

On the Open Style of Architectural Reasoning

Konstantinos Apostolidis

In the field of thermodynamics, a system is defined as an assemblage of 'devices containing a quantity of matter that is being studied'.¹ A control volume contains the matter and the devices inside a control surface that separates the system from its surroundings.² A thermodynamical system can be isolated (when no mass, heat, or work crosses the boundary of the system), closed (when heat and work can cross the control surface but the mass is fixed), or open (allowing the flows of both energy and mass).³

These three kinds of thermodynamical systems do not represent three diverse material ontologies, but different scientific methods of inquiry towards the growth of knowledge – a given material structure is studied through different methods and apparatuses, which may result in different interpretations of its nature. Likewise, the methodologies used to study different forms of scientific and institutional research determine our perception of architecture. On these grounds it becomes clear that the use of different theories, methods, and apparatuses in architectural research results in equally different understandings of what open architecture could be.

The reference to thermodynamics above stresses the fact that, even in the hard sciences, the way matter is examined determines the very nature of that matter. Likewise, openness can be grasped as a question of method rather than as an objective ontological category. From this perspective, we can achieve a better understanding of openness in architecture by focusing on the theoretical devices used to appraise our discourse on the subject. By shifting our attention from architecture to the

methods we use to analyse it, openness stops being a property common to certain objects and becomes a potentiality that can appear in a broader spectrum of architectures. Granted that theories and methodologies have a life of their own, they can evolve beyond concrete objects and eventually alter our perception of architecture, liberating architectural practice from rigid interpretations and fixed characterisations that are often unable to acknowledge and manifest architecture's potential.

My argument follows Karl Popper's distinction between two types of knowledge: individuals' subjective knowledge and knowledge situated in an autonomous 'third world' that comprises theoretical systems, hypotheses, problems, journals, libraries, and critical arguments.⁴ Based on this distinction, we will examine if there is anything to say about the openness of architecture's 'third world'.

The styles project

My hypothesis is rather simple: throughout history different ideas regarding architecture have shared a Foucauldian a priori basis.⁵ Michel Foucault's archaeology points out that in any given society the configurations of knowledge, practice and thought owe their existence to an a priori order, which he calls episteme. These configurations have changed as history unfolds. Ideas, sciences and rationalities have emerged and vanished, since 'the mode of being of things, and of the order that divided them up before presenting them to the understanding, was profoundly altered'.⁶ Foucault thus states that even truth itself is a product of these a priori orders:

“Truth” is linked in a circular relation with systems of power which produce and sustain it, and to effects of power which it induces and which extend it. A “regime of truth”.⁷

It seems appropriate to assume that there is an epistemological field within which the idea of open architecture becomes possible prior to its implementation. This proposition requires that we come up with clear-cut concepts that allow us to render the function of those methods that make openness in architecture possible.

After falling under Foucault’s spell (especially regarding transformations of truth in Western traditions), and influenced by Paul Feyerabend’s *Against Method*, the philosopher of science Ian Hacking drew on A.C. Crombie’s concept of ‘styles of scientific thinking’.⁸ Based on this idea, Hacking claims that ‘different methods of inquiry used in the sciences have their own historical trajectories, and have moulded scientific reason and even what counts as true’.⁹ His argument is that societies operate according to ‘styles of reasoning’, understood as strategies that have been developed by our species to understand and alter the world.

Styles of reasoning, eminently public, are part of what we need to understand what we call objectivity. This is not because styles are objective (i.e., we have found the best impartial ways to get at the truth), but because they have settled what it is to be objective (truths of certain sorts are just what we obtain by conducting certain sorts of investigations, answering to certain standards).¹⁰

The ‘styles project’ developed in Hacking’s work questions whether reason authenticates itself by determining what is true or false.¹¹ Societies, he notes, don’t actually have a good reason to use several styles of inquiry. They simply use those styles because they are taken for standards of good reason and establish criteria for truthfulness.¹² Specifically, three points from Hacking’s ‘styles of reasoning’ appear as pivotal for implementing his

ideas in architecture. These are: style, truth and reason.

