Luigi Moretti, from History to Parametric Architecture.

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Caadria 2018
May 17th

School of Architecture
Tsinghua University
Beijing, China
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Balilla House, Luigi Moretti, Rome, 1933
Luigi Moretti Archive.
1. Moretti, man of Italian Culture

Dome of San Carlo alle Quattro Fontane, Borromini, Rome.
Passion for Heritage and Commitment to a new Architecture.

1907 - Born in Rome, Luigi Moretti lived his whole life in his City.

1950 - Founded Spazio Magazine.


1960 - Presented his Parametrical Models of Stadia at Triennale, Milano

1973 - Died While at Work

Sant’Ivo alla Sapienza, Borromini, Rome. Spazio Magazine n. 7, Cover.

1. Moretti, Man of Italian Culture
Moretti’s Theories and Parametricism.

His Commitment to Parametric Architecture dissemination make him comparable to Patrik Schumacher.

But, Moretti his a Man of Italian Culture, his Ideas are strongly related to Architecture, while Schumacher lives in a interconnected technological world, and promotes a broader global theory, starting from Luhmann thoughts.

Inside his first Interview, for Quadrivio Magazine in 1936 he announces the arrive of a new architecture, and the end of Rationalism.

Watergate Building, Luigi Moretti, Washington
2. From Structure to Form (1951).

Model of *Stadio secondo le curve di equiappetibilità visiva*, Luigi Moretti, 1960.
“Form follow Forces”
(Bletzinger, Ramm, 2014)

Wider relationships between the three qualities of Architecture.

Moretti states that Vitruvius’s Firmitas, Utilitas and Venustas have been misrepresented in an educational simplification by minor theorists of the 16th Century.

Architecture is then defined in 3 forms:

**The structural** form, one of the n possible.
**The functional** form, answer to functional needs.
**The Expressive** form, Architect will of representation.

To have an Architecture, it is necessary for these forms to be **Identical**, so that relationships and rhythms of one form are legible in the other two.

Hope in a return to the Structure $\rightarrow$ Form Approach

Moretti recognizes in succession of styles a continuous oscillation of the relationships between the three categories of forms, due to the two main generative directions of architecture:

**Structure $\rightarrow$ Form**, typical of Hadrian, Romanesque, Gothic architecture and Brunelleschi.

**Form $\rightarrow$ Structure**, main Path during Renaissance, Baroque and even Rationalism

Each Architecture can be obtained with a series of parameters, which are **infinite** and **sometimes not identifiable**, this make any Architectural shape solvable only through a **Structure $\rightarrow$ Form** process.


Model of the inner spaces of Guarino Guarini’s Saint Mary of the Divine Providence, Luigi Moretti.
Perception of objects and space is a theme of interest for Parametricism, as it was for Moretti, who affirms that as Human we understand form through the differences (relationships) between them.

Each form can be defined by its differences, so our perception of reality can be assimilated to a system of ordered differences in a rhythm that constitutes the law of form.

Moretti recalls Évariste Galois Theory, defining the system of differences as a group. The group is not a quality of form, but a set of instantaneous relationships.

Évariste Galois, French mathematician died at the age of 20 years.
The group of differences that we can perceive simultaneously is limited and defines it as a chain.

The set of chains that define a non-elementary shape is therefore defined as structure of form.

Moretti enumerates different types of structures in architecture: chiaroscuro structure, structure of static relationships, structure of spaces, structure of plastic relations, structure of surfaces, structures of light density, etc.

All these families of relationships are interdependent (isomorphic) and a new approach is necessary to manage them all together: parametric architecture.

Residential Complex, Luigi Moretti, Rome

Balilla House, Luigi Moretti, Rome, 1933
Luigi Moretti Archive.
8 points for Parametric Architecture

1 - Rejection of empirical decisions.
2 - Assessment of traditional phenomena as objective facts based on interdependence of expressive, social and technical values.
3 - Exact and complete definition of architectural themes.
4 - Objective observation of all the conditioning elements (parameters) related to the architectural theme and identification of their quantitative values.
5 - Definition of the relationships between the values of the parameters.
6 - Indispensability of different skills and scientific methodologies according to the criteria of operational research to define conditioning elements and their quantities.
7 - Affirmation of the Architect’s freedom in decision and expression, only if it does not affect the characteristics determined by the analytical investigations.
8 - Research of architectural forms towards a maximum, therefore definitive, exactness of relationships in their general “structure”.

Casa delle Armi, Luigi Moretti, Rome, 1937
Moretti wishes a method that guarantees the best solution to meet the needs of architecture, rejecting any empirical choice, choosing the scientific method for the functional solution of form and at the same time declaring the architect’s freedom of expression, considering the Architect as an artist able to manage the whole architectural process.

This set a difference with Schumacher’s parametricism, which states the need for a differentiation between art and architecture, as well as between science and architecture.

Model of Church of the Concilio Sancta Maria Mater Ecclesiae, Luigi Moretti, 1965.
Traditional Phenomena as inspiration for Parameters.

If traditional facts need to be analysed according to dictates of parametric architecture, the same concept of Parameter as we have seen arises from the observation and analysis of the examples of the great masters.

For Moretti the parametric component of historical architecture is clear, as demonstrated by Carpo, who recognizes a Classic and Medieval Parametricism.

Sant’Ivo alla Sapienza, Borromini, Rome.
Conclusions.

Moretti managed to grasp a **different relationship between form and structure**, arriving to conclusions which the current architectural culture has come to formulate through experiments and computational methods.

While today we can read a different relationship through parameter and tradition, Moretti **roots parametric architecture in history**, also declaring the need for a **multidisciplinary Architecture**, obtained through a pragmatic, rigorous and scientific approach.

Residential Complex, Luigi Moretti, Rome, Luigi Moretti Archive.
Conclusions.

His aversion to rationalism, which throughout his life, usurped the role of Global Style of parametric architecture, lead him to underestimate rationalism power, same error we risk to commit today.

Almost 50 years after his death, it is perhaps possible to recover his theories and researchs on parameters which could find new space in the field of data, thanks to Machine learning methods, artificial intelligence and robotics.

Download the full Paper:
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Designer and researcher, MArch-Eng at University of Palermo, PhD In Architecture, Former visiting academic at the University of East London. Most of my Professional experiences are linked to Mirabilia, communication agency founded in 2007 in Palermo, where as creative director I deal with communication design clients of different scale. Together with Mirabilia I have won several awards as Firefox Flicks, International design Award. My works have been published by Taschen, DesignBoom, Archdaily, World Architecture Community, Archilovers, and others. I am the main editor of Archinerds, a curated social media gallery that deals with the relationship between image and architecture.

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