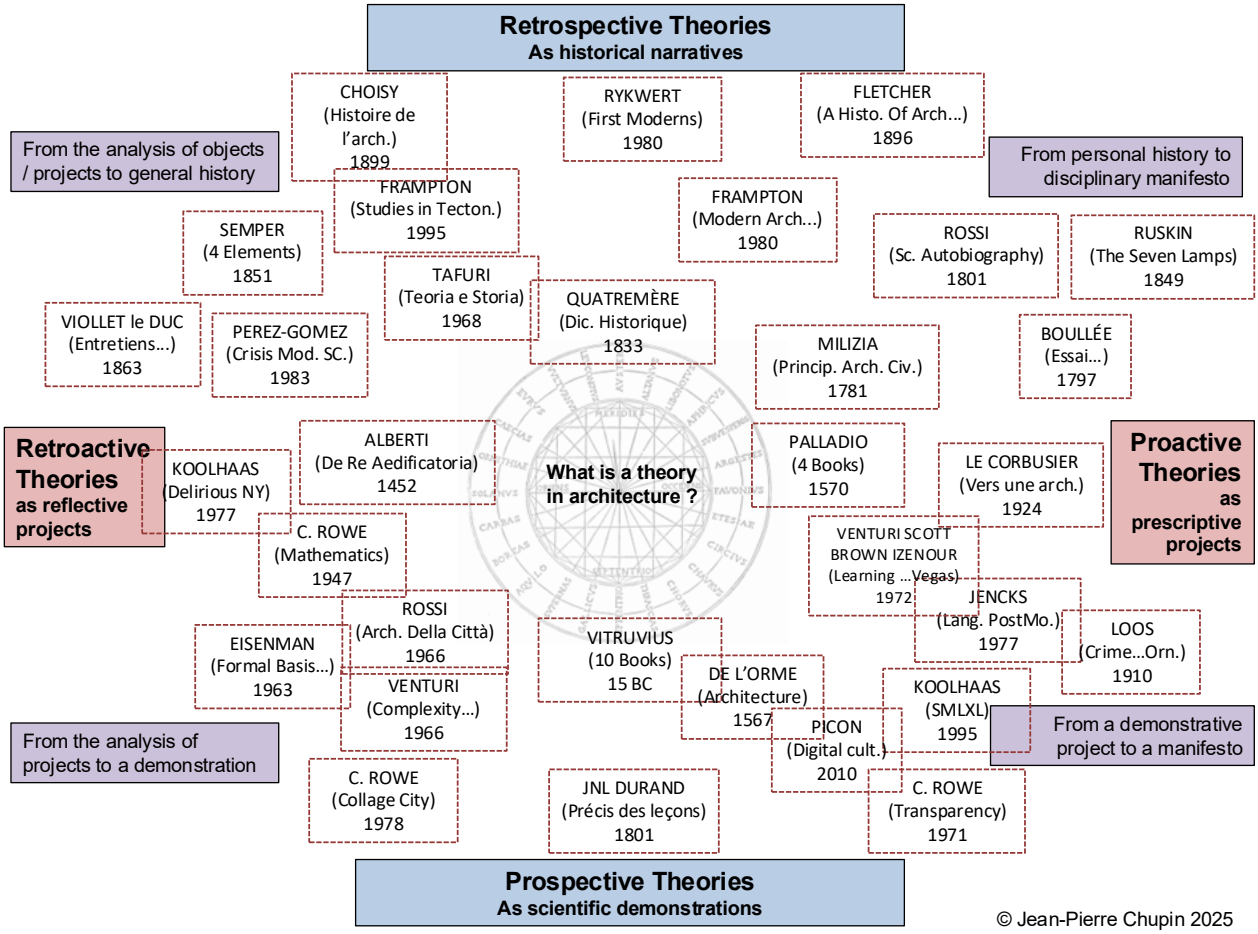

Fig. 2: Theoretical mapping of theories from Vitruvius (15 BCE) onto Kenneth Frampton's Studies in Tectonic Culture (1995) and Antoine Picon's Digital Culture in Architecture (2010). Diagram: author.