A style of reasoning is an analytical tool, comparable to the well-known Kuhnian paradigm, in the sense that it pursues the emergence of new modes of reasoning in the history of knowledge. Generally, styles of reasoning are concerned less with the content of science than with its methods. This is why Hacking notes that styles of reasoning are more in line with Foucault’s episteme than with other conceptualisations of style in the history of knowledge.¹³ Although Hacking admits that alternative notions such as ‘ways of finding out (how to)’ seem preferable to style, it is also clear that the term allows us to establish a distinct connection with art and architecture.¹⁴ Concretely, style allows us to recognise that there is a paradoxical social nature in the originality and the individuality of both art and reasoning.

Reference to style is frequent in architectural discussions and usually refers to the distinctive formal virtues and qualities that characterise certain buildings and projects. In his *Modern Architecture: a Critical History*, Kenneth Frampton describes the international style as ‘a general rule towards the hypothetical flexibility of the free plan, and to this end it preferred skeleton frame construction to masonry’.¹⁵ He then uses a series of projects to illustrate the way the international style and its variations became actualised by the many different compositions that share a series of distinct and innovative architectural positions. Regarding Brazilian architects’ modifications of the international style, for example, he notes how Oscar Niemeyer’s Casino at Pampulha ‘reinterprets the Corbusian notion of *promenade architecturale* in a spatial composition of remarkable balance and vivacity’.¹⁶ What is evident here is that style is used to distinguish a population of architectural projects that share and develop certain common features. Ultimately, the international style transcends individual architects and is instead contained in the particular methods and decisions of an architectural synthesis that

continues to operate and evolve beyond the authority of any single architect.

In his *Principles of Art History* Heinrich Wölfflin had already noted how the notion of style cannot be assigned to separate individuals, but characterises a population of works of art.

The course of the development of art (...) cannot simply be reduced to a series of separate points. Individuals fall into larger groups. Botticelli and Lorenzo di Credi, for all their differences, have still, as Florentines, a certain resemblance when compared with any Venetian.¹⁷

Wölfflin suggests that in the development of any art form one can distinguish different universal representational forms that have been used in different manners by the various artists of an epoch. These forms constitute the abovementioned a priori for a particular group of artists. The art each of them produced in a particular epoch remains bound to these forms. Evidently, Wölfflin did not care about 'the beauty of Leonardo but (about) the element in which that beauty became manifest'.¹⁸

The origins of the word style can be traced back to literature. The Latin *stilus* refers to the pen as the quintessential tool for writing, and eventually came to be used figuratively as something that characterises an elegant writer.¹⁹ Until the dawn of the twentieth century style was mostly used as a means of periodisation, identification and analysis of works of art and architecture, but after Wölfflin and the appearance of abstract styles it became a generating principle – the inner creative force of a period.²⁰

Philosopher Arnold Davidson developed his own idea of styles of reasoning, based on Wölfflin's conception of style. 'A style of reasoning is primarily concerned not with the ideas of individuals, but rather with a set of concepts and the way that they fit together.'²¹ Davidson's work discusses the emergence of a new style of reasoning in psychiatry since around 1870, which has turned homosexuality,

masochism, sadism and fetishism into central topics of sexuality. Before the nineteenth century, he argues, the concept of perversion (and the concomitant figure of the pervert) did not exist. A whole new style of reasoning about psychiatry was necessary for these notions to appear.²²

The second point from Hacking's 'styles of reasoning' I will draw upon concerns truth. According to Hacking, 'truth has no history, while truthfulness – the possibility of telling the truth about a specific topic – does have a history'.²³ He explicitly refers to Bernard Williams's book *Truth and Truthfulness*, which argues that Thucydides's historiographic style introduced a fundamental change in the way we conceive of history, by adding new criteria for telling the truth about the past. As the first scientific historian, Thucydides produced a conceptual shift in what it means to tell the truth regarding a historical account.²⁴ To say that a statement about an event is historically true is to imply that it is determinately located in the temporal structure.²⁵ He goes on to say that

