# Transactions; or Architecture as a System of Research Programs

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# **Transactions**;

or Architecture as a System of Research Programs

Dissertation

for the purpose of obtaining the degree of doctor
at Delft University of Technology
by the authority of the Rector Magnificus Prof. dr. ir. T.H.J.J. van der Hagen,
chair of the Board for Doctorates
to be defended publicly on
Tuesday 16 October 2018 at 15:00 o'clock

by
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This dissertation has been approved by the promotor.

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Propositions

Of the dissertation by Jorge Mejia “Transactions; or Architecture as a Series of Research Programs”

1. Popular modernist histories of architecture, such as those written by Reyner Banham, follow a hermeneutic trajectory, and rely on the historicist tendencies to explain architecture in relation to supposedly incontrovertible principles or laws, and to prophesy the future of architecture based on those principles or laws.
2. Together, the hermeneutic trajectory and the historicist tendencies that can be identified in modernist architectural historiography, have been used as instruments of power, fostering relations based on superstition and tribalism among architects.
3. The growth and the development of architectural knowledge are seriously hindered in closed architectural societies, understood as those in which the relations between architects are marked by tribalism and superstition, and in which criticism and the formulation of bold propositions are limited, discouraged, or impeded altogether.
4. An architectural position can be understood as an architect’s decision to use a particular set of instruments and methods in order to confront a discernible question, and in relation to the choices of other architects who confront that question by using equally discernible instruments and methods.
5. An architecture without tradition is also without theory.
6. The growth and the development of architectural knowledge are favored by proliferation; or the deliberate incorporation of variables in the assessment of any question.
7. Every architecture articulates a vision of a possible future for the built environment with the necessary instruments and methods required to achieve that possible future.
8. The built environment articulates multiple architectures, plus a series of unforeseeable possibilities that result from the articulation of those architectures. In this sense, the built environment is simultaneously physical and metaphysical.
9. Competition and collaboration among architects are always carried out within the realms of architectural use or purpose, form, communication, and technique.
10. Architects often neglect or reject architectures produced within research programs different to those in which they inscribe their own work. Criticism among architects is often limited to work produced within a single research program.

These propositions are regarded as opposable and defendable, and have been approved as such by the supervisor:
Prof. Dr. Ir. T.L.P. Avermaete

Stellingen

horende bij het proefschrift van Jorge Mejia “Transactions; or Architecture as a Series of Research Programs”

1. Populaire modernistische architectuurgeschiedenissen, zoals die geschreven door Reyner Banham, volgen een hermeneutisch traject en zijn afhankelijk van twee historicistische tendensen: de tendens om architectuur te verklaren in relatie tot veronderstelde onomstotelijke principes of wetten, en de tendens om de toekomst van architectuur op basis van die principes of wetten te voorspellen.
2. Het hermeneutische traject en de historicistische tendensen die kunnen worden geïdentificeerd in de modernistische architectuurgeschiedschrijving, worden beide gebruikt als instrumenten voor macht, en voeden relaties gebaseerd op bijgeloof en tribalisme onder architecten.
3. In gesloten architectonische kringen worden de groei en de ontwikkeling van architectonische kennis ernstig belemmerd. In dergelijke gesloten architecturale kringen worden de relaties tussen architecten gekenmerkt door tribalisme en bijgeloof, en worden kritiek en het formuleren van gedurfde proposities beperkt, ontmoedigd of geheel belemmerd.
4. Een architectonische positie kan worden opgevat als een beslissing van een architect om een specifiek instrumentarium en specifieke methoden te gebruiken om een bepaalde kwestie te benaderen. Deze positie staat in relatie tot de keuzes van andere architecten die dezelfde kwestie vanuit hun eigen instrumenten en methoden benaderen.
5. Een architectuur zonder traditie is tevens zonder theorie.
6. De groei en de ontwikkeling van architectonische kennis worden begunstigd door proliferatie, een mechanisme dat we kunnen begrijpen als het bewust opnemen van meerdere variabelen bij de analyse van een opgave.
7. Elke architectuur articuleert zowel een visie op een mogelijke toekomst voor de gebouwde omgeving als de instrumenten en methoden die nodig zijn om die mogelijke toekomst te bereiken.
8. De gebouwde omgeving omvat meerdere architecturen, plus een reeks onvoorziene mogelijkheden die voortkomen uit de articulatie van die architecturen. In deze zin is de gebouwde omgeving tegelijkertijd fysiek en metafysisch.
9. Concurrentie en samenwerking tussen architecten vindt altijd plaats binnen de domeinen van architectonisch gebruik of functie, vorm, communicatie en techniek.
10. Architecten verwaarlozen of verwerpen vaak architectuurprojecten die zijn geproduceerd binnen andere onderzoeksprogramma's dan degene waartoe ze hun eigen werk rekenen. Kritiek onder architecten is vaak beperkt tot werk dat wordt geproduceerd binnen een enkel onderzoeksprogramma.

Deze stellingen worden opponeerbaar en verdedigbaar geacht en zijn als zodanig goedgekeurd door de promotor:
Prof. Dr. Ir. T.L.P. Avermaete

## Contents

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**Summary**

This study of the historiography of architecture and the built environment develops the thesis that well-known *modernist* histories of architecture, such as those written by Reyner Banham, remain unable to appraise the many nuances and complexities that characterize *modern* architecture. It is argued here that, among other reasons, they are unable to do so because they follow a fundamentally hermeneutic trajectory, on the one hand, and because they are strongly reliant on elements of historicism, as defined by Karl Popper, on the other.

In order to confront the inabilities that stem from these two causes, the study reflects on Karl Popper's investigations on knowledge, science, and society; and more specifically, revises the architectural historian Stanford Anderson's attempts to use the work of Popper and Imre Lakatos (one of Popper's critics and collaborators) for the appraisal of architecture.

Key among this work is Imre Lakatos's formulation of a methodology of scientific research programs, of which Anderson tried to produce a qualified version for the appraisal of architectural design. This study evaluates that qualified version, paying special attention to the examples utilized to present it at work.

Subsequently, a tripartite counter-example is advanced as a development of the examples used by Anderson to present his qualified version at work. Together, the study of Anderson's approach to the work of Popper and Lakatos, and the description of three architectures understood as parts of an architectural research program, confront the hermeneutic trajectory and the elements of historicism identified in modernist architectural historiography, and provide new elements for the appraisal of modern architecture.

In loving memory of R.H.R.
To Students.

"We need discourse; we need one another."

- Stanford Anderson[1]

[1] Anderson, Stanford: "People in the Physical Environment: The Urban Ecology of Streets," in Anderson, Stanford (ed.): On Streets. Cambridge (Mass.) and London: MIT Press, 1986, p. 5

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Image 1
José Antonio Corderch, Habitatges Barceloneta

Introduction

# The Dynamics of Discourse

## Beyond modernist architectural historiography

I will open this discussion by formulating the most important aspects of my investigation. In this section, I will outline the central question I have set out to confront, the hypotheses I will use to confront that question, and the position I will adopt in relation to the body of knowledge I am dealing with. In general terms, this is a reflection on architecture and the built environment, carried out at two levels. On the one hand, it deals with the *theory* of architecture, in the sense that it tries to explain architecture, define the principles on which its practice is based, and justify a course of action for its development. Its main concern, though, is with architectural *historiography*, or "the study of the writing of history and written histories"[1] of architecture and the built environment. Consequently, the primary sources I have consulted are histories of architecture (in this case, modernist histories of architecture), as well as critical, analytical, and theoretical assessments of modernist architecture.

To be clear, *modernist* architecture is here understood as that which adheres to, depends on, or benefits from elements of what we conventionally refer to as "the Modern Movement in Architecture;"[2] and is different from *modern* architecture, which – following the more general definition of the word modern – is simply "related to the present or recent times as opposed to the remote past."[3]

This distinction is needed to clarify the question I have chosen to confront, and which can be formulated in the following terms: I believe that well-known *modernist* histories of architecture, such as those written by Reyner Banham, have been unable to appraise the many nuances and complexities that characterize *modern* architecture;[4] and I trust that by studying that inability, we can achieve a better understanding of architecture, in general, and develop the way we think, write, and especially learn about *modern* architecture, in particular.

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[1] http://www.oxforddictionaries.com/definition/english/historiography, retrieved 28/04/2016

[2] Ciucchi, Giorgio: "The Invention of the Modern Movement," Oppositions 24 (Spring, 1981), pp. 69 – 91; Colquhoun, Alan: "The Modern Movement in Architecture", in Collected Essays in Architectural Criticism. London: Black Dog Publishing, 2009, pp. 18 – 22. Originally published in the British journal of Aesthetics (January, 1962)

[3] https://en.oxforddictionaries.com/definition/modern, retrieved 28/08/2018

[4] I wish to thank Richard M. Sommer for pointing a very early version of this investigation in this direction.

I am aware that the choice to confront this question is far from original. Renato de Fusco's Structuralist approach to architectural history, and Panayotis Tournikiotis's comparative study of modernist histories of architecture, for example, have already considered similar questions.[5] The latter's book The Historiography of Modern Architecture examines the work of several well-known modernist historians, including Banham, and pays special attention to their aim for historic authenticity.[6] Similar attention was given by Ernst Gombrich to the origins and nature of the modern study of the history of art and architecture, in his description of some of its problems.

According to Gombrich, those origins and those problems can be traced back to the work of the philosopher Georg Wilhelm Friedrich Hegel. Gombrich narrowed down Hegel's appraisal of art to five basic principles, namely: (a) a belief in aesthetic transcendentalism, or the belief that art embodies transcendental values, while the artist is an exceptional individual who is able to reveal those values to others; (b) a belief in historical collectivism, or the demarcation of art, not as the work of individuals, but as a manifestation of the spirit of a nation; (c) a belief in historical determinism, or the evolution of art from primitive, to classic, and to sensual or decadent stages; (d) a metaphysical optimism, or the assumption of every historical process as one that is directed to human self-consciousness and the triumph of reason; and (e) a belief in the relativism of art, according to which the value of art depends on the culture in which it is inserted, for which its examination depends on the ability to express certain spiritual values.[7]

Since the early 1960s, Gombrich's reflections on the Hegelian basis of modern artistic historiography have been discussed and developed by several architects, including Alan Colquhoun

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[5] De Fusco, Renato: Historia y Estructura: Teoría de la Historiografía Arquitectónica. Madrid: Alberto Corazón, 1974. Originally published as Storia e struttura: Teoria della storiografia architettonica. Milano: Edizioni Scientifiche Italiane, 1970. Tournikiotis, Panayotis: The Historiography of Modern Architecture. Cambridge (Mass.): MIT, 1999. Cf. Mark Jarzombek's review of that book, in the Journal of the Society of Architectural Historians, Vol. 60, No. 1 (March 2001), pp. 107 – 108. I have become aware of these sources through: Figueroa, Erick: Moral y Arquitectura: Lectura de Una Crítica a la Teoría de la Arquitectura Moderna. Cali: Universidad del Valle, 2006; who in turn studies: Watkin, David: Morality and Architecture Revisited. London: The Chicago University Press and John Murray Ltd., 2001

[6] Tournikiotis, pp. 260 – 267

[7] I have accessed this discussion through the work of the architect and historian Carlos Niño Murcia, whose summary of Hegelian categories I have translated freely. Niño Murcia, Carlos: Arquitectura y Estado. Bogotá: Universidad Nacional de Colombia, 2003, p. 20; and "Arquitectura Colombiana entre 1960 y 1980" in Arquitextos: Notas de Clase 3. Bogotá: Universidad Nacional de Colombia, 2006, p. 21. For the original source of the discussion: Gombrich, Ernst: "Hegel and Art History," in Porphyrios, Demetri (ed.): On the Methodology of Architectural History. Architectural Design. 51 (6/7, 1981), pp. 3 – 9. Presented originally as a lecture in 1977, this paper develops ideas from Gombrich's own: In Search of Cultural History, Oxford: Clarendon Press, 1969

and Demetri Porphyrios.[8] Colquhoun examined the ways in which architects have used Hegel's notion of historical determinism, and described that determinism as a form of historicism.[9] In his words, "dictionary definitions (and general usage) suggests that there are three interpretations of historicism: the theory that all socio-cultural phenomena are historically determined and that all truths are relative; a concern for the institutions and traditions of the past and the use of historical form. The word historicism therefore can be applied to three quite separate objects: the first is a theory of history; the second, an attitude; the third, an artistic practice."[10]

Granted that Hegel's understanding of art, as described by Gombrich, aimed for a general theory of history, it is clear that it operates on the first of these definitions of historicism. The philosopher Karl Popper further construed that definition as "an approach to the social sciences which assumes that historical prediction is their principal aim and which assumes that this aim is attainable by discovering the 'rhythms' or the 'patterns', the 'laws' or the 'trends' that underlie the evolution of history."[11]

In light of these definitions, Hegel's aesthetic transcendentalism, his historical collectivism, and his attempt to define the spiritual values of a culture, as described above, can be understood as efforts to define underlying historical principles or laws for the evaluation of works of art; while his historical determinism and his metaphysical optimism can be understood as attempts to predict the future course of artistic activity.

Popper was a stern critic of Hegel, counted him among the enemies of what he described as an Open Society,[12] and rejected the historicist nature of his thought. Moreover, he took historicism in

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[8] E.g., Colquhoun, Alan: "EH Gombrich and the Hegelian Tradition" and Porphyrios, Demetri: "Notes on a Method" both published in: Porphyrios, Demetri (ed.): On the Methodology of Architectural History. Architectural Design. 51 (6/7, 1981), pp. 35 – 39, and 96 – 104, respectively. These studies coincide in their assumption that what applies to the study of art applies, *mutatis mutandis,* to the study of architecture. We will examine this assumption carefully in the conclusive chapter of this investigation.

[9] Cf. Colquhoun, Alan: "Three Kinds of Historicism," in: Collected Essays in Architectural Criticism. London: Black Dog Publishing, 2009, pp. 154 – 162. Originally published in Architectural Design 53, 9/10 (1983). I owe this reference to Esin Komez, who has studied historicism in architecture in: Reclaiming Context: Architectural Theory, Pedagogy and Practice Since 1950, PhD dissertation, Delft: 2017; and in "Karl Popper's Architectural Legacy: an Intertextual Reading of Collage City," Journal of the Faculty of Architecture – Middle East Technical University, Vol 33, No. 1 (January 2016) pp. 107 – 119.

[10] Colquhoun, "Three Kinds of Historicism," p. 154

[11] Popper, Karl: The Poverty of Historicism. London: Routledge, 2002, p. 3

[12] Popper, Karl: The Open Society and Its Enemies. London and New York: Routledge, 2011, pp. 219 - 289

general, and Hegel's historicism in particular, for a "poor method" whose fundamental aim he described as "misconceived."[13]

It must be noted that Gombrich, who studied the inherent historicism of Hegel's appraisal of art, was close to Popper at a personal and at an intellectual level.[14] From an architectural perspective, his participation in the symposium Context for Decision Making in the Arts and Sciences, held at the Architectural Association in London in 1963,[15] also suggests a Popperian connection between Gombrich and the research on the history and theory of architecture carried out by architects like Royston Landau and Stanford Anderson.

Awareness of that connection has encouraged me to formulate the following hypothesis, in the face of the question I have chosen to confront: (a) If Popper's argument that "historicism is a poor method" and that "the fundamental aim of historicist methods is (…) misconceived," applies to architecture and architectural history as much as it does to other fields of human activity; and (b) if, as we've seen for Hegel's understanding of art, via Gombrich, modernist architectural historiography also contains elements of historicism; then (c) it should follow that what I perceive as modernist architectural historiography's inability to appraise modern architecture satisfactorily might owe to its historicism (i.e., to the misconception of its goals, and to its poor methodology).

From this hypothesis, it can be inferred that if we identify elements of historicism in modernist architectural historiography, and then replace them with elements from a better methodology, we should be able to develop our ability to appraise modern architecture beyond the limits of that historiography.

The philosopher Anthony O'Hear already touched upon the first two assertions of this hypothesis by suggesting that the Popperian definition of historicism does indeed apply to architecture, and in particular to the work of modernist historians of architecture, like Nikolaus Pevsner. "Even today, apologists for modernist and post-modernist architecture frequently appeal to what, following Sir Karl Popper, I will call historicist arguments. (…) I will begin by saying what I take historicism to be. Historicism is any approach to human affairs which assumes first that there is an inevitable course to human history, and then goes on to insist that the individual must simply submit him or herself to that course. As what I have to say is being applied to architecture, I will at the outset make clear

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[13] Popper: The Poverty of Historicism, pp. xi - xii

[14] Gombrich, Ernst: "What I learned from Karl Popper," in Lenvison, Paul (ed.): In Pursuit of Truth, Atlantic Highlands (NJ) and Brighton: Humanities Press and Harvester Press, 1982, pp. 203 – 220

[15] There, Gombrich presented the paper "Beauty of Old Towns." Other participants included: Stanford Anderson ("Architecture and tradition that isn't trad, Dad"), Royston Landau ("Towards a Structure for Architectural Ideas"), William W Bartley III ("How is the house of science built?"), and Jack D Cowan ("Some principles underlying the mechanization of thought processes"). All papers were published as a series in the journal Arena, between February and June, 1965

that my use of the term 'historicism' is different from that employed by Sir Nikolaus Pevsner in his well-known *Outline of European Architecture* and elsewhere. For Pevsner, and for many subsequent writers on architecture and aesthetics, a historicist building or work of art is one whose design imitates a style associated with a past age. (…) Pevsner himself is, in Popper's sense, a historicist. His approach to architecture actually makes him an ideal-type historicist."[16]

If, with O'Hear, we admit that modernist historiography contains elements of historicism, our aim for a better methodology should be directed towards the identification, evaluation and possible replacement of those elements. This would demand that we make clear what we take to be elements of historicism, in the first place. For the purpose of carrying out this study, I have decided to synthesize Colquhoun's and Popper's definitions, above, and narrow these elements down to: (a) the tendency to explain the origins and development of modernist architecture in relation to supposedly incontrovertible historical principles or laws, and (b) the ambition to prophesy future courses for architecture based on those principles or laws.

As noted, we should try to identify and to replace these two elements of historicism in modernist histories of architecture with elements from a better methodology. But, where could we find that methodology?

Following a trajectory similar to ours, Stanford Anderson examined the possibility of utilizing key items from Popper's research on knowledge, science and society for the appraisal of architecture. Anderson's research focused with particular attention on methodologies developed by Popper and his critics and collaborators for the appraisal of science. Based on that coincidence, it is possible that the methodology we are looking for can be part of Popper's research, and more specifically, part of Stanford Anderson's attempt to bring that research to architecture.

To develop that possibility, I have decided to study Anderson's research, starting from his early "defense of the Popperian concept of tradition against the technological determinism of Reyner Banham."[17] Evidently, Anderson's arguments in that polemic benefitted from his adoption of a *scientific attitude*, which contained elements of scientific rationality which his opponent's arguments lacked. As we will see in chapter 1, Banham's understanding of modern science as a specialized, changing discipline, that is based on rational experimentation;[18] missed a key element

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[16] O'Hear, Anthony: "Historicism and Architectural Knowledge," in Philosophy, Vol. 68, No. 264 (April, 1993), pp. 127 – 128. Pevsner, it must be noted, was Reyner Banham's doctoral supervisor at the Courtauld Institute of Art.

[17] Anderson, Stanford: "Architectural History in Schools of Architecture," Journal of the Society of Architectural Historians, Vol. 58, No. 3, Architectural History 1999/2000 (September, 1999), p. 285

[18] Banham, Reyner: Theory and Design in the First Machine Age. London: the Architectural Press, 1960, p. 18.

of scientific rationality which Anderson did contemplate (at least partially) in his own approach to science: its social nature.

According to that approach, specialization and experimental research do not describe a scientific attitude *per se*, unless they are carried out in the face of testing and refutation provided *by others*. This premise, which Anderson developed in the conceptual formulation of his work (albeit not in its practical application), is one of the key elements he obtained from Popper's research; it is central to Popper's Logic of Scientific Discovery, published originally in 1934, and first translated to the English language in 1959.[19] The demarcation of science advanced in that book, which we will also study in the next chapter, is based on the assumption that scientific propositions are rational conjectures, which must necessarily be open to testing and refutation by others.

Several philosophers have developed that demarcation further. Among them, we can mention Elie Zahar, Paul Feyerabend, Joseph Agassi, Alan Musgrave, Marx Wartofsky, Thomas Kuhn, Peter Urbach, Ian Jarvie, and Imre Lakatos; who have pondered on the differences between scientific and non-scientific attitudes, the growth of scientific knowledge, the rationales that guide the natural and human sciences, and the historiography of science; in some cases even rejecting core elements of Popper's demarcation.[20]

Noted earlier, several architects have tried to establish possible relations between the work of these philosophers and architecture.[21] My decision to focus with special attention on Stanford Anderson's research owes to the fact that it has been through his reading of Imre Lakatos that I have become acquainted with scientific demarcations, rationality and methodology; and based on one of his claims that I have chosen to carry out most of this investigation. In his words: "The attempt to adapt (Lakatos's) methodology of research programs to architectural production is not seen as a revolution in architectural thought and practice, but rather as a potentially more detailed and rigorous manner of clarifying and judging competing practices."[22]

In these terms, Anderson summarized his aim for a better methodology, giving credence to my belief that his use of scientific methodologies for the appraisal of competing architectural

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[19] Popper, Karl: The Logic of Scientific Discovery. London: Routledge, 2002

[20] Cf. Paul Feyerabend's arguments against rationalism, in Feyerabend, Paul K.: Adiós a la Razón. Barcelona: Altaya, 1995, p. 20

[21] Aside from Anderson and Landau, who I mentioned earlier and will study with more detail in the following chapter, see; Bamford, Greg: "From analysis/synthesis to conjecture/analysis: A review of Karl Popper's influence on design methodology in architecture," in Design Studies, Vol. 23, No. 3 (May, 2002), pp. 245 – 261

[22] Anderson, Stanford: "Architectural Design as a System of Research Programs," Design Studies, Vol. 5, No. 3 (1984), p. 150

practices allowed him to identify and confront prominent flaws in Banham's appraisal of modern architecture. A close look at Banham's research leads me to believe that those prominent flaws stemmed from the *hermeneutic* basis of his approach, and from the way in which those basis favored a *historicist* posture.

If we understand hermeneutics as the aim to interpret or explain what things mean, it becomes clear that Banham's historiography followed a hermeneutic trajectory, as it tried to interpret or explain the meaning of buildings. Furthermore, his interpretations and explanations were meant to support the claim that those buildings were exceptional because, unlike others, they *adequately* embodied a series of supposedly incontrovertible processes, which he took for historical principles or laws.

Alan Colquhoun came to similar conclusions, when he noted how Banham "devotes several pages of analysis to the two buildings which he has chosen to represent the (Modern) movement at its point of climax, Mies van der Rohe's Barcelona Pavilion and Le Corbusier's Villa Savoye at Poissy-sur-Seine. Of these (Banham) says: 'Their status as masterpieces rests, as it does with most other masterpieces of architecture, upon the authority and felicity with which they give expression to a view of men in relation to their environment.' This sentence clearly implies an acceptance of the symbolic role of architecture and of other than purely technical values."[23]

This simply means that Banham's attempt to grant architecture a symbolic role, which was basically hermeneutic, favored his historicist intention to grant authority to a particular architecture. That authority was granted in relation to the accuracy with which that architecture symbolized a supposed historical law, which he referred to as "a view of men in relation to their environment," and can therefore be taken for historicist.

From these observations it can be assumed that if historicism is a poor method, and if a hermeneutic approach to history favors that poor method, it should be possible to confront historicism by replacing the hermeneutic bases that seemingly support it with elements of a better methodology. In even simpler terms: Instead of trying to explain or interpret what a particular architecture means, we can study it by describing the processes of exploration, evaluation, and discovery implied in its production.

I will refer to these processes as *heuristics*.

In architecture, heuristic processes both define and are defined by the instruments and methods utilized to carry them out.[24] This reciprocity suggests that a heuristic approach to architecture,

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[23] Colquhoun: "The Modern Movement in Architecture," p. 21. The quote refers to Banham: Theory and Design in the First Machine Age, p. 325 of the New York: Praeger, 1960 edition.

[24] My equation of these heuristics with the architect's instruments and methods is based on a Elisavet Kiourtsoglou's paper "Mathematics Meets Aesthetics: the Experimental Tool of Iannis Xenakis for Philips'

based on the description of the interrelated instruments and methods used by architects as they face similar questions, can provide us with valuable architectural knowledge; beyond the explanation of what exceptional buildings are supposed to mean, and beyond their judgment of their exceptionality in relation to supposed principles or laws.

On these grounds, instead of aiming to define what is *true modernism* in architecture, instead of trying to explain why some buildings represent that true modernism more accurately than others, or instead of prophesying what that *true modernism* must look like in the future, like Reyner Banham tried to do in much of his research; we will focus on the way different architects explore, evaluate and discover architecture and the built environment in the face of similar questions, like Stanford Anderson tried to do.

**An adequate history**

After delineating my main research question and the hypotheses I am working on, above, I will try to clarify my position in relation to the body of knowledge I am dealing with a bit further.

Noted earlier, my position is defined by a rejection of historicism in modernist architectural historiography. Like Popper, I believe that historicism it is a poor method. The methodological poverty of historicism is evident in modernist architectural historiography's inability to account for important nuances and complexities in modern architecture. Like Popper, I also believe that the fundamental aim of historicism is misconceived. The utility of histories of architecture, I believe, does not depend on their ability to corroborate supposed historical principles or laws through buildings, or to prophesy the future of architecture based on those principles or laws; histories of architecture are useful in the sense that they favor the growth and development of architectural knowledge.

With that realization in mind I have chosen to confront historicism in modernist architectural historiography, and the hermeneutic trajectory that appears to favor it, by advancing a *heuristic* approach to architectural history. This approach is by nature *methodological*, in the sense that it is reliant on the study of the instruments and methods used by architects to develop their work.

I have good reasons to trust in the utility of this approach. Beyond explanations or interpretations of what extraordinary buildings *represent* or *mean*, as an architect I find descriptions of the questions confronted by architects while producing those buildings, together with descriptions of the instruments and methods used in that confrontation, particularly useful.

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Pavilion (1958)", presented on the 22nd of November, 2017, at the EAHN Conference "The Tools of the Architect," in Delft.

To explain this better, I will use the following architectural question formulated by Rudolf Wittkower as an example: "For Renaissance architects, the church façade raised one of the most intricate problems. Those architects who thought in classical terms and regarded the Christian church as the legitimate successor to the ancient temple, wrestled constantly with attempts to apply the temple front to the church. But unlike the ancient temple with its uniform cella, most churches were built on the basilical system with a high nave and lower aisles. How could a temple front with its simple portico and pediment be applied to such structure?"[25]

This question, and the challenge it describes, are entirely clear to me. I can understand the ways in which different architects might respond to it, and the instruments and methods that would be necessary to carry out their responses. I can imagine, for instance, one architect trying to unify nave and aisle (instruments) by altering the proportions of the classic front (method); while another tries to introduce a new layer (instrument) that mediates between front and body (method) as they tackle that question. In all cases, I can see how I could eventually appropriate such responses, should I be faced with that question, myself; and – most importantly – I can understand those responses in relation to each other.

On the contrary, I find it very difficult to relate to way in which some modernist histories of architecture have tried to explain certain buildings, and what they are supposed to represent or mean. I can develop this idea based on two examples: Trying to explain the "genesis of modern architecture" Bruno Zevi wrote: "To the question, '*why did modern architecture appear?*' historians answer with four types of justifications derived from diverse theoretical premises: the idealist and the mechanicist, the abstract-figurative and the economic-positivist: due to a natural evolution in taste; caused by scientific and technical progress in construction; as a consequence of new theories of aesthetic vision; as the result of a radical social transformation."[26] Following an identical ambition, Vincent Scully argued that "Modern Architecture is a product of Western civilization. It began to take shape during the later eighteenth century, with the democratic and industrial revolutions that formed the modern age."[27]

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[25] Wittkower, Rudolf: Architectural Principles in the Age of Humanism. New York: W. W. Norton, 1971, pp. 90 – 91. I have chosen to use the notion of an architectural question, rather than that of an architectural problem, in order to stay clear from architecture as a "problem-solving" discipline. This distinction, I owe to my colleagues Willemijn Wilms Floet and Klaske Havik. However, since many of the authors I cite still use the term problem, I need to ask the reader to equate both terms throughout the text.

[26] Zevi, Bruno: Historia de la Arquitectura Moderna. Buenos Aires: Emecé Editores S.A., 1957, pp. 15, 52 – 53 (my translation)

[27] Scully, Vincent: Modern Architecture. New York: George Braziller, 1975, p. 10. Banham also felt able to summarize "the causes of the architectural revolution which occurred during the first decade of the century," as noted by Colquhoun, in "The Modern Movement in Architecture," p. 18.

In both cases, it is assumed that the origin and nature of an architecture are un-dissociable from a historical event, which is taken for a supposedly incontrovertible principle or law, such as Zevi's "natural evolution in taste." Scully, on the other hand, assumed that an uncontestable cause-effect relation could be established between the democratic and industrial processes followed by a particular civilization and a particular kind of architecture.

Unlike my previous example, I wouldn't know how to proceed based on the interpretations advanced by these authors. I certainly wouldn't know how to imprint democracy or the industrial revolution on my work as an architect, or which among the many evolutions in aesthetic taste that exist at any given moment should be taken for *the* generator of my work. These interpretations basically offer me a few tags which I could use to try and fix the work of an architect within a category, meant to epitomize a supposed principle or law; and perhaps encouragement to mimic specific features from buildings said to epitomize those principles or laws.

Beyond that extremely meager yield, the methodological poverty of these approaches is also patent in their extended use of binary reductions, or the attempt to explain architectures that are said to epitomize or corroborate a supposed principle or law in opposition to architectures that don't. Those of us who have endured a modernist architectural education are familiar with these binary reductions, and with the fact that they inevitably lead to *ad-hoc-ness*,[28] or the use of additional, stopgap historical categories for every exception those explanations cannot account for. Makeshift sub-categories and – even worse – superstition can be counted among the ad-hoc resources that have been utilized by modernist historians of architecture to deal with the mounting anomalies and exceptions that derive from their poor method.[29]

According to Landau, reliance on such poor method has also led many architects to assume contradictions in their work as flaws, leading them in some cases to conceal those among their ideas which appear to be inconsistent with their actions.[30] This concealment has clear negative effects on architecture, in general, as it deprives other architects from crucial knowledge that could be useful for the development of their own work. While we elaborate on that idea, and on

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[28] For a thorough reflection on ad-hoc-ness, specifically in relation to Popper's work, see: Bamford, Greg: "Popper's Explications of Ad-Hocness: Circularity, Empirical Content, and Scientific Practice," The British Journal for the Philosophy of Science. Vol. 44, No. 2 (June 1993), pp. 335 – 355; and Bamford, Greg: "What is the Problem of *Ad Hoc* Hypotheses?," Science and Education, Vol. 4, No. 8 (July, 1999), pp. 375 – 386. Bamford provides valuable insight on the psychological nature of Popper's rejection of ad-hoc hypotheses. My approach to ad-hoc-ness is much more modest.

[29] I will elaborate a bit further on the superstitious nature of the oft-used figures of geniality and inspiration, in Chapter 3, and expose some of their noxious consequences in the final chapter of our study.

[30] Landau, Royston: "Notes on the Concept of an Architectural Position." AA Files, No. 1 (Winter 1981 – 1982), p. 113

the central role architectural knowledge plays in our discussion, in the following chapter, we must also recognize that unlike those who assume contradictions in their work as flaws, others have sought for alternatives to overcome modernist historiography's reductive simplism, and the binary reductions that stem from it.

Aldo Van Eyck, for example, argued that "you can't just split dual phenomena into polarities and alternate your loyalty from one to the other without causing despair. (…) To establish the 'in-between' is to reconcile conflicting polarities. Provide the place where they can interchange and you re-establish the original dual phenomena."[31] Subsequent efforts to substitute Scully's version of Hegelian relativism (i.e., his belief in modernist architecture as specific to Western civilization) with elements from a better methodology, have also confronted the "center vs. periphery" binary reduction in architectural historiography with post-colonial notions of hybridization.[32]

Against poor method, throughout the second half of the twentieth century several architects have recognized and tested *proliferation*,[33] or the deliberate addition of variables in the assessment of any question, as a valuable instrument to confront modernist historiography's reductive simplism. We can use the way Royston Landau wrote about the conflict among the allegedly opposite architectures of a "rationalist" and an "empiricist" designers, as an example of proliferation. Instead of keeping his focus suspended between two supposed opposites he evolved on that opposition by adding a third variable to his example.

Landau's thoughts date back to the 1980s, when Leon Krier was usually tagged as a rationalist architect, and Norman Foster's architecture was said to explore on an intuitive or empirical basis. Back then, rationalism and empiricism were taken for irreconcilable opposites by many architects. Landau recognized that the tags assigned to the work of these architects were clearly insufficient, given the fact that some features of Krier's work were deliberately kept ambiguous and uncertain, defying the common definition of rationalism; while Foster carefully systematized the conclusions of his inquiries, even if those conclusions came from not-fully-controlled processes of experimentation. Faced with the insufficiency of the categories in which these architectures were supposed to fit, Landau did not try to come up with an *ad-hoc* category, but instead relied on proliferation (or the introduction of an additional variable – a third architect, in this case), as a way out of this antithesis. "What is likely to happen," he asked, "if I try to fit James Stirling into this

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[31] Newman, Oscar (ed.): CIAM '59 in Otterlo. Stuttgart: Karl Krämer Verlag, 1961, p. 27

[32] Among others: Hernández, Felipe: Bhabha for Architects. London, New York: Routledge, 2010, pp. 67 – 69; Waisman, Marina: El Interior de la Historia: Historiografía Arquitectónica para Uso de Latinoamericanos. Bogotá: Escala, 1990

[33] Feyerabend, Paul K.: "Outline of a Pluralistic Theory of Knowledge and Action," in Anderson, Stanford: Planning for Diversity and Choice: Possible Futures and their Relation to the Man Controlled Environment. Cambridge (Mass.): MIT, 1968, pp. 275 – 284

Rationalist/Empiricist polarity, when, throughout his career, he uses a new Rationalist schema, after each series of designs, yet still appears to enjoy the unexpected and the experimental?"[34]

This way, Landau showed that the way we understand architecture is often hindered by a psychological tendency towards simplification;[35] but also by the lack of an adequate epistemological apparatus for the simultaneous appraisal of multiple variables. Furthermore, his example showed that modernist interpretations based on clear-cut categories (empiricist, rationalist), radical oppositions between those categories (empiricist *versus* rationalist), and the preponderance of isolated, individual form-givers (Krier, Foster, even Stirling) as motors for architectural activity; seldom account for subtle interactions and growing informality in our appraisal of architecture.

Landau rejected "the results of an orthodox 'unificationist' history (which) may still be found in the continuing saga of the Modern Movement in which Pevsner and Giedion both tried to give to it a pedigree and a coherence which it could never have, while neglecting to expose the divided, irresolute, factional and splintering nature of this series of enterprises – and for which an adequate history still needs to be written – even as a preliminary to the still more dubious Post-Modernism which is already being far more naively depicted than its advocates would have us believe."[36]

Moving towards that adequate history, we have suggested the possibility of replacing the hermeneutic basis of modernist historiography with a heuristic approach. This means that, rather than aiming to explain what buildings mean in relation to a supposed principle or law, we should study the questions several architects confront at any given moment, as well as the different instruments and methods they use to confront them.

In order to study the interrelations that can be established between those questions, instruments and methods I have chosen to use elements from a specific methodology. The *methodology of scientific research programs*, originally formulated by Imre Lakatos as a reaction to Karl Popper's demarcation of science, and later studied in relation to architecture by Stanford Anderson, should help us overcome the limitations posed by the methodological poverty of historicism, which we have identified in modernist architectural historiography; by assuming architecture as a series of interrelated probes, carried out in discernible heuristic terms.

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[34] Landau: "Notes on the Concept of an Architectural Position," p. 112

[35] "Psychologically, it is a human characteristic to comprehend through simplification, and this applies to historians and critics who, as a part of their task, have to produce sensible stories from highly complex data." Ibid.

[36] Ibid., p. 114. Also: Landau, Royston: "The History of Modern Architecture that Still Needs to be Written." AA Files, No. 21 (Spring 1991), pp. 49 – 54

**Framework**

As noted, this discussion aims to appraise architecture (theory) by contributing elements for the revision of modernist histories of architecture (historiography). Almost two decades before me, the historian Sarah Williams Goldhagen developed a similar ambition in the book Anxious Modernisms.[37] Concretely, in her coda to that book Williams examined the methodological poverty of modernist historiography, and confronted it with elements of a better methodology. Taking that similarity into account, in this section we will briefly study her example.

The texts included in Anxious Modernisms, co-edited by Williams and Réjean Legault, describe a particularly complex and contradictory range of post-war architectures. That diversity certainly challenges any attempt to unify those architectures in relation to a principle or law. Williams dissected that challenge in two steps. First, she listed a series of questions, instruments and methods that were common to the work of several European architects throughout the first half of the twentieth century, such as "abstraction and the rejection of historical precedent, the use of new technologies and new materials, programmatic functionalism, structural rationalism, the separation of structure and skin, (and) the reflexive affiliation after the Second World War of early modernism with progressive political ideas."[38] Then, she showed how modernist histories of architecture took these for principles or laws, by elevating them to the category of "elements integral to the modern movement."

Clearly, the assumption of these questions, instruments and methods as "integral" or essential to modern architecture does not resist much scrutiny, and has long been refuted. As examples of this refutation, Williams mentioned Colquhoun's refusal to believe that technical discoveries and sheer constructive rationality added up to a new aesthetic paradigm in modern architecture; and Stanford Anderson's critique to conspicuous drawbacks in functionalism as a form-defining principle in modernist architecture.[39]

The refutation of these so-called integrals as both explanations and criteria for the evaluation of modern architecture has also eroded the illusion of a *Zeitgeist*, utilized by several modernist historians to unify European architectures from the first half of the twentieth century. Zevi's attempt to define the origin of modern architecture in relation to a spirit of the time, and Scully's intention to link it to a particular civilization, are good examples of the noxious Hegelian belief in

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[37] Williams Goldhagen, Sarah and Legault, Réjean (eds.): Anxious Modernisms: Experimentation in Postwar Architectural Culture. Cambridge (Mass.): MIT, 2000

[38] Williams Goldhagen, Sarah: "Coda: Reconceptualizing the Modern", in Ibid., p. 301

[39] Williams Goldhagen: "Coda," p. 301

these supposed "spirits" (of the time, of nations, races or cultures) at work. Needless to say, that belief is entirely historicist, in the sense that it assumes those spirits as incontrovertible principles or laws.

Elaborating on the erosion of these beliefs and on the refutation of an allegedly unified modern architecture, Williams concluded that "the codified image of the modern movement has been successfully dismantled, but no new framework has been advanced in its place that will help make sense of modernism in architecture."[40] Therefore, she identified the need for a "framework of analysis" for the appraisal of modern architecture,[41] which should allow us to recognize the intensity of architectural activity after World War I, and account for its shifting, multifarious nature.[42]

In her opinion, the "codified image" of modern architecture advanced by well-known modernist historians relied on the assumption that a consistent and radically new approach to architecture appeared in the first decades of the twentieth century. A century later we can only conclude that those decades were the origin, not of one, but of several different approaches to architecture; and that those new approaches were all but convergent, much less part of a unified response to a single question. Sharp differences between the architectures enveloped by the modernist blanket contradict the idea of uniformity, advanced by those historians.

Laying the bases for a critical reexamination of their work, Williams tackled the question of modern architecture's diversity by using two clear strategies. On the one hand, she described a series of interrelated questions that were confronted by several architects simultaneously. Those descriptions allowed her to "make sense of modernism's initial complexity and its evolution over time".[43] Key among those questions, was the following: What role does architectural tradition play in the production of new architecture?

As we know, several historians of modernist architecture, including Banham, believed that modernist architects could only hold one view in relation to this question. Supposedly, the rejection of tradition in the production of new architecture was integral to modernist architecture. In Banham's terms, architects who did not reject tradition could not be taken for *true* modernists. Sarah Williams, on the contrary, acknowledged that this was indeed an important question for

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[40] Williams Goldhagen: "Coda," p. 302

[41] "In this essay" Williams Goldhagen notes, "I will not discuss modernism's intellectual and cultural roots, which is a project distinctly different from the one undertaken here" – footnote 5 in, Ibid. p. 321. Cf. Zevi's aim for a "genesis of modernism" mentioned above.

[42] Ibid., p. 302

[43] Ibid., p. 303

many architects throughout the twentieth century, but she went on to collect examples that suggested that, in reality, the work of those architects branched out way beyond any supposed anti-traditionalist common denominator. In this sense, her examples contradicted the historicist tendency to assume that the similar, discernible questions faced by several architects should be understood in relation to supposedly incontrovertible principles or laws.

Instead, Williams tried to describe architectures that faced similar questions by aligning them along "strains," which delineated the interrelations that can be established between several architects in relation to a discernible question, and in relation to the instruments and methods they use to confront that question. Furthermore, her use of those strains favored proliferation, as I have previously described it based on Landau's example. Anxious Modernisms analyzed architectures that apparently rejected tradition and modernist architectures that were strongly engaged with tradition simultaneously; dissolving supposed antitheses by discussing several diverse approaches to the same question together. This way, Williams described the features that are common to several architectures, or the way they deal with the same questions, without taking those common features or questions as evidence of incontrovertible principles or laws. In this sense, it can be said that Anxious Modernisms develops a historiographical approach that tries to *describe* modern architecture without aiming to explain, interpret, or *define* it conclusively.

Besides providing this investigation with an example of the ways in which a better methodology for the appraisal of architecture can confront elements of historicism in modernist historiography, as we just saw, my study of Williams's research has offered me something else. Tacitly, Anxious Modernisms and other texts by Williams have provided additional support to my decision to search for elements of a better methodology for the appraisal of architecture in science. In the following section, I will elaborate on this thought a bit further.

**Paradigm**

In her own words, Sara Williams strove to "de-ossify" modernist historiography's appraisal of modern architecture. As we saw, she developed that intention by advancing a "framework (that) accounts for the main contours of the modern movement and of the anti-modern reactions to it (…) and reveals modernism to have been a multifaceted, pluralistic, and sometimes self-contradictory phenomenon that cannot be essentialized around the work or ideas of any single individual, group or style."[44]

Within that framework, Williams tried to accommodate the complex and contradictory nature of modern architecture, and the several interrelated "strains" of activity developed by several architects; including the work of those "less prominent practitioners, who have often been

[44] Williams Goldhagen: "Coda," pp. 308 - 309

misapprehended as ancillary to the mainstream."[45] This way, she advanced an "understanding of architectural culture (…) based in the dynamics of discourse rather than in the visible artifacts that discourses produce;"[46] and she tried to "conceptualize (modern architecture) not as a stock if variable cluster of rhetorical synechdoches, or as any of the other useful but ultimately partial possibilities that have been proposed, but rather as a discourse."[47]

Using the philosopher Jürgen Habermas's definition of the term, Williams understood this discourse as an "account, in which speech acts are regarded by the community of its recipients as intrinsically hypothetical assertions submitted to critical analysis and response."[48] In other words, she confronted attempts to explain architecture and its history as a supposedly uniform succession of buildings, taken for extraordinary for their ability to adequately represent historical principles or laws; and instead described modern architecture and its history as a long and complex conversation or discourse carried out by many individuals.

"Derived from the Medieval Latin 'argument' and the Latin 'to run about,' the word 'discourse' is typically used to mean a series of discussions and debates on a relatively closed set of questions. Figuratively, a discourse is a bunch of people running about having an argument – or more correctly, a series of arguments and debates, which are related to one another and governed by a set of underlying concerns or principles. To explore the definition further, a discourse is an extended expression of thoughts on a subject or related collection of subjects, conducted by a self-selected group of people within a discrete set of identifiable social institutions, and lasting over a bounded, which does not necessarily mean short, period of time. It is focused around an essentially coherent (although not always articulated) group of questions and has its own jargon, its own contested terms."[49]

This description of architecture as a discourse has important implications for this investigation. Key among these implications is the fact that it recognizes that human actions (in this case architectural, instead of speech acts) are not conclusive statements, but rather hypotheses or conjectures, open to criticism, testing and refutation by others. As we saw, what we referred to earlier as Stanford Anderson's *scientific attitude* was based on his recognition of the social nature of science, which is no different than Williams's acknowledgment of the conjectural nature of our

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[45] Williams Goldhagen, "Coda," pp. 308 – 309

[46] Ibid., p. 319

[47] Williams Goldhagen, Sarah: "Something To Talk About: Modernism, Discourse, Style". Journal of the Society of Architectural Historians, Vol. 64, No. 2 (2005), p. 164

[48] Ibid., endnote 7

[49] Ibid., p. 159

thoughts and actions. This acknowledgment is central to both Popper's and Lakatos's demarcation of science, as we will see in the following chapter.

Besides her acknowledgment of the conjectural nature of an architect's ideas and actions, Williams also shared other elements of Popper's scientific rationality. Links can be established between the methods she utilized to appraise the history of modern architecture, and another of Popper's critics and collaborators' description of the history of science as a series of revolutionary paradigm-shifts amid long periods of normality.[50] Concretely, against modernist historiography's attempt to unify several architectures in relation to supposed principles or laws, Williams advanced the flexible figure of a *paradigm*, as defined by Thomas Kuhn.

Williams saw paradigms as discursively negotiated, and therefore dynamic instruments for the appraisal of a discipline. In her terms, a paradigm "is tenacious, benefiting from several self-reinforcing mechanisms. Affording the possibility of inter-subjective basic agreement, a paradigm lends enough coherence to a discipline, or to a topic within a discipline, that its subjects can be discussed in shorthand, assuming consensus over definitions and basic themes. Furthermore, until a paradigm is challenged by a compelling potential replacement, there is no other game in town."[51] Applied to architecture, Williams's use of this particular instrument seemed able to keep architectural discussions channeled within clear disciplinary bounds; and yet allowed hypotheses within those discussions to remain open to testing and refutation.

The historiographical and theoretical consequences of Williams's understanding of architecture as a *discourse*, based on *paradigms*, can be grasped by reviewing what we've discussed so far. We have assumed that modernist architectural historiography appears to be unable to appraise modern architecture adequately, we have identified a hermeneutic basis in that historiography, and we have linked that basis to the historicist tendencies to and evaluate buildings in relation to supposedly incontrovertible historical principles or laws, and to prophesy the future of architecture based on them. Aware of the methodological poverty of these historicist tendencies, we have proposed to replace them with elements from a better methodology, as a way to overcome those limitations. The new elements we aim to introduce are heuristic in nature, and the methodology we intend to take them from from is scientific.

On these grounds, we have examined Williams's critique of modernist historiography, her description of modern architecture as a series of strains, and her attempts to proliferate within those strains, as a way out of that historiography's ambition to present historical events as embodiments of underlying principles or laws. We he have also studied her description of architecture as discourse carried out by many individuals simultaneously; as well as her

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[50] Kuhn, Thomas S.: The Structure of Scientific Revolutions. Chicago: University of Chicago Press, 1970

[51] Williams Goldhagen: "Something To Talk About," p. 146

description of the way that discourse is fed by the conjectures advanced by each of those individuals in response to one or more discernible questions (and to the conjectures advanced by others regarding those questions).

That discourse – we have seen – is complex, even informal,[52] yet not anarchic.[53] Instead, it evolves around paradigms, or the heuristics used to confront discernible questions within what has been consensually understood as part of the architectural discipline. Finally, we have identified clear links between Williams's formulation, on the one hand, and Popper's and his critics' research on human knowledge, science and society, on the other; and have suggested the importance of studying those links further based on Stanford Anderson's approach to that research. In the final part of this introduction, I will briefly describe how these ideas will be developed in the following chapters.

**Structure**

I will conclude this introduction by outlining the structure of my investigation. My first step in the development of this discussion will attempt to sketch the intellectual path that led Stanford Anderson towards Imre Lakatos's methodology of research programs. After becoming acquainted with Karl Popper's research, around 1958,[54] Anderson identified prominent drawbacks in Reyner Banham's approach to history, and proceeded to use notions obtained from Popper's research to refute key elements in Banham's approach. In chapter 1, we will follow Anderson's trajectory between 1963, when he challenged Banham's conjectures regarding the role of tradition in the production of modern architecture, and until the mid-1980s, when he first established links between Lakatos's methodology of research programs and architectural design.

It must be clear that my study of Anderson's trajectory intends to confront the historiographical question I have set out to study. My approach to scientific rationality must be understood as instrumental to that intention. Historiography is my end, scientific rationality has provided me with means towards that end, so to speak.

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[52] I base my definition of informality on: Zaera, Alejandro: "Order Beyond Chaos," in Avermaete, Tom; Havik, Klaske and Teerds (eds.), Hans: Architectural Positions: Architecture, Modernity and the Public Sphere. Amsterdam: SUN Publishers, 2009, pp. 373 – 381

[53] "A work of art can be open only insofar as it remains a work; beyond a certain boundary, it becomes mere noise." Eco, Umberto: The Open Work. Cambridge (Mass.): Harvard, 1984, p. 100

[54] Anderson, Stanford: Interview dated April 6, 1999, in Frank, Suzanne: IAUS: The Institute for Architecture and Urban Studies; an Insider's Memoire. Bloomington (In.): Author House, 2011, pp. 211 - 217

Chronologically, the trajectory I will describe runs parallel to the evolution of Italian Neo-Rationalism, the heyday of semiotics, and the reappraisal of site-specific architectures, among the many lines of inquiry followed by many architects between the late 1950s and the early 1980s. Stanford Anderson was not foreign to many of these lines of inquiry, or to the questions confronted by those architects; and yet I believe his formulation of a methodology for the appraisal of modern architecture is a unique contribution. To support this claim, in chapter 1 I will describe salient aspects of Anderson's contribution to modern architectural thinking, including the definition of a sophisticated relation with architectural tradition, the assignment of theoretical responsibilities to that tradition, and the assumption of the built environment as a collective construct.

I will also acknowledge Anderson's ability to collect methods and ideas from other disciplines, as an organizer of transdisciplinary events. Using methods and ideas collected by Anderson in some of those events, I will elaborate further on the importance of proliferation as a cognitive tool, and introduce the figure of the model, as an elemental unit for the appraisal of architecture. Towards the end of the chapter, I will suggest a series of adjustments to Anderson's approach to Lakatos's methodology of research programs, and more specifically, propose necessary revisions to the examples he used to illustrate the methodology at work.

Given the relational nature of Lakatos's methodology, following chapter 1 I will study my own qualified version of that methodology at work, by describing the interrelations that can be established between three architectures, which can be jointly understood as part of a research program. Chapters 2, 3, and 4, will study a series of discernible coincidences, differences, and similarities that can be established between the work of Rogelio Salmona, Le Corbusier, and Shadrach Woods.

Among those coincidences, is the fact that Shadrach Woods and Rogelio Salmona arrived at Le Corbusier's atelier in 1948. Woods worked there until 1953, established a stable collaboration with Georges Candilis and Alexis Josic in 1958, and worked in the project for the Free University in 1963. Meanwhile, Salmona worked at Le Corbusier's office until 1954, built his first projects in Colombia around 1959, and started working in the project for Centro Gaitán around 1979. So seen, Le Corbusier's project for a Hospital in Venice, developed between 1963 and 1965, is chronologically interrelated with the work of Woods and Salmona, as well as with Stanford Anderson's study of scientific rationality since 1958.

In practical terms, the arrival of two young architects at the Le Corbusier's office in the whirlwind of the second postwar constitutes an opportunity to study what would normally appear to be, first convergent and then divergent paths within a consistent chain of events. Modernist historians have often depicted Le Corbusier as a modernist master, Woods as an agent of change within (and beyond) the Modern Movement, and Salmona as a syncretic force, able to reformulate modernism

at the margins of Western civilization.[55] Against the poor method that supports those depictions, we will focus on the questions these architects confronted, together with the instruments and methods they used to confront them; and we will try to establish interrelations between those questions, instruments and methods. In other words, we will try to sketch the dynamics of a particular discourse, as Sarah Williams Goldhagen would have it, or – in our own terms – we will try to describe the *transactions* that define that discourse.

A transaction is simultaneously understood here as the act of carrying on or conducting a negotiation, an interaction between an individual with one or more people, and the record of a disciplinary event.[56] These three definitions converge in the interrelations that can be established among the discernible instruments and methods used by several architects to confront similar questions. .

Our study of the transactions carried out among these architects will focus on specific aspects of their work. In Chapter 2, for example, we will focus on the architecture of Rogelio Salmona, and specifically describe his project for a monument in Bogotá, popularly known as Centro Gaitán. Based on our analysis of that project, we will examine Salmona's rejection of modernist functionalism, and his attempts to reconcile modern and traditional architectural explorations in the realms of form and technique.

Following, in chapter 3, we will study Le Corbusier's adoption of several roles as an architect, and the incidence his contact with other architectures had in the definition of those roles. Like in our study of Salmona, we will also examine Le Corbusier's architecture as an attempt to reconcile modern architecture with tradition. In this case, our revision will be based on several critical essays and modernist histories of Le Corbusier's project for Venice.

Following Landau's example, we will proliferate within this discussion by involving a third subject in these transactions, and focus on Shadrach Woods's project for a University in Berlin, in Chapter 4. Aside from our description of Woods's explorations within the realm of architectural form, we will try to sketch the instruments and methods he used to convey his radical understanding of possible futures for the built environment.

As we move on to the next chapter, I believe we can briefly conclude this introduction by relating the structure I just described with my original goals. Granted the success of this effort, we should be able to contribute to the development of a demarcation of architecture that evolves beyond

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[55] Among others: Téllez, Germán: Rogelio Salmona, Obra Completa: 1959 – 2005. Bogotá: Escala, 2006; Arango, Silvia: Historia de la Arquitectura en Colombia. Bogotá: Universidad Nacional, 1989; Avermaete, Tom: Another Modern. Rotterdam: NAi, 2005; and Von Moos, Stanislaus: Le Corbusier: Elements of a Synthesis. Rotterdam: NAi010, 2013

[56] https://www.dictionary.com/browse/transaction, retrieved 04/09/2018

modernist historiography's inability to appraise modern architecture. In more specific terms, we should be able to describe different architectures as interrelated conjectures, rather than as the embodiments of incontrovertible principles or laws; and we should be able to advance visions of possible futures for the built environment, without feeling compelled to prophesy. Notably, the way in which I have chosen to develop these intentions remains bound to discernible elements of modernist historiography, in many important ways. This investigation remains unwilling or unable to detach itself from the study of exceptional buildings, designed by individual form-givers, for example. As our discussion, and as the distinct demarcation of architecture that is promoted by it unfold, though, I trust that the reasons for this inability will become much clearer.

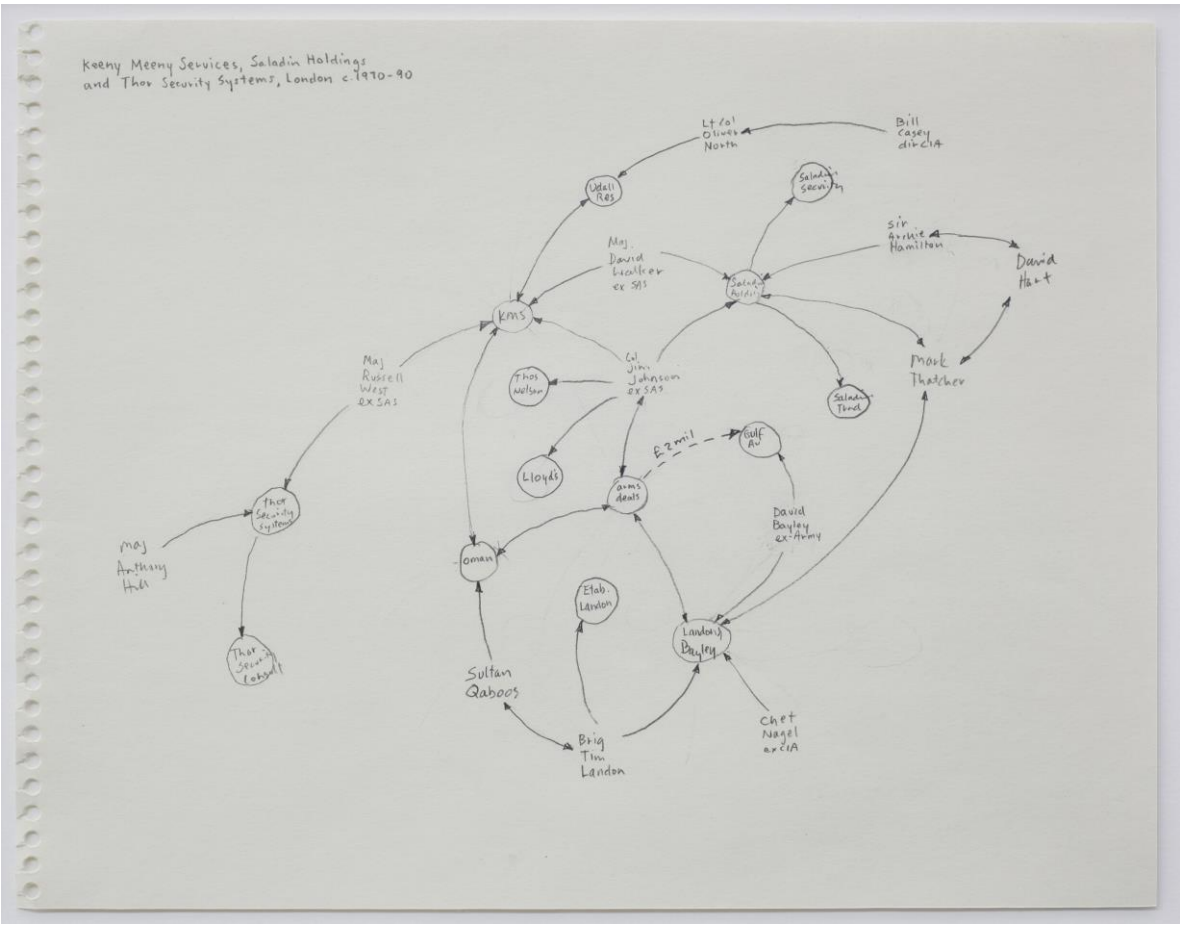


Image 2

Mark Lombardi: Keeny Meeny Services, Saladin Holdings and Thor Security Systems, London c. 1970 - 1990

1
# Towards Methodology

## Appraising architecture

Evolving from the discussions that followed the disintegration of CIAM in the late 1950s, several conjectures stand out from Stanford Anderson's appraisal of architecture. In this chapter, we will study some of those conjectures, and describe salient aspects of that appraisal, as stages in a process of scientific discovery carried out on architectural grounds. The object of this revision is to contextualize and evaluate Anderson's adaptation of Imre Lakatos's methodology of scientific research programs to architecture, as a valuable a tool for its appraisal; and as a valuable tool to overcome some of the limitations in modernist architectural historiography which we have previously described. Necessary revisions to Anderson's interpretation will be suggested towards the end of the chapter.

I should start by mentioning the reasons that have led me to focus on the work of Stanford Anderson, in the first place. The first of these reasons is quite simple: Anderson's work as a professor of architectural history is strongly related with my intention to focus on modernist architectural historiography. As we'll see, Anderson's thoughts on architectural history,[1] historiography[2] and theory,[3] can be taken for developments of modern architecture.

Besides that obvious coincidence, my interest in Anderson touches upon a more specific aspect of his work. I refer here to the underlying scientific rationales that fed his writing; and to the distinct position he took in relation to the branch of scientific thinking that stems from the work of Karl Popper. This investigation is based on my adherence to Anderson's use of some of Popper's ideas against elements of historicism in architectural thinking. Concretely, the use of these ideas is evident in Anderson's beliefs that (a) architects must strive for the growth of knowledge in their

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[1] Anderson, Stanford: Peter Behrens and a New Architecture for the Twentieth Century. Cambridge (Mass.), London: MIT Press, 2002

[2] With Martha Pollak, Anderson edited two issues on "Architecture and Historiography" in the Journal of Architectural Education, Nos. 44/3 and 44/4 (July and August, 1991, respectively). Furthermore, see: Anderson, Stanford: "Critical Conventionalism in Architecture," Assemblage, No. 1 (October, 1986) pp. 6 – 23

[3] Anderson, Stanford: "Quasi-autonomy in Architecture: the search for an in-between," Perpsecta 33 (June, 2002) pp. 30 – 37. Anderson tried to link this idea of quasi-autonomy with his interpretation of research programs in architecture, as we will see towards the end of this chapter.

field;[4] and (b) that we can study how this growth of architectural knowledge takes place, based on scientific methods of appraisal.[5]

Both assertions demand further definition of what is understood as the growth of knowledge. In this study, we will expand on Anderson's notion and talk about the more encompassing *growth and development* of knowledge, in order to account for both cumulative knowledge (an increase in knowledge, or knowing more) and critical knowledge (an improvement in knowledge, or knowing better). My decision to add development to sheer growth owes to the economist Herman Daly, who noted: "Growth if a physical concept. When something grows, it gets bigger, either by assimilation or by accretion. Development is a qualitative concept; something gets better, it doesn't necessarily get bigger. It evolves, it changes, it improves. As analogies: a snowball rolling down a mountain is pure growth, by accretion – it's getting bigger and bigger. An embryo is growing and developing at the same time, changing qualitatively as it gets bigger. Planet Earth as a whole is not growing, but it is evolving, either in a positive or a negative way."[6]

Noted earlier, Stanford Anderson started studying scientific rationality around 1958,[7] when he became acquainted with the work of Popper and some of his critics and collaborators – including Imre Lakatos. Based on what we've discussed so far, we can argue that Anderson's early approaches to scientific rationality allowed him to confront several problems in modernist architectural historiography (such as the aforementioned historicist tendencies to explain architecture or to prophesy its future in relation to supposed historical principles or laws) with a fresh mindset. In order to develop this argument, we will start this chapter by studying three early stages in Anderson's approach to scientific rationality which are pertinent to our discussion. For the sake of clarity I will briefly sketch each of these stages, before developing them as sections in the chapter.

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[4] Pollak, Martha (ed.): The Education of the Architect. Historiography, Urbanism and the Growth of Architectural Knowledge: Essays Presented to Stanford Anderson. Cambridge (Mass.), London: MIT, 1997

[5] Anderson, Stanford: "Rational Reconstructions and Architectural Knowledge," in Faschingeder, Kristian, et al. (eds.): Architecture in the Age of Empire. Weimar: Verlag der Bauhaus-Universität, 2011, pp. 160 – 173

[6] Daly Herman: "Ecologies of Scale: Interview with Benjamin Kunkel," New Left Review 109 (January / February 2018), pp. 88 – 89

[7] Anderson wrote: "It was particularly my exposure to the thought of Popper, through the dynamic teaching of Paul Feyerabend, that led me to go on to a doctoral degree program." Anderson, Stanford: Interview dated April 6, 1999, in Frank, Suzanne: IAUS: The Institute for Architecture and Urban Studies; an Insider's Memoire. Bloomington: Author House, 2011, p. 214. Furthermore, see footnote 15, in Anderson, Stanford: "Architecture And Tradition That Isn't Trad, Dad," In Whiffen, Marcus (ed.), The History, Theory and Criticism of Architecture. Cambridge (Mass.): MIT, 1965, p. 77

The first of these stages has already been mentioned in the introduction, and demands that we turn our attention back to the early 1960s, when Anderson's decided to challenge Reyner Banham's advocacy for a supposedly tradition-less modernist architecture. Our analysis of the arguments advanced by both authors in a couple of interrelated texts will try to identify elements of historicism in Banham's appraisal of architecture, and describe the development of that appraisal which was suggested by Anderson.

A second stage in Anderson's intellectual trajectory recognized architecture as a discipline that advances possible futures for the built environment, without assuming those possible futures as prophesy. In tune with the *telic*[8] nature of this interpretation, I have decided to link it to the distinct figure of the *model*, as defined by the philosopher Marx Wartofsky; and I have tried to incorporate that particular definition of the model within my approach to Anderson's work. I trust that the consequences of establishing this link will be fruitful.

Yet a third, among the stages in Anderson's work which we'll study, elaborated on the notion of *proliferation*, which has also been mentioned several times in the introduction. We will explore Paul Feyerabend's interpretation of the role of proliferation in the growth and development of knowledge, and link that interpretation to Anderson's characterization of the built environment as an *artifact* (a figure borrowed from the field of economics) that is defined by proliferation.

Following our description of these three stages, we will evaluate the ways in which Stanford Anderson's approach to Imre Lakatos's methodology of scientific research programs benefitted from the use of definitions and conjectures developed in each stage, and we will study Lakatos's methodology with some degree of detail. Towards the end of the chapter, I will focus on some of the examples used by Anderson to present his version of the methodology at work, and suggest necessary corrections to several problematic items I have identified in those examples.

In order to develop these points in our discussion, we must begin by turning our attention back to the early 1960s, and focus on some of the transactions (understood simultaneously as negotiations, interactions, and records of intellectual activity within a discipline among two or more individuals, as noted in the introduction) that were taking place among architects then.

**Tradition and authority**

Our study of Stanford Anderson's path towards a methodology of research programs for architecture begins in 1963, with his decision to challenge a specific item from Reyner Banham's understanding of modern architecture. He wrote: "I have chosen to introduce my argument

[8] The dictionary defines telic as: "expressing and end or purpose". http://www.dictionary.com/browse/telic, retrieved 07/08/2017. Both end and purpose necessarily imply a projection towards the future.

through the writing of Reyner Banham for several reasons. Banham makes articulate a view which I believe is implicitly held by many architects. His writings have recently been topical; and thus a summary of them should give perspective to my own position. Finally, I hope that this polemicizing tactic will assure me at least one interested, and interesting, critic."[9]

Banham – we know – was an extremely popular historian of modernist architecture, noted for his development of a distinct mechanistic posture (i.e., "relating to theories which explain phenomena in purely physical or deterministic terms"[10]) developed throughout most of his research, but very specifically in a series of articles he published in 1960 in the Architectural Review, under the title "Stocktaking."[11] Anderson's challenge to that posture was specifically directed against the article "Coventry Cathedral: Strictly 'Trad, Dad'"[12] – a short piece from 1962 in which Banham discussed the results of the design competition (from 1950) and posterior reconstruction (between 1956 and 1962) of St. Michael's Cathedral, in Coventry.[13] "There can be little doubt that Coventry Cathedral is the worst setback in English church architecture for a very long time," Banham wrote. "Its influence, unless sternly resisted, can only be confusing and diversionary."[14]

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[9] Anderson, Stanford: "Architecture And Tradition That Isn't Trad, Dad," In Whiffen, Marcus (ed.), The History, Theory and Criticism of Architecture. Cambridge (Mass.): MIT, 1965, p. 72

[10] https://en.oxforddictionaries.com/definition/mechanistic, retrieved 01/08/2017. Evidently, the deterministic aspect of this definition already suggests a historicist basis of the mechanicist approach.