Fig. 3: Theoretical mapping of contemporary architectural theories with an alternative rotation of the two main axes: retrospective versus prospective theories, retroactive versus proactive theories. Image: author.

about distinguishing epistemological aims and ways of producing knowledge. But paradoxically, and contrary to typical historical or sociological disciplines, which tend to choose one methodological side, both aims can be found in architecture theories and doctoral dissertations.

Now, things become a little more complex when we consider two other exemplary works within the compendium of architecture theory: those of Leon Battista Alberti (1404–1472) and Andrea Palladio (1508–1580). Palladio's *I quattro libri dell'architettura* was published in 1572, over a century after Alberti's *De re aedificatoria* (1452). Alberti's work is a meta-treatise written in the middle of the fifteenth century that, according to many historians, inaugurates a recognition of architecture as an intellectual or humanistic discipline and not only as a trade or craft. Despite their prominent role in the western history of architecture theory, we should not place these two major treatises in a central position, solely based on their role in the history of architecture theory. Their objectives are different. Alberti's *De re aedificatoria* is overtly speculative and philosophical, while Palladio's *I quattro libri dell'architettura* asserts its professional pragmatism as a quasi-rulebook. However, these two theories cannot be placed simply along the axis of historical narratives versus scientific demonstrations. We need another axis and its set of poles, as these theories embody a typical architectural way of thinking called *designo* or *projicio* or project. If anything, they should be placed on a second axis and on opposite sides, close to the vacant centre. Alberti's text is a meditation on architecture as an intellectual discipline, while Palladio's is a detailed and carefully illustrated exposé on rules for building, and as such on the profession of the architect. To simplify the comparison of the main objectives of these two books, we can say that Alberti's focuses on the nature of architectural theory, while Palladio's focuses on the nature of practice.

Reflective versus prescriptive projects

Before presenting the second axis, let me summarise some aspects of the first. The gradients across the first axis have in common that they are primarily concerned with knowledge. We have distinguished between retrospective and prospective speculations or perspectives, in the sense of the Latin suffix *specto, spectare,* meaning 'to watch' or 'to look at'. However, we can identify a significant set of architecture theories whose main objective is not so much to observe or look at or even reflect, as it is concerned with acting and transforming. This second ensemble of theoretical orientations is concerned with principles related to the production of projects more than the construction of knowledge. Again, it is important to stress that the compass can only accommodate the main vectors identified in a book or theory to help with a general comparison and ideally a didactic categorisation. The fact that a prevailing trend is identified does not imply the rejection of all theoretical nuances that inevitably appear at the core of the text.

The theoretical projects that can be located across the second axis do not have the same doctrinal orientation, far from it. They may be written as professional manifestos; they do not operate in the same manner. One way to operate distinctions along this axis is to look for temporal orientations. A pole of principles for actions (or a project) is directed to the future, while the other is digging into the past, and this is not unusual in architecture. The first pole can be said to be proactive, while the second is retroactive. If we take Le Corbusier's *Vers une architecture* (1923), for example, we can first say that it is neither a historical narrative nor a scientific demonstration. A second reading helps us identify a proactive manifesto closer to Palladio's *I quattro libri dell'architettura*. By contrast, Rem Koolhaas's *Delirious New York* (1978), another modern manifesto, assumes a recursive dimension of theory and design thinking: it intends to act retroactively – in the literal sense of the term for which it is famous – and its reflexive dimension brings it closer to Alberti's *De re aedificatoria.* Le Corbusier's *Vers une architecture* is therefore considered a proactive theory, while Koolhaas's *Delirious New York* positions itself as a retroactive theory.

Let us now switch registers and use a different set of exemplary cases of architectural theory, to avoid confusing what is called a theory with what could be considered mainstream modern professional manifestos. If we examine Françoise Choay's *Allégorie du patrimoine* (1992) (*The Invention of the Historic Monument*), now considered a reference book on the theory of heritage conservation, what can we say of its main theoretical orientation*?* First, that it takes us back in time to a concept – that of heritage – which is not always on the historical side of our compass. There are theories of heritage conservation that consider sociological aspects and, of course, highly technical and technological aspects of preservation. But in Choay's book, the theory of heritage throughout the history of the notion appears retrospective in its reconstitution of the 'invention' of a concept. It is thus better located on the side of historical narratives, like that of Rykwert's *The First Moderns*. [Fig. 2, 3] On the other hand, Catherine Cooke's *Russian Avant-Garde: Theories of Art, Architecture and the Cities* (1992), which considers the impact of the Russian avant-garde on modern theory, is more retroactive, as is Koolhaas's retroactive manifesto. Overall, Cooke's theory maintains that certain doctrines from the Russian past can be mobilised to shed light on, if not direct contemporary practices (that is, in the context of the book, of the 1990s).