Thucydides imposed a new conception of the past, by insisting that people should extend to the remoter past a practice they already had in relation to the immediate past, of treating what was said about it as, seriously, true or false.²⁶

A fundamental characteristic of any myth is that it is atemporal. Thucydides confronted this interpretation by imposing a specific chronological system on his narration of the Peloponnesian war. His main problem was that the Athenian and Spartan calendars were different, so he invented his own based on the years a war lasted and then subdivided them into summers and winters. True, he could not point at exact dates, but his history remained structured around a series of events. Additionally, Thucydides's historiographical method consisted of recounting public speeches, such as Pericles's famous funeral oration. While Homer depicted the great heroic achievements of the past as myths that were meant

to entertain, warn and remind, Thucydides looked at the past as a means to confirm his views of the present. He was not interested in great events per se, but rather in the political and societal causes of those events. Nor did he strive to amuse the reader. His recording of political speeches was meant to help the reader understand the deeper motives of rival cities and their politicians.

As we can see, truth in history emerged as an outcome of historiographic methods. Similarly, Hacking notices that when the notion of 'proof' appeared in geometry, it also became the gold standard for truth in the field of mathematics.²⁷ The point here is that there are different criteria of truthfulness in different areas of thought, and that these criteria are determined by the ways of thinking and doing that are intrinsic to each area.

This assertion leads us to the third and last among Hacking's points that I want to address: styles of reasoning are not referred to any superior authority, nor do they answer to truth-prescribing canons. Their only standard is that they work.²⁸ But styles of reasoning are not to be confused with styles of argumentation.

By using the term 'reasoning' Hacking initially aimed to replace Combré's 'thinking' with a notion that recognises the role of both processes of thinking and doing in the pursuit of knowledge. While it might seem that this understanding equates logic to scientific reason, Hacking made a clear distinction between both terms. For him logic corresponds to Aristotle's form of argumentation, which was formulated in syllogisms. Scientific reason, on the other hand, is made up of experimental explorations together with hypothetical modelling.²⁹ These two different processes are significantly creative, in the sense that they are able to overcome mere argumentation as means to defend or refute a scientific theory. In fact, in the sciences certain phenomena only appear within experimental processes carried out with distinct apparatuses.³⁰ Reasoning is not a priori. It is conceived instead as part of a practical, collaborative process among the different practices

(such as speculation, calculation and experimentation) that come together during scientific research.³¹

Two 'third world' architectural studies can help us understand the growth of knowledge in architecture further. Both studies express independent views regarding architectural development, but they both acknowledge (albeit to different degrees) that architectural design is openly related to a cultural environment that inevitably defines architectural possibility. It is in this sense that Stanford Anderson's understanding of architectural design as a series of research programmes, and Michael Hays's idea of critical architecture, establish methodologies and illustrate styles of reasoning that issue in truth claims for distinct architectures.

The notion of style summarises the common ground between the various concepts and ideas that determine a set of architectures. As Nelson Goodman has noted, the qualities that define a particular style can only be revealed by juxtaposing different works.³² In order to approach an open style of architectural reasoning we must examine more than one example of architectural reasoning. We will therefore try to diagnose the statements and ideas that are common to the work of Anderson and Hays, and thus portray an open style of architectural reasoning.

Stanford Anderson's architectural research programmes

It has been suggested that Stanford Anderson's implementation of Imre Lakatos's *Methodology of Scientific Research Programmes* overcomes notable limitations in traditional architectural historiography by offering a nuanced way of telling the truth about modernist architecture.³³ In fact, Anderson's reference to Lakatosian reasoning shapes a discrete image of architecture, whose type and degree of openness are framed by method.