[11] These are: "Stocktaking 1: Tradition and Technology," in Architectural Review 127 No. 756 (February, 1960), pp. 93 – 100; "Stocktaking 2: The Science Side," in Architectural Review 127 No. 757 (March, 1960), p. 183 – 190; "Stocktaking 3: The Future of Universal Man," in Architectural Review 127 No. 758 (April, 1960), pp. 253 – 260; "Stocktaking 4: History Under Revision," in Architectural Review 127 No. 759 (May, 1960), pp. 325 – 332; and "Stocktaking 5: Propositions," in Architectural Review 127 No. 760 (June, 1960), pp. 381 – 388.

[12] First published as: Banham, Reyner: "Coventry Cathedral – Strictly 'Trad, Dad'," in New Statesman, LXIII (May 25, 1962), pp. 768 – 769.

[13] Originally built between the 15th and 16th centuries, and partly destroyed by the Luftwaffe in 1940. https://en.wikipedia.org/wiki/Coventry_Cathedral, retrieved 28/08/2017

[14] From the re-print version of Banham, Reyner: "Coventry Cathedral – Strictly 'Trad, Dad'," published in Architectural Forum, CXVII (August 1962), pp. 118 – 119. All further mentions of this text refer to this version.

According to Banham, the Cathedral by the Indian born architect Basil Spence[15] could be described in those terms, basically for not conforming to what he implicitly defined as *true modernism*.[16] In particular, Banham severely criticized Spence's inability to resist the allegedly backwards competition brief behind the project, which he referred to as "trad, Dad."[17] What troubled Banham was the idea that the configuration of the Cathedral could be defined on the fore, on the basis of a traditional church-form. Even if the conventional basilica layout was updated by Spence's use of modern building materials and techniques, and by his use of ornaments and religious artwork in modern styles, Banham sternly rejected it. "A true modernist," he argued, "a radical functionalist, would have rejected this basic proposition…"[18]

To this, Stanford Anderson reacted with a paper entitled "Architecture and Tradition that isn't 'Trad, Dad'," presented in a symposium held at the Architectural Association in London in 1963. "My first public lecture and publication," Anderson wrote, "was a defense of the Popperian concept of tradition against the technological determinism of Reyner Banham."[19]

The paper, published the following year in the proceedings of the 1964 AIA-ACSA Teacher Seminar,[20] used Karl Popper's distinction between tradition (basically, that which is customary, or

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[15] Paradoxically, the Wikipedia biography of Basil Spence (1907 – 1976) mentions that he was "most notably associated with Coventry Cathedral in England and the Beehive (executive wing of the Parliament building, in Wellington) in New Zealand, but also responsible for numerous other buildings in the Modernist/Brutalist style." In: https://en.wikipedia.org/wiki/Basil_Spence, retrieved 31/05/2017. As we know, what we know as "brutalism" in 20th century architecture owes much of its popularity to Banham.

[16] It appears that Alison and Peter Smithson's entry to this same competition did meet Banham's expectations regarding *true modernism*, as suggested in Banham, Reyner: "The New Brutalism," the Architectural Review (December, 1955), pp. 354 – 361

[17] The context of this discussion involves Richard Lester's 1962 film "It's Trad, Dad!" (http://www.imdb.com/title/tt0055026/, retrieved 10/08/2017), which illustrates a series of generational tensions in the charged social milieu of Europe and the USA, with specific focus on the distance between traditionalist and innovative segments of society.

[18] Banham: "Coventry Cathedral – Strictly 'Trad, Dad'," p. 118

[19] Anderson, Stanford: "Architectural History in Schools of Architecture," Journal of the Society of Architectural Historians, Vol. 58, No. 3, Architectural History 1999/2000 (September, 1999), p. 285

[20] A relevant note from the foreword to these proceedings, by Bruford L. Pickens: "Although the objective may never be fully reached, the programming has been directed less and less toward presenting a constellation of 'stars,' lecturing to a passive audience – assumed to be neophytes. (…) The ideal seminar might very well have no 'stars,' and depend upon prepared and articulate participants who have varied experience and positive views.", In Whiffen, Marcus (ed.), The History, Theory and Criticism of Architecture. Cambridge (Mass.): MIT, 1965, p. v

passed on from one generation to the next) and traditionalism to confront Banham's belief that modern architecture is at odds with tradition.

Popper recognized that "quantitatively and qualitatively by far the most important source of our knowledge – apart from inborn knowledge – is tradition. Most things we know we have learnt by example, by being told, by reading books, by learning how to criticize, how to take and to accept criticism, how to respect truth. The fact that most of the sources of our knowledge are traditional condemns anti-traditionalism as futile. But this fact must not be held to support a traditionalist attitude: every bit of our traditional knowledge (and even our inborn knowledge) is open to critical examination and may be overthrown. Nevertheless, without tradition, knowledge would be impossible."[21] Based on these premises, Anderson recognized the importance of tradition as a source of knowledge,[22] but rejected traditionalism, which can be defined as the attribution of authority to any tradition. The key word here is authority.

In Anderson's words, "traditionalism, in the sense of seeking to maintain the status quo, has been traditionally, and rightly, combated by most twentieth-century architects. But having rejected the authority of tradition, modern architects have then sought a new authority. Most commonly, architects have claimed to find that authority in science or technology. To cite a recent example of such theorizing,[23] Dr. Reyner Banham argues that technology 'represents the converse of tradition'…"[24]

Concretely, Anderson's opposition to Banham tried to "establish an interpretation of tradition that will recognize our debt to the past without establishing the past as an authority."[25] He aimed to do so, not only by contending Banham's belief that modern architects could ignore architectural

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[21] Popper, Karl: "Sources of Knowledge and Ignorance," in Popper, Karl: Conjectures and Refutations. London and New York: Routledge, 2010, p. 36; also: Popper, Karl: "Towards a Rational Theory of Tradition," in Conjectures and Refutations, London and New York: Routledge, 2010, pp. 161 – 182

[22] This posture was simultaneously developed by Landau, who argued that "a building is the response to its *problem requirements* in the light of a *tradition*." Landau, Royston, "Towards a Structure for Architectural Ideas," ARENA, Volume 81, Number 893 (June 1965), p. 10. I wish to thank Klaus Platzgummer from the Architectural Association for sharing this paper with me.

[23] Clearly, Anderson refers here to: "Stocktaking 1: Tradition and Technology," in Architectural Review 127 No. 756 (February, 1960), pp. 93 – 100

[24] See footnote 1, in: Anderson, Stanford: "Architecture And Tradition That Isn't Trad, Dad," In Whiffen, Marcus (ed.), The History, Theory and Criticism of Architecture. Cambridge (Mass.): MIT, 1965, p. 71.

[25] Ibid.

tradition altogether, but – more importantly – by contending the underlying idea that architecture should be understood in relation to any principle or law, taken for authority.

This was clearly the case with Banham. In his opinion, the revolutionary nature of modernity had generated unprecedented conditions, which could or should not be confronted with instruments and methods from the past.[26]

For the sake of argument, we could establish an indirect link between Banham's approach to history and Anderson's scientific sources. In tune with Thomas Kuhn's description of the history of science as a series of long periods of normal science, punctuated by exceptional scientific revolutions; Banham's article on Coventry Cathedral assumed that there are long periods of architectural continuity, and turning points in architectural history where *quantitative* change seems unable to confront the problems of time. Cultural movements are therefore pushed towards *qualitative* change, which could be linked to Kuhn's description of scientific revolutions.[27]

Granted that scientific progress was responsible for that revolutionary nature of modernity (i.e., for our radical breaking-with-the-past), Banham believed that science should also be able to explain the present and define a course of action for the future, even for architects. In consequence, he suggested that modern architects should not rely on architectures of the past, but emulate the products of modern science, towards the future.[28]

But, what exactly did Banham understand by science?

We can infer a reasonable definition from his claim that "the most significant aspect of the rigorous scrutiny of the history of the Modern Movement (is) the rediscovery of science as a

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[26] I infer this opinion from ideas expressed in the following books and collections of essays by Reyner Banham: Theory and Design in the First Machine Age. London: the Architectural Press, 1960; Guide to Modern Architecture. London: The Architectural Press, 1962; Megastructure: Urban Futures of the Recent Past. London: Thames and Hudson, 1976; Design By Choice (ed. Penny Sparke). London: Academy Editions, 1981; The Architecture of the Well-Tempered Environment. Chicago: University of Chicago Press, 1984; and A Critic Writes, Berkeley, Los Angeles, London: University of California Press, 1999.

[27] Kuhn, Thomas S.: The Structure of Scientific Revolutions. Chicago and London: University of Chicago Press, 1996

[28] This is formulated quite concretely in Anderson: "Architecture And Tradition That Isn't Trad, Dad," pp. 72 – 73. Cf., Banham's argument in Theory and Design in the First Machine Age, that the architecture of the early Twentieth century was tense between academicism (tradition) and Futurism (progress). Banham's belief that modernist architects had taken a turn towards academicism and away from Futurism after the 1920s, led him to claim that they were "wrong". Banham: Theory and Design in the First Machine Age, p. 330

dynamic force, rather than the humble servant of architecture."[29] If we pair that claim to his well-known belief that "what we have hitherto understood as architecture, and what we are beginning to understand of technology are incompatible disciplines," [30] we can confidently argue that Banham basically understood science as the particular rationality which rules technology.

This interpretation explains Banham's attempt to describe what he called "the science side"[31] of architecture in relation to technical processes from the aerospace ("weapons systems," in his words) and computer industries; or in relation to a mechanistic[32] approach to physiology, psychology, and psychiatry (which he called the "human sciences"). In this sense, Anderson's description of Banham's posture as "technological determinism" is quite accurate.

Together, Banham's equation of science and technology, and his opposition of science to tradition, raise important questions,[33] as Anderson was quick to note. "Even if we were to accept that such a thing as a qualitative change distinguished modern architecture from that which preceded it," he asked, "does this liberate us from the past? Is the traditional operational lore of architecture categorically superseded? Or is the situation of architecture similar to that of physics, where older hypotheses (…) remain theoretically suggestive or pragmatically operative? Are tradition and technology hostile opposites which cannot work in concert?" [34]

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[29] Banham: "Stocktaking 1: Tradition and Technology," pp. 93 – 100

[30] Banham: Theory and Design in the First Machine Age, pp. 329 - 330

[31] Specifically in: "Stocktaking 2: The Science Side," in Architectural Review 127 No. 757 (March, 1960), p. 183 – 190

[32] I base this observation on the definition of the term "mechanistic" provided above; in the sense that these so-called "human sciences" try to study quantifiable, cause-effect approaches to the relation between the built environment and the human body (physiology) and mind (psychology and psychiatry). Richard Llewelyn-Davies, in charge of making the description of this relation in the article, cites multiple sources that study comfort (heating, lighting, sound insulation, glare), functional efficiency (in hospitals and laboratories), and general sensory perception. Banham developed the first of these lines in: The Architecture of the Well-Tempered Environment, first published in 1969.

[33] Cf., Vidler, Anthony: "Troubles in Theory, Part III: The Great Divide: Technology vs. Tradition," in the Architectural Review (24 July, 2012) https://www.architectural-review.com/rethink/viewpoints/troubles-in-theory-part-iii-the-great-divide-technology-vs-tradition/8633393.article, retrieved 26/09/2017

[34] Anderson: "Architecture And Tradition That Isn't Trad, Dad," p. 74

We know the answers to these questions. Strictly speaking, more and better architectural knowledge is available to us than it was to our predecessors.[35] However, it is clear that we have no evidence to support the claim that any specific improvement we can think of in architecture can be described as tradition-less. Most importantly: we know that the use of science as an excuse to reject tradition is inaccurate. In fact (as Anderson suggested, in relation to physics) it is clear that modern science has largely benefited from retaining valuable elements from scientific tradition, proving that tradition itself does not necessarily impede progress or innovation.

Brought back to architecture, what we know largely contradicts Banham's interpretation. "The conclusion to be drawn from the tradition-bound character of our most famous contemporary architects," Anderson thought, "is not that we must be rid of tradition, but rather that we should acquaint ourselves with our traditions – in order that we may use those traditions more eloquently or free ourselves from them, as we see fit. At times, traditions may be kept vital and more richly and subtly expressive by only the smallest of adjustments or innovations. Again, if our traditions have sunk to the level of torpid convention, radical innovation may be necessary."[36]

Evidently, Anderson's ability to contradict Banham's arguments benefited from a nuanced[37] definition of the role of tradition in the production of new architecture: neither as an authority nor as a constraint, but rather as a "necessary, common dynamic ground upon which we operate."[38] Firstly, because that nuanced definition was able to recognize both the limiting and limited nature of some ineffectual traditions; and secondly, because despite that recognition, it still acknowledged the fact that even "radically new goals" may be fulfilled through an "acute understanding of our tradition and of its influence upon us. (…) A critical understanding of our tradition," Anderson felt, "is a necessary aspect of any rational and fruitful context for decision-making." [39]

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[35] Cf.: "Despite only rather *ad hoc* criticism, I think we would agree that public housing has improved during the century. Park Hill, Sheffield, is now an excellent conjecture which hopes to resolve some of the problems which earlier developments left open to criticism. We may hope to learn all the more from Park Hill in that it is the subject of continuing sociological study. We learn from the proposal, testing, and reformulation or rejection of simple and apparently inadequate hypotheses such as the *Existenzminimum*." Anderson: "Architecture And Tradition That Isn't Trad, Dad," p. 87

[36] Ibid. pp. 75 - 76

[37] Anderson defined his position as situated "between the extremes of traditionalistic 'tombstone polishing' and a 'compulsive, progressivist reflex'," in Ibid., p. 71

[38] Ibid., p. 76

[39] Ibid, p. 76 – 77

Furthermore, we must understand why Anderson was keen on discussing this particular issue with Banham. In fact, his thoughts on tradition were part of his approach to methodologies that aim to explain the growth of knowledge, in general; and of scientific knowledge, in particular. We already know that what we have described as his nuanced approach to tradition was strongly based on "the Popperian concept of tradition." Clearly, his thoughts on science and the growth of knowledge shared the same origin.[40]

Specifically, Popperian falsificationism (i.e., the assumption that in order to be scientific, a proposition must acknowledge that there must be a counter-proposition that proves it false) was crucial to Stanford Anderson's understanding of cognitive growth. In his words, the fact that until now we continue to try and err and learn from our mistakes is "the basis of all epistemology and methodology."[41] In other words, for Anderson a critical reading of our guesses and mistakes is the motive force that makes our knowledge improve and grow. "What we call 'science'," Anderson thought, " is differentiated from other guesses not by being something distinct from other guesses but by the attitude of scientists towards their guesses. They maintain an active, critical, or argumentative attitude toward their guesses."[42]

Clearly, this definition of science has little use for incontrovertible principles or laws. As we've defined it, a falsificationist posture assumes any proposition as conjectural, demands that it has potential falsifiers, and welcomes severe criticism of that conjecture as a way to test its soundness. The opposite (i.e., an understanding that aims to corroborate interpretations in relation to a supposed principle or law), we have linked to historicism; and while Anderson did not refer explicitly to historicist accounts, he did object approaches to architecture in which "corroboration is always sought; never falsification. (…) This absolutist attitude," Anderson felt, "encourages personal criticism[43] against the author rather than rational criticism of the conjecture."[44]

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[40] Anderson wrote: "I would like to express my appreciation to Professor P.K. Feyerabend, who introduced me to Popper's writings at the University of California, Berkeley, in the fall of 1958." This acknowledgment follows a list of works by Popper, used as sources for this article. See footnote 15 in: Anderson: "Architecture And Tradition That Isn't Trad, Dad," p. 77

[41] Ibid., p. 77

[42] Ibid., p. 78

[43] This observation might explain why modernist histories of architecture often focus on individual authors, described as authorities or "masters" – a point I will develop further in the final chapter of this discussion.

[44] Ibid., pp. 86 - 87

The target of these observations was again Banham, whose rejection of Coventry Cathedral sought to corroborate what he took for true modernism; and whose criticism was directed against the author of the Cathedral for diverting form the authority of science, here typified as radical functionalism.[45]

Instead, Anderson had a very different interpretation of what science meant, and why it was important for modern architects. Banham's attempt to explain, judge, and prophesy architecture against the authority of science as technology or mechanistic thinking was very different from Anderson's attempt to adapt the *methodologies of the scientific disciplines* to architectural thinking. Focus on these methodologies implied, according to Anderson, that[46] "there is no authoritative source for our guesses, (that) we can accept for consideration hypotheses or ideas from any source."[47]

While we can subscribe to the first part of this statement (that there should be no authoritative source for our guesses), the second part (that our guesses can come from any source) deserves our attention. Bluntly put: Rejection of authority – I argue – should not mean that anything goes, and should certainly not favor lack of focus or pertinence for our guesses. This truism raises an important question: how to keep discussions focused and pertinent in the absence of an authority?

The answer is quite simple: by ascribing those discussions to tradition. Tradition – and that's why this point is so relevant for our discussion – plays a key role in Stanford Anderson's approach to scientific methodology (and its possible use by architects) as it keeps discussions focused on and pertinent for architecture. Although this argument will be challenged in the following section, we can still say here that not any or every guess by an architect should be considered in the pursuit of architectural knowledge. Trial and error, conjectures and refutations, guesses, observations, and predictions, are useful and operative for architecture if (and only if) they remain within the limits of architecture. For a historicist, these limits would be defined by an authority. We believe, on the contrary, that these limits are basically defined by consensual agreements among architects.

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[45] For Banham, a "pure functionalist" is "an architect who designs entirely without aesthetic intentions." In: Banham: Theory and Design in the First Machine Age, p. 162

[46] "One's guesses change in the direction of an ever better account of that which we can observe; that is, our guesses serve to explain the world. Furthermore, such guesses or theories lead us to observe things which we would not otherwise have observed; that is, our theories are predictive. By checking the correspondence of our predictions with our observations, we are able to test our theories. Thus theories serve us for explanation, prediction and testing." Anderson: "Architecture And Tradition That Isn't Trad, Dad," p. 78

[47] Ibid., p. 78

A similar realization led Anderson to establish a productive link between tradition and theory.[48] Theories, he argued, have always been used to explain, predict and test. In this sense, he added, "traditions play a role similar to theories. (…) And in this role of theory, traditions give us something upon which to operate – a means of communication (including, but not restricted to, language) and a body of conventional usages and ideas which are, nevertheless, subject to criticism and change. Similar to science, society proceeds by the tradition of changing its traditional myths. But this process implies the impossibility of starting with a *tabula rasa*."[49]

Developing this interpretation further, Anderson also thought that "the tradition we prize is not a mere accumulation of knowledge, an undifferentiated catalog of past events, but rather a vital body of ideas, values, mores, and so forth that we have as yet found resistant to criticism."[50] This means that tradition is not (or should not come from) an authority. Instead, we can comfortably relate it to Sarah William's Goldhagen's description of a discourse, from the introduction; and define it as a concerted, communal, conventional construct; built by many over time, and ever-changing.

Taken to practical terms, Anderson used his Popperian approach to tradition to illustrate the banality of both tradition-less and traditionalist postures in architecture, with an example: Against Banham's claim that Italian Futurist architecture was basically tradition-less,[51] and instead leaned towards the authority of modern science, Anderson set out to prove that the Futurist architect Antonio Sant'Elia's mechanistic utopia relied on traditional forms and methods of architectural representation. Strictly speaking, Sant'Elia's architecture continued ongoing explorations carried out by architects who recognized strong ties to tradition, like Frank Lloyd Wright, Charles Rennie Mackintosh, or the architects grouped under the Viennese Secession. By simply recognizing some of these relations, Anderson demonstrated that the belief that an architect can reject tradition altogether is simply not accurate.[52]

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[48] Cf., Popper, Karl: "Three Views Concerning Human Knowledge," in: Conjectures and Refutations. London and New York: Routledge, 2010. Especially Part 4, "The Second View: Theories as Instruments," pp. 144 – 148

[49] Anderson: "Architecture And Tradition That Isn't Trad, Dad," p. 81

[50] Ibid., p. 82

[51] "The architect who proposes to run with technology knows now that he will be in fast company, and that, in order to keep up, *he may have to emulate the Futurists and discard his whole cultural load,* including the professional garments by which he is recognized as an architect." Banham: Theory and Design in the First Machine Age, pp. 329 – 330, my italics

[52] Anderson: "Architecture And Tradition That Isn't Trad, Dad,", p. 79

Furthermore, to illustrate the shortcomings of the opposite, traditionalist posture, Anderson focused on the work of English architect Augustus Pugin. Of special interest for Anderson was Pugin's belief "that Protestantism had led to degeneracy in architecture;"[53] and while we will certainly not focus on the details of Pugin's ludicrous posture, we can simply go through Anderson's account. For a long time Pugin tied his critical evaluation of architecture to its adherence to Gothic traditions, taken for authorities. "What this escapist attitude actually meant," Anderson wrote, "was that Pugin was not at all in a position to deal with the evils of the contemporary tradition; his anachronistic endeavors would not challenge the most pressing problems directly and could not provide the innovation necessary to transform the condition of architecture."[54]

So seen, Pugin's inability to articulate his understanding of architecture in relation to other architectures (and to the questions they set out to confront) was shared with the Futurists. Anderson argued that, aside from stemming from an inaccurate claim (as noted above), the relevance and pertinence of Sant'Elia's supposedly tradition-less architecture dwindled due to his incapacity to recognize valuable elements in certain traditions. In other words, while Pugin withdrew his work from questions of his time by granting authority to a particular tradition, Sant'Elia also withdrew his work from the questions of his time by leaping into the future blindly; or by granting authority to technological progress, against tradition. Together, traditionalist and tradition-less architects proved unable to uphold their conjectures for long, based on their un-operative postures regarding architectural tradition.

Anderson's example allows us to conclude that in their attempt to circle *around* tradition, Futurist and neo-Gothic conjectures revealed their inability to interrelate with other architectures.[55] This issued in their work's incapacity to compete or cooperate with other architectures of their time, which productively acknowledge useful elements from tradition, and dismissed others, in order to confront topical questions. In conclusion, Pugin's neo-Gothic, and Sant'Elia's Futurist approaches were challenged by modern architectures[56] that established heuristically clearer and more operative positions vis-à-vis tradition.

Based on this example, Anderson argued that if modern architects (like Basil Spence) were to be criticized, they should not be criticized (as Banham did) for utilizing valid aspects of tradition in their own work. Instead, Anderson provided consistent arguments to justify criticism towards any

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[53] Anderson: "Architecture And Tradition That Isn't Trad, Dad,", p. 83

[54] Ibid. p. 85

[55] Cf. Landau: "Towards a Structure for Architectural Ideas," p. 11

[56] For an excellent reflection on modern traditions in architecture, see: Martí Arís, Carlos: Silencios Elocuentes. Barcelona: Edicions UPC, 2002, pp. 12 – 16

architect who believes that his work is absolutely free from any link to other architectures, including those of the past. "This supposed independence," he said, "often led (modernist architects) into a blind submission to traditions which they might otherwise have critically observed and overthrown."[57]

In summary, around the question of tradition, and more specifically, around the role played by architectural traditions in the production of modern architecture, we have been able to identify the underlying historicist basis in Reyner Banham's approach to architecture. We have described that historicist basis as Bahnam's intention to explain the present and prophesy the future in relation to a rule or law: in this case, a supposed scientific rationality patent in technology, which he referred to as "true modernism." While we can agree with Banham's rejection of tradition as an authority for architecture; we have seen how his beliefs that modern architecture should reject tradition altogether, and – much worse – that the authority of tradition should be replaced by the authority of (a very particular interpretation of) science, were easily refuted. Finally, we have seen how Anderson's refutation of Banham's beliefs was strongly based on his adoption of a particular definition of scientific rationality.

Writing these partial conclusions has allowed me to realize that Anderson's and Banham's arguments regarding the role of tradition in the production of modern architecture have kept our attention focused on the relation between an architect's work and the architectures of the past. Meanwhile, we have only hinted at architecture's capacity to describe possible futures for the built environment. In order to move our discussion forward, in the following section we shall approach the relation between architecture and the future with some degree of detail, based on some of the papers presented in an academic event.

**Architecture as model**

Some of the papers presented at the conference "Inventing the Future Environment," held a few years[58] after the publication of "Architecture and Tradition," should help us understand Stanford

[57] Anderson: "Architecture And Tradition That Isn't Trad, Dad," p. 75

[58] "Documentation of a conference held ad Endicott House, Dedham, Massachusetts, October 13 – 16, 1966, under the sponsorship of The Graham Foundation for Advanced Studies in the Fine Arts, the American Institute of Architects – Princeton Educational Research Project, and the Department of Architecture, Massachusetts Institute of Technology." As noted in Anderson, Stanford (ed.): Planning for Diversity and Choice: Possible Futures and Their Relation to the Man Controlled Environment. Cambridge (Mass.): MIT, 1968

Anderson's approach to the methodology of research programs a bit better. The proceedings[59] of that conference were edited by Anderson, and cover a breadth of topics (such as leisure, vehicular traffic, and demographics) always in relation to the built environment.[60] Despite that breadth, though, most papers included in the proceedings seem to share the idea that progress in architecture is basically cognitive. In other words, rather than limiting the discussion to possible technical, aesthetic, or performative improvements in architecture, focus was set on the growth of architectural knowledge. As a consequence of that focus, discussion was largely carried out in methodological and normative terms; meaning: most papers studied the instruments and methods that make that growth of knowledge possible; and the ways in which those instruments or methods can be standardized or regulated in order to be assessed.

Aside from defining that focus, in his role of editor Stanford Anderson took a clear stance regarding what was meant by "possible futures" for the built environment in that conference. In line with what we've discussed in the introduction, he was keen on avoiding the historicist tendency to prophesy. "This conference," he wrote, "is frankly weighted toward those people who are concerned with the multiple possibilities before man, not towards those who would prophesy the future nor even toward those who find satisfaction in projecting the most probable future. I shall briefly consider this orientation as it relates to architecture and to this conference."[61]

Historicism – we said earlier – tries to explain the origins and development of a particular event in relation to supposed underlying historical principles or laws, and often aims to prophesy based on those principles or laws. Architects who feel compelled to corroborate their beliefs regarding the past, as well as architects who wish to impose their individual ambitions on others towards the future, have often favored historicist interpretations. Case in point is Banham's "machine age" – supposedly undeniable as an explanation of his time; supposedly inexorable as a prospect for the future.

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[59] A note by the editor: "The conference title was 'Inventing the Future Environment.' This Publication varies from the conference program in the following respects: the paper of one contributor has been omitted; Professor Feyerabend's essay, my 'Summary' and Carney's Postscript have been added; all papers and discussions have been edited; section headings and the arrangement of parts have been changed in the interest of better conformity with the content." Footnote 1, Anderson (ed.): Planning for Diversity and Choice," p. 3

[60] These topics are "Current General Studies of the Future", "Two Broad Substantive Issues in Planning for the Future", "Two Themes on the Changing Style of Life", "Plural and Normative Planning", and – perhaps the most relevant to the present investigation – "New Methodologies for Pluralistic situations". The book concludes with a "Response from the Architects," a Summary, and the essay "Environmental Conjecture: In the Jungle of the Grand Prediction," by Melvin Charney, as a Postscript.

[61] Ibid., p. 5

"However," Anderson wrote, "the architect has slowly been forced to acknowledge that in most cases he does not act upon the environment unilaterally and that when he has had approximated total control of the environment, the life of the community has far too often been as bad or worse than before. The image of the architect as the great social prophet has lost whatever credibility it may once have had. (…) To state the problem more briefly," he concluded, "architects and planners have been frustrated by the recognition that their work does have an effect on the future, by a consequent feeling that they must be responsible to the future, and by the disconcerting admission that they do not know the future."[62]

This sense of frustration was related to the historicist bases we have attributed to modernist architecture. Anderson seemingly concurred with this interpretation, when he claimed that architects' "reliance upon (…) the situation of the moment viewed as a point in a continuation from the past into the future (is) an inadequate basis for architectural thought and practice. There are aspects of situations which are discontinuous or changes of scales and rates of change which cannot be accounted for in the immediate situation alone, nor even in projections or extrapolations."[63] Said even more simply: reality defies the historicist belief that supposed historical principles or laws link past, present, and future univocally; hanging on to that supposition can only result in frustration.

In order to evolve beyond what he took for an inadequate basis for architectural thought and practice, Anderson proposed that modern architects drop their historicist ambition to be accurate or right in relation to supposed historical principles or laws. "The architect's problem," he argued, "is not how to found his knowledge positively but how to make his knowledge grow. (…) To grow in such knowledge requires the invention of possibilities and of possible futures."[64]

This idea is crucial to our investigation, for two reasons. Firstly, because it makes the difference between Anderson's understanding of architecture and Banham's understanding of architecture even clearer. Simply put, while Banham sustained that it is the architect's goal or duty to be right (and thus feels entitled to criticize Basil Spence for being "confusing and diversionary," for example); Anderson advocated for an architect who explores.

The second reason why this idea is crucial to our investigation relates to its pairing of the growth of knowledge with the invention of possible futures. This relation deserves some attention.

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[62] Anderson, Stanford (ed.): Planning for Diversity and Choice," p. 5. Certainly, Anderson was not alone in this argument; formulated in different ways, by people as different as Constant, Cedric Price, and John Turner, among many others.

[63] Ibid., p. 6

[64] Ibid., p. 5

Our approach to this question can start by defining architecture as a telic discipline; meaning: a discipline that projects its products towards the future. I guess most of us can agree with that definition. If we also believe (as we have chosen to do) that our understanding of architecture would benefit from overcoming elements of historicism (as we've described them), it logically follows that these possible futures should not equate to historicist prophesy (as we've described it). The question becomes then: What is the difference between project and prophesy?

The difference appears to be a question of method. At least that's what Anderson indicated, when he told those gathered around the topic of possible futures for the built environment in 1966 that they should not expect to foresee radically new architectures for an improved society: "Rather," he told them, "we seek a more viable *methodology* for architecture."[65]

If by viable we understand practicable or workable (as the dictionary suggests[66]), Anderson's rejection of the historicist aim to prophesy led him to advance a practical or operative understanding of architecture. In turn, this practical or operative understanding is focused on methodology, which we have described earlier as the study of the instruments and methods used by architects to develop their work. We can confidently conclude then that the difference between architecture's projection of possible futures and prophesy is that, unlike prophesy (or utopia), architecture's projection of possible futures is operative; meaning: it implies a series of instruments and methods required to achieve those possible futures. Granted that we can understand what those instruments and methods are, and how they operate, it is clear that we can approach architecture's projection of possible futures methodologically.

This idea (which, as we'll see, Anderson unfortunately failed to follow through in his attempts to exemplify Lakatos's methodology at work) is further developed in some of the papers included in the conference proceedings, with arguments that I will try to expose and incorporate to our discussion. The first of these papers is "Utopian Thinking and the Architect,"[67] by the Canadian social anthropologist and philosopher Ian Charles Jarvie (one of Popper's students at the London School of Economics).

In short, Jarvie offered much valued refinement to some of the terms we've been using, as he sustained that a radical rejection of prophesy, futurism, or utopian thinking is counterproductive. In his opinion, while Popper's rejection of historicist prophesy and utopianism were based on

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[65] Anderson (ed.): Planning for Diversity and Choice, p. 5

[66] http://www.dictionary.com/browse/viable, retrieved 04/08/2017

[67] Jarvie, I.C.: "Utopian Thinking and the Architect," in Anderson (ed.): Planning for Diversity and Choice, pp. 8 – 41

evidence of their tragic results,[68] it should be possible to minimize those tragic results and keep the beneficial aspects of even the wildest speculation regarding the future.

These beneficial aspects are related with the production of knowledge, if we follow Anderson's belief that "the architect's problem is how to make his knowledge grow." Accordingly, Jarvie believed that even wild speculation can teach us. To sustain that claim, he sketched a few different ways of thinking about the future, and then tried to see how each of them might improve or increase our knowledge. "The future," he wrote, "could be confronted or thought about in three ways: 1. Things will go on as they have – with a few small changes. This is a rather conservative prediction about the future. 2. Certain present tendencies will become dominant. This is inductive prediction. 3. Wild speculation about the future; or we have no idea, but maybe such and such will happen."[69]

Jarvie's opinion was that all the above possibilities "are on the same level of likelihood. There is absolutely no way of telling whether we are in for a period of quiescence (1), whether certain present trends will grow stronger and become dominant (2), or whether drastic wholesale change will occur without warning (3). The advocates of 1 and 2 are simply conservative and inductive in their refusal to face this fact, that we really don't know. However, those who approach wild speculation and prophecy in a critical way might at least learn something unexpected and conceivably useful."[70]

Again, Jarvie's definition of what constitutes a critical approach to utopia is a question of method. "In methodology," he thought, "we stress the importance of concentrating on a single problem and its ramifications; otherwise, it can't really be followed through. (…) The main technique is to decide what problems you are talking about and then to break them down into as many manageable sub-problems as you possibly can. In this way, you find that a large number of them have obvious solutions and that others are very difficult; but you have at least narrowed the points of concentration. This seems to me one of the easiest ways to break down existing categories and misconceptions."[71]

Like us, Jarvie acknowledged a telic nature for architecture; or its expression of an end or purpose towards the future. We've also called this architecture's projection of possible futures. Knowledge

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[68] Cf. Popper, Karl: "Utopia and Violence," in Conjectures and Refutations. London and New York: Routledge, 2010, pp. 477 – 488

[69] Jarvie, I.C.: "Utopian Thinking and the Architect," in Anderson (ed.): Planning for Diversity and Choice, pp. 23 – 24

[70] Ibid., p. 24

[71] Ibid., p. 30

regarding those futures, though, cannot be "founded positively" – we have no way to be sure, or right. Rather, Jarvie asserted that extremely different attitudes towards a necessarily unpredictable future are equivalent, in the sense of being equally inaccurate; and yet we can learn from all those "wrong" visions of possible futures based on a critical attitude. This critical attitude demands that we evaluate our visions of the future – even the wildest ones. In this particular case, Jarvie's paper proposes that architects should evaluate their visions by utilizing a discernible method: piecemeal engineering, which he called contingency planning; or cutting big problems into smaller sub-problems, as we just saw.[72]

These notions are further strengthened and sharpened in the philosopher Marx Wartofsky's paper "Telos and Technique: Models as Modes of Action."[73] In a nutshell, Wartofsky's paper substantiates architecture's simultaneous capacity to advance possible futures, while it defines the instruments and methods required to arrive at those possible futures.

In tune with Jarvie's breaking down of big problems into smaller sub-problems, Wartofsky defined his text as an attempt "to characterize the normal process of creating the future, by bringing it down from the scale of cosmic crisis to that of daily and local necessity. I do not think," he argued, that "there is a millennial solution to the future; but I do think that the pattern of our ordinary planning and striving prefigures whatever larger structures there are in terms of which long-range creation of the future take place."[74]

Like Jarvie, Wartofsky also recognized "ordinary planning and striving (for the future)" as an alternative to prophecy or utopia (which he called: those "larger structures in which long-range futures take place"). More important, though, is his claim that that every act of ordinary planning and striving for the future encompasses both the envisioned future, as well as the instruments and methods required to get there. Together, future, instruments, and methods, constitute a model; which Wartofsky defined as "future-directed action in which the future is more than the blindly inevitable fact of succession in time and includes some envisioned goal as its content"[75]

Normally, we think of models as "imitations, diagrams, scale versions, or pictures of something already existing. However," Wartofsky believed, "they can be more than this, as in prototypes,

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[72] Cf. Popper, Karl: The Open Society and Its Enemies. London and New York: Routledge, 2011

[73] Wartofsky, Marx. W.: "Telos and Technique: Models as Modes of Action," in Anderson (ed.): Planning for Diversity and Choice, pp. 259 – 268, followed by a discussion (pp. 268 – 274). For a complete development of this subject, see: Wartofsky, Marx W.: Models: Representation and the Scientific Understanding. Dordrecht, Boston, and London: D. Reidel Publishing Company, 1979

[74] Wartofsky: "Telos and Technique," p. 260

[75] Ibid., pp. 260 – 261

plans, hypothetical constructions of various sorts which serve as guides to action. (…) Models are the highly specialized part of our technological equipment whose specific function it is to create the future. (…) What I mean by model," he concluded, "is not simply the *entity* we take as a model but rather the *mode of action* that such an entity itself represents. In this sense, models are embodiments of purpose and, at the same time, instruments for carrying out such purposes."[76]

I will repeat this, in order to make it clearer: Wartofsky's definition of the model encompasses a problem situation or question, plus the instruments and methods required to move from that question to a possible future. In his words: "The features of such a model are that it is necessarily critical of the present, and not simply an envisioning of the future. Thus, such a model has to be both a vision and a creation of the future that is not simply 'more of the same,' or that simply represents the present at a later time. The future here has to be one that destroys the present, preserving only these elements of it which are future-now, those which represent radical innovation in the present."[77] This means that the model favors our heuristic approach to architecture (as defined in the introduction) mindless of the nature, magnitude, or importance of the question considered by the architect. To confirm this interpretation, I rely on Wartofsky's belief that even "in the most trivial cases the model is already normative and telic."[78]

It is important to note that Wartofsky indistinctly used the terms "technical" and "normative" in his definition of the instruments and methods that make the model a "mode of action." Earlier, we linked the technical to those instruments and methods that make that growth of knowledge possible; and the normative to the ways in which they can be standardized or regulated in order to be assessed. This standardization or regulation suggests the need for some degree of specificity – some discipline.

Clearly, models do not cater to just any possible future; nor do they contemplate the use of every tool or method to get there. Given our architectural focus, we must assume that the specific ("only certain") features of the future contemplated in an architectural model are those which pertain to the built environment and fit our definition of architecture. As we just saw, that definition is strongly based on tradition. Adding to Stanford Anderson's defense of a critical approach to architectural tradition, Wartofsky's model proposes an equally critical relation between tradition and the production of modern architecture. "There are (…) things that are presently '*future*'," he

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[76] Wartofsky: "Telos and Technique," p. 261

[77] Ibid., p. 265

[78] "It is normative in that it is chosen to represent abstractively (sic) only certain features of the thing we model, not everything all at once, but those features taken to be important or significant or valuable. The model is telic in that such significance and value can exist only with respect to some end in view or purpose that the model serves." Ibid., p. 261

wrote. “Since they ought to be preserved, they are not ‘obsolescibles.’ There are things that are ‘past-now,’ which are obsolescibles. Which to preserve and which to eliminate is a choice but not a choice that is made merely in theory. It is a choice which has to be made in practice. But even this is a false division because the theoretical choice, if it is a real choice, is one that will terminate in an action of some sort, or is already the inception of an action of some sort.”[79]

This final idea, which blurs the limits between theory and action, leads me to believe that the model is an excellent unit of appraisal for architecture. I base this belief on the fact that the model is able to account for most architectures we can think of, without exceptions. A floor plan, an existing building (and the city it belongs to), the textual description of a place’s atmosphere, a quickly drawn sketch, the way to lay bricks for a wall, a lecture on architectural theory, what we do when we inhabit a place – all these architectures seem to fit comfortably within the definition of models, both telic and technical. And even though he did not explicitly discuss architecture in terms of models, I am convinced that Stanford Anderson’s understanding of architecture after the 1960s incorporated the simultaneously telic and technical features of this figure.

It is also clear to me that between 1963 (when he presented his arguments against Banham) and 1966 (when he collected the papers of the conference “Inventing the Future Environment), Anderson’s understanding of architecture continued evolving around scientific rationality and the growth of knowledge. Our study of that evolution has provided us with a few arguments to sustain our contention of modernist historicism, and has yielded a valuable unit of appraisal for architecture, based on those arguments. While we have the opportunity to recognize the importance of defining this unit of appraisal, and its value for our discussion, we must first take a look at the last among the stages in Stanford Anderson’s intellectual trajectory which we set out to describe.

**Proliferation and the built environment as artifact**

One more paper from the conference proceedings discussed in the previous section is relevant to our study of Stanford Anderson’s intellectual trajectory. However, rather than including that paper in our discussion on architectural models (which we’ll come back to towards the end of this section), I have decided to study it separately. This decision is based on the affinity that exists between the notion of proliferation, defined in that paper, and Stanford Anderson’s reading of the built environment as artifact.

[79] Wartofsky: “Telos and Technique,” pp. 265 - 266

Earlier,[80] we defined proliferation as the deliberate addition of variables in the assessment of any question; and we saw how this addition of variables can be used to evolve beyond what I called "simplistic oppositional schemes." As we said then, among the limitations we have identified in modernist historiography is its aim to explain some architectures in opposition to others. More precisely: we said that modernist historicism often defines a principle or law, and evaluates different architectures in relation to that principle or law. Architectures that epitomize or corroborate the supposed principle or law are simply opposed to architectures that don't. We used a short text by Royston Landau to illustrate this: Landau described a popular opposition (he called it the "Rational/Empiricist polarity"), and found that adding a third variable to the supposed antithesis revealed the inaccuracy of the understanding of architecture that supported that antithesis.

In my conversations with students and colleagues, I like to call this deliberate addition of variables the "confetti strategy," since I imagine an initial situation: a black and a white spot on a surface try to explain something. Based on Landau's example we could group architectures we consider rationalist on the white spot, and architectures we consider empiricist on the black spot. As Landau noticed, beyond a certain point this explanation stops working; some architectures simply can't be described as either black or white. At that point, we'd have several options. One option would be to append each spot with ad-hoc margins, allowing it to account for some irregularities. We'd basically trust that if we allow the margins of the spot that stands for rationalism to grow enough, it might embrace "exalted rationalism," for instance. But there's a limit to ad-hoc-ness, as we've seen; so based on Landau's example I have come to believe that a better option consists in something like throwing confetti over the surface where the black and white spots lie. In my opinion, proliferating on the black and white spots with several spots of different colors demands that we sharpen our definition of what black and white spots stood for in the first place. This is an improvement of knowledge. Furthermore, it invites us to study the position of each spot in relation to others, which leads our attention to the surface that is common to all spots, suggesting an increase in our knowledge regarding the initial situation.[81]

This idea, that adding variables to a question might help us assess that question better, is developed further by a paper from the conference proceedings we've been studying; namely, Paul

[80] I refer to the section "An adequate history," from our introduction.

[81] After using this example several times, I have been glad to discover that OMA's 1982 entry for the Parc de la Villette competition in Paris describes an entire layer of the project as "Point grids, or confetti." http://oma.eu/projects/parc-de-la-villette, retrieved 15/09/2017

Feyerabend's "Outline of a Pluralistic Theory of Knowledge and Action,"[82] included in the section "New Methodologies for Pluralistic Situations."

According to Feyerabend, our knowledge is often hindered by our ambition to be accurate. "The way to knowledge and to the conquest of nature," he thought, "consists in increasingly restricting the range of possible ideas until a close fit is established between behavior and thinking, on the one side, and 'reality,' on the other. The aim is reached as soon as a single point of view is established beyond doubt as the one correct picture of the world."[83]

As we noted of historicism, this idea that knowledge comes from the narrowing down of possible ideas and choices towards a single truth is at odds with our belief that the growth and development of knowledge depends on the falsifiability of our conjectures. We know that Stanford Anderson shared this thought, because he opposed historical interpretations in which "corroboration is always sought, never falsification," as we saw earlier.

Feyerabend held a similar view. Like Anderson, he criticized approaches to knowledge in which "there is only one correct point of view; (in which) the correct philosophical method aims at establishing unanimity as well as steadfastness in the pursuit of truth."[84] In order to confront that steadfastness in the pursuit of truth among philosophers and scientists,[85] Feyerabend turned to art. "While the modern theories of knowledge are still largely hostile to a proliferation of ideas," he wrote, "and while contemporary philosophers and scientists regard it as their main task to delimit the number of alternative views, such a restriction is no longer (sic) demanded in the arts."[86]

His study of what he called the "freedom of artistic creation"[87] led Feyerabend to argue that what we take for true or accurate only reveals the exhaustion of our ability to test or refute our conjectures beyond certain point. In other words, statements taken to be correct in relation to

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[82] Feyerabend, Paul K.: "Outline of a Pluralistic Theory of Knowledge and Action," in Anderson (ed.): Planning for Diversity and Choice, pp. 275 – 284

[83] Ibid., p. 275

[84] Ibid., p. 276

[85] Feyerabend tied this steadfastness to an alleged "principle of tenacity," in: Ibid., pp. 279 - 280

[86] Ibid., p. 277

[87] Ibid., p. 277

reality are not necessarily true; they just mark the moment where criticism is suspended.[88] Talking about science, Feyerabend argued that "concentration upon a narrow domain of theories indicates (that) scientists have come to the end of their rope, that they can no longer think of any decisive objection (or of any decisive reason for defending an alternative) and that they have therefore, for the time being, agreed to accept a single point of view to the exclusion of everything else. Of course, the situation is hardly ever presented in that way. Instead of admitting that their ingenuity has given out and that they are no longer able to advance knowledge, scientists are usually in the habit of saying that they have finally arrived at the truth."[89]

There are situations, though, in which our ambition to know more or better relies on proliferation. (Image 3). Besides art, Feyerabend mentioned how, given the gravity of the matters they deal with, the judiciary systems of certain societies encourage proliferation in their appraisal of a situation. We trust that strong competition between prosecutors and defendants in these systems generates an increase in our knowledge of a case. In the courtroom – Feyerabend noted – even the layman can refute very specialized assessments, operating on a methodology that privileges the proliferation of conjectures and refutations as the soundest way to know.[90]

Based on these thoughts, Feyerabend believed that "there is no need to suppress even the most outlandish product of the human brain, and science, far from giving comfort to the doctrinaire, will profit from such an activity and is unthinkable without it."[91] But besides increasing and improving our knowledge, "there is another reason in favor of proliferation," he added, "which is even more subtle and which has been put forth, quite recently, by Dr. Imre Lakatos. This reason is what one might call the metaphysical[92] components of observation."[93]

To understand this better we must recall that Lakatos's work also evolved from falsificationism, as we mentioned in the introduction. Lakatos agreed with Popper that no theory should be taken for

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[88] The idea that "there is no such thing as a finished project, but a deadline" is popular among architects, and is an excellent way to express this thought.

[89] Feyerabend: "Outline of a Pluralistic Theory of Knowledge and Action," p. 279

[90] Ibid., p. 278

[91] Ibid., pp. 283 – 284, Alludes in turn to: Lakatos, Imre: "Falsification and the Methodology of Scientific Research Programmes," in Lakatos, Imre and Musgrave, Alan: Criticism and the Growth of Kowledge. Cambridge: Cambridge University Press, 1970, pp. 91 – 196

[92] I understand metaphysics here as "abstract theories with no basis in reality," based on: https://en.oxforddictionaries.com/definition/metaphysics, retrieved 17/08/2017

[93] Feyerabend: "Outline of a Pluralistic Theory of Knowledge and Action," p. 281

irrefutable. However, he realized that in practical terms it often happens that the testing of a theory reaches a point where evidence for or against that theory cannot be provided anymore. The lack of proper instruments for the accurate observation of a phenomenon beyond certain point is an example. According to Lakatos (who therefore preferred to talk of fallibilism than of falsificationism) at that point a theory will appear to lack potential falsifiers, and will be assessed at a metaphysical level.[94]

Feyeraband developed this particular observation a bit further. Before moving into metaphysical speculation, he thought, we can extend the testability of some of our ideas by proliferating. In his words, "we can increase the strength of experimental refutations by replacing these metaphysical assumptions with scientific theories, that is, by again developing alternatives to the theories under test: decisive refutation is impossible without proliferation. To sum up, 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," he insisted, "is unthinkable without it."[95]

[94] Lakatos: "Falsification and the Methodology of Scientific Research Programmes," pp. 91 – 196

[95] Feyerabend, Paul K.: "Outline of a Pluralistic Theory of Knowledge and Action," p. 283

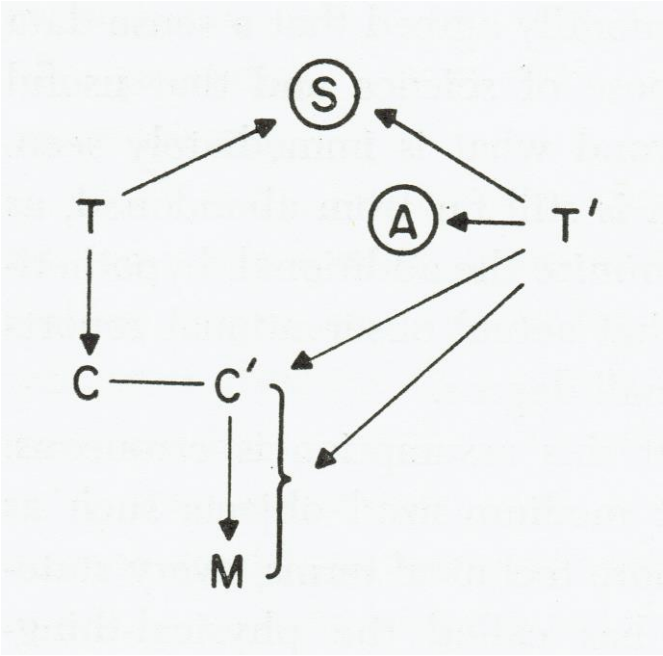


Image 3
Paul Feyeraband: Proliferation

For any theory (T): "Assume… that T entails C, that C' is what actually happens, that C', but not C, triggers a macroscopic process M that can be seen by all, and assume further that C and C' are indistinguishable not only because our measuring instruments are too crude but because the laws of nature prohibit the distinction by any physical means. In this case M refutes T, but we can never ascertain that this is so. Only the Good Lord, who stands above all the laws of nature and is not bound by them, is able to point out that T is refuted by M – unless the erring mortals are allowed to proliferate and to invent alternatives of T. For if one of these alternatives, say T', predicts C' and the connection between C' and M, and if it approximately repeats the successful predictions of S and T and makes in addition some other predictions A, then we shall trust T' more than T and accept the assertion, following from it, that T has been refuted by M. in this case, the alternative has not just accentuated an already existing difficulty; it has actually created it. In the light of this possibility, the use of alternatives is recommended even if the theory that stands in the center of attention should happen to be without blemish."[96]

[96] Feyerabend: "Outline of a Pluralistic Theory of Knowledge and Action," pp. 280 – 281

These reflections on the value of proliferation in the growth and development of knowledge (and on the need to recognize that part of our understanding is metaphysical) were studied by Stanford Anderson in relation to the built environment in the article "Environment as Artifact," published in the journal Casabella in 1971.[97] I have established this relation, based on Anderson's claim in that article that "the refusal to consider metaphysical issues offers no guarantee that one will, modestly, talk 'about architecture rather than around it.'" [98]

According to Anderson, "such a refusal obscures the major continuing enterprise of architecture: the establishment of a greater verisimilitude between our understanding and our physical environment. The method and the studies of any commentator on architecture," he thought, "must recognize this speculative characteristic of the man-controlled environment. Architecture – like any other objectification of man's cognition – does not merely 'express' and 'communicate'. It makes truth claims which are constantly tested both by man's evolving metaphysics and by the limitations and possibilities of the world of literal things and beings."[99]

Evidently, these claims were directed against someone who believed that considering metaphysical issues in architecture implied talking around architecture (rather than about it), and therefore refused to consider them altogether. Who could that be?

From the above we can hint at the target of Anderson's article based on two important premises. The first is explicit: the built environment is a source of knowledge ("architecture is an objectification of man's cognition," in Anderson's terms), rather than the epitome of some supposed principle or law (it "does not merely 'express' or 'communicate'" something else). The second is implicit: knowledge implies falsification (or fallibilism, in Lakatos's terms). This can easily be deduced from Anderson's argument that our goal as architects ("the major continuing enterprise of architecture," he called it) is not for accuracy ("to found our knowledge positively") but for greater verisimilitude ("to make our knowledge grow"). Our subscription to these two premises leads us to a third: If we further admit (like Lakatos and Feyerabend, above) that falsification can only be carried out in measurable terms up to a certain point, beyond which lies metaphysics; we must also admit that the built environment is partially metaphysical.

For the sake of clarity, I will repeat this: (a) if the built environment is a source of knowledge, (b) if knowledge depends on falsification, and (c) if there is a point beyond which falsification turns a

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[97] Anderson, Stanford: "L'Ambiente Come Artefatto: Considerazione Metodologiche / Environment as Artifact: Methodological Considerations," Casabella, No. 359 – 360, year XXXV (1971), pp. 71 – 77. I must thank Nelson Mota for introducing me to this article.

[98] Ibid., p. 71

[99] Ibid.

question metaphysical; then (d) we must admit that the built environment is at least partly metaphysical.

Clearly, this conclusion is at odds with historicism. The reason is quite simple. Historicism – we have said – is often eager to explain (architecture, in this case) in relation to a supposed historical principle or law. As we know, principles and laws are meant to be corroborated, rather than falsified. Operating on such tenets Reyner Banham, for example, was not looking for a greater verisimilitude between our understanding and the built environment. His thoughts on the so-called "machine age" were not meant to be falsified, either. Instead, he evaluated architecture in terms of accuracy. More specifically, he judged architects based on their ability to express or communicate the principles that defined (or the laws that ruled) the "machine age" accurately – at least in his terms. For Banham, that ability was patent in design.

He was certainly not alone in this interpretation. "From the 1930s through the 1950s," Anderson wrote, "the 'Masters of the Modern Movement' (…) shared the notion that the design process issues in a 'design object' – that is, in an object that receives its permanent form according to a clear, pre-visioned plan." [100] More than the architects themselves, [101] it is clear that modernist historians of architecture explained the work of those so-called "Masters of the Modern Movement" (or whoever Reyner Banham had in mind when he talked about "a true modernist (or) a radical functionalist") as a refusal of metaphysical issues in architecture.

As we've seen, that refusal was not without problems: "the impotence of architecture," Anderson said, "proclaimed over several decades by architects(…) intrudes on most inquiries into 'the role of the architect.'(…) What was taken to be the 'crisis of architectural design' has proven to be the (…) severe questioning of 'design.' In general terms, events and criticisms of recent years have shaken our confidence in man's ability to exert a socially beneficial control over his environment by 'design' – by the systematic direction of actions calculated to achieve a pre-visioned goal."[102]

As we know, this "severe questioning of design" described by Anderson led many architects to strive for a better understanding of architecture than that provided by modernist historicism. The three architects whose work we will study in the following chapters (or those studied in the aforementioned Anxious Modernisms catalog), for example, provide us with evidence of different attempts to improve on modernist architecture, especially after the 1950s.

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[100] Anderson: "Environment as Artifact," pp. 71 – 73

[101] Cf. Padovan, Richard: Towards Universality: Le Corbusier, Mies and De Stijl. London, New York: Routledge, 2002

[102] Anderson: "Environment as Artifact," p. 71.

Notably, Stanford Anderson's own attempt to improve on modernist historicism relied on the notion of proliferation, as we have described it above. For him, the built environment is best understood, not as the result of an individual's will or actions aiming to corroborate a supposed principle or law; but as "organizations of form that are the (often unforeseen) result of many human actions, as environments that must sustain a wide range of (often unforeseen) human actions. Such an organization of form," Anderson affirmed, "in contrast to an object that is the result of a deliberate design, has been termed an 'artifact'[103]„[104]

Noted earlier, Anderson borrowed the notion of artifact from the field of economics; hinting at an understanding of architecture that equated the built environment with other systems of human organization, [105] such as politics, the economy, or legislation.[106] Certainly, we can count all of these systems of human organization among the "objects made by human beings, especially with a view to subsequent use"[107] – or artifacts. More important, though, is Anderson's assertion that the built environment as artifact results from (and deals with) "unforeseen" conditions or situations. Concretely, in Anderson's text these "unforeseen" conditions and situations relate to two notions which we will develop further towards the end of this chapter, when we'll focus on architectural heuristics. I am talking about the notions of architectural form ("organizations of form," in

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[103] "F. A. Hayek, "The Results of Human Action but not of Human Design", in his "Studies in Philosophy, Politics and Economics" (pp. 96 – 105, London: Routledge and Kegan Paul, 1967)", footnote 4 in Anderson: "Environment as Artifact," p. 77. Hayek's notion of the artifact was used again in: "People in the Physical Environment: The Urban Ecology of Streets," in Anderson, Stanford (ed.): On Streets. Cambridge (Mass.) and London: MIT Press, 1986, especially pp. 2, 7

[104] Anderson: "Environment as Artifact," pp. 71 – 73

[105] Cf. with Ana Martinez Alancon's lucid reading of modernity, in her preliminary study to Machiavelli's Discourse on Method: "Antiquity considered that society was a natural product, derived from the human being's own constitution, which responded to laws, such as those in nature, which man could understand but not change. In the Middle Ages, society and history were thought of as integral to a grandiose, divine plan of creation and redemption. The main protagonist of this plan was Providence, and it was expected of man that he comply with a series of laws ascribed to that Providence, or else be subject to the useless or unfortunate destiny reserved for reprobates. In the Renaissance a new point of view appears, and Machiavelli is among the first and most explicit exponents of this change. Social order appears as the product of human action; man takes charge and becomes protagonist and architect of history, which he can model according to his desires and needs. History therefore stops being a natural phenomenon, or the result of God's will, and becomes the fruit of men's ambitions, acts, plans, and work: a new, man-made product. In other words, history becomes an artifice (…) or even better, an artifact." In Maquiavelo, Nicolas: Discurso del Metodo. Barcelona: Altaya, 1993, p. XV

[106] Cf., with Shadrach Woods's claim regarding laws, in Chapter 4.

[107] http://www.dictionary.com/browse/artifact, retrieved 11/09/2017

Anderson's terms) and architectural use or purpose (which Anderson refers to as "human actions").

As we know, these notions were central to modernist historicism. We just saw how, among modernist historians, the question of architectural form has often been understood in relation to design; meaning: a building's shape is often understood and evaluated in relation to the architect's ability to accurately epitomize a particular law or principle with that shape. A good example of this is Banham's critique of Basil Spence for not being a "radical functionalist," which basically meant that the form of his project for Coventry Cathedral did not accurately "express" or "communicate" mechanistic rationales. On the other hand, we also know that for modernist historiography architectural use or purpose often stood for the supposed law or principle (e.g., mechanicism) itself. Continuing with Banham, we can agree that for his so-called "radical functionalist" architecture should basically corroborate the mechanistic rationales behind functionalism – that was its purpose.

In this sense, we can argue that historicist interpretations, such as modernist functionalism, left no room for indeterminacy. Instead, the aim for accuracy in the corroboration of a supposed principle (e.g., the supposedly scientific rationales behind technology) often took the unforeseen or the unexpected as flaws. "But such scientized design," says Anderson, "has not answered the severe questioning of the metaphysics that underlie design nor the difficulties imposed by the shift from the concept of 'design object' to that of 'artifact'. Those who are interested not only in the abandonment of what has proved inadequate, but also in the alternatives that might emerge from a revolutionary situation, must ask how an artifact does (should) receive its form."[108]

In order to address this question, we must return to the notion of the model, which we described earlier as simultaneously telic (i.e., directed towards a possible future) and technical (i.e., defining the instruments and methods required to move towards that future). In tune with Wartofsky's definition of the model, Anderson believed that the built environment as an artifact "must have or be capable of receiving an objective, criticizable form."[109] This means that, like the model, an artifact should always be technically and methodologically assessable. We've called this the technical part of the model. Furthermore, Anderson believed that the built environment as artifact "must at least potentially account for both individual, willed, often rational action," like the model (we've called this the telic part of the model); but he also thought that it must account for "the existence of unforeseen communitarian results."[110]

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[108] Anderson: "Environment as Artifact," p. 73

[109] Ibid. p. 75

[110] Ibid.

From the above, we can conclude that Anderson's understanding of the built environment as an artifact is indeed served by Wartofsky's definition of a model (i.e., a possible future plus the instruments and methods needed to get there). But there is something else. Anderson recognized that when several models (i.e., proliferation) converge, the result is greater than the sum of its parts; the addition of several models yields "unforeseen communitarian results."

To make this even clearer we just need to turn to the most obvious of examples: a city. We must agree that every building in a city meets our definition of an architectural model: one or more architects advanced the project of each building as a vision of a possible future, and defined the instruments and methods required to arrive at that future. While the results of using these instruments and methods towards that possible future were mostly foreseeable (and therefore testable) at the level of a single building; adding more and more buildings to the city (or proliferating) eventually yields formal results that were unforeseeable by the architects who advanced each model; and opens the resulting built environment up to human actions which were also unforeseeable. Sometimes, we can evaluate those unexpected results with known instruments; but as soon as we lack the proper instruments for the accurate observation of those results, we must admit that we are confronting the built environment in metaphysical terms.

Based on this exciting conclusion, we can see how Anderson's understanding of architecture, even at the largest (urban) scale, followed the different stages we have been trying to describe so far in this chapter. As we saw when we talked about tradition, Anderson's understanding of the built environment as artifact defies any notion of authority; it recognizes no real or final author; no one can claim to have control over its form, or over what people choose to do in it.

True: the built environment as artifact recognizes the telic and technical elements required by architects in order "to make idea and form operative, intellectually and pragmatically."[111] Following Wartofsky, Anderson assumed the built environment as a man-made organization of actions and forms, aimed towards a possible future and developed with a series of assessable instruments and methods. However, that assumption did not yet recognize collective actions, nor did it account for metaphysical aspects of those collective actions. The subsequent introduction of Feyerabend's thoughts on proliferation in his appraisal of architecture led Anderson to understand how several models converge "within a metaphysic that denies final authority to any form"[112] – another way he used to describe the built environment as artifact.

We should find no difficulty concluding that together, model and artifact sharpened Anderson's understanding of architecture as a source of knowledge; and clarified the role of the architect in relation to the growth and development of that knowledge. Together – I believe – that sharpened

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[111] Anderson: "Environment as Artifact," p. 77

[112] Ibid.

understanding and that clearer role of the architect already imply concrete improvements on modernist historicism. And even though Anderson failed to mention his debt to Wartofsky and Feyerabend in the article published in Casabella; he did note that his reflections on the built environment as artifact encompassed several lines of inquiry, which he was developing at the time as a fellow at the Institute for Architecture and Urban Studies, in New York.

Among those lines of inquiry, one appears to be of special interest to our discussion. Specifically, Anderson said that he was working on "a methodological study," focused on the "epistemological characteristics of research programs in which both the theories and that to which the theories refer (the architectural theory and the physical environment) are subject to criticism and change."[113] This study, Anderson said "will start from a transformation of the position set out by Imre Lakatos, 'Criticism and the Methodology of Scientific Research Programmes'."[114] In the following section, we will focus on that study.

**Research programs**

Thirteen years after the publication of Environment as Artifact in Casabella, Stanford Anderson published the results of his study of Imre Lakatos's methodology of scientific research programs in the journal Design Studies. He did so in tandem articles, titled "Architectural Design as a System of Research Programs,"[115] and "Architectural Research Programs in the Work of Le Corbusier."[116] The first of these texts focused on the "transformation of the position set out by Imre Lakatos," mentioned above, while the second tried to exemplify that transformed position at work. In this section, we will establish an initial relation between these two articles with Lakatos's position.

In order to do so, it is important to ponder on the reasons that led Anderson to focus on Lakatos's work. As we've seen, Anderson was strongly interested in the work of Karl Popper, which he had become familiar with, via Paul Feyerabend, while he studied at Berkeley in the late 1950s. His interest in Popper stemmed from his belief that the architect's problem was not to achieve a conclusive understanding of architecture (i.e., to be "right"), but to make architectural knowledge grow. Consequently, Popper's work (and especially his Logic of Scientific Discovery, which

[113] Anderson: "Environment as Artifact," p. 71

[114] Ibid., p. 77

[115] Anderson, Stanford: "Architectural Design as a System of Research Programs," Design Studies, Vol. 5, No. 3 (1984), pp. 146 – 150

[116] Anderson, Stanford: "Architectural Research Programs in the Work of Le Corbusier," Design Studies, Vol. 5, No. 3 (1984), pp. 151 – 158

discusses how scientific knowledge grows) provided an excellent basis for Anderson's understanding of architecture.

This basis was effectively used by Anderson, as we've seen. His rejection of elements from the modernist historian Reyner Banham's understanding of architecture based on Popper's distinction between tradition and traditionalism is a good example. Likewise, since 1963 (and throughout his career) Anderson explored architecture based on notions obtained from the broader discussion regarding the philosophy of science which included Popper's ideas, plus the ideas of his critics and collaborators (among which was Imre Lakatos).

He was not alone in this approach. Well-known architectural historians and critics like Charles Jencks and Royston Landau shared Anderson's interest in the relation between architecture and the philosophy of science, in quite specific terms. Jencks, who developed his PhD under Reyner Banham,[117] confronted elements of Popper's research based on his own defense of ad-hoc-ism in architecture. In his words: "If Popper's objections (to ad-hoc-ness) are sound, then we would have to limit adhocism to a prescientific condition before the resolution of conflicting explanations makes a theory unified and simple. Furthermore, we would have to regard it as a dubious state of imperfection in which our knowledge is fragmentary and contradictory, a state to be transcended as soon as possible. The idea of absolute truth as a terminus of research must be kept as a regulative idea if we are not to remain in ignorance. Nevertheless, by contrast, it is just as important to realize that most of our knowledge is partial and at a stage prior to perfect synthesis and resolution. (…) In a very real sense adhocism (sic) is only a partial theory, one-half a philosophy, to be supported by other approaches which are complementary."[118]

Landau's approach to Popper was different from Jenck's, in the sense that it was not limited to one specific item, like ad-hoc-ness. For this reason, and for its relation with Anderson's research, it deserves closer attention in our study. Landau – it is interesting to note – taught at the MIT (where Anderson started teaching in 1963) between 1960 and 1967; and later worked as director of graduate studies at the Architectural Association in London (where Anderson presented his paper on architecture and tradition). It was working in that capacity that Landau published the article "Notes on the Concept of an Architectural Position,"[119] where he advanced an understanding of architecture that comes quite close to Anderson's, and consequently to the position argued here.