Some architecture theories literally revive historical concepts and ideas, and such is the case of Kenneth Frampton's redefinition of 'tectonics' at a respectful distance from that of Semper's. [Fig. 2] We will come back to this comparison. For now, it is more enlightening to illustrate the second axis with a comparison between Robert Venturi, Denise Scott-Brown and Steven Izenour's *Learning from Vegas* (1972), which essentially develops a forward-looking, highly comparative thesis on the constitution of urban identity. Its didactic and prescriptive nature locates it between Le Corbusier's manifesto *Vers une architecture* and Palladio's *I quattro libri dell'architettura*. In comparison with Choay's retrospective narrative and Cooke's retroactive essay, *Learning from Vegas* is both a prospective and proactive essay concerned with orienting future evaluation of urban contexts. If only for its sophisticated comparative and iconic apparatus, *Learning from Vegas* acts as a reference book for practitioners, more than as a text book for geographers (or developers). [Fig. 3]

Surprisingly enough, and for the above reasons, we can look at Jane Jacobs's influential critical theory of American urban planning policies, *The Death and Life of Great American Cities* (1961), as a proactive manifesto, hence as a proactive theory. [Fig. 2, 3] This book has long been one of the most activist theses in favour of a better urban future and a reconsideration of scale and walkability. Surprisingly enough, since Jacobs was a deliberate critic of rationalist planners, including Le Corbusier, the forward-looking tone of her book advocating for dense mixed-use development and sidewalks is located closer to Le Corbusier's proactive side of the modern manifesto, than to Koolhaas's retroactive approach to New York's big narrative. Where Jacobs praises Greenwich Village as a vibrant example of communal life, Koolhaas insists on the 'delirious' phantasmagorias at the source of the metropolis. Jacobs wants to demystify, while Koolhaas 're-mystifies', so to speak.

An important reminder, as we collect and locate theories using this epistemological compass, we look for the main intentions and objectives of a theory as it can be identified in the whole of a single book. This categorisation of one set of theories embodied in a book should therefore not be confused with the orientation of a lifetime. For example, Colin Rowe's famous essay, *Mathematics of the Ideal Villa: Palladio and Le Corbusier compared* (1947), is more oriented toward a transhistorical meditation on a disciplinary object (the villa), while his essay on modern spatial compositions, *Transparency* (1971), written in collaboration with Robert Slutzky, appears more oriented toward project theory, or design theory and therefore more directed to action. If *Mathematics of the Ideal Villa* considers historical objects, it is more retroactive than retrospective. This is so because Colin Rowe wants to demonstrate that some concepts like proportion transcend historical periods. On the other hand, the essay on literal and phenomenal transparency asserts itself as freely speculative and interdisciplinary. It was written in dialogue with an artist (Robert Slutzky). Contrary to *Mathematics*, *Transparency* presents itself as a proactive manifesto closer to *Vers une architecture,* even if Le Corbusier is amply quoted in both texts. It is appropriate to locate the essay on transparency in the lower right quadrant of the compass, where a demonstrative project can potentially become a professional manifesto. [Fig. 2]

Let us consider two other examples. While Koolhaas's *Delirious New York* can be taken as an emblem of all retroactive theories, we should not confuse its quasi-analytical nature with *S, M, L, XL* (1995), designed by Bruce Mau and also featuring OMA projects. The big book from 1995 is an augmented portfolio that intends to guide future design practices. This intention makes it closer to a proactive Corbusian manifesto. These two books from the same main author therefore have opposite aims and lie in opposite quadrants of our compass of theories. Different theses do not belong to the same category simply because they were produced by the same author. [Fig. 2] It goes without saying that many nuances in the structure of a book or dissertation could move it to several positions on the compass as the chapters unfold. This is undeniably a considerable limit to such a compass, which, like any theoretical model, remains only one possible analogical representation of a phenomenon.[8]