Anderson claims that 'the architect's problem is not how to find his knowledge positively but how to make his knowledge grow'.³⁴ To that effect he looks into the philosophy of science and applies

Lakatos's theory of knowledge to architecture. Lakatos proposed a methodology to explain the growth of scientific knowledge as a refutation of Thomas Kuhn's theses, according to which knowledge changes by irrational 'conversions' from one paradigm to another.³⁵ Although Lakatos seemed to worry about rationalism in science, his ultimate concern was truth itself: 'one cannot simply water down the ideal of proven truth.'³⁶ Aiming to develop scientific truth and to appraise the growth of knowledge, his method is no different from historiography. Lakatos's methodology for the philosophy of science certainly can't be exhausted and properly presented within the limits of this article, so let us focus on two aspects of his style of reasoning, which appear to be instrumental to our argument.

First, Lakatos replaced the single scientific theory or hypothesis as 'the typical descriptive unit of great achievements' with the 'research programme' – a historical notion that encompasses a continuum of theories which might last for centuries.³⁷ Theories last as long as they can continue making novel predictions compared to their rivals; a theory is 'falsified when it is superseded by a theory with higher corroborated content'.³⁸ This is how research programmes evolve. As long as new theories can predict new facts, the research programme they are part of generates progressive 'problem shifts'. Otherwise, that theory degenerates. Lakatos does not demarcate between scientific and non-scientific theories. Instead he makes a distinction between progressive and degenerating research programmes, with particular stress on the important relationship that exists between theories in the quest for knowledge:

If falsification depends on the emergence of better theories, on the invention of theories which anticipate new facts, then falsification is not simply a relation between a theory and the empirical basis, but a multiple relation between competing theories, the original "empirical basis", and the empirical growth resulting from the competition. Falsification can thus be said to have a "historical character".³⁹

Lakatos further describes a complex correlation between competing theories during the development of research programmes. Specifically, he writes that the 'proliferation of theories' drive the program forward and not the empirical anomalies which trigger counterexamples.⁴⁰ In this he agrees with Feyerabend, who has argued that

proliferation is required both in order to strengthen our tests and in order to bring to light refuting facts that would otherwise remain inaccessible. The progress of science is unthinkable without it.⁴¹

The previous demarcations clearly shape an unrestrained form of scientific growth that is grounded on the complementary relationships that different theories establish with each other. The typical unit of scientific achievement is no longer a singular, undivided entity, but an assemblage of theories that is intrinsically open to constant challenge via its immanent components – the different theories within the programme. It becomes clear that the social nature of science is essential for the growth of knowledge. The parallel work of different scientists and institutions who produce series of theories is pivotal to the process that drives knowledge forward.

Anderson assumed that the work of an architect can also be understood as a research programme, within which works of architecture are not isolated, but rather parts of a continuum or series. From this perspective, part of Le Corbusier's work grew as a series of fragmentary conceptual architectural research programmes, such as the *promenade architecturale* (apparent in Le Corbusier's drawings of the Acropolis) and his *Maison Dom-Ino*.⁴² Anderson also proposed a distinction between conceptual programmes (abstract architectural concepts) and artefactual programmes (physical built architecture – such as the *Maison La Roche*), which supposedly operated in parallel as the work of the architect evolved.⁴³

Although the typical division between theory and practice is possibly misleading, this

methodological decision allowed Anderson to illuminate the reciprocal dynamics that underlie architectural form and transform the work of the architect from within. Maison Dom-Ino is not seen as a still image, but rather as perpetually incomplete and open to continuous change:

The Maison Dom-Ino bore meanings in the mid-1920s which it could not have possessed before. In a full exposition I would like to continue this story down to the Carpenter Center for the Visual Arts at Harvard. By that time Le Corbusier's understanding of architecture and cognition was sufficiently different that a much fuller exploitation of the freedoms of the Five Points was necessary and, with that, the acceptance of another reading of the Maison Dom-Ino.⁴⁴

The possibility of an open architecture emerges when works of architecture have been put in a historical sequence and have been examined in terms of their reciprocal relations. It is telling that Anderson remains focused on the work of a single architect, even after new hypotheses have emerged within the research programme it is part of. Architectural form becomes a form of research in its own right, which is open to new questions and modifications by the architect who experiments with and develops the work.