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[117] "In 1970 Jencks received a PhD in architectural history, studying under the radical modernist Reyner Banham at University College, London. His thesis was the source for his Modern Movements in Architecture (1973) which criticized the suppression of some Modernist variations." https://en.wikipedia.org/wiki/Charles_Jencks, retrieved 11/10/2017

[118] Jencks, Charles, and Silver, Nathan: Adhocism: The Case for Improvisation. Cambridge (Mass.) and London: MIT, 2013 (1972), pp. 36 – 37

[119] Landau: "Notes on the Concept of an Architectural Position," pp. 111 – 114

Landau's text focused on architectural historiography. Like us, he confronted the assumption (held by many well-known modernist historians of architecture) that architectural history can be understood as the classification of architects and buildings in relation to their supposed meaning; or in relation to the supposed historical principles or laws expressed by that meaning. "My perspective," Landau wrote, "is not one that simply wishes to expose the developments or the meaning of built form, with the architects' names and dates as a helpful appendage." [120] Instead, he seemed to be much more interested in the conjectural nature of architectural propositions, and in the exchanges that took place between several of those propositions. "My interest," he said, "starts elsewhere with the variety of approaches that have been responsible for the architecture, with the architects' points of view, with their commitments, their beliefs, but also with the *exchanges* that have led up to those beliefs and which, in some way, have played a part in the evolution of the architectural culture."[121]

In effect, Landau believed that the study of these exchanges (which we've referred to as the transactions that can be established between the instruments and methods used by different architects) should help us "capture the complexity and the breadth of an architectural domain."[122] This complexity and this breadth – he warned – pose two concrete challenges on architectural historians. The first of these challenges is ontological:[123] in order to write the history of architecture it should always be clear what is understood by architecture, in the first place. The second challenge is to choose an adequate historiographical approach (or methodology), based on that understanding.

Landau could clearly define his own understanding of architecture (or ontology) and his own approach (or methodology) in his article. Firstly, he described architecture as an open and elusive discipline – where the term discipline defines a limited field of interest; while the terms open and elusive refer to the "flexing boundary capable of accommodating modification" of that discipline. Based on that understanding of architecture, Landau's historiographical approach focused on the delimitation of discernible architectural questions, and on the study of the "points-of-view and the

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[120] Landau: "Notes on the Concept of an Architectural Position," p. 111

[121] Ibid.

[122] Ibid., p. 112

[123] I understand ontology simply as the aim or effort to define what a thing is. This interpretation is based on the more sophisticated definitions of "the branch of metaphysics dealing with the nature of a being," or the "set of concepts and categories in a subject area or domain that shows their properties and the relation between them," as suggested in https://en.oxforddictionaries.com/definition/ontology, retrieved 11/10/2017

discussions or exchanges" between different architects[124] in their confrontation of those questions.[125]

An excellent approach to appraise those exchanges or transactions between architects – Landau argued in his article – had been advanced a few years prior to the publication of his paper by Imre Lakatos. In his opinion, Lakatos's methodology of scientific research programs was of value for architects, in the sense that it "was concerned with accounting for the growth of scientific knowledge, showing the rules that control its production and organization and giving criteria for providing connections between theories..."[126] Landau believed that "in the fields of architecture, planning, and design, as well as in the social sciences, the methodology of scientific research programs appears to offer promise both as a conceptual model and as a research tool. It should assist the historian or the researcher to sort out and characterize complex connected events or provide ways of comparing alternatives, which for the researcher may provide a preliminary step to decision making. Methodologically, the concept of a *program and its heuristic* should be able to offer immediate usefulness to many forms of *non-scientific* research…"[127]

This interest in the work of Lakatos had an interesting antecedent within Landau's own work.[128] A few years before publishing his "Notes on Architectural Position," Landau had already mentioned

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[124] "An analysis of an architectural field must be able to recognize the complex, inconsistent and erratic actions coming from individual positions, but also, it must be capable of taking into account the plurality of belief systems belonging to the different members of a particular intellectual community, but who, as a group or set, also possess similarly complex, inconsistent and unpredictable characters." [124] Landau: "Notes on the Concept of an Architectural Position," p. 113

[125] In Landau's words: "To produce a historical construction requires the identification of a *whole* followed by finding ways of analyzing that whole. I favor the notion of an open 'elusive' whole, sufficient to approximately limit a field of interest, but with a flexing boundary capable of accommodating modification. The whole in my described empirical field will be the architectural culture containing the points-of-view and the discussions or exchanges I referred to previously. So a boundary will be drawn which will be limited by the scope and extent of the culture (it being an a-temporal and synchronic boundary) so the search will then be one of investigating the density of activity inside… An analytical concept that I have been analyzing for this research is the notion of an *architectural position.*" Ibid., p. 112

[126] Endnote 1, in Ibid., pg. 114

[127] Landau, Royston: "Methodology of Research Programs," In Evans, Barrie; Powell, James A.; and Talbot, Reg (eds.): Changing Design. Chichester, New York: John Wiley and Sons, 1982, p. 308

[128] Landau's earlier paper "Towards a Structure for Architectural Ideas" elaborated on the Popperian demarcation of science, the growth of knowledge, and so on; and in its published version acknowledged contributions from Alan Musgrave and Imre Lakatos. However, the text itself does not elaborate on Lakatos's work. Landau: "Towards a Structure for Architectural Ideas," p. 7

Lakatos in the paper "Methodology of Research Programmes,"[129] presented at the "Changing Design" conference, organized by the Design Research Society in Portsmouth (UK), in 1976. "The purpose of this presentation," he argued then, "is to describe briefly the emergence of the methodology of scientific research programs, a methodological approach first proposed by the late Professor Imre Lakatos. In this abbreviated account," he said, "I shall attempt to (1) indicate how the methodology arose; (2) outline its salient features; (3) draw attention to a growing literature on the methodology; (4) suggest that there may be a promising future for versions of this methodology of research programs outside the natural sciences."[130]

This attempt came remarkably close to Anderson's "Architectural Design as a System of Research Programs," published eight years later. In particular, both articles (a) describe the context within the philosophy of science in which the work of Lakatos appeared; (b) sketch the basic elements of the methodology of research programs; and (c) try to adapt those elements to architecture. An even closer look at both texts also tells us that they are based on a comprehensive reading of Lakatos, whose paper "Falsification and the Methodology of Scientific Research Programmes"[131] was used as a central reference by both architects,[132] albeit not the only one.

Following Anderson and Landau, we should go directly to Lakatos for both the context (a) and the basic elements (b) of his methodology of scientific research programs; keeping in mind that our study is based on an understanding of architecture that sustains that the architect's problem is to make architectural knowledge grow. As I said, it is this understanding which explains why Anderson initially chose to explore a specific strain of scientific thinking, which also tries to explain how knowledge grows (in science).

Lakatos described this strain of scientific thinking succinctly: "In 1934 Karl Popper (…) argued that the mathematical probability of all theories, scientific or pseudoscientific, given *any* amount of evidence is zero. If Popper is right, scientific theories are not only equally improvable but also

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[129] Landau: "Methodology of Research Programs," pp. 303 - 309

[130] Ibid., p. 303

[131] Lakatos: "Falsification and the Methodology of Scientific Research Programmes," pp. 91 – 196

[132] It is important to note, though, that key elements in both Landau's and Anderson's interpretation of Lakatos's methodology come from other texts, such as "History of Science and its Rational Reconstructions" (in Lakatos, Imre: The Methodology of Scientific Research Programmes, Philosophical Papers, Vol. 1. Cambridge: Cambridge University Press, 1978, pp. 102 – 138); and especially from "Why did Copernicus's Research Programme Supersede Ptolemy's" (in Lakatos, Imre: The Methodology of Scientific Research Programmes, Philosophical Papers, Vol. 1. Cambridge: Cambridge University Press, 1978, pp. 168 – 192). This last text is basically a case study that, in my opinion, includes key explanations required to understand how the methodology of research programs works.

equally improbable. A new demarcation criterion was needed and Popper proposed a rather stunning one. A theory may be scientific even if there is not a shred of evidence in its favor, and it may be pseudoscientific even if all the available evidence is in its favor. That is, the scientific or non-scientific character of a theory can be determined independently of the facts. A theory is 'scientific' if one is prepared to specify in advance a crucial experiment (or observation) which can falsify it, and it is pseudo-scientific if one refuses to specify such a 'potential falsifier'. But if so, we do not demarcate scientific theories from pseudoscientific ones, but rather scientific method from non-scientific method."[133]

In other words, Lakatos described a strain in the philosophy of science (which we've referred to as falsificationism or fallibilism) which opposes the belief that theories are meant to be right or true; and instead contends that theories are conjectures, which can be evaluated against other conjectures, in relation to a particular question they all confront. Focus on this relation between several theories or conjectures is especially important for our study, and constitutes Lakatos's distinct contribution to the strain in the philosophy of science we have been talking about. Elaborating on Popper's demarcation of science (and on Thomas Kuhn's criticism of that demarcation), Lakatos advanced what he described as *sophisticated* (as opposed to naïve) *falsificationism*. "Sophisticated falsificationism," he believed, "shifts the problem of how to appraise *theories* to the problem of how to appraise *series of theories*. Not an isolated *theory*, but only a series of theories can be said to be scientific or unscientific: to apply the term 'scientific' to one *single* theory is a category mistake.[134]„[135] Lakatos called these series of theories "research programs."

According to Lakatos, the growth of scientific knowledge cannot be fully explained on the basis of the formulation of conjectures and the refutation of those conjectures, as Popper seemed to believe. Instead, he understood that each scientific conjecture was part of a much more complex construct, which involved several items; so he described these items based on a well-known scientific achievement: Newtonian science.[136]

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[133] Lakatos, Imre: "Introduction: Science and Pseudoscience," in Lakatos, Imre: The Methodology of Scientific Research Programmes, Philosophical Papers, Vol. 1. Cambridge: Cambridge University Press, 1978, p. 3

[134] Referring to Popper, Lakatos notes: "(…) of course there is nothing wrong in saying that an isolated, single theory is 'scientific' if it represents an advance on its predecessor, as long as one clearly realizes that in its formulation we appraise the theory as the outcome of – an in the context of – a certain historical development." Footnote 2, in Lakatos: "Falsification and the Methodology of Scientific Research Programmes," p. 119

[135] Ibid. – emphases in the original.

[136] "What makes Newtonian cosmology and mechanics one of the few, precious non-*ad hoc* or 'totalistic' systems is that it is a unified, highly interrelated theory which has been so often tested and modified that its

Certainly, assuming Newton's contribution to science as a single theory or conjecture seems simplistic – even naïve. Instead, Lakatos described Newtonian science by describing its different constituent parts.[137] For Lakatos, what we know as Newtonian science is best understood as a series of theories or conjectures. Some of the theories or conjectures are truly central to Newton's understanding of science (i.e., it is not possible to speak of Newtonian science without them), while some appear to be of secondary or accessory importance, only. They are expendable. Together with these central and expendable theories or conjectures, Lakatos acknowledged the necessary (mathematical, in this case) instruments and methods required to develop and articulate the whole series of theories as a reasonably coherent whole; and most importantly, to protect it from (unavoidable, given the falsificationist basis of this understanding) refutations from other series of theories, assembled to confront similar questions. As I just said, Lakatos called this articulate series of theories a "research program;" he called those theories or conjectures that are central to the program the "hard core" of the program; he called the more expendable theories or conjectures "auxiliary hypotheses;" and he called the necessary instruments and methods required to articulate and protect the program its "heuristic."[138]

In Lakatos's words, a research program "is not an isolated hypothesis (or a conjunction of hypotheses): a research program (…) consists of a developing series of theories. Moreover, this developing series has a structure. It has a tenacious *hard core*, like the three laws of motion and the law of gravitation in Newton's research program, and it has a *heuristic*, which includes a set of problem-solving techniques. (This, in Newton's case, consisted of the program's mathematical apparatus, involving the differential calculus, the theory of convergence, differential and integral equations). Finally, a research program has a vast belt of auxiliary hypotheses on the bases of

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parts are inextricably linked." In Jencks, Charles, and Silver, Nathan: Adhocism: The Case for Improvisation. Cambridge (Mass.) and London: MIT, 2013 (1972), p. 31

[137] Cf. Jarvie, I.C.: "Utopian Thinking and the Architect," in Anderson (ed.): Planning for Diversity and Choice, pp. 8 – 41, discussed with some detail, above.

[138] "In the last few years I have been advocating a methodology of scientific research programmes, which solves some of the problems which both Popper and Kuhn failed to solve. First, I claim that the typical descriptive unit of great scientific achievements is not an isolated hypothesis but rather a research programme. Science is not simply trial and error a series of conjectures and refutations. 'All swans are white' may be falsified by the discovery of one black swan. But such trivial trial and error does not rank as science. Newtonian science, for instance, is not simply a set of four conjectures – the three laws of mechanics and the law of gravitation. These four laws constitute only the 'hard core' of the Newtonian programme. But this hard core is tenaciously protected from refutation by a vast 'protective belt' of auxiliary hypotheses. And even more importantly, the research programme also has a 'heuristic', that is, a powerful problem solving machinery, which, with the help of sophisticated mathematical techniques, digests anomalies and even turns them into positive evidence." Lakatos, Imre: "Introduction: Science and Pseudoscience," in: The Methodology of Scientific Research Programmes, p. 4

which we establish initial conditions. The protective belt of the Newtonian program included geometrical optics, Newton's theory of atmospheric refraction, and so on. I call this belt a *protective belt*," said Lakatos, "because it protects the hard core from refutations: anomalies are not taken as refutations of the hard core but of some hypothesis in the protective belt. Partly under empirical pressure (but partly *planned* according to its heuristic) the protective belt is constantly modified, increased, complicated, while the hard core remains intact." [139]

After describing the parts of a research program, in Lakatos's own terms, let us continue using his example of Newtonian science, in order to examine how a research program works. As we know, Newtonian science tried to produce knowledge regarding a concrete question; namely, the behavior of bodies in space. In the face of that question, Newtonian science aimed to improve on other research programs that confronted the same question, by being more complete, accounting for more variables, and being more adaptable to change than those other research programs. This allows us to define what a research program does: Every research program aims to produce knowledge regarding a particular question. Most importantly, though, it always tries to do so in relation to (i.e., by competing or collaborating with) other research programs that also try to produce knowledge regarding that question. For this reason, research programs can only be evaluated or appraised in relation to each other, rather than against a supposedly incontrovertible law or principle.

In Newton's case, it is clear that the series of theories or conjectures he advanced to explain celestial mechanics evolved from and competed with other conjectures. Newton's research program explained and predicted the behavior of bodies in space more and better than Ptolemaic and Copernican science, for example, and improved on (in this case collaborated with) Kepler's conjectures too. Lakatos described this improvement in two different ways. Firstly, he evaluated research programs as being either progressive (i.e., improving on another) or degenerating (or lagging behind, and therefore being improved on by another) in relation to each other.[140] Secondly, he considered that the improvement of a progressive program in relation to a degenerating program implied that the first would eventually supersede[141] the second.

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[139] Lakatos, Imre and Zahar, Elie: "Why did Copernicus's research programme supersede Ptolemy's?" in Lakatos: The Methodology of Scientific Research Programmes, pp. 178 - 179

[140] Ibid.

[141] "One research programme *supersedes* another if it has excess truth content over its rival, in the sense that it predicts progressively all that its rival truly predicts and some more besides." This statement is followed by a footnote: "For an interesting discussion of "superseding" versus "incommensurability", Cf. Feyerabend (1974)", footnote 2, in Lakatos and Zahar: "Why did Copernicus's research programme supersede Ptolemy's?" p. 179. In the conclusions of this study, I contend the notions of progress and supersession, in favor of the notion of evolution.

Now, we understand that this supersession does not need to be absolute; a research program does not need to entirely disprove or replace another. Even though several research programs, such as Einstein's, have improved on Newtonian science since the 18th century, there are elements of Newton's research program that are still considered pertinent and valuable, and therefore remain in use. Most of us still try to learn about general physics in secondary school based on elements of Newtonian science, for example.[142]

Beyond this question of (full or partial) supersession, though, I must insist on the importance of three items from Lakatos's understanding of science for our study. First, is the fact that the methodology of scientific research programs is a historiographical approach.[143] Lakatos advanced his methodology as a way to explain the way scientific knowledge has grown throughout history. Secondly, that historiographical approach was explicitly meant to confront elements of historicism. As we've seen, rather than explaining events in the history of science in relation to a supposed historical principle or law (or aiming to prophesy based on that supposed principle or law); Lakatos proposed a history of science written on the basis of the description of conjectures, in relation to discernible questions, and in relation to other conjectures that were equally related to those questions. Thirdly, Lakatos was clear on defining his historiographical approach as a methodology, meaning that his evaluation of those conjectures in relation to each other was based on the evaluation of the instruments and methods implied in those conjectures, or their heuristics.[144]

This brings us back to our discussion on architectural theory and historiography, and to the way in which Royston Landau and Stanford Anderson tried to adapt Lakatos's methodology to

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[142] "Nobody, in fact, would expect a scholar of non-Euclidean geometry to use Riemann's geometry to measure his room so that he could build a wardrobe for it; or a supporter of the theory of relativity to adjust his watch according to Lorentz's transformations, after getting the time from the first motorist who happens to zoom by." Eco, Umberto: The Open Work. Cambridge (Mass.): Harvard, 1984, p. 120

[143] Lakatos describes his historiographical approach in the following way: "Philosophy of science without history of science is empty; history of science without philosophy of science is blind". Taking its cue from this paraphrase of Kant's famous dictum, this paper intends to explain *how* the historiography of science should learn from the philosophy of science and *vice versa*. It will be argued that (a) philosophy of science provides normative methodologies in terms of which the historian reconstructs 'internal history' and thereby provides a rational explanation of the growth of the objective knowledge; (b) two competing methodologies can be evaluated with the help of (normatively interpreted) history; (c) any rational reconstruction of history needs to be supplemented by an empirical (socio – psychological) 'external history'." From: Lakatos: "History of Science and its Rational Reconstructions," in: The Methodology of Scientific Research Programmes, p. 102

[144] "A research program never solves all its anomalies. 'Refutations' always abound. What matters is a few dramatic signs of empirical progress. This methodology also contains a notion of *heuristic progress*: the successive modifications of the protective belt must be in the spirit of the heuristic." [144] Lakatos and Zahar: "Why did Copernicus's research programme supersede Ptolemy's?" pp. 178 – 179

architecture. As I noted before, Landau's approach focused on a description of the key elements of Lakatos's work, and pondered on their utility for architects. By comparison, Anderson's approach tried to link the methodology of scientific research programs to architectural design.

Earlier, we have described why Anderson chose to use the scientific discussion carried out by Popper and his critics and collaborators to study architecture. Now, we can understand why he narrowed that choice down to a the work of Lakatos, and even more specifically, to Lakatos's methodology of research programs. To do so, we must recall Anderson's earlier description of what he termed the "crisis of architectural design" that appeared to be topical since the 1960s.

As we know, this crisis sprung from the modernist belief that the architect could achieve control over the built environment by design, on the one hand; and from the realization by architects that even when they did achieve some control over the results of their work, those results were quite different than expected. This realization – we have also seen, when we talked about proliferation and the built environment as an artifact – made architects aware that the built environment was not just the result of quantifiable or rational decisions; but that it also implied what we have described as metaphysical elements of that built environment. Concretely, Anderson tried to use Lakatos's methodology in order to explain the relation between design decisions that could be quantified or rationalized, and design decisions that appeared irrational, arbitrary;[145] or catered to the metaphysical elements of the built environment. In order to do so, he started by demarcating architecture as a cognitive practice; "not some arcane, special process, but (…) rather allied to common sense and to the pursuit of rationality. As such," he said, "it may be hypothesized that other studies of rational thought and practices may serve as the basis, or as models, for the understanding of design."[146]

It is clear to us that these were not just any "studies of rational thought and practice" which Anderson had in mind, as the basis for the understanding of architecture. When Anderson thought of relating rational aspects of architecture to rational aspects of another discipline, he was thinking about science; and more specifically, about a concrete set of studies of the growth of scientific knowledge carried out by Popper and his critics and collaborators, including Lakatos. "Within the broader claim that such activities as science and architecture share certain features as cultural systems," Anderson thought, "there is no desire to deny distinctions or force

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[145] "In the initiation of any human activity," Anderson said, "some ultimate arbitrariness will be introduced. Design only begins with that risk. The search for rationality in design is not a matter of eliminating that risk, but rather one of turning that gamble to our advantage. Alternative risks are available, or can be invented by us. Both the design process and its implementation are means to give those risks coherent fulfillment while also testing, revising, learning from, and, if need be, rejecting them." Anderson: "Architectural Design as a System of Research Programs," p. 147

[146] Ibid., p. 147

methodologies from one of these systems upon another. Rather, we propose, Lakatosian (sic) style, the agreement that one attempt a research program concerned with architectural design as a rational enterprise subject to an analysis related to Lakatos's methodology of research programs."[147]

In particular, Anderson's intention to study architecture as a system of research programs (and not, for example, as a series of architectural revolutions, based on Thomas Kuhn's work[148]) owes to a distinction we established earlier; between Popper's interpretation of falsificationism (which Lakatos called naïve, granted that it simply assumed that the growth of knowledge is based on the falsification of some theories or conjectures by others); and Lakatos's development of that interpretation into what he described as sophisticated falsificationism (which assumes that the growth of knowledge depends, not on the formulation and rejection of individual theories or conjectures, but of series thereof). Anderson brought this distinction to architecture, in the following terms: "Whether one thinks of a single work of architecture or certain *sustained patterns of work by one or more architects*, it is not implausible to think of something like a 'hard core' that sets and maintains the direction of the work." [149]

Based on this premise, and on the different stages in his intellectual trajectory which have described, Stanford Anderson advanced an understanding of architecture based on Lakatos's methodology of research programs. In the final section of this chapter, we will focus on that understanding, and evaluate its utility for our own investigation. As I said in the introduction, I will not only describe, but also suggest a series of adjustments to Anderson's approach to the methodology of research programs; and more specifically, suggest adjustments to the examples he used to illustrate the methodology at work. These adjustments are focused on architectural heuristics, and their role in architecture, seen as a system of research programs.

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[147] Anderson: "Architectural Design as a System of Research Programs," p. 149

[148] Cf., Crilly, Nathan: "The Structure of Design Revolutions: Kuhnian Paradigm Shifts in Creative Problem Solving" Design issues, Volume 26, Number 1 (Winter 2010), pp. 54 – 66

[149] Anderson: "Architectural Design as a System of Research Programs," p. 149, my emphasis.

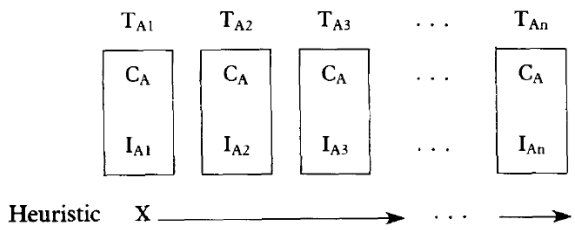


*Figure 1. T (theoretical state of the conceptual programme) = C (hard core) + I (auxiliary hypotheses). C = hard core, which remains the same for any single research programme. I = auxiliary hypotheses, which is that part of theory to which the* modus tollens *is directed*

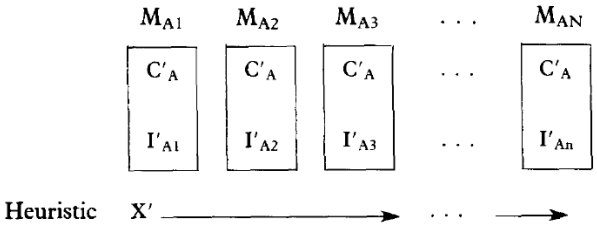


*Figure 2. M (artifactual state); ie, artifacts serving as models and forming a research programme. Here we are concerned with physical objects which are configured in such a way as to embody propositions about themselves and the role of artifacts generally. C′ = hard core. I′ = auxiliary hypotheses*

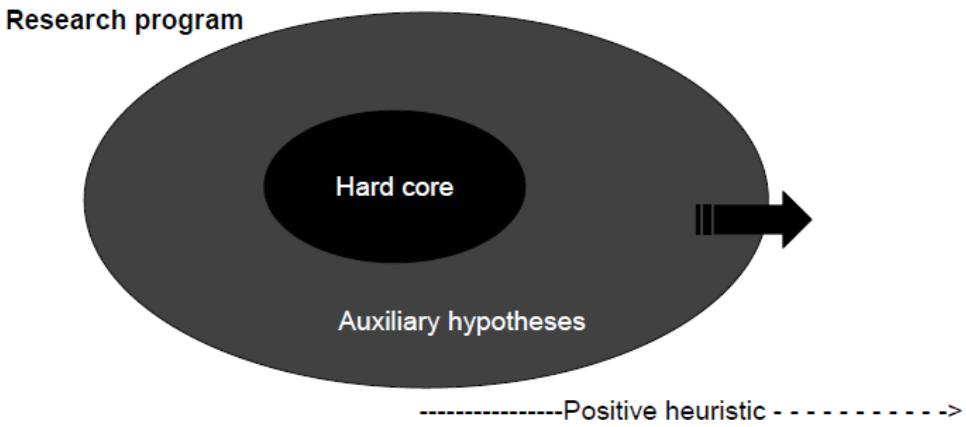


Image 4

Stanford Anderson: qualified version of Lakatos's research programs

Theoretical state of the conceptual program and artifactual state (above): hard core and auxiliary hypotheses (below)

**Heuristics**

*"See what things consist of; resolve them into their matter, form, and purpose."*

- Marcus Aurelius, Meditations 12:10

Between 1984 and 2011, Stanford Anderson published four papers[150] on the relation between architecture and Imre Lakatos's methodology of scientific research programs.[151] Granted that we have already discussed the basics of Lakatos's methodology, we can evaluate Anderson's approach to that methodology with more detail based on these papers.

The earliest of these articles is seminal, in the sense that it inaugurated Anderson's ambition to establish a link between rationality and arbitrariness in architectural design and Imre Lakatos's acknowledgment of conventional and metaphysical aspects of science. In his words, Anderson strove to "investigate whether a qualified version of Imre Lakatos's methodology of scientific research programs may provide an explanatory and normative[152] model of design processes."[153] In order to do so, he inscribed Lakatos's work within the tradition of falsificationism, and made a distinction we've studied already; between Popper's naïve and Lakatos's sophisticated interpretations of falsificationism. In Anderson's terms: "Lakatos' (sic) distinctive contribution is the shift of the methodological unit of epistemological analysis from the theory to the 'research program';"[154] or the shift from individual theories to series or theories as the basis for the growth of knowledge.

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[150] These were: "Architectural Design as a System of Research Programs," Design Studies, Vol. 5, No. 3 (1984), pp. 146 – 150; "Architectural Research Programs in the Work of Le Corbusier," Design Studies, Vol. 5, No. 3 (1984), pp. 151 – 158; "Architectural Design as Research Programs: The Schools at Cranbrook by Eliel Saarinen," Places, Volume 3, No. 2 (Fall, 1986), pp. 59 – 69; and "Rational Reconstructions and Architectural Knowledge," in Faschingeder, Kristian, et al. (eds.): Architecture in the Age of Empire. Weimar: Verlag der Bauhaus-Universität, 2011, pp. 160 – 173

[151] Furthermore, I must note that in the edition of Design Studies where the two first papers were published, two of Anderson's students at the MIT also published articles discussing architecture in relation to Lakatos's research programs. These were: Andreotti, Libero: "conceptual and artefactual research programmes in Louis I. Kahn's Exteter Academy Library (1966 – 72)," Design Studies, Volume 5, No. 3 (July, 1984), pp. 159 – 165; and Metallinou, Vasilia A.: "Regionalism as an architectural research program in the work of Dimitris and Suzanna Antonakakis," Design Studies, Volume 5, No. 3 (July, 1984), pp. 166 – 174.

[152] It is important to note the remarkable similarity with Wartofsky's definition of the model, as discussed above.

[153] Anderson: "Architectural Design as a System of Research Programs," p. 147

[154] Ibid., pp. 147 - 148

Furthermore, Anderson noted how these series of theories which he called research programs are always linked to concrete questions: "A research program is built around a particular problem situation. Lakatos recognizes that more than one research program may be addressed to any problem situation. Indeed, it is in the competition and comparison of research programs that Lakatos locates much of the success and rationality of science."[155]

We must remain aware that Anderson's interest in Lakatos's research programs was entirely based on his belief that in the work of an architect, as well as in the work of a scientist working on a falsificationist tenets, there are several common features.[156] He described four of these features as (a) "the acceptance by convention of certain assumptions in order to initiate and drive a body of work; (b) the examination of a body of work for internal structure and for its relation to other systems and to empirical conditions; (c) the embedding of this work in a historical and cultural setting; (and) (d) the necessity of institutional support and constraints."[157]

Anderson believed that, in architecture, these four features converge in what he called "an explanatory and normative model," a term that obviously brings us back to something we studied already: namely, Marx Wartofsky's definition of a model, which we described as being able to account for the telic and the technical aspects of architecture. It is in relation to Wartofsky's definition of a model that we can best understand what Anderson referred to as an architect's "body of work;" and that I propose we study these features shared by science and architecture, according to Anderson.

Regarding the first (a) of these features, it is clear that Anderson was especially interested in the conventional nature of those hypotheses which we've described as central or indispensable to a research program; or what Lakatos called the hard core of that program.[158] As we know, according to Lakatos the hypotheses that are central to a scientific research program are not always the result of a rational process of inquiry, nor are they meant to deal with severe criticism. Instead, these hard core hypotheses are often formulated on the basis of convention – consensual

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[155] Anderson: "Architectural Design as a System of Research Programs," p. 147

[156] "Science comes to be seen as one more – very important, but one more – cultural system. Arriving at this point, we are neither forced nor inclined to deny distinctions between such cultural systems as science and art, but neither are we inclined to draw hard and fast boundaries." Ibid., p. 149

[157] Ibid., p. 149. I have introduced markers (a, b, c) to make the distinction clearer.

[158] "In the course of a research program there is a series of theoretical states. Each of these theoretical states retains a common element, and it is the constancy of this common element which identifies the series as a single program. Lakatos refers to this common element as the 'hard core', the postulates upon which the program of research is based." Ibid., p. 148

agreements among several parties who deem a particular question relevant or topical, without further evidence or support. [159]

Based on this description, we must agree that Lakatos's definition of a research program's hard core is extremely valuable for the appraisal of architecture, in the sense that it recognizes that, like scientists, architects oftentimes initiate and drive a body of work (i.e., a telic vision of a possible future for the built environment, plus the technical means needed to get there) based on their acceptance by convention of certain assumptions which are not entirely rational. Admitting this certainly demystifies an architect's ultimate or essential motivations, and allows us to discard the absurd belief that science is entirely rational.

Unlike his development of this first common feature, though, Anderson's development of the second (b) of these aforementioned features shared by architecture and science is full of inconsistencies, and contains what I believe is the most problematic aspect in his entire interpretation. Strictly speaking, what he referred to as "the examination of a body of work (of architecture, in this case) for internal structure and for its relation to other systems and to empirical conditions" does not seem entirely possible on the basis of Anderson's paper.

I have two arguments to sustain this claim. My first argument is that, by omitting a key item in Lakatos's methodology, Anderson could not deliver on his promise to provide an explanatory and normative model of design processes. Even if he recognized that a body of work (in science as well as in architecture) can be initiated and driven by a conventional hard core hypothesis; his description of those other hypotheses or conjectures which we have referred to as subsidiary or expendable within the program (and which constitute an essential part of its internal or technical structure), is entirely lacking. Lakatos – we know – referred to these as "auxiliary hypotheses," and believed that they formed what he called a "belt," destined to protect the program's core from criticism or refutation coming from other research programs, based on what he called those hypotheses' "positive heuristics."[160]

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[159] "According to Lakatos' (sic) construction, the hard core is methodologically inviolable. That is, from within its own research program, neither criticism nor test results may be directed against the hard core. (…) The rationality of assuming the hard core is not known a priori; it is a matter of agreement, of convention, to assume the hard core. (…) With Lakatos, then, the conventional element of science has invaded, to accept his terminology literally, the very core of the scientific enterprise. (…) This conventionalism, this resistance to criticism, this degree of arbitrariness is necessary to the construction and development of the program, but it is tested and controlled in the larger construction of the scientific enterprise." Anderson: "Architectural Design as a System of Research Programs," p. 148

[160] "While coherent development of the program is, on the one hand, facilitated by the maintenance of the hard core, there must also be that which is open to change. So Lakatos' (sic) hard core is surrounded by what he sometimes called the 'protective belt' of auxiliary hypotheses. It is these hypotheses which must bear the brunt of test. Negative experimental results are directed against the auxiliary hypotheses which are

Mention of these heuristics and of their role within an architectural body of work is minimal in Anderson's paper. Without elaborating much further, he just mentioned that Lakatos considered a negative heuristic,[161] which was specific to the hard core of the program; and a positive heuristic, related to the protective belt of the program. This positive heuristic he simply described as "methodological directives or suggestions which help to drive the program,"[162] without mentioning how.

As Anderson set out to do, any methodology (or any explanatory or normative model, as he called it) is meant to examine the internal structure of a body of work. By internal structure, we can understand its constituent parts, and how they work together.[163] In this sense, this internal structure is no different than the technical driver mentioned by Wartofsky in his definition of a model. Consequently, a methodological approach must recognize the instruments and methods, or the heuristics that constitute the internal structure of that body of work, and drive that body of work in a particular direction. Anderson's quick dismissal of the role and nature of heuristics in his interpretation basically stripped the architectures he set out to study of their technical driver, and consequently made it impossible for him to explain what he referred to as "a body of work's relation to other systems and to empirical conditions."

Let us focus on these empirical conditions for a moment, since they reveal a glaring misconstruction in Anderson's argument, which threatens to obliterate most of what we have discussed so far. We know that most of that argument is based on his belief that science and architecture share common features. These common features necessarily imply common methodological bases, in relation to the way knowledge grows in both disciplines. In both cases this growth of knowledge depends on some degree of arbitrariness, and on the formulation and refutation of falsifiable conjectures. This argument is mostly muddled, though, as Anderson introduced the idea that science and architecture relate to entirely different empirical conditions:

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then altered to maintain the coherence of the hard core with the date. This account of the protective belt explains its logical role, but one can also note a more positive aspect of the auxiliary hypotheses. Additional, or improved, hypotheses, perfect and extend the reach of the hard core." Anderson: "Architectural Design as a System of Research Programs," p. 148

[161] Anderson defines this "negative heuristic" as "possible hypotheses or steps which are not to be entertained because of their inconsistency with the hard core." Then he adds: "The negative heuristic is closely allied to the hard core, a set of injunctions against possible hypotheses or research strategies inconsistent with the hard core." Ibid.

[162] Ibid.

[163] Returning to our previous example, it seems implausible to examine Newtonian science for internal structure without its "mathematical apparatus, involving the differential calculus, the theory of convergence, differential and integral equations," and so on.

While an "obdurate empirical reality" (e.g., nature, the cosmos, etc.) imposes definite and concrete empirical constraints on scientific thought – he argued – "the architect is involved in making his own reality as well as his theory."[164]

Against the very reasons we have mentioned as justifications for Anderson's study of Lakatos, this idea implies a distinction between science as accurate or factual, and architecture as something entirely different; mindless of Lakatos's demonstration that scientific thinking is not bound by empirical constraints, as we saw in our lengthy discussion on metaphysics; and beyond Anderson's own defense of the role of tradition in architecture as an obdurate empirical reality for the architect, which sparked our discussion.

From these observations, we can conclude that Anderson's attempt to equate the methodological bases of two different disciplines, in order to examine "a body of work (of architecture) for internal structure and for its relation to other systems and to empirical conditions," was mostly flawed. It is clear that he could not explain that body of work's internal structure because he did not recognize the instruments and methods that constituted that structure in the first place; and it is also clear that he did not study that body of work's relation to any empirical conditions because he assumed that there were no (or at most very few) empirical conditions for architecture.

Without a clear description of architecture's heuristics, and without the acknowledgment of other-than-physical constraints for the work of an architect, it seems only natural that Anderson could also refrain from examining the relation between several architectural bodies of work, and completely disregard the social or discursive[165] basis of Lakatos's understanding of science. Consequently, Anderson's development of the last two common features mentioned above (c and d – regarding the embedment of architecture in a historical and cultural setting, and its relation to institutional support and constraints) was seriously hampered by his neglect of a research program's heuristics, for a very elementary reason.

Evidently, the scientific research programs we have been describing do not appear ex-nihilo, nor do they exist on their own. Instead, series of theories result from the work of one or more scientists, and are always in relation to other series theories developed or formulated by others regarding a particular question. To illustrate this we must only recall some of the examples used by Lakatos and his collaborators to show the methodology at work: "Why did Copernicus's research program supersede Ptolemy's?"[166] or "Why did Einstein's Program supersede

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[164] Anderson: "Architectural Design as a System of Research Programs," p. 149. Opposite this interpretation, I argue that tradition, as discussed in the first section of this chapter, constitutes an architect's empirical reality.

[165] I refer to Sarah Williams Goldhagen's definition of discourse, as developed in the introduction.

[166] "Why did Copernicus's Research Programme Supersede Ptolemy's," in Lakatos: The Methodology of Scientific Research Programmes, pp. 168 – 192

Lorentz's?"[167] There is no doubt that competition and collaboration, and the formulation and refutation of conjectures by several parties, are indispensable to Lakatos's understanding of science.

Remarkably, Anderson chose to turn these normally social processes into something entirely personal. Competition and collaboration between several series of theories – he thought – might as well take place within the work of a single architect.[168] In order to develop this curious interpretation Anderson chose to append Lakatos's methodology ad-hoc, by inventing two different kinds of research programs. Like Landau's ad-hoc-ist architect from the beginning of this chapter, he simply restated the age-old division between architectural theory and practice by assuming that the work of an architect can be understood as the conjunction of a conceptual (i.e., theoretical) research program, and an artefactual (or practical) research program. "The architect," he believed, "is simultaneously involved in two related but not deterministically controlled activities: a conceptual program (similar to that of Lakatos) and what might be called an artefactual program, concerned with the systematic exploration of physical models"[169]

I must make clear that models here are definitely not those telic and technical units of appraisal we just discussed; and that artefacts here have little relation with Anderson's previous definition of the term, based on Hayek. Instead, it seems that here the terms models and artefacts are just synonyms for actual or represented physical objects; as opposed to the theories or ideas which define Anderson's so-called conceptual research program.[170]

The weakness of this interpretation transpires in the follow-up article "Architectural Research Programs in the Work of Le Corbusier," where Anderson tried to equate full-fledged scientific research programs to two conjectures within the work of a single architect. Anderson was not entirely unaware of the feebleness of his equation, though: "The present essay," he wrote

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[167] Zahar, Elie: "Why did Einstein's Programme Supersede Lorentz's (I)," The British Journal for the Philosophy of Science., Vol. 24, No. 2 (June, 1973), pp. 95 – 123; and "Why did Einstein's Programme Supersede Lorentz's (II)," The British Journal for the Philosophy of Science., Vol. 24, No. 3 (September, 1973), pp. 223 – 262

[168] Cf. Yoon, J. Meejin, and Howeler, Eric: Expanded Practice. New York: Princeton Architectural Press, 2009

[169] Anderson: "Architectural Design as a System of Research Programs," p. 149

[170] "In positing these two parallel research programs, no priority is given to either one. The two programs are not deterministically linked; either one may anticipate and influence the other; onemay terminate without implying termination of the other. As already stated, each may provide a critique of the other, but no more than in science does one expect a 'strong test'. Perhaps still more than in science, competing programs can and should proliferate. Yet in practice, such programs do thrive or falter according to their perceived fruitfulness, their success at innovating or in better meeting perceived needs." Ibid., p. 150

diffidently, "*does not offer* the scope for a detailed analysis of an architectural research program, but will rather illustrate such an approach through selected works of Le Corbusier. Two early projects, the young Jeanneret-Le Corbusier's sketches at the Acropolis and his Maison Dom-ino will be presented as independent, *not fully developed* architectural programs. These *rudimentary* programs are then seen as *weakly* conflated in the Maison La Roche. With the five points of the mid 1920s, the Maison Dom-ino receives an important reinterpretation capable of subsuming the earlier concepts in a new, coherent program which is progressively realized in the major villas of the 1920s."[171]

In short, Anderson believed that Le Corbusier's drawings of the Acropolis represent a research program in their own right. "The first fragmentary program turns on the concept which Le Corbusier was later to call the promenade architectural. Perhaps this term could be read as 'architecture considered as the orchestration of spatial experience'."[172] And even though it is clear that Anderson recognized that the so-called "promenade" was related to (in the sense that it manifestly strove to evolve from) other architectures;[173] and that this relation was patent in a series of equally discernible instruments and methods, such as texts and drawings, or formal and technical choices;[174] Anderson avoided any relation between this supposed research program in the work of Le Corbusier and any other architecture altogether. Instead, he moved on and added that the Maison Dom-ino project by Le Corbusier should also be understood as yet another full-fledged research program, different from the first, and which he described in the following terms: "Architecture, or this new architecture based on a modern technology, should give direct expression to structural elements."[175]

Clearly, we can take both of these ideas (namely: "architecture considered as the orchestration of spatial experience," and the belief that "architecture should give expression to structural elements") for well formulated architectural conjectures, like I just said. As suggested for the promenade, they both appear to confront an architectural question, and they can both be understood in relation to other architectures which deal with the same question in similar or

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[171] Anderson: "Architectural Design as a System of Research Programs,"p. 151, my emphases.

[172] Ibid.

[173] "Such a concept," he wrote, "may not sound so startling today, but one must remember that well into the nineteenth century treatises on architecture relied primarily on an objective view of the autonomous rules of architecture itself, best exemplified in the study of the classical orders." Ibid.

[174] "The 'physical models' – the Acropolis itself as well as Le Corbusier's drawings – are crucial to this fragmentary research program: the Acropolis affording the opportunity to test out the proposition which the drawings advance." Ibid., p. 152

[175] Ibid., p. 153

different ways. However, it is difficult to assume these so-called artefactual programs as series of theories in their own right; or to assume that they contain immutable core ideas arrived at by convention (when there is no one to convene with – I will come back to this in the conclusions to our study), which are in turn protected by some sort of belt (when there is nothing to protect them from). As we will also see in the conclusions of this study, the maison Dom-ino and the "promenade architecturale" can indeed be ascribed to two different research programs, but they are certainly not research programs in their own right.

We can further understand the problematic nature of Anderson's interpretation based on his third article on the subject, titled "Architectural Design as Research Programs," and published in the magazine Places as the result of a workshop organized by the North American Association of Collegiate Schools of Architecture (ACSA[176]) in 1985. In that workshop, Anderson guided a group of professionals in their analysis of two buildings: the Cranbrook School for Boys and the Kingswood School for Girls in Bloomfield Hills, Michigan.[177] The fact that he provided an introduction and conclusions to their analysis suggests that he also defined the terms in which the participants analyzed both buildings.

The overarching hypothesis of that analysis, as in Anderson's earlier text on Le Corbusier, is that each of these two buildings can be understood as the development of several, distinct research programs within the work of a single architect. "The ACSA team," the participants wrote, "surprised itself in finding that the two secondary schools of Cranbrook, both designed by Eliel Saarinen, and so similar in purpose, patronage, and date, are nevertheless representatives of quite different programs."[178]

And what were these quite different research programs? On the one hand, Anderson and his colleagues advanced "the following two hypotheses within the 'hard core' or Saarinen's Cranbrook School (for boys). First, the style is informed by and makes reference to Ruskinian principles embodied in the phrase 'joy of work' and includes considerations about labor, materiality, and ornament. Second, the main generating principle of the plan is an open-ended interplay of vistas and axes and an inwardly focused integration of buildings, plazas, and courts; the outdoor space is positive and all elements are placed sensitively in the landscape."[179] On the other hand, the workshop attendees asserted "that the following (hard core hypotheses) define the overall program at Kingswood (school for girls): (1) an aesthetic that stems from what Frank Lloyd Wright

[176] http://www.acsa-arch.org/, retrieved 06/02/2018

[177] https://en.wikipedia.org/wiki/Cranbrook_Schools, retrieved 31/01/2018

[178] Anderson, Stanford, et al.: "Architectural Design as Research Programs: The Schools at Cranbrook by Eliel Saarinen," Places, Volume 3, No. 2 (Fall, 1986), p. 60

[179] Ibid., pp. 61 – 62

called the 'Art and Craft of the Machine'; (2) the use of an orthogonal plan, comprised of sections of uniformly built elements; and (3) the contrast between distant readings of a picturesque object in the landscape and close-range readings of rigid, axially organized space."[180]

The platitude of these analyses basically reaffirms my previous observations regarding Anderson's attempt to explain a couple of Le Corbusier's architectural conjectures as full-fledged research programs. Clearly, Saarinen's choices for a particular materiality, and for distinct strategies for the implantation and configuration of these two schools can be taken for architectural conjectures; which respond to discernible questions (such as the relation between building technology and society, or between built objects and their surroundings landscape) by using equally discernible instruments and methods. However, Anderson and his colleagues were not able provide us with the slightest indication of why we should consider these conjectures as the hard core hypotheses of one or more full-fledged research programs, other than just calling them so.[181]

Similar shortcomings reappear in the late Stanford Anderson's final paper on the subject, presented at the Bauhaus Colloquium at Weimar, in 2009.[182] There, Anderson reiterated the rudiments of Lakatos's methodology, and even returned to his attempt to explain some of Le Corbusier's projects as research programs in their own right. The only difference with the previous

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[180] Anderson, et al.: "Architectural Design as Research Programs," p. 65

[181] Instead, the article juggles with Lakatos's terminology, a couple of analytical observations regarding both school's form and materiality, and mention of well-known historical referents; and presents the result as an indistinct heap of supposed hard core and auxiliary hypotheses and research programs. E.g.: "First Hard Core Hypothesis. The concept of the 'Art and Craft of the Machine' stems directly from the Arts and Crafts sensibility already noted in the Cranbrook School. Here, however, in the basic fabric of the building, the contributions of many skilled craftsmen were not required. Rather, the machine was used to make ornament more accessible to everyone. Metal can be inexpensively cast or stamped, and stone and wood can be cut thin and layered into decorative patterns .Thus, the quality of surfaces and the use of repetitive, machined elements becomes the primary mode of ornament, and attitude that is found in the whole of the contemporary manner termed art deco. An auxiliary hypothesis is that the artist emerges as the sole giver of form, and his designs are explicitly carried out by craftsmen who no longer have a role in defining the product of their craft. An example of this is the use of repetitive stamped copper patterns under the eaves: another is the use of standardized industrial sash windows. Where exceptional windows occur, such as the large leaded-glass windows at the lobbies, the pattern is cellular and repetitive. Another auxiliary hypothesis is that materials are used to define hard, uniform surfaces, which is in sharp contrast to the embedding of many elements and soft definition of the edges at Cranbrook School. The palette of materials on the exterior of Kingswood School is held to a minimum: brick, green-stained bricks, green copper roofs, sandstone, glass, and painted metal sashes. Articulation of construction and the 'truth' of the materials is de-emphasized, as elements of the wall are all subsumed by the insistent reading of surface." Ibid. pp. 65 – 66

[182] Anderson, Stanford: "Rational Reconstructions and Architectural Knowledge," in Faschingeder, Kristian, et al. (eds.): Architecture in the Age of Empire. Weimar: Verlag der Bauhaus-Universität, 2011, pp. 160 – 173

papers was Anderson's intention to elaborate a bit further on the historiographic, rather than on the cognitive utility of Lakatos's work. He tried to do so by relating Lakatos's distinction between internal and external histories of science with a series of well-known discussions regarding the autonomy and self-referentiality of architecture, based on the work of Peter Eisenman, among others. But that is another topic altogether, which I will only touch upon tangentially towards the end of our discussion; so I will simply notice here that this last paper does not contribute any additional element to our study, and instead ratifies what I have found most problematic in Anderson's examples.

As we've seen, Anderson had enormous difficulties in presenting what he described as a qualified version of Imre Lakatos's methodology of scientific research programs at work. Studying these articles I have come to the conclusion that the main reason behind these difficulties lies in a subtle yet momentous contradiction. Simply put, Anderson purportedly aimed for a methodological appraisal of architecture, which implies the study of the instruments and methods utilized by an architect to confront discernible questions, as we said earlier. Such appraisal – we also said – equates to a heuristic understanding of architecture, which we defined as the study of the architectural discipline's processes of exploration, evaluation, and discovery. Our analysis of these four articles, however, reveals that Anderson's approach to Lakatos's methodology failed to recognize the necessarily heuristic nature of any methodological approach. Instead, it remained linked to a hermeneutic understanding of architecture; or the idea that architecture represents something which can or must be interpreted or explained, rather than described. I can sustain this claim based on the fact that Anderson never took Saarinen's schools at Cranbrook (or Le Corbusier's work, for that sake) for active parts of a research program; but rather saw them as – in his own words – "*representatives* of quite different (research) programs."[183]

I tend to believe that Anderson was partially aware of this contradiction. At least that's what I have inferred from his conclusions on the Cranbrook workshop, where he suggested that it would have been better to place "Saarinen's work within more general architectural developments," than to assume that a single one of his buildings represented several research programs.[184] We can understand this suggestion in relation to those features which Anderson thought are common to science and architecture, and which justified his interest in Lakatos. Certainly, placing a particular architecture within (or in relation to) a series of architectural developments seems more in tune with "the examination of a body of work for internal structure and for its relation to other

[183] Anderson, Stanford, et al.: "Architectural Design as Research Programs," p. 60

[184] Anderson wrote: "Could one demote the Ruskinianism of Cranbrook and the arts program of Kinsgwood to the role of auxiliary hypotheses under a more powerful hard core that would then show the continuity of the program from one school to the other? This is certainly a possibility, but we failed to identify commonalities between the schools of a sufficient power to play that role. Perhaps our failure to find such a strong hard core will encourage others to make such a contribution." Ibid. p. 69

systems and to empirical conditions;" than, for instance, trying to explain how that architecture represents "Ruskinian principles embodied in the phrase 'joy of work'."

The glaring difference between these two propositions allows us to recognize that Stanford Anderson's understanding of architecture effectively evolved from Reyner Banham's understanding of architecture, by dropping much of its historicism; but it also allows us to recognize that he was not entirely able to shed that understanding's hermeneutic basis. Anderson's assumption of architecture as a cognitive discipline (and the falsificationist foundations of that assumption); his nuanced understanding of the role of a non-authoritarian tradition in the production of new architecture (and its liberating consequences); his embrace of a definition of architecture as eminently (and simultaneously) telic and technical; and his recognition of metaphysical aspects in a built environment that is defined by proliferation; notably evolved from Banham's historicist plea for an architecture that should adequately represent what he took for a second machine age – his so-called "true modernism."

Furthermore, there can be little doubt that these stages in Anderson's process of architectural discovery make perfect sense of his interest in Lakatos's methodology of research programs. Anderson successfully demonstrated the pertinence of studying architecture based on a well-known scientific methodology, by identifying a series of common features to both disciplines. But, as we have seen, the examples he assembled to study his own qualified version of Lakatos's methodology at work were mostly flawed, due to his dismissal of architecture's heuristics and their role in the operation of the resulting methodology.

If we want to evolve beyond those examples, it is essential that we clarify what we understand for architecture's heuristics; that we explain their nature, and more importantly, their role in architecture understood as a system of research programs. In order to do so, we must uphold our definition of architecture as a cognitive practice; one that necessarily operates on the exploration, evaluation, and discovery of a limited number and a particular type of questions regarding the built environment. Based on that definition, I have argued (based on Marx Wartofsky's notion of the model) that every architecture (or every architectural body of work – in Anderson's terms) simultaneously comprises the projection of those questions towards a possible future, together with a choice of instruments and methods required to achieve that projection. Any process of architectural exploration, evaluation or discovery both defines and is defined by the instruments and methods utilized to carry them out.

As already stated, this reciprocity has allowed me to subsume all these terms (instruments, methods, exploration, evaluation and discovery) under the encompassing notion of heuristics; leading me to believe that if we can identify a field of exploration or an instrument that is common to most architectures, we should also be able to point at an architectural heuristic. In his own approach to Lakatos's methodology, Royston Landau developed this exact same premise towards a definition of architectural heuristics. Firstly, he noted that every architecture is nothing different than the demarcation of a concrete and discernible position in relation to other architectures. Secondly, he understood that this relation was defined by what he referred to as rules or

heuristics. The deliberate interchangeability of both terms used by Landau makes perfect sense under what we have described as a normative approach to architecture; or the study of the instruments and methods that make the growth and development of architectural knowledge possible, plus the ways in which those instruments or methods (heuristics) can be standardized or regulated (rules) in order to be assessed.

"Lakatos" – Landau argued – "will tell us that his *programme* has running through it underlying it and thus holding it together, a *hard core* of inviolable statements which are not open to questioning or revision by the author… But there is a further important idea which Lakatos might contribute to the concept of a position, and this is the *rules* or *heuristics* which the position needs for its regulation… In the production of architecture they may be very numerous and will certainly include *formal rules* (e.g. proportional systems, classical rules, vernacular preferences, randomness), *technological rules* which are most likely to be coordinated with economic rules, *ethical* and *political rules*... This variable set of positive rules cannot be explored in abstract but only in reference to a particular position."[185]

In other words, Landau recognized that, when understood as a system of research programs, architecture implies the sort of hard core hypotheses which we have repeatedly described. However, and contrary Anderson's attempt to exemplify Lakatos's methodology at work based on his analysis of few buildings from a single architect; Landau understood the importance of describing an architecture's position in relation to other architectures. This position, he argued, is always regulated or demarcated by that architecture's own heuristics, and the relation between those heuristics and those of other architectures. Finally, he mentioned four of these heuristics in concrete terms. As we just saw, he referred to them as formal, technological, ethical, and political heuristics; noting that these categories make little sense *in abstracto*, and must always be referred to specific architectures.

On the grounds of this interpretation, we can propose necessary adjustments to Stanford Anderson's qualified version of Lakatos's methodology. The resulting, adjusted methodology remains bound to Anderson's belief that every architecture is an opportunity for the growth and development of knowledge regarding the built environment. As we've seen, we must emphasize on the fact that 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.

But on what grounds do architectures compete and collaborate with each other? On the one hand, we can argue that every architecture establishes a negative or non-relation with other architectures, as it contains essential motivations or propositions that are not entirely rational,

[185] Landau,: "Notes on the Concept of an Architectural Position," p. 113

and are therefore not open to discussion. These are what Lakatos referred to as hard core hypotheses, defined by their negative heuristics.

On the other hand, it is clear that every architecture establishes a positive relation with others regarding discernible questions. This positive relation is basically one of engagement, and can imply competition (rejection, contradiction, refutation) and/or collaboration. In any case, this positive relation depends on every architecture's ability to couple a vision of a possible future for the built environment (the telic component of Wartofsky's model), plus the instruments and methods required to get there.

We can equate these instruments and method to Wartofsky's description of the technical driver of a model, or to those positive heuristics which Lakatos linked to the auxiliary hypotheses of a research program, as we noted earlier. Furthermore, in tune with Landau's interpretation, we can conclude that these instruments and methods operate within at least four fields of well-known architectural exploration, evaluation, and discovery.

We can start talking about these fields by arguing that every architecture explores, evaluates, and discovers the built environment in terms of geometries, patterns, configurations, processes that issue in forms, and so on.[186] This formal heuristic of architecture can include the study and development of proportional systems, or the adoption of randomness in the generation of the built environment, as Landau seemed to suggest when he talked about a formal rules or heuristics of architecture; but it can also include formalist approaches which typify what are taken for elemental kinds of forms, or the rejection such proposition altogether.

Besides that formal heuristic, every architecture also explores, evaluates, and discovers within what I will refer to as the technical heuristic of the building art – a slight adjustment to Landau's allusion to architecture's technological rules. This heuristic refers to any architecture's reflection on the means with which the built environment is defined by establishing a relation between space and matter and their properties; and includes the processes, procedures, and principles that can or should be utilized in order to achieve that definition. Ranging from the mechanics of structural calculation, to the notion of order as the harmonic articulation of building parts, this heuristic also comprises the consequential notion of technical motivation.[187]

What this built environment is thought, built, and used for implies yet another field of exploration, evaluation and discovery, which Landau seemingly alluded to when he talked about the political rules or heuristics of architecture. What I would prefer to call the utilitarian/purposeful heuristic

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[186] Kousoulas, Stavros, and Mejia Hernandez, Jorge (eds.): Exploring Architectural Form: A Configurative Triad, Footprint 22 (Spring, 2018)

[187] Semper, Gottfried: Style in the Technical and Tectonic Arts; or Practical Aesthetics. Santa Monica: Getty Research Institute, 2004

or architecture refers to the general and particular human actions that can or should happen in the built environment, plus the architect's purpose in defining that built environment in a particular way in relation to those activities. These activities and purposes range from ergonomics to politics, and from economy to introspection or contemplation, among many others.

Finally, the codification of the information acquired from, and used to define the built environment constitutes a fourth, communicative heuristic, which we can develop from Landau's mention of the ethical rules of architecture.[188] This heuristic explores, evaluates, and discovers ways in which architectural knowledge is communicated; including graphic[189] or physical abstractions that describe elements of the built environment, plus the textual descriptions of events, principles, accounts and other media that explain what architecture is and how it has and should occur.

With these definitions in mind, let us briefly exemplify the relation between questions, heuristics, instruments, and methods, based on a few, popular architectures:

[188] Landau mentions Michel Foucault's appraisal of communication as "'delimiting a field of objects', as specifying 'a legitimate perspective for the agent of knowledge', and of 'fixing the norms for the elaboration of concepts and theories'." It is such interpretation that allows me to establish a comfortable link between ethics and communication. Landau's quote referes to Foucault's "History of Systems of Thought" (1977), p. 199, as a source for his reflection. In Landau: "Notes on the Concept of an Architectural Position," p. 113

[189] Cf. "The projective geometry of the seventeenth century would emerge out of perspectival endeavours: this too, like so many sub-disciplines of modern 'science,' is in the final analysis a product of the artist's workshop." Erwin Panofsky, Perspective as Symbolic Form, New York: Zone Books, 1997, p. 58

Table 1
**Architectural Heuristics**

| Question | heuristic | instrument | Method | example |
|---|---|---|---|---|
| How to achieve density while preserving introversion/privacy? | form | courtyard / patio configuration | stacking several patio units diagonally | Nid d'Abeilles housing project in Casablanca |
| How to achieve multiplicity with standard units? | | individual dwelling unit / cell | grafting cells onto a central core or stem[190] | Nakagin Capsule Tower in Tokyo |
| How to blur the limits between public and private space? | use / purpose | platform-tower configuration | levelling the platform's surface with public space | Residencias el Parque housing project in Bogotá |
| How to bridge height differences in a public space? | | Paving | defining the folds of a surface | Plaza de Bolívar in Bogotá |
| How to avoid monotony in a large surface? | technique | brick masonry | articulating several types of locks for the brickwork | Museum Boijmans Van Beuningen in Rotterdam |
| How to articulate spaces of different sizes? | | balloon frame | stacking several balloon frames on top of each other | Lovell Health House in Los Angeles |
| How to represent time in relation to the built environment? | communication | montage / collage | presenting different sequential images next to each other | The Manhattan Transcripts |
| How to rationalize complex forms through drawing? | | descriptive geometry | dissecting the object into an array of sections | How to lay out a croissant? |

[190] To further demonstrate how different methods lead to different architectures, despite confronting the same question, we can compare Kurokawa's Capsule Tower with Moshe Safdie's Habitat 67, and with Le Corbusier's Unites.

Based on these simple examples, we can come back to what I have referred to as the most problematic aspect of Anderson's interpretation; namely, his inability to examine a body of work of architecture for internal structure and for its relation to other systems and to empirical conditions. Using these definitions, I am convinced that the body of work of every architect can be described as the articulation of a series of conjectures in at least these four fields of exploration, evaluation, or discovery. This articulation (i.e., the ration or balance given to these instruments and methods) is nothing different than any architecture's internal structure.

As we've seen, every architecture's internal structure is deliberately aimed towards the fulfilment of a goal: the achievement of a possible future for the built environment. The importance or weight given by architects to their work in each of these fields is always established in relation to one more questions to be met in the fulfilment of that goal. More importantly, though, it is established in relation to other architectures that have also chosen to confront those questions (i.e., an architecture's relation to other systems), including those that constitute architecture's tradition. We have equated that tradition with the architect's empirical conditions.[191]

Together, the bodies of work produced by many architects constitute an architectural research program when their work (despite being engaged in fierce competition, even) shares the same hard core hypotheses. This can be explained in rather plain terms. Architects choose to confront one or more questions, aiming to project their work towards a possible future for the built environment. Based on this choice, they assemble an architectural model by defining the instruments and methods required to confront that question. That particular choice of instruments and methods describes the importance given by an architect to each of the the fields of exploration, evaluation, and discovery in which he has chosen to act in order to confront that question. These choices are in turn conditioned by an architectural tradition which provides examples of how that question has been confronted before, and by the competition and collaboration that can be established with other architectures that are currently aiming for a similar feat. Jointly, though, these competing and collaborating architectures can be actually protecting one or more underlying hypotheses, which are tacitly shared by all architects involved in the same research program. These hypotheses are seldom discussed, certainly not meant to be confronted, basically taken for granted.

Our ability to describe a research program in such terms owes much to Royston Landau's defense of the eminently discursive or social nature of architecture; which we can relate to Sarah Williams Goldhagen's appraisal of modern architecture as a discourse, discussed in our introduction. Landau knew that any architecture's self-imposed rules, or its deliberately chosen heuristics, define its position in relation to other architectures; and consequently claimed that the description

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[191] Cf.: "Every architect conceives an imaginary city of his own. The buildings in that city are his and those of his peers. He often makes both kinds." Amancio Guedes: Amancio Guedes (exhibition catalog). The Architectural Association, London, 1980, pg. 36

of an architecture is nothing else than the description of that position. Williams Goldhagen's definition of a "framework" within which to situate modern architectures can also be understood as an attempt appraise that position. As we've seen, contrary both authors Stanford Anderson chose a different trajectory,[192] and tried to explain architecture based on the work of a single architect, without issue.

Based on these observations we can only conclude that the appraisal of architecture based on a methodology of research programs must examine not one, but several architectures; with special focus on their internal structure, on the relations that can be established between them, and on the relation each of them establishes with its own empirical conditions, at a conjectural level. Operating on this premise, in the following chapters I will describe the work of three architects who momentarily collaborated in an extremely fertile professional environment. As noted in the introduction, the architects Rogelio Salmona, Le Corbusier, and Shadrach Woods coincided in Le Corbusier's office in 1948, albeit momentarily. Springing from that coincidence, we will try to describe the ways in which each of these architects' work confronted discernible questions by using equally discernible instruments and methods; we will examine how their architectures established a series of transactions with other architectures and traditions; and we will try to explain how despite the enormous differences between them, these three architectures can be understood as parts of a well-known research program.

[192] At an early stage in his career, Anderson appeared to touch on what we have defined as architecture's heuristics, albeit tangentially (in relation to "the arts") and fleetingly. "Since Popper's theory of knowledge is a general theory and has been extended by him to a sociological theory of tradition," he wrote in 1963, "it is plausible to seek to extend his ideas further to non-scientific fields – including the arts. The most serious apparent, though perhaps not insuperable, shortcoming is that the arts seem to have no coherent set of generally accepted theories or universal laws. However, since art does form part of our social situation, one may explore the interpretation of the arts within a sociological theory of tradition. Furthermore, one may study the relationship of the arts to traditions within the arts themselves; that is, the *formal, technical and iconographic* traditions." In: Anderson: "Architecture And Tradition That Isn't Trad, Dad," p. 82, my emphasis.

Image 5
Rogelio Salmona: Centro Gaitán

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# Centro Gaitán: Architectural Purpose Beyond Modernist Functionalism

## Communication and purpose

More than fifty years past that intense 1948, in which he moved to Paris and started working as an architect, Rogelio Salmona presented his work to a European audience. "We can come close to understanding what I have built in Colombia since I left Le Corbusier's studio up to now," he said, as he scrolled through pictures of his projects. "However, it is clear that architecture cannot be fully appreciated through photographs for it has music, texture, color, and taste which the eyes alone cannot see."[1]

Taking this statement as a starting point, our aim in this chapter will be to study the ways in which Rogelio Salmona developed an understanding of architecture which – he claimed – could not be fully grasped in visual terms. More specifically, we will study how this understanding of architecture set out to confront functionalist elements of modernist architecture.

For the sake of clarity, we have previously defined functionalism as the belief that the production of architectural form can be directly linked to the analysis of specific, clear-cut human actions, or "functions," expected to take place in that form. In order to assess the ways in which Salmona confronted that belief, in the following pages we will: (a) describe how Salmona's architecture evolved beyond popular modernist communicative strategies, as a way to explore, discuss, and convey purposes for architecture beyond the widespread interpretation of modernist functionalism; (b) focus on Salmona's assumption that a series of configurative strategies could lead to the achievement of those purposes for architecture in his buildings; (c) provide a general context for Salmona's architecture, and discuss how modernist historiography has approached that architecture; (d) analyze the project for Centro Gaitán, as part of Salmona's architectural model (based on our definition of the architectural model, from the previous chapter); and (e) discuss the notion of architectural purpose advanced by Salmona, as an evolution on modernist functionalism.

With these intentions in mind, I have chosen to start this chapter by touching on Salmona's address to the Finnish Association of Architects,[2] based on my conviction that architectural

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[1] Salmona, Rogelio: "Between the Butterfly and Elephant," in Heikkinen, Mikko: Elephant & Butterfly: Permanence and Chance in Architecture (Proceedings of the 9th International Alvar Aalto Symposium). Helsinki: Alvar Aalto Academy, 2004, p. 23. I wish to thank Klaske Havik for valuable information regarding this event

[2] http://www.safa.fi/ - retrieved 23/02/15

communication played a strategic role in his decision to confront functionalist elements of modernist architecture. Supporting this conviction, I have found that the short quote from his speech (above) echoes a previous, similar claim: "the symbiosis (of) architecture and space," Salmona said in an interview in 1984, "cannot be visualized with current representational systems, which are the result of 'staging'[3] and the system of linear perspective."[4]

This idea (basically: that architecture has more to it than can be seen) allows us to establish an initial relation (regarding the communicative heuristic of architecture, as we defined it in the previous chapter) between Salmona's work, and the work of leading architectural phenomenologists, such as Alberto Pérez Gómez, Robin Evans, and Dalibor Vesely.[5] Like Salmona, these authors have argued that modernist architectural thinking relied too heavily on our sense of sight, and that that too-heavy reliance on sight (which assumes architecture as a scenery, best conveyed in perspective drawings or photographs) limits our understanding of architectural purpose. In other words, Salmona and these authors have argued that architecture is expected to *do* things (besides accommodating standard human actions, or "functions") which cannot be grasped or communicated in visual terms; and they believed that these *other* things which architecture is also expected to do are extremely important.