In this undoubtedly Cartesian approach, the proposed compass settles at the intersection of two major axes, one considering ways to produce knowledge, the other considering ways to produce projects. In relation to the four poles, we can distinguish eight potential quadrants. The vertical axis enables us to distinguish between theoretical texts that look to the past (retrospective) and those that look to the future (prospective). The horizontal axis enables us to distinguish between proactive principles that aim to prescribe, and retroactive principles that operate as reflective practices. The latter are said to be retroactive because they assume certain elements or concepts belonging to the history of the discipline, while the former are more clearly proactive, at times assuming a tabula rasa, an entirely new set of principles for conducting architectural projects. Beyond the four cardinal directions, we can find more nuances in such a compass, offering no less than eight orientations of architectural theory. If my hypothesis considering dissertations as theories is indeed valid, then these eight vectors define eight orientations to better understand doctoral dissertations in architecture. [Fig. 1]

Four poles and eight vectors to categorise theories (and doctoral dissertations)

Some theories move from the analysis of objects to general history. These can be located between the retroactive aim and the retrospective view. Depending on how you orient the compass, they will be in the upper left quadrant or simply at the left pole. Having worked to increase awareness of Kenneth Frampton's work in France, I cannot fail to notice that his definition of 'tectonic culture' is a theoretical project more than a historical one, and his reinterpretation of history, like Gottfried Semper or Auguste Choisy, formulates a new definition of the 'poetics of construction', venturing into the fringes of doctrinal discourse, which Frampton assumes with confidence.[9] His book *Studies in Tectonic Culture* (1995) lies somewhere between the historical gaze and the retroactive aim, as it borrows a concept from nineteenth-century theory in order to sustain a modern actualisation at the end of the twentieth century. This approach cannot be confused with the one adopted in his celebrated critical history of Modern Architecture, first published in 1980, which although a historical survey, is closer to a political project, and therefore a more personal view of modern theories. His historical survey slides between retrospective and proactive theories. [Fig. 2]

Between retroactive and prospective theories, we find approaches ranging from project analysis to scientific demonstration. This type of theory is both reflective and rationalising. This is where two foundational postmodern works of critique, both published in 1966, can be located: *L' Architettura della città* (1966) by Aldo Rossi and *Complexity and Contradiction in Architecture* (1966) by Robert Venturi. [Fig. 2] Both theories demonstrate a return to historical projects and objects as well as an interest in classical ways of designing with absolutely no ambition to produce new historical knowledge. We cannot locate them in the quadrant defined by retrospective theories. Meanwhile, both theories display a series of approaches and concepts borrowed from various human and social sciences: from geography to anthropology and the psychology of perception to semiotics. It appears, however, that through this penchant for scientific demonstration, they still intend to theorise architecture rather than produce new knowledge in anthropology or linguistics.

Now, we also find architecture theories that function as literary or philosophical essays. These are sometimes centred on one exemplary project or case study, and their oscillation between prospective theory and prescriptive discourse makes them sound like political manifestoes. A lot of theories on the digital turn, for example, are not only analytic and technologically oriented, but tend to be prophetic in nature. Antoine Picon's *Digital Culture in Architecture* (2010), and more recently Neil Leach's *Architecture in the Age of Artificial Intelligence* (2022) may be labelled as introductory essays; they inevitably risk a leap into the future. [Fig. 2] Although not as proactive and prescriptive in tone as *Toward an Architecture*, these essays reflecting the impact of digital technologies on architectural theory and practice can be gathered in the lower right-hand quadrant of the compass as they move from a demonstrative project to a manifesto. [Fig. 2] On the other hand, Mario Carpo's series of books on the digital turn (2012 and 2017) is generally celebrated for their erudite but retroactive theses; hence, they move toward the retroactive pole on the left side of our compass.