In other words, Anderson believed that this kind of open architecture could be observed in a limited number of works within the research programme carried out by a single architect. Although Lakatos's style of reasoning presumed that it is the proliferation of rival theories that drives science forward, Anderson studied and presented Le Corbusier's work as isolated from other architectures. Years later, Anderson seems to have become aware that his interpretation is actually incompatible with Feyerabend's 'proliferation principle'.⁴⁵ Thus he notes that

Lakatos, concerned with science, speaks of rival research programs, and looks to those occasions where one program defeats another. Looking to architecture, for the word "rival" I would substitute "competing," as it would be more common that multiple programs can thrive.⁴⁶

In that respect, Jorge Mejía Hernández has studied Anderson's shortcomings regarding broader architecture research programmes.⁴⁷ Rather than different fragmented research programmes within the work of a single architect, different hypotheses can be identified within the work of Le Corbusier, while still recognising that 'knowledge is the result of the interrelations or transactions that are established between several architectures that compete and collaborate with each other for it, as Lakatos noted regarding the growth of knowledge in science.'⁴⁸ This recent interpretation describes a free-for-all development of the architectural discipline, which is still derived from Lakatos and Feyerabend, but which Anderson does not fully follow.

Historiographical style

The second aspect of Lakatos's methodology that I want to address marks a different understanding of openness. It is truth itself that is open. This is why history can be reconstructed, and why the growth of knowledge can be made visible if one looks back through the lens of the history of science. But Lakatos's methodology is retrospective, and therefore cannot help us foresee the future. It is only possible to tell whether a research programme is progressive or not after the fact.⁴⁹

The methodology of scientific research programmes constitutes, like any other methodology, a historiographical research programme. The historian who accepts this methodology as a guide will look in history for rival research programmes, for progressive and degenerating problemshifts.⁵⁰

Rather than qualifying the style of his historiography, it is crucial to assert that Lakatos's style of reasoning is historiographical. Like Thucydides, Lakatos introduced criteria for telling the truth about the past of science and named that process a 'rational reconstruction of history'.⁵¹ The history of science is constantly enriched via perpetual reconstructions.

Progress in the theory of scientific rationality is marked by discoveries of novel historical facts, by the reconstruction of a growing bulk of value impregnated history as rational. In other words, the theory of scientific rationality progresses if it constitutes a "progressive" historiographical research programme.⁵²

Stanford Anderson invokes these rational reconstructions of history by presenting Le Corbusier's research programme as one of them.⁵³ His argument even reproduces Lakatos's confusing distinction between the 'internal' (scientific) and 'external' (cultural) histories of a research programme; where the 'internal history provides the rational explanation of the growth of objective knowledge'.⁵⁴ As Lakatos notes earlier, 'in constructing internal history the historian will be highly selective: he will omit everything that is irrational in the light of his rationality theory'.⁵⁵ It is not entirely clear what relevance external history can have in Anderson's interpretation – probably owing to Lakatos's vague assertion that 'historians and philosophers of science must make the best of the critical interplay between internal and external factors'.⁵⁶

For Lakatos, negotiations between internal and external factors play their part in the development of science. Following this logic, the internal history offers the basis for the construction of a rational history, and therefore endorses the supposedly rational practices that belong exclusively to the field of science. Similarly, in architecture Anderson understands the interplay between rational

decisions and irrational environments as part of professional practice: 'Especially in a field like architecture, it is precisely because some material matters must be assigned to the program and its internal history that I prefer to speak of the *quasi-autonomy* rather than the autonomy of architecture'.⁵⁷

Anderson invokes Lakatos to reflect on the autonomy of the architectural discipline, but also acknowledges the different ways in which architecture remains open to its environment.⁵⁸ This allows him to ensure that history can be reconstructed rationally while architectural historiography can remain open, in the sense that truth claims regarding the growth of architectural knowledge can change according to the historian's methods.

