A Black Box? Architecture and its Epistemes

Tom Avermaete

It was probably the British critic Reyner Banham who most adequately qualified the general status of architectural knowledge, when he wrote in his posthumously published essay ‘A Black Box: The Secret Profession of Architecture’: ‘I propose to treat the architectural mode or presence as a classic ‘black box’, recognized by its output though unknown in its contents’.1 Banham correctly identified that architectural artefacts, our buildings and cities, are intensively discussed and criticized but that the underpinning design knowledge is hardly ever scrutinized. He questioned in his essay what ‘architects uniquely do’ and applauded attempts as Christopher Alexander’s pattern language, as an ‘approximate description of what architects actually do when they do architecture’.2

Banham’s essay was an attempt to identify the value of the knowledge that is generated in the very act of architectural design, but he simultaneously criticized how architecture distanced itself from all other knowledge fields in society because of its closed and obscure character. The English critic lamented how architects increasingly distinguished themselves from other professional groups in society, by keeping the basis and logics of their profession secret. Retrospectively, Banham’s essay reads as a populist critique that urged the opening up of the field of architectural design, so as to initiate more exchange with society.

However, Banham’s essay also prompts a different consideration; it invites us to reflect upon the content of the ‘black box’. It prompts us to contemplate the character, the modus operandi and the role of architectural design knowledge. This is not an easy task. First, this is because – as Banham rightly noted – architects have intentionally kept the knowledge
base of their profession vague and secret, often in an attempt to discriminate the profession of architecture from other professions such as that of the engineer. Second, architecture knowledge seems difficult to unravel because it is articulated through a unique entanglement of tools, processes and things.

**Beyond innocence: the existence of epistemes**

In this essay, I want to pay special attention to one of the initial moments in the design process: the analysis of the territorial or urban condition in which the architect will be intervening. Though many architects maintain that this is an exploratory and open phase in the design process, I would argue that the contrary is true. This analysis, that it is just any other moment in the design process, is all but innocent. Specific ‘frames of value and thought’ drive the logos and praxis of the architect during the initial analysis. Sometimes these thought frames are very explicit and articulated loudly in texts. At other times, they remain completely silent and hidden. The French philosopher Michel Foucault has called these thought frames ‘epistemes’. He writes:

> I would define the episteme retrospectively as the strategic apparatus [...] The episteme is the ‘apparatus’ which makes possible the separation, not of the true from the false, but of what may from what may not be characterized as scientific.³

While Foucault was writing about science, it is possible to draw parallels with our own field. In architecture too, we can discover several of these epistemes that act as comprehensive frameworks for the analysis, understanding and conception of the built environment. Specific to architectural culture is that these epistemes are not consecutive or mutually exclusive. In other words, in architecture there is never a single dominant episteme. Quite the contrary. As the English critic Charles Jencks illustrates in his famous chart of the developments of twentieth-century architecture, in our field, several epistemes seem to function at once. In architectural culture, epistemes are simultaneous and complementary.
Time and time again, these epistemes are activated by designers in the analysis of the existing built environment, as well as for the design of new buildings and neighbourhoods. However, very often this activation is not explicitly reflected upon. Most often, epistemes remain tacit in architectural culture; they are considered as recognized, self-evident, or – in some cases – even as ‘given’ or ‘engrained’ in the built environment. This essay is an attempt to uncover some of these epistemes. It is an attempt to lift the lid of the ‘black box’ and raise awareness about some of the epistemes that have been around for a long time in architecture culture and have informed architectural thinking and practice in the past two centuries.

**ty·pol·ogy (tī pālˈə jē): noun. the study of types**

A first episteme that we can discover in architectural culture can be qualified as typology and relates to the study of types. In general terms, a *type* is usually understood as sharing characteristics with other people or things, and as such, forming an identifiable group within a larger set. In architecture, the idea of type has its own particular history and has played a substantial role in the understanding of the built environment.

The nineteenth-century French architect and educator Jean-Nicolas-Louis Durand was one of the first to conceive of the built environment in this specific way. In his renowned publication *Recueil et parallèle des édifices de tout genre anciens et modernes* of 1801, Durand illustrates what such an episteme could offer for the understanding of the built environment. One of his examples is churches from various time periods. Across geographies and scales, as well as material and stylistic differences, Durand illustrates that different churches can be understood as belonging to the same group of occurrences in the built environment (Fig. 1). For Durand, particular modern and Gothic churches belong to the same typology because they share characteristics of spatial disposition: the tripartite division, the axiality and the symmetry of the church.

In Durand’s view, type is defined as a combination of static and dynamic elements. While some of the main characteristics of the spatial disposition remain static, the materiality, style and size of the churches differ. The static parameters make a building part of a typological group.
Durand uses the architectural type both in diachronic and synchronic comparative studies. In other words, type allows Durand to see relationships between buildings that have been realized in different eras, but it also offers him the opportunity to make connections between different buildings that are simultaneously realized.