There is another sector of architectural theory which, although quite prolific, would appear unusual to most 'hard scientists' and 'naturalised epistemologists'. Far from relying on empirical methods and discoveries, far from using formal tools of logic, the production of knowledge – if there is any – is grounded in professional and at times personal experience. Not only do we find architectural theories based on practical experience – which may sound acceptable for a professional discipline – but their narrative tone often amounts to a personal journal. On the perfectly legitimate strength of decades of professional experience, these authors decide to theorise architecture based on their own practice. Although reflecting on your own journey is certainly salutary, this kind of theory does not hesitate to present a series of personal opinions as a reform of prevailing norms, seeking to accelerate the transition from practice to theory. First published in English at the insistence of Peter Eisenman, Aldo Rossi's *A Scientific Autobiography* is a typical case of this way of writing theory, as is one of Rossi's main influences, Etienne-Louis Boullée's *Essai sur l'art* (1797). [Fig. 2] In this, his last essay, written as a journal that was only published in the twentieth century, Boullée (1728–1799) considers the state of architecture in the storm of the French Revolution, and his '*théorie du caractère*' is located within a meditation and remembrance of his personal, at times nostalgic journey. As it was written around 1797 but only published in 1953, we could even consider it a 'retroactive theory'. In the same vein, we find Rossi (1931–1997) connecting fragments of his own journey and architectural souvenirs in a 'scientific biography' whose title hints at Max Planck's autobiographical book without narrating any scientific journey.

As already mentioned, this compass of theoretical writings does not categorise books by authors but by epistemological and pragmatic vectors. For example, Rossi's two main books do not have the same epistemological or disciplinary value. His *L'Architettura della città* from 1966 is the result of careful interdisciplinary research proximate to a contemporary doctoral dissertation, convening methods and advancements from various disciplines (geography,

anthropology, history and so on) to investigate the hypothesis of 'urban facts'. *A Scientific Autobiography* was first published in English in 1981. Composed as a collage of scattered notes, although arranged without poetic talent, this second book is the result of an unpublished underlying theoretical project titled Città Analoga on which Rossi secretly worked for over a decade prior to its abandonment.[10] Rossi based his meditation on Boullée's – mostly unrealised – projects, whose essay, written at the end of an anxious career during turbulent times, was put together in a style that Rossi particularly admired. Locating these books along with, for example, John Ruskin's *Seven Lamps of Architecture* (1849), is therefore the only way to appreciate their specific architectural – hence epistemological – nature. [Fig. 2]

The quadrant gathering essays moving from personal history to disciplinary manifestos is a risky one if considered as a theoretical writing style. Although many architects may dream of writing as well as Boullée, Rossi, or Ruskin, not everyone may benefit from the talent, nor the legitimacy conferred by their peers. This also has many implications when we go back to our hypothesis connecting theories and doctoral dissertation. I can only advise very young PhD students not to go down this road, which requires long and profound experience.

By considering the eight directions of this compass, we now have as many categories to distinguish the vectors of theoretical writing in architecture. The simplified instruction to use the compass could then be as follows: first, seek to distinguish theories centred on historical objects from those which, without denying the rigor of history, focus on the objects of the sciences, whether the humanities, social sciences or engineering sciences. Second, use the horizontal axis to distinguish theories written as potential doctrines from instructions for designing projects, whether proactive or retroactive in their use or reuse of principles in architecture.

In other words, between historical narratives, scientific demonstrations, reflective and prescriptive projects, anyone who undertakes a meditation on the great diversity of architectural theories is not condemned to wander into an ocean of architectural theses but can profit from the four cardinal points of a compass to orient their navigation and understanding. The eight quadrants offer as many nuances that, in turn, shed light on the variety of methodological approaches at the disposal of an architectural theorist – whether experienced or novice – in this extended disciplinary field that is architecture. And such a compass also allows for some epistemological considerations on the nature of architectural theory. For example, if a theory shifts from a history of architecture to a kind of art history, it runs the risk of no longer contributing directly to the production of architectural knowledge. If a theory veers too much into proactive manifesto, it may prematurely reform common practices, but it will also run the risk of sounding like a recipe book full of prescriptive statements and not a reflexive disciplinary meditation in the sense defined by Alberti in the middle of the fifteenth century.