Rather than using the idea of a rational reconstruction of history to tell a transformed truth about the past of architecture, Anderson presumes that Le Corbusier was fully aware of the internal history of his work, and was therefore able to reconstruct it rationally.⁵⁹ While architecture is seen here as a discipline with its own rationales and methods of growth, it is the historian who must bring before us the rational architectural choices of the architect and thus reveal to us progress within a research programme. It becomes evident that Anderson mobilised Lakatos' methodology as a war machine, in order to make truth claims about architecture.

So far we have considered two distinct statements about openness in architecture derived from Lakatos's methodology of scientific research programmes. The first is that knowledge results from the proliferation of architectures within one or more research programmes. The second is that architectural history remains open to new problem shifts and must therefore be constantly and perpetually reconstructed. These statements emerge from (and make sense within) the system of concepts that shaped Lakatos's reasoning. The idea of an open architecture has remained within a Lakatosian universe, which still implies a definite understandings of openness, such as the two

noted above. A truly open style of reasoning, on the other hand, would require that we fit together concepts that address openness in diverse studies on architecture.

Lakatos attempted to rewrite history based on a series of progressive incidents in the history of science. Concretely, he was determined to refute Kuhn's proposition that knowledge changes by irrational reconstructions, shifting from one paradigm to another.⁶⁰ According to Hacking, Lakatos's distinction between what is proper for the historian to choose as rational, and what is not proper, is only grounded on his style of reasoning, which is itself historically framed. Given this understanding, we are left with a pressing question: can we make statements about architecture without committing to prearranged axioms in our examinations of architecture?

Michael Hays's critical architecture

As we have seen, open architecture is a matter of representation, determined by theoretical mechanisms of appraisal. Anderson's implementation of Lakatos's historiographical style within the field of architecture cultivated two distinct conceptions of open architecture. Nonetheless, Hacking's comments on Lakatos quoted above hint at a different approach towards openness in architecture.

In his essay 'Critical Architecture: Between Culture and Form' Michael Hays understands open architecture as the capacity of the architectural object to be free from any external cultural and formal order – that is, to be intrinsically open.⁶¹ To elaborate on this claim let us draw again on Hacking's philosophy of science:

Maybe there are two quite distinct mythical origins of the idea of "reality". One is the reality of representation, the other, the idea of what affects us and what we can affect ... We shall count as real what we can use to intervene in the world to affect something else, or what the world can use to affect us.⁶²

Hacking reflected on Francis Bacon, who 'taught that not only must we observe nature in the raw, but that we must also "twist the lion's tail", that is, manipulate our world in order to learn its secrets.'⁶³ According to this interpretation, the evaluation of science does not need external methods of appraisal. Instead, the experimental method has a life of its own and it is what drives knowledge forward.

Michael Hays made a similar claim about architecture using a series of works by Mies van der Rohe as 'examples of a critical architecture that claims for itself a place between the efficient representation of preexisting cultural values and the wholly detached autonomy of an abstract formal system.'⁶⁴ Hays's plea for a critical architecture can be comprehended as the possibility of an architecture that remains open to both external cultural authority and internal logic; adopting an in-between position vis-à-vis well-known architectural discussions. On the one hand there are those who declare that architecture and its development are to be understood solely as cultural epiphenomena, or products. On the other are those who proclaim the autonomy of architectural form. Hays situates Mies van der Rohe's work in between, and is therefore able to discuss the development of architecture in relation to its environment without imposing on it any fixed methodological rule or predetermined interpretation. For Hays architecture is not a built representation of reality. Architecture does not manipulate reality, and cannot be said to be alienated from it either.

Hays places the early work of Mies van der Rohe against the metropolitan dilemmas faced by many intellectuals at the dawn of the twentieth century. His early skyscraper projects stand between individuals' despair within the setting of the new metropolitan life, as expressed by Munch and Kafka, and the 'unreasoned order' of the metropolis, acknowledged by Dadaism.⁶⁵ Departing from the 1919–1922 skyscraper studies, Hays argues that these projects cannot be reduced to some compositional formal logic. Such an order would be exhausted by their distorted glass surfaces, which

at the same time produce various refractions and reflections of the world, and therefore construct different and distorted images of metropolitan life. In Hays's view, Mies's skyscrapers deliver a critical interplay between architectural form and its cultural environment. Although they appear as distinct objects within their built environment, they are dependent upon their context and are 'open to the chance and uncertainty of life in the metropolis'.⁶⁶

