

GOLDEN RATIO HOUSE

A CONSTRUCTION OF FORM, BY DEREK WEIDNER

Thesis submitted to the faculty of the Virginia Polytechnic Institute and State University in partial fulfillment of the requirements for the degree of Masters of Architecture in Architecture.

Steve R. Thompson, Chair _____

William U. Galloway _____

Kay F. Edge _____

April 26, 2012 in Blacksburg, VA

Key Words: Autonomy, Golden, Ratio, Proportion, Construction

ABSTRACT

The Golden Ratio House is primarily an architectural object constructed from a cube, which is the necessary point of origin for this project.

Similar to the rules of invention, its purpose lies in its own making. Its rational construction, using the proportion of the golden ratio, produces an autonomous form.

The translations and transformations of the cube are dialectic. The resulting form of the House is a product of the logic necessary for its existence.

EXPOSITION

The story of my thesis begins with the difference between measure and construction; a subtle distinction, but one essential to the question of architectural form.

When an object is measured it is made sensible to us as material. Construction is the act of making, but its goal is to define a thing that has no material existence. It is a rational expression of precise logic.

Within a construction, material thickness is replaced by distance. Form is all that remains and the architecture can be judged in its ideal state.

My thesis addresses the question of autonomous form through ratiocination, and reification.

A NOTE TO THE READER

This portfolio is a construction in and of itself, where each section builds upon the last. These sections are meant to be self-referential and dialectical.

The reader should compare the work in one section to the other sections in order to uncover the methods used to construct the house. This will help the reader understand the discoveries that I made about construction.

The sections in this document are not chronological in the sense of when the work was created, but how they should be read and understood.

TABLE OF CONTENTS

Exposition.....	iii
Note to the Reader.....	iv
Table of Contents.....	v
List of Figures.....	vi
Title Page.....	1
Constructions.....	2
Developments.....	3
Plan Drawings.....	12
Formal Model.....	17
Axonometrics.....	22
Early Building Drawings.....	26
Material Object Study.....	33
Photo-projections.....	37
Traces.....	41
Fragments.....	46
Sources.....	51

CONSTRUCTIONS

Facade Construction Sketch.....	2
Golden Ration Construction 1.....	3
Golden Ration Construction 2.....	3
Facade Construction Schemes.....	4
Construction Series A.....	5
Construction Series B.....	6

DEVELOPMENTS

Facade Grid.....	7
Front Facade 1.....	7
Front Facade 2.....	8
Front Facade 3.....	8
Front Facade Drawing.....	9
Rear Facade Drawing.....	9
Right Facade Drawing.....	10
Left Facade Drawing.....	10
Top Facade Drawing.....	11

PLAN DRAWINGS

Plan Grid.....	12
First Floor.....	13
Second Floor.....	14
Third Floor.....	15
Plan Grid Overlay.....	16
First Floor Overlay.....	16
Second Floor Overlay.....	16
Third Floor Overlay.....	16

FORMAL MODEL

Front View.....	17
Rear View.....	17
Right View.....	18
Left View.....	18
Front-Right View.....	19
Rear-Right View.....	19
Front-Left View.....	20
Rear-Left View.....	20
Top View.....	21

AXONOMETRICS

First Floor Axonometric.....	22
Second Floor Axonometric.....	23
Third Floor Axonometric.....	24
Full View Axonometric.....	25

EARLY BUILDING DRAWINGS

First Floor.....	26
Second Floor.....	27
Third Floor.....	28
Front Facade.....	29
Rear Facade.....	29
Right Facade.....	30
Left Facade.....	30
Section Drawing 1.....	31
Section Drawing 2.....	31
Formal Construction Series.....	32

MATERIAL OBJECT STUDY

Front View.....	33
Rear View.....	33
Right View.....	34
Left View.....	34
Front-Right View.....	35
Rear-Right View.....	35
Rear-Left View.....	36
Front-Left View.....	36