Eisenman's doctoral dissertation as a case of 'prospective-retroactive' theory

Space is lacking to explain how this way of mapping theories has already stood up rather well to the test of a corpus of contemporary doctoral theses in the past decade. However, since the first 'doctor of architecture' emerged in the middle of the twentieth century, in a slow progression that only accelerated in the mid-1990s, one doctoral dissertation serves to illustrate my hypothesis of a homology between architectural theories and dissertations. It was written in 1963 by Peter Eisenman, who would go on to give architectural theory a particular linguistic and deconstructivist twist in the 1980s and 1990s. His doctoral dissertation has already acquired a mythical dimension. Defended in Cambridge in the early 1960s, it was only published in 2006, not in a completely rewritten form as may be expected for a doctoral exercise, but in the unusual form of a facsimile. Furthermore, this rare document was designed by the demanding Lars Müller publishing house to reinforce its mythical character.[11]

We now know that this dissertation, centred on the formal analysis of the work of several modern architects, was to have a decisive influence on Eisenman's subsequent career as an architect, teacher and theorist. But this never prevented Eisenman from commenting ironically about the usefulness of a thesis in architecture, as evidenced by a remark nestled in the afterword to the 2006 facsimile: 'I have often been asked what the value of a PhD is for an architect, and I have always replied: learning how to sit still for three years.'[12] In the same afterword, and in a romanticised way, Eisenman recounts that after three months of travel in Europe with Colin Rowe, his mentor in architectural theory, he already knew what he wanted to write:

> An analytical work that related what I had learned to see, from Palladio to Terragni, from Raphael to Guido Reni, into some theoretical construct that would bear on modern architecture, but from the point of view of a certain autonomy of form. This led to the title. The Formal Basis of Modern Architecture.[13]

In retrospect, Eisenman places the objective of his doctoral dissertation between two theoretical boundaries: an exercise in orienting and categorising architectural theory, which sounds analogous to the one attempted in this article. On the one hand, he wanted to distance himself