Hays describes Mies's 1929 German Pavilion in Barcelona as an assemblage without compositional order, and therefore free from any transcendental form of authority. 'There is no prescribed logic of passage; the composition is neither a relational hierarchy of component parts nor a series of identical units repeated in a potentially endless chain.'⁶⁷ Instead, the pavilion is presented as the temporal experience of its material components:

Mies has constructed a labyrinth that denies us access to the ideal moment of organization lying beyond the actual experience of this montage of contradictory, perceptual facts. The work itself is an event with temporal duration, whose actual existence is continually being produced.⁶⁸

This moving image of the pavilion is not to be reduced to single rule, but rather presents us with a collage of different fragments of experience. Hays does not try to identify a formal order to describe this architecture, but rather presents Mies as a sort of film editor, in charge of the montage of the different parts and materials that make up the building. 'Architectural reality takes its place alongside the real world, explicitly sharing temporal and spatial conditions of that world, but obstructing their absolute authority with an alternative of material, technical, and theoretical precision.'⁶⁹ The pavilion adopts the qualities of a film that is projected in a three-dimensional reality.

We can see how Mies van der Rohe adopts the role of Hacking's experimenter. He does not manipulate reality in the laboratory, though. As a filmmaker,

he offers us different, manipulated realities, parallel to those that already exist. Scientific experimentation does not merely explain phenomena. It intervenes in reality and creates new regularities. Architecture operates at the level of cultural reality. According to Hays, Mies's architecture must be understood as part of that reality as much as it can also generate alternative worlds, like a glitch in the matrix.

Common grounds

By analysing several projects Hays sees how 'Mies's architectural program was a persistent rewriting of a few themes. Mies rationalised his initial choice of themes by demonstrating the range of their applicability. He reused them in changing circumstances; he modified and refined them over time.'⁷⁰ Notably, a set of architectural propositions appeared and evolved many times in his work, suggesting that openness operates at the epistemological level of architecture, where it explains the growth of knowledge within the programme. On these grounds we can acknowledge a first feature of open architecture that is common to both Anderson's and Hays's reasoning: internal proliferation is crucial for an architecture programme.

Besides proliferation, repetition also reveals a way of accumulating knowledge based on a programme's own authority.⁷¹ In Mies's work Hays recognises 'an ability to initiate or develop cultural knowledge... alternative to the dominant culture.'⁷² In other words, Hays sees Mies's architecture as alienated and still working as a mechanism of culture. While Anderson thought that the external history of a programme is only complementary to its internal (that is, purely architectural) history, Hays argues that rather than merely being affected by it, architecture's interaction with culture is meant to distort it. But how can this distortion of culture become part of architectural knowledge?

The answer is not obvious. Perhaps we could find it in Lakatos's rational reconstructions of history? As we've seen, Hays's reasoning is

grounded on the view that architecture can shape the conditions of its own appraisal. 'Each architectural object places restraints upon interpretation ... because contingent and worldly circumstances exist at the same level of surface particularity as the object itself.'⁷³ Accordingly, one would need to come up with a critical historiography focused on these 'intrinsic conditions through which architecture is made possible.'⁷⁴ That is exactly what Hays does when he reconstructs Mies's work as an alternative truth, leading us to a second shared statement by both Anderson and Hays: historiography is fundamental to an open style of architectural reasoning. Setting aside individual methodological differences, both authors acknowledge (to different degrees) that history is not a given. For architectural knowledge to grow, history must be reconstructed.

Finally, Hays insists on the absence of a compositional authority in the projects he analyses. For him architecture operates free from any predetermined formal order; it is open only to its own immanent properties. Consequently he does not speak of proliferation between different architectures, like Anderson, but presumes instead that Mies's programme was independent from any formal frame of reference. He rejects, for instance, the suggestion that the Barcelona Pavilion is 'the most immaculate transcription of the modern spatial conception' – in the sense that it drew on ideas from Wright, Suprematism, Loos, Berlage, Schinkel and De Stijl.⁷⁵ Such a statement would depict the pavilion as a mere conceptual construct rather than a concrete material object.