PHOTO-PROJECTIONS

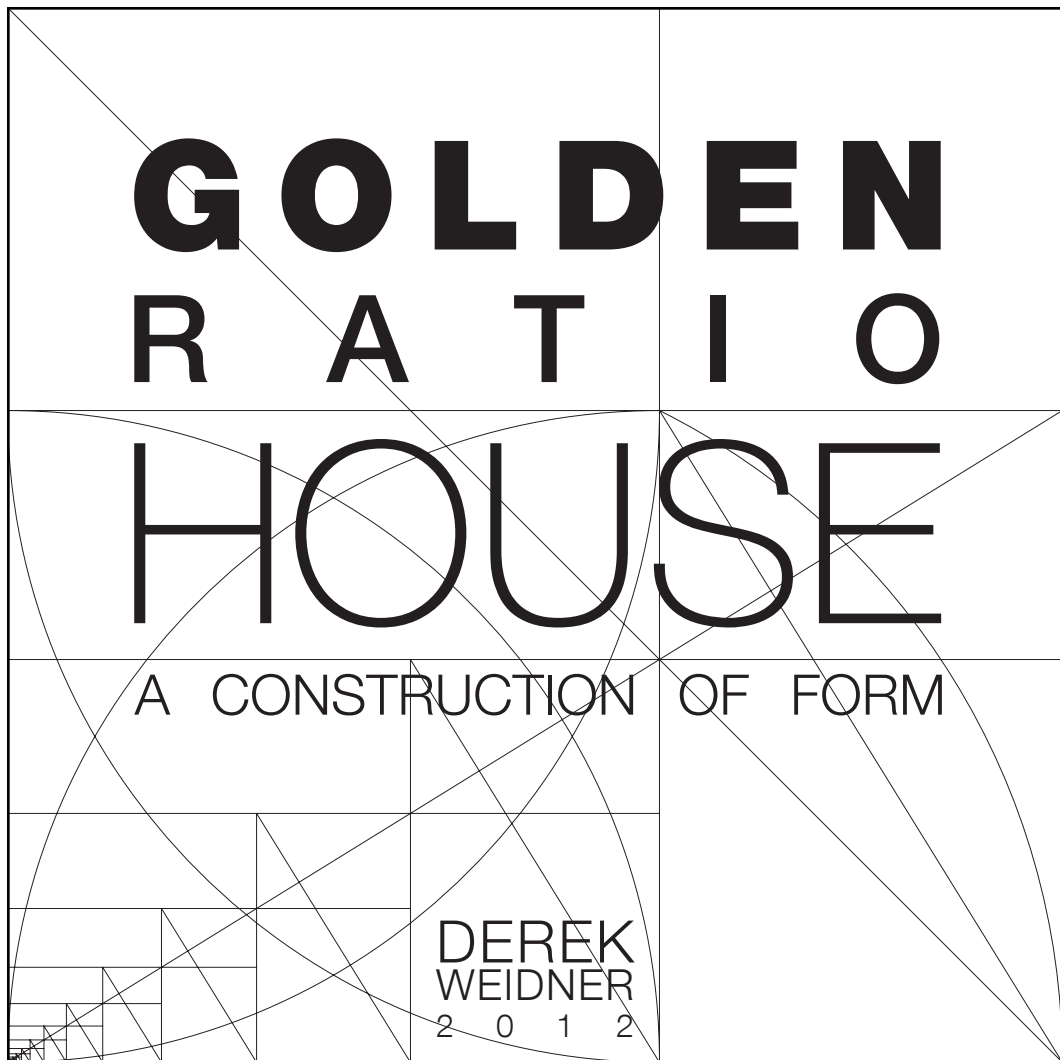
Front Projection.....	37
Rear Projection.....	37
Right Projection.....	38
Left Projection.....	38
Front-Right Projection.....	39
Rear-Right Projection.....	39
Rear-Left Projection.....	40
Front-Left Projection.....	40