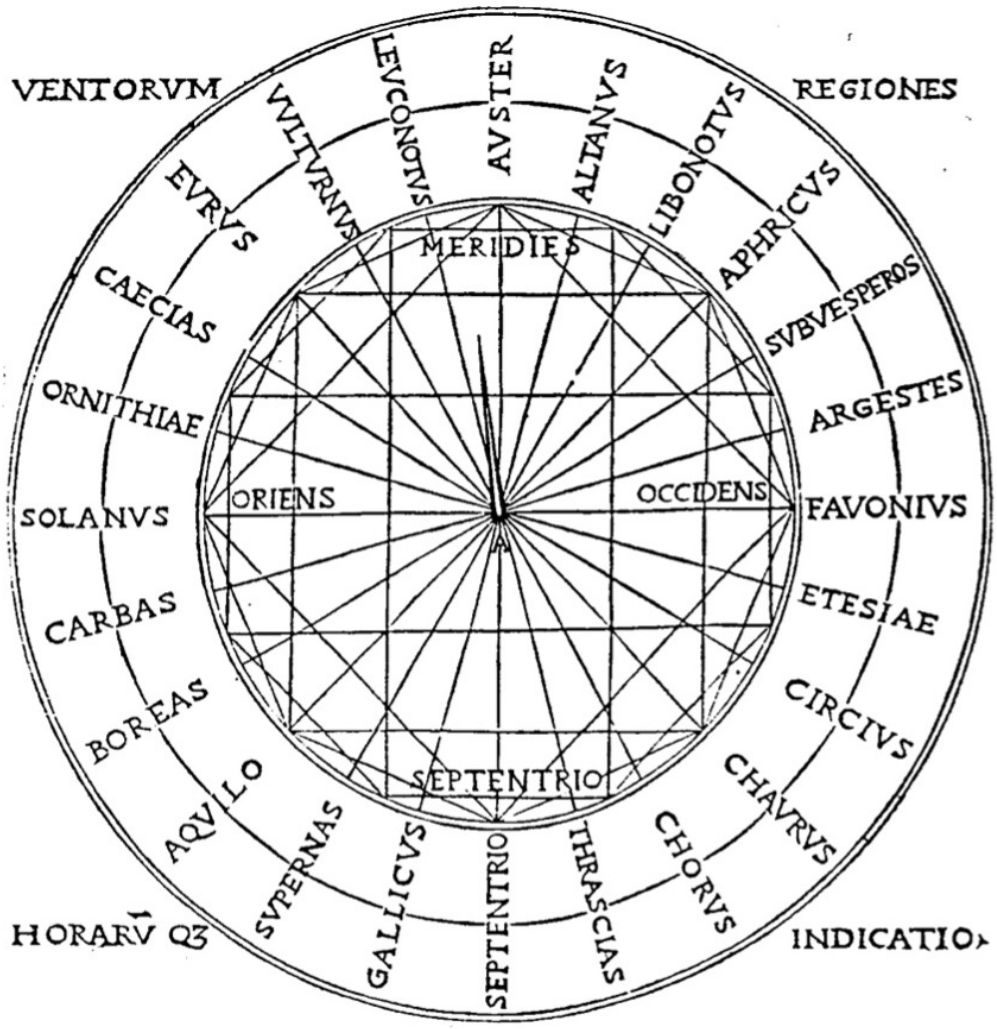

Fig. 4: The *Ventorum Regiones* by Cesare di Lorenzo Cesariano, a compass of winds or 'wind rose' in the first Italian-language version of Vitruvius's *De Architectura* published in Como in 1521. This compass was, in fact, a sundial. Image: Como 1521 edition of De Architectura.

Fig. 5: Octagonal ‘Tower of the Winds’ in Athens. Photo: Andreas Trepte, Wikimedia Commons.

from Christopher Alexander's theory on the mathematisation of form, whose influential *Notes on the Synthesis of Form* (1964) had been partly written in Cambridge. On the other hand, Eisenman insists on the fact that he wished to distinguish himself from the formal ideas of Colin Rowe, to adopt a discourse rooted more precisely in linguistics. Doing so, his dissertation sought to excise historical questions and methods, as much as mathematical logic, to concentrate on the analysis of form in a properly architectural approach, that is – as far as Eisenman was concerned – with a properly critical aim.

In the proposed compass of theories, Eisenman's original essay on *The Formal Basis of Modern Architecture* is therefore best located at the intersection of retroactive and prospective theories, that is, in the lower left quadrant, where theories move from the analysis of projects to an architectural demonstration. Indeed, he intended the dissertation to move from retroactive comparative analysis – which is where we located Rowe's *Mathematics of the Ideal Villa* – to a demonstration closer to a scientific induction, which was Alexander's original intention in *Notes on the Synthesis of Form*. In other words, Eisenman's original theoretical essay is retroactive, as it wants to theorise modern principles, and prospective, as it does so following a linguistically inspired 'syntax of forms'. [Fig. 2] In seeking to determine the 'formal foundations' of modern architecture, it was looking for the laws of a modern language. We need only reread the 1963 introduction to the dissertation to see that this demand for autonomy, explicitly setting historical facts at a distance, was indeed at the heart of his intellectual project.

Eisenman's methodological posture was therefore not retrospective, but neither was it strictly retroactive. As the Swiss historian Werner Oechslin would later show, it consisted of 'stepping outside history' to devote himself to a strict theoretical comparison of the formal aspects of architectural work.[14] Some critics have criticised Peter Eisenman for devoting lengthy analytical discussions to Giuseppe Terragni's Casa del Fascio (built between 1932 and 1936 in Como, Italy) without ever mentioning that it was also a landmark monument of Italian fascism, but we should acknowledge that it was never his purpose to produce historical knowledge.

The Tower of the Winds as an architectural compass

To conclude this exercise in epistemological navigation in the ocean of architectural theories, without closing the discussion while opening retroactively to ancient ways of thinking in architecture, it may be useful to remind ourselves that there are ways of framing orientations that have long been embodied in architectural 'towers of the winds'. These beautiful architectural devices were often eight-poles but some of them were even capable of comprising up to 24 orientations. We find descriptions of these compasses in all editions of Vitruvius's *De Architectura*, whose original illustrations have been lost and had to be 're-constructed'. Though both a compass and a sundial, the one inserted by Cesare di Lorenzo Cesariano in the first Italian-language version of Vitruvius published in Como in 1521 is a good reminder of the often retroactive nature of architectural knowledge. [Fig. 4]

Some were even built. One of the most beautiful of these wind towers was designed in the middle of the first century BCE by Andronicus of Cyrrhus. [Fig. 5] This octagonal device, both practical for orientation and symbolic of a temple of winds, is surprisingly well preserved today in the ruins of ancient Athens. Also called the *Horologium*, it offers itself as an embodiment of a compass defining eight forms of theories in architecture. I believe that the compass of architectural theories briefly presented in this article is, most probably, still hidden in such a Tower of the Winds, somewhere to be rediscovered.