Consequently, based on these authors we can consider that architects (like Salmona) who aim to evolve beyond modernist functionalism could benefit from confronting modernist architecture's predominantly visual approach; from involving more of our senses in our understanding of architecture; and more interestingly even, from exploring the way we perceive, represent, and communicate[6] architecture.

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[3] I have used the term "staging" to translate Salmona's original "puesta en escena," which is also commonly translated as mise-en-scène. Staging here means "the act, process, or manner of presenting a play on the stage." http://www.dictionary.com/browse/staging, retrieved 26/09/2017

[4] Gaitán, Gloria and Saldarriaga, Alberto: "Centro Cultural Jorge Eliecer Gaitán." Proa No. 336 (October 1984), pg. 14

[5] Evans, Robin: The Projective Cast: Architecture and Its Three Geometries. Cambridge (Mass.) and London: MIT, 2000. Perez-Gomez, Alberto and Pelletier, Louise: Architectural Representation and the Perspective Hinge. Cambridge (Mass.) and London: MIT 2000. Vesely, Dalibor: Architecture in the Age of Divided Representation: The Question of Productivity in the Shadow of Production. Cambridge (Mass.) and London: MIT, 2004

[6] For an excellent approach to the communicative heuristic of architecture, see: Havik, Klaske: Urban Literacy: Reading and Writing Architecture. Rotterdam: nai010 Publishers, 2014

RESIDENCIAS "EL PARQUE" • BOGOTA

ARQUITECTO: **ROGELIO SALMONA**

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ARQUITECTOS COLABORADORES
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COORDINACION Y ASESORIA TECNICA
ARQUITECTO: **URBANO RIPOLL**

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CALCULOS Y PLANOS ESTRUCTURALES
INGENIERO: **DOMENICO PARMA**

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CONSTRUCTORES:
EDIFICIO "A" **CUELLAR, SERRANO, GOMEZ**
EDIFICIO "B" **ESGUERRA, SAENZ, URDANETA, SAMPER**
EDIFICIO "C" **PIZANO, PRADILLA, CARO, RESTREPO**

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*Días antes de la inauguración visitamos, con el arquitecto Rogelio Salmona, esta obra. De las interesantes explicaciones relacionadas con el proyecto, tomamos algunas notas, que luego fueron revisadas y ampliadas por él, conforme al siguiente texto:*

Las "Residencias del Parque", son una tentativa para resolver los problemas de ocupación del espacio de un "habitat" de alta densidad. Se basa, principalmente, en las características del lugar y en las de la luminosidad de la ciudad de Bogotá, factores que fueron determinantes en la elaboración de las formas y en la ocupación del espacio.

El objeto de este planteamiento es el de lograr una solución arquitectónica significativa, tanto para la ciudad como para la colectividad que la habita. Esta solución contempla una variedad de espacios, en los cuales pueda desenvolverse la vida comunitaria y privada, así como una adecuada relación con el paisaje circundante urbano y natural.

Los tres edificios que conforman el conjunto fueron diseñados con el empleo de un módulo único, pero varían en forma y en altura. La forma general y las

(Continúa en la página 8a.)

esquema básico
relación espacial de los edificios

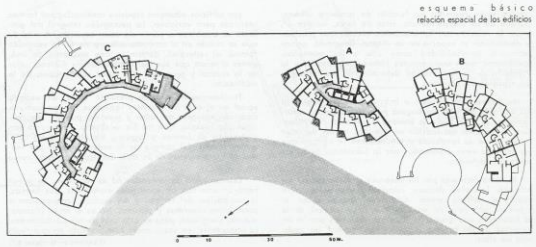


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Image 6
Habitual layout, Proa Magazine – Rogelio Salmona: Torres del Parque, Proa 231 (August 1972)

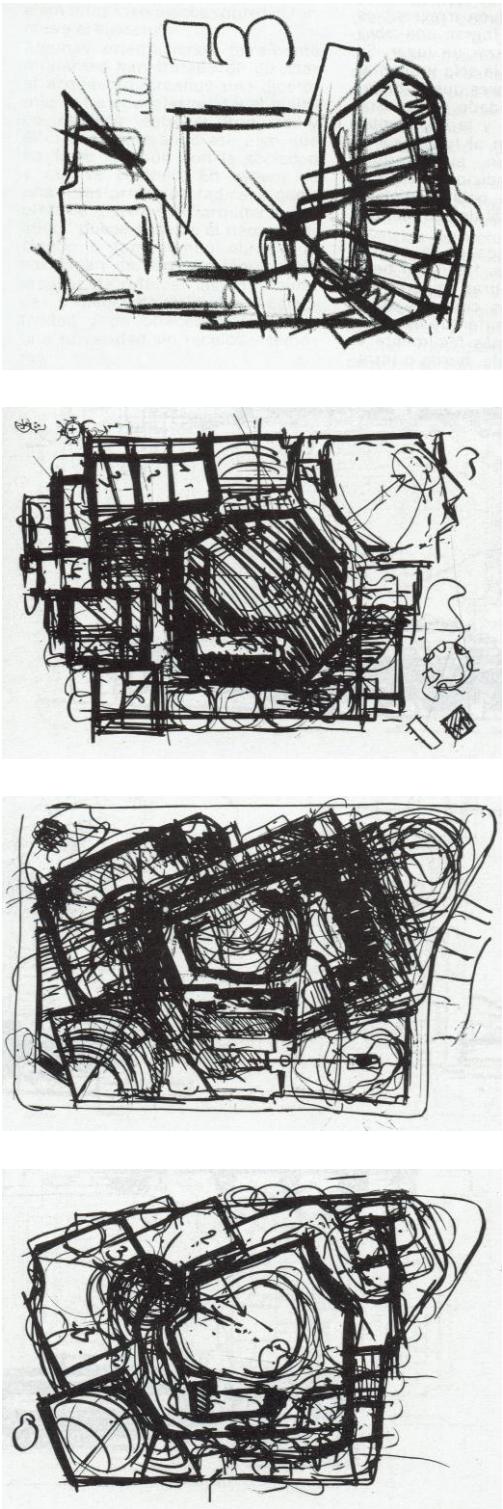

Image 7
Process sketches – Rogelio Salmona: Centro Gaitán, Proa 318 (May 1983)

In line with these ideas, from a very early stage in his career, Salmona chose to contend specific items from the strain of mainstream architectural modernism which was prevalent upon his return to Colombia, in 1957.[7] The strain of mainstream modernism I refer to, upheld by prominent firms like Cuéllar Serrano Gómez,[8] was clearly grounded on functionalist beliefs, advocated for an International Style[9] for architecture, and was strongly reliant on photography, in communicative terms. The main outlet for the expression of that local modernism was the magazine Proa,[10] where modernist projects and buildings were presented in black-and-white photos, eventually followed by schematic floor-plans, and described in succinct texts. These texts mostly focused on each project's functional distribution.[11]

Salmona presented his work somewhat differently, even when he published his projects in Proa.[12] Besides plans, photos, and short descriptive texts, he often published expressive perspectives of his projects, for example. These perspectives managed to capture and convey atmospheric[13] qualities in his work, beyond (standard) black and white photography.[14] Sometimes, he also

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[7] This return is situated on the 8th of November, 1957 by: Mejia Vallejo, Clara, and Torres Cueco, Jorge: "Elementos Para una Búsqueda: Le Corbusier y Rogelio Salmona," in DeArq, 14 (Julio, 2014). p. 137

[8] Ulloa, Miguel: "Cuéllar Serrano Gómez (1933–1982)." The Routledge Encyclopedia of Modernism. : Taylor and Francis, 2016. https://www.rem.routledge.com/articles/cuellar-serrano-gomez-1933-1982. Also: http://www.banrepcultural.org/blaavirtual/biografias/serngabr.htm. Both webpages, retrieved 18/04/2017

[9] Hitchcock, Henry-Russell, and Johnson, Philip: The international Style. New York, London: W.W. Norton & Company, 1997

[10] Mondragón, Hugo: "La Revista Proa", in DPA No. 24, Barcelona: 2008, pp. 90 – 95

[11] An example of what I describe above, chosen randomly: *"House in Cali – Architects: Borrero, Zamorano, Giovanelli. Very appropriate for the semi-tropical climate of Cali is the ensemble of the designs of this house. The zoning around a pool gives the interior intimacy and comfortable spaciousness. The neat characterization of the areas of dwelling and circulation, the frankness in the treatment of volumes, voids, walls, and the differentiated use of materials are excellent contributions to the attractive impression that the project shows as a whole."* Besides the text, the description of the project includes two photographs, two floor plans, and a list of the spaces shown in the plans. Proa, No. 127 (June 1959), p. 8

[12] For a collection of Salmona's projects published in the magazine, see Proa, No. 317 (April, 1983), No. 318 (May, 1983), and No. 336 (November, 1984)

[13] Cf., Havik, Klaske; Teerds, Hans; and Tielens, Gus (eds.): OASE 91, Building Atmosphere. Rotterdam: nai010 Publishers, 2013

[14] Photographers like Paul Beer and Otto Moll were instrumental in defining this particular way of communicating architecture among modernist professionals in Colombia. See: Castell, Edmon (ed.): Paul Beer: Metamorfosis de una Ciudad. Bogotá: IDPC, 2005; and Urrea Uyabán, Tatiana, and Montaña Cuéllar,

published project sketches, which illustrated parts of the configurative process followed in the definition of each project; or he quoted fragments of poetry, in order to communicate his more metaphysical intentions. Both his role as an architect and the purpose of his work, for instance, were repeatedly described by echoing the poet Guillaume Apollinaire's ambition to "*offer ivy and time a ruin more beautiful than others…"*[15] – a quote which Salmona cited frequently; and which speaks of his ambition to evolve beyond modernist architecture's functionalist agenda with complex purposes for architecture, like aiding contemplation, or revealing that which is not obvious.

Besides questioning the way architecture was habitually communicated in magazines like Proa in the late 1950s; Salmona also questioned widespread claims for the supposed tradition-less nature of modernist architecture, in terms that come quite close to those used by Stanford Anderson to challenge Reyner Banham's claims for tradition-less-ness, as we saw in the previous chapter. Specifically, Salmona tried to incorporate latencies from an expanded reading of Latin American architectural traditions in his projects; including configurative strategies from Pre-Columbine and Moorish architectures, for instance. However, his acknowledgment of strong values in those traditions did not mean that Salmona denied or rejected valuable evolutions on modern building techniques. On the contrary, his architecture evolved from the formal basis[16] of modernist free plans and elevations, and on the technical basis of reinforced concrete structures. Reliance on these formal and technical bases of modern architecture did not oppose, but rather aided Salmona's intention to convey strong spatial qualities from "Islamic architecture and the Pre-Hispanic architecture of America"[17] with his own architecture.

In these terms, Salmona made it his goal "to reconsider the premises of the Modern Movement in Latin America, keeping in mind the local geographic, historic, and technical conditions."[18] Clearly, Salmona was not aiming to reconsider the whole of modernist architecture. In fact, we can point out at the specific premises he intended to reconsider. Based on our description of architectural

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Jimena: "A través de la lente: Otto Moll González," in Boletin Cultural y Bibliografico, Vol. 46, No. 83 (2012), pp. 98 – 128

[15] "Préparer au lierre et au temps une ruine plus belle que les autres…" in Apollinaire, G.. Les Peintres Cubistes, Paris: Hermann, 1965, p. 95. Also found in: http://obvil.paris-sorbonne.fr/corpus/apollinaire/meditations-esthetiques/body-2#body-2-11, retreived 11/05/2016.

[16] Cf. Eisenman, Peter: The Formal Basis of Modern Architecture. Baden: Lars Muller, 2006, and Martí Arís, Carlos: Las Variaciones de la Identidad: Ensayo Sobre el Tipo en Arquitectura. Barcelona: Ediciones del Serbal, 1993

[17] Salmona: "Between the Butterfly and Elephant," pp. 21 – 22

[18] Ibid., p. 20

heuristics from the previous chapter, we can clearly situate these modernist premises-to-be-reconsidered within the realm of architectural use or purpose, mostly. Aside from the so-called functions habitually considered by modernist architects in the description of their projects' performance, Salmona argued that the specific way to evolve beyond modernist architecture[19] was by "creating, weaving and preparing space, not only to withhold time, but to make it perceptible and feel it as it elapses."[20]

This particular desire to use architecture as a means to reveal the pass of time (which we will come back to, later) led Salmona to situate his work in a delicate balance, between a series of carefully selected natural and cultural determinants for his projects; or, as he habitually described these determinants, at the "convergence of geography and history."[21] Further study of Salmona's projects and writings suggests a clearer definition of both terms. For him, the term geography, for instance, encompasses the topography and the ecology[22] that make a situation distinct. On the other hand, when Salmona talked about history he we wasn't talking about any history; he mostly alluded to the history of a series of well-known architectural building types[23] and material cultures.[24]

Concretely, Salmona's approach to history was focused on the stereotomic[25] monumentality of pre-Columbian architectures from Central and South America, mostly. In his opinion, the platforms and mounds from these architectures achieved a strong sense of permanence, which he admired. On the other hand, Salmona twinned these Pre-Columbian architectural traditions with elements of Moorish[26] architecture from Spain, and with well-known metaphors and allegories from

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[19] Specifically, Salmona claimed: "We should attempt to go beyond rethinking the Modern Movement…" Salmona: "Between the Butterfly and Elephant," p. 20

[20] Ibid. I have changed the verb terminations (create to creating, for example) to make them suit the text.

[21] Ibid., p. 18

[22] Understood as "the set of relationships existing between any complex system and its surroundings or environment" - http://www.dictionary.com/browse/ecology . Retrieved 29/03/2017.

[23] Quatremere de Quincy, A.C.: "Type," from the Encyclopedie Methodique, vol. 3, in Hays, K. Michael (ed.): Oppositions Reader. New York: Princeton Architectural Press, 1998, pp. 616 – 620

[24] Frampton, Kenneth: Studies in Tectonic Culture. New York, London: MIT, 2001

[25] Semper, Gottfried: Style in the Technical and Tectonic Arts; or Practical Aesthetics. Santa Monica: Getty Research Institute, 2004, p. 109 – 11

[26] Often referred to as Mudéjar (https://en.wikipedia.org/wiki/Mud%C3%A9jar, retrieved 02/10/2017), this architectural tradition has a strong presence in several Latin American cities. Among the architects used by Spanish conquistadors in the construction of their cities after 1500s were many "alarifes," or Muslim

European civilization, in order to make his ambitions accessible to a broad public. Mention of Heraclitus's river, for instance, allowed him to reinforce this idea of architecture as a backdrop that reveals the pass of time. "One could summarize the itinerary of my architectural experience in Colombia," he said, "as lying (…) between the ephemeral and the permanent."[27]

But how did these intentions translate to architecture, in operative terms? In most of Salmona's architecture, the backdrop required to reveal the pass of time is achieved by using materials (like stone, brick masonry, and concrete) and shapes (such as squares and cubes, circles and cylinders) which convey a sense of stability. "In Colombia and in Latin America," Salmona argued, "nothing should be deliberately ephemeral, unstable and lightweight. It is necessary to think about what will remain…"[28] Consequently, the more transient and ephemeral indigenous architectures of the northern Andes[29] failed to capture his attention. Instead, his research focused on massive architectures from Central and South America.[30]

Aside from conveying stability, this focus had other important implications. Unlike the lighter and less permanent architectures of the Muiscas,[31] for example, focus on Peruvian and Mesoamerican cultures implied an urban[32] scale. In other words: Besides their outright massiveness, the longer-

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architects who remained in Spain after the expulsion of the Caliphs of Al-Andalus (Andalucía) in 1492, and eventually carried their architectural expertise to Latin America. Like Salmona's architecture, Mudéjar architecture relies heavily on the use of brickwork, and combines elements from different (Islamic, Romanic, and Gothic, mostly) architectures. Cf. Barney, Benjamnín: "Mudejarismo y Arquitectura en la Nueva Granada, Siglo XVIII," in CITCE, No. 4 (julio – diciembre, 2002), pp. 33 – 47.

[27] Salmona: "Between the Butterfly and Elephant," p. 13

[28] Ibid., p. 17

[29] For an interesting account on Pre-Columbian settlements in the northernmost Andes, see: Serje De la Ossa, Margarita: "Organización Urbana en Ciudad Perdida," Cuadernos de Arquitectura Escala, No. 9 (November, 1984)

[30] Kubler, George: Arte y Arquitectura en la América Precolonial. Madrid: Ediciones Cátedra, 1986

[31] The Muiscas inhabited a vast region in the Northern Andes, which includes the high plateau (Sabana Cundi-Boyacense) occupied by Bogotá. Unlike the Incas, the Aztecs, and the Mayas, the Muiscas were not ruled by a king or emperor, but instead articulated smaller organizations into a confederation. As noted, their architecture was built with transient materials. (https://en.wikipedia.org/wiki/Muisca, retrieved 02/10/2017)

[32] Cf., Benevolo, Leonardo: "Las Nuevas Ciudades Fundadas en el Siglo XVI en América Latina: Una Experiencia Decisiva Para La Historia de la Cultura Arquitectónica del 'Cinquecento'," in Mena, Miguel D. (ed.): La Ciudad Colonial del Nuevo Mundo: Formas y Sentidos. Santo Domingo: Cielo Naranja, 2014. Vol. I., p. 79

lasting architectures of the Mayas, the Aztecs, and the Incas offered Salmona the stable and complex backdrop of the city. Against this backdrop – he believed – ephemerality and change[33] can best be observed over long periods of time. For Salmona, the urban compounds built by these civilizations offered great examples of the paradoxical coexistence of persistence and perpetual transformation, at both natural and cultural levels. It is safe to say that Salmona's praise for the cities' ability to be built and re-built, layer upon layer, against the landscape; explains much of his architecture, and entails a political dimension to his architecture, too.

Juan Pablo Aschner has studied this political dimension in Salmona's work: "The relations that exist between architecture and politics," he says, regarding one of Salmona's projects, "do not lie on the symbolic representation of political contents, but in the structure in which architectural and political contents are rendered indistinguishable. To be political, architecture should be polis, and also embody the ideals of that polis; it should be therefore the scenery and the catalyst of political action."[34]

Aschner's argument stems from his analysis of Salmona's Centro Gaitán project, where architecture is clearly expected to perform at this urban, and therefore political scale, as we'll see. Replicating the city's complexity, Salmona thought of this project as "an inquiry into architecture within architecture, as in spaces within spaces." In the project, he said, "there is a great variety of spaces inside one common space that structures the whole."[35] The instruments and methods used to carry out these intentions resulted in "a very low building (…)[36] in which courtyards assembled diagonally can be crossed, and both roofs and interiors are useful space."[37]

Based on what we've said above, we can conclude that these architectures within architectures, this variety of spaces inside a larger space (kept deliberately low to the city by going underground,

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[33] This idea, that cities are *instruments* that allow us to perceive and measure cultural (i.e.: political, aesthetic, economic, etc.) changes over time becomes even more interesting when related to Anderson's description of the built environment as an artifact, studied in the previous chapter.

[34] Aschner, Juan Pablo: "Una política que quiere ser forma, una forma que quiere ser política: Confrontación de propuestas arquitectónicas y políticas en el Centro Cultural Jorge Eliécer Gaitán," Revista de Estudios Sociales, No. 35 (April, 2010), p. 106

[35] Salazar, Maurizio: Lugares Dentro de Lugares: El Rito de la Memoria en la Composicion Arquitectonica. Centro Cultural Jorge Eliecer Gaitan: Rogelio Salmona. Bogota: Universidad Nacional de Colombia, 2010pp. 322 – 323

[36] A short fragment has been omitted from the quote, deliberately. It reads: "… which communicates us with our pre-Columbian roots – not only Colombian"

[37] Aschner: "Una política que quiere ser forma," pp. 103 – 104

and knit with a diagonal array of patios) had a clear purpose. From the outset, Centro Gaitán was meant to be a monument – a purpose which evidently contended the sort of modernist functionalism upheld by popular architects,[38] even in Colombia. Salmona was quite explicit about this contention. "Function," he said, in relation to this project, "is something I have never cared about. In truth, these are the sort of things you should get out of the way as quickly as possible… The functional and programmatic parts (are) only the beginning of the job, and (have) to be solved quickly in order to move on towards the crux of the matter: emotion… looking for that poetic halo where architecture really lies… Functionalism is what is necessary, but not essential."[39]

So what was essential in architecture for Salmona, then? Clearly, it was not the accurate embodiment of standard human actions, as we just saw, or the achievement of a particular image, as we saw even earlier. Instead – as we also said before – favouring contemplation, or revealing that which is not obvious, seem more plausible as purposes for Salmona's architecture. Since we've already touched on the way his expressive perspectives and process sketches (our his use of poetry) aided these intentions; it only seems fair that we also try to study his use of certain configurative strategies,[40] as the instruments and methods utilized to explore poetic, contemplative, and political purposes of architecture, beyond modernist functionalism.

Further study of some of those instruments and methods – I believe – should provide us with a better understanding of why Rogelio Salmona's architecture became so important for Colombian architects, since the late 1950s and over the following decades.[41] Based on this belief, in the following section, I suggest we focus on some of those instruments and methods; and I suggest we try (based on our understanding of architecture as a system of research programs, as described in the previous chapter) to relate those instruments and methods to the work of other architects. In

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[38] It is well known that the commemorative purpose of monuments was an issue for modernist architects in general. Cf., Sert, Jose Luis; Leger, Ferdinand, and Giedion, Sigfried: "Nine Points on Monumentality," in Giedion, Sigfried: Architecture You and Me: the Diary of a Development. Cambridge (Mass.): Harvard, 1958, pp. 48 – 51

[39] Salazar: Lugares Dentro de Lugares," p. 322

[40] By configurative strategies I refer, for example, to the specific choice for a large, yet very low building; for a diagonal array of patios; for the inscription of smaller spaces within a larger envelope, like in a Russian matryoshka doll, etc.

[41] Cf. "Whatever one may think about Palladio's facades, it must be admitted that they represent the climax of a development to which, significantly, the great classical architects Alberto, Bramante, and Peruzzi had contributed. It is not surprising, therefore, that Palladio's design proved to be outstandingly successful and was adapted and copied for 250 years." Wittkower, Rudolf: Architectural Principles in the Age of Humanism. New York: W. W. Norton & Company, 1971, p. 97

order to do so, let us move on to study an important event in the history of modern architecture in Colombia: a design competition.

**Use and improvement of means**

As we all know, design competitions are fertile grounds for the evaluation of heuristic conflict, as we saw while we discussed Reyner Banham's reaction to the Coventry Cathedral competition results. Call for projects are professional microcosms, where architectural conjectures and refutations to those conjectures are transacted in very clear terms; as competition entries tend to strategically emphasize and amplify participating architects' intentions.

An evaluation of the rules, participants, juries, and results of most calls for projects oftentimes reveals the nature and focus of the architectural discussions that take place at any given moment, in a particular setting.[42] Likewise, the professional discussion that sprang from the design competition for the Colegio Nacional Emilio Cifuentes in Facatativá,[43] held in 1959, allowed Rogelio Salmona express his understanding of architecture in an article published in a popular weekly news magazine. The winning entry for that competition, presented by the architect Jaime Villa Esguerra,[44] developed a functionalist scheme, based on the distribution of classroom blocks parallel to the main landmark visible from the site: the archaeological site Piedras del Tunjo.[45]

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[42] These evaluations are often specific (e.g.: Tigerman, Stanley: Chicago Tribune Tower Competition. New York: Rizzoli, 1989; Magyar, Peter: Multiple Horizons: Yokohama International Port Competition. London: Trafford Publishing, 2015); but sometimes turn into more ambitious or encompassing histories of architecture (e.g., Cooke, Catherine, and Kazus, Igor: Soviet Architectural Competitions: 1920s – 1930s. London: Phaidon, 1992; Ronn, Magnus, Kazeiman, Reza, and Andersson, Jonas (eds.): The Architectural Competition: Research Inquiries and Experiences. Stockholm: Axl Books, 2010. Mattie, Erik, and De Jong, Ceres (eds.): Architectural Competitions: 1792 – Today. Munich: Taschen, 2000; and De Haan, Hilde, and Haagsma, Ids: Architects in Competition: International Architectural Competitions of the Last 200 Years. London: Thames and Hudson, 1988). For the specific context of Colombian architectcure, see: Ulloa, Mauricio (ed.): Concursos de Arquitectura en Colombia. Bogota: SCA, 2015

[43] Facatativá is a municipality in the Colombian department of Cundinamarca, located around 31 km northwest of Bogotá, with an approximate population of 135.000 inhabitants (2016). https://en.wikipedia.org/wiki/Facatativ%C3%A1, retrieved 18/04/2017

[44] Villa (1932 – 2004) developed the project with architecture students José Absalón Saavedra, José Ignacio Jimeno, Antonio Uribe and José Leopoldo Cerón. In Ulloa, Mauricio (ed.): Concursos de Arquitectura en Colombia. Bogotá: SCA, 2015 pp. 95 – 97

[45] Salamanca, Óscar: El Emilio Cifuentes y la Construcción del Paisaje. Unpublished Master Thesis. Bogotá: Universidad Nacional, 2004

Against that proposition, Salmona's article claimed that the project submitted by Fernando Martínez and Guillermo Avendaño opened a new and positive direction for local architecture, and in that sense could be taken for better than the winning entry.

Salmona's text was originally published in Semana No. 646 (12 – 18 May 1959),[46] and was part of a broader discussion, initiated by a note by the magazine's editors entitled "Allende los patrones" (beyond patterns) which read: "It seems that the frankness, the audacity, and the singular conception of the project (by Martínez and Avendaño) scandalized (or disconcerted) the jury. It often happens that the novelty of a form, be it plastic or architectural, disorients those in charge of judging it, perhaps for lack of any supporting precedent (against which to judge it)…"

To this, Germán Téllez and Julián Velasco, members of the jury, responded with the article "Arquitectura 'Funcional'," in Semana No. 649 (2 – 8 June, 1959): "The 'forms' of the project are not new or strange. (…) We are familiar with the work of Alvar Aalto, with the trends promoted by the Italian magazines Casabella and L'Architettetura, and with Scandinavian architectures which this project is clearly related to." Fernando Martínez added to the polemic in Semana No. 650 (9 – 15 June, 1959) with an open reply to Téllez, in which he tried to contend the claim that his project somehow copied the architecture of Alvar Aalto, by linking it to several other architectures. The discussion was closed with a survey, entitled "Hacia la auto-critica" (towards self-criticism) in Semana No. 653 (June 30 – July 6, 1959) in which the architects Pablo Lanzetta, Guillermo Bermudez, Hernan Vieco, Francisco Pizano, Jose Prieto Hurtado, German Samper, Eduardo Mejia, Carlos Martinez, and Arturo Robledo, gave their opinions and somehow nuanced the polemic.[47]

At the center of the polemic was Salmona's use of Martínez and Avendaño's entry against modernist architecture. As we said above, by the late 1950s, modernist architecture had become prevalent among Colombian professionals;[48] and Salmona was keen on identifying problematic elements in the work of those professionals – especially regarding its functionalist basis. Basically, he strove to overcome the limits imposed by that functionalist basis, while preserving valuable formal and technical elements from modern architecture. "Even if there is no doubt that modern architecture is elaborating a language of its own," he thought, "resulting from a new vision and technical progress; that it has achieved new spatial possibilities and that it is permanently creating new forms and structural types; there is no doubt either that these facts are neither accidental nor

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[46] Reprinted: Salmona, Rogelio: "Notas Sobre el Concurso para el Colegio Emilio Cifuentes". In Tellez, German: Rogelio Salmona, Obra Completa: 1959 – 2005. Bogota: Escala, 2006. pp. 723 – 725. All notes regarding this text will refer to this reprint.

[47] I must thank Erick Figueroa for this information.

[48] Ramírez Potes, Francisco. "La arquitectura escolar en la construcción de una arquitectura del lugar en Colombia," Revista Educación y Pedagogía, Vol. 21, No. 54 (mayo – agosto 2009), p. 87

the result of a happy event at the end of a series of repetitions and empirical trials, but that, as in every artistic creation, they are the product of a clear consciousness and plastic intention."[49]

In other words, Salmona recognized that (a) artistic progress was the result of the interrelated efforts of several artists, and (b) that each of these efforts was consciously intended towards progress, in relation to other efforts. Further developing this notion of artistic progress, Salmona held that "in architecture, the creative act demands a process of elaboration and maturation, which corresponds to the most advanced movement of ideas in any given time, while simultaneously opposing elaborate formulas and conformist schemes – these are the bases for most of today's works."[50] On these grounds, he was able to sketch the way in which a particular architecture could evolve from another architecture, by improving on key aspects of that architecture, in clear heuristic terms. "Separating (oneself) from that general movement that results from the actions and quests of past movements," he noted, "means trying to open a new path; an act which denotes knowledge of the development and materialization of ideas, as well as a creative intuition that, in most cases, anticipates the author's own intentions and satisfies a series of needs, while raising still other needs. This act also implies imitations and replicas; for it identifies and embodies aspects of the practical and speculative experience of its time, and constitutes a scheme, a model that engenders new behaviors and brings forth new hypotheses."[51]

It was certainly not common for a Colombian architect to describe architecture as a series of hypotheses in the 1950s. Clearly, Salmona's understanding of architecture as a series of hypotheses owes much to the work of the art historian Pierre Francastel, and his attempts to develop a sociology of art. Citing Francastel loosely, Salmona argued: "Art is first and foremost a problem. The artist tends to solve, initially, a technical question. He positions himself in the realm of experimentation and succeeds upon finding an initial solution. He immediately springs from this situation to attempt, by amplification, confrontation with other problems of a plastic nature. 'The problems faced by an artist are first and foremost problems dealing with the use and improvement of means'."[52]

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[49] Salmona: "Notas Sobre el Concurso para el Colegio Emilio Cifuentes," p. 723

[50] Ibid.

[51] Ibid., p. 723

[52] Ibid.. Francastel is quoted (loosely, it seems) in the original without defining any source or further reference. However, the exact terms are used in (and the argument can be clearly inferred from): Francastel, Pierre: Pintura y Sociedad: Nacimiento y Destruccion de un Espacio Plastico, Del Renacimiento al Cubismo. Madrid: Catedra, 2007.

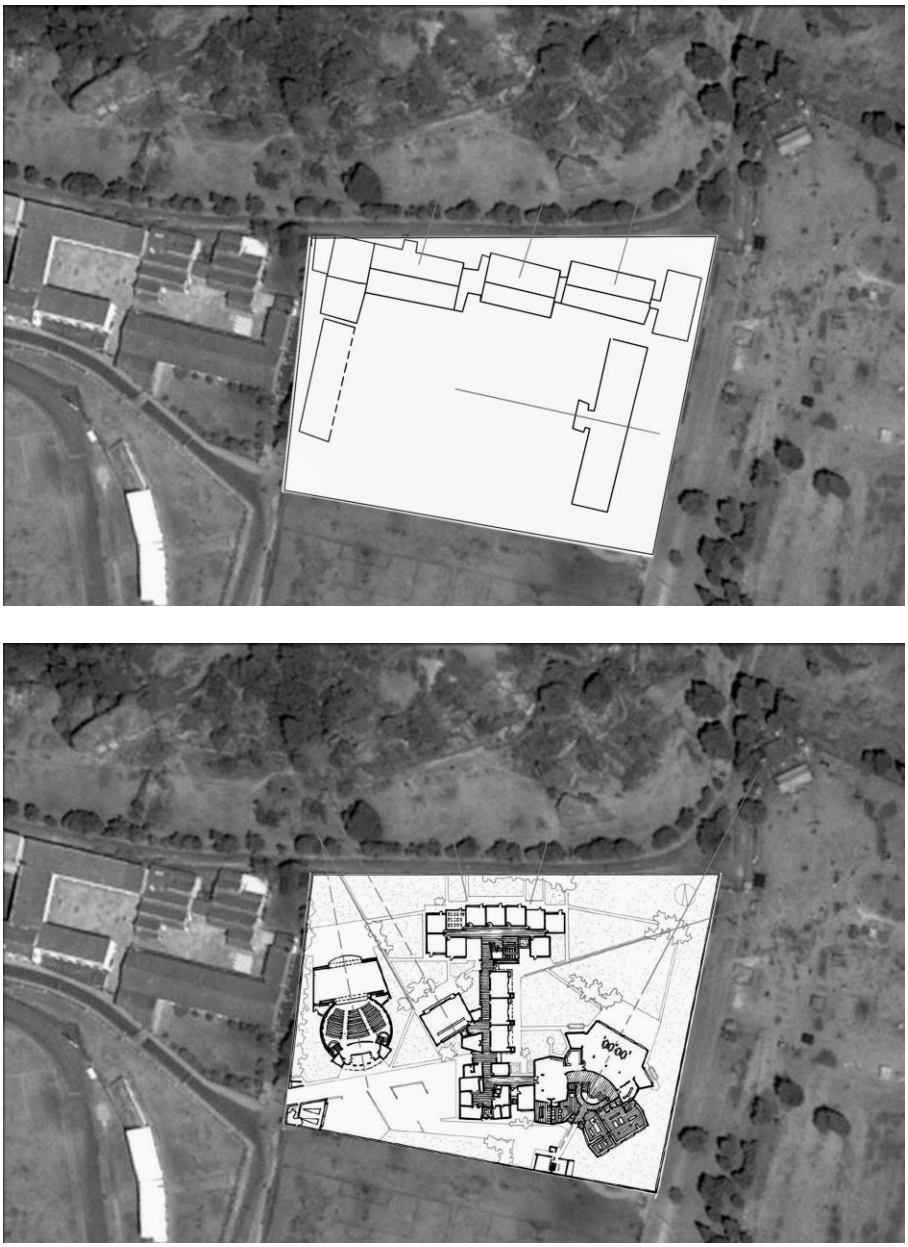

Image 8
Competition entries for the Emilio Cifuentes School
Winning entry by Jaime Villa (above) and second place by Martínez and Avendaño (below)

Implicit in this statement are two interesting notions. The first is the notion that architecture is motivated by logics of discovery and invention; and the second is the notion that the artist's struggle with an artistic discipline's intrinsic logics (which – in Salmona's words – "sometimes transcend individual control and understanding") are common to every process of discovery and invention. This, we have seen, not only relates the statement to the scientific methods of appraisal which we discussed in the previous chapter, but is also strongly related to the heuristic nature of our investigation, which as we noted is understood as the study of the instruments and methods used by architects to evaluate, explore and discover the built environment.

In this case, the first of the notions mentioned above was used to explore a particular architectural transformation (namely, the acknowledgment of a purpose for architecture beyond modernist functionalism); and the second of these notions was used to situate a project which embodied that transformation (Martínez and Avendaño's competition entry) in relation to *other* architectures (rather than in relation to a supposed law or principle). Furthermore, this relation to other architectures was not established by Salmona in vague or ambiguous terms, but was based on the belief that evolution in architecture necessarily implies an improvement in architectural means. Concretely, these means, which can also be understood as the specific instruments and methods used by an architect to confront a question, can be evaluated by another architect and then replaced with other means, which are assumed to be better in the confrontation of that question.

Beyond the obvious resonances between these notions and our understanding of architecture as a system of research programs; this realization allows us to identify similarities between Salmona's attempt to situate a particular architecture amid a series of interrelations, and Sarah Williams Goldhagen's attempts to define frameworks[53] for the evaluation of transformations in modern architecture, from our introduction. In his evaluation of the competition for the Emilio Cifuentes school, for example, Salmona says: "These notes won't try to analyze the project for a School in Facatativá in its functionality, the qualities and cunningness of its plans, the materials utilized in its construction, their economy, etc. It tries (instead) to *locate it within the broader realm of ideas, scrutinizing in which ways it corresponds to one of the many movements of modern architecture…*"[54]

In these terms, the competition entry by Fernando Martínez and Guillermo Avendaño, together with Rogelio Salmona's reaction to the jury's decision, can be understood in relation to the sort of modernist architecture that was prevalent in Colombia. As I suggested above, by the time Salmona returned to Bogotá, after living abroad for close to a decade, free plans and strip windows had

[53] Williams Goldhagen: "Coda: Reconceptualizing the Modern"

[54] Salmona: "Notas Sobre el Concurso para el Colegio Emilio Cifuentes," p. 723 (my emphasis).

become institutionally[55] and socially prevalent. Important public and private buildings were designed by modernist architects, architectural education was based on modernist historiography and encouraged a supposedly rationalist attitude towards design; architectural competitions were won by functionalist projects, and the few specialized books and magazines that were published locally featured collections of modernist buildings. Against this hegemony of modernist architecture, analyzing Martínez and Avendaño's project for a school in Facatativá was, according to Salmona "difficult, because it (broke) a bit with the use of current formulas in the architectural language and (tried) to create a new spatial sensation, together with forms different from those of the current (late 1950s) Colombian repertoire."[56]

Overcoming that difficulty, Fernando Martínez and Guillermo Avendaño struggled to evolve beyond what Salmona identified as prominent limitations in modernist architecture. The project for the Emilio Cifuentes school introduced two concrete revisions to modernist architecture, and took some distance from most of the architecture that was being designed and built at the time. Let us examine these revisions with some detail.

The first of these revisions war formal. The school's layout (i.e., its implantation and its overall shape) was dislocated into a series of divergent axes, which aimed to achieve a fuller integration with the surroundings by intensifying the effect of long visual cones. The second of these revisions was technical; in the sense that the project proposed a revision of standard concrete frames by recovering load-bearing masonry building techniques. Elaborating a bit further on these revisions in relation to the winning entry, we can note that Martínez and Avendaño's project was spread out in blocks, just as that winning entry; but contrary that winning entry, the position of those blocks was regulated by a multi-axial scheme, instead of an orthogonal scheme. Furthermore, at the level of each individual block, the general composition of the project opened into a flush of different shapes, reintroducing geometric explorations that had been temporarily shunned by rectangular hegemony, among modernist architects. The relation between the built and the un-built, in terms of proportion and position, remained deliberately ambiguous, too. The project by Martinez and Avendano was not a dense, urban building punctured by voids, as in the Hispanic colonial model; but it wasn't a campus-like, empty surface occupied by free-standing volumes (like the winning entry) either. Directed masses somehow managed to contain open space without enclosing it, by dislocating and limiting perspective views, in Martínez and Avendaño's proposal. Finally, the seen-brick finishing marked a sharp distance with widespread use of modernist white and glass volumes, too.

According to Salmona, by using these particular instruments and methods, Martínez and Avendaño intended to take "possession of space" – that was their purpose. This, wrote Salmona in

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[55] Niño Murcia, Carlos: Arquitectura y Estado. Bogotá: Universidad Nacional, 2003

[56] Salmona: "Notas Sobre el Concurso para el Colegio Emilio Cifuentes," p. 723

his text, “is the real difficulty in the appreciation of a project, granted that the architect (sic) tries to achieve it, not with the harmonious collaboration of one block in relation to another block, but with the creation of a space that is receptive of a surrounding landscape… While certain axes of the composition methodologically underlie the organization of plan, volume or inner space, they remain insufficient in the achievement of total space, much less of a new spatiality.”[57]

I have noted earlier how Salmona’s acknowledgment of strong values in Pre-Columbine and Moorish traditions did not mean that he automatically denied or rejected equally valuable evolutions in modern building techniques. In similar terms, for Salmona the school project by Martínez and Avendaño acknowledged valuable elements from tradition, without falling into a traditionalist[58] posture. “To achieve free space rhythmically,” Salmona says, “or to frame it poetically, was the quest of centuries of architecture… This project presents aspects that correspond with, and come close to, other contemporary works in which the attempt to possess exterior space turns intentional, and empirically tries to introduce a new compositional, plastic element to those already acquired by modern architecture.”[59]

From this description, we can gather that Salmona saw in this particular project’s architectural composition a clear intention to evolve beyond key elements from modernist architecture. In his opinion, Martínez and Avendaño advanced a series of project strategies that led to the articulation of a complex spatial relationship between inner, enclosed, built space, and an the surrounding landscape. This complex relation between interior and exterior space was meant to evolve from modernist buildings’ opening of vistas by extending strip windows throughout entire facades. In this case, evolution meant establishing a more diverse and complex perceptual relation with the surroundings, which – these architects believed – favored the contemplation of those surroundings in more ways than were offered by the winning project, for example.

Again, we can link the specific compositional strategies used to achieve this particular purpose to elements of specific architectural traditions. In particular, Salmona suggested that we can relate Martínez and Avendaño’s project to other artistic efforts of his time, equally aimed at improving on particular aspects of modern architecture, in clear heuristic terms. To illustrate this point, we can recall how the articulation of spatial relations beyond the modernist free plan, and beyond the continuous open façade, appeared to capture the attention of notable architects in the 1950s. For architects like Hans Scharoun or Alvar Aalto, for example, the formal basis of modernist architecture appeared to be rather insufficient, and should therefore be reconsidered. Bringing this reconsideration down to the level of the specific configurative strategies lauded by Salmona in

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[57] Salmona: “Notas Sobre el Concurso para el Colegio Emilio Cifuentes,” p. 723

[58] As defined by Stanford Anderson, in the previous chapter.

[59] Ibid., p. 723

Martínez and Avendaño's project, we can identify the use of oblique or diagonal compositional axes, as key project decisions meant to carry out the architect's ambitions, in terms of what the project should "do."

"This spatial reality," Salmona argued, "still archaic and imprecise, is one of today's explorations in architecture, and one of the project's most interesting aspects…. In the project for the School in Facatativá there is an attempt to avoid differentiation and to communicate the existing landscape with the spaces that are created between the different volumes. These spaces act like 'funnels' that intentionally direct the landscape towards the inside. To achieve such an alternative, the general plans adapt themselves to the basic spatial intention. Consequently, the project does not come from the elaboration of functional schemes, but from a synthesis that responds to a spatial intention, which is in turn the base of the project and the motor of the poetics of architectural composition."[60]

In other words, in Salmona's opinion the project for the Emilio Cifuentes school contested the orthogonality of the winning entry as part of a clear aim to evolve beyond modernist architecture in the realm of architectural purpose. The particular geometry used to implant the project on the site, and the specific configurative strategies required to articulate the different constituent parts of the project, offer a particular formal basis on which Rogelio Salmona and some of his colleagues could carry out their ambition to overcome elements from functionalism in modernist architecture.

A few years after the publication of Salmona's "Notes on the competition for the Emilio Cifuentes school," Martínez and Avendaño's project was awarded the "Best Unbuilt Project" prize, in the first Colombian Biennial of Architecture (1962). The category disappeared in the following biennial (1964), in which a jury led by Serge Chermayeff decided to declare National Prize void. In their report of this second biennial, the evaluators declared: "Analyzing the exhibited material, the Jury has noted that there are currently two clearly marked tendencies in Colombian architecture."[61]

Based on what we have discussed so far, I believe we can now reconsider these two, clearly marked tendencies in Colombia architecture; not as mainstream modernism and an ad-hoc offshoot of mainstream modernism, as they have often been explained. Instead, we can understand these so-called tendencies as discrepant conjectures, which entail equally discrepant

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[60] Salmona: "Notas Sobre el Concurso para el Colegio Emilio Cifuentes," p. 723

[61] "Informe presentado a la junta directiva de la Sociedad Colombiana de Arquitectos por la comisión designada para estudiar los trabajos presentados a la II Bienal Colombiana de Arquitectura." August 28, 1964, signed by Serge Chermayeff, Gabriel Serrano, Francisco Pizano, Orlando Hurtado y Manuel Lago, in Proa No. 166, (August 1964)

heuristics. So seen, it is clear that Salmona's understanding of architecture contends functionalist elements from modernist architecture; and it is clear that this contention took place in the field of architectural purpose. As I've tried to show, his praise of Fernando Martinez and Guillermo Avendaño's explorations within the realm of architectural form simply supported his own hypotheses regarding architectural purpose.

This interpretation, which we arrive at based on our understanding of architecture as a system of research programs, intents to complement a few well-known approaches to Salmona's work, by offering elements of a better methods to appraise that work. As we'll see, some of these well-known approaches contain elements of historicism, which – as we said in the introduction – limit our understanding of architecture. Therefore, in order to describe how our own understanding of archtiecture could improve some of those well-known approaches, we must first study some of them.

**Influence**

Rogelio Salmona's aim for an architecture that evolves from modernist functionalism (by developing elements of mainstream architectural modernism, and combining those elements with other elements from Pre-Columbian and Moorish architectural traditions), has certainly posed a challenge on modernist historians and critics, who often find Salmona's projects difficult to classify. The reasons for this difficulty are quite clear now. As we said in the introduction, modernist historiography relies heavily on the assignment of labels (such as organic, functional, or expressionist) to different kinds of buildings. These labels – we also said – refer to what I have describe above as historicist principles or laws: Architectures that epitomize or corroborate a supposed principle or law are tagged with a particular label, and opposed to architectures that don't.

As we saw, in historicist terms architectures that don't exactly fit a supposed historical principle or law (or its opposite), are often tagged with ad-hoc categories. Following this historicist trajectory, the work of Rogelio Salmona has been tagged by well-known modernist historians as "another architecture,"[62] or as an "architecture of the senses and context,"[63] for example. Both makeshift categories are linked to so-called "spirits of place and time," or to a supposedly clear and distinct identity that makes Latin American architects exceptional. In this sense, we can argue that both makeshift categories are entirely historicist; not only because they explain Salmona's architecture

[62] Browne, Enrique: Otra Arquitectura en America Latina. Mexico: Gustavo Gili, 1984, pp. 105 – 148

[63] Arango, Silvia: Historia de la Arquitectura en Colombia. Bogota: Universidad Nacional, 1986, pp. 263 – 274

as inextricably bound to modernist architecture; but because they continue the modernist idea that architecture can be explained in relation to supposed principles or laws.

I will not try to assemble yet another ad-hoc category (such as "appropriated modernist" or "critical regionalist"), to try to fit the supposedly anomalous character of Salmona's architecture within the modernist catalog (as some historians have done). Instead, I will insist in my belief that we can benefit from approaching architecture in heuristic terms. Repeatedly, we've described this heuristic approach as one that focuses on the instruments and methods used by the architect. Furthermore, our understanding of architecture as a system of research programs positions the instruments and methods used by any architect in relation to those used by other architects. Based on the falsificatoinist (or fallibilist) basis of this understanding, we've made clear that these instruments and methods must be taken for conjectures and refutations, chosen by Salmona – in this case – and other architects to confront discernible questions. All this should be quite clear by now.

Having made that clear, I would like to sketch a few basic facts regarding Salmona's own history. Rogelio Salmona was born in Paris, on April 28, 1927, and moved with his Spanish father and his French mother from a very early age to Bogotá. After graduating from the French School in Bogotá, he began studying architecture at the country's National University. Before completing his professional studies, though, he quit school and moved to Paris. There, he started working in Le Corbusier's atelier.[64]

Kenneth Frampton describes relevant aspects from Salmona's formative period in Paris, which we've already touched upon. "In the first instance," he says, "is the cultural *influence* of the art historian Pierre Francastel with whom Salmona studied part time at the Ecole Pratique des Hautes Etudes, Paris, over the years 1950 to 1957. In the second, there is Salmona's affinity for pre-industrial European urban culture and, above all, for the architecture of the Iberian Peninsula and North Africa. Finally, despite his eventual disenchantment, there is also the subtle *influence* of Le Corbusier, for whom Salmona worked for half a decade between 1948 and 1954,[65] during which time he would work on a number of seminal projects, including the Sarabhai House, Ahmedabad and, above all, the Maison Jaoul, with the design and detailing of which he was intimately involved form 1953 onwards."[66]

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[64] a+u (Architecture and Urbanism) No. 450: Rogelio Salmona (March, 2008), p. 9

[65] Clara Mejia Vallejo notes that Salmona received a letter of recommendation from Le Corbusier on the 17th of July, 1954. In Mejía and Torres: "Elementos Para una Búsqueda," p. 137

[66] Frampton, Kenneth: "The Work of Rogelio Salmona," a+u (Architecture and Urbanism) No. 450: Rogelio Salmona (March, 2008), p. 28

The historian Germán Téllez adds the Master Plans for Bogotá and Marseille-Veyre, Chandigarh and the Roq-et-Rob house to the list of projects Salmona worked on as a draughtsman, during this period.[67] Téllez also notes that "Salmona worked for some time with the architect Jean Prouvé (on his celebrated prefabricated aluminum schools) and found a curious job at the Louvre, copying drawings from Greek vases. (….) Immediately before returning to Colombia," Téllez adds, "(… he also) worked with Bernard Zehrfuss and J. de Mailly in the project for a palace of exhibitions in the La Defense area of Paris."[68]

Beyond this brief mention, I haven't been able to find any attempt to describe Salmona's work in relation to the architectures of Prouvé or Zehrfuss. Instead, most well-known historians and critics who have written about Salmona's architecture coincide in describing it as an offshoot of Le Corbusier's architecture. Beyond the accuracy of this description, though, Téllez leads his approach to Salmona's in a different direction, when he notes how, "in the absence of a continuous academic formation, in which the necessary cultural input was extremely limited, the courses of, and his personal relationship with Pierre Francastel were decisive. (…) Francastel's concepts transcend the limits of Art, revitalizing and framing it within a broader system of cultural, technical, and socio-political references that allowed Salmona to focus his interests and curb his intellectual dissatisfaction much more comfortably."[69]

From this statement, I would like to highlight the importance of transcending the figure of an architecture that univocally stems from, or follows, another architecture. Instead, Téllez suggests that we can position that architecture between a series of elements obtained from different sources (namely, the history professor and the master architect). "Francastel," Téllez notes, "made Le Corbusier relative, by situating him within a frame of reference or a dimension that was truly different from the disproportionate aggrandizement granted him by his admirers and unredeemed disciples. For Francastel Le Corbusier was just another one among the phenomena of the twentieth century, not more but not less either, inscribed within his time, with his own limitations too."[70]

Based on this interpretation, we can hint at the ways in which Salmona tried to develop Francastel's claim for a broader cultural responsibility for the artist; and we can argue that this broader cultural responsibility pertains to Salmona's attempt to define a purpose for architecture beyond modernist functionalism. The provision of political, contemplative, and revelatory

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[67] Téllez, German: Rogelio Salmona, Obra Completa: 1959 – 2005. Bogota: Escala, 2006, p. 25

[68] Ibid., p. 50

[69] Ibid., p. 49

[70] Ibid.

purposes for architecture, for example, can be interpreted as part of those broader cultural responsibilities.

So seen, Salmona's attempt to define a purpose for architecture beyond modernist functionalism, benefitted from interrelating Francastel's views on purpose and Le Corbusier's explorations in architectural form and material culture; from adopting a critical posture towards those views and explorations; and from feeding that critical posture with elements from specific architectural traditions.[71]

To clarify the extent of the specific formal and technical elements from Le Corbusier's architecture which Salmona decided to incorporate into his architecture, it might be useful to recall Stanford Anderson's "Architectural Research Programs in the Work of Le Corbusier"[72] (from the previous chapter) at this point. The reasons for recalling Anderson's text are quite simple: (a) Salmona's architecture makes extensive used of the Le Corbusier's Dom-ino, reinforced concrete structure; (b) Anderson assumed the Dom-ino structure as a research program in its own right; and (c) modernist historians and critics have mostly dismissed the importance of Salmona's use of reinforced concrete structures, and have focused instead on his extensive use of brick.

So, what did Anderson have to say about Le Corbusier's Dom-ino proposition, in the first place? "Conceptually," he notes, "the Maison Dom-ino, as a housing research project, proposes that new materials and new techniques in the hands of a rationalized industry can efficiently provide a primary structure which will facilitate the solution of a critical housing problem without inhibiting the efficient and positive employment of local resources. The Maison Dom-ino, seen in the context of the entire housing research project, does not imply other readings which the skeletal drawing has induced. The famous drawing appears to emphasize primary structure so forcefully that an unintended reading must also have been immediately available: architecture, or this new architecture based on a modern technology, should give direct expression to structural elements."[73]

As we will see in the next chapter, by the 1950s Le Corbusier was immerse in a series of revisions of his own work. Some of these revisions focused on the Dom-ino proposition, and suggested new

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[71] Regarding Maison Jaoul, for example, Frampton says: "Derived from the megaron vernacular of the Mediterranean, spanning from the Cyclades to North Africa and the Balearic Islands, this barrel vaulted craft typology was to exercise a lasting influence on Salmona's domestic work. Setting aside the Catalan vault, to which he would occasionally have recourse, the primary trope that Salmona drew away from Le Corbusier's Brutalist (sic) phase was surely load-bearing masonry construction…" Frampton: "The Work of Rogelio Salmona,", p. 28

[72] Anderson: "Architectural Design as a System of Research Programs," pp. 146 – 150

[73] Anderson: "Architectural Research Programs in the Work of Le Corbusier," p. 153

approaches to architecture regarding the technical heuristic. Real or apparent limitations in the performance of the structural frame led Le Corbusier to reconsider technical elements from specific architectural traditions. In other words, far from being anomalous events in his production, we can argue that the Maison Jaoul and other similar experiments of that period reveal the revision of a previous conjecture within the mature architect's own work. We can also argue that the same exploration was carried out almost simultaneously by younger colleagues, such as Salmona, sensible enough to recognize its pertinence and possibilities.

According to Kenneth Frampton, however, the technical choice for loadbearing masonry is part of Le Corbusier's recognizable *influence* on Salmona; an influence which is in turn "related to the Colombian brick tradition (which) was the tectonic (sic) point of departure for Salmona's unrealized Cooperativa de Los Cerros of 1961 – 1963 and the equally unprecedented stepped housing development with long mono-pitched roofs built for the Fundacion Cristiana de la Vivienda – San Cristobal in 1971."[74] Salmona's extensive use of Dom-ino (reinforced concrete posts and slabs or beams), and his gradual shift towards loadbearing walls, was clearly ignored by Frampton's further account.

According to Frampton, Salmona's architecture could be explained by mentioning a few formal similarities between Salmona's buildings and other buildings, mostly. To illustrate this point, Frampton notes how "the Residencias El Parque (1965 – 1970), overlooking the bullring in Bogota has long since been acknowledged as the high point of his early practice. (…) Perennially controversial, while going well beyond the fan-like, high-rise paradigm pioneered by Hans Scharoun in his Romeo and Juliet apartments, Stuttgart of 1962, the Residencias El Parque stacked up into a sculptural form that displayed its plastic affinity not only for the grain of the city but also for the profile and sweep of the nearby mountains." [75]

A further example of Frampton's description of Salmona's work, mentions that his "second significant high-rise structure in the center of Bogota was the office tower that he designed for the Sociedad Colombiana de Arquitectos (1967 – 74). Although the rotated square format of the plan bore a certain resemblance to the *parti* of Frank Lloyd Wright's Price Tower of 1952, the structural system was quite different, its floors being cantilevered from a central core." [76]

Based on these two fragments, we can identify a constant in Frampton's approach of Salmona's architecture. After describing a few general features of that architecture, Frampton suggests that those features are *influenced* by a canonical example of modern (European, North American)

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[74] Frampton: "The Work of Rogelio Salmona," p. 28

[75] Ibid.

[76] Ibid.

architecture. “From the early 1960s onwards,” Frampton says, “Salmona designed a series of small houses that were exceptionally ingenious compositions in load bearing brickwork. These houses seem to have been influenced by British New Brutalists and most particularly perhaps by the work of James Stirling. However, unlike Stirling they were all structured around an impluvium, with mono-pitched, tiled roofs draining into a central patio.”[77]

Honestly, I find it rather difficult to grasp how these influences operate. It would seem as if these influences and these resemblances were limited to the description of similarities in the general form of these projects; or to similarities in their image. Furthermore, we can ask ourselves: What does Frampton mean when he argues that one of Salmona’s projects goes “well beyond” Scharoun’s paradigmatic Romeo and Juliet project?

Our doubts regarding Frampton’s approach to Salmona’s architecture bring us back to our contention of modernist historiography, as defined in the introduction. As I mentioned earlier, it would appear that this particular approach remains bound to one of the problematic elements of modernist historiography which we set out to confront. By describing these projects as versions of other projects, Frampton basically assumes Salmona’s architecture as an ad-hoc version of modernist architecture; or even more precisely, as an ad-hoc embodiment of the supposed principles or laws epitomized by modernist architecture. Given that we have previously defined ad-hoc-ness as the need to come up with specific, unassailable, or additional explanations for every exception the (supposedly encompassing) original explanation is unable to answer; we can argue that Frampton shares our belief that a series of anomalies defy the idea of modern architecture as the consistent understanding of architecture described by well-known modernist historians. However, based on what we’ve discussed so far, we must agree that superficial associations such as formal resemblance can be productively replaced by a sharper, heuristic explanation of architectural models; or an explanation of the instruments and methods used by the architect to arrive at a particular result.

This sort of description of any particular architecture can be further contextualized and framed within a system of transactions between several architectural models, which we’ve defined in the previous chapter as both telic and technical. Transactions among architectures certainly transcend the notion of influence, in the sense of providing us with much more information, and especially much more useful information, about the architectures we study in relation to each other. This argument simply iterates on our beliefs that (a) every single architect’s work is *related to* or *interacts with* the architectural explorations, instruments, and methods used by other architects, in clear and precise terms; and that (b) it is possible to analyze, dissect and transmit the elements of these interrelationships, and to learn from them, turning them fully operative.

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[77] Frampton: “The Work of Rogelio Salmona,” p. 28

Among Kenneth Frampton's descriptions of Rogelio Salmona's work, only one project avoids the link to an example of canonical modernist architecture, or the mention of an influence. Instead, this singular project is taken for self-referential; and associated to pre-modernist and non-western architectural traditions. "The early 1980s" Frampton says, "were a period of sharp transition in Salmona's architecture as it shifted from residential commissions to a series of public works. Among these the unfinished Centro Cultural Jorge Eliécer Gaitán will reemerge as the parti for the Museo Quimbaya of 1985. Both buildings will be structured about four square patios, set corner-to-corner and linked by a diagonal water channel and walkway. Rendered as a pre-Columbian city-in-miniature, the museum would be treated in a resolutely abstract manner, even somewhat to the expense of its overarching function."[78]

Following Frampton's lead, regarding the exceptional character of this project, in the following section we will focus on the ways in which the instruments and methods used by Rogelio Salmona in the development of Centro Gaitán, contest key elements of modernist functionalism.

**Process**

On April 9, 1948, the Colombian Liberal Party's presidential candidate Jorge Eliécer Gaitán Ayala was shot to death outside his law practice, only blocks away from the Plaza de Bolívar, at the very heart of Bogotá. Salmona was no stranger to this figure. As a boy, his Father would take him to Gaitán's Friday lectures, at the Municipal Theater. The architect comments: "'I admired him, and I still admire him. He was a powerful voice within this political turmoil that has been Colombia. He truly marked me."[79]

The events that followed Gaitán's assasination led to the partial destruction of central and neuralgic areas of the city. Enraged followers torched buildings and other significant infrastructures in the midst of generalized chaos. Salmona was clear on defining that moment as a turning point in his life; an extremely painful moment, marked by fear, destruction, and the uncertainty that resulted from that destruction.[80] To protect him from the dreadful outcome that could be foreseen amid such turbulence, the young architecture student was sent on short notice to Paris, carrying a letter from his father to Le Corbusier, who had visited Bogotá in 1947.

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[78] Frampton: "The Work of Rogelio Salmona," p. 30

[79] Otálora Montenegro, Sergio: "Salmona, el Mejor". In Revista Diners, Bogota. March 1998, pp. 20-24. Cited by: Salazar: Lugares Dentro de Lugares, p. 43

[80] Revista Proa, No. 336 (October, 1984)

Le Corbusier had been granted celebrity status by the small community of architects that gravitated around the radically[81] modernist faculty of architecture, at the National University. Among the few Francophone students and faculty members in charge of hosting the visitor was Salmona, who – as we noted earlier – had received his basic education at the local *Lycee Francaise*. His father, on the other hand, appears to have empathized with the visitor, and thus felt entitled to request his solidarity in times of obvious distress. During the decade the undergraduate spent working, studying and travelling abroad, back home a long period of violence and political turbulence ensued.

Gaitán – the slain politician – was a singular character; a leader endowed with exceptional oratory talents and an electrifying discourse that appealed to the masses. He lived with his family in Santa Teresita, a neighborhood in the same Teusaquillo area where Salmona grew up. Gaitán's home was not brick faux Tudor, as most bourgeois homes in Teusaquillo, but instead a middle class unpretentious little house that embodied what Silvia Arango describes as a crucial modernization of the architectural program in the early twentieth century in Colombia.[82] Decades after his death, a group of intellectuals decided to pay homage to the figure of the liberal "caudillo" by institutionalizing[83] his memory around his house.

Juan Pablo Aschner mentions how, "in order to provide continuity and preserve the legacy of Gaitán, the (national) Government ordered (…)[84] the creation and construction of the National Exploratory.[85] The Ministry of Public Works opened an architectural competition to design a

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[81] For a history of the Faculty of Architecture, at the Colombian National University: Angulo Flórez, Eduardo (ed.): Cincuenta Años de Arquitectura, 1936 – 1986. Bogotá: Escala, 1987

[82] "In this period, a typological process that had been in the works for decades finally materializes... The model of suburban "quintas," once areas are reduced and distributions are standardized will become the typical habitat that underlies any pre-conception of dwelling. Designing a house for any social group will consist, from then on, of articulating within the interplay of restricted possibilities, a series of independent and functionally specialized spaces: social (…), service (…) and private zones. Internal courtyards will disappear and the house will now gravitate around a distribution hall… This pattern remains valid in Colombia, and has resisted every stylistic challenge during the last 50 years (1989) making evident how typological transformations occur at a much slower pace than transformations in the architectural language." Arango: Historia de la Arquitectura en Colombia, pp. 177 – 178. My translation.

[83] Anderson, Stanford: "Public institutions: Louis I. Kahn's Reading of Volume Zero." Journal Of Architectural Education, Vol. 49, No. 1 (September, 1995), p. 18

[84] Specifically, by issuing Law No. 34, from 1979

[85] Departamento Nacional de Planeación: Estudio Técnico del Instituto Colombiano de la Participación Jorge Eliécer Gaitán. Bogotá: 2004, p. 5, cited by Aschner: "Una política que quiere ser forma," p. 103. The citation includes a broken link to the DNP website.

complex that, according to Gloria Gaitán (daughter of the politician), should become the headquarters of the Fourth Estate, citizen power, adding to the three established branches of power in representative democracy."[86]

"Towards July, 1979," says Silvia Arango, in her own account of the project's history, "a competition was held for what should become the Centro Gaitán. Salmona proposed a project that was finally accepted The Center should embody what the figure of Jorge Eliécer Gaitán represented for Colombians: Publicness. Its main symbolism should be that of the speaker close to the masses. (…) The image of the popular leader should remain evident in the Center. The architectural project should therefore be, first and foremost, a plaza[87] where different spaces and activities converge, both in plan and in volume, as in a coliseum, a forum, an agora, or a square. This generative idea persisted throughout the whole development of the project."[88]

These observations are part of Arango's 1982 article "Radiography of a Project: Jorge Eliécer Gaitán Museum, Bogotá", published in the aforementioned magazine Proa. Continuing with her description of the project's "initial idea," Arango says: "On the other hand it was important to consider the project's location. Close to the 'Teusaquillo' neighborhood, in an urban transition zone lacking a well-defined architectural character, the site incorporated two elements of the urban landscape: proximity to the Arzobispo creek – one of the few small rills in relatively good shape that still run through Bogotá – and the faraway views of the mountains on the East, which constitute the predominant landmark for the whole city. These two determinants lie at the origin of the project's main axes."[89]

It is important to note that Arango's text is focused, not on the object that is Salmona's architectural project for the Center, but on its configurative strategies. "We chose the project for the Centro Gaitán," she says, "even though it is still in an intermediate stage of its process, because we had the chance to deal with all of its drawings, drafts and sketches, together with the indications that the architect Salmona kindly gave us. This project still has a long way to go, since it is still necessary to define its final form, its details and constructive plans… However," she points out, "since we are thinking mostly of students of architecture, we thought it could be important to

[86] Aschner: "Una política que quiere ser forma," p. 103

[87] I have kept the original Spanish.

[88] Arango, Silvia: "Radiografía de Un Proyecto: Museo Jorge Eliecer Gaitan, Bogota," Proa 318 (May, 1983), p. 17

[89] Ibid.

describe the first stages of the architectural process, moving from an initial idea up to its concretion as a preliminary project."[90]

Such focus on process is favored by an exceptional circumstance: The building was never concluded. What we know as Centro Gaitán is basically the partial development of a project that was conceived as an aggregation of shapes and surfaces, similar to what we described earlier, regarding Martinez and Avendaño's project for the Emilio Cifuentes school. In the particular case of Centro Gaitan, Salmona's approach to architectural form generated several partial embodiments or project versions which, in the face of contingency, ended up becoming an incomplete, uninhabited collection of platforms, halls, and rooms; an instant ruin of sorts, with extremely interesting communicative and purposeful consequences within Salmona's work, as one could infer from his citation of Apollinaire.

We must agree that the way this form without an actual function came into being strongly echoes Stanford Anderson's description of the built environment as an artifact,[91] described with some level of detail in the previous chapter. In the specific case of Centro Gaitán, the building has changed several times, and construction has been carried out without continuity, ending up in a form defined by human action, but not entirely by human design – using some of Anderson's terms. These apparently accidental developments allowed for the project to become, of all possible outcomes, "a pre-Columbian city in miniature," as Frampton called it; or a brand-new obsolescence, function-less and therefore monumental.

According to Mauricio Salazar, there are three distinct versions of the project for Centro Gaitán. Adding to Arango's description of the site, Salazar mentions that "the space where the Jorge Eliécer Gaitán Cultural Center was (initially) located was not an empty plot; on the contrary, it was occupied by fourteen houses."[92] Within the urban trace, these homes configured one compact urban block, of the two that were assigned for the Center, in its fullest version. These houses were entirely demolished, with the obvious exception of Gaitán's house. A second, southern, elongated block faced the course of the Arzobispo creek, and was separated by a street from the northern parcel mentioned above. "By the end of 1979," says Salazar, "the lots of the southern block – eleven parcels, approximately – (…) were added to the project, now made up by two blocks…"[93] These lots were also, originally occupied by houses and small buildings, which remain intact.