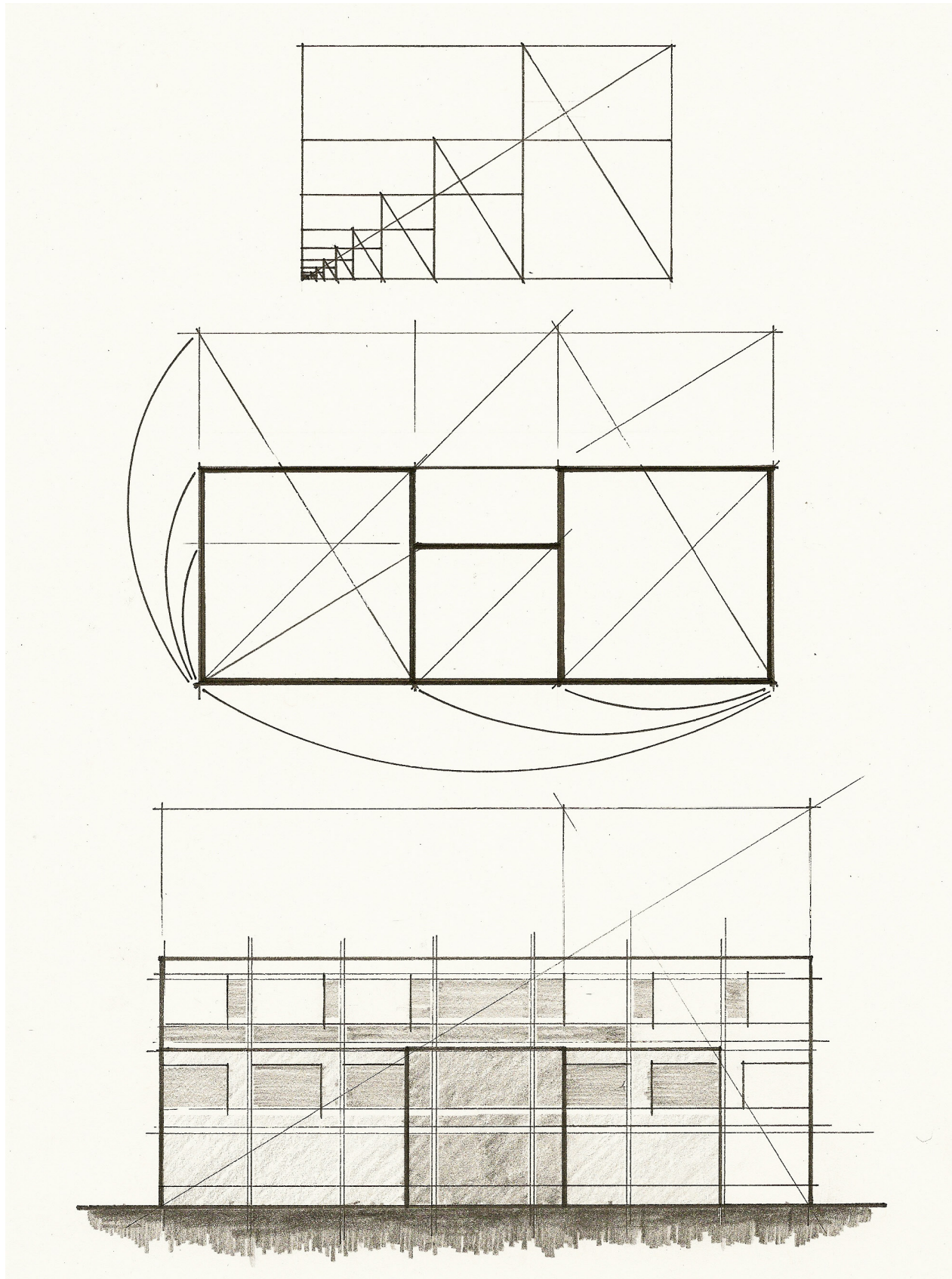
TRACES

Formal Analysis 1.....	41
Formal Analysis 2.....	41
Early Building Study.....	42
Analytic Sketches 1.....	43
Analytic Sketches 2.....	44
Analytic Sketches 3.....	45