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Notes

In Memory of Jean-Louis Cohen (1944 – 2023).

This text is an updated and expanded version, previously published in French, of a reflection commissioned and published by the late Professor Jean-Louis Cohen, who passed away prematurely in 2023. This new version is dedicated to his memory. It was first presented in part in Jean-Pierre Chupin, 'Un compas des théories dans l'océan doctoral en architecture' in *L'architecture entre pratique et connaissance scientifique (Actes de la rencontre du 16 janvier 2015 au Collège de France),* ed. Jean-Louis Cohen (Paris: Recherche & Architecture, Éditions du Patrimoine, 2018), 36–51.

1. Jean-Pierre Boutinet's anthropological categorisation of the notion of a project as a 'figure or trope of anticipation' at the crossroads of nature-culture and symbolic-operational still is unsurpassed. Jean-Pierre Boutinet, *Anthropologie du projet* (Paris: Presses Universitaires de France, 1995).
2. The French expression '*conduites à projet*' could be roughly translated with 'project behaviours'. Jean-Pierre Boutinet locates the 'project' in the fourth category of anticipation methods. Rather than adaptive, cognitive or imaginary, the project is a 'blur-type operational anticipation'. This categorisation appears in a table in the first edition of his celebrated *Anthropologie du projet* (Paris: Presses Universitaires de France, 1990), 68. It should be noted that his reflection on the architectural project, although it was part of his doctoral thesis, had been rejected by the scientific publisher PUF in 1990 and was only included in the second edition in 1995.
3. Jean-Pierre Chupin, 'Dans l'univers des thèses, un compas théorique', in *Les Cahiers de la recherche architecturale et urbaine* 30 – 31 (Trajectoires doctorales 2) (2014): 23–40. See also: Jean-Pierre Chupin, 'Vertiges et prodiges du contresens (Le projet comme traduction)' in *Recherche par le projet / Research by design*, ed. Flora Pescador and Vicente Miravalle (Lyon: ENSA Lyon + ULPGC, 2015), 28–36.
4. Jean-Pierre Chupin, *Analogical Thinking in Architecture: Connecting Design and Theory in the Built Environment* (London: Bloomsbury, 2023).
5. On this subject, one of the last outstanding anthologies that clearly intends to make a clean sweep of a history of architectural theory from a critical standpoint is *The Sage Handbook of Architectural Theory*, published in 2012 under the direction of Greig Crysler, Stephen Cairns and Hilde Heynen, to consider emerging issues of sustainability, ethics, of heritage and digital technologies that require a redesign of architectural theory.
6. The bibliography on this subject continues to grow but I can refer to the essay by Antoine Picon which situates the question in a contemporary context: Antoine Picon, *Ornament: The Politics of Architecture and Subjectivity* (London: Wiley, 2013).
7. Manfredo Tafuri, *Teorie e storia dell'architettura* (Bari: Laterza, 1968); Alberto Perez-Gomez, *Architecture and the Crisis of Modern Science* (Cambridge, MA: MIT Press, 1985).
8. On the limits of any theoretical models, particularly in architectural theory, see Chapters 1 (Reflecting on Design Thinking) and 4 (From Linguistic Metaphors to Critical Analogies) in Chupin, *Analogical Thinking in Architecture*.
9. Cyrille Simonnet and I have introduced Frampton's theories of tectonic culture in French in Jean-Pierre Chupin and Cyrille Simonnet, eds., *Le projet tectonique (avec une introduction de Kenneth Frampton)* (Gollion: Infolio, 2005).
10. See my chapter on Aldo Rossi's theory of the *Città Analoga*, 'In the Labyrinth of Analogous Cities', in Chupin, *Analogical Thinking in Architecture*, 101–30.
11. Peter Eisenman, *The Formal Basis of Modern Architecture* (Zurich: Lars Müller Publishers, 2006).
12. Ibid.
13. Ibid.; my emphasis.
14. Werner Oechslin, 'Out of History? Peter Eisenman's Formal Basis of Modern Architecture', trans. Christoph Shläppi, in *Peter Eisenman, Die Formale Grundlegung der Modernen Architektur* (Zürich: GTA / Gebr. Mann, 2005), 11–60.

Biography

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