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[90] Arango: "Radiografa de Un Proyecto," p. 17

[91] Anderson: "Environment as Artifact," p. 71

[92] Salazar: Lugares Dentro de Lugares, p. 86

[93] Ibid. pp. 86 – 87

Continuing with Salazar, "the (…) three stages (of the project are dated from) 1979, 1980 and 1983 – with significant variations. Each stage of the composition constitutes a project (that is) different from the others. In consequence, three projects make up one general project which (…) alludes to architecture's broadest rules, and therefore to the city."[94] The first of these stages dates from 1979, and only occupies the northern block. At a formal level, it is composed of a series of individual blocks, spread on the site rather loosely, yet circling around the fundamental pre-existence of Gaitán's house. It must be noted that the original house was initially considered as a small museum, exhibiting personal belongings and other memorabilia from the lawyer. With time, his house turned into Gaitán's tomb, while all other uses, including that of the museum, were assigned to the new building-to-be.

The atrium form, which remains at the base of the whole intervention, and in all of its stages, was used in this first scheme, but only as part of a larger whole. The resulting cluster was articulated by reconsidering a series of pre-Hispanic explorations within the formal and purpose-minded heuristics of architecture. Salazar notes how "in the first (version of the) project, the cloister structure is only one among other parts of the composition."[95] The courtyard building in this stage of the process was specifically meant to accommodate a Museum of Popular Struggles. "This courtyard, laid out without a clear order in relation to the other volumes of the project, establishes an analogous organizational relationship with (…) Pre Hispanic cities like Uxmal, Monte Albán, Chichen Itzá and Machu Picchu, among others, organized on extra-rational relations that comprise different scales simultaneously."[96]

I will unpack this a bit, by rephrasing the above: Simply put, Salmona's explorations in the realm of architectural form led him to take design decisions at very different scales simultaneously. The sizes and proportions, directions and positions of the different compositional axes and building blocks that make up the different versions of the project intend to establish, at once, a series of complex relations between the immediate geography and a series of elements from the city. These choices make sense of Salmona's aim to deal simultaneously with geography and history, as we mentioned earlier; and clearly resonate with his prior observations on the deeper purpose of his colleagues' entry for the Emilio Cifuentes School in nearby Facatativá, which – he believed – led to a "new spatiality."

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[94] Salazar: Lugares Dentro de Lugares, p. 88

[95] Ibid., p. 90

[96] Ibid.

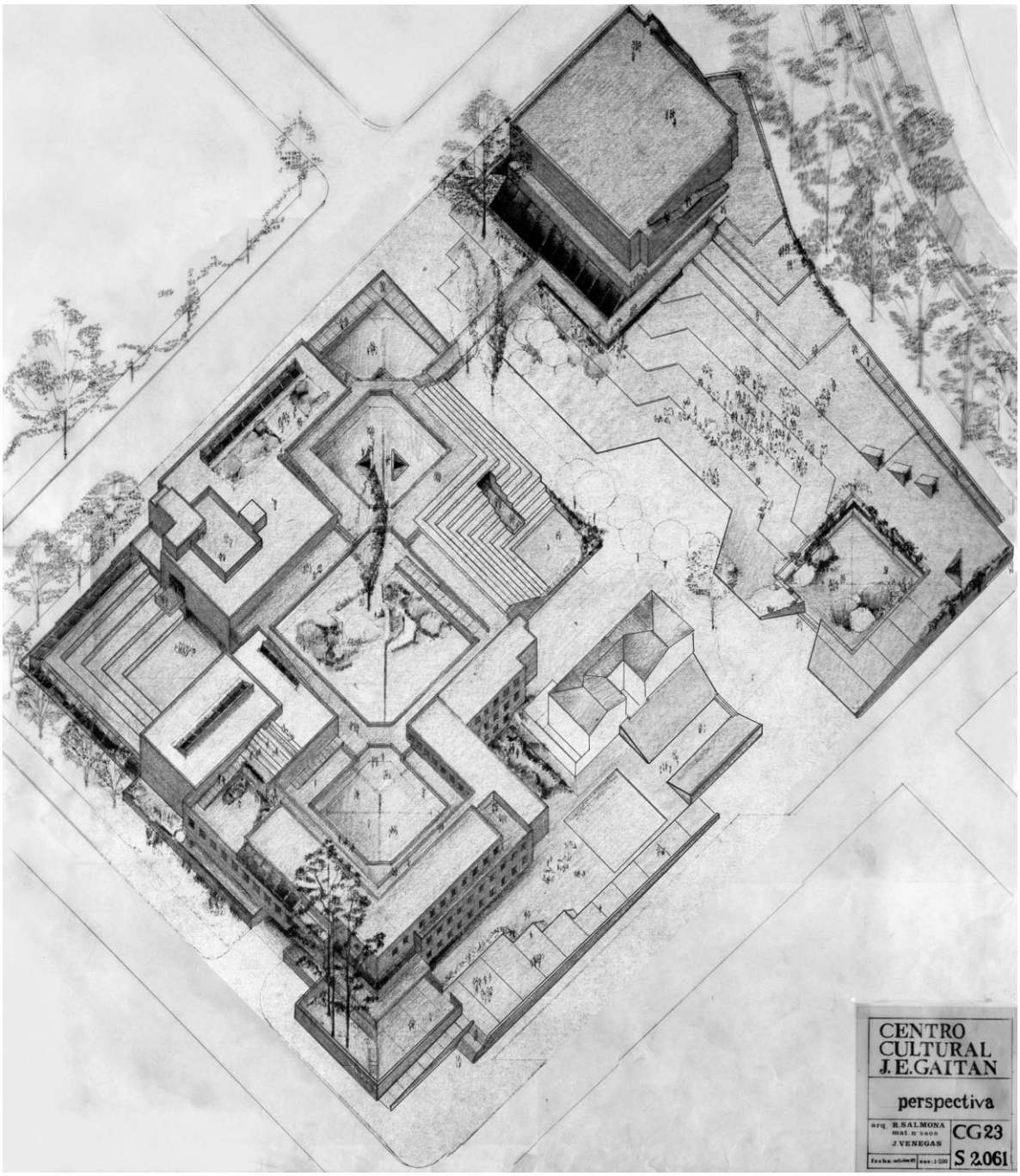


Image 9
Centro Gaitán – Axonometric view (labeled as perspective)

"While in the first (version of the) project the courtyard constitutes part of the composition," Salazar notes, "in the second (version) this typology is the organizing element for the whole project."[97] Elaborated between 1980 and 1982, Salmona's second version for the project spreads out over both the northern and the southern blocks and distributes the whole program on the perimeter of the resulting area by erasing any evidence of prior divisions. The central courtyard resulting from this formal operation is so placed, that Gaitán's house is conveniently located inside a large plaza.

The first stage of the project reacts to a broad range determinants, including distant, afferent, immediate and interior foci, by utilizing scalar proliferation and multi-axiality as compositional strategies; but it somehow remains impermeable to the city's morphology. The additional layer of intervention in the second version establishes a clear bond with the basic tenets of Spanish colonial urbanizing principles[98] and procedures. Salazar identifies recurrent formal elements and configurative strategies from the traces of Hispanic foundations in Quito, Lima and some Chilean towns as antecedents of Salmona's explorations at this stage.[99] The key formal elements and configurative strategies of this tradition are, in the first place, an apparently un-surpassed level of abstraction and openness,[100] which has allowed the gridiron, un-hierarchic plan to remain fertile grounds for the production of many American cities, centuries after its inception in the 16th century. On the other hand, the system embodies an extremely complex tension between the concentric, centripetal nature of the constituent courtyard unit, and the eccentric, centrifugal force that governs the urban structure in its entirety.

By defining a courtyard within a sparse array of scattered forms, spread rather loosely on the territory – as Martínez and Avendaño proposed for the Emilio Cifuentes project – Salmona could reproduce the spatially integrating effects he praised in a series of buildings from the Pre-Columbine, Moorish, and European architectural traditions. These spatially integrating effects, in turn, were a purpose for the building, in their own right. Revealing the mountains, or detaching the mountains from the city's skyline, for example, were among the things these building were

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[97] Salazar: Lugares Dentro de Lugares, p. 90

[98] Martínez Lemoine, René: "The classical model of the Spanish-American colonial city," the Journal of Architecture, Vol. 8 (Autumn, 2003), pp. 355 – 368; Mundigo, Axel I., and Crouch, Dora: "The City Planning Ordinances of the Laws of Indies Revisited. Part I: Their Philosophy and Implications," the Town Planning Review, Vol. 48, No. 3 (July, 1977), pp. 247 – 268; Salcedo Salcedo, Jaime: Urbanismo Hispano-Americano, Siglos XVI, XVII y XVIII. Bogotá: Universidad Javeriana, 1996; and Mena, Miguel D. (ed.): La Ciudad Colonial del Nuevo Mundo: Formas y Sentidos. Santo Domingo: Cielo Naranja, 2014 (2 volumes).

[99] Salazar: Lugares Dentro de Lugares, p. 90

[100] Koolhaas, Rem: Delirious New York: A Retroactive Manifesto for Manhattan. New York: The Monacelli Press, 1997

expected to do. “Once you stand on the site where the Centro Gaitán will be built,” Salmona wrote, while working on the project, “you can see without any impediment the convergence of the Guadalupe and Monserrate mountains. The (project’s) diagonal is born there, of the site. The project simply makes it evident and underscores it.”[101]

So seen, the 1979 stage in the project’s development was a an attempt to evolve beyond architecture’s performative capacities beyond modernist functionalism, as we have described it previously.[102] We can agree that at least part of Salmona’s success in carrying out his explorations in architectural purpose owe to his ability to keep his reflections bound to the urban scale and its own intricate logics. After all, the crucial question posed by the medium in which Salmona intervened was still one of extremely intense (i.e., vast and quick) urbanization. It seems only natural then that, in order to move towards the new spatiality he so urgently sought since the late fifties, his architecture continue evolving on his intention to integrate interior and exterior space in architecture.

Yet a third version of the project, begun in 1983 and modified on several occasions over the years, tries to synthesize the courtyard typology and the prior configurational strategy of atomized volumes, in order to create what Salazar deems a “processional route;”[103] or a typological hybrid that articulates cloisters into public, internal streets. According to Salazar, “the single formal courtyard structure, (…) is transgressed and accommodated to the situations posed by each project stage, and establishes an urban generative principle,”[104] in what can be easily be defined as an open[105] building, or an artifact, as mentioned above.

While Silvia Arango describes the first two compositional stages, and sketches some traces pertaining to the designer’s process; and Salazar’s thesis dives into the topic of memory as the topical base for a rational reconstruction of the project; yet another text from 1984, adds a final element to the present discussion. The article/interview entitled “Architecture, open space, public space,” published in Proa in 1984, starts with a general observation by Alberto Saldarriaga: “The

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[101] Gaitán, Gloria and Saldarriaga, Alberto: “Centro Cultural Jorge Eliécer Gaitán,” Proa, No. 336 (October 1984), p. 14

[102] Frampton: “The Work of Rogelio Salmona,” p. 30

[103] Salazar: Lugares Dentro de Lugares, p. 91

[104] Ibid., p. 91

[105] Openness is assumed here both in social terms, as defined by: Popper, Karl: The Open Society and Its Enemies. London and New York: Routledge, 2011; and in aesthetic and communicative terms, as defined by: Eco, Umberto: The Open Work. Cambridge (Mass.): Harvard, 1989

first thing that strikes one's attention, when studying the project for the Jorge Eliécer Gaitán Cultural Center, is the fusion between the building and open space. Fusion is not the right word... A better word is maybe 'symbiosis.' There is in this project great fluidity in the trace of the limits between built and open space."[106] Salmona responded to Saldarriaga's argument: "Examples like Teotihuacán or Machu Picchu, in which space and building are so intimately integrated, have no equivalent references in the Western world (sic). The architecture of the American world (sic) appears to form itself as the continuation of exterior public space, intimately bound to nature. (…) Conventional rationality does not apply so much to the understanding of American reality or to the Colombian city in particular."[107]

Further developing this idea, Juan Pablo Aschner mentions how "the collective as a political idea that seeks to formalize itself, is conceived in Salmona's architectural project through two complementary strategies: on one hand , by the aforementioned creation of open spaces for political action and, on the other, by building a whole from multiple and diverse components. which are able to perform together as a whole and still preserve their relative autonomy. These components participate in the whole, or composition , as key players ( in the case of pavilions and courtyards ) or as supporting actors (in the case of ramps, stairs, ambulatories, etc. ) and together constitute a grammar in which each main actor is a verb and each supporting actor is a complement."[108]

Based on these descriptions, we can come close to understanding Salmona's attempts to describe the enforcement of political action as a purpose for architecture. We can also assume the contemplation of the pass of time, as it elapses; or the revelation of tensions between natural elements, the urban backdrop, and architectural geometries, as purposes for the built environment, beyond modernist functionalism. However, Salmona's claim, above, for an urban reality in which "conventional rationality does not apply…" remains puzzling, and thus allows for a final discussion.

**Awareness**

Shortly after receiving the Alvar Aalto Medal, which briefly earned him the attention of a few peers and colleagues outside the Latin American context, Salmona fell terminally ill. "The healthy vigor he had displayed when I met him in Helsinki a few years before," says the Japanese architect Hiroshi Naito, "was gone. He was thin and his back bent, and his small body looked even smaller.

[106] Gaitán and Saldarriaga: "Centro Cultural Jorge Eliécer Gaitán," p. 14

[107] Ibid.

[108] Aschner: "Una política que quiere ser forma," p. 107

Despite the painful slowness of his walk, however, his features were keen and sober, like those of a monk, and his words (…) carried greater force than before. He seemed cloaked in an invisible dignity, like the buildings he designed."[109]

Half a century of intense exploration within the architectural discipline might explain this invisible dignity, founded on a set of tenacious hypotheses that, owing to Salmona's intervention, constitute valuable knowledge for other professionals. Like the work of many well-known architects, it is clear that Rogelio Salmona's architecture draws a very complex network of explorations, fed simultaneously by internal proliferation, transactions with other architectures, and a clear and cultivated posture in the face of tradition.

However, until recently modernist historians and critics have attempted to define Salmona's architecture as an anomalous offshoot of modernist architecture. As we've seen, this definition has been supported by the idea that modernism epitomizes a series of supposed historical laws, regarding politics and economy, mostly. According to this interpretation, different buildings can be bundled together if they are believed to represent industrialization, for example. For modernist historians and critics approaching architecture this way, the notion of influence comes in handy, both in the construction of orderly series of architectures, and in the ascription of those series of architectures to convenient historical laws.

Improving on these historicist approaches, more recent attempts to understand Salmona's architecture delve into the instruments and methods used by the architect in the development of his architecture; and attempt a rational reconstruction[110] of several individual projects, as explorations which are related to discernible questions. This renewed historiographical approach to Colombian architecture has brought important knowledge to the fore, and lies at the base of the present investigation.[111] Furthermore, the heuristic bases of this approach allow us to understand the ways in which Rogelio Salmona constantly recognized the need to transcend, develop and confront key tenets of a modernist tradition he fully acknowledged as his own. As we close this chapter, we can recognize how the particular features of Centro Gaitán which we have described throughout this chapter speak of an exploration within the communicative heuristic of architecture, which proposes necessary adjustments to modernist methods of representation. Emphasis on vision, or – in his words – "'staging' and the system of linear perspective" were

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[109] Naito, Hiroshi: "Salmona in Retrospect," a+u (Architecture and Urbanism), No. 450: Rogelio Salmona (March, 2008), p. 64

[110] Lakatos: "History of Science and its Rational Reconstructions," pp. 102 – 138

[111] I refer specifically to the "Master in Architecture," the "Master in History and Theory of Art, Architecture and the City" graduate programs, and the "PhD in Art and Architecture" program, offered at the Colombian National University, in Bogotá.

confronted by Salmona with discernible instruments and methods, such as expressive perspectives, process sketches and poetry.

On the other hand, we have described a few salient features from Salmona's approach to materiality, by describing his aim for a durability and toughness. A relation can be established between this approach to materiality, and the architect's attempt to construct a backdrop for revelation. Furthermore, and tied to his work in the realm of architectural form, we have seen how Salmona tested project strategies that disaggregated the configurative and constructive processes of his buildings into a series of smaller elements and clusters of elements, at different scales.

This simple description suggests a revision of popular approaches to the question of materiality in the work of Salmona, which *interpret* the predominance of brickwork in most of his buildings as politically motivated, and link it to the quest for a local identity – two historical laws. In truth, Centro Gaitán and most of Salmona's buildings are built on a quite conventional repertoire of modern building techniques, based on the extensive use of reinforced concrete columns and beams.

Far from a radical gesture, this approach to material culture implies small but clear evolutions on the technical repertoire of modernism. Salmona found opportunity in the under-industrialization of his context, and supported his claim for durability on low-tech, labor intensive solutions, which suggest a reconsideration of modernist notions of efficiency. Furthermore, there exists a consonant posture between the articulation of massive concrete structures, intermediate brick in-fills, more delicate surface cladding and a final set of details that solve joints, edges and other exceptions; and the equally articulate, simultaneous response the buildings themselves offer to the landscape, the city, afferent public space and the intimate realm of the individual user.

Such increase in complexity, via proliferation, is quite evident in Salmona's formal explorations. Within an architectural model that explored several configurative strategies (e.g.: a diagonal array of square patios, a cluster of freestanding prisms, placing two circular courtyards in tension, etc.), one could point at a small number of essential explorations, present in most of Salmona's projects. Furthermore, one could suggest interrelations between the instruments and methods used to carry out those explorations, and those used by other architects. First among these configurative strategies is a particular geometric posture, in the face of orthogonality. Notably, Salmona's buildings try to increase the number of spatial, formal and perceptual relations by using either non-rectangular geometries, or by assembling squares and rectangles diagonally, both vertically and horizontally.

The courtyard typology plays a central role in the assignment of general form, for many of these projects. An urban element by nature, the use of the patio in rural or freestanding situations only confirms the inextricable relation that Salmona's architecture intended to establish with the city, as a backdrop. From his extensive use of the courtyard, it would appear that Salmona always tried

to suggest a dense, tightly knit city, even when he designed small, suburban houses. But that evidently pre-existent structure was enhanced and amplified with the inception of three additional elements that demand further attention. The first two have been mentioned already: scalar simultaneity and oblique[112] tension. Resulting from the symbiosis of these partial hypotheses, however, is a third, configurational strategy that still assumes a compact urban tissue, and yet expands on its performative capacities. Salmona replaced general form (i.e., the definition of a large shape, such as a compact block, or a single slab) with a loose clustering of smaller shapes (like a single auditorium, a few classrooms, or a reading hall). The end result of these explorations are artifacts where elements of modernist, pre-Hispanic, Moorish, Spanish colonial, and popular spontaneous cities appear to converge.

This artifactual-ness contributes new insight regarding tradition and time, as Téllez opportunely noted. "In relation to the historical references that might have contributed to raise Salmona's interest for the spatial organization (of Centro Gaitán), it is possible to say that, with very few exceptions – even in the case of Pre-Hispanic compounds – we deal with spatial superimpositions that occurred throughout time, some times over extremely prolonged spans and for causes that necessarily include chance, the unconscious and the accidental, aside from or together with a design will. How a particular spatial organization is produced is more important than the resulting form. The purpose for which it is produced is not less important when one tries to establish analogies and references (to other architectures). A series of beautifully linked spaces might be the result of years, decades or centuries of unregistered building, mutilation, demolition and reconstruction, but the final result might superficially resemble the fruit of a single, instant blow form a dictatorial will. In the first case, the historic antecedent differs at a fundamental level to Salmona's formally similar propositions, but in the second, they are exactly the same, even though there are some secondary architectural differences…"[113]

What this particular architecture aims for, leads our discussion to the assumption we've been working on throughout this chapter: Architectural use and purpose were a central concern of Rogelio Salmona. Following this assumption, I have tried to show how Salmona understood the architecture of his time as limiting in a very particular way; and how he chose to try to overcome its limits. Aside from the satisfaction of basic human needs, aside from fostering human activities comfortably and efficiently, architecture – Salmona's architecture suggests – must lead to awareness.

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[112] For more on the formal possibilities of obliqueness, see: Virilio, Paul: "The Oblique Function," in Ockman, Joan (ed.): Architecture Culture, 1943 – 1968: A documentary anthology. New York: Columbia Books of Architecture, Rizzoli, 2007, p. 410

[113] Téllez: Rogelio Salmona, Obra Completa, p. 265

Revealing the world and raising awareness of human existence in relation to nature are huge feats that Salmona attempted by dislocating orthogonal configurations and blurring the boundaries between architectural forms and their surroundings. Oppositions regarding tensions between nature and the city were countered by proliferating with diverse scales, sizes, directions, foci, and elements from different urban models. The valuation of positive aspects of ruins turns obvious, once we understand Salmona's contention of modernist functionalism. Apollinaire's full text, mentioned earlier reads: "The utilitarian goal which most contemporary architects have proposed, is the cause of the considerable delay of architecture in relation to the other arts. The architect and the engineer must construct with sublime intentions: to raise the highest tower, to prepare for ivy and time a ruin more beautiful than others, bridge a port or river with an arch more daring than the celestial arch, to compose a definitive and persistent harmony, more powerful that man has ever imagined."[114]

Juan Pablo Aschner suggested that Salmona's approach to architectural purpose "has proposed a broad ranging architecture… For this reason, his sources are general and timeless elements of significance. (…) Centro Gaitán avoids individuation and is directed towards a compound, not manifest in one but in multiple stairs, paths, patios, doors, and most of all, in the possibility of making different choices in its practice. (…) The possibility of something happening or not should not be excluded from the work of architecture and the political act."[115]

Rounding our attempt to describe Salmona's architecture, Hiroshi Naito argued that "there exist in architecture two kinds of value – value that is easy to understand and value that is hard to communicate. (…) The essence of Salmona's buildings, what he tried to impart to his architecture, was this 'value that is hard to understand.' (…) A look at his oeuvre clearly shows a gradual transition from the 'easily understood' works of his early period, which still exhibit Le Corbusier's influence, to his later 'hard-to-understand' works, placing emphasis on the quality of space and the spatial flow."[116]

The development of this gradual transition, I believe, is best understood, not as the mere influence of one architect on another, but as the result of a series of transactions; between Rogelio Salmona's intentions and concerns and the ideas of Le Corbusier and Pierre Francastel, for

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[114] "Le but utilitaire que se sont propose la plupart des architectes comtemporains est la cause du retard considerable de l'architecture sur les autres arts. L'architecte, l'ingenieur doivent construire avec des intentions sublimes: elever la plus haute tour, preparer au lierre et au temps une ruine plus belle que les autres, jeter sur un port ou sur un fleuve une arche plus audacieuse que l'arc-enciel, composer en definitive une harmonie persistante, la plus puissante que l'homme ait imaginee." In http://obvil.paris-sorbonne.fr/corpus/apollinaire/meditations-esthetiques/body-2#body-2-11, retrieved 27/03/2017

[115] Aschner: "Una política que quiere ser forma," pp. 109 – 110

[116] Naito: "Salmona in Retrospect," p. 66

example; but also between the instruments and methods he chose to carry out his intentions and concerns, and those chosen by other architects to confront their own. It is in relation to these transactions that we can speak of Rogelio Salmona's architecture as part of an architectural research program, whose central hypotheses we will describe towards the end of this study.

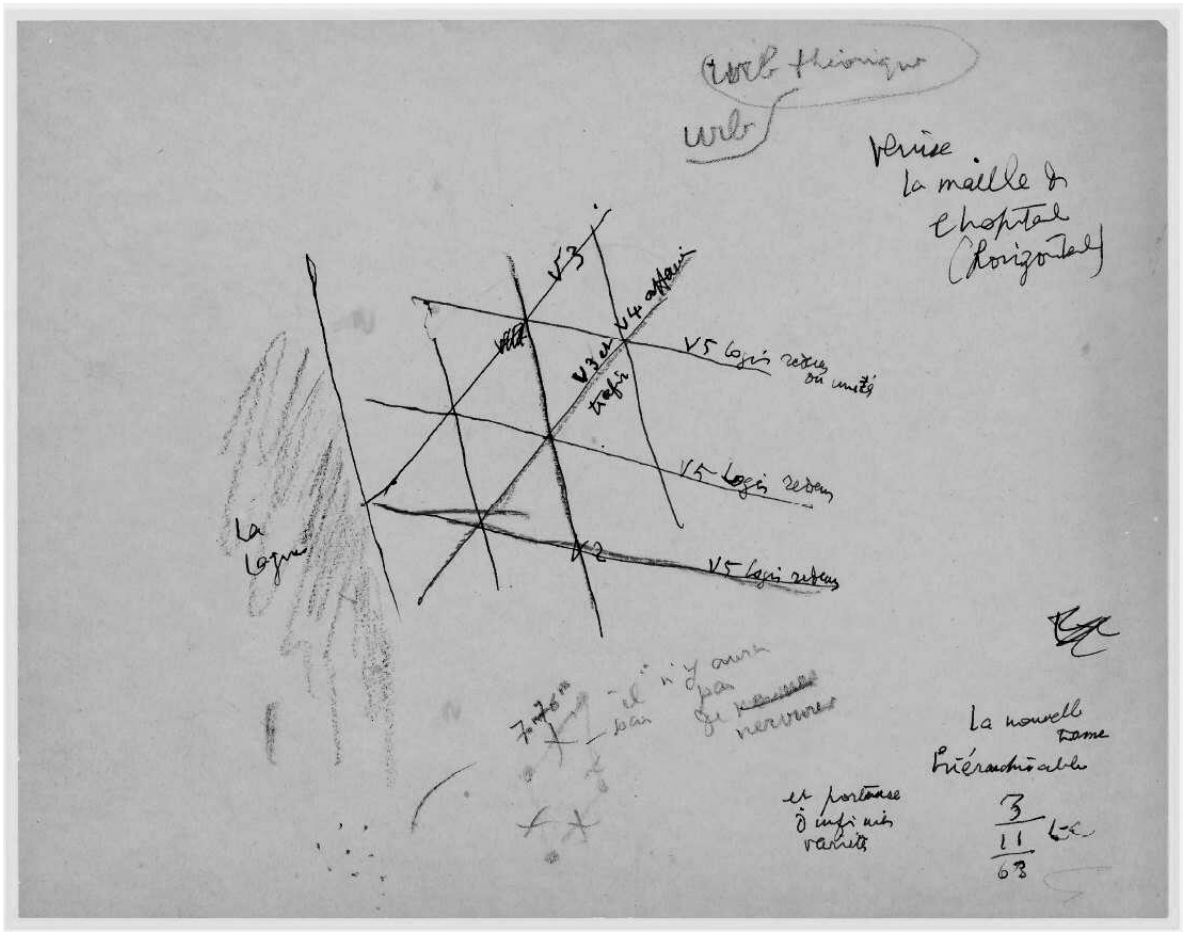


Image 10
Le Corbusier: sketch, Venice Hospital

3

## Nuovo Ospedale: The Role of the Architect Beyond the Modernist Individual Form-Giver

### Conjectures

Fifteen years past that intense 1948, in which the Assembly of Constructors for an Architectural Renovation (A.S.C.O.R.A.L.)[1] published their practical approach to the Athens Charter (best known as the "C.I.A.M. Grid");[2] Le Corbusier was busy developing the project for a new hospital for Venice. In this chapter we will describe some of the instruments and methods he chose to develop that particular project. In order to do so, we will (a) start by describing a few salient aspects from Le Corbusier's work as architectural conjectures. The development of this idea should help us reaffirm notions that have been discussed earlier (especially in chapter 1) regarding our understanding of architecture as a system of research programs.

Furthermore we will (b) try to show some of the ways in which these conjectures have been described, specifically in the case of Le Corbusier's project for a new hospital for Venice. In the final part of the chapter, we will (c) identify a problematic assumption, present in recent modernist approaches to that project, (d) study an excellent methodological alternative to those approaches, and (e) based on that alternative, suggest a transformation in Le Corbusier's understanding of architecture towards the end of his career. (This transformation – I presume – is especially patent in his reassessment of his role as an architect.)

We will start our development of these points based on a well-known fact: By 1948[3] (the year that Rogelio Salmona and Shadrach Woods arrived to his office) Le Corbusier was regarded by many as one of the world's leading architects.[4] Ample diffusion of his work made his explorations within the realms of architectural form, architectural use or purpose, and architectural communication,[5] extremely popular among architects and students of architecture from many different countries. Among the explorations that made him so popular, we can mention that around 1948 Le Corbusier

[1] For information regarding Le Corbusier's role in A.S.C.O.R.A.L., see F.L.C.: D2-16, D3-8 to D3-20, F1-2, R2-15 and 16, and J3-12

[2] Le Corbusier: Grille C.I.A.M. d'urbanisme: Mise en application de la Charte d'Athènes. Bolougne-sur-Seine: Éditions de l'Architecture d'Aujourd'hui – Collection A.S.C.O.R.A.L., 1948

[3] For a good summary of Le Corbusier's production between 1944 and 1958, see: Mejía Vallejo, Clara and Torres Cueco, Jorge: "Elementos para una Búsqueda: Le Corbusier y Rogelio Salmona," DeArq, No. 14 (July 2014), p. 138

[4] For Le Corbusier's role as a "leader of modern architecture," see: Martí Arís, Carlos: "Le Corbusier: Bogotá, Aerial View" in O'Byrne, María Cecilia, et al. (eds.): LC BOG: Le Corbusier en Bogotá, 1947 – 1952. Bogotá: Universidad de los Andes, 2010, pp. 8

[5] We can easily relate explorations such as Le Corbusier's celebrated "four compositions", the "four functions" defined in the Athens Charter, and the C.I.A.M. grid as a communicative apparatus for these ideas, to the positive heuristics of architectural form, use or purpose, and communication, as described in Chapter 1.

was testing the relations between architectural use and form, based on the "Modulor"[6] system of proportions, for example. As we know, this system of proportions was fundamental in the development of the Venice Hospital project, fifteen years later. Furthermore, around 1948 Le Corbusier was also experimenting with a new communicative tool, through the formulation of the C.I.A.M. Grid, as we noted above.

Le Corbusier described this Grid as "a modern implement by means of which the analysis, synthesis, presentation and understanding of a town planning problem might be effected." This tool was not meant to be used to confront just any kind of town planning question, though. Instead, the communicative implement was meant to analyze, synthesize, present, an understand town planning questions derived from idea that the city could be split into distinct zones according to a clear-cut division between four equally distinct functions. These functions were *habitation* (dwelling), *loisirs* (spare time), *travail* (work), and *circulation*, as previously defined in the well-known Athens Charter. In Le Corbusier's words, the aim of the grid was to "bring an element of order into the study of town planning," providing a standard template, in order to account for "the complexities of geography, topography, technique, circulation, human values, climate conditions and so on…"[7]

The development of this proposition, as well as other well-known explorations were published together in 1948, in a special issue of the French magazine L'Architecture d'Aujourd'hui,[8] devoted entirely to the work of the Le Corbusier. The issue collected a considerable number of excerpts from his office's production; including short articles, sketches, urban plans, paintings and photos of his buildings. In the central article, entitled "Unité," the architect explained most of his work as the consequence of radical improvements in the realm of architectural technique. In this sense, Le Corbusier sustained his earlier[9] claim that the development of reinforced concrete and steel building techniques[10] were responsible for liberating modern architects, such as himself, from obsolescent architectural traditions.[11]

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[6] Le Corbusier: Le Modulor. Bolougne-sur-Seine: Éditions de l'Architecture d'Aujourd'hui, 1950

[7] Le Corbusier: Oeuvre Complete: Volume 7, 1946 – 1952. Zurich: Les Éditions d'Architecture Artemis. 1970, p. 40. This proposition was central to the 7th C.I.A.M. congress in Bergamo, the following year, as noted in Mumford, Eric: The C.I.A.M. Discourse on Urbanism, 1928 – 1960. Cambridge (Mass.), London: MIT, 2002. For a fresh approach to the C.I.A.M. grid, see Avermaete, Tom: Another Modern, Rotterdam: NAi, 2005

[8] L'Architecture d'Aujourd'hui, Numéro Hors Série: Le Corbusier (April 1948)

[9] Le Corbusier: Towards a New Architecture. Milton Keynes: B.N. Publishing, 2008, especially "The Engineer's Aesthetic and Architecture", pp. 9 – 20

[10] The argument goes something like this: In the 20th century, the most obvious consequence of improved building techniques and materials could be appreciated in the unprecedented spans that could be achieved by using steel and concrete beams and posts. Lengthier spans (and smaller cross-sections in load-bearing elements) made free plans and free elevations feasible, and liberated facades from load-bearing responsibilities (further increasing the chances of introducing natural light through the use of large glass surfaces, too). In this sense, an improvement in architectural technique had consequences in the realms of

It is not difficult to understand Le Corbusier's fascination with new developments in architectural technique, since the very beginning of the 20th century. Mary McLeod describes how, as early as 1914, he had already assembled one of his most acclaimed architectural propositions, based on this fascination. The Dom-ino system, advanced as a solution for the reconstruction of war-torn[12] areas of Belgium, was meant to be mass-produced, and provided the technical basis for an architecture that could be used and configured in several different ways. Improved building techniques – le Corbusier believed – were responsible for the achievement of that flexibility.

Excellent approaches to the Dom-ino system[13] coincide in their rigorous *description* (in the sense of "conveying in words the appearance, nature, attributes, etc."[14]) of the instruments and methods used by Le Corbusier in its production. Contrary those approaches, though, Le Corbusier often appears to have been more interested in *explaining* (in the sense of "assigning a meaning, or making clear the causes or reasons of"[15]) his work – mostly as the result of an overall sense of progress.

To illustrate this point, it might be useful to compare the description (a) and the explanation (b) of the same (Citrohan) house, published in Towards an Architecture: (a)"Framework of concrete. A Large living room 30 feet x 16 feet; kitchen, maid's room; bedroom, bathroom, boudoir; two bedrooms and a 'solarium." (b) "A house like a motor-car, conceived and carried out like an omnibus or a ship's cabin. The actual needs of the dwelling can be formulated and demand their solution. We must fight against the old-world house, which made a bad use of space. We must look upon the house as a machine for living in or as a tool. When a man starts any particular industry he buys the necessary equipment of tools; when he sets up house he rents, in actual fact, a ridiculous dwelling. Till now a house has consisted of an incoherent grouping of a number of large rooms; in these rooms the space has been both cramped and wasted. Today, happily, we are not rich enough to carry on these customs, and as it is difficult to get people to look at the problem under its true aspect (machines for living in), it is nearly impossible to build in or towns, with disastrous results. Windows and doors must have their sizes readjusted…"[16] Clearly, the apparently small difference in terms between describing and explaining is not a trivial matter.

Adding to this observation, we also know that Le Corbusier was quite active in the promotion of a series of rationales, which he ascribed to that overall sense of progress. Specifically, he was

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architectural form and use, simultaneously. L'Architecture d'Aujourd'hui, Numéro Hors Série: Le Corbusier, p. 49

[11] Le Corbusier: Talks With Students. New York: Princeton Architectural Press, 1999, pp. 59 – 60

[12] This is: after World War I (1914 – 1918).

[13] Gregh, Eleanor: "The Dom-ino Idea," Oppositions 15 – 16 (Winter – Spring, 1979), pp. 60 – 87. I wish to thank Veronika Mayr for her help, finding this text.

[14] http://www.dictionary.com/browse/describe, retrieved 07/06/2017

[15] http://www.dictionary.com/browse/explain, retrieved 07/06/2017

[16] Le Corbusier: Towards a New Architecture, p. 240.

engaged in a series of companies and associations[17] which aimed to promote technical principles of industrial rationalization and standardization among architects. McLeod mentions, for example, how after "his arrival in Paris in February 1917 he served as an architectural consultant for the S.A.B.A. (Société d'Applications du Béton Armé), an association of engineers and industrialists involved in the construction of national defense projects. Shortly afterwards, he also founded his own enterprise, S.E.I.E. (Société d'Enterprises Industrielles et Etudes), which included both a small concrete block factory and a research section devoted to the study of concrete and refrigeration."[18]

Based on what we discussed in the previous chapters, we can make sense of these two observations (i.e., Le Corbusier's inclination to explain his architecture; and his promotion of industrial rationales among architects) in relation to some of the shortcomings we have identified in modernist architectural historiography. I refer to my belief (from the introduction) that well-known modernist histories of architecture are limited by their (hermeneutic) aim to interpret or explain architecture in relation to some general principle or law; and to my criticism of the evaluation of architecture against rationales (economic or productive, such as those promoted by Le Corbusier), that are taken for those supposed historical principles or laws. I've called that sort of evaluation historicist.

Our decision to steer away from both hermeneutic and historicist elements in modernist historiography, and rather focus on the instruments and methods used by the architect, helps us recognize that Le Corbusier's position as a designer was much more nuanced and ambiguous than his explanation of that position. This has been demonstrated by noting obvious discrepancies between some of the architect's actual buildings, and the way he tried to explain those buildings as embodiments of a particular rationality.[19] "The observable facts of (Le Corbusier's) built designs," says Reyner Banham, "are that most of his most celebrated 'machine age' effects were achieved with very primitive building technologies, descending, in later designs, to plain fakery."[20]

This brings me to the point I've been trying to develop since I started discussing Le Corbusier's inclination to explain (rather than describe) his architecture. Unlike Banham I am certainly not interested in defining *true* modernism; nor do I feel entitled to judge any particular architecture as plain *fakery*. The reason for this is central to this discussion: instead of judging architecture (in

[17] For a list of professional associations Le Corbusier participated in (or corresponded with), see: F.L.C.: T2 – 1, T2 – 2, T2 – 3, and G1 – 4. Also, see: Brooks, H. Allen: Le Corbusier's Formative Years, Charles-Edouard Jeanneret at La Chaux-De-Fonds. London and Chicago: the University of Chicago University Press, 1997

[18] McLeod, Mary: "'Architecture or Revolution': Taylorism, Technocracy, and Social Change". Art Journal, Vol. 43, No. 2, Revising Modernist History: The Architecture of the 1920s and the 1930s (Summer, 1983), p. 135

[19] O'Byrne, María Cecilia: El proyecto para el hospital de Venecia de Le Corbusier. PhD dissertation (unpublished), Barcelona: UPC, 2007, cuaderno II, p. 151

[20] Banham, Reyner: "The Last Formgiver," in Banham, Reyner: Design By Choice. London: Academy Editions, 1981, pp. 41 – 43. Originally published in The Architectural Review (August, 1966), pp. 97 – 108

terms of true, fake, right, or wrong) I am interested in appraising any architectural proposition; not as a fact or as a statement (to be proved true or right), but as a *conjecture* (to be upheld and understood in relation to other conjectures).[21] Herein lies the scientific basis of this study.

The importance of this is twofold. On the one hand, any relation between an event (in this case, the work of an architect) and a supposed historical law (e.g., industrial progress, as the fundamental justification for that event), tends to be broken, once the event is made relative or inconclusive, as conjectures are. The presumed certitude of historicism is not served well by falsifiable propositions. In this sense, our recognition of the conjectural nature of any architectural proposition allows us to stay clear from the historicist ambition to explain events as the result of supposed laws; while our assumption of Le Corbusier's architecture as a series of conjectures protects us from his historicist rhetoric.

On the other hand, the recognition of the necessary relativity of any conjecture (i.e., the assumption that inconclusive propositions necessarily relate to other propositions), turns the explanation of what a single conjecture *means* rather banal.[22] (Who is interested in "assigning a meaning, or making clear the causes or reasons of" a mere opinion?) On the contrary, any understanding of the ways in which two or more conjectures differ, which elements they share, and so on, is better served by a description of those conjectures.

Finally, it must be clear that we're not talking about just any kind of conjectures, but specifically about architectural conjectures; which leads us to ask: what makes a conjecture architectural? We can answer this question by recalling our lengthy description of the key role that tradition plays in the production of new architecture, in Chapter 1. Then, we agreed that, for the sake of the present discussion, whatever is considered *architectural* (or not) is basically a matter of convention. In other words, things are considered architectural (or not) based on consensus, and in relation to what has traditionally been regarded as architectural.

Helping us bring this rather long discussion back to the work of Le Corbusier, Mary McLeod provides us with a very valuable lead, as she suggests that his "*maison types* were *polemical statements*, not *actual realizations* of mass-production procedures."[23] We can easily relate McLeod's understanding of Le Corbusier's architecture as a series of polemical statements, or conjectures, to Sarah Williams Goldhagen's understanding of architecture as a discourse, from our introduction. Moreover, Charles Jencks's belief that Le Corbusier's late projects constituted yet

[21] The reasons for this have been thoroughly explained in chapter 1. They are basically the same reasons that have led me to adhere to Stanford Anderson's belief that our understanding of architecture should be conjectural, rather than corroborative, as we mentioned earlier.

[22] Contrary conjectures or falsifiable propositions, dogma feeds on (and favors) self-referentiality and tautology.

[23] McLeod: "'Architecture or Revolution'," p. 141

another turn in an ongoing process of trial and error, also suggests an conjectural understanding of those projects, as we will see later.[24]

The direction that turn could have taken is described by Tim Benton, who divides Le Corbusier's production after the 1920s in two explorations. One the one hand – Benton believes – Le Corbusier struggled to define a basic architectural unit, habitually programmed for dwelling; while on the other, he sketched the rudiments for an overarching urban theory. Benton notes how it was common for Le Corbusier to divide his explanations sharply, between these two propositions.[25] However, "by 1964 (sic), when Le Corbusier began thinking about the Venice hospital project, he had begun to lose faith in the grand scheme approach to urbanism. Instead of designing for a city, or a region, or even a block of flats, he had begun to turn the process on its head and focus on the individual. His fascination for the urban structure of Venice, a dense and automobile-free maze of streets, alleys and little squares, led him to try to work from the bottom up."[26]

Benton's claim that the development of the Venice Hospital represented a radical turn in Le Corbusier's architecture[27] supports Mahnaz Shah's more recent approach to the project. In her well documented reconstruction of the design process, Shah claims that a transformation in Le Corbusier's understanding of architecture is noticeable in his approach to architectural form. Specifically, Shah describes a shift in Le Corbusier's work, from the typological straightforwardness of the early "four compositions," to the formulation of a configurative strategy (i.e., the formulation of rules that define the relation of constituent parts within a form, rather than the definition of that form).[28]

Aiming to understand the ways in which Le Corbusier allegedly revised some of his previous conjectures, in the following section we will go through several descriptions of the project for a new hospital for Venice. Some of our considerations regarding those descriptions should suggest interesting relations between the project for the Venice Hospital, and other well-known explorations and debates which surrounded the project's development, in the early 1960s.

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[24] Jencks, Charles: Le Corbusier and the Continual Revolution in Architecture. New York: The Monacelli Press, 2000, p. 325

[25] Benton, Tim: The Rhetoric of Modernism: le Corbusier as a Lecturer. Boston: Birkhäuser, 2009. Cited in Shah, Mahnaz: Le Corbusier's Venice Hospital Project: An Investigation into its Structural Formulation. Farnham: Ashgate, 2013, p. XVIII

[26] Benton, Tim: "Foreword 2," in Shah: Le Corbusier's Venice Hospital Project, p. XVIII

[27] Ibid.

[28] Shah tries to establish a relation between the principles implied in the project, and Deleuze and Guatarri's notion of "rhizome." in Ibid., p. 198

**Several descriptions**

Now, let us briefly examine some general aspects of the project for a new hospital for Venice. As early as 1959,[29] the administrators of the running Santi Giovanni e Paolo hospital had already acknowledged the need for new facilities, based on their perceived obsolescence of the medical center.[30] Local authorities and prominent members of the Venetian architectural community soon met the request of the administrators by inviting Le Corbusier – a leading professional voice, as we noted earlier – to assume the commission.[31] After a protracted discussion with several key figures[32] in the commissioning process, Le Corbusier formally took up the task and developed it with a close group of collaborators coordinated by the Chilean architect Guillermo Jullian.[33]

The project was to replace the old San Giobbe abattoir, at the northwestern mouth of the island-city's Grand Canal, and was expected to equate in size and importance to other Venetian monuments, such as the Piazza de San Marco compound, or the church of San Giorgio Maggiore. The aim to contribute to the public life of Venice, by introducing a vital activity, and by contributing a meaningful landmark towards a rather neglected edge of the city, posed several interesting questions.

Based on Alan Colquhoun's description of the design process, we can hint at one of these questions as the need to articulate two very different scales.[34] The first of these scales is the large scale of the modern public building, and more specifically, the large scale of a modern public hospital, expected to serve the population of an entire city.[35] The second of those scales is the medium to small scale of the pre-existing urban tissue.[36]

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[29] Shah: Le Corbusier's Venice Hospital Project, p. 10

[30] Located along the Fondamenta Mendicanti, at the Castello sestiere, the running hospital is part of a compound which dates back to the 15th century.

[31] For a detailed description of the architectural competition opened prior to Le Corbusier's acceptance of the commission, the commissioning process, the local debates around the commission, and the reflections of several architects regarding the project, see: O'Byrne: El proyecto para el hospital de Venecia de Le Corbusier,Cuaderno 1, pp. 47 – 134; and: Dubbini, Renzo, and Sordina, Roberto: H VEN LC: Hopital de Venise Le Corbusier, Testimonianze. Venice: IAUV, 1999

[32] An insider's account of the process is offered by: Mazzariol, Giuseppe: "Le Corbusier a Venezia: Il progetto del nuovo ospedale," Zodiac, No. 16 (1966), pp. 237 – 241

[33] For a complete collection of Jullian's work, see: Perez de Arce, Rodrigo: Guillermo Jullian: Obra Abierta. Santiago de Chile: Ediciones ARQ, 2000. I wish to thank Óscar Andrade for sharing this book with me.

[34] Specifically: the dimensions of buildings and other elements of the built environment, in relation to the dimensions of the human body.

[35] We have studied this question before, albeit formulated differently. As we saw in the previous chapter, Rogelio Salmona attempted to reconcile the two very different scales of the individual building, and the extra-large natural element of the mountains, with his architecture.

[36] Colquhoun, Alan: "Formal and Functional Interactions: a Study of Two Late Buildings by Le Corbusier," in Colquhoun: Collected Essays in Architectural Criticism, p. 29, originally published in Architectural Design, vol. 36 (May 1966)

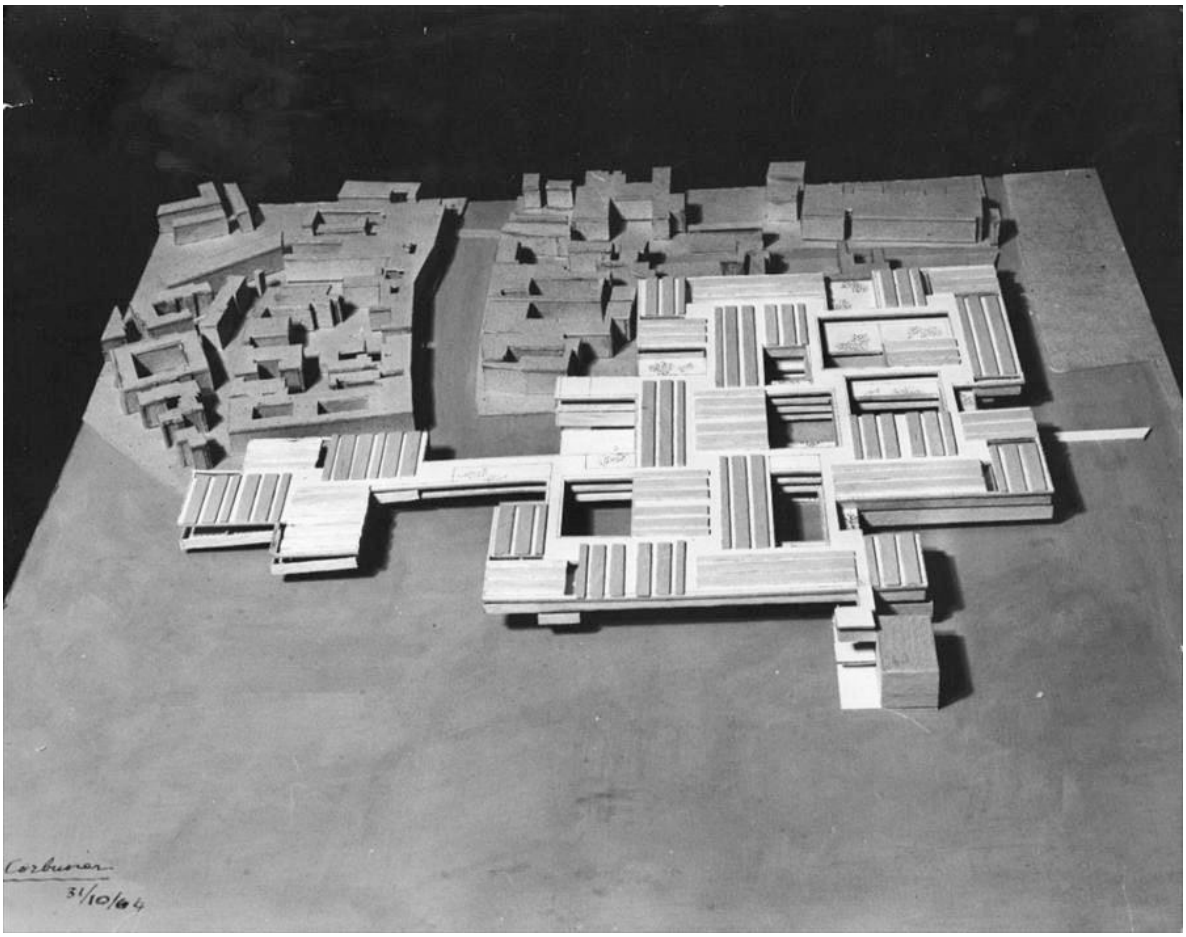


Figure 11
Le Corbusier: Venice Hospital, model

So, what architectural instruments and methods did Le Corbusier choose, in order to confront this question? We can answer that question based on his succinct descriptions of the project. In general terms, these descriptions ratify our (and Alan Colquhoun's) belief that the project set out to explore the question of articulating two very different scales. The need to adapt to the smaller scale of the old city explains why, contrary other modernist hospitals (designed as towers or slabs, in many cases), Le Corbusier strove to explore the possible outcomes of designing a horizontal hospital.[37] This decision was simply enforced with the definition of a limit for the building's height. "The height of the hospital from the ground is approximately 13.66 meters," says Le Corbusier. "This dimension corresponds[38] to the average height of the buildings of the city."[39]

Within this vertical constraint, Le Corbusier chose to divide this height into three levels. The expected use or purpose of each of these levels is also described by the architect: "The first level, the ground floor, is the level of liaison with the city; there one finds general services and all public access, by water, by foot, or by the bridge across the lagoon. The second level is the floor for preventive care, specialties, and rehabilitation. It is the level of medical technology. The third level is the area of hospitalization, and the area for visitors."[40] Some of these levels could be subdivided further, into intermediate layers. "The first and second levels have a respective height of 5 meters, which is occasionally divided in two stages of 2.26 meters each. The last level is 3.66 meters, and this height is, in places, reduced to 2.26 meters. In most cases this double height of 2.26 meters is reserved for passages and for communication."[41]

A technical report[42] elaborated by medical doctors and public health specialists, has been repeatedly mentioned as the programmatic basis for the distribution of activities in relation to floor plans, and for the definition of clusters of activity in the different levels of the Hospital. Hashim Sarkis has studied that technical report in detail, and sustains that "as one goes through the full document, the confluence of technical and conceptual arguments becomes clear."[43] Based on his description, we are led to infer that by technical, Sarkis refers to use or purpose (regarding medical processes and procedures); while by conceptual he refers to questions related with architectural configuration, mostly. This inference is confirmed by Guillermo Jullian, who recalls that, "after having access to that report, we grasped the most advanced concepts in hospital

[37] Shah: Le Corbusier's Venice Hospital Project, pp. 39 – 40. In particular, Shah refers to information found in F.L.C.: 12 – 20 – 2 and 12 – 20 – 3

[38] I have not found evidence to sustain this claim.

[39] Le Corbusier: Oeuvre Complete, Volume 8: 1965 – 69. Zurich: Les Editions d'Architecture Artemis. 1970, p. 134

[40] Ibid.

[41] Ibid.

[42] Le Corbusier: "Rapport Technique," in Sarkis, Hashim: CASE: Le Corbusier's Venice Hospital and the Mat Building Revival. Munich, London and New York: Prestel, 2001, pp. 36 – 47

[43] Ibid., p. 37

development, and in a certain way we were relieved – we didn't worry too much about those issues;[44] that was easily solved. What we were interested in was the architectural problems of the hospital."[45]

Since, as we just saw, most of these so-called architectural problems were related with size, scale, and the division of levels or layers within a limited height; we can sustain that by architectural problems, Jullian referred to problems related to architectural configuration. In this sense, we can say that the instruments are methods used by Le Corbusier in Venice are, to a great extent, focused on exploring the formal heuristic of architecture.

This does not mean that we should ignore the relation that exists between the definition of that architectural form, and the use or purpose expected of the project. On the contrary, the different ways in which the configuration of each of the project's layers was approached, suggests that the use or purpose of the hospital was an exploration in its own right. Aside from accommodating medical processes and procedures adequately, the project explores ways in which (different types of) human interaction can be sustained. In the new Venice Hospital, patients were expected to preserve some sense of communal, albeit not social life. "This concept of various 'levels' of cure," says Le Corbusier, "means that one considers the 'human being' even before the 'patient', which means that at the human level it is especially necessary to find the scale of the construction: the cell and all that it comprises."[46]

Based on these descriptions, we can speak of the project as a conjecture regarding architectural use or purpose (favoring several types of interaction between different people), which is explored by a group of architects with instruments and methods (e.g., the definition of a scale, layering, the controlled repetition of a basic cell, etc.) related to architectural form.

At this formal level, the Venice Hospital explores what we described earlier as a configurative strategy for the generation of the built environment. Le Corbusier confirms our interpretation, when he says that "the generating[47] element of the hospital has been the patient cell. These cells,

[44] We can relate this posture to Rogelio Salmona's statement regarding function, from the previous chapter.

[45] Allard, Pablo: "Bridge Over Venice: Speculations on Cross Fertilization of Ideas Between Team 10 and Le Corbusier (After a Conversation with Guillermo Jullian de la Fuente)," in Sarkis: CASE: Le Corbusier's Venice Hospital, p. 27

[46] Shah: Le Corbusier's Venice Hospital Project, pp. 39 – 40, information taken from FLC: 12 – 20 – 2 and 12 – 20 – 3

[47] "The geometric, as opposed to the additive, schema consists of a system of overlaid squares and golden section rectangles. The smaller of the two squares establishes a center of gravity asymmetrical in relation to the scheme as a whole and related to it diagonally. This center is also on the intersection of the rectangles formed by dividing the total square according to geometrical proportion. The additive grid consists of eight units, which allows for division of the Fibonacci series into 8, 5, 3, 2. The center of the small square is the center of gravity of the treatment department and the main vertical circulation point for patients around which there is an opening in the top floor giving light to a ground floor court which wraps around the central

created on the Modulor scale, define the structure of the unit of care of 28 patients, which functions independently. This unit is organized around a central space of communication (campiello) and four conduits (calle), allowing circulation for the use of patients during the post-hospitalization period. This structure leads to the horizontal hospital through the attachment of the additional building blocks next to one another. Thus the hospital ceases being a static organization (organism)[48] and acquires a flexibility that enables it to follow the evolution of new medicine, while allowing it a potentiality to grow further in the future. The services can be interchangeable and, in this eventuality, they will be used according to the various needs. It thus allows (the patient) to experience the same conditions as in the city when moving in the "calle" or the "campiello" and there are also hanging gardens on the same level (3)." [49]

We can relate this description of the project to Alison Smithson's popular[50] assemblage of a series of buildings that use similar configurative instruments and methods, at two levels. On the one hand, we can establish clear relations between some of those buildings, and their approach to architectural use or purpose. Both the hospital and some of the buildings listed in Smithson's celebrated article on Mat-Building appear to value the establishment of human interactions at several (not necessarily clear-cut) levels or privacy, publicity, and commonality. Smithson's valuation of these interactions suggests an alternative understanding of architectural use or purpose, beyond the supposedly clear-cut functions defined in the aforementioned C.I.A.M. grid.[51]

On the other hand, we can also establish a relation between several of the buildings listed in Smithson's article, and their approach to architectural configuration. Furthermore, we must note that Smithson's article links the approaches followed by some of the projects listed in her article, to specific configurative traditions. The Venice project appears to agree with Smithson's belief, that the complex configurations observed in Arab and North-African souks, and medieval European squares and streets, hold valuable information for architects dealing with questions similar to those faced by Le Corbusier in Venice around 1963.

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core. As at the monastery of La Tourette, the traditional court with circulation around it is modified by a cruciform circulation system on its axes – a typical Corbusian superimposition of functional and mythic orders." – Colquhoun: "Formal and Functional Interactions," p. 30

[48] For a detailed explanation of "biological" approaches to the question of architectural function, see Forty, Adrian: Words and Buildings: A Vocabulary of Modern Architecture. New York: Thames and Hudson, 2004, pp. 174 – 195

[49] Shah: Le Corbusier's Venice Hospital Project," p. 39, refers in turn to: FLC: 12 – 20 – 2 and 12 – 20 – 3

[50] Smithson, Alison: "How to Recognise and Read Mat Building: Mainstream Architecture as it has Developed Towards the Mat Building," in Sarkis: CASE: Le Corbusier's Venice Hospital," pp. 90 – 103, originally published in Architectural Design, Vol. 9 (September 1974), pp. 573 - 590

[51] For a wonderful description of this process, see: Pedret, Anne: "Dismantling the C.I.A.M. Grid: new values for modern architecture," in Risselada, Max, and Van den Heuvel, Dirk: Team 10 (1953 – 81): In search of an Utopia of the present. Rotterdam: NAi, 2006, pp. 252 – 257

Using these instruments and methods, Le Corbusier's office presented the project[52] at different moments, and at several levels of its development.[53] It is interesting to note how, beyond the differences that exist between these different stages of development, the project as a whole has also been described in very different ways. Glaring discrepancies between analyses which assume the project as an object, describable in clear geometric terms; and accounts which speak of a series of actions and principles whose application eventually leads to the generation of that object; ultimately reveal the conjectural (i.e., relatively ambiguous or inconclusive) nature of the project that is trying to be described. In order to clarify this a bit, let us examine some of the ways in which the project for a new hospital in Venice has been described.

A first kind, among these descriptions[54] basically assumes the project as a large three-dimensional structure. In this kind of description, the open framework that is this open structure, allows the architect to simply fill in the void space between the structural elements (with slabs and walls and small volumes) at will. There is an obvious relation between the instruments and methods implied in this description, and those implied in some of Le Corbusier's earlier propositions, including what is popularly known as the plug-in system, used in his Unites d'Habitation. (We can also establish an interesting relation between this description, and Shadrach Woods's understanding of the built environment at an infra-structural level,[55] as we will see in the following chapter.)

A second kind, among these descriptions of the Venice Hospital, divides the project into a series of distinct horizontal layers. This approach describes the different configurative strategies used in each of these layers as the result of the definition of different uses or purposes for each level, as we mentioned earlier. As Alan Colquhoun notes, "the organizational problems (…) in the Hospital

[52] I prefer this approach, to that which states there are several "versions" of the project, mostly because there are discrepant views among the authors I have been citing, regarding the number of these versions. Attempts to define what exactly constitutes a version of the project with accuracy, I find rather futile.

[53] One of these stages of development consists of a set of plans dated from October 1964; while others represent further elaborations of the project, developed by a team led by Guillermo Jullian. Changes among these stages are generally assumed to be posterior to Le Corbusier's decease in 1965. Differences between the material that has been published are evident, yet not crucial; and have been copiously described by analysts and critics. Sarkis, for example, suggests that "the broad strokes are set in the first, the programmatic complexities are worked out in the second, and in the third the constructive logic begins to appear…" (Sarkis: CASE: Le Corbusier's Venice Hospital, p. 37); while Shah provides a synthetic comparison of these differences, level by level, based on floor-plans of the first two stages of the project's evolution. The plans she refers to date from 1965, and include an addition of units in the third level, expanded professional services, additional offices and a library in the two sub-levels that comprise the second floor; the completely new introduction of a mezzanine on the ground floor, and the expansion of that ground floor, including the more radical change in the position of the project's chapel. (Shah: Le Corbusier's Venice Hospital Project, pp. 28 – 29).

[54] Mumford, Eric: "The Emergence of Mat or Field Buildings," in Sarkis: CASE: Le Corbusier's Venice Hospital, p. 51

[55] I trust that any attempt to establish an "original vs. copy" relation between the work of any two architects will be discouraged by our investigation.

at Venice are complex and specialized. It is possible (even within the height restrictions imposed by the site) to imagine a solution in which vertically organized blocks of different classes of accommodation would be related horizontally, but Le Corbusier has decided to separate the different classes vertically, so that each level serves a different purpose, and a cross-section at any one point is, in principle, typical of the whole organization. This has obvious advantages both from the point of view of administration and that of extensibility. But it also repeats the pattern of the city with its overall texture – a solid mass of building penetrated by canals and courts."[56]

Yet a third, common description[57] of the project, focuses on the importance of a series of circulation spaces, mostly. In this approach, the hospital's second level, plus a series of ramps, and other vertical and diagonal connectors, take center stage. To a certain extent, this description of the Venice Hospital follows Louis Kahn's understanding[58] of architecture as a relation between served and servant spaces; in the sense of recognizing the cardinal compositional and functional role played by what are usually thought of as secondary spaces, in the articulation of the entire project's configuration and performance.

Adding to these three, common descriptions, is Le Corbusier's own description (quoted at length, above) of the project as the result of clustering a series of smaller spaces together, by following straightforward pre-established compositional rules. This description focuses on the definition of minimum configurative units (patient rooms or "cells," for example), and their further grouping in strips or bars of several cells, following a pinwheel scheme, in this case.

As I said, more than the differences that exist between the different stages of the project's development, I find these differences (between several descriptions of the project) fascinating.[59] The fact that Le Corbusier's project for a hospital in Venice is describable in many different ways, somehow ratifies Stanford Anderson's understanding of Le Corbusier's architecture[60] as the conflation of different explorations (namely, that of the *promenade architecturale*, and that of the open structural framework, as we saw earlier). While these different explorations don't fully account for the complexity of a full-fledged research program, as Anderson thought, the hospital does suggest that Anderson was following a valuable lead, when he focused on Le Corbusier's intention to explore within architectural form and use or purpose simultaneously.

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[56] Colquhoun: "Formal and Functional Interactions," p. 29

[57] O'Byrne: El proyecto para el hospital de Venecia de Le Corbusier

[58] Kahn, Louis: "Talk at the Conclusion of the Otterlo Congress," in Newman, Oscar (ed.): C.I.A.M. '59 in Otterlo. Stuttgart: Karl Krämer Verlag, 1961, pp. 210 – 211

[59] An ingenious conflation of some of these descriptions (the hospital as an open structure, as a series of layers, as the interaction of served and servant spaces, and as the grouping of cells) is advanced by O'Byrne, under the suggestive figure of a "*unit of Unités,*" in: O'Byrne: El proyecto para el hospital de Venecia de Le Corbusier, Cuaderno IV, pp. 6, 101

[60] Anderson: "Architectural Research Programs in the Work of Le Corbusier," pp. 151 – 158

Supporting this claim, Alan Colquhoun suggests that "the Venice Hospital (…) evokes complex and overlapping responses. The analytical way in which the constituent functions are separated allows (it) to develop pragmatically around and within fixed patterns. The form is not conceived of as developing in a one-to-one relation with the functions, but is based on ideal schemata with which the freely deployed functions engage in a dialogue. The building is both an agglomeration of basic cells, capable of growth and development, *and* a solid which has been cut into and carved out to reveal a constant interaction of inside and outside space. (…) The impression of complexity is the result of a number of subsystems[61] impinging on schemata which, in themselves, are extremely simple."[62]

As we suggested earlier, when we studied Anderson's attempt to describe the work of Le Corbusier based on Lakatos's methodology, I believe Colquhoun's description above could also be led further. By this I mean that we could transcend the sheer acknowledgment of the inherent complexity of this particular architecture. In order to do so, we could also establish interrelations between the instruments and methods used by Le Corbusier, and those used by other architects in the face of questions similar to those he met in Venice, for example. In this sense, we have already suggested that some of the instruments and methods used by Le Corbusier while developing this project, are also used by Alison Smithson, Shadrach Woods, and Louis Kahn.

However, instead of elaborating further on those possible interrelations – which we will do later – at this point I would like to return to our contention of modernist historiography. In the following section I would like to bring our focus back to the ways in which our approach to the Venice Hospital appears to contradict other approaches, which deliberately neglect possible interrelations between the project and other architectural conjectures that were topical at the moment of its design. Given the importance of those accounts in the definition of our position, we will study them with some attention.

**Stand-alone, self-centered, or referred to a (conveniently) distant past**

In order to clarify the differences that exist between our approach to the Venice Hospital, and those we are about to study, we need to make something clear. Our understanding of architecture as a system of research programs suggests that the importance of Le Corbusier's (and any other) architecture lies in its consistent attempt to evolve from what we earlier defined as the four positive heuristics of architecture (namely: form, purpose or use, technique, and communication). In the case of Le Corbusier, this attempt to evolve is patent in architectural conjectures (such as "Les Traces regulateurs", "Les 5 points d'une architecture nouvelle," and "L'urbanisme et la regle

[61] An excellent description of the articulation of different architectural sub-systems in modern architecture, can be found in: Martí: Las Variaciones de la Identidad, p. 144

[62] Colquhoun: "Formal and Functional Interactions," p. 33

des 7V"[63]) which have purportedly been formulated in response to neo-classical approaches to form, and pre-industrial urban performance, for example.

Furthermore, our approach allows us to indicate the heuristic realms of architectural activity in which evolution was supposedly sought, in relation to other architectures. In this particular case, the architect oftentimes argued that, for the most part, "Les 5 points d'une architecture nouvelle" were launched as an attempt to evolve from the formal basis of neo-classical architecture.[64] Free ground plans and roof terraces, for instance, were supposed to evolve in relation to rigid vertical orders, as defined by neo-classical manuals.[65] So seen, evolution was sought by competing with, or challenging key elements from other architectures.

"Les Traces Regulateurs,"[66] on the other hand, can also be understood as an attempt to evolve from the formal basis of architecture, this time by evolving on a traditional approach to composition based on a strict geometry. In this case, evolution was sought by cooperating[67] with other (mostly classical) architectures.[68] Based on these simple examples, we can see how architectural conjectures intend to evolve in relation to other architectures, by competing or cooperating with those architectures in discernible terms.