Beyond these external influences, for Hays the development of Mies's programme can be traced back to a repetitive reconstruction of particular themes and concepts. Actually, he is not too concerned with descriptions that portray the pavilion as a mere conceptual scheme, but rather with the external origins and the authoritative nature of such a scheme. While both Hays and Anderson presuppose that there is indeed a relationship between architecture and culture underlying the growth of

architecture knowledge, their understanding of that relation differs. At the formal level of architecture, for example, each offers a different explanation of the relationships that exist between a particular architecture and a population of different architectures. As we have seen, Hays considers Mies's work in isolation from that of other architects.

This notable discrepancy between the two authors does not affect our attempt to approach an open style of architectural reasoning. As defined above, styles of reasoning do not answer to any authority and therefore do not presuppose uniformity of criteria. Open architecture is not to be understood as opposed to closed architecture, but rather as a spectrum of possibilities, or different degrees of openness. Of course, an open style of architectural reasoning cannot be exhausted by studying two speculations on architecture. On the contrary, it must perform as a lasting research programme in its own right, perpetually juxtaposing and embodying shared statements from different individual understandings of architecture with their own forms and degrees of openness.

Unstable modernisms

Based on a brief examination of modernist architecture's open nature, Stanford Anderson and Michael Hays articulated their approaches to the work of two of modernism's central figures. Like them, Kenneth Frampton also acknowledged associations between different modernist architectures and discourses. For him, the *promenade architecturale* can be seen as a shared and evolving investigation that links the Athenian Acropolis with the work of Le Corbusier and Oscar Niemeyer, among others. Would this mean that an open style of architectural reasoning automatically implies modernist architecture is also open? We could conclude in the affirmative, especially if we consider that Anderson and Hays did not just narrate the great achievements of their heroes in Homer's terms, but instead constructed new images and thoughts and eventually came up with a Thucydidean reconstruction of the past.⁷⁶

The creative force of such an open style of architectural reasoning resulted in the demarcation that includes well-known modernist architectures (that have actually been built), as well as potential, theoretical modernisms that remain latent. The latter only anticipate the emergence, via different understandings, of the former. We are thus faced with a fundamentally unstable, yet productive image of many juxtaposed modernisms which together form an open body of knowledge.

Notes

1. Richard Sonntag, Claus Borgnakke and Gordon J. Van Wylen, *Fundamentals of Thermodynamics* (New York: Wiley, 2003), 14.
2. Ibid.
3. Ibid., 15.
4. Karl Popper, 'Epistemology without a knowing subject', *Studies in Logic and the Foundations of Mathematics* 52 (1968): 333–73. In Popper's view, 'there is a physical world and a world of states of consciousness, and that these two interact.' Ibid., 334. He argues that 'traditional epistemology with its concentration on the second world, or on knowledge in the subjective sense, is irrelevant to the study of scientific knowledge...what is relevant for epistemology is the study of scientific problems and problem situations, of scientific conjectures (which I take as merely another word for scientific hypotheses or theories), of scientific discussions, of critical arguments, and of the role played by evidence in arguments ; and therefore of scientific journals and books, and of experiments and their evaluation in scientific arguments; or, in brief: that the study of a largely autonomous third world of objective knowledge is of decisive importance for epistemology.' Ibid., 337.
5. Michel Foucault, *The Order of Things*, trans. Alan Sheridan (London and New York: Routledge, 2005), xxiii.
6. Ibid., xxiv.
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Biography

Konstantinos Apostolidis obtained his diploma as an architect from Democritus University of Thrace in 2013, and the degree of Master of Science in Architecture and the Building Sciences (cum laude), from TU Delft in 2016. Since 2018 he is a PhD candidate at the National Technical University of Athens. He works as an architect and has won several prizes in architectural competitions.