One of the most important characteristics of this typological approach to the built environment is that it focuses on built form. The tools of the architect are adjusted to this particular perspective. Hence, in the approach of Durand, the ground plan, cross-section and façade drawing—all understood as precise descriptions of built architectural form—play a paramount role. In Durand’s *Recueil et Parallèle des Édifices de Tout Genre*, precise plans, sections and façades of different buildings are juxtaposed. Together, they constitute the evidence for the existence of certain types within the built environment.

When Jean-Nicolas-Louis Durand was no longer analysing but instead designing new buildings, he acted within the same episteme. In his lectures for students at the Ecole Polytechnique in Paris, published as *Précis* in 1802, the design of a new museum does not start from a programmatic

---

Fig. 1. Gothic and modern churches. From Jean-Nicolas-Louis Durand, *Recueil et Parallèle des Édifices de Tout Genre Anciens et Modernes*, 1801.
analysis but rather from an ideal typological proposal. In other words, for Durand, architectural design is understood as the development of variations on a type. It should come as no surprise that the tools that informed the architectural analysis reappear. Indeed, we see again that the ground plan, cross-section and façade drawing are for Durand the main tools of architectural action, both analytical and projective.

Typology was not only an episteme of the nineteenth century but also gained great importance in the twentieth century. Around 1960, the lens of typology reappeared in the Italian architectural and urban debate on typo-morphology. A group of Italian architects reacted against the hypothesis of international style modernism, and made a plea to reconsider the principles and rationales of the historical urban tissue.

It was the Italian architect and urban planner Saverio Muratori who reinvented the episteme of typology in his *Studi Per Una Operante Storia Urbana Di Venezia* in 1959. In this comprehensive historical analysis of the city of Venice, Muratori investigates the evolution of the city through a very precise description of the built form of neighbourhoods and buildings. Using the instrument of the ground plan drawing, he illustrates how buildings and neighbourhoods have had the capacity to accommodate change throughout time, while maintaining some of their formal and spatial characteristics. For Muratori, the city is a material organism that changes and adapts constantly. His drawings illustrate, for instance, how the inner partitions of houses have transformed through the centuries to comply with changing dwelling patterns, while maintaining their outer presence and thus their formal and visual relation to the city. This led Muratori to the conclusion that there exists a type of the Venice house, which remains stable in terms of urban form (morphology) while offering the opportunity for change in its architecture (typology).

When Muratori moves to the realm of design, he works within the same episteme. His design for the neighbourhood Barene di San Giuliano (1959), a new project for the city of Venice, is not based on functional zoning, as would have been the case in a modernist plan, but rather on the clear description of the typology of urban perimeter blocks and the resulting morphology of the neighbourhood. Typology and morphology are pronounced with the tool of the ground plan drawing, which defines with great precision the intended built form. Other Italian architects such as Aldo Rossi and Carlo Aymonino worked in the same episteme from
the beginning of the 1960s, just as the French school of Versailles, with Panerai and Castex, would work in the footsteps of Muratori from the 1980s onwards.\textsuperscript{10}

\textbf{phe-nom-enol-ogy (fə nəmˈə nälˈə jē) noun. the philosophical study of phenomena, specif., such a study of perceptual experience}\textsuperscript{11}

A second episteme that has dominated architectural thinking and practice in the nineteenth and twentieth centuries is phenomenology. Indeed, architecture and the city have long been addressed as phenomena that are mainly about perception and experience. An early example of this episteme is to be found in the \textit{Histoire de l'Architecture} (1899) by French historian Auguste Choisy.\textsuperscript{12} In his study, Choisy analyses the Acropolis in Athens. However, this is not done from a morpho-typological viewpoint — precisely describing the built form of the Acropolis — but rather from the multiple perspectives from which the Acropolis is experienced (Fig. 2).

In contrast to Durand, the interest of Choisy is not so much the precise and actual built form, but rather the various ways in which the site and the buildings of the Acropolis are perceived by its visitors. This is clearly reflected in the tools that are employed. In a combination of movement diagrams (composed of a schematic plan with numbers indicating the different vantage points) and perspective drawings of the different built structures, Choisy attempts to convey the sequence of experiences of the visitor while gradually moving on the Acropolis. For Choisy, who was a professor at the \textit{École des Ponts et Chaussées} in Paris, architecture is first and foremost a landscape of perception.\textsuperscript{13}

In the twentieth century, the critical capacity of the episteme of phenomenology would be activated by the British architect Gordon Cullen in his well-known book \textit{The Concise Townscape} (1961).\textsuperscript{14} In this publication, he offered a critique of the rational and open model of modernist urban planning, but also made a strong plea to recuperate the urban experience of the historical city. In his attempt to describe the lost qualities of the historical city, Cullen did not choose a typo-morphological investigation, but rather a so-called ‘serial vision’ that combined the subsequent visual impressions of a pedestrian walking through a medieval city. In order
to transmit these various phenomena, *The Concise Townscape* employs specific tools; it combines a series of perspectives illustrating the subsequent views with a diagrammatic plan that illustrates the followed path. Together, the perspectives and plan depict the qualities of the town as a matter of movement and altering perception.

The American architect and urban designer Kevin Lynch chose the episteme of phenomenology to criticize the dense and unstructured character of the contemporary city. In his seminal publication *The Image of the City* (1960), Lynch maintained that an analysis of the urban condition should start from so-called ‘mental maps’.¹⁵ These maps were based on interviews that probed the perception and mental representation of the urban environment by citizens. Lynch held that these mental representations were defined by perceptual anchor points in the city: paths, edges, districts, nodes and landmarks. As a tool, Lynch used a combination of schematic maps with photography in order to capture the perception and mental mapping of citizens. Consequently, Lynch defined design

---

¹⁵

Fig. 2. Movement diagram and perspective of the Acropolis in Athens. From Auguste Choisy, *Histoire de l'Architecture*, 1899.
as intervening in the mental maps of citizens. In his view, the designer should work on paths, edges, districts, nodes and landmarks to make the city more legible.

**se·mi·ol·o·gy (sē’mē-ŏl’ə-jē) noun. the study of signs**

A third important episteme that is at work in the field of architecture is semiology. Approaching the built environment as a collection of signs that can be deciphered or even ‘read’ as a language is one of the epistemes that was rather short lived. Among the most explicit proponents of this episteme are Venturi and Scott Brown, in their study *Learning from Las Vegas* (1972). In their seminal analysis of Las Vegas, Venturi and Scott Brown do not read the urban condition as built form, nor as a perceptual landscape, but rather as an assembly of signs (Fig. 3). Their instruments are adjusted to this particular episteme. Venturi and Scott Brown use

---

**Fig. 3. 'Space, Scale, Speed, Symbol: A Comprehensive Analysis of Vast Spaces'. From Robert Venturi, Denise Scott Brown and Steven Izenour, *Learning from Las Vegas: The Forgotten Symbolism of Architectural Form*, 1972.**
diagrams to investigate the urban condition of Las Vegas from this semio-
logical perspective. The well-known distinction between a ‘duck’ and
‘decorated shed’ is a prime example of this approach, but their ‘Speed-
Scale-Symbol’ diagrams also illustrate how they maintain that changing
mobility requires changing signs in the urban territory.

In 1970, Venturi and Scott Brown used a similar method to investi-
gate the standardized company settlement of Levittown. This housing
estate was planned, built and sold by a single developer, the company
of Abraham Levitt and Sons. The Levitts devised a mass-production
scheme that allowed them to build inexpensive housing for the post-war
flood of veterans and their families. Levittown was characterized by uni-
iformity but also by many small and large interventions by inhabitants. In
their investigation ‘Learning from Levittown’, Venturi and Scott Brown
analyse the built environment through the use of symbolic decorative
attachments, the wagon wheels, post and rail ranch fences, coach lights
and flagpoles that were becoming the standard appliqué of middle-class
American homes.¹⁸

The analysis used very specific instruments and focused on the changes
that owners had made: ‘how they have decorated them on the outside and
dealt with their lawns in individual ways’.¹⁹ In large collages, Venturi and
Scott Brown confront drawings and photographs of these signs of the
middle class with the way in which houses were represented in television
commercials, home journals, car advertisements, cartoons, films and
even soap operas. As Scott Brown puts it, they did ‘lots of content analysis
looking at what we called literature, but the literature was Disney cartoons
on Daisy Duck, sitcoms, ads on television, articles in Popular Mechanics
magazine or builders’ journals’. In this comparative fashion, they are able
to illustrate the symbolic charge of the different signs that people are add-
ing to their homes. In the designs for buildings and neighbourhoods by
Venturi and Scott Brown, signs – both popular and disciplinary – would
get a paramount place. They were a means to situate their buildings and
cities both in the world of users and of architects.
Praxeology (prak-sē-ä-lə-jē) noun. the study of human action and conduct

In the field of architecture, there exists a long tradition of approaching the built environment through the ways that it is practised. In this episteme, the manifold practices of dwelling and building are at the centre of attention. Bruno Taut’s, *Die neue Wohnung – Die Frau als Schöpferin* (1924) is a good example of such an episteme. In this book, we find reprints of the study ‘Steps Taken in the Preparation of a Meal’ by the English household specialist Christine Frederick. Through diagrams and schemes, Taut visualizes how the kitchen in the house is used to prepare a meal. The built environment does not appear here as a material reality, nor as a series of signs, but rather as an abstracted stage for everyday practices. Taut studied spatial practices in function of their rationalization. Taylorization and ergonomics offered an important intellectual base for his investigations. Similar approaches to the built environment can be found in Margarete Schütte-Lihotzky’s design for the Frankfurter Küche (1926) and in the work of Ernst Neufert for his so-called *Architect’s Data* (1936).

Within the same episteme, but from another intellectual perspective, are a set of studies that appeared in the ninth *Congrès International d’Architecture Moderne* (CIAM) in 1953. This main platform of the modern movement in architecture presented a set of studies that looked into spatial practices in the built environment from their ‘socio-spatial’ character. CIAM architects normally used a system that Le Corbusier had introduced in 1946 as the CIAM Grid or *Grille*: a large matrix composed according to fixed CIAM categories that allowed for the presentation of an avant-garde urban project in a standard fashion. They believed that the Grid was one of the tools by which different modern design solutions could be compared and thus would offer the basis for finding universal solutions for the future city. However, instead of showing a hyper-modern design for a new urban neighbourhood – as was normally done in CIAM Grids – two North African groups at the ninth CIAM in 1953 focused on a completely different urban environment: the *bidonville*, or shantytown (Fig. 4).

The group GAMMA (*Groupe d’Architectes Modernes Marocains*), led by the French urban planner Michel Ecochard and the architect Georges Candilis, represented investigations of the Carrières Centrales bidonville in the Moroccan city of Casablanca. It was composed of a large series of
sketches, photographs and collages that documented the living conditions in the bidonville in both the private and collective spheres. Another group of North African architects, the CIAM-Alger group under the leadership of architects such as Roland Simounet and Michel Emery, presented the Bidonville Mahieddine Grid. The grid for the shantytown of Mahieddine, on the outskirts of Algiers, showed a very detailed study of the reasons for the emergence of the bidonville – the sanitary and health problems that it brought to the fore, photographic and graphic analyses of the way that the bidonville was practised, as well as design proposals for new housing units that were to replace the shantytown.

To investigate the bidonville, the young French architects relied upon a tradition of anthropological research developed at the Service de l’Urbanisme in Casablanca, Morocco. After the Second World War, this urban services department of the French protectorate initiated large programmes for the investigation of indigenous dwelling patterns in towns and villages. To their credit, the French architects did not confine this methodology to the terrain of traditional rural environments. The everyday urban spaces of the bidonvilles of Casablanca or Algiers were investigated in a similar ethnological fashion, through tracings and photographs. By using
this approach, the architects of GAMMA and CIAM-Alger were able to depict the bidonville as the substance of daily practices of dwelling and building, as the material through which inhabitants leave the most rudimentary symbolic and spatial traces in the built environment. The bidonville was described as the locus of symbolic and spatial struggles. In the North African CIAM Grids, spatial practices are considered as conscious, and thus meaningful, spatial expressions. They are the articulations of negotiations and re-negotiations between conscious and active subjects.

**In conclusion**

Architectural culture works along a large variety of epistemes, of which I only present four. Nevertheless, this small overview illustrates that epistemes are at work in the field of architecture. They are related to a specific set of tools – ranging from drawing to collage and diagram – and methods, including mapping, charting and fieldwork. Epistemes are the bridges between investigation and projection, between analysis and design. They are specific thought frames from which architects operate and that provide a basis for analysis, comprehension and intervention in the built environment. Epistemes – sometimes a single one but most often a combination of many – offer a horizon for the delineation, formulation and composition of architectural projects.

**Notes**

2. Mary Banham et al. (eds.), *A Critic Writes*, XX.
4. *Webster’s New World College Dictionary*.


11 Webster’s New World College Dictionary.


13 This was also the case for a contemporary of Choisy: Camillo Sitte, *City Planning According to Artistic Principles* (London: Phaidon Press, 1965 [orig. 1889]).


16 Webster’s New World College Dictionary.


**Bibliography**


Moneo, Rafael, ‘On Typology’, *Oppositions* 13 (Summer, 1978), 23–44

Muratori, Saverio, *Studi Per Una Operante Storia Urbana Di Venezia* (Roma: Istituto Poligrafico dello Stato, 1960)


Sitte, Camillo, *City Planning According to Artistic Principles* (London: Phaidon Press, 1965 [orig. 1889])

Taut, Bruno, *Die Neue Wohnung: Die Frau Als Schöpferin* (Leipzig: Klinkhardt & Biermann, 1924)


*Webster's New World College Dictionary*