I feel compelled to insist on this point because, contrary our interpretation, recent attempts to explain the project for a hospital in Venice retain a problematic (basically dichotomous) assumption, common to other modernist histories of architecture. Based on painstaking reviews of archival material, these recent approaches try to explain the project for a new hospital for Venice in relation to an architectural question (e.g., the negotiation of different scales, the pursuit of formal flexibility, etc.); but when it comes to understanding how that question has been dealt with by other architects, a conceptual line is drawn.

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[63] O'Byrne: El proyecto para el hospital de Venecia de Le Corbusier, Cuaderno IV, pg. 99

[64] Le Corbusier: Towards a New Architecture, p. 172 – 173

[65] Among these manuals, we can mention Vignola, Giacomo Barozzi da: Canon of the Five Orders of Architecture. Mineola, New York: Dover Publications, 2011. Originally published in 1562.

[66] Le Corbusier: Towards a New Architecture, p. 65

[67] "Unfortunately his use of historical evidence is sloppy in the extreme, and so this chapter (Les Traces Regulateurs) shows him in bad light. Lines inked on photographs of the Porte Saint Denis and the façade of Notre Dame are an inaccurate version of Blondel's diagram in the first instance, and over a foot thick to scale in the second; those on photographs of the Capitol at Rome and the Petit Trianon are more convincing because they demonstrate nothing that one does not feel, as Choisy did about Serlio, to have been impossible to demonstrate by simple numbers." In Banham: Theory and Design in the First Machine Age, p. 226

[68] This illustrates our point, regarding the banality of defining what is modern (or not), like Banham. Instead, it suggests the utility of identifying possible modernizations, in clear heuristic terms.

On one side of this line, cooperation (i.e., adhering to or evolving on a particular exploration), is mostly referred to the architect's own work,[69] or to architectures from the distant past, only.[70] On the other side of this line, other architectures dealing with the same question at the same time, are either neglected,[71] or taken for competitors[72] (i.e., explorations to be challenged or refuted), never as collaborators.

Why is this assumption problematic? For the most part, because it is grossly imprecise. Any architect will testify to the impossibility of detaching herself and her work from her professional milieu, or only competing with that milieu. Beyond its sheer inaccuracy, though, I am more interested in the methodological shortcomings of this assumption; especially because I believe these methodological shortcomings are strongly related with our initial contention of modernist architectural historiography.[73] This should become much clearer as we examine two recent approaches to the Venice Hospital which contain this problematic assumption I've been talking about.

The first of these recent approaches, is the monumental dissertation defended by Maria Cecilia O'Byrne in 2007.[74] Throughout the five volumes of her thesis, O'Byrne presents a comprehensive collection of archival material, and a thorough description of the project based on that material. The objectives set by O'Byrne for her investigation are clearly related to what we discussed earlier,

[69] To illustrate such an understanding: "Le Corbusier speaks about the need for a deep study of the (project's) parts in order to 'defeat the adversary.' (…) By this he probably referred to the need to improve himself…" in Mejía and Torres: "Elementos Para una Búsqueda," p. 140, my translation.

[70] "Today I am accused of being a revolutionary, yet I confess to having had only one master: the past; and only one discipline: the study of the past," in Brooks: Le Corbusier's Formative Years, p. 92

[71] "He knew Berlage too well not to be acquainted with Wright's work, and told Sigfried Giedion that he had actually heard Berlage's lecture of 1913 (on Wright), but when Wijdeveld asked him to contribute to the special issue of *Wendingen* devoted to Wright, he is reported to have replied 'Connais pas cet architecte'." In Banham: Theory and Design in the First Machine Age, p. 221

[72] "In the depths of our being, larva, toads, and beasts which haunt the memories of the primordial world reemerge again today… We see them in this new crisis of the spirit which followed the war: frightening dreams of Hermann Finsterlin from Bavaria with their viscous ejaculations recalling underwater horrors, or those viscera, or impure acts of beasts. He was pretending to extract out of this architectural creations. Bruno Taut… publishes in his review houses where one finds the same distracted neurasthenia. But physical matter is against it. Those things can be born in a fevered head and inscribed on paper. Physical facts refuse to let them be built." From: L'Esprit Nouveau 25 (1925), cited in Jencks: Le Corbusier and the Continual Revolution in Architecture, pp. 125 – 127.

[73] While I haven't been able to link these particular assumptions to the main historicist tendencies we have ascribed to modernist historiography, I do understand them within the broader sphere of Popper and his critics' thought. I will try to develop this idea further in the general conclusions to this dissertation.

[74] O'Byrne: El proyecto para el hospital de Venecia de Le Corbusier

regarding the differences that exist between describing and explaining architecture. Her aim is to analyse the project in what she considers "two complementary directions." One of these directions aims for a physical description of the project, while the other is proposed as a "cultural analysis" of the project's architecture (i.e., an explanation).[75]

The first of these directions focuses on "the documents that compose the four versions (sic) of the hospital (…), including sketches, photos, notebooks, letters, written documents, and other graphic documentation."[76] The second of these directions aims to "render[77] the project through architecture – both Le Corbusier's own architecture, as well as the architecture he saw, knew, and remembered while he was designing the hospital."[78]

The result of this rendering is extremely interesting, since it basically disregards any positive interrelations between architectures confronting similar questions around the same time. From that perspective, Guillermo Jullian's recognition of the value of contemporary architectural discussions[79] in the reformulation of several of Le Corbusier's experiments is mostly neglected. Instead, we are expected to believe that "the origin of the patio in Le Corbusier (sic) can be found in his collective housing buildings, in the proposal for the Immuebles Villa (1922);"[80] or that "Le Corbusier renovates form and language in architecture, over and over, in his tireless quest for variations of his youthful concerns. Only thus," O'Byrne believes, "is it possible to understand how Le Corbusier finds the solution for other projects in the nineteen-sixties in his museum prototypes." [81]

Clearly, these explanations suggest a stand-alone, self-centered understanding of Le Corbusier's architecture. On the other hand, among the architectures O'Byrne uses to "reconstruct (sic) Le Corbusier's museum project (are): Teotihuacan in Mexico, the ziggurats at Nineveh in Mesopotamia, Hagia Sophia in Constantinople, St. Peter in the Vatican, the mosque at Cordoba, the Chartres cathedral, Angkor Vat in Cambodia, the Kaaba in Mecca, Paxton's Crystal Palace, and a series of Pompeiian houses"[82] – all architectures from the distant past.

Closely related to O'Byrne's work, is the second of these recent approaches, which I want to discuss. Mahnaz Shah's dissertation, published in 2013, equally provides an impressive account of the project's development, as I said before. Although Shah does establish clear interrelations

[75] O'Byrne: El proyecto para el hospital de Venecia de Le Corbusier, Cuaderno I, p. 6
[76] Ibid., Cuaderno I, pg. 7
[77] In my opinion, the notion of "rendering" is a much better translation for the Spanish "hacer," than "making" or "doing".
[78] Ibid.
[79] Ibid., Cuaderno V, pp. 62, 66. I must note that this fifth volume contains the appendixes to the thesis.
[80] Ibid., Cuaderno IV, p. 56
[81] Ibid., Cuaderno IV, pg. 137
[82] Ibid., Cuaderno III, pg. 86

between the project and the work of Piet Blom,[83] Shadrach Woods, and Ernesto Nathan Rogers,[84] among others, her excellent descriptions are debilitated by her aim to explain the Venice Hospital as the result of Le Corbusier's own thoughts on Venice, mostly. "My hypothesis" she says, "is that the essence of the Venice hospital project lies in the interpretations and visualization of the city of Venice by Le Corbusier. For Guilliaume (sic) Jullian de la Fuente, and those who had the privilege to later get involved in the project's further development, it remained an exercise in interpreting and visualizing the key concepts as proposed by Le Corbusier. The history of the project, therefore, is among other things, the historical account of these interpretations and their application through the design method that was again an invention of Le Corbusier."[85]

Like O'Byrne, Shah also appears to understand Le Corbusier's architecture in relation to itself (e.g., to a design method he "invented"), or to the distant past (in this case, the city of Venice). The problematic nature of this understanding is patent in a very subtle, yet momentous contradiction: both authors want to make the instruments and methods used by Le Corbusier available to other architects; and yet they both refer to them *intuitu personæ*.[86] "The Master's *modus operandi*,"

[83] The establishment of such complex interrelations, transcending a supposed originality and recourse to distant historical references, is further analyzed at the formal heuristic of architecture in Shah's comparative analysis of the formal principles that underlie three projects: Shadrach Woods's Berlin Free University, Le Corbusier's Venice Hospital and Piet Blom's Noah's Ark. It must be acknowledged that intense heuristic conflict is common to these propositions at a formal level. A study of the structuring role of the circulations of all three models allows Shah to make a case for competition among investigations within the same heuristic, identifying differences and similarities, including radical differences between Woods and Le Corbusier in relation to the item of articulation, in each of their compositions. Shah demonstrates how, while the Venice project is knit based on pinwheel joints, Woods assumes the pinwheel form as a dissociating element (Shah, p. 142), and thus chooses to structure his Berlin scheme on straight lines, orthogonally disposed as warps and wefts in a loom. According to Allard, Jullian appears to be aware of the specificities of each hypothesis, when he argues that the mat metaphor cannot be attached to the hospital, claimed to achieve a higher degree of complexity by sheer intensification of the joint. Shah's analysis yields the conclusion that the Venice Hospital's formal hypothesis is able to articulate circulation and served space as successfully as the other schemes, and yet provides additional room for enhanced performance in relation to those schemes. The differential layering, the type of grouping, and especially the discontinuity provided by the pinwheel shape in the third level, allow the hospital scheme to provide multiple responses to an equally complex set of spatial and functional situations. By recognizing the project's added complexity in relation to other projects' performance on specific heuristic grounds, Shah's conclusions share elements of our understanding of architecture as a series of research programs. Unfortunately, further interpretation diverts towards an inductive reflex. Following a corroborative path, Shah leans towards discussing the building's ability to fit the mat building category, as defined by Alison Smithson. Shah: Le Corbusier's Venice Hospital Project, pp. 134 - 144

[84] In my opinion, this is the most interesting part of the book. Ibid., pp. 129 – 149

[85] Ibid., p. 10

[86] i.e., as inextricably bound to the *person* of Le Corbusier.

says O'Byrne, "consists of knowing or even creating the rules of the game, in order to break or change those rules later on."[87]

This is my point: Both beliefs (i.e., that the work of any architect can be understood as a self-referential process, or that the instruments and methods used to produce that architecture can only be referred positively to architectures of the distant past) tend to weaken the conclusions obtained by these modernist approaches; or to render those conclusions inoperative.[88] The reason for this ineffectuality is purely methodological. Said more clearly: an inaccurate or (sometimes deliberately[89]) distorted understanding of the instruments and methods used by an architect in the confrontation of a question makes it extremely difficult for other architects to relate to those instruments and methods – much less to employ them.

Aiming to develop these readings at a methodological level, our understanding of architecture as a system of research programs evaluates the importance of any architecture according to its ability to recognize pertinent questions of its time; but most importantly, in its ability to engage in conflict and cooperation with other architectures which gravitate around those pertinent questions, in clear heuristic terms.

Based on this premise, we can return to the *Nuovo Ospedale*, and examine some of the architect's conjectures based on what we just said. For instance, we can study the use of *calli* by an architect who declared the "mort de la rue", and defined the street as "no more than a trench, a deep cleft, a narrow passage."[90] This case certainly poses an interesting question, in conjectural terms.

The resurgence of street-like configurations in the work of Le Corbusier could be seen as an individual *change of heart*; but I much prefer to describe it as the result of transacting with other architectures. We can uphold this claim based on our knowledge that, together with Shadrach Woods's "Stem" (which we'll study in the following chapter), a series of postwar explorations in the realm of architectural form and use[91] sought to overcome perceived insufficiencies in what we know as modernist zoning by recovering valuable elements from a traditional element, such as the

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[87] O'Byrne: El proyecto para el hospital de Venecia de Le Corbusier, Cuaderno IV, pg. 98

[88] A very interesting relation can be established between this thought, and Anderson's reflections regarding the relative inconsequence of the architectures of Pugin and St'Elia, due to their inability or unwillingness to engage with the questions and the traditions of their time, as we noted in chapter 1.

[89] Towards the end of our discussion, I will elaborate on this further, based on Popper's attacks on superstition and tribalism; as I pose the question of an open or closed architectural society.

[90] http://www.fondationlecorbusier.fr/corbuweb/morpheus.aspx?sysId=13&IrisObjectId=6159&sysLanguage=en-en&itemPos=2&itemSort=en-en_sort_string1%20&itemCount=2&sysParentName=Home&sysParentId=65, retrieved 21/06/2017

[91] For a recent development on this relation: Valena, Tomas, Avermaete, Tom, and Vrachliotis, Georg (eds.): Structuralism Reloaded: Rule-Based Design in Architecture and Urbanism. Stuggart and London: Edition Axel Menges. 2011

street.[92] Some of these investigations basically recognized the street, and its possible modernizations, as a valuable figure in the face of architectural questions that were topical.

Further interrelations can also be established between the Venice Hospital and the inception of the notion of Core, introduced in the 8th C.I.A.M. meeting at Hoddesdon.[93] "As should now be obvious," Eric Mumford notes, "… the Smithsons' emphasis on street decks, clustering, and local culture; Gutmann and Manz's idea of the 'space of the in-between'; van Eyck and Blom's concept of the 'organized Casbah'; and Candilis-Josic-Woods's principles of stems and webs eventually had a direct influence on Le Corbusier and Guillermo Jullian de la Fuente in the Venice Hospital project."[94]

As we have seen earlier, the failure to properly assess heuristic transactions between architectures engaged in the confrontation of similar questions (and around the same time), necessarily leads us to accept or even use extremely weak figures for the appraisal of architecture, such as "influence" (which we discussed in the previous chapter) or "inspiration."

"It is symptomatic of Le Corbusier's capacity of self-renewal," Frampton says about the Venice Hospital, "that it seems to have been *inspired* by a design of one of his former assistants, the American architect Shadrach Woods. Like Woods's 1963 four story gridded proposal for the Free University of Berlin, the layered, carpet-like structure of the Venice Hospital was to have been pierced by six courtyards in order to provide adequate light and air to the lower floors.[95]„[96]

Leaving influence and inspiration aside, it is clear that Le Corbusier's work since 1948 did benefit from transacting with some of the best architectures produced in the United States of America in the 20th century. In the following section, we will take a good look at some of those transactions, based on another recent approach to the work of Le Corbusier. As we will see, Mardges Bacon's account contains methodological elements that favor our understanding of architecture as a system of research programs.

**Cross-fertilization**

Clearly, some of the explanations we just saw are based on an understanding of architecture that assumes the architect as an individual form-giver – an assumption shared by many well-known

[92] Anderson, Stanford (ed.): On Streets. Cambridge (Mass.), London: MIT, 1978

[93] Zuccaro, Marchi, Leonardo: The Heart of the City: Continuity and Complexity of an Urban Design Concept. London: Routledge, 2017. Also: O'Byrne: El proyecto para el hospital de Venecia de Le Corbusier, Cuaderno III, p. 63

[94] Mumford: "The Emergence of Mat or Field Buildings," p. 58

[95] Frampton, Kenneth: Le Corbusier: Architect and Visionary. London, Thames and Hudson, 2001, p. 224

[96] Shah: Le Corbusier's Venice Hospital Project, p. 135

modernist histories of architecture.[97] We have already described this individualization of architectural activity as problematic, at different levels. For the most part, we have noticed its ineffectuality: It is increasingly difficult to appraise (much less operate on) a built environment that evolves at large scales and at high levels of complexity, based on an understanding of architecture as the work of unrelated individuals.

Stanford Anderson's understanding of the built environment as an artifact, from chapter 1, suggests the need for better hypotheses regarding the role of the architect in the face of these large scales and high levels of complexity. In this same sense, a shift in scale and focus in Le Corbusier's work (from the extra-large scale of the urban masterplan, allegedly designed by an architect; to the much more nuanced configurative approach used in Venice[98]) does not appear to be a personal or isolated decision. Instead, we can describe this shift in scale and focus in relation to other architectural conjectures.

Recently, the historian Mardges Bacon has approached this question in an excellent way, offering new insight into a series of transactions that involved Le Corbusier's architecture. In the article "Le Corbusier and Postwar America,"[99] Bacon specifically describes how other architectures, including those of the Tennessee Valley Authority, defined part of Le Corbusier's explorations after the War, in clear heuristic terms. "Such postwar projects," argues Bacon, "coincided with a formal shift in Le Corbusier's work, which emphasized architectural mass over volume as well as a renewed interest in infrastructure.[100] This shift joined with other evolving tendencies, which advanced curvilinear forms and a sensitivity to regional, vernacular, and humanistic concerns."[101]

Bacon's argument is directed against another[102] one of Reyner Banham's modernist explanations – in this case, against his intention to explain Le Corbusier's project for a Unité d'Habitation at Marseille in relation to vernacular European architectures.[103] It is worthwhile to note that the methodological approach used by Bacon to contend Banham's arguments affirms our valuation of proliferation as a source of knowledge (also from chapter 1); in the sense of presenting a series of

[97] For example, see: Banham, Reyner: "The Last Formgiver" Architectural Review (August, 1966), pp. 97 – 108.

[98] O'Byrne: El proyecto para el hospital de Venecia de Le Corbusier, Cuaderno IV, pp. 5, 17

[99] Bacon, Mardges: "Le Corbusier and Postwar America: The TVA and *Béton Brut*," Journal of the Society of Architectural Historians, Vol. 74, No. 1 (March, 2015), pp. 13 – 40. I wish to thank Nelson Mota for sharing this article with me. In the same direction as this article, see: Avermaete, Tom: "From Knoxville to Bidonville: ATBAT and the Architecture of the French Welfare State," in Swenarton, Mark et al. (ed.): Architecture and the Welfare State. London: Taylor and Francis, 2014, pp. 219 - 234

[100] As we will see in the following chapter, there is an interesting understanding of architecture at an "infra-structural" level in the work of Shadrach Woods.

[101] Bacon: "Le Corbusier and Postwar America," p. 13

[102] We must recall Stanford Anderson's contention of Banham's views on tradition, from Chapter 1

[103] I will return to this in the conclusions of this study.

"multifaceted and interrelated questions"[104] between the architecture of we what we know as the Tennessee Valley Authority, and the work of Le Corbusier and several others.

By focusing on the work of the group of architects assembled by the French authorities to analyze contemporary architecture produced in the United States of America in 1945, Bacon describes the ways in which "the mission's indispensable reconnaissance not only definitely shaped Le Corbusier's experience but also provided evidence that his design ideas after the war were formed not in isolation but within a culture of collaboration."[105] In this sense, the article's contention of the sort of stand-alone, self-centered interpretation of the work of a single architect which we recently saw, is clear.

The particular type of collaboration described in the article implies a series of transactions between several architectures. In particular, Bacon traces the transactions between the architectures of the Tennessee Valley Authority and the work of Le Corbusier as back as the formulation of the Athens Charter: "Man in harmony with nature,"[106] Bacon notes, was the trope of both the TVA and of the fundamental postulates of C.I.A.M. 4, 1933, which led to the Athens Charter. Based on this evidence, we can argue that the architectures of the TVA and the Athens Charter share a basic conjecture regarding architectural use or purpose, for example.

Additional relations between several architectures can be described further, based on Bacon's description of Le Corbusier's exchanges with others. Key among these exchanges is Le Corbusier's relation with the politician Eugène Claudius-Petit,[107] who was appointed French Minister of Reconstruction and Urbanism in 1948. Official documents published as early as 1944 suggest that Claudius-Petit's understanding of the built environment clearly adhered to elements from both the Athens Charter and from the architectures of the TVA.[108] "Commingling two models," says Bacon, "Claudius-Petit thought that no path to reconstruction was more farsighted than that provided by Corbusian modernism, and no redevelopment model was more instructive than the TVA."[109]

According to Bacon, Claudius-Petit thought that the TVA model could provide a necessary boost to French architecture and city planning, and consequently assembled a team of French architects to visit, study, and learn from the architectural instruments and methods that were being used and

[104] Bacon: "Le Corbusier and Postwar America," p. 13

[105] Ibid., p. 34

[106] Ibid., p. 14

[107] Eugène Claudius-Petit (1907 – 1989) participated in the French Second National Assembly between 1946 and 1955. In such capacity, he held several ministries. Claudius-Petit was instrumental in Le Corbusier's project for Firminy-Vert. https://en.wikipedia.org/wiki/Eug%C3%A8ne_Claudius-Petit, retrieved 05/07/2017

[108] Bacon makes this observation in relation to the institutional pamphlet "Problemes d'Urbanisme Contemporaine, from 1944. https://www.cairn.info/revue-vingtieme-siecle-revue-d-histoire-2003-3-page-43.htm, retrieved 26/06/2017

[109] Bacon: "Le Corbusier and Postwar America," p. 14

discussed by architects at the other side of the Atlantic. Le Corbusier, a friend and close associate[110] of the politician, was involved.

"In the spring of 1945," notes Bacon, "Le Corbusier conceived of the mission as a study tour examining four aspects of American productivity."[111] These aspects included the acquaintance with the work of several city planning departments, the analysis of advanced construction methods (especially those dealing with systems of prefabrication), and a new look at industrial architecture. Upon return, the initiative was expected to be registered in four books, to be published by the A.S.C.O.R.A.L.. Each of these books would focus on one of the four basic functions defined in the Athens Charter."[112]

Beyond the specificities[113] of the mission, Bacon's analysis is relevant for our research at two levels; firstly, because it provides a careful description of the architecture that is being discussed, in clear formal, technical, and purposeful terms; and secondly, because these heuristics are discussed as points of convergence and interaction between several architects, rather than on their individual work.

So seen, it becomes clear how Le Corbusier confronted discernible questions related with architectural form and technique, by using the same instruments and methods (e.g., a specific technique for casting and pouring concrete) employed by American architects and engineers, as they confronted similar questions. To illustrate this point, Bacon specifically argues that the architect Michel Ecochard's[114] graphic registry of the Norton dam's checkered pattern (a design decision that is attributed to the architect Ronald Wank) can be directly traced from the Tennessee Valley to the Unité d'Habitation at Marseille. More importantly, Bacon's description sharply articulates an architectural question, the instruments and methods used to confront that question, and the way they are shared by several architects. Simply put: Wank's decision is described as the aim to articulate two scales (the large scale of a dam, the small scale of a human being), and to incorporate the natural imperfections of a constructive process carried out at a very large scale, as a positive aesthetic element. (We've discussed similar questions, in relation to the Venice Hospital.) In the face of these questions, Wank opted for the division of large surfaces into a series of smaller fragments, to be composed by alternating of the direction of the formwork used to pour the concrete that finally materialized those surfaces. Question, instruments, and

[110] As noted above, this relation originated a concrete development Le Corbusier's several projects for the city of Firminy.

[111] Bacon: "Le Corbusier and Postwar America," p. 16

[112] Ibid.

[113] Bacon, Mardges: Le Corbusier in America: Travels in the Land of the Timid. Cambridge (Mass.) and London: MIT, 2001

[114] For more on the architecture of Michel Ecochard, see Avermaete, Tom: "Framing the Afropolis: Michel Ecochard and the African City for the Greatest Number," in L'Afrique C'est Chic: Architecture and Planning in Africa 1950 – 1970, OASE 82 (October, 2010), pp. 77 – 89

methods, were registered[115] by Ecochard, and reappear in Le Corbusier's project in Marseille. "Knowing that Roland Wank invented (sic) the checkerboard pattern," Bacon says, "and that Le Corbusier most likely borrowed the term *béton brut de décoffrage* from Ecochard's description of the TVA dams, obliges us to assess the Unité more inclusively within a transatlantic as well as a Mediterranean culture of building and also to recognize that vital components of its formal and artistic expression are closely associated with public works."[116]

"At Marseille," Bacon says, "during the immediate postwar years, Le Corbusier applied lessons from the TVA, including the union of architecture and infrastructure, an aesthetic treatment for bare concrete, dedication to teamwork, and communitarian ideals."[117] Based on this interpretation, we can argue that some of Le Corbusier's explorations in the realm of architectural technique, and the opening up to a completely new dimension of architectural scale in his postwar architecture, are best described in relation to other contemporary architectures, as we have noted earlier.

These other architectures include Le Corbusier's own, previous work, and the architectures of the Tennessee Valley Authority; but they also include Claudius-Petit's understanding of architecture (in terms of use or purpose, mostly), Michel Ecochard's focus on a particular item (regarding architectural technique), plus the work of several others.[118] (According to Bacon, these transactions with several architectures describe Le Corbusier's position in the 6th C.I.A.M. meeting at Bridgwater (1947), focused on the issue of collective living for the "common man".[119])

Besides Bacon, other authors have recently explored similar methodological approaches to the work of Le Corbusier. Bringing our focus back to Venice, Pablo Allard's approach to the project for a new hospital shares Bacon's "multifaceted and interrelated" view, for example. In his article "Bridge over Venice"[120], Allard advances a series of "speculations on cross-fertilization of ideas between Team 10 and Le Corbusier," based on first-hand information provided by Guillermo Jullian. Specifically, Allard establishes a relation between the work of the late Le Corbusier, and the

[115] We could argue that this checkerboard pattern was also used at a completely different scale, in Ecochard's masterplans for large dwelling projects in Morocco, where the pattern evolves into the well-known 8x8 grid. Avermaete: "Framing the Afropolis," p. 85

[116] Bacon: "Le Corbusier and Postwar America," pp. 32 – 33

[117] Ibid.

[118] Bacon recalls how "in New York, (the engineer Vladimir) Bodiansky took the lead in organizing the Le Corbusier-founded Atelier de Batisseurs, conceived as a building cooperative composed of engineers, architects, technicians, and administrators. Many of its members, including Jose Luis Sert, Stamo Papadaki, Ernst Weissman, Pierre Chareau and Sigfried Giedion, were then in the United States. Bodiansky's research on American buildings and construction would later inform the AT.BAT. team charged with constructing Le Corbusier's postwar buildings." Ibid., p. 16

[119] Ibid., p. 24 – 25

[120] Allard, Pablo: "Bridge Over Venice: Speculations on Cross Fertilization of Ideas Between Team 10 and Le Corbusier (After a Conversation with Guillermo Jullian de la Fuente)," in Sarkis: CASE: Le Corbusier's Venice Hospital, pp. 18 – 35

propositions discussed by the young architects responsible for the organization of the 10th C.I.A.M. meeting at Dubrovnik.

These relations are based on the identification of problematic features in several architectural conjectures formulated in previous C.I.A.M. meetings. Jürgen Joedicke suggests that Le Corbusier was well aware that, against a waning C.I.A.M., a group of younger architects was active in the advancement of consistent explorations in the realms of architectural form, use or purpose, and communication, especially. Some of those explorations, he thought, should eventually refute older conjectures.[121]

Supporting this claim, Guillermo Jullian has recognized that, at a certain point, during his collaboration with Le Corbusier, there was an "internal crisis produced within the atelier because of Team 10."[122] Allard's inquiry on the nature of that crisis focuses on Team 10 Alison Smithson's aforementioned article "How to Recognize and Read Mat Building;" and on her decision to attribute the project to Le Corbusier and Jullian, jointly.[123] This is not a simple matter. In Allard's words, "Smithson's labeling of the project is significant not only because it acknowledges that Jullian was effectively in charge of the completion of the design, which took more than nine years to develop. Given the polemics embodied in a timeline such as Smithson's, and the overemphasis on the contributions of Team 10, her inclusion of Jullian – a friend of many Team 10 architects and often present at the group's meetings – opens the door to speculation on a cross-fertilization of ideas that took place between Team 10 and Le Corbusier around that time."[124]

Allard's description of Jullian "not only as a collaborator with Le Corbusier but as a participant in the critical debates taking place at the time, particularly those surrounding members of Team 10 and Le Corbusier,"[125] is crucial to reassess our understanding of the Venice Hospital as a proposition fueled by conflicting and cooperating hypotheses within an architectural research program. Among these debates, Jullian's attendance to the 1962 Team 10 meeting held in Royaumont, France, plays a fundamental role in this discussion. In his account of that meeting[126] Allard notes how "the events that followed that invitation are critical to (…) the development of what we know today as 'field' or 'mat' buildings."[127]

According to Allard, Jullian's report on the Royaumont gathering reveals a conflict among several architects, in clear heuristic terms. For the most part, this conflict was patent in a series of architectural conjectures regarding architectural form and use or purpose, which basically aimed at evolving on elements from modernist functionalism. Succinctly, the architects gathered at

[121] In Newman, Oscar (ed.): C.I.A.M. '59 in Otterlo. Stuttgart: Karl Krämer Verlag, 1961, p. 16
[122] Perez de Arce Guillermo Jullian, p. 124.
[123] Allard: "Bridge Over Venice," p. 19
[124] Ibid., p. 21
[125] Ibid., p. 20
[126] Jullian de la Fuente, Guillermo: "Notes Sur Royaumont," Le Carre Bleu 2 (1963)
[127] Allard: "Bridge Over Venice," p. 21

Royaumont (a) discussed a question (the need to evolve beyond an understanding of architectural use or purpose based on the definition of four basic functions, as defined in the Athens Charter); (b) identified a method to confront that question (the belief that higher degrees of complexity in the articulation of architectural form could have an effect on use or purpose); and (c) discussed the utility of a particular tool, to carry out that method. (In this case, we can argue that that tool was the use of a configurative approach, as we described it earlier.)

Clearly, we can relate the question, instrument, and method discussed by those architects, to our previous descriptions of the questions, instruments, and methods, used by Le Corbusier's in his project for Venice. Moreover, the description of these interrelated questions, instruments, and methods provides us with elements of a better methodology, when compared to those contained in the modernist accounts we saw earlier. Especially, I refer to their belief that the project for a new hospital can be explained in relation to "the section of the 1925 Cité Universitaire project and the fragmented pictures of Venice's urban structure published years before in his book *La Ville Radieuse*;"[128] or to a series of paintings by Canaletto and Carpaccio, or a map of Venice by De Barbari.[129]

As we said, against the ineffectuality of these stand-alone or self-centered interpretations; or against attempts to refer Le Corbusier's architecture only to architectures from the distant past; the development of the conjectures advanced at Venice reveal a sense of pertinence that transcends the architect. As Allard notes, the project's core ideas (i.e., the definition of questions, instruments, and methods) were further developed, rather than changed by Jullian after Le Corbusier's death. Allard interprets this continuity "as a manifestation of Jullian's conviction about the efficiency of the model and the hospital's potential as an exploration of a completely new architectural frontier."[130]

This new architectural frontier, I am starting to believe, is one in which the modernist assumption of the architect as an individual form-giver is contended by the understanding of architecture as a cooperative endeavor; and where the built environment is understood as a series of "organizations of form that are the (often unforeseen) result of many human actions, as environments that must sustain a wide range of (often unforeseen) human actions – in contrast to an object that is the result of a deliberate design"[131] – as we have seen before. In the final section of this chapter, we will discuss this supersession a bit further, in relation to patent changes in Le Corbusier's understanding of his role as an architect.

[128] Allard: "Bridge Over Venice," p. 24
[129] Ibid., p. 25
[130] Ibid., p. 27
[131] Anderson: "Environment as Artifact," pp. 71 – 73

**Life belongs to those who discover**

Upon the first anniversary of Le Corbusier's death, Reyner Banham reflected on the legacy of the architect in a late obituary published in the Architectural Review.[132] The terms in which the professional debate was being carried at the time permeate the note, and suggest a sense of awareness regarding ongoing changes in the general appraisal of the role of the architect. Several conclusions can be gathered from the text.

The first of these conclusions – one we can mostly agree with – is that a remarkably intense architectural production, such as Le Corbusier's, implies an equally intense reaction from both collaborating and conflicting parties.[133] Banham argued that, motivated some of these competing and collaborating parties, even in his final productive stage Le Corbusier evidenced a singular acuteness in his analysis of the architecture of his time.[134] Now, we can claim that that acuteness is best understood as a sense of awareness regarding his own position, in relation to the series of ongoing transactions that describe an architectural research program at work, as we will see.

A second conclusion implicit in Banham's obituary requires further attention, and suggests that, as the Venice project evolved, some of those transactions were focused on revising the very role of the architect. According to Banham, up to his final stage in his career Le Corbusier was able to adapt to new understandings of that role; basically by adopting several, different roles – as we've seen. However, we are told that by the time of his death, new approaches to this question appeared to challenge Le Corbusier's ability to adapt. I find it interesting that Banham recounts this particular moment as an "end of the line" of sorts, as he calls Le Corbusier "the outstanding form-giver of what may prove to be the last form-dominated epoch or our architecture."[135]

We can interpret the inaccuracy of this interpretation at two levels. On the one hand, we now know that many architects after Le Corbusier proved to be outstanding form-givers – their architecture evolving in periods in which architectural form certainly concentrated the attention of many architects. More important, though, is what I would call a methodological inaccuracy: Banham's aim to define a historical period (e.g., "the last form-dominated epoch"), is basically historicist, as it (a) tries to explain events in relation to a supposed law or unifying principle (for

[132] Banham, Reyner: "The Last Formgiver"

[133] "All genius is embarrassing, and never more so than in the immediate aftermath of death. Supporters of the deceased giant busy themselves with the public record to ensure that the good (in defiance of the normal entropy of reputation) shall live after him. Detractors, convinced that their hour has finally struck, emerge from the woodwork – only to find that everyone is applying the law of *de mortius* to the last letter of *nil nisi bonum*. When the dead genius has attained a measure of acceptance as widespread, total and unquestioning as that enjoyed by Le Corbusier, when his supporters are in such total command of the media of communications as were Corb's, the chances are that the festering burst through the crust of conventionalized approval, will provoke a reaction so destructive of his reputation that it may take a generation of more to set the record straight." In Banham: "The Last Formgiver"

[134] Ibid., p. 41 - 42

[135] Ibid., p. 42

instance, that all architecture produced in a particular period shares a fundamental formal concern), and (b) as it attempts to prophesy (that following epochs will not be, in this case, "form-dominated").

Against these historicist elements in Bannham's understanding of architecture, it should be clear why we recognize Mardges Bacon's "multifaceted, interrelated approach" as an evolution; especially (in this it clearly relates to Williams Goldhagen's approach, as we saw in the introduction) as it describes the tensions and conflicts that characterize an architectural position.

These tensions and conflicts were certainly at work in the many associations and collaborations in which Le Corbusier participated, and should be central to any description of his architecture. According to Bacon, Le Corbusier's understanding of his own role as an architect teetered between the value he gave to (and the benefits he obtained from) collaborating with others;[136] and his interest in presenting himself as an "outstanding form-giver."[137] AT.BAT. – to cite one example we've already talked about – was contradictorily understood by Le Corbusier as a cooperative endeavor, "albeit under his direction."[138] A similar conflict is patent in his crass misreading of the T.V.A.'s structure, its political nature, and the way it was able to produce vast tracts of the built environment without the need to concentrate authorship or authority on any individual.

"Le Corbusier failed to understand the essence of T.V.A. planning," argues Bacon. "He viewed it through the prism of the Radiant City, where 'plan is the dictator.' The T.V.A., however, had no master plan. Lilienthal – its director – maintained that while the T.V.A. was a planning agency, there was no document that could be called a 'T.V.A. Plan.' Le Corbusier looked to Lilienthal as a self-governing authority, a distorted view of his power. The T.V.A. was a federal agency operating as an autonomous centralized entity with decision-making authority over a region. Both Lilienthal and T.V.A. public policy, however, were guided by democratic, not authoritarian, processes."[139]

It should not be difficult to relate Le Corbusier's inability to grasp the T.V.A.'s lack of plan or author; or his efforts to present himself as an individual form-giver (and the conflicts those efforts entailed); with Banham's understanding of architecture, in general. In both cases we can identify elements of historicism, such as the aim to explain events based on supposed underlying laws or principles (e.g., mechanicism), and the tendency to prophesy (e.g., the unavoidable coming of a "second machine age"). Furthermore, both share the sort of stand-alone or self-centered interpretation of the work of an architect which we have identified, even in recent modernist histories. Based on Bacon's methodology, though, the recognition of a collective endeavor such as the T.V.A. as the source of some of the instruments and methods used by Le Corbusier in his late projects radically challenges the notion of authorship attributed to the individual form-giver, on which those modernist histories rely.

[136] Bacon: "Le Corbusier and Postwar America," pp. 26 – 27
[137] Ibid., pp. 29 – 30
[138] Ibid., p. 21
[139] Ibid., p. 34

In this regard, Charles Jencks is quick to assume that these stand-alone, self-centered notions of authorship imply a problematic authoritarian view of the role of the architect;[140] as a member of an elite, in charge of governing the constitution of the built environment. The sort of *intuitu personæ* explanations of Le Corbusier's architecture we mentioned earlier certainly favor this authoritarian understanding of the role of the architect.[141] In order to confront this problematic feature of modernist historiography, Jencks[142] developed his popular "Evolutionary Tree" diagrams of modern architecture, which – he argues – are "based on the structural analysis sketched by Claude Levi-Strauss."[143]

These diagrams[144] – of which several versions exist – aim to be multifaceted, in the sense of recognizing multiple interrelations between architects and/or architectures. (It is interesting to note that these multiple interrelations remain bound to a unidirectional interpretation of time, and to the work of white men.) The horizontal axis of the diagrams describes the appearance of different architectures by decades. On the other hand, their vertical axes recognize six "traditions," which are used by Jencks to communicate his understanding of modern architecture. Notably, these traditions appear to be free of value – none is presented as better or worse, or as more or less important than the other. Jencks's division between logical, idealist, self-conscious, intuitive, activist, and un-self-conscious emphases in the production of the built environment, can be understood as an attempt to focus on the description of architectural questions,[145] rather than on the explanation of exceptional buildings. More interestingly, even, is the diagram's ability to identify "nodes" where these emphases appear to converge sometimes, as architects with different (and shifting) architectural positions focus on a particular question during a period of time.

Mindless of the version of the scheme which we look at, Le Corbusier appears in several, extremely different positions in these evolutionary trees. Between the 1920s and 1930s, for example, Jencks positions him simultaneously (a) orbiting around "functionalism," where the idealist and the logical emphases converge; and (b) promoting what is described as an "un-self-conscious" understanding of the built environment with his Plan Voisin project. On the other hand, between the 1950s and the 1960s we can also find Le Corbusier performing the apparently

[140] For Le Corbusier's "autocratic tendency" see: Jencks: Le Corbusier and the Continual Revolution in Architecture, p. 75. For his marked elitism, Ibid, p. 134

[141] In turn, this authoritarian view favors a sense of tribalism among architects, which I will get back to in the conclusions.

[142] For the sake of fairness, I must say that Jencks's understanding of architecture is as prone to prophesy as Banham's.

[143] Jencks, Charles: Arquitectura 2000: Predicciones y Metodos. Barcelona: Editorial Blume, 1975, pp. 49 – 51

[144] "Evolutionary tree of twentieth century architecture. This simplified diagram is based on six major types of architecture (far left) that oscillate with respect to each other, rather like species. Like "strange atractors," they remain coherent even though they are loose or fuzzy categories." In: Jencks: Le Corbusier and the Continual Revolution in Architecture , p. 350

[145] Said more clearly: attitudes that define (a) the pertinence of a question, and (b) the position in relation to that question.

opposite roles of (c) the "brutalist" architect (again, at the idealist/logical crux), while simultaneously (d) following the "intuitive" tradition, with his Ronchamp project. According to Jencks, "About forty explicit movements, or schools, emerged in the twentieth century, and Le Corbusier more than any other architect jumped from one to another, often leading them forward." [146]

Trying to understand why (or how) he managed to jump between very different architectures, we must note that modernist histories of architecture have oftentimes solved both questions (and the blatant contradiction that exists between their supposed historical laws, and the work of an architect that appears to defy those laws) with the simplest of all ad-hoc figures: Genius – a form of superstition – reveals a patent inability (or unwillingness) to understand or describe an architect's attempt to confront a discernible question with equally discernible instruments and methods. For the modernist historian who struggles to protect her explanations from scrutiny, the figure of the inscrutable "master" might seem convenient.

Mindless of his own description of Le Corbusier as a genius,[147] I believe that Jencks's understanding of architecture (and the "evolutionary tree" diagrams that spring from that understanding) certainly evolves from modernist histories of architecture, as we've described them. It does so by proliferating (i.e., by describing architectures in relation to each other, rather than trying to explain them in relation to a supposed principle or law); and by turning those architectures conjectural, in the face of what Jencks calls "traditions" (and I'd rather call concerns, emphases, or questions). In the face of these questions, Le Corbusier's architecture appears "four to five movements at any one time" in Jencks's diagram, while it defines or relates to "a new movement or trend every five years."[148] More interestingly even, is Jencks's belief that such prolificacy and such pertinence can be explained on the basis of what he calls "competitive pluralism."[149]

Notably, this idea that architectural conjectures are formulated in relation to other conjectures (pluralism), and that this relation is often defined by competition, comes quite close to our understanding of architecture as a system of research programs. However, while the *pluralist* component of the operation appears to be quite well developed, as Jencks positions and repositions architectures along loose and intertwining lines,[150] it remains unclear on what grounds the competitive aspect takes place. In this sense, it can be argued that Jencks comes extremely close to our demarcation of architecture as a system of research program, and yet remains unable to provide the sound internal analysis offered by Lakatos's methodology, which we have approached via Anderson.

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[146] Jencks: Le Corbusier and the Continual Revolution in Architecture, p. 350

[147] Ibid., p. 356

[148] Ibid., p. 350

[149] Ibid., p 350

[150] I would like to note the obvious relation that exists between these "lines," and Sarah Williams Goldhagen's "strains," from our introduction.

To a certain extent, we have confronted that question in our investigation, by establishing that competition among architectural conjectures is fundamentally carried out in clear heuristic grounds. Different or similar architectural positions are different or similar essentially in their approach to architectural form, for example, and in their use of similar or different instruments regarding that approach. Following that lead, we can argue that when Jencks claims that his "evolutionary tree" diagram "should be in three dimensions, to show more complex interactions,"[151] he is basically acknowledging the need for (at least) another layer of data. That additional layer could describe interrelations between architectures gathered around a particular position in discernible heuristic terms.

As I studied several description of Le Corbusier's involvement in different collaborations, I have come across a diagram which specifically describes some of the interrelations that defined those collaborations. Included in H. Allen Brooks's excellent approach to Le Corbusier's early architecture, a sketch by the French engineer Max Dubois[152] shows "how Jeanneret (Le Corbusier) related to the various interlocking companies which he served. His architectural office is at lower center and the Briqueterie d'Alfortville, which he administered, is at left, both being within the umbrella group Societe d'enterprises industrielles et d'etudes (SEIE), at bottom center. The Societe d'application industriel is listed above and SABA (Societe d'applications du beton arme) to the right."[153]

The lines[154] that connect all these societies represent a particular question that is confronted by each of these societies; namely, architectural design, the production of bricks, or building with reinforced concrete. Furthermore, we can assume that these lines imply a particular set of instruments and methods that are specific to the confrontation of that question. (In this case, those employed in the production of bricks tend to differ from those used in the designer's atelier). In this sense, the interrelations that are traced in Du Bois's sketch allow us to understand the architect at work, adopting several roles in relation to other architects, and in clear heuristic terms.

[151] Jencks: Le Corbusier and the Continual Revolution in Architecture, p. 350

[152] For Max Du Bois's cardinal role in the formulation of the Dom-ino proposition, see: Gregh, Eleanor: "The Dom-ino Idea," Oppositions 15 – 16 (Winter – Spring, 1979), pp. 60 – 87

[153] Brooks,: Le Corbusier's Formative Years, p. 473

[154] We should find no difficulty establishing a relation between this sketch and the Peter Smithson's well-known "Play Brubeck" drawing.

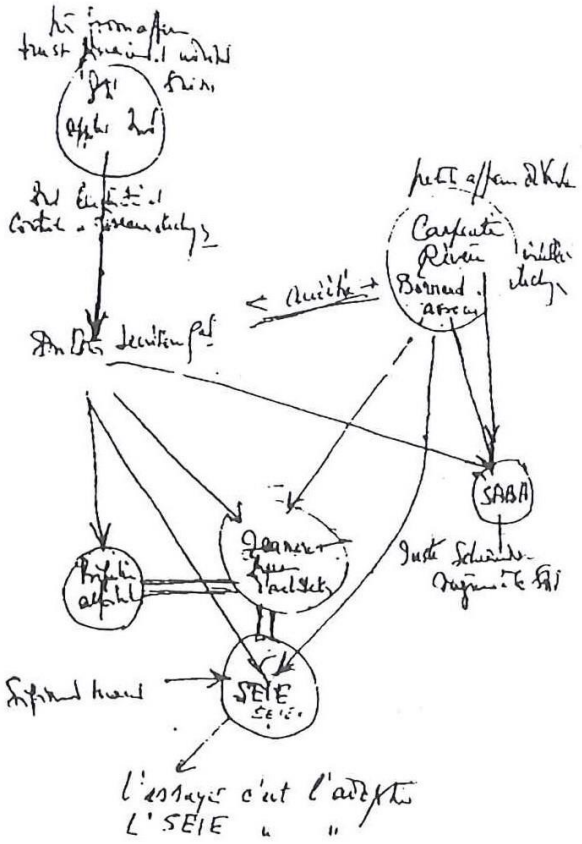


Image 12
Max Dubois's sketch, depicting Le Corbusier's interrelations with other professionals

This sharper definition of the heuristic interrelations implied, as architects transact in the face of discernible questions, should allow us to situate Le Corbusier's project for a new hospital in Venice in a framework akin to Jencks's diagram, with some degree of accuracy. Most importantly though, it should allow us to realize that the description of that position entails a quite accurate description of the project, as well. Put simply: it allows us to recognize the questions Le Corbusier chose to deal with, and to understand that those questions were pertinent, as they were also confronted by other architects, around the same time. We can also understand that beyond the necessary uniformity that results from historicist approaches to history, there were other architects working on quite different questions while Jullian, Le Corbusier, and their collaborators worked on their project for Venice. Some of the work of those other architects proved pertinent, some did not.

Furthermore, the sharpening of Jencks's diagram by including Du Bois's lines of interrelation, allows us to focus on the instruments and methods used by Le Corbusier to confront those questions, and to realize that competition and collaboration mostly took place in relation to different architects' choices regarding those instruments and methods. Our simple description of the Venice Hospital in relation to the architecture of Louis Kahn, Shadrach Woods, and Alison Smithson, for example, already showed us how those architects identified questions regarding architectural form, or use or purpose, in the architectures of their time; and how they chose to confront those questions.

Knowledge acquired within this dynamic context is certainly scientific in nature, as it is based on a conjectural understanding of all these architectures. In our approach, neither the architectures that are studied, nor our thoughts on those architectures are taken for conclusive – much less true. This realization brings me back to the work of Le Corbusier, and more specifically, to what we have described as a change in his understanding of his own role as an architect, towards the end of his life. In particular, I would like to focus on his belief that some of his early propositions could be taken for *irrefutable*.[155]

As we've seen, they were not.

Our attempt to describe elements from Le Corbusier's architecture as parts of a system of research programs has suggested a change in his understanding of his role as an architect. We can trace this change: In 1923, when Vers Une Architecture was first published, he believed that architecture was "a question of morality," that "lack of truth is intolerable," or that "we perish in untruth."[156] As we just saw, around 1948 he still believed some questions could be deemed irrefutable. Towards the end of his life, though, those beliefs appear to change. By 1965 a rationality much more akin to the logic of scientific discovery that feeds these pages is patent in a

[155] E.g.: ""Steel and reinforced concrete liberate us from Vignola or prejudice, leading us to the free plan; the free plan leads to the free elevation; the free elevation to the glass pane. Natural, irrefutable evolution." In: L'Architecture d'Aujourd'hui, Numéro Hors Série: Le Corbusier (April 1948), p. 49

[156] Le Corbusier: Towards a New Architecture, p. 13

letter to his good friend, the banker Jean-Pierre de Montmollin. In that letter, Le Corbusier argued that "life belongs not to those who know, but (to) those who discover…"[157]

Again, we could interpret this change as an individual change of heart, or we can understand it in relation to ongoing discussions, fed by the conjectures of others. Whatever the case, we must recognize that Le Corbusier's argument poses an interesting question regarding the logics that govern architectural discovery. Our attempt to adopt elements from Karl Popper's theories on human knowledge and scientific discovery are clearly addressed to that question, as we will see, after we incorporate yet another architecture to our study.

[157] Letter from Le Corbusier to Jean Pierre de Montmollin, March 15, 1965 (F.L.C. – U39, 214), cited in Jencks: Le Corbusier and the Continual Revolution in Architecture, p. 69

Image 13
Free University, Berlin

4

## Freie Universität: Architectural Configuration Beyond Modernist Form

### Articulating ponderable and imponderable human actions

Twenty years past that intense 1948, in which he moved to Paris and started working as an architect, Shadrach Woods described his work in the following terms: "In the constant struggle to achieve *progressive* and *humanist* architecture, we have had priceless assistance to counterbalance the routine opposition of banal minds."[1] In order to understand what Woods meant, especially when he talked about an architecture that was both progressive and humanist, in this chapter we will (a) study his trajectory as an architect, with special focus on one of the conjectures that defined that trajectory. Furthermore, we will (b) try to understand why he described his architecture as humanist, and (c) study how that allegedly humanist architecture sought to evolve on modernist architecture, in identifiable ways. Towards the end of the chapter, we will (d) analyze the project for the Free University in Berlin, as an example of his effort to evolve on modernist architecture. Our goal with this analysis is to (e) inscribe that project within a broader investigation into architectural form carried out by Shadrach Woods; and to evaluate to what extent that investigation can be taken for progressive.

With those intentions in mind, let me start by mentioning some basic facts about Woods:[2] He was born in Yonkers, New York, in 1923; received his training as an engineer at New York University, and served in the US Navy during World War II.[3] By the end of the war he moved to Dublin, where he studied literature and philosophy at Trinity College.[4] A few years later,[5] he became interested in

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[1] Joedicke, Jürgen (ed.): Candilis, Josic, Woods: A Decade of Architecture and Urban Design. Stuttgart, Bern: Karl Krämer Verlag, 1968, p. 5

[2] Feld, Gabriel: "Shad's 'Idee Fixe': Berlin Free University and the Search for Principles of Organization," in Architectural Association Exemplary Projects 3, Free Univeristy Berlin – Candilis, Josic, Woods, Schieldhelm. London: Architectural Association, 1999, p. 107. In letter to Aicha Woods, dated April 1, 1996, Gabriel Feld submits a comprehensive chronology, bibliography, a list of Wood's projects, and a list of names of people directly related to Woods, which I have used to write this section.

[3] Tzonis, Alexander, and Lefaivre, Liane: "Beyond Monuments, Beyond Zip-a-tone, Into Space/Time: Contextualizing Shadrach Woods's Berlin Free University, A Humanist Architecture," in Architectural Association Exemplary Projects 3, p. 127

[4] Joedicke (ed.): Candilis, Josic, Woods, p. 8

architecture, and decided to present himself with a letter of recommendation at Le Corbusier's architecture office.[6]

It was working there that he met Georges Candilis.[7] Together, these two young architects played an important role in the project for the Unité d'Habitation at Marseille,[8] as both designers of the project and managers at the construction site. Based on their success in that project, some authors claim that Le Corbusier thought of Woods as a possible coordinator for some of his projects in India.[9] What we know with certainty is that during the conclusive stages of the building

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[5] I have noticed a discrepancy between: "In 1945 he officially joined the office of Le Corbusier…" and "In 1948 he decided to turn to architecture and immediately applied for a job at the internationally renowned office of Le Corbusier." Both dates (and mention that Woods worked "with the well-known architect André Lurçat for a brief time,") can be found in: Avermaete, Tom: Another Modern. Rotterdam: NAi, 2005, p. 31. Clearly (see following note) the correct date is 1948.

[6] Dated 19-9-48, the letter reads: "Monsieur, Je suis un etudiant americain qui, apres avoir fait des etudes litteraires en Irelande et avant guerre, des etudes d'ingenieur a New York, vient enfin de me decourvir une vocation – celle d'architecte. J'ai, donc, le desir et l'intention de me faire incrire dans une ecole d'architecture a Paris. Mais puisque je n'en sais rien, et puisque je vous ai admire depuis longemps, je prendre la liberte de venir vour demander quelques considere avant de prendere une decision. Je vous envoie une lettre de Madame Graham Peterson, laquelle servirá, j'espere, de recommandation. Je vous sauvais que si vous me feriez l'honneur de me laisser venir vous vouir quand il vous será commode. Je vous prie d'agree mes salutations tres respectueses. Shadrach W. Woods. (FLC – S1 – 2 – 109). The response, dated 24 September 1948, and addressed to Madame Pelosson, reads: Madame, M. Le Corbusier a pris connaissance de votre lettre et de celle de M. Sharcadh W. Woods. Elles ont eu toute son attention. Il me prie de vous repondre qu'il regretted infiniment de ne pouvoir satisfere au desir de cet etudiant americain. Son atelier est complet et il se voit dans l'obligation, journellement, de refuser les demandes qui lui sont faites. Cependant, il peut venir voir M. Le Corbuseier un apres-midi a son atelier 35 rue de Sevres. Il serait prudent, pur qu'il ne se derange pas inutilement de telephoner pour prender rendez-vuz: Kittre 99-62. Je vous signale que M. Le Corbusier partira a la fin de la semaine prochaine pour un voyage assez court en Turquie. Veuillez agreee, Madame, l'expression de mes salutations distingues. La Secretarie. (FLC – S1 – 2 – 110).

[7] Avermaete claims that "it was Georges Candilis who employed Shadrach Woods as a project architect in the office (of Le Corbusier)." In an endnote, he substantiates his claim: "A detailed description of Woods's appointment at Le Corbusier's office can be found in Candilis, Georges, Batir la Vie (Paris, Stock, 1977), 156 – 157." In Avermaete: Another Modern, pp. 31, 391. Also: Joedicke (ed.): Candilis, Josic, Woods, p. 8.

[8] Avermaete: Another Modern, p. 31

[9] See footnote 22, in O'Byrne: El proyecto para el hospital de Venecia de Le Corbusier, Cuaderno III, p. 19

process at Marseille Woods decided to stop working directly for Le Corbusier, and instead strengthened his collaboration with Candilis.

Woods's choice to develop his architecture outside Le Corbusier's office, while remaining within his sphere of influence, has been registered by modernist historians of architecture in rather unclear terms. Jürgen Joedicke, for example, appeared rather puzzled by the notable differences he saw between Woods's architecture and the work of his former employer. "When one remembers that Candilis and Woods worked for a long time with Le Corbusier, it is surprising how slight his formative influence has been on their architecture. This applies as much to basic principles of layout and organizational structure as to formal interpretation. Perhaps the difference lies in a fundamental attitude towards architecture."[10]

In 1951 both travelled to Africa and joined the French engineer Henri Piot in ATBAT-Afrique[11] – an offshoot of one of the many associations promoted by Le Corbusier, as we noted in the previous chapter.After a productive stint in the emancipating French protectorates and colonies in northern Africa, Woods and Candilis returned to Paris in 1955, and started working in the central headquarters of ATBAT. There they met Alexis Josic.[12] That year, the collaboration formed by these three architects and their associates submitted an entry to the ambitious *Opération Million*[13] national competition, calling for large scale plans for low-cost post-World War II reconstruction housing. Resulting from this entry, the newly formed Candilis Josic Woods were commissioned to design, at once, 2500 dwellings in Paris and the South of France.[14] By 1965 the firm had produced

[10] Joedicke, Jürgen (ed.): Candilis, Josic, Woods, p. 9

[11] "In 1949 a branch was formed in Africa as an engineering office. ATBAT – Afrique, as this African venture was called, was located at Casablanca, and from 1951 an architects' and engineers' office was opened in Tangier, under the leadership of Candilis, Woods and Piot. A great many buildings came from it in the early years, especially housing for Moroccans, including the typical 'Semiramis' and 'Beehive'." Ibid., p. 8. For more on ATBAT – Afrique, see: Architectural Design. Vol. 35, No. 1 (January 1965), and Eleb, Monique: "An Alternative to Functionalist Universalism: Ecochard, Candilis, and ATBAT – Afrique," in Williams Goldhagen and Legault (eds.): Anxious Modernisms, pp. 55 – 73

[12] Joedicke (ed.): Candilis, Josic, Woods, p. 8

[13] http://housingprototypes.org/project?File_No=fra022, retrieved 06/11/2017

[14] Joedicke (ed.): Candilis, Josic, Woods, p. 8

thousands[15] of apartments, drawings, articles, sketches, scale-models, institutional buildings, and urban plans.

A comprehensive collection of the firm's production of that decade was published in 1968. Woods curated the material and wrote the explanatory texts for that publication,[16] testifying to his role as a communicator within the group. The architects Alison and Peter Smithson referred to that role, by noting that "Shadrach Woods was the position-taker in the partnership;"[17] while more recently the researchers María González and Patricio del Real have argued that "Woods (…) was the most theoretically inclined member of the architectural partnership of Candilis-Josic-Woods…"[18]

These impressions of Woods's role are important for our study for two reasons. On the one hand, the idea that his leading role among his colleagues owed to his theoretical (i.e., conceptual, speculative) standing, suggests that Woods's work as an architect must have issued in identifiable conjectures or hypotheses. That is indeed the case. In fact, most of Woods's architecture can be explained in relation to a very concrete conjecture; namely, his belief that the built environment must simultaneously and harmonically accommodate those human actions which can indeed be standardized and measured (he referred to them as "ponderables"), like modernist functionalists thought; together with those human actions which remain "indeterminate and open to change."[19] He called those "imponderables."

Woods elaborated further on this conjecture by studying several kinds of interrelations between ponderable and imponderable human actions vis-à-vis four specific aspects of architecture; specifically: (1) the limits of built space,[20] (2) architectural volumes and spaces.[21] (3) diverse uses

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[15] Joan Ockman speaks of 40,000 dwellings, in her foreword to Avermaete: Another Modern, p. 9

[16] Joedicke (ed.): Candilis, Josic, Woods

[17] And they add: "… so for that reason, among many others (P.S. and S.W. were the same age, he was the wittiest, etc., etc.) Woods was the person in Team 10 to whom we felt closest." in Peter Smithson, "Introduction," in Architectural Association Exemplary Projects 3, p. 12.

[18] González, María and del Real, Patricio: "Paris Nord: Shadrach Woods's Imaginary Global City," in Williams Goldhagen, Sarah; Wagenaar, Cor, and Mumford, Eric (eds.): Positions 1: Grand Plans (Spring 2010), p. 65

[19] Joedicke (ed.): Candilis, Josic, Woods, p. 21

[20] Ibid., p. 71

[21] Ibid., p. 117

of the built environment,[22] and (4) the division between public and private[23] domains of that built environment. He believed that if he and his colleagues could achieve a proper articulation between the architectural elements (we will soon describe these elements with more detail) and the dimensions that define each of these aspects in a particular situation; the resulting architecture should be flexible enough to accommodate foreseeable or ponderable human actions adequately, without limiting or restricting spontaneous or imponderable human actions.[24]

On the other hand, the idea that Woods's leading role among his colleagues was manifest in what Alison and Peter Smithson referred to as his "position-taking," suggests a relation between this architectural conjecture, and those formulated by other architects around similar questions. Granted that any position (be it physical, political, but also architectural) can only be achieved in relation to other, identifiable positions; the Smithsons' assumption of Woods as a "position-taker" points at an identifiable relation between his and other architectures. This is also accurate. In fact, Woods often acknowledged the role played by others in the development of his work,[25] rather than presenting it as his own individual creation. Most of that work was actually developed by partnerships or collaborations where Woods participated, and most of that work was also open to criticism from other architects, in well-known instances. The intense discussions carried out at the Team X meeting at Royaumont,[26] which we mentioned in the previous chapter, are a good example of one of these instances.

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[22] Joedicke (ed.): Candilis, Josic, Woods, p. 21

[23] Ibid., p. 159

[24] According to Woods, the actions of people prevailed over the abstract configurations of space – a clear statement regarding a relation between the formal and use or purpose minded heuristic of architecture. In this sense, Woods was convinced that "architects should address the 'creation of environment at every scale' because, irrespective of scale, what mattered was 'human association'." Tzonis and Lefaivre: "Beyond Monuments," pp. 133, 141.

[25] "We should like to acknowledge our tremendous debt to the two great men under whom we were fortunate enough to work," Woods wrote; "first, Le Corbusier and then Wladimir Bodiansky. Without their influence we would certainly not have followed the road we took. Among the friends who honored us with their support in our undertakings we wish particularly to thank Michel Ecochard, Marcel Lods, Charlotte Perriand and Paul Herbe (+). We have often had the opportunity to appreciate the profound knowledge and friendship of Jean Prouve. Young people came from everywhere to help us. We are grateful to all of them." Joedicke (ed.): Candilis, Josic, Woods, p. 5

[26] Jullian de la Fuente, Guillermo: "Notes Sur Royaumont," Le Carre Bleu 2 (1963)

All this to say that the architectural conjecture we are talking about was not formulated ex nihilo. Quite on the contrary, it was formulated against other architectures which – it can be assumed – were seen by Woods as unable to articulate different kinds of human actions with specific aspects of architecture satisfactorily.

It shouldn't be difficult to hint at what those other architectures could be, if we only point at the fields of architectural evaluation, exploration and discovery (or heuristics, as we defined them earlier) where Woods focused his attention. Part of that attention focused on the way built space is defined. Woods's intention to articulate spaces (and their limits) and volumes evidently dealt with the shape, dimension and proportion of architecture; corresponding to what we have described as the formal heuristic of architecture. On the other hand, Woods studied diverse kinds of human actions, and their relation to the public and private domains of the built environment; fitting within what we've called the use or purpose-minded heuristic of architecture.

Based on this knowledge, we can identify at least one well-known kind of architecture Woods was reacting to with these choices. What we have described earlier as modernist functionalism did not aim to articulate diverse human actions or realms, but to separate them as clearly as possible; dividing the built environment into clear-cut zones of specialized activity. Architects who upheld functionalist conjectures understood these clear cut-zones as counter-forms for those activities; and believed that they could establish a direct, causal relation between the use or purpose of a particular architecture, and its form. Against those conjectures, we can conclude that Woods's recognition of imponderable (and therefore un-standardizable) actions in the constitution of the built environment necessarily implied an examination of architectural use or purpose, and an examination of architectural form, that rejected modernist functionalism.[27]

We can further support this observation based on something we read before: "The 'Masters of the Modern Movement'," Stanford Anderson argued, "shared the notion that the design process issues in a 'design object' – that is, in an object that receives its *permanent* form according to a clear, *pre-visioned* plan."[28] Against that notion, Woods did not strive for the production of a

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[27] "The goal is the establishment of an adequate physical milieu as the natural habitat of the men living in our society. We can apply any and all techniques to this end, but it will be essential to our approach to say that we are not really sure of the main characteristics of this society, which aims to accommodating diversity. It may then be said that the accommodation of unknown variables is a design discipline." Woods, Shadrach: "Waiting for Printout (Previously known as the Technico-Social Hangup)," Perspecta, Vol. 12 (1969), p. 7

[28] Anderson: "Environment as Artifact," pp. 71 – 73

definite object, whose form was designed to accommodate standard human actions. Instead, he saw his work as an architect as the definition of two items, basically. The first of these items was a set of dimensions and proportions;[29] while the second was what he referred to as the elements of architecture.[30]

And what were these elements? "The elements which limit space," Woods noted, "include walls, partitions, roofs, balconies, loggias, storage walls, windows, etc."[31] In other words, Woods suggested that architecture should be understood as the act of defining the dimensions and proportions of walls, roofs, windows, and so on; plus the act of defining the dimensions and proportions of the spaces between (or limited by) those elements.[32] But – one might argue – all architects do this, in one way or another. So what makes this idea interesting or special?

What is remarkable about this description is that it recognized the existence of a series of elements that are specific to architecture,[33] while it kept the definition of those elements (their dimensions and proportions, and the relations between them) deliberately generic and abstract; and for that reason, flexible – open to change within reasonable disciplinary boundaries.[34] Clearly, Woods was not talking about just any proportions and dimensions, or about any way of defining or delimiting space; but he was not talking about a univocal, fixed, or final understanding of built form, either. The distance between two walls, for example; their sizes, and the proportion of the space defined by them; were understood by Woods as variables that can be modified in order to adapt a built environment to imponderable (in his terms; or *unforeseen*, according to Stanford

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[29] Joedicke (ed.): Candilis, Josic, Woods, p. 71

[30] Cf. Koolhass, Rem, et al. (eds.): Elements. Venice: Marsilio, 2014

[31] Joedicke (ed.): Candilis, Josic, Woods, p. 71, my emphasis

[32] Woods further noted how through the definition and valuation of these dimensions and proportions, each specific project turns concrete. "If those values are not correctly determined," he argued, "the way to expressionism is open." Ibid., p. 92. In order to clarify the term "expressionist", Joedicke notes how "two phases can be distinguished in the (Candilis Josic Woods) partnership's development: the first, in which town planning was approached as an exercise in visual aesthetics; and the second in which (they) turned away from this attitude in pursuit of new systems and forms uninhibited by the bonds of architectural composition." Ibid., p. 8

[33] In chapter 1 we have linked this notion to a normative understanding of architecture.