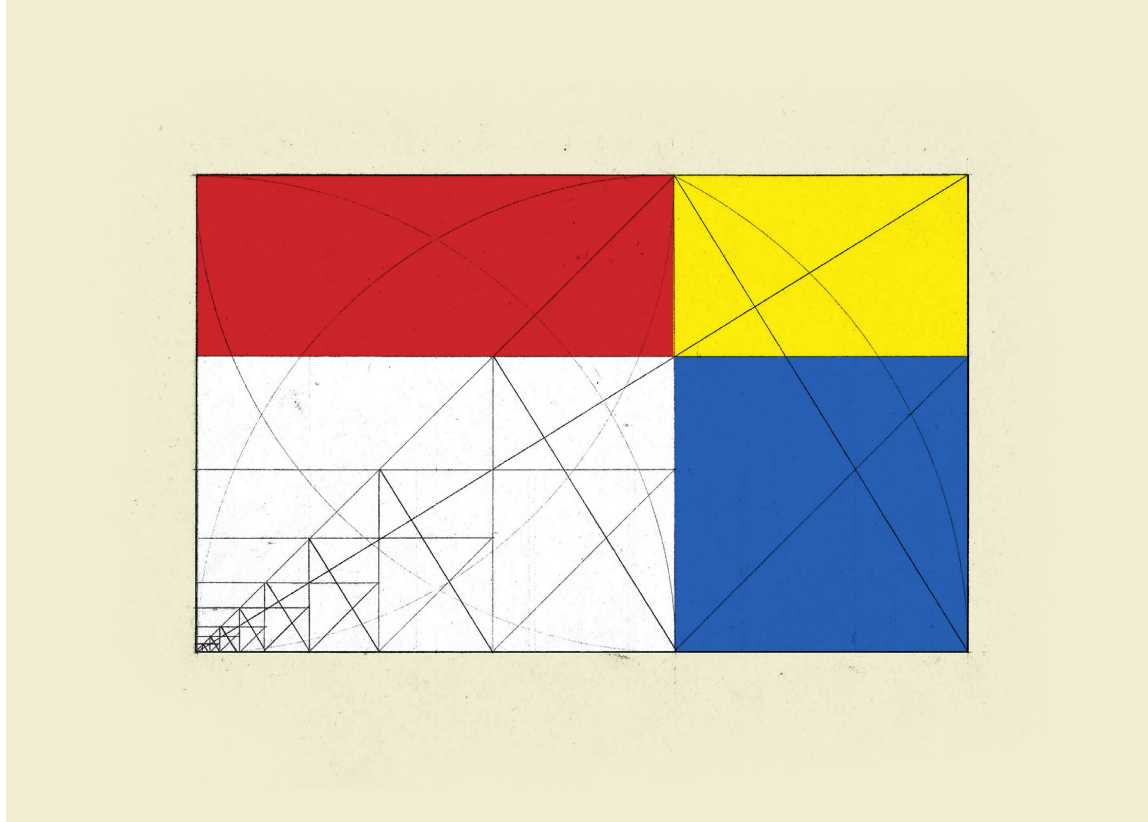
FRAGMENTS

Fragment 1.....	46
Fragment 2.....	47
Fragment 3.....	48
Fragment 4.....	49
Fragment 5.....	50

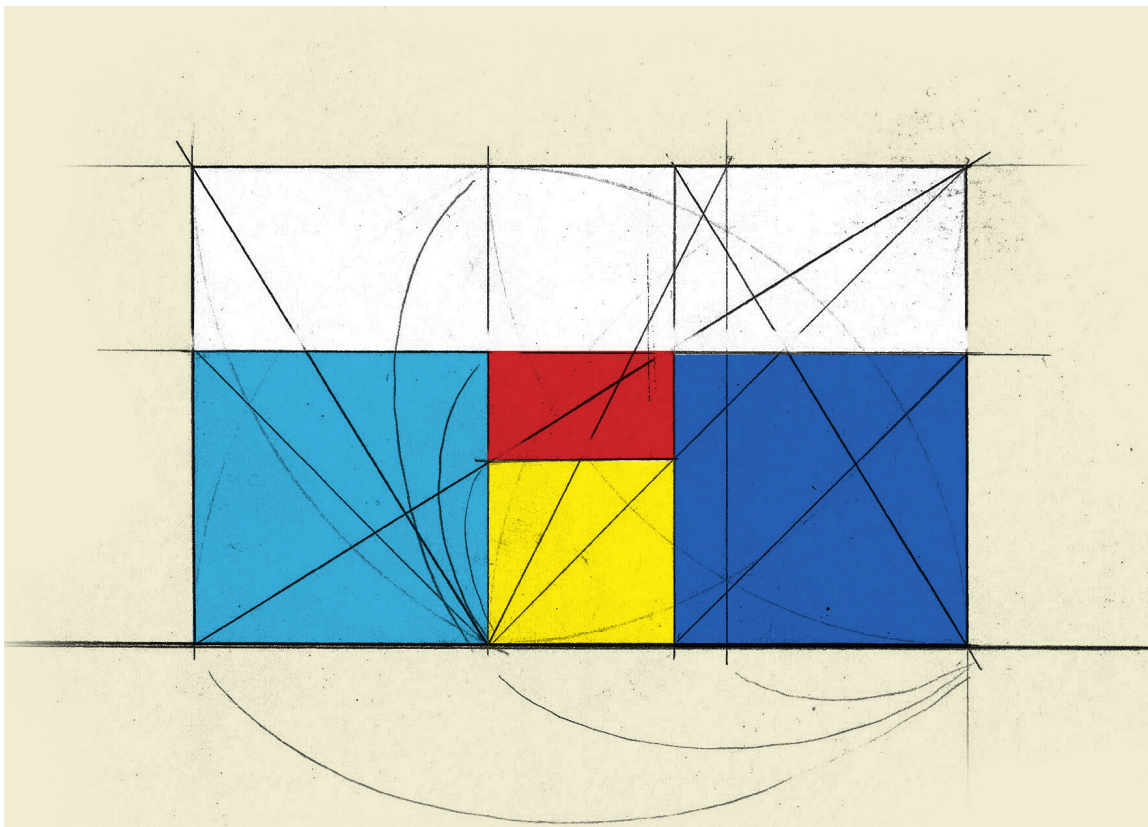