[34] Ibid., p. 5

Anderson, as we saw in chapter 1) human actions. And even though this idea seems quite abstract, Shadrach Woods demonstrated its feasibility in operative terms. The collaborations in which Woods participated were able to design bona-fide architectural projects, and actually built them, based on the development of this conjecture.[35]

Changes in the dimensions and proportions of a thoroughly designed mass housing project, for instance, allowed Shadrach Woods and his colleagues to adapt[36] that project to several different situations and then build the different results.[37] On these grounds, Woods and his colleagues could successfully adjust a mass housing project to meet the different gradients of privacy required by different social groups with different customs and behaviors, or to the changing tensions that exist between the public and the private[38] realms in different societies at any given time. Furthermore, this conjecture was tested beyond the dwelling program in several kinds of projects, including that for the Free University in Berlin, which Woods described, not as a building, but as "a series of parallel pedestrian stems… serving the zones which can be considered as the most active, with a secondary system of perpendicular ways leading to the more tranquil areas."[39]

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[35] Jurgen Joedicke describes one of these projects, Caen – Herouville, as the definition of a basic structuring system, open to further transformation. Joedicke (ed.): Candilis, Josic, Woods, p. 9

[36] Avermaete refers to this as "Attitudes of modification and insertion," in Avermaete: Another Modern, pp. 226 – 227. For concrete examples of this process, such as European Housing in North Africa, Moslem Housing, etc., see Joedicke (ed.): Candilis, Josic, Woods, pp. 24 – 61

[37] "As well as France, Africa and Asia provided commissions (to the partnership) and a system of classifying dwelling types took shape out of the particular local conditions. Three main categories were established and investigated: buildings in temperate climates like Central Europe; buildings in hot dry climates like Morocco, Algeria and Iran; and buildings in humid tropical countries like Martinique. Appropriate solutions were worked out for each." Ibid., p. 8

[38] In Woods's words, "the understanding of the balance to be achieved between public and private zones, and of the nature of the varying degrees of integration involved leads to the development of 'organic' systems and structures which complement and complete (…) geometric systems and structures." Ibid., p. 159

[39] Ibid., p. 200. Cf. Avermaete's description of the project as "a dense, two-dimensional patch of urban fabric that stands midway between an architectural building and an urban project." Avermaete: Another Modern, p. 326

It must be noted that the development of this approach to architecture was not without setbacks. Woods recognized that by operating at the level of elements and dimensions only, the architect could lose contact with the needs and possibilities of the individual human being. Thus, he made clear that the dimensions and proportions used by the architect should always remain "between the individual cell and the always abstract total number. By articulating this reasonable intermediate" he claimed, "it has been possible to establish a scale which is comprehensible to men."[40]

And while he did not exactly define what he meant by abstract total number, we can still link his realization that architecture and the built environment should remain inextricably bound to human actions, to what Woods described as the humanist nature of his work.[41] In other words, the dimensions and proportions of and between architectural elements were seen by Woods as the instruments and methods needed to develop a built environment for the performance of both ponderable and imponderable actions by any human being.

Furthermore, Woods simultaneously recognized the human beings behind these actions as individuals, but also as members of larger groups. According to Jürgen Joedicke, the ponderable and imponderable human actions we have been talking about were studied by Woods and his colleagues in relation to "an un-hierarchical association of autonomous individuals."[42] This means that the tensions that necessarily exist between any individual's autonomy, and the loss of at least part of that autonomy for the sake of association, were examined in relation to a very concrete form of that association, which has been described as un-hierarchical. Based on this description, in the following section I will try to elaborate further on the ways in which this particular understanding of the relation between individuals and society led to Woods's description of his architecture as a humanist architecture.

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[40] Joedicke (ed.): Candilis, Josic, Woods, p. 117

[41] "In the work of Candilis-Josic-Woods humanism refers to the human subject and its dwelling practices." Avermaete: Another Modern, p. 134

[42] Joedicke (ed.): Candilis, Josic, Woods, pp. 8 – 9

**A humanist architecture**

Just a couple of years after curating the above-mentioned catalog of his work, Shadrach Woods published two texts, where he examined different aspects of the built environment. The first of these texts was the pamphlet "What U Can Do,"[43] where he tried to define a role for the architect in the production of that built environment.[44] That role, he thought, should evolve beyond the common distinction between architecture and urbanism as two different disciplines.

Woods was convinced that that distinction was unnecessary, based on his belief that human beings are naturally equipped with the ability to organize themselves around elemental, unwritten codes.[45] Bringing that belief to the production of the built environment, he therefore argued that instead of assuming that the urbanist should demarcate the territory in relation to our actions; or instead of expecting the architect to materialize those actions into built form separately;[46] if we just understood human actions in elemental[47] terms, all disciplines concerned with the production of the built environment should naturally converge into an all-encompassing activity, which he referred to as "environmental design."[48]

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[43] Woods, Shadrach: What U Can Do. Architecture at Rice 27, Spring 1970

[44] Ibid, p. 1

[45] "The built world is the natural habitat of man. This milieu is organized according to systems of conduct (law) and systems of exchange of goods (economy). But first, before any of these, there are the intangible, imponderable, inexpressible human relationships which establish themselves among the citizens. These form a kind of unwritten code which men apparently need in order to live together. Tenuous though they may be, they are yet of the greatest importance: the essential prerequisite of life. When these relationships are no longer vital, or viable, or clearly understood by all the citizens, they are replaced by cant, dogma, codes, regulations, and laws. And these systems of human interaction, feelings, belief, and legislation continuously evolve, reacting to the forces crystallizing out of the urban social magma." Ibid, pp. 8 – 9

[46] Ibid., pp 3 – 4

[47] Akin to these basic, unwritten codes that precede social forms, mentioned in note 44 (above), "are the ways, the pipes, the wires and tubes, the viscera of the city, the urban underground which has so radically transformed man's lives, raising them above nature, freeing them from natural constraints, liberating them. Men in cities thus become free not only from the tribal social order but also from the rural natural order." Ibid., p. 10

[48] As Avermaete has noted, Woods believed that "the knowledge of the built environment reflects the agreements, tacit or otherwise, honored by those who act on it. Any regularities, systems, patterns or types

We can understand that idea, which was further developed in the posthumous "The Man in the Street,"[49] as a reaction to popular histories of architecture that promoted a sharp distinction between architecture and urbanism. Among the authors of some of those histories, Reyner Banham, for example, thought of the roles of the architect and the urbanist in the production of well-known European cities as opposites. In short, Banham characterized architects as mostly concerned with the production of Ideal Cities, and urbanists as concerned with the production of Utopias. According to Banham, while the first focused on the development of perfect geometries and formal layouts for those cities, the second seemed more interested in distributing the territory to accommodate perfect societies. According to Banham, "an ideal city, as proposed by the Renaissance progenitors of the concept like Alberti and Filarete, was a buildable geometrical layout related to one of the perfect forms of the Platonic tradition. It was often conspicuously indifferent to the social system to which it gave shelter, whereas Utopia, by contrast, is often obsessional about the proposed social system, but not too concerned about architectural form. Only in the nineteenth century did the two kinds of ideal become conflated, and only in the twenties was social Utopia confused with architectural adventurism."[50]

It must be noted that to a certain extent Banham also found this division problematic, and hoped that modernist architecture's alleged scientism would eventually bridge the division between both disciplines. In his words: "In Europe, particularly in France, paranoia about *la politique pavilionaire* (owner-occupation) kept most of the Left so solidly against single-family dwellings in their own plots of land that they were almost automatically in favor of very large mass-housing projects. Even without the examples of such housing schemes in the socialist countries of eastern Europe to emulate, their belief that the working classes should live in compact and central settlements where they could conveniently be rallied and deployed as a political army when the Revolution finally dawned ensured that they had no difficulty in remaining true to their Fourierist traditions of the gigantic *phalanstere* as the proper abode for the working man."[51] Instead,

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that can be found within the built environment are therefore not irreversible, but subject to human agreement. Hence, an understanding of the built environment must be obtained by studying form as representing agreement among the agents practicing it." Avermaete Another Modern, p. 94

[49] Woods, Shadrach: The Man in the Street: A Polemic on Urbanism. Baltimore: Penguin Books, 1975

[50] Banham, Reyner: Megastructure: Urban Futures of the Recent Past. London: Thames and Hudson, 1976, p. 80. For a much more elaborate reflection on this distinction, see: Anderson, Stanford: "People in the Physical Environment: The Urban Ecology of Streets," in Anderson, Stanford (ed.): On Streets. Cambridge (Mass.) and London: MIT Press, 1986, pp. 8 – 9

[51] Banham: Megastructure, pp. 205 - 206

Woods chose to explore that possibility beyond modernist architecture, based on his study of the work of the French social reformer Charles Fourier.

According to Woods: "In the past two centuries ideal cities have been a source of inspired speculation, imagined as the perfect containers for ideal societies. A direct connection could readily be assumed between urban form and political system, indeed such a connection was evident in history. Now, when we continue to speculate today about urbanism and its predictable effects, we are continuing in a certain tradition. That tradition comes to us from many sources (for example, the Fourierists) who projected urbanistic correspondences for reformed societies. We might choose another example; there were many in that 'enlightened' time. If we choose Charles Fourier and his disciples to illuminate this point, it is because Fourier seems to us to be closer to the socialism which eventually dominated the early twentieth-century urbanism."[52]

Despite the widespread belief among modernist architects that Fourier's thoughts were mostly outdated,[53] Woods valued his ability to advance a project for the built environment that resonated with some of his own concerns. One the one hand, Fourier's well-known project for a Phalanstère can be understood as a large, complex building; but it can also be understood as a complete small village, made up of several building parts. Besides, Fourier's project was entirely based on a social program that recognized individual[54] autonomy, and aimed for an un-hierarchical association among many of those autonomous individuals. [55] In Woods's words, "Phalanstères would be erected to accommodate the new man in his daily pursuits. This, we must admit, was a stupendous conceit, the product of an extraordinary intelligence. It contained a clear vision of the

[52] Woods: The Man in the Street, p. 1

[53] "Fourier's ideas, which were not so much his alone but those of his epoch, were obscured in the dust raised during the conversion from a rural to an urban economy and from a parochial to a national hierarchy… One may greatly regret the occasion which was lost to us when Fourierism fell victim to another kind of progress." Ibid., p. 4

[54] "Fourier was not yet threatening to 'turn it around' in terms of the society at large; he was only trying to sort out the individual's relationship to society. In a sense, he was saying that reform, at the individual level, might promise a considerable transformation of the entire society." Ibid., p. 3

[55] Feld: "Shad's 'Idee Fixe'," p. 115

necessity as well as the possibilities of a total integration of the physical, social and temporal milieus into one habitat."[56]

In other words, Woods understood and valued Fourier's project for a Phalanstère as a reflection on the relations between human beings, and between those human beings and their built environment. Furthermore, the project seemed to blur the limits between urbanism and architecture, based on an understanding of human beings and their actions in very elemental terms. If we understand the notion of humanism as "any system or mode of thought or action in which human interests, values, and dignity predominate;"[57] it is clear that both Fourier's project for a Phalanstère, plus Woods's praise of that project, are eminently humanist.

This humanism issued in identifiable elements of Shadrach Woods's understanding of architecture. The first of these elements I have already mentioned, and regards the essentially individualistic nature of that understanding. As we noted before, Woods especially valued Fourier's claim that change in any society basically depends on the internal reforms (i.e., personal change) carried out by each and every one of the individuals that constitute that society.

However, Woods noted how these internal reforms are oftentimes hindered by built environments that are either too chaotic, or too rigid. Based on this premise, we can assume that the second humanist base of Woods's understanding of architecture was his recognition of order, or the organization of the built environment, as something that should serve, rather than be served by human beings. To illustrate this point, Woods used two examples. On the one hand, he referred to the well-known relation between tyrannies and their use of the built environment as an instrument of oppression and control.[58] On the other hand, Woods also recognized how, beyond tyrannies, many contemporary cities grow without any sense of order, and in doing so,

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[56] For Woods, Fourier's ideas were "overtaken and rendered obsolete (in the details but not necessarily in the concept) by the massive movements of population which came with the Industrial Revolution." Woods: The Man in the Street, pp. 3 – 4

[57] http://www.dictionary.com/browse/humanism, retrieved 30/03/2018

[58] "In clearly structured, tyrannical societies preceding (Fourier's) time of enlightened speculation it was certainly normal to express and to reinforce the hierarchy of authority through urban design and the design of specific buildings (e.g. Peking, Versailles). Urban clarity reflected a rigid, well-organized, comprehensible and highly repressive political system, with power, at the expense of the individual, concentrated in a central authority." In such situations, "there was total interdependence among the economic, political, social and spatial organizations which structured the city and the state, and which contributed to its continuing functioning." Woods: The Man in the Street, pp. 5 – 6

turn just as oppressive to their inhabitants. Both chaos and suburban sprawl, Woods believed, "produce effects far more oppressive, in all likelihood, than any experienced under past tyrannies."[59] In both cases, Woods suggested that whenever a society exerts too much[60] or too little control over its built environment, the resulting cities do not serve human beings, but instead turn challenging or demanding.

This observation, and especially the fact that two apparently different situations lead to equally unfortunate results, can be related to a third item in Woods's understanding of the built environment; namely, his realization that there is not a necessarily direct or univocal relation between the form of the built environment and the political systems under which that form is produced. Perhaps his own experiences working as an architect in Northern Africa[61] taught Woods about the discrepancies that exist between the reasons that lead an invader to impose a particular urban form on an invaded territory, and the way in which that imposed form oftentimes ends up being used.[62] These discrepancies suggest that the relation between a society and its built

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[59] Woods: The Man in the Street, p. 11

[60] According to Woods, "the work of the architect (or the urbanist) is to organize, not to design. To organize suggests collective as much as individual action; it implies the introduction of order, and the integration of disparate elements." Wagner, George: "Looking Back Towards the Free University, Berlin," in Architectural Association, Exemplary Projects 3, p. 19

[61] "Shadrach Woods's early architectural experiences are inextricably entangled with an intensified awareness of the colonial context that the Second World War evoked in France. In 1945, France still possessed one of the greatest colonial empires in the history of the world, second only to that of the United Kingdom. The French flag flew over large stretches of the West, North and Central Africa, numerous islands in the Pacific and Caribbean, and Indochina in Southeast Asia." Avermaete: Another Modern, p. 31; and Avermaete, Tom: "Nomadic Experts and Travelling Perspectives: Colonial Modernity and the Epistemological Shift In Modern Architecture Culture," in Avermaete, Tom; Karakayali, Serhat, and von Osten, Marion (eds.): Colonial Modern: Aesthetics of the Past Rebellions for the Future. London: Black Dog Publishing, 2010, pp. 130 – 151

[62] "In the newly colonized countries, notably the Americas, the opportunity to redesign urban structures abounded and was thoroughly exploited, especially by the colonial bureaucracies at home. City plans were conceived as matrices for the subdivision of land, and thus were generally open and non-centric, in their form, if not in their intent… Unwittingly perhaps the colonialists of America have given America a head start toward the realization of appropriate urban structures for an open society." Paradoxically, however, "those open plans were to accommodate a hermetically closed society... Meanwhile, in northern Europe, where the political correspondences for these open, non-centric plans were coming into being, cities were losing their symbolic functions as their hierarchical structures dissolved, under the impact of an influx of population of rural areas." Woods: The Man in the Street, pp. 8 - 9

environment habitually transcend a particular political situation, and instead represent the many nuances and complexities that characterize every society.[63]

Finally, these three items in Woods's understanding of architecture (i.e., his defense of society as an un-hierarchical association of autonomous individuals, his praise of balance in the organization of the built environment, and his acknowledgment of the complex and contradictory nature of the built environment) converged in a goal: What Woods dubbed the humanist nature of his architecture was in fact his belief that the built environment should serve a particular kind of society which he referred to indistinctly as either socialist, democratic, or open.[64] Mindless of the fact that his work was mostly developed in France during what are commonly known as *Les Trente Glorieuses*,[65] or the thirty years after World War II in which welfare state politics issued in extremely high levels of political freedom and human development in Western Europe; he was also aware that those achievements were fragile,[66] and were only enjoyed by a very small portion of humanity.

In order to foster and protect those achievements, and to expand their effects beyond Europe, Woods advanced a series of architectural propositions, meant to favor permanent (and global, as we will see towards the end of this chapter) processes of urban transformation. The rationality behind these propositions was simple. Wherever individual autonomy was curbed, or wherever inequality prevailed, a few individuals could impose a fixed interpretation of the built environment onto others, whose architectural options would be limited. Against that possibility, Woods thought that in order "to keep options open, urbanism itself must be adaptable to change. An urbanism of change, one that takes the fact of inevitable change as one of its components, can perhaps include all the options."[67] Key among the propositions that were part of this encompassing and changing

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[63] "It may well be that the physical disorders which trouble our cities are, after all, an accurate representation of the moral disorders which trouble our society." Woods: The Man in the Street, pp. 11 - 13

[64] "The ideal of an open society, a classless political organism," Woods thought, "has not given rise to an urbanism or an architecture of cities which could be considered commensurate with its spiritual worth." Ibid., p. 11

[65] https://en.wikipedia.org/wiki/Trente_Glorieuses, retrieved 14/03/2018

[66] "In fact, generally, in northern and western countries we do not practice democracy, nor do we live in an open society, but rather we hold these up as ideals to be revered while going about the sordid business of getting and spending, a business which seems to rely entirely upon economic or financial oppression of one class by another." Woods: The Man in the Street, p. 13

[67] Ibid., pp. 23 – 25, 28; and Joedicke (ed.): Candilis, Josic, Woods, pp. 8 – 9.

approach to architecture and the built environment were Woods's well known Stem and Web configurations, advanced in the early 1960s. In the following section, we will study both proposition with some detail, and examine how they appear to evolve on modernist architecture.

**Streets, evolved**

The first of the aforementioned propositions, or what Woods referred to as a "Stem,"[68] sprang from his rejection of a particular kind of architecture. Succinctly, Woods argued that the way in which many architects developed mass housing projects in the second postwar limited the social and spatial options of their inhabitants, as we discussed above. To sustain that argument, he described what he saw as the reasons behind that limitation.

Central among those reasons was a quantitative transformation in housing, which – he thought – had negative qualitative consequences. Woods's argument was that increasing populations demanded more dwellings, which in turn demanded some changes in those dwellings; but most importantly, also changes in the way those dwellings related to each other and to their surroundings. To reflect on those changes, he focused his attention on the individual dwelling unit (which he indistinctly referred to as a house or as a cell), and studied its relation to the built environment. While in some built environments houses interact directly with their surroundings, he observed, in others that interaction implies an intermediate step: groups of dwellings are boxed together into a larger shape, and it is that shape which interacts with its surroundings.[69]

The mass housing projects that Woods criticized were made this way. In his opinion, the architects behind those projects designed individual dwelling units, and then basically boxed them (he referred to this process using the popular French term *plan masse*) into a larger whole. He referred to projects done this way as simplistic,[70] vane,[71] but most importantly unable to adapt or change.[72]

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[68] Woods, Shadrach: "Stem". Architectural Design, Volume XXX, No. 5 (May 1960) p. 181

[69] "In the centuries before the advent of the architect-town planner, habitat was the result of the interaction of cells (houses) and environment. In the years since, architecture become an arithmetical progression from cell (house) to mass-housing, and environment a by-product of cell-planning." Ibid.

[70] "The reflection by Candilis, Josic and Woods on the altering subject, status and experience of architecture formed the basis for a serious questioning and criticism of the architecture and urbanism that the official French modernization Project brought to the fore. In 1959, four years after the official inauguration of the

In order to understand that inability to change, we must return to our definition of four fields of architectural exploration, evaluation or discovery, or heuristics, from chapter 1. Concretely, Woods believed that the attention paid to the formal heuristic of architecture (i.e., the composition of floor plans and sections of individual dwelling units, and the boxing of those units into larger shapes) by architects working on postwar mass housing projects, was not matched with equal attention in the realm of use or purpose. In his words: "The problem of habitat, which is cell plus activity, is only half solved by *plan masse*, since *plan masse* is concerned only with cell and not with environment or activity. It gives only one dimension of habitat. It seems clear that the *aesthetic, monumental or symbolic grouping* of cells (hence, of families), in the tradition of *La Grande Architecture*, leaves out too many factors of human ecology. It is the wrong tool for the job."[73]

So, what was the right tool or instrument, then? For Woods, the answer was quite simple: while some traditional built environments organized individual dwelling units in direct relation to their surroundings (e.g., freestanding rural houses), others grouped or clustered those units lineally around streets. Against well-known modernist attempts to eliminate the age-old street configuration from the built environment,[74] Woods and his collaborators recognized "the street as

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partnership, Georges Candilis, Alexis Josic and Shadrach Woods summarized their arguments in the razor-sharp 'Repenser le probleme' published in l'Architecture d'Aujuourd'hui. The partners argued that French architecture had reached an impasse, because it was based on standard recipes; recettes de forms and recettes de norms." Avermaete: Another Modern, p. 127

[71] "This single-mindedness was perhaps necessary to solve the problem of the production of houses in massive quantities, but it has led architects and planners to the present absurdity of treating habitat as a means of self-expression, a plastic universe where houses are building blocks for the children architect to play with." Woods: "Stem," p. 181

[72] "The housing scheme which starts from an additive system invariably ends in formalism, The idea of cluster, so clear in the cell or in the block of flats, which is a composite cell, is non-existent in the greater scale of the housing scheme. The *plan masse* as a plastic or aesthetic arrangement of homes or flats does not work in our mobile civilization. Through its very sensitivity, it tends towards the fixed, immobile, static form – an optimum form based on contemporary aesthetic." Ibid.

[73] Ibid., The fact that Woods rejected architectures that were essentially aimed at producing aesthetic, monumental, and symbolic results, speaks of his contention with a concrete architectural research program, as we will see towards the end of this chapter, and in the conclusions of this study.

[74] "It is instructive to note that little more than twenty years separate the antistreet thesis of Le Corbusier from the prostreet preoccupations of Alison and Peter Smithson. Where Le Corbusier, true to his

the only permanent element of the city. As long as this void was kept clear," they believed, "the rest could be adapted to changing needs."[75]

Based on that premise, Woods tried to evolve on the traditional street configuration, towards what he called a Stem. But, what did this evolution imply? Basically, a process of abstraction or dissection (i.e., the description of the elements of the street, and most importantly, a description of their performance), and the acknowledgment of the temporary (i.e., changing, dynamic) nature of the street. In extremely simple terms, we can describe Woods's Stem proposition as a street that has been dissected according to the performance of its constituent parts, and re-formulated in relation to possible changes in their arrangement.[76]

Both processes of dissection and re-formulation were entirely in tune with Woods's understanding of architecture, which we discussed earlier. We must recall from the first section of this chapter how Woods explored the possibility of intervening the built environment at an extremely basic level; utilizing well-known elements of architecture, and defining the dimensions and proportions of and between those elements. Stem was no exception, and remained as the abstract formulation of (a) a way of organizing elements in space, and (b) an expected performance of the results of that organization. This is exactly how Woods dissected a traditional street configuration (i.e., buildings aligned along empty, public, practicable space) into a series of abstract elements, and then described their performance. "We began," he wrote, "by considering two families of components: Dwellings and Ancillaries. This process may be compared to the concept of design by dissociation, which has long been general practice in the organization of housing units. A core is

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Enlightenment heritage, castigated the traditional street for being 'no more than a trench, a deep cleft, a narrow passage,' that in his opinion did nothing but oppress the spirit." Kenneth Frampton: "The Generic Street as a Continuous Built Form," in Anderson, Stanford (ed.): On Streets. Cambridge (Mass.) and London: MIT Press, 1986 (1978), p. 309; refers to: "La Rue," in Le Corbusier et Pierre Jeanneret, Oeuvre Complete de 1910 – 1929. Zurich: Girsberger, 1943, pp. 112 – 115; and to the journal l'Intransigeant (May 1929); Cf. "If modern architecture chose to reject the street as the realm for social interaction, it had to develop a viable alternative. This challenge became central to the work of Shadrach Woods and the generation of architects who came of age after the Second World War." Feld: " Shad's 'Idee Fixe'," p. 107

[75] Schieldhelm, Manfred: "Architect's Statement: The Berlin Free University Experience," in in Architectural Association, Exemplary Projects 3, p. 97

[76] "The street, which was destroyed by the combined assaults of the automobile and the *Charte d'Athenes*, may be revalidated if it is considered as a place as well as a way from one place to another. Its form or spatial content will be different from that of previous streets, but the idea of street (as distinct from that of road) is inherent in the idea of stem." Woods: "Stem," p. 181

first determined by abstracting from the programme those elements which are easily defined (entry, kitchen, stairs, bath, etc.), then the rooms are clustered around these services. Servant and served, as Louis Kahn[77] puts it, are defined and the core brings clarity and organization to the cluster."[78]

Evidently, what Woods referred to as a core, and as the ancillary or served spaces that are clustered around it, respectively correspond to the ponderable and imponderable spaces we talked about before. In a Stem, though, these spaces acquired a new, not only spatial, but also temporal dimension. Woods assigned servant spaces, which are easily definable granted the ponderable nature of the activities that are expected to take place in them, a particular duration (i.e., they can remain unchanged for a particular amount of time); and served spaces, where imponderable activities can more freely happen, another duration.[79] Alexander Tzonis and Liane Levaifre have studied this temporal dimension of Woods's Stem as one that aimed to recognize four essential purposes for the built environment. What we referred to previously simply as change, they refined further as the aim for an architecture that fosters plasticity, mobility,[80] flexibility and process.[81]

As noted, Woods's criticism of *plan masse* focused on its inability to achieve these qualities, especially in relation to the formal and purposeful heuristics of architecture.[82] Regarding the

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[77] Cf. Tzonis and Lefaivre: "Beyond Monuments," p. 134

[78] Woods, Shadrach: "Urban Environment: The Search for System," in Donat, John (ed.) World Architecture One. Studio Vista, London, 1964, p. 153

[79] "While the basis of planning and architectural design is contained in (…) Kahn's distinction of servant and served, in planning, the servant may have one scale of temporal validity, while the served has another." Woods: "Stem," p. 181

[80] In Woods's words, "architects and planners are principally concerned with mobility in all its connotations, as a diagnostic tool to new forms." Ibid.

[81] Tzonis and Lefaivre: "Beyond Monuments," p. 120

[82] Regarding the consequences of Stem within the communicative heuristic of architecture, Avermate noted: "The most suggestive explanation of the principles of the stem concept is a collage that was elaborated shortly after the publication of the stem article. The collage reveals the twofold characteristic of the stem. In the bottom left corner aerial photographs of linear urban developments suggest how the stem attempts to recapture the capacity of existing traces to structure urban development. In this part of the collage the stem appears as a device that structures the practices of dwelling and building and their resulting forms. At the

formal heuristic, he considered that the definition of individual dwellings or cells, and their posterior boxing into buildings (he referred to them as symbols, given that – in his opinion – architects oftentimes aimed to make their overall form expressive or meaningful) did not result in adequate built environments. The reason for this was that, in the realm of use or purpose, those buildings were not flexible; meaning that they appeared unable to cater to imponderable human actions, and also unable to change. Consequently, his response to *plan masse* evolved in the formal and purposeful heuristics as well: Woods proposed a shift from boxing apartments into blocks, to clustering spaces into cores and arraying those cores along linear Stems.[83] "A line," he explained, "is open-ended; it has no dimension; it can change direction at will. When we organize human activities and habitat into a linear system, the line becomes a Stem to which dwellings attach themselves."[84]

And how were dwellings supposed to attach themselves to a Stem? As we saw, a series of served spaces (which catered to imponderable actions) were clustered around cores (programmed for ponderable actions), and then arrayed lineally. Since spaces, cores, and the overall lineal organization were kept at the very abstract level of architectural elements and dimensions, a Stem could be of any size, and change either partially (its constituent parts changing at different rhythms, as we noted above) or completely, over time. It is in this sense that Shadrach Woods aimed to produce a built environment that was plastic, mobile, and flexible; one that, more than a

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top of the collage a completely different view of the stem can be seen. Here, photographs of markets, squares and streets demonstrate how the stem is thought of as a figure of social practices. The stem appears here as the locus of collectivity; as a site for meeting, trade and play. The middle part of the collage demonstrates, through a mixed technique of plan and photographic material, how the final goal of the stem concept is the reconciliation of physical and social characteristics. Here it becomes clear that the stem is initially a trace and thus no more than a path. The stem acquires its actual form and span from the alignment of entities that are both built architectural volumes and collective functions. According to Candilis-Josic-Woods, the very presence of these janus-faced elements defines the essential characteristic of the stem." Avermaete: Another Modern, p. 243

[83] "(…) it is proposed that planning be reconsidered as proceeding from stem to cluster (rather than from cell to symbol), as in the design of cells one proceeds from core to cluster. The process of planning from stem to cluster will tend to re-establish density and scale in habitat." Woods: "Stem," p. 181

[84] Woods: "Urban Environment," p. 153

permanent object, could be taken for an ongoing process of definition of built form in relation to changing use or purpose. [85]

Soon, though, the linear nature of the Stem revealed its inability to accommodate the radically different speeds and sizes of people and cars. Woods noted: "We sought to reconcile the scales of speed of the automobile and the pedestrian and found that these scales are, in geometric terms, not supplementary but complementary, not parallel but perpendicular. They can only meet at points, never in lines."[86] In an article published in Le Carre Bleu two years later, Woods confronted this insufficiency by moving from the linear organization of a Stem, to the grid-like organization of the Web – the second of the aforementioned propositions we set out to discuss above. In his words: "After having explored some of the possibilities of a system approach to environmental design, and having shown that Stem was indeed a valid tool for the organizing of urban environment, we are now exploring the directions which our research has opened to us. If we consider circulation, whether it be mechanical or pedestrian, it is evident that the idea of continuity in the system is essential. Indeed, continuity in the whole organization, so that no parts of it are in danger of isolation and none subject to an *a priori* over-densification, is absolutely basic for an evolving society. Chains of relationships and circulations are continuous, cyclical, and therefore tend towards the infinite. There is no beginning or end to the system, just as there is no centre as opposed to non-centre."[87]

In other words, the weaving of several Stems into a Web allowed Woods to imagine a poly-centric built environment, that remained able to cater to both ponderable and imponderable human actions, and also remained able to change.[88] Web evolved from the architectural element, to the spatial configuration achieved by assembling several elements, and to the urban principle resulting

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[85] About the Free University in Berlin, which we will study immediately, George Wagner notes: "The building treads a fine and unsteady line between specificity and generality," and he adds: "To even think about evaluating it formally shows a misunderstanding of the intention that it operate as instrument, not product." Wagner: "Looking Back Towards the Free University, Berlin," pp. 17, 15; refers in turn to "The Free University and the Language of Modern Architecture", Domus, May 1974, p. 8

[86] Woods: "Urban Environment," p. 153

[87] Ibid.

[88] "When we predetermine points of maximum intensity – centres – we are fixing a present or projected state of activities and relationships. We are perpetuating an environment where some places are central and others not, without, however, any competence for determining which things belong in which places. We compromise the future, closing doors instead of opening them." Ibid.

from the extended use of that spatial configuration. “A point,” Woods believed, “is static, fixed. A line is a measure of liberty. A non-centric web[89] is a fuller measure.”[90]

Based on what we discussed in chapter 1, we can understand that fuller measure as a full-fledged architectural model, meant to advance a vision of a possible future for the built environment, together with the necessary instruments and methods required to get there. Regarding the telic part of his model, Woods envisioned a possible future for the built environment that was firstly poly-centric, and secondly flexible enough for its constituent parts – centers included – to change their use or purpose, and even their position, throughout time.[91] That vision of a possible future was intrinsically flexible (i.e., able to change within), but it also recognized the possibility of articulating itself with pre-existing environments, based on that flexibility (i.e., able to change without). For Woods, Webs should be “flexible enough to permit growth and change within themselves throughout the course of their time;” and “open in both directions, i.e. in respect to smaller systems within them as well as in respect to greater systems around them.”[92]

The telic part of Woods’s model, on the other hand, assembled the necessary instruments and methods (like we saw earlier: a definition of architectural elements, as instruments, and the definition of certain dimensions to put those elements together, as methods) required to provide a clear organizing principle for the model; especially regarding the shape or form of the envisioned built environment. The clarity of that organizing principle (i.e, the technical part of Woods’s model) was crucial, as it provided the necessary foundation for important parts of those environments (such as centralities, served or ancillary spaces, the position of cores, and so on) to change at different rhythms.

This acknowledgment of the clarity of an organizing principle as indispensable to freedom and change was entirely in tune with a previous observation we made, regarding Woods’s awareness of the problems generated by chaotic built environments. “Given the discipline of a continuous system frame,” he claimed, “functions may be articulated without the chaotic results which we obtain when we pursue only the articulation of function without first establishing a total order.

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[89] A note in the original says: “This word is used to designate Stem to the next degree. Stem squared, as it were.” Woods: “Urban Environment,” p. 153

[90] Ibid.

[91] “… the constellation of points of intensity of activity, of production and exchange cannot be predetermined. Those constellations are constantly shifting; the web deforms and reforms itself to accommodate them.” Woods: The Man in the Street, p. 218

[92] Woods: “Web,” Le Carre Bleu, 3 (1962)

Indeed it is only within such a frame that function can be articulate. The parts of a system take their identity from the system. If there is no order, there is no identity but only the chaos of disparate elements in pointless competition. The purpose of any putting-together, to create a whole which is greater than the sum of the parts, is only possible if we can guarantee a whole – a total synthetic order of all the functions."[93]

Noted earlier, Woods's ambition for a synthesis of different uses or purposes for the built environment implied a rejection[94] of modernist functionalism.[95] This observation allows us to recognize Stem and Web as conjectures that transact (i.e., compete or collaborate) with other architectural conjectures, in identifiable heuristic terms. For instance, we can compare Woods's propositions regarding the formal heuristic of architecture with Reyner Banham's description of "Le Corbusier's aesthetic process. The three *Rappels* are united by the proposition 'Mass and surface are the elements by which architecture manifests itself. Mass and surface are determined by *the plan*. *The plan is the generator…*'." That proposition, Banham argued, was instrumental to "the much-quoted statement 'Architecture is the masterly, correct and magnificent play of masses brought together in light.'"[96] According to this interpretation, Le Corbusier utilized an identifiable instrument (orthographic projection, or plan) and a particular method (organizing spatial relations within plan, first, and then choosing the masses and surfaces that would fit that plan), to operate on the formal heuristic of architecture; and did so aiming for a built environment that established a meaningful (i.e, masterly, correct, magnificent) relation with light.

Woods challenged Le Corbusier's method by inverting its order. Rather than seeing plan as the generator of form, or seeing mass and surface as determined by plan, he claimed that "the architectural process begins with a way of thinking about organization in a given place-time, *then*

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[93] Woods: "Web"

[94] Tzonis and Lefaivre: "Beyond Monuments," p. 123

[95] The built environment, he thought, "cannot result from a zoning plan; to dissociate the functions is to ignore their inter-dependence. Neither can the city be made from a composition of solids and spaces; the most perfect realization of this kind is, by definition, the most static and therefore the least adapted to the change and growth of life the town must express. Everything that happens in the city is inter-related, one event affects another." Woods, Shadrach, "Frankfurt: The Problems of a City in the Twentieth Century", in Donat, John (ed.) World Architecture One. Studio Vista, London, 1964, p. 156

[96] Banham: Theory and Design in the First Machine Age, pp. 224 - 225

*establishes a system of relationships* and, finally, achieves plastic expression."[97] Other authors have noted similar heuristic transactions between Stem and Web and other popular architectures. Among them, Avermaete has described key differences in the instruments and methods used by Woods and those used by some of the architects who are often associated to him as members of the so-called Team 10.[98] Notably, Avermaete's description of concrete interrelations between several architectures evolves on modernist histories of architecture that have tried to explain those architectures in a univocal relation to modernism, taken as an incontrovertible principle or law. That evolution is especially patent in Avermaete's acknowledgment of the cognitive growth that the establishment of those interrelations entails.[99] Based on this realization, in the following section we will elaborate a bit further on the growth of knowledge propitiated by Shadrach Woods's architectural conjectures by studying them at work.

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[97] Woods: "Web"

[98] Alluding to Woods's project for the Berlin Free University, in relation to Aldo Van Eyck's project for an Orphanage in Amsterdam, Avermate wrote: "(Peter) Smithson distinguishes between these two projects (BFU and Van Eyck's Orphanage) because they represent a different way of organizing and composing urban space. While Van Eyck's orphanage is based on the so-called 'configurative principle' that structurally assembles similar architectural elements, the Berlin web or mat demonstrates another organizing principle. (…) not an addition of isomorphic elements, but rather a structured nesting of diverse spatial and social units. While Van Eyck's orphanage is the repetition of 'plain sameness', in the case of the Berlin mat 'apparent sameness is the carrying order'." Avermaete: Another Modern, p. 319

[99] "The idea that the approaches of Team 10 architects are revisions of CIAM stances is not new. Both scholars and Team 10 contributors have depicted Team 10 as a typological or ideological modification of CIAM. However, the issue of revision can also be seen from a different angle: the changes that Candilis – Josic – Woods and other Team 10 members evoked within CIAM can be regarded as epistemological alterations. In other words, they can be considered as changes in the way that architectural knowledge is acquired, treated and applied." Ibid., p. 58; aside from offering a definition of the term epistemology, Avermaete refers to: Smithson, Alison: The Emergence of Team 10 out of CIAM; Frampton, Kenneth: Modern Architecture: A Critical History; and De Sola Morales, Ignasi: Differences. Topographies of Contemporary Architecture.

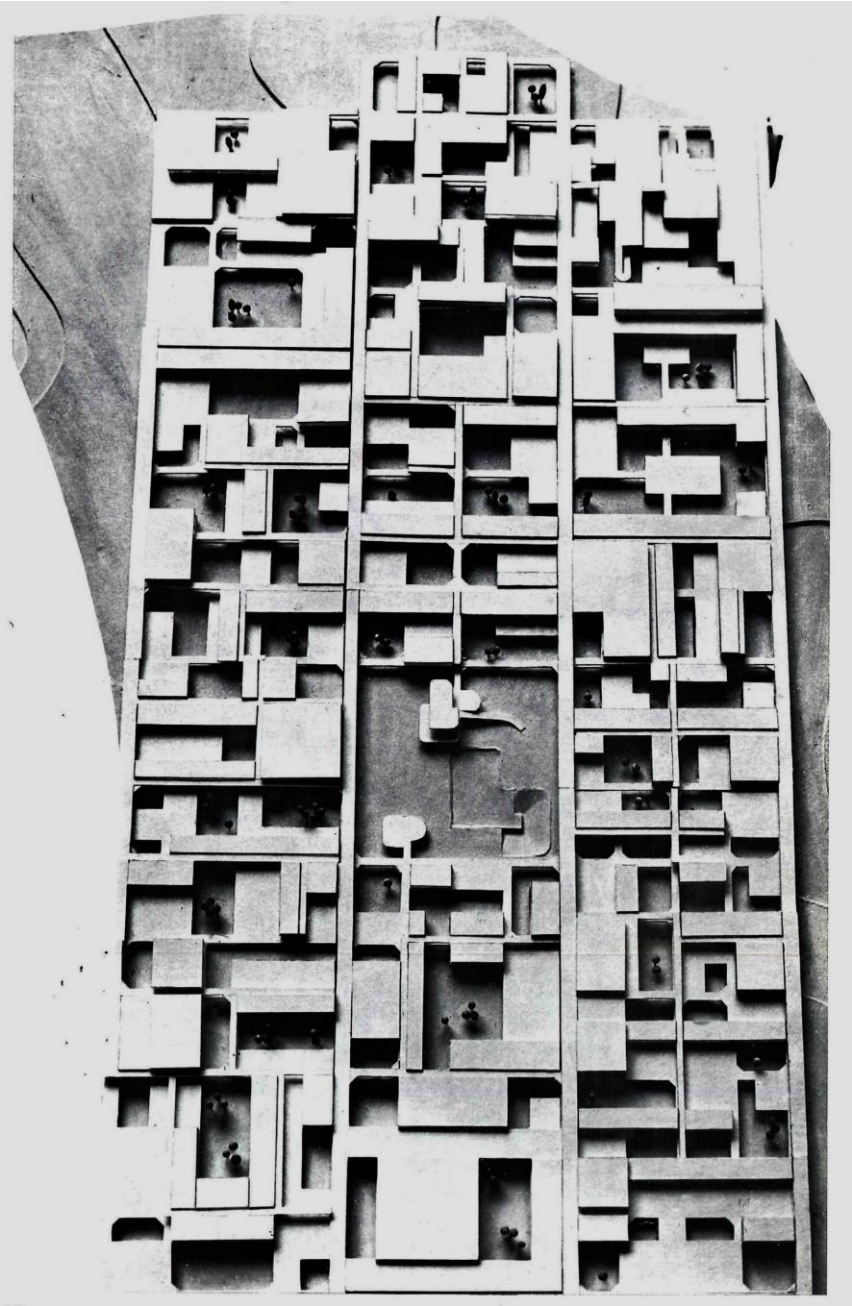

Figure 14
Free University, Berlin: scale model

**Instruments and methods**

Shadrach Woods utilized the Web model in a project for the city center of Frankfurt.[100] His aim with that project was to show how a network of Stems could simultaneously achieve a flexible internal organization, and an equally flexible relation to the context in which it intervened.[101] In practice, the project evolved on the Stem organizing principle in two concrete ways. While that principle had been mostly utilized to develop projects for previously un-urbanized areas (e.g., Candilis Josic Woods's projects for Toulouse-Le Mirail and Caen-Hérouville[102]), the project for Frankfurt advanced a full-fledged intervention within a consolidated, war-torn city center. This basically meant that the project had to negotiate, not only with its internal logics of flexibility and change, as any Stem, but also with the shapes, sizes, uses and purposes of several different architectures that already existed on the site. On the other hand, while in practice the fundamentally linear organization of Stem had issued in oblique plan geometries, meant to adapt architecture to the geographies of unbuilt sites; in order to adjust to the built context of Frankfurt Woods decided to rein those Stems into an orthogonal grid.

Tzonis and Lefaivre have noted how in Woods's project for Frankfurt "the Stem is no longer bifurcated, as it had been in the 1961 Caen-Hérouville and Toulouse-Le Mirail competitions, but had a square configuration. The advantages for the Frankfurt site were obvious: whereas the earlier projects had been located on open sites where the blocks could branch out freely, following the bifurcation rule, this development had to fit within the gaps opened up by war bombing in an existing dense urban fabric."[103]

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[100] Gabriel Feld argued that Frankfurt is not the first antecedent of Woods's use of the Web. Instead, he mentions the 1961 project for the extension of the Notre Dame du Calvaire in St. Julien – l'Ars, near Poitiers. "The convent of Notre Dame du Calvaire can be seen as a 'dress rehearsal' for the radical notion of the Free University…" Feld: " Shad's 'Idee Fixe'," p. 113

[101] "In April 1963 a competition for the war-torn centre of Frankfurt gave Woods the opportunity to experiment with this new organizational device. He proposed to cover a large urban void with a multi-level matrix providing an infrastructure of circulation and services. The grid was regular, but its edges were negotiated around existing buildings. The grid also incorporated a few historical monuments such as the cathedral – the only icons in an otherwise nondescript building fabric." Ibid., p. 111

[102] Tzonis and Lefaivre: "Beyond Monuments," p. 129

[103] Ibid.

Based on what we have discussed so far, we can understand the advantages suggested by these authors as part of the knowledge we can obtain from Shadrach Woods's work as an architect. On the one hand, the relation between the chosen organizing principle and the context's constraints offered Woods the possibility to challenge identifiable elements of a particular kind of architecture. As we saw, Woods rejected what he referred to as expressionism, which we have defined earlier as the architect's ambition to box the constituent parts of any architecture within a visually appealing or meaningful whole. In his opinion, without major environmental constraints, the designers of freestanding modernist mass housing blocks oftentimes focused on making them meaningful or expressive, to the detriment of other aspects. Aside from considering their approach simplistic or vane, as we noted, Woods thought that it produced architectures that were unable to cater to imponderable human actions, or to change. Naturally, work limited to a series of gaps within an existing urban tissue made it virtually impossible to think of boxing cells within meaningful blocks. Therefore, the introduction of a simple and clear organizing principle was an advantage, in the sense that it averted expressionism.

On the other hand, at the level of use or purpose, the restrictions imposed by a partially demolished site offered Woods two choices. One of these choices was to restore pre-existing architectures to a supposedly original (and therefore fixed) state, both formally and functionally. The other choice was to introduce an organizing principle that allowed the inhabitants of the area to re-arrange their own built environment and change it throughout time, in relation to what was already there. The second option seemed advantageous, in the sense that it allowed Woods to test his conjectures regarding the production of flexible environments. In his words: "The problem of reconstructing the centre of Frankfurt was not to make a museum, but to discover a system which would allow the inhabitants to create their own environment with the maximum facilities, and at the same time enable it to evolve in proportion to their needs. The system proposed allows the inhabitants to control and contribute to their environment. On the site to be rebuilt, with its existing historic monuments, it was felt that any multiplicity of individual forms would only devalue the existing buildings. But such a diversity of activities had to be included that to accommodate them in separate units would have been chaotic. To overcome this it was decided to combine all the elements in one unit keeping a valid scale both for the site and for the people using it."[104]

Here, we can see some of the propositions we have been discussing in this chapter at work. They can be briefly summarized as Woods's beliefs that: (a) the built environment must not be congealed, like a museum, but instead flexible, able to change and to cater to both ponderable

[104] Woods: "Frankfurt," p. 156

and imponderable human actions; (b) the ways in which an environment changes are not dependent on the architect, but on the individuals who use and inhabit it; (c) the abilities of that environment to remain flexible and to incorporate multiplicity (i.e., to articulate different architectures, or differences between the individuals who inhabit it) benefit from a clear, elemental order, which the architect can provide; and (d) the provision of that order largely differs from the boxing of functional spaces into meaningful containers. In Frankfurt, the architects' choice for an orthogonal Web configuration provided that order by defining a clear and simple unifying geometry, but also a scale that could relate human dimensions and proportions with those of pre-existing architectures.

Woods's project for Frankfurt was never built. However, he and his colleagues continued evolving on the Web model[105] in their project for the new headquarters of the Free University in Berlin.[106] The project was to be situated in the Dahlem locality of that city, confronting the architects with a context entirely different from that faced earlier. This was a suburban context, planted with freestanding villas built for high income families. The constraints met in Frankfurt, and the advantages of using an orthogonal Web there, were not present here. Previous work based on Stem configurations, with arms branching out obliquely into open territories could have made sense in this context; and yet Woods chose to stick to an orthogonal Web, for the sake of preserving the order he had achieved in Frankfurt.[107]

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[105] Aiming to inscribe Woods's work within a Western tradition, Tzonis and Lefaivre wrote: "If Frankfurt refers to the precedent of Diocletian's palace at Split, the rectilinear weft and warp of Berlin evokes the structure of Manhattan." Tzonis and Lefaivre: "Beyond Monuments," p. 137

[106] The Free University is described as a progressive offshoot of Humboldt University, founded in 1948. Schieldhelm, Manfred: "Architect's Statement: The Berlin Free University Experience," in in Architectural Association, Exemplary Projects 3, p. 97; and also in: Woods: "Free University, Berlin: Architects Candilis, Josic and Woods, with Greig and Schieldhelm". In Donat, John (ed.): World Architecture 2. London, Studio Vista, 1965, p. 114

[107] "When Shadrach Woods died in 1973, the first phase of his Berlin Free University had just been completed. Throughout his intense twenty-five-year career he had focused on a few architectural and urban ideas, which he developed from project to project. (…) At the core of these ideas was a search for principles of organization, which Woods called 'a search for systems.' The project for the Free University, wits its matrix of corridors and complex pattern of spaces, was a result of this long, patient effort to develop principles of organization. Conceived as an armature sustaining – and transforming – social interaction, the project exemplifies the dilemma of a whole generation of post-war architects who followed the canon of modern rational planning while simultaneously challenging its reductive assumptions." Feld: "Shad's 'Idee Fixe'," p. 105

Based on that decision, Woods described the task in front of him as the "tentative use of a minimum structuring system where individual and group may determine desirable relationships."[108] I must note the enormous difference that exists, between formulating a project whose use or purpose is to allow individuals and groups of people to determine how they want to relate among themselves, and to adjust their built environment accordingly based on a minimum organizing principle, like Woods proposed; and the functionalist belief that the architect could determine the adequate architectural counter-form for clear-cut standardized human actions, which we have repeatedly mentioned.[109] This difference allows us to ratify our earlier claim that Woods's conjecture was not formulated ex-nihilo. Instead, it offers us additional examples of how architectural hypotheses compete and collaborate with each other within an architectural research program.

In this case, Woods's project for the Free University competed with well-known university campus architectures, in identifiable ways.[110] In particular, Woods rejected their disaggregation of activities into distinct, separate functions; and believed that that dissociation resulted in isolated, monotonous enclaves,[111] or in chaos. Therefore, rather than defining individual, functionally specialized blocks, and spreading them throughout a territory, like the architects of many campuses often do; Woods advanced an organizing principle, which basically consisted in the definition of the dimensions of and between a series of architectural elements (instruments) and a series of instructions (or methods) required to assemble them into cores, ancillary spaces, Stems and Webs. The use of these instruments and methods – Woods believed – issued in a flexible built environment, in which different kinds of human actions are not fixed or divided, but instead interrelated and able to change.

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[108] Woods: "Free University, Berlin," p. 117 (caption of illustration 10).

[109] "We seek rather a system giving the minimum organization necessary to an association of disciplines. The specific natures of different functions are accommodated within a general framework which expresses university. (Association)." Ibid., p. 117 (caption of illustration 7)

[110] Woods illustrates this point with two images of the Berkeley campus of the University of California: one of the master plan adopted in 1944, and the other one of the changes to that master plan, as registered by Kevin Lynch in 1956. Ibid., p. 114

[111] "The implantation of isolated housing projects or of dormitory towns makes as little sense as the building of educational or industrial parks. Public and private are contiguous and continuous, each supporting the other, but each limited to its own domain… when either clearly dominates over large areas, the fabric of life is discontinuous, creating zones of blight." Woods: The Man in the Street," p. 59 (caption of image 37)

The aim for a built environment that caters to changing and interrelated actions was in clear correspondence with Woods's interpretation of the use or purpose of a University building. In order to understand that interpretation, we must recall the way in which he abstracted the performance of the constituent parts of a traditional street configuration, in order to evolve on it towards a Stem. Likewise, Woods abstracted the uses or purposes that are proper to an educational facility, and suggested a built environment that could furnish them. "The idea of a university," he wrote, "(deals with) the need for an exchange of general and special information. The university is composed of individuals and groups, working alone or together, in different disciplines. When individuals work together they take on new characteristics and develop new needs. The university as it seems to be," is one in which "buildings contribute to the isolation of specific disciplines (atomization of the idea of university). But the removal of built barriers and the mixing of disciplines is not enough. The group is meaningless when there is no place for the individual." [112]

On these grounds, Woods utilized the instruments and methods of his Web model to provide the basis for a built environment that could harbor those individuals and those groups. In terms of instruments, he remained true to his understanding of the built environment as the assembly of well-known architectural elements. With the concurrence of the engineer Jean Prouvé, Woods and his colleagues devised a modular system of windows, stairs, walls, slab and roof panels, ramps, columns, and all other elements required to assemble the building.[113] As noted earlier, the dimensions and proportions of those elements, and the ways in which they could be assembled and disassembled, was understood as the architect's work. In terms of method, elements were put together following most of the rationales we described earlier, when we touched upon Woods's

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[112] Woods wrote: "This scheme is an attempt to discover structuring principles which might be applicable to the organization of physical environment. The university is considered as a place and a tool. Many of its functions are known, others are not. We supposed that its principal function is to encourage exchange between people in different disciplines with a view to enlarging the field of human knowledge. Our intention, then, is to provide within one organization the maximum possibilities for contact and exchange… whilst ensuring privacy for each specific function. In order to facilitate intercommunication between the various disciplines we felt it necessary to go further than the analysis of different faculties in different buildings; we tried to imagine a synthesis where all the faculties would be associated rather than dissociated and where the psychological barriers which separate one from the other would not be reinforced by physical barriers such as entrance doors and building walls, or by the physical identity of the parts at the expense of the whole." In: "Architect's Statement: Competition Project, 1963 – 64," in Architectural Association, Exemplary Projects 3, p. 25

[113] Mostafavi, Mohsen: "Performative Skin," in Architectural Association, Exemplary Projects 3, pp. 100 – 103

Stem and Web propositions. This means that slabs and walls, columns and windows, were organized into three kinds of groupings. Some formed cores or servant spaces, such as toilets and other services that catered to ponderable human actions, meant to remain relatively unchanged for some time. Others formed ancillary or served spaces, such as classrooms, offices and auditoria. Those spaces catered to more imponderable actions, and were therefore understood as more flexible, and therefore able to change more constantly. Cores and ancillary spaces arrayed themselves along parallel and perpendicular corridors, which also contained ramps and stairs for vertical communication. The latter were necessary because, despite its horizontality,[114] the building was still divided into several floors.

As we have noted before, it is rather difficult to describe Woods's project for the Free University in the way one describes many buildings. It's much easier to describe it a series of parts and procedures that can be used to put those parts together, as I just did. Like in Le Corbusier's project for Venice, which we studied in the previous chapter, descriptions of the project's configuration demand additional clarifications, such as the stage or moment of their development in which they are in. In this case, for instance, there is a description of a version of the project presented to the design competition that originated it,[115] there is another description of the project that was initially built,[116] there are descriptions of the shape the project is in at the moment, and so on.

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[114] Woods referred to this horizontal arrangement as a ground-scraper, and opposed it to vertical towers that, in his opinion, limited the interrelation of spaces and human actions. "In skyscraper type buildings disciplines tend to be segregated. The relationship from one floor to another is tenuous, almost fortuitous, passing through the space-machine-lift. In a groundscraper organization greater possibilities of community and exchange are present without necessarily sacrificing any tranquility." Woods: "Free University, Berlin,", p. 116 (caption of illustration 8). For more on Woods's definition of a ground-scraper: Avermaete, Tom: "Mat-building: Team 10's reinvention of the critical capacity of the urban tissue," in Risselada, Max, and van den Heuvel, Dirk (eds.): Team 10, 1953 – 81: In Search of a Utopia for the Present. Rotterdam: NAi Publishers, 2006, pp. 307 – 312

[115] A general description of the project tells us that "the University has three levels; an underground service and storage floor; the ground floor, which contains most of the activities; and an upper floor with offices and small classrooms. It is hoped to add a fourth level with some housing if this seems desirable. All roofs are accessible as public or private terraces. No one of the main stems has been given greater importance than the others, either in dimension or through the intensification of activity planned along it. It is felt that the plan, in its present state, should remain as open (non-centric) as possible so that it may become, through use, polycentric. The system adopted is one in which a series of parallel ways is established following the principal direction of the university, existing and projected. These main stems run northeast-southwest and are about 200 feet apart. They contain and serve all those functions and places which would benefit from easy contact with the rest of the university, including auditoriums, exhibition spaces, lounges,

Most of these descriptions coincide in the elemental features of the project: It has an underground level that will probably not change much in time, and two levels above it. These two levels are divided into a more public ground floor, which can contain more easily accessible spaces such as classrooms, all sorts of services and auditoria, and a more private upper floor, which can contain offices and smaller classrooms; and that these spaces are arrayed along parallel and perpendicular corridors, forming a network of orthogonal circulations that adapt to the terrain (i.e., they are not entirely flat) but also allow users to move from one floor to another through ramps and stairs. The internal configuration, the overall size, limits, and shape of the University can change, owing not only to the modularity of the elements employed in its assembly, but on a particular item which is seldom mentioned in popular reviews of the project: its voids.

Notably, the age-old courtyard configuration (i.e., the organization of built form around void space) is a key element to understand the evolution of Stem into Web, and therefore to understand the Free University project. Courtyards are indispensable articulating elements, that allow the overall form of the Web to remain flexible, but most importantly, functional. Without them, some spaces would be impracticable, for sheer lack of ventilation and light. So seen, Woods's project for Berlin collaborates with architectures that organize built form based on the courtyard configuration, and evolves on that configuration by making it flexible. On the other hand, we can also argue that it competes with well-known modernist architectures by challenging some of their hypotheses, as we suggested a moment ago. Among those hypotheses, we can mention functionalism, zoning, and the belief that the work of an architect issues in an "object that receives its permanent form according to a clear, pre-visioned plan," as Stanford Anderson noted for the work of those so-called masters of the Modern Movement.

Notably, our attempt to position the Free University in relation to other architectures, by studying the ways in which it collaborates and competes with them at a heuristic level,[117] largely differs

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libraries, lecture halls, cafes, etc. The main stems are interconnected at convenient intervals by secondary ways. (…) Those places and functions which require privacy and tranquility are located away from the main ways. This web of primary and secondary circulation should retain the possibility of modification so that it may be used efficiently. In the beginning it exists only as approximate right-of-way for circulation and services. It is not a mega-structure, but a structuring device which exists only where and when required." "Architect's Statement," p. 25

[116] "Architect's Statement: Completion of the First Phase, 1973," in Architectural Association, Exemplary Projects 3, pp. 30 – 41

[117] There is a tradition in analyses that try to establish interrelations between this and other architectures, at the level of instruments and methods employed by different architects in the confrontation of similar

from accounts that intend to explain what the project means. As examples, I will only mention Tzonis and Lefaivre's attempt to relate the organizing principle utilized in Berlin to the philosopher Rene Descartes's philosophy;[118] and George Wagner's attempt to grant the project a far-fetched monumental quality.[119] Both attempts coincide in assigning the project a sense of meaningfulness that render it explainable.

Contrary those attempts (which we will return to, in the final chapter), we have tried to describe the instruments and methods used by Woods in the development of his work. We have described the way in which those instruments and methods have been used to formulate two concrete architectural models: Stem and Web; and we have described the ways in which the conjectures that are part of those models compete and collaborate with conjectures from other architectures that use different instruments and methods to confront similar questions. Among those architectures, we have mentioned modernist postwar mass housing blocks, well-known university campuses, and built environments organized around age-old courtyard configurations. Positioning his work in relation to these and other architectures, Woods continued evolving on his architectural conjectures for several years, after his projects for Frankfurt and Berlin. An important part of his work evolved towards ever larger and more ambitious developments. In the final section of this chapter, we will discuss one of those developments, and evaluate to what degree it can be taken for progressive, as Woods thought his architecture to be.

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questions. Aside from Tzonis and Lefaivre's attempt to link the projects of Frankfurt and Berlin to Jaap Bakema's analysis of the city of Split (Bakema, Jaap: "Een Huis van Een Keiser Werd Stad Voor 3000 Mensen te Split" Forum, seztiende jaargang No. 1 (januari 1962), pp. 45 – 72), and to the urban trace of Manhattan; Avermate has noted how "Gutkind's analysis of traces as elements that structure the spatial practices of the urban realm was a main source of inspiration for Shadrach Woods' stem concept…" (Another Modern., p. 243); and Gabriel Feld has tried to link Stem to "the plan for Radburn, New Jersey, by Clarence Stein and Henry Wright." ("Shad's 'Idee Fixe'," p. 111).

[118] "The Free University's mobile, flexible, minimal structure offers a 'direction for design', to paraphrase Descartes' 'direction de l'esprit.'" Tzonis and Lefaivre: "Beyond Monuments," pp. 139 – 140, refers to René Descartes, Discourse de la Methode, 1637

[119] "the Free University is some kind of new monument, monumental not for its form but as a window onto the politicized and optimistic discourse of the post-war generation. A collapsing of the mediums of architecture and urbanism, it is a unique imagining of what a building might be." Wagner: "Looking Back Towards the Free University, Berlin," p. 15, Refers to Manfredo Tafuri's "Architecture and Utopia."

**To be able to disappear**

A year after his proposal for the city center of Frankfurt, and almost simultaneous to his development of the Free University for Berlin, Woods presented a project that evolved on Stem and Web.[120] While the organizing principles implied in the new development were basically the same as those used in previous projects, its scale was entirely different. That difference had notable consequences in Woods's approach to architectural form. In simple terms, if Stem articulated the organizing principles we've studied at the scale of cores and ancillary spaces, buildings and streets; and if Web articulated them at the scale of the building and the city; Woods's project for Paris Nord tested them beyond the urban scale.

In their excellent study of that project, the researchers Maria Gonzalez and Patricio del Real have argued that Woods's move from the scale of the individual building towards a territorial or regional scale was a logical one.[121] In order to understand that move, we must recall what we described earlier as the humanist basis of Woods's architecture. As we said, that basis was reliant on the work of social reformer Charles Fourier. Fourier's well-known project for a Phalanstère provided Woods with a valuable example of an architecture that blurred the limits of the individual dwelling, the large building, and the small town; and it did so by recognizing the autonomy of each of the Phalanstère's inhabitants, while preserving their ability to engage in active communal life.

But while Fourierism provided Woods with instruments and methods to explore the built environment in relation to architecture's use or purpose; it did not entirely fit with his own understanding of the built environment's form. The reason for this was simple: the Phalanstère

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[120] "By 1964 Woods sought a concept that could extend and then supplant the web – just as the web extended and supplanted the stem – and provide a coherent city model." González, María and del Real, Patricio: "Paris Nord: Shadrach Woods's Imaginary Global City," in Williams Goldhagen, Sarah; Wagenaar, Cor, and Mumford, Eric (eds.): Positions 1: Grand Plans (Spring 2010), p. 71. I must note the difference in terms, between these researchers' use of the term "supplant" and my use of term "evolve". I will elaborate on this distinction further in following chapter.

[121] "With Paris Nord, the interwoven multi-layered systems of the web are enlarged to a territorial scale. Developed the year after their work in Frankfurt, this extension of the web model into a larger area was the logical move toward the incorporation of regional space in urban planning. Not a mere formal or compositional scaling, this move springs from a belief in architecture as an event territorial in scale. By extending the web to the scale of the region, Woods brought the political implications of the model to the fore. When the web is treated in this way, its inherent homogeneity becomes a call for an equally non-hierarchical power scheme." Ibid., p. 78

was essentially a rural project. Like Woods's projects for Frankfurt and Berlin, images of Fourier's project reveal its use of a courtyard configuration. Despite having an identifiable center, the project's linear articulation of several courtyards suggests that the project could branch out in many directions onto a territory; and yet, the Phalanstère was presented as an autonomous project, meaning that it was a freestanding object laid out in the countryside by its author, and unrelated to any other architecture.

Contrary that autonomy, Woods recognized advantages in operating within an urban context, as we saw. Negotiating a Web model with several pre-existing architectures gave him the opportunity to challenge what he referred to as expressionism, and allowed him to articulate different kinds of human actions with different kinds of architectures with his work. The fact that the organizing principle used in Frankfurt was preserved in the context of Dahlem, suggests Woods's recognition of the formal rationales he used in the city as valuable instruments and methods to operate on a suburban condition.[122] We can also understand that decision in relation to Woods's rejection of the conventional division between two supposedly different kinds of built environments. Simply put, by imposing urban logics on a suburban context, Woods tried to dissolve the division between urban, suburban, and rural environments. Based on this interpretation, it can be argued that Fourier's Phalanstère contributed valuable elements to Woods's architecture, regarding the use or purpose of architecture; but it was not able to provide him with equally useful instruments and methods to explore its form. The Phalanstère entailed the division between building and countryside, and therefore operated on an interpretation of architectural form that largely differed from Woods's.[123]

Based on these premises, González and del Real have sustained that Woods's project for Paris Nord evolved on Fourierism by focusing on a particular item from the philosopher Friedrich Engels's thought. According to both researchers, Woods adopted Engels's hypothesis that the opposition between the city and the countryside was noxious, and should therefore be suppressed.[124] Consequently, in Woods's project for Paris Nord "the 'interdependence

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[122] "Between the city and the countryside," he wrote, "there is something else; suburbia, a tissue not quite urban, not quite country and which has the qualities of neither one: an empty lot, a wasteland." Woods, Shadrach and Vailland, Roger: "Conversation on Urbanism," Perspecta, Vol. 11 (1967), p. 56

[123] "The urban condition cannot be dissociated from the rural condition." Woods: "Stem," p. 181

[124] González and del Real quote Engels: "The liberation of humanity from the shackles of the past cannot be realized without the suppression of the opposition between the city and the countryside," and add themselves: "In the disruption of the delicate balance between city and countryside was the foundation of

city/country' becomes a new city split in two: urban environment and open areas, what Woods calls zones of 'no edification'…. In Paris Nord the old city and countryside are synthesized into one entity: the new city…"[125]

And what was this new city like? Woods's project for Paris Nord can be understood as a series of guidelines for the organization of built form, operating at two levels. At the first of these levels, the project made an exhaustive inventory of the existing conditions of the site, and in doing so described a series of limits, boundaries, centralities,[126] and points of inflection for any built environment projected onto that site. Those conditions were not defined by the architect, and were not fixed or final either. The inventory contained a detailed registry of (a) natural resources, such as rivers and forests, (b) human resources, or the distribution of the population, and (c) built elements such as transportation networks and service infrastructures. At a second level, the project introduced the organizing principle of an orthogonal Web, with dimensions and proportions adjusted in relation to a traditional built environment, deemed adequate by the architect.[127]

By operating at these two levels, the project for Paris Nord was able to blur at least two boundaries, which are oftentimes taken for granted by many architects. One was the boundary believed to exist between rural and the urban environments – with the consequent assumption of

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nineteenth-century industrialization. Almost a century later, Shadrach Woods followed Engel's lead in attempting to suppress the opposition between the two." González and del Real: "Paris Nord," p. 65

[125] Ibid., pp. 74 – 75

[126] "It didn't work and it doesn't work today. So now we are trying to make cities without centers. One does not just put the center of a city or a plan by arbitrary decision or command. The centers in a city are not chosen by the planners or the architects; they are created by the activities of the people who use the city." Woods and Vailland: "Conversation on Urbanism," p. 56

[127] "The system outlined there is basically a combination of the grid-based web with two contextual models: the vernacular one of the medieval city of Sousse, in Tunisia, and the geographical one featuring the characteristics of the territory under study. The first set of drawings for Paris Nord were thus maps of the site – the whole of the Parisian region – recording specifics like population distribution, rivers and green areas, and the existing transportation system." González and del Real: "Paris Nord," p. 74; Cf.: "Studying the present in order to formulate hypotheses for the future is a principal characteristic of the working method of Candilis-Josic-Woods. An example of this can be observed in the Study for Paris-Nord (France, 1964) in which the existing urban landscape is thoroughly analysed by projecting new urban grids onto the situation." Avermaete: Another Modern, pp. 218 – 219

an in-between, suburban condition. The second boundary blurred by Woods was that which supposedly exists between the work of an architect and an urban planner, which we studied with some detail at the very beginning of this chapter. With these two boundaries blurred, Paris Nord can be understood as an oversized version of the Free University, or as an urbanist's masterplan for a particular region, making sense of Woods's defense of the encompassing discipline of environmental design. Furthermore, by establishing an even (and evenly distributed) relation between built and unbuilt, Paris Nord makes it impossible to define where nature starts and the built environment begins, and vice-versa.

Moreover, as González and del Real have also noticed, Paris Nord overstepped the idea of the individual architectural project, in the sense that it was not a specific solution for a particular site; but rather a fragment of a much larger development that could be achieved by the application of an organizing principle. The apparently utopian attempt to explore the evolution of Web at a territorial, and then at a global scale, was in fact consistent with Woods's belief that the urban was the only acceptable condition for human existence, and that as such it should supersede any other form of organization for the built environment, as we saw earlier. This proposition not only implied the imposition of urban rationales over natural environments, but – most importantly – it also implied a project for a single, world-wide urban environment.[128] According to González and del Real, Woods's project for Paris Nord gave "tangible form to his proposal for the world administrative system he called 'The Global City,' the political and organizational structure defined at the end of his book The Man in the Street…"[129]

As we said before, several authors have tried to attribute a sense of transcendence or meaningfulness to Shadrach Woods's formulation of abstract organizing principles, as the instruments and methods required to build our environment, even at a global scale. They have tried to do so by relating his work to artistic developments that deal with the continuity of space.

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[128] Woods argued that such a project should rely "on simple geometrics, because these are the easiest to conform, or to deform should the occasion arise. We developed linear systems (Stem) as well as poly-directional ones (Web). These are variously applicable and relate to the size of development, to a large degree. But whether they are stems or webs, their purpose is to organize a field (similarity to irrigation systems) for the practice of urbiculture, the growing or cities. The chief characteristic of such devices is their intent of total organization, this meaning that they are not exclusively concerned with certain aspects of the problem, in contrast to circulation systems for example, or hyper-sensitive space-making." Woods, Shadrach: "Waiting for Printout (Previously known as the Technico-Social Hangup)," Perspecta, Vol. 12 (1969), pp. 9 – 10

[129] González and del Real: "Paris Nord," p. 65

Some of those developments have also raised claims for universality.[130] Contrary those attempts, our study of architecture as a system of research programs has led our discussion towards an entirely different, and I would dare to say more productive conclusion. Unlike many architects' belief in the originality or meaningfulness of their or their colleagues' work, Shadrach Woods's trajectory can be understood as an effort to recognize that most of the built environment has been, and is in fact produced without those two conditions in mind. Actually, it is produced without much influence from the kind of architect Stanford Anderson referred to, when he talked about the so-called masters of the modern movement, as noted before.

We must recall how Woods opposed what he referred to as those archtiects' expressionism, or their ambition to produce work that was meant to be fundamentally beautiful, appealing, original or meaningful. We have also seen how he also opposed functionalism, or their belief that an architect can produce adequate counter-forms to accommodate clear-cut, standardized human actions. Instead, we have seen how Woods utilized age-old configurations, such as the courtyard, which have been used throughout history with success by thousands of people from many different places, as they build and transform their environments; and we have also seen how he sustained that in essence, the work of every architect consists in the simple acts of utilizing a series of well-known elements of architecture, and the definition of the dimensions and proportions of and between those elements.

With all these things we've seen in mind, I would like to return to the very beginning of this chapter, where we set out to study in what sense it was that Shadrach Woods's architecture could be taken for humanist and progressive, as he claimed it to be. Granted that most of work was intended to adapt to as many kinds of human actions as it possibly could, and that it recognized the need to empower every individual as responsible for the production and change of the built environment, we can confidently claim that indeed, we are talking about a humanist architecture.

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[130] "The rediscovery of continuous total space is the chief non-technical contribution of modern art and architecture to the social phenomena of the XXth Century. The world is one: a continuous surface surrounded by continuous space. Total space and universal society are interdependent: the one engenders the other." In this sense, it can be said that "though Woods challenged modernism, he did not break with it in a radical way," as Tzonis and Lefaivre point out. "He adopted the pre-war objectives of movement, change and the 'fourth dimension', but gave them a different meaning – that of mobility. Woods saw himself as an inheritor of modernism's humanist tradition at a time when that tradition appeared to be disappearing. He rethought basic concepts of modernism, adapting them to post-war needs and aspirations." Tzonis and Lefaivre: "Beyond Monuments," p. 125; Cf., Padovan: Towards Universality

Describing it as progressive, though, is a bit more challenging. As we will discuss in the following chapter, the notion of progress suggests the achievement of an improved or higher state in relation to something else; and I honestly do not believe we have any elements to consider that to be the case. We can speak, though, of this architecture as one that evolves on other architectures, in the sense that it develops some of their propositions and transforms them into something else.

On several occasions we have discussed how Woods's constant process of abstraction allowed him to recognize the value of the simplest architectural elements, and the value of the simplest human actions, as a way to evolve on well-known architectures (e.g., a traditional street configuration, a conventional university campus) towards something else (i.e., Stem, the Web of the Free University). This simple observation leads me to believe that, while it is rather pointless to describe his architecture as progressive, Shadrach Woods did indeed evolve on modernist architecture. He did so by advancing what he referred to as an act of "minimal structuring" [131] of built space. Paired to his popular claim that "the 'man in the street' is the real town-builder,"[132] the two or three acts of minimum structuring which we have studied in this chapter can be understood as clear challenges to a particular understanding of architecture which many of us share, and which presumes exactly the opposite.

I am talking about that understanding of architecture which presumes that most men and women around the world are not able to build their own environment, and require the professional services of a specialist, who has been professionally trained to do so. While this understanding might be accurate in some cases, it is also clear that an already existing global city that can be assembled with the fragments of vast tracts of the built environment, has been built on an entirely different understanding of architecture. Without the assistance of professional architects, millions of human beings have built, and constantly change their homes, not aiming for expressionism, but trying to make the best possible use of available resources in order to cater to their own actions.[133]

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[131] "Not a formal urban or architectural composition, Paris Nord projected an urban system based on 'minimal structuring.' (…) and reveals Woods's utopian proposition that 'leads one to imagine that there is another way to consider the built world – not as city and country as mutual oppositions, but as parts of a single operating entity.'" González and del Real: "Paris Nord," p. 66. Refers in turn to: Woods: The Man in the Street, p. 32

[132] Joedicke (ed.): Candilis, Josic, Woods, pp. 8 - 9

[133] I find an obvious relation between this interpretation, and Stanford Anderson's understanding of the built environment as an artifact, which we discussed extensively in chapter 1. Remarkable is that while Woods appears to arrive to his interpretation of a built environment built by multiple human actions based on the work of Friedrich Engels, one of the authors of the Communist Manifesto; Anderson arrives at the exact

In relation to this, already existing global city, Woods believed that "the image of the city, like the organization of the house, is not the affair of the architect. As architects we must disappear at the correct time and leave the place to men, city dwellers, who know better than us what is the appearance of their habitat. To do so, to be able to disappear, we must find the outcome, the exit door." [134] That door, I believe, did not imply a rejection of architecture; it was simply one that allowed Shadrach Woods to exit a particular architectural research program, and enter another, as we will see in the final chapter of our study.

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same interpretation through his study of the work of Friedrich von Hayek, who is taken for the founder of neo-liberal capitalism.

[134] Woods, Shadrach: "Paris Nord" unpublished typed text in French from the Shadrach Woods Archives, Feld 8:48, p. 8. I have not seen the original archive, but have obtained text and source from: González and del Real: "Paris Nord," pp. 78 – 79.

Image 15
House in Lutry, Switzerland

Conclusions

**Research Programs**

## A demarcation of architecture

Seventy years past the moment that briefly brought together Rogelio Salmona, Le Corbusier and Shadrach Woods, our architectural reflections can still be fed by a series of explorations present in, or related to some of their projects. Beyond attempts to judge or explain their meaning in relation a supposed historical principle or law; Centro Gaitán, the Nuovo Ospedale and the Freie Universität can be seen as interesting conjectures in an ongoing architectural discussion, and positioned in relation to other architectures that are also part of that discussion.

Adding to histories of architecture that focus on a few exceptional buildings,[1] or on the few men and women who are presented as their authors, in the previous chapters we have followed a methodological trajectory, which has allowed us to study the work of three architects as parts of a system of interrelated probes. The choice for that trajectory has proven fruitful. Against the hermeneutic basis we have identified in several modernist histories of architecture (i.e., against their attempt to explain the supposed *meaning* of buildings), we have set out to study architecture from a heuristic perspective, understood as the description of the instruments and methods used by architects to explore, evaluate and discover the built environment.

The mere description of just any instruments and methods is not automatically methodological, though. In order to be methodological, a study must be systematic; it must be organized and disciplined, or inscribed within the limits of a "set or system of methods, principles, and rules for regulating a given discipline"[2] – in this case, the architectural discipline. This straightforward realization explains the title of this study. My initial attempt to confront a historiographical question eventually led me to think about the history of architecture, not as a collection of exceptional buildings, but as a series of *transactions* between architects. Noted earlier, in this investigation the term transaction encompasses three meanings: the act of carrying on or conducting a negotiation, an interaction between an individual with one or more people, and the record of a disciplinary event. All three meanings converge in the interrelations that can be established among the discernible instruments and methods used by several architects to confront similar questions within the architectural discipline.

[1] "Conventional histories of architecture (…) miss both the minute and main details of artistic activity. The monograph upon a single work of art is like a shaped stone ready for position in a masonry wall, but that wall itself is built without purpose or plan." Kubler, George: The Shape of Time: Remarks on the History of Things. New Haven, London: Yale University Press, 1962, p. 33

[2] http://www.dictionary.com/browse/methodology. Retrieved 29/03/2018

In order to understand the logics that rule those transactions, I have decided to use the philosopher Imre Lakatos's methodology of scientific research programs. I have explained the reasons that led to this decision, and the implications that stem from it, in chapter 1. Among those reasons I have noted how Lakatos's methodology is basically a historiographical framework, intended to make sense of identifiable transactions (in his case, a series of theories or conjectures, plus attempts to reject or refute them) between scientists. That methodology, we know, evolved from the philosopher Karl Popper's investigations on human knowledge, science, and society.

Our reflections have certainly benefited from that relation in ways we can now discern. For instance, we have utilized Popper's notion of falsificationism, and Lakatos's development of that notion into a so-called sophisticated falsificationism, in order to understand how we know and learn about architecture. Among other things, the use of both notions has taught us that, rather than assuming that architects can learn from (or relate their work to) science by mimicking the aesthetics of its products; architects can adopt a *scientific attitude* towards their work. In our case, this means that architects can understand their work as a series of theories or conjectures, meant to confront a particular question; rather than as final or conclusive statements, meant to corroborate or prove a particular principle or law which is taken for true. Furthermore, this means that architects can acknowledge that their architectural conjectures are formulated and evaluated, not in relation to that supposed truth, but in relation to series of conjectures formulated by other architects.

Additionally, our reflections have also benefitted from previous attempts to establish a relation between Karl Popper's research (and that of his critics and collaborators) and architecture, which we have traced back to the early 1960s. Although we have studied the research of Royston Landau and Sarah Williams Goldhagen as part of these approaches, I have chosen to focus specifically on Stanford Anderson's attempt to draw parallels between Imre Lakatos's methodology of scientific research programs and architectural design. The reasons for this choice have also been made clear. As we will see in the following section, Anderson's attempt was partially successful in identifying similarities between the work of architects and scientists, based on the methodology proposed by Lakatos to explain the growth of scientific knowledge. However, we have also been able to identify aspects from Anderson's work which admitted further elaboration.

Notwithstanding those aspects, I am convinced that my decision to use Lakatos's methodology to appraise architecture, via Anderson, has been a fruitful one. Among the fruits it has borne is a clear and concise demarcation of architecture as: a) a specific human activity or discipline concerned with the production of the built environment, with a discrete set of instruments and methods (i.e., a technique) whose use can be *systematized*, and therefore assessed methodologically, b) a cognitive practice, or a particular way of knowing and producing knowledge, which can therefore be *researched*, and c) a discipline that is fundamentally telic, in the sense that it projects its knowledge toward a possible future, and can therefore be understood on the basis of *programs*. This is what I understand, when I refer to *architecture as a system of research programs*.

It is based on this demarcation that I have confronted a very specific problem, which I have described as modernist architectural historiography's inability to account for the many nuances and complexities that characterize modern architecture. That inability, I have shown, owes much to the *historicist* basis of that historiography. Specifically, we have focused on two elements of that historicism, which we have been able to identify thanks to Karl Popper. These are: the belief that an architecture can be explained in relation to incontrovertible historical principles or laws; and the belief that the future of architecture can be prophesied based on those principles or laws.

The work of the popular historian of modernist architecture Reyner Banham has provided us with a clear example of those two elements of historicism at work. Banham believed that modernist architecture was the inevitable outcome of (his very particular interpretation of) scientific progress, taken for an incontrovertible principle or law; based on which he also tried to prophesy a future for architecture, which he referred to as the "architecture of the second machine age." Like other well-known historians of modernist architecture, Banham judged and promoted different architectures depending on their ability to accurately represent the sort of scientism-as-mechanization which he took for an incontrovertible historical principle.

Against that approach to architecture, in general, and to architectural history, in particular, I have shown how the work of architects can also be described and understood in relation to the work of other architects, rather than in relation to any supposed historical principle or law. The interrelations I have drawn between the instruments and methods used by the three architects whose work we have studied, have certainly been able to clarify the nature and direction of that work for us. In other words, we have been able to understand these architectures without the need of classifying them as particular *kinds* of architecture, or without judging them in relation to some supposed standard. Instead, I have demonstrated how a study of the ways in which different architects evaluate, explore, and discover the built environment, by competing and collaborating with others, allows us to learn from their work.

We have seen, for example, how the three discrete interventions in Bogotá, Venice, and Berlin, coincide in their attempt to articulate several layers of those cities; and we have also seen how that attempt constitutes a rejection of identifiable elements of what we have described as modernist functionalism. On the other hand, we have studied the ways in which Rogelio Salmona, Le Corbusier, and Shadrach Woods adopted modernist architecture's use of industrialized building techniques. Our aim to determine in what sense these architects rejected some elements of architectural modernism, and in what sense they adopted others, is clearly different from Reyner Banham's aim to judge if an architect can be taken for a true-modernist, or not. I will expand on this further, below.

In the meantime, these observations confirm my belief that above any building or project's specificity, or beyond its ability to fit a particular category, the construction of more and increasingly diverse interrelations between several architectures can provide us with valuable knowledge about the architectural discipline as a whole.

But how should we study these interrelations? As I have shown, it is clear that we can do so by studying the different instruments and methods used by architects as they confront similar questions. These instruments and methods – we know – basically operate within four clearly defined fields of architectural activity, or architectural heuristics. In short, architects explore, evaluate, and discover the built environment together; and they all do so in terms of its form, the materials and constructive processes required to produce it, the expected use or purpose for which it is produced, and the way we can communicate about it. In the following section, I will show how the acknowledgment of these four heuristics can be taken for our main contribution to the study of architecture as a system of research programs.

**A development of Stanford Anderson's methodology**

Since the beginning of this investigation I have made clear that I have accessed Imre Lakatos's methodology of scientific research programs through Stanford Anderson's research. As we saw in chapter 1, Anderson tried to explain the relevance of the investigations carried out by Karl Popper and his critics and collaborators (among them, Lakatos) on human knowledge, science, and society; and their possible uses for architecture.[3] It was based on his study of Popper's investigations on tradition, for example, that Anderson criticized modernist architecture's supposed tradition-less-ness, promoted – among others – by Banham.[4]

We can now summarize the benefits of studying Stanford Anderson's research (i.e., his use of elements of Popper's work, and more specifically, his attempt for what he called a qualified version of Imre Lakatos's methodology of research programs) in two concrete ways. On the one hand, it is clear that there are elements of that research that certainly evolve beyond modernist architectural historiography. We have benefited from their use, and have therefore chosen to preserve them in our study. On the other hand, it is also clear that there are other elements of Anderson's qualified version which admit further development. We have tried to append, revise, or correct those elements, based on research by other authors who are related to Anderson in ways I have made clear opportunely.

[3] Anderson, Stanford: Interview dated April 6, 1999, in Frank, Suzanne: IAUS: The Institute for Architecture and Urban Studies; an Insider's Memoire. Bloomington (In.): Author House, 2011, p. 214. Also, Anderson noted elsewhere: "Colin Rowe and I came independently to the epistemological analyses and alternatives offered by the thought of Karl Popper and, later, Imre Lakatos." Anderson, Stanford: "Architectural History in Schools of Architecture," Journal of the Society of Architectural Historians, Vol. 58, No. 3, Architectural History 1999/2000 (September, 1999), pp. 284 – 285, leads to endnote 21, with bibliographical references.

[4] As I said in chapter 1, I believe that Anderson's "recognition of theoretical and critical issues, including those contemporary issues that could appear anachronistic yet yielded reciprocal benefits for theory and history – for the understanding of temporally or culturally distant artifacts," clearly evolves beyond Reyner Banham's understanding of architecture.

Regarding those elements which we have chosen to preserve, the most important is Anderson's acknowledgment of cognitive growth as a goal for the architect. We have repeatedly quoted his belief that "the architect's problem is not how to found his knowledge positively but how to make his knowledge grow;"[5] which basically means that the architect's duty is not to be right, but to try to learn through his or her work.

Furthermore, we have developed that interpretation further based on our belief that the architect must strive for, not only the growth, but the *growth and development* of his or her knowledge, at both quantitative (knowing more) and qualitative (knowing better) levels. Like Anderson, I am convinced that both knowing more and knowing better about architecture and the built environment demand that we preserve and uphold a *scientific attitude* towards our work. By this I mean that in order to learn, it is essential that we admit that every one of our thoughts and actions as architects is nothing but a conjecture, and that we further admit that there must be potential refutations or counter-conjectures that are able to falsify our own.

This idea (and its development into a description of the built environment as an artifact) is central to my claim that Anderson's appraisal of architecture evolves beyond modernist architectural historiography, as it clearly defies the historicist elements we have identified in that historiography. Simply put, the recognition of the falsifiability of our propositions is completely at odds with the belief that our goal as architects is to interpret as accurately as possible any supposedly incontrovertible historical principle or law.

A second element from Anderson's approach to the philosophy of science, which we have chosen to preserve in our study, is his adoption of Lakatos's belief that that growth of knowledge does not depend on isolated theories, but on series of theories. This belief (which is strongly related to the value we have given to proliferation in the production of knowledge) also defines the distinction between naïve and sophisticated falsificationism, which justifies the entire methodology of research programs. Furthermore, this belief entails important consequences when brought to architecture. The most important of these consequences is that, seen this way, our appraisal of the growth and development of architectural knowledge seems less plausible through the study of a single building or theory, than on the study of series thereof.

The study of series of buildings or theories, understood as conjectures and refutations to those conjectures, leads us to recognize a third element in Anderson's approach to Lakatos worth preserving. I am talking about the acknowledgment that competition (we will slightly revise this soon) between series of hypotheses is central to the growth of knowledge. Again, this idea sharply opposes the historicist interpretation that some architectures should be judged as wrong or inaccurate in relation to a supposed principle or law (e.g., Banham's criticism of Basil Spence's project for Coventry Cathedral, for not being "truly modernist," from chapter 1), and instead

[5] Anderson, Stanford (ed.): Planning for Diversity and Choice: Possible Futures and Their Relation to the Man Controlled Environment. Cambridge (Mass.): MIT, 1968, p. 5

suggests that the multiple transactions and interrelations that can be established between the work of several architects is what allows them and many others to know more and better about what they do.

Finally, it is important to mention, among Anderson's contributions to this study, his acknowledgment of the existence of hard-core hypotheses that initiate and sustain the work architects. Adopted from Lakatos's methodology, the figure of hard core hypotheses, which are also referred to as a negative heuristics, represent a set of convened core-values which are protected by an orbit of conflicting conjectures, and provide a sense of disciplinary stability for that work. In other words, the figure of hard core hypotheses allows us to recognize that not all of our work as architects is necessarily rational, nor meant to be discussed, criticized, or rejected by others. Instead, we must admit that an important part of that work (dealing, for example, with the reasons that lead us to do it in the first place, to approach it in a particular way, or to drive it in a particular direction) is oftentimes based on our feelings, and with the way we feel about certain conventions which we take for granted, uncritically.

Based on these observations, I have argued that Stanford Anderson's appraisal of architecture confronted modernist historiography by advancing elements of a better methodology. That better methodology suggests that architecture is basically a collective, cognitive practice, which benefits from a scientific attitude towards knowledge. Anderson recognized the conjectural nature of all architectural propositions, saw competition as a source of knowledge, and acknowledged that consensus and convention are central to the work of an architect. These are all elements from his interpretation that I believe we can agree on, and have therefore been preserved in our study.

I also believe, though, that other elements from Anderson's interpretation must be revised. The first of those elements is the lack of an identifiable unit for the appraisal of architecture in his qualified version of Lakatos's methodology. By this I mean that, while Lakatos studied science based on the appraisal of series of theories, Anderson never made clear what exactly it was that he was appraising, especially when he tried to exemplify his qualified version at work. In order to make this clear, let us return to the examples he advanced to study his qualified version of Lakatos's methodology at work. As we saw, those examples were entirely focused on a handful of drawings or buildings, such as the Dom-ino house, a drawing of the Athenian Acropolis, the two schools at Cranbrook, and so on. That focus, which deliberately excluded writing as architectural work, for example, explains why Anderson eventually had to differentiate between two kinds of research programs: a conceptual or theoretical program, and an artifacutal or projective research program.

We know now that that division was extremely problematic, and proved to have very little use for Anderson himself. The fact that he did not elaborate on, nor provide any example of a conceptual research program, ratifies this observation. Therefore, we have chosen to avoid that division altogether, and instead we have tried to define an elemental unit for the appraisal of architecture for our study, that is able to account for both conceptual and artifuactual aspects of architecture, jointly. Fortunately, we have found an excellent alternative for this unit of appraisal in the

philosopher Marx Wartofsky's definition of the model, which entails a vision of a possible future, plus the necessary instruments and methods required to arrive to that future, as we saw in chapter 1. Our use of this notion has allowed us to do two important things. Firstly, it has allowed us to recognize many different architectures as visions of possible futures for the built environment, including (but not limited to) buildings, projects, material calculations, digital prototypes, diagrams, sketches, budgets, scale-models; but also descriptive, critical, or analytical texts on the past,[6] present, or future of that built environment.

A second important thing the model has allowed us to do, is to recognize the inextricable relation that exists between architecture's vision of a possible future, and the technical driver required to get there. Our acknowledgment of that technical driver has led us to a second, key point from Anderson's interpretation, which we have chosen to revise. I am talking about his inability to explain exactly in which aspects it is that different architectures interact with each other.

In order to overcome that inability, we have described the technical driver of an architectural model as the necessary instruments and methods required to explore, evaluate, and discover the built environment with the intention to move towards a possible future. Unsurprisingly, our reflections on the nature of these instruments and methods have shown us that architects coincide in their focus on four fields of exploration, evaluation and discovery, which we have called architectural heuristics.[7] Despite huge differences between their work, architects advance visions of possible futures that include reflections and experiments on the shape, form or configuration of the built environment; on the materials, processes, and techniques required to achieve those possible futures; on the possible, expected, or desired uses or purposes of that built environment; and on the ways in which their reflections can be communicated to others.

The recognition that the work of an architect issues in models, and that several of those models can relate to each other based on their heuristics, has led us to controvert the main limitation we have found in Anderson's approach. I am talking about his attempt to exemplify one or more architectural research programs at work within the work of a single architect.[8] As we know, the

[6] An operative understanding of history recognizes that our study of objects and events of the past is instrumental to project our present acts towards the future. It is in this sense that I recognize history, or the analysis of precedents, as part of the telic component of an architectural model.

[7] "Recently…, the historians of science have conjoined ideas and things in an inquest upon the conditions of discovery. Their methods is to reconstruct the heuristic methods of the history of science, and thus to describe happening at its point of inception." Kubler: The Shape of Time, p. 4

[8] Surprisingly, Anderson was aware of the importance and utility of establishing interrelations between the work of different architects. Some of these interrelations were developed in: Anderson, Stanford: "Deutscher Werkbund – the 1914 debate: Hermann Muthesis versus Henry van de Velde," in Farmer, Ben and Louw, Hentie (eds.): Companion to Contemporary Architectural Thought. London and New York: Routledge, 1993. Pp. 462 – 466; and also in Anderson, Stanford: "The Legacy of German Neoclassicism and Biedermeier: Behrens, Tessenow, Loos, and Mies" Assemblage, No. 15 (August 1991) pp. 62 – 87

original methodology that Stanford Anderson was trying to adapt to architecture is entirely reliant on the establishment of interrelations between the work of different scientists. Attempts to establish interrelations between Ptolemaic, Copernican, and Newtonian science, for example, were central to the work of Lakatos, who studied the ways in which some of the hypotheses formulated by those scientists competed with each other.[9] Based on this simple observation, it is clear that our appraisal of architecture can evolve from Anderson's qualified version, in order to explain an architectural research program at work based on the interrelations that can be established between the work of several architects in clear heuristic terms.

Consequently, our revision of Anderson's qualified version of Lakatos's methodology: a) defines the architectural model, which is both telic and technical, as a basic unit for the appraisal of architecture; b) makes clear that the technical component of every architecture comprises the instruments and methods, or heuristics, used to explore, evaluate, and discover the built environment, and to drive it towards a possible future; and c) appraises architecture by studying the interrelations that can be established between the instruments and methods used by several architects as they confront similar questions, rather than by studying exceptional buildings in relation to a supposedly incontrovertible historical principle or law.

I must note that, aside from what we have preserved and revised from Anderson's research, I have also felt it necessary to slightly alter a few items from Lakatos's original methodology. The first of these items is his constant allusion to cognitive growth as *progress*. As we saw, Lakatos defined two kinds of research programs, which he described as either decadent or progressive. Clearly, the notion of progress in architecture is extremely difficult to evaluate. Taking that difficulty into account, I am convinced that that specific notion does not contribute anything of value to our investigation. For that reason, I have chosen to substitute the notion of progress with that of evolution. Unlike progress, which often entails a positive meaning, evolution refers to something that grows, adapts, or develops, without necessarily qualifying it. This slight adjustment allows us to contemplate the possibility that, contrary Lakatos's description of scientific processes, the fact that one architecture evolves from or beyond another does not mean that it necessarily supersedes it.

This observation led me to a second, slight revision of Lakatos's methodology, which consists in contemplating that not only competition, but *competition and collaboration*, are indispensable to, not only growth, but the *growth and development* of knowledge. I understand Lakatos's focus on competition as a source or motivation for progress, and his assumption of progress in relation to growth, as part of a larger set of ideas in which his thought evolved, and which I do not entirely share.[10] Fortunately, I have been able to show how in architecture, collaboration among architects

[9] Lakatos and Zahar: "Why did Copernicus's research programme supersede Ptolemy's?" pp. 168 – 192

[10] The work developed by Karl Popper and Friedrich Hayek (whose notion of "artifact" was used by Anderson to describe the built environment) at the London School of Economics is often inscribed within classical

is as valuable and productive as competition in the production of knowledge, which is seen as both growth and development. With this final observation in mind, I believe we should move on, and try to describe architecture as a system of research programs a bit further.

**Architecture as a system**

The demarcation of architecture I have advanced in the first section of this chapter is instrumental to our description of architecture as a system of research programs. Let us give it a second look. As part of that demarcation, we referred to architecture as a *specific* discipline; one that is different from others. But what defines that specificity? The answer is quite simple: we all do. Architecture is a relative concept, whose specificity is defined by convention.[11] In other words, the way in which an architect defines what is architecture at any given moment is not automatic,[12] but rather based on a series of consensual agreements among several parties, with which the architect agrees or disagrees. Once we agree with a particular definition of what is (and what is not) architecture, our choice is not meant to be questioned – at least not on a regular basis. We mostly take that definition for granted. In this sense, we can equate our definition of architecture to the hard core hypothesis of a research program, as described by Imre Lakatos in his methodology.

Stanford Anderson – we know – referred to that hard core hypothesis in architecture as "the acceptance by convention of certain assumptions in order to initiate and drive a body of work."[13] The first part of this proposition, which acknowledges the conventional nature of an architectural research program's hard core, explains why Anderson's attempts to exemplify the methodology of research programs at work were mostly flawed. Succinctly, if the architect accepts by convention certain assumptions that initiate his or her work, it is clear that those assumptions have been discussed by or with others. An individual cannot convene.

Given that Anderson took those conventional assumptions for a research program's hard core, his aim to identify one or more hard-core hypotheses within the work of a single architect reveals a glaring contradiction. The collective nature of convention is entirely at odds with Anderson's aim to identify several hard-core hypotheses (i.e., several conventional assumptions) within the work

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economic liberalism. I have chosen to add the notions of collaboration and development as used by other economists, like Herman Daly.

[11] Understood as a "general agreement or consent; an accepted usage, especially as a standard procedure." Clearly, this sort of agreement involves several parties. (http://www.dictionary.com/browse/convention, retrieved 25/04/2018)

[12] Meaning: "having the capability of starting, operating, moving, etc., independently; or occurring spontaneously." (http://www.dictionary.com/browse/automatic, retrieved 25/04/2018)

[13] Anderson: "Architectural Design as a System of Research Programs," p. 149

of one architect. In fact, it appears to be exactly the other way around: the work of an architect does not constitute, in itself, one or more research programs. Rather, it is advanced as part of, or inscribes itself within one or more ongoing research programs, whose hard-core hypotheses are shared by some architects, and rejected by others.

In the second part of the proposition we just read, Anderson also talked about *driving* an architectural body of work – an idea that clearly resonates with our demarcation's allusion to the *telic* nature of architecture. As I have noted, it is characteristic of the architectural discipline that it projects its products towards a possible future. Evidently, the act of projecting or driving a body of work towards a possible future within the limits of a specific discipline implies a technique that is also specific to that discipline. This simply means that the definition of architecture as a discrete practice that produces a particular kind of work, and the acknowledgment that that work can be driven in a particular direction, bring about a series of instruments and methods that are proper to that practice and required for that action. Since those instruments and methods are integral to every architect's definition of architecture, we can assume that together, definition, instruments, and methods, constitute a *system*; and that the intention to drive that system towards a possible future issues in a *program.*

According to our interpretation, the system of programs we are describing is fundamentally *cognitive*. This last element from our demarcation just denotes that architecture is a particular way of knowing and producing knowledge. Architects explore, evaluate and discover the built environment based on a particular definition of architecture, and through the use of the instruments and methods that correspond with that definition. This is how we learn, and how we produce knowledge about the built environment.

Based on these premises, we can explain the growth and the development of architectural knowledge as the result of an architect's "examination of a body of work for internal structure and for its relation to other systems and to empirical conditions"[14] – like Stanford Anderson did. This means that, mindless of the kind of architecture he or she produces, we can understand the work of an architect as part of a system of research programs, in the following way: a) a work of architecture is initiated by the architect's adoption of a conventional definition of architecture; b) that definition allows the architect to decide a possible future towards which that work must be driven; c) in order to drive that work towards that possible future, the architect chooses to confront certain questions.

While operating on these three points, the architect is inserting his or her work within a research program, by agreeing with a hard core hypothesis which is basically a definition of architecture.

Furthermore, in order to confront the questions I just mentioned, d) the architect assembles a series of instruments and methods, which are meant to drive his or her work towards the

[14] Anderson: "Architectural Design as a System of Research Programs," p. 149

envisioned future, as they confront those questions. Those instruments and methods allow the architect to explore, evaluate, and discover the built environment, and are also used by other architects in similar or different ways. For that reason, e) the architect transacts (by competing and collaborating, negotiating, interacting, and recording disciplinary activity) with other architects who share similar or different goals, based on their choices.

Like the auxiliary hypotheses in Lakatos's description of a research program, the architect's choice for a particular set of instruments and methods (point d) can be taken for a positive heuristic, in the sense that it is open to criticism and testing (point e) by others. Meanwhile, the original definition of architecture, which I have equated to the program's hard core (points a, b, and c), is protected from direct criticism by those auxiliary hypotheses. Basically, it is much easier (and much more common) to criticize a building's shape, the materials used in its construction, its inability to cater to some use, or the way it has been rendered or described in a text; than to engage in a full-fledged ontological discussion aimed at defining if that building fits within what we consider to be architecture or not. This brings us to a very interesting realization: architects mostly criticize architectures that belong to the same research program in which they inscribe their own work. Architectures that operate on different research programs are seldom criticized, but are instead neglected or dismissed, as they are basically not taken for architecture. We will return to this, towards the end of this chapter.

Meanwhile, let us re-direct our attention to our original discussion. With the above thoughts in mind, it is clear that this investigation's main contribution to the body of knowledge I have chosen to deal with is its advancement of a demarcation of architecture and a methodology for its appraisal which are in stark contrast with, and certainly evolve beyond demarcations and methods promoted by modernist historians like Reyner Banham. That contrast issues, among other items, in my choice to study architecture by focusing on the transactions that can be established between three architectures, rather than studying those architectures in relation to supposed principles or laws. As I have shown, that choice has allowed us to confront the aforementioned historicist tendencies to explain architecture in relation to those principles or laws and to prophesy; and it has also allowed us to replace those tendencies by introducing elements form a better methodology. In the following section, we will examine how our introduction of those elements from a better methodology favor the growth and development of architectural knowledge.

**Transactions**

In the three previous chapters we have examined some of the many nuances and complexities that characterize the architectures of Rogelio Salmona, Le Corbusier, and Shadrach Woods. Specifically, we have described some of the instruments and methods employed in the development of three of their projects, and sketched the context in which those instruments and methods were chosen. We have also seen how several authors have avoided much of that context,

and have instead tried to explain those projects, either in relation to modernism (understood as an incontrovertible historical principle or law) or as acts of geniality.

In this conclusive stage of our study, it does not appear to be necessary or useful to iterate on our earlier, more detailed descriptions of those projects. Instead, I will try to focus on few transactions among these architectures, carried around a concrete question which we have insistently touched upon: What is the relation between human activity and the architectural form in which that activity takes place?

As we know, modernist architectural historiography has told us that an incontrovertible principle or law (in this case, the belief that architecture should mimic a supposed scientific rationality) issued, among other consequences, in what we know as modernist functionalism. Earlier, we have defined that particular version of functionalism as the belief that the production of architectural form can be directly linked to the analysis of specific, clear-cut human actions, or "functions," expected to take place in that form. To illustrate that proposition at work, in chapter 1 we saw how a modernist historian like Reyner Banham established a direct relation between "true modernism" and "radical functionalism" in architecture, in his critique on Basil Spence's project for Coventry Cathedral.

Evidently, the architects whose work we have studied did not entirely agree with that proposition, and tried to challenge it in several ways. True, we could have tried to judge that work as either truly modernist (or not) like Banham; case in which we could have said that these architects' defiance of modernist functionalism disqualified them as not entirely or truly modernist. On the other hand, we could have also tried to come up with one or more ad-hoc categories of modernism that would suit these architects, like we saw some authors try to do. Had we chosen that trajectory, we could have explained Centro Gaitán as an offshoot of Frank Lloyd Wright's influence, or as a "critical regionalist" modernist project, for example. In both cases, we would be taking for granted some sort of canon or norm, upheld by a few architects, and we would be explaining and judging an architects' work in relation to that canon or norm.

Instead, and for reasons that should be quite clear by this point, I have decided to avoid the study architecture in relation to definitive instances, such as canons, univocal influences and incontrovertible principles. All these – I am convinced – are noxious elements of historicism. Instead, I have chosen to examine the interrelations that can be established between the work of several architects, in terms of the instruments and methods they use, as they confront similar questions.

Based on that decision, we can identify the following transactions between Salmona, Le Corbusier, and Woods, in relation to what we have described as the question of modernist functionalism. These transactions can be succinctly expressed in a table, similar to the one we used earlier to illustrate four fields of architectural exploration, evaluation and discovery (or architectural heuristics), and some of the instruments and methods used by architects to work within those heuristics.

**Table 2**
**Transactions**

| Question | Example | Heuristic | Instrument | Method |
|---|---|---|---|---|
| What is the relation between human activity and the architectural form in which that activity takes place? | Centro Gaitán | Form | courtyard / patio configuration | a diagonal array of patios, around which independent blocks are clustered. |
| | | use / purpose | flat roofs | making the roofs accessible from outside public space, as terraces |
| | | Technique | reinforced concrete and brick masonry | cladding a post and beam skeleton with brick masonry to achieve a massive effect. |
| | | Communication | poetry Expressive perspectives. | describing architecture in terms of perception and metaphysics. |
| | Venice Hospital | Form | hypostyle configuration<br><br>courtyard / patio configuration | assembling an inferior level of columns, and a superior level of courtyards |
| | | use / purpose | streets and squares | reproducing the configuration of venetian alleys and squares on the upper level. |
| | | Technique | reinforced concrete | assembling an inferior level of columns and beams, and a superior level of load bearing walls and slabs. |
| | | Communication | elevation drawings | presenting the building as a neutral, façade-less background to emphasize its integration to the urban context. |
| | Free University | Form | modular elements (walls, slabs, stairs, columns). Courtyard / patio configuration. | piecemeal articulation of clusters of built form with circulations (halls, ramps, stairwells) and voids (courtyards) |
| | | use / purpose | modular elements | leaving the assembly of parts of the building open for users to define. |
| | | Technique | prefabricated steel modular elements. | flexible assembly of small buildings parts. |
| | | Communication | plan drawings | superimposing several plan drawings on top of each other, in order to show the articulation of several different systems. |

Despite its reductive nature, we can obtain valuable knowledge from this table, and from the transactions between several architectures which it describes. I propose that we focus on three, concrete examples of that knowledge.

The first lesson we can obtain from this table is not explicit, but rather tacit. I refer to our ability to understand the existence of different points of view regarding one question. Although the table is necessarily schematic, in the sense that it narrows down each architect's response within a heuristic field to one instrument and one method; it is clear that the transactions we are describing are more complex, and a diversity of instruments and methods can be advanced to respond to a question within the work of a single architect, as well as and among several architects. In relation to our example, if we take for granted a platitude such as the oft-misquoted modernist belief that "form follows function," and if we complement that with the attempt by several architects (including an earlier Le Corbusier) to simplify human actions in the built environment into a few standard actions, it becomes clear that these three architects were indeed critical of modernist functionalism, both individually and jointly.

Their reactions to that question, or the instruments and methods they used to confront it, are in all cases discernible. Rogelio Salmona was keen on stimulating observance and awareness at the perceptive and metaphysical levels within the built environment; Le Corbusier's last project recognized and promoted social interaction as an indispensable purpose for the built environment; and Shadrach Woods understood that, as important as the ponderable functions defined by modernist architects, were those imponderable non-functions which demanded that the built environment remain relatively undetermined, flexible, and open to change.

Some of us can agree with these three architects' positions in relation to that question, or reject them; consider that the instruments and methods they chose to confront it were adequate, or believe that others would work much better. Whatever the case, it is important to recognize that by recognizing all these possibilities we will be avoiding the historicist belief that an architect's work is unavoidably (and uncritically) bound to something beyond our control. There is an enormous difference between believing that our work must accurately represent technological progress, democracy, Western civilization, or the moral standards and power ambitions of a particular group, on the one hand; and understanding on the other that our work is related (in ways we can understand and control) to the work of many others who confront questions similar to those that capture our genuine interest, with discernible instruments and methods we can also use ourselves.

A second lesson we can obtain from the table above, allows us to recognize the enormous value of architectural instruments and methods which we often take for granted. As we've seen, these three architects' rejection of modernist functionalism was partially based on their use of an age-old instrument of architecture. The courtyard configuration, or the decision to arrange built space around a vertical void, was utilized in these three projects following quite different methods. Those methods can be described as actions (e.g., clustering, puncturing, stacking, sponging or foaming, etc.), and linked to the intentions of the architects regarding expected uses or purposes

for their work.[15] The nature and performance of those instruments, and the methods or actions utilized to operate with them, are not arcane knowledge. In adequate circumstances and proper environments, they can be taught and learned.

A third and final lesson we can obtain from our table, is the demonstration that the growth and development of architectural knowledge can be described as the result of competition and collaboration among architects. As we saw in the introduction, when we discussed an architectural question from Rudolf Wittkower's research, the very simple relations we have sketched between an architectural question, an instrument and a few methods with which that instrument is used, have allowed us to present bona-fide operative knowledge. Contrary the difficulty we had utilizing the explanations advanced by Bruno Zevi and Vincent Scully, also in the introduction, any architect can learn from the fact that several of their colleagues have already thought that beyond a few systematized actions, our use of the built environment implies actions that are imponderable, social, or metaphysical. Any architect can use that knowledge when dealing with a tight brief or program, choosing to stick to that brief strictly, open up space for unexpected things to happen, and so on.

Also, any architect can learn from the fact that several colleagues have already tried to open space for a series of non-standard human actions within their work by using a well-known architectural configuration, such as the courtyard. Faced with a similar question, any architect can consider that particular configuration as a powerful option, and trust that it has worked for others before. Finally, any architect can recognize that some of his colleagues have already used different methods to adjust that configuration to their own intentions. Among these methods we have seen the clustering of different kinds of building blocks around well-defined, strictly-aligned patios; the stacking of a porous layer of cells, corridors and courtyards above a layer of columns; and the production of a sort of sponge, made up by the piecemeal articulation of walls, slabs, stairs, and voids of different sizes. These three methods of using the courtyard configuration are readily available. We can all use them.

This has an extremely important consequence, which can also be taken for one of the main contributions our study makes to the body of knowledge it has been dealing with. Based on our study of architecture as a system of research programs, any of us can inscribe his or her work among the transactions that we have identified between these projects, like these three well-known colleagues did in relation to each other, and to other architectures which we have duly mentioned. In other words, each and every one of us can compete with some of these architects' propositions, challenge others, and so on.

Clearly, this inscription of our own work amid a network of interrelated probes largely differs from the idea that our work as architects is subservient to that of a few so-called *masters*, whose work

[15] Cf.: Cortés, Juan Antonio: Nueva Consistencia: Estrategias Formales y Materiales en la Arquitectura de la Última Década del Siglo XX. Valladolid: Universidad de Valladolid, 2003

*influences* us, or who we shall follow. It is also quite different from the belief that we must explain and judge our work in relation to a series of supposedly incontrovertible principles or laws, to which we shall comply. The consequences of these two differences will be discussed in the final section of this chapter.

**Hard core hypotheses**

As we move towards the end our discussion, three concrete realizations afforded by this investigation appear to me as particularly interesting, and allow me to advance a few hypotheses for future study. Let us examine them.

The first important thing I have realized through this effort is that my initial aim to confront the shortcomings of modernist architectural historiography was a productive one. My belief that modernist histories of architecture remain unable to appraise many of the nuances and complexities that characterize modern architecture was not unfounded. I have been able to demonstrate that they remain so at least in part because they follow a hermeneutic trajectory, which is often reliant on the use of elements of historicism, as we have described them. This is already an important finding.

We have seen those elements of historicism at work in two kinds of modernist histories: some directly linked to the architecture of the so-called Modern Movement, like Banham's; but also some newer ones, written much more recently, albeit in pretty much the same historicist vein. Despite their popularity among architects, we have shown how the belief that historical events obey to an incontrovertible historical principle or law, and the belief that the future can be prophesied in relation to that principle or law, are misconceived as goals and provide us with a poor method for the appraisal of architecture.

As we have seen, those beliefs were present in Banham's evaluation of architecture in relation to a few mechanistic principles, and in his attempt to prophesy an "architecture of the second machine age;" and they are also present in current attempts to explain and evaluate architecture as the unavoidable cause and consequence of newer versions of Banham's laws. Those who judge any architecture based on its ability to represent the supposedly inescapable laws or principles that govern digital technology, for example; or those who prophesy imminent futures for the built environment in relation to one of the many forms of soi-disant "activism;" certainly operate on historiographical grounds similar to those Banham worked on, in his promotion of mechanization.

Our choice to follow a heuristic, rather than a hermeneutic trajectory, and our choice to oppose the historicist basis of modernist historiography by using a well-known demarcation of science (and a historiographical methodology derived from it), have also proven to be fruitful. By using Popper's theories of science, knowledge and society, and by using Lakatos's methodology of research programs to appraise architecture, I have come to a second important realization: To a

great extent, the hermeneutic trajectory followed by modernist histories of architecture, and the historicist elements which appear to be favored by that trajectory, overstep the sheer study of architectural objects and events, and operate as instruments of power among architects. Unequivocally, the idea that architectural objects or events must be explained, interpreted, or translated (i.e., hermeneutics) presupposes that they indeed have a meaning, which is defined and understood by *someone*. Likewise, the idea that that meaning must be evaluated in relation to an incontrovertible principle or law (i.e., historicism), implies that someone will define, uphold, or enforce that principle or law, while others will be subject to it.

The use of these two instruments of power among architects has often favored two of the attitudes which characterize what Popper referred to as a closed society.[16] The first of these attitudes is superstition. The widespread belief that an architect's relevance or success is contingent on the arcane notions of inspiration and geniality, are two common expressions of superstition. The second of these attitudes is tribalism. The assumption that those touched by inspiration or endowed with geniality are meant to lead, while the rest must follow, is just as common. It is based on these two attitudes that modernist histories of architecture have presented thousands of architects with the prospect of evaluating their work as subservient to that produced by a few men; who are taken for geniuses or masters based on their ability to epitomize a supposedly incontrovertible principle or law (e.g., mechanization) into a few exceptional buildings.

The futility of such interpretation is the third, and perhaps the most important thing I have realized through this reflection. As in the sciences, we must agree that the growth and the development of architectural knowledge is seriously hindered by the constitution of closed societies, understood as those in which relations among architects are marked by tribalism and superstition. In such societies, the freedom to criticize every proposition and to formulate bold conjectures (which as we've seen, are indispensable to the growth of knowledge) are limited or discouraged, when not impeded altogether.

It is important to note, though, that these two attitudes are nor inherent to, nor pervasive throughout modern architecture. Rather, they can be understood as auxiliary hypotheses, meant to protect the negative heuristic of only one, among several other architectural research programs which have evolved throughout extremely long periods of time.[17] I will refer to this as the Albertian research program, which evolves around the hard-core hypothesis that architecture is an artistic discipline, in the very specific terms in which art is understood in modern European

[16] Popper: The Open Society and Its Enemies

[17] "The actual hard core of a programme does not actually emerge fully around like a theme from the head of Zeus. It develops slowly, by a long, preliminary process of trial and error." Lakatos: "Falsification and the Methodology of Scientific Research Programmes," p. 133, footnote 4

culture.[18] This closeness to art, explains why many architects and architectural historians could so easily adopt Hegel's understanding of art for their own appraisal of architecture, as we saw in the introduction. The origins of this research program can be traced back to the work of the Genoese polymath Leon Battista Alberti, whose well-known treatise on architecture[19] assembled a series of hypotheses that have defined and supported the work of many architects since the 15th century of our era.[20] Among those hypotheses, I can mention two, which are especially relevant to our study. These are a) the belief that, like modern European art, architecture must be meaningful;[21] and b) the belief that, like works of modern European art, exceptional works of architecture are authored by recognizable individuals.[22]

Based on these two hypotheses, the Albertian research program has been remarkably successful, especially in its exploration, evaluation, and discovery of the communicative heuristic of architecture. Boosted by its advantageous situation in relation to economic, political, and – most importantly – military power,[23] the Albertian architectural research program has literally *conquered* a leading institutional role. As Stanford Anderson noted, architecture as a system of research programs implies the embedding of the architect's work in a historical and cultural setting and the necessity of institutional support and constraints.[24] Architects operating on this program have widely publicized explanations that align a diversity of architectural objects and events with their program's hard core hypothesis; and have cunningly detached their work from architectures produced on different programs.[25] This is especially evident in modern academia,

[18] Wittkower, Rudolf: Architectural Principles in the Age of Humanism. New York and London: W.W. Norton & Company, 1971

[19] Alberti, Leon Battista: On the Art of Building in Ten Books. Cambridge (Mass.) and London: MIT, 1991

[20] Biermann, Veronica, et al.: "Leon Battista Alberti (1404 – 1472)," in: Architecural Theory: From the Renaissance to the Present. Köln: Taschen, 2015, pp. 28 – 33

[21] Alberti's notions of "voluptas" and "concinnitas," and his cunning recovery of the Vitruvian notion of "venustas," link several concepts, including beauty and meaning. For the relation between these Albertian notions and modernist architectural historiography: Tournikiotis, Panayotis: The Historiography of Modern Architecture. Cambridge (Mass.): MIT, 1999, pp. 82-82, 136 – 137, 178 – 179, 240 – 247

[22] Vasari, Giorgio: The Lives of the Most Excellent Painters, Sculptors, and Architects. New York: Modern Library Classics, 2006 (1568)

[23] Frankopan, Peter: The Silk Roads. London: Bloomsbury, 2015

[24] Anderson: "Architectural Design as a System of Research Programs," p. 149

[25] "Although the Vitruvian tradition remained alive in numerous medieval manuscripts, it was only of marginal importance for actual building practice. Indeed, the Classical column orders were first considered exemplary only once Vitrivius's text had been appropriated once again by the Classical scholars of the Renaissance and deemed to be the model par excellence for architecture to follow, with Leon Battista

where promotors of the Albertian research program have succeeded in narrowing down the definition of the architect as an individual who, like an artist, is able to claim authorship over meaningful work.

By acknowledging the existence of this program, I have come to a vital realization. Towards the end of the introduction, I recognized that this study remained unwilling or unable to detach itself from the study of exceptional buildings, designed by individual form-givers. The reason for that inability is now clear to me: I have been formed as an architect entirely within the Albertian research program. The way in which I have so far appraised architecture is based on a demarcation similar to that used by Adolf Loos to distinguish between a tomb or a monument and rustic country houses, by Nikolaus Pevsner to distinguish between a Cathedral and a bicycle shed, and by Bernard Rudofsky to refer to the men and women responsible for the production of amazing built environments as "non-architects."[26] In all cases, the demarcation of architecture shared by these architects contains a hard-core hypothesis that rejects or neglects all architectures that do not coincide with, or challenge it.

It is interesting to note, though, that despite its undeniable communicative efficiency, the Albertian research program's leading role in academic and normative instances (such as schools and academies of architecture, professional associations, specialized media and regulating agencies) does not entirely correspond with its actual presence in the built environment. Architects who operate on that program as designers, teachers or critics, often complain about the fact that vast tracts of our cities are built either illegally or immorally; where illegal means that they have been built by those they take for non-architects, and immoral means that they have been built by rogue colleagues. Both disqualifications are revealing, as they point to conflicts at the level of convention and consensus regarding what is architecture, or who is an architect. This simple observation leads me to believe that supposed non- or rogue architects are so-categorized simply because their work belongs to research programs that compete with the Albertian research program in the production of the built environment. But, what are these other research programs?

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Alberti declaring they should be taken as the binding norm." Evers, Bernd: "Preface," in: Architectural Theory: From the Renaissance to the Present. Köln: Taschen, 2015, p. 6

[26] "In September 1965 Reyner Banham published a short review of Architecture without Architects, the catalogue of an exhibition curated by Bernard Rudofsky that had opened the previous November at the Museum of Modern Art in new York. Entitled 'Nobly Savage Non-Architects,' Banham's review wrestled with a paradox, for the 'primitive' buildings Rudofsky presented appeared to the English critic to be irrelevant to 'our present technological and social dispensation' and yet, as he concluded, conceding a pertinence, 'an excursion like this into architectural noble-savagery is just serendipity a la mode.'" Scott, Felicity: "Bernard Rudofsky: Allegories of Nomadism and Dwelling," in Williams Goldhagen and Legault (eds.): Anxious Modernisms, p. 215. Refers in turn to Banham, Reyner: "Nobly Savage Non-Architects," New Society (2 September 1965), p. 24

On the one hand, those taken for non-architects can be described as performing on an Elemental research program, which evolves on the hard-core hypothesis that architecture is fundamentally an economic discipline.[27] This basically means that, according to this program, the work of an architect must make the best possible use of available resources in the constitution of the built environment. An enormous proportion of our environment has been built on this program, which produces valuable knowledge through the assemblage of full-fledged architectural models, as we have defined them earlier; and yet, the promotors of the Albertian program have succeeded in making a sharp distinction between their own work, and that produced by civil engineers, empirical or vernacular (i.e., "non-professional") builders, or computers, for example.

Among architects working on an Albertian research program, the possibility of attributing meaning to the work of a civil engineer ((e.g., Pier Luigi Nervi, Felix Candela and Robert Maillart) immediately qualifies his or her work as architecture. This observation allows us to recognize that despite their disagreements, both Stanford Anderson and Reyner Banham opearted on the same research program. The title of Anderson's study of the work of the Uruguayan engineer Eladio Dieste ("Innovation in Structural Art"), and Banham's description of the interchange between the 10 and 405 freeways in Los Angeles as a "work of art" are eloquent in this sense.[28]

On the other hand, promotors of the Albertian program oftentimes disqualify the work of other colleagues on sheer moralistic grounds.[29] Rather than criticizing concrete aspects of those colleagues' work, their judgment is directed against them, personally. Stanford Anderson, we saw in chapter 1, referred to these disqualifications as "absolutist attitudes that encourage personal criticism against the author rather than rational criticism against the conjecture."[30] Truth is that those taken for immoral or rogue architects habitually inscribe their work within a Commercial research program, which evolves around the hard-core hypothesis that architecture is a commodity, meaning that the work of an architect must fundamentally strive to produce pecuniary value and adapt to commercial demand.[31] Equally vast proportions of our built environment have been built on this program, and on the models it produces. Nonetheless,

[27] Derived from the Greek *oikos*, the term economy has evolved from the household management to the management of resources, in general. http://www.dictionary.com/browse/economy, retrieved 26/04/2018

[28] Anderson, Stanford (ed.): Eladio Dieste: Innovation in Structural Art. New York: Princeton Architectural Press, 2004; and Banham, Reyner: Los Angeles: The Architecture of Four Ecologies. Berkeley, Los Angeles, London: University of California Press, 2009

[29] Kelley, Kevin Ervin: "Architecture for Sale(s): an Unabashed Apologia," in Saunders, William S. (ed.): Commodification and Spectacle in Architecture. Minneapolis, London: University of Minnesota Press, 2005, pp. 47 – 59

[30] Anderson: "Architecture And Tradition," pp. 86 – 87

[31] Cf. Poli, Francesco: Produzione artistica e mercato. Turin: Giulio Einaudi Editore, 1975; Saunders (ed.): Commodification and Spectacle in Architecture

architects who operate on the Albertian program frequently argue that the architecture produced by real estate developers, large corporations, or profit-seeking contractors is of an inferior, if not entirely different nature than their own.

In both cases, it is clear that conflict between these research programs originates at the level of the different hard-core hypotheses that sustain them. The negative heuristic nature of these hypotheses implies that these differences are not confronted directly. Architects operating on the Albertian program prefer to reject or neglect architectures which do not fit their definition of architecture, before submitting that definition to testing or criticism. In this sense, our definition of these three architectural research programs entirely fits within Imre Lakatos's description of a research program and its hard core.[32] Furthermore, Lakatos's assumption that competition between research programs is carried out by a series of auxiliary hypotheses on positive heuristic grounds, allows me to return once more to modern functionalism, in order to advance a final interpretation.

What we have referred to as the modernist functionalist question (which we have touched upon in every chapter of our study) can be understood as an auxiliary hypothesis from one research program that challenges the hard-core hypothesis of another program. Let us examine this carefully.

Since the beginning of our study, I defined modernist functionalism as the belief that the production of architectural form can be directly linked to the analysis of specific, clear-cut human actions, or "functions," expected to take place in that form. For an architect operating on the Elemental research program, this proposition is self-evident. Dams and bridges, huts, warehouses, and morphogenetic or performative[33] architectures are radically functionalist. However, for architects operating on the Albertian program the functionalist hypothesis is an extremely challenging one, as it questions meaningfulness as the fundamental purpose of architecture. It is no surprise then that most attempts to contend this kind of functionalism coincide their defense of meaningfulness.[34]

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[32] We have defined a research program's hard core hypotheses as series of "inviolable statements which are not open to questioning or to revision by the author." According to Landau, "this means that the program must stand or fall by its own dogmatically held hard core so that if the hard core turns out to be unsatisfactory and has to be abandoned, the program must go with it." I am convinced that our description of three full-fledged research programs in architecture offer a reasonable answer to Landau's question: "Can an architectural position have this sort of a nature?" Landau: "Notes on the Concept of an Architectural Position," p. 112

[33] Oxman, Neri: "Per Formative: Towards a Post-Formal Paradigm in Architecture" Perspecta 43: Taboo (2010), pp. 19 – 30

[34] Gandelsonas, Mario: "Neo-Functionalism," In Hays, K. Michael (ed.): Oppositions Reader. New York: Princeton Architectural Press, 1998, pg. 7; and Eisenman, Peter: "Post-Functionalism," Ibid., pg. 9

To exemplify this point, we must only recall Rogelio Salmona's decision to confront modernist functionalism by defining a use or purpose for architecture that was entirely meaningful. As we saw, Salmona's use of architectural precedents deliberately neglected Elemental architectures, such as those produced by the indigenous peoples of his own country. His contention of other architectures within the Albertian research program was mostly aimed to expand that program's artistic canon in order to embrace a few non-European, yet equally meaningful traditions, such as the architectures of Central and South America, Northern Africa, or Andalucía.

Knowledge derived from our study of his architecture allows me to infer that approaches to architecture similar to Salmona's oftentimes confront a single element of the Albertian program (its Euro-centrism), and rather attempt to broaden the canon of that program without altering the hard-core hypothesis of architecture as an art, produced by a recognizable author. They do so in order to incorporate non-European architectures as part of the program, and seldom acknowledge the Elemental program as a valid trajectory for architects.

Contrary Salmona, Shadrach Woods's transactions with modernist functionalism were somewhat more complex, and in some aspects much closer to the Elemental research program. (I will return to this in a moment.) Halfway between these two postures, we can reassess Stanford Anderson's attempt to describe two different research programs in the work of Le Corbusier.

Rather than assuming that the work of an individual architect constitutes one or more research programs on its own; it is argued here that the work of every architect is initiated and driven within ongoing research programs. Based on that premise, it becomes clear that Le Corbusier's work can indeed be understood in relation to two different research programs. The Dom-ino scheme meets our description of an Elemental research program, granted its fundamental aim to make the best possible use of available resources in the constitution of the built environment; while the commonly named *promenade architecturale* is a much more artistic proposition, in the sense that it assumes the act of circulating as one that must be meaningful. [35] Laterally, in chapter 3 we even touched upon links between Le Corbusier's work and the Commercial research program, when we discussed his role as an entrepreneur and member of several commercial associations.

Margdes Bacon's account of Le Corbusier's collaboration with the architects of the Tennessee Valley Authority offered us a unique opportunity to study the interrelations that can be established between architectures produced in two different research programs. What we referred to then as le Corbusier's reassessment of his role as an architect can be understood as a negotiation between the hard-core hypotheses of a program that assumes the architect as the

[35] Cf. "The Maison La Roche offers an artefactual research program that is all enticing auxiliary hypotheses, devoid of had core principles and played out in a special context that constrained all empirical conditions to ensure realization of the not fully developed program." Anderson: "Architectural Research Programs in the Work of Le Corbusier," p. 158

individual author of a meaningful work of art, and another program that assumes the architect as an anonymous team-member behind an enormous project for the built environment.[36]

The fact that we can inscribe different parts of the work of Le Corbusier and other architects within different architectural research programs, suggests that competition and collaboration in architecture occur at two levels. Auxiliary hypotheses can compete and collaborate within a single program, but they can also compete between one program and another. Mentioned earlier, architects who agree on their definition of architecture, and therefore inscribe their work within the same research program, tend to compete and collaborate with each other openly. On the contrary, architects operating on different research program still compete and collaborate with each other, but they usually do so less directly, in order to protect their own definitions of architecture.

This explains why Nishat Awan, Jeremy Till, and Tatjana Schneider, for example, have chosen to refer to architects as "spatial agents,"[37] in order to recognize the Elemental research program as a valuable source of architectural knowledge; or why Shadrach Woods, who was trained as an engineer and had a manifest interest in architectures built by "non-architects," also avoided the term architecture and instead preferred to speak of "environmental design."[38] In both cases, we are talking about architects who utilized these ad-hoc denominations of architecture as a way to examine conflict and collaboration between the Albertian program, where their investigations originated, and the Elemental program, on which they fed. On the contrary, as we saw in chapter 1, Reyner Banham simply assumed that Basil Spence's cathedral was bad architecture, but architecture nonetheless. In that case, both critic and architect inscribed their work within the Albertian research program.

Like these transactions between the Albertian and the Elemental research programs, we can also describe popular efforts to ascribe meaningfulness to environments built on the Commercial program, such as those carried out by Venturi, Scott-Brown, and Izenour;[39] or assume that much

[36] Cf. Bacon: "Le Corbusier and Postwar America," pp. 32 – 33. Refers to: Banham: "The New Brutalism," pp. 354 – 361

[37] Awan, Nishat, Schneider, Tatjana, and Till, Jeremy: Spatial Agency: Other Ways of Doing Architecture. London: Routledge, 2011. Also: Doucet, Isabelle, and Cupers, Kenny (eds.): Agency in Architecture: Reframing Criticality in Theory and Practice, Footprint 4 (Spring 2009).

[38] Recent studies that examine the built environment from an economic vantage point (e.g., as a series of "common pool resources") have been initiated with an exhaustive study of the work of a renowned designer like Shadrach Woods. E.g., Avermaete, Tom: "The Architecture of the 'Commons'," in Avermaete, Tom, van den Heijden, Hans, Oostmeijer, Edwin, and Hannema, Kirsten (eds.): Architecture in the Netherlands 2015/2016, Rotterdam: NAi/010, 2016, pp. 36 – 43. See also: Sohn, Heidi; Kousulas, Stavros, and Bruyns, Gehrard (eds.): Commoning as Differentiated Publicness, Footprint 16 (Spring, 2015).

[39] Venturi, Robert, Scott-Brown, Denise, and Izenour, Steven: Learning from Las Vegas. Cambridge (Mass.): MIT, 1977

of the work of the Rem Koolhaas has aimed, not only to ascribe meaningfulness to, but also to adapt identifiable formal strategies from the Commercial program to his work within the Albertian program.[40]

Jointly, these examples demonstrate the vanity of neglecting or rejecting architectures which evolve on research programs different from ours. Whether we recognize it or not, all architectures – ours included – are interrelated in one way or another, in what Stanford Anderson described as a series of "sympatric relations."

According to Anderson, "the notion of territoriality, transferred from ethology, has played an increasingly prominent role in human ecology, and in more narrowly defined studies of architecture. As in A.E. Parr's definition of territory, 'space which an individual or close-knit group will defend,' the concept necessarily involves a principle of competitive exclusion. Ethologists, however, have pointed to two extreme types of territory or 'niche specificity.' 'In one the animal… requires to be spatially separate from its closest allies and competitors… In the other the various species are structurally specialized to use different resources; they do not need to have behavioral mechanisms fixing them in place and in fact cross each other's paths.' Ecological sympatry, the sharing of the same region by different kinds of organism (sic), is thus a concomitant of the description of territories."[41]

In our case, we can interpret this definition of sympatry in relation to the actual space of the built environment, but also in relation to the space we all share within the architectural discipline. On the basis of these sympatric relations, the transactions carried out between architects operating on the three research programs we just sketched define the evolution of most contemporary cities. And yet, we must also acknowledge that other consequential research programs explain much of the production of our built environment, too.

What we can describe as a Military research program in architecture, for instance, was instrumental to the construction of many European cities. That program evolved around the hard-core hypothesis that architecture is an instrument of a very particular type of physical defense. That hypothesis was seriously challenged by radical transformations in warfare, pushing the entire Military research program to a relatively marginal role in the evolution of most contemporary

[40] Koolhaas, Rem: Delirious New York: A Retroactive Manifesto for Manhattan. New York: The Monacelli Press, 1997; and Chung, Chihua Judy (ed.): The Harvard Design School Guide to Shopping. Koln: Taschen, 2002

[41] Anderson, Stanford: "People in the Physical Environment: The Urban Ecology of Streets," in Anderson, Stanford (ed.): On Streets. Cambridge (Mass.) and London: MIT Press, 1986, p. 3. Notes refer to A.E. Parr, "In Search of Theory VI," Arts and Architecture (Septembre 1965), pp. 2 – 3; and G.E. Hutchinson, The Ecological Theater and the Evolutionary Play. New Haven: Yale University Press, 1965, p. 55

cities. However, the recent work of certain architects suggests a radical reinterpretation of the program, and its possible reinvigoration for contemporary architecture.[42]

The growth and the development of our architectural knowledge, which is nothing but our capacity to understand the cities generated by these and other research programs, depends on our ability to recognize the nature of their interrelatedness, and on our ability to understand how they perform. Furthermore, it is important to remember that attempts to build entire cities on architectures that operate within a single research program (i.e., without the productive tension that is generated by the competition and collaboration between several programs) are often regarded in negative terms. In fact, the above mentioned notion of "sympatry" was specifically used by Anderson to explain the productive nature of competition and collaboration between architects in the production of the built environment.[43]

I am convinced that our ability to appraise that interrelatedness and that performance *systematically* is a much better measure of success for our work as architects, than our ability to accurately represent any supposed historical principle or law. Certainly, the *scientific attitude* required to uphold this measure of success demands that we expose our work to radical criticism from architects operating on logics entirely different from ours; and that we compromise our very definition of architecture.

In exchange for this compromise, the demarcations and the methodology we have advanced in this study contain a promise. By understanding it as a system of research programs, we become aware that architecture is first and foremost a form of governance and participation; a way of producing knowledge by exploring, evaluating, and discovering the built environment in order to organize and negotiate our individual and collective hopes and decisions as best as we can. Based on this premise, our contention of modernist historiography can be understood as a plea for an *open architectural society*.

Oftentimes, Popper's description and defence of an open society has been understood by architects operating on the Albertian program as an invitation to provide the counter-form for a political or social situation.[44] This, of course, owes to their understanding of architecture as an artistic discipline, meant to produce meaningful objects, and the subsequent belief that architecture can epitomize or represent the principles that guide an open society. Our study suggests something entirely different. The absurdity of aiming to produce an architecture for an open society by individuals who relate to each other based on tribalism and superstition, can

[42] E.g., https://www.forensic-architecture.org/ - retrieved 30/04/2018

[43] Anderson, Stanford: "People in the Physical Environment," p. 3

[44] E.g., Van den Heuvel, Dirk: "The Open Society and Its Experiments: The Case of the Netherlands and Piet Blom," in Swenarton, Mark et al. (ed.): Architecture and the Welfare State. London: Taylor and Francis, 2014, pp. 133 – 152; and: Van den Heuvel, Dirk (ed.): Jaap Bakema and the Open Society. Amsterdam: Archis, 2018.

certainly be replaced by elements of a better methodology that should allow us to foster, cherish and protect our individuality and our freedom in the way we relate to each other as architects. These elements, which this investigation has found in the methodology of research programs, provide us with a demarcation of architecture and with a method for its appraisal that recognize that each and every architect's ability to transact with others freely is indispensable to for the growth and development of architectural knowledge, and must therefore be treasured and protected.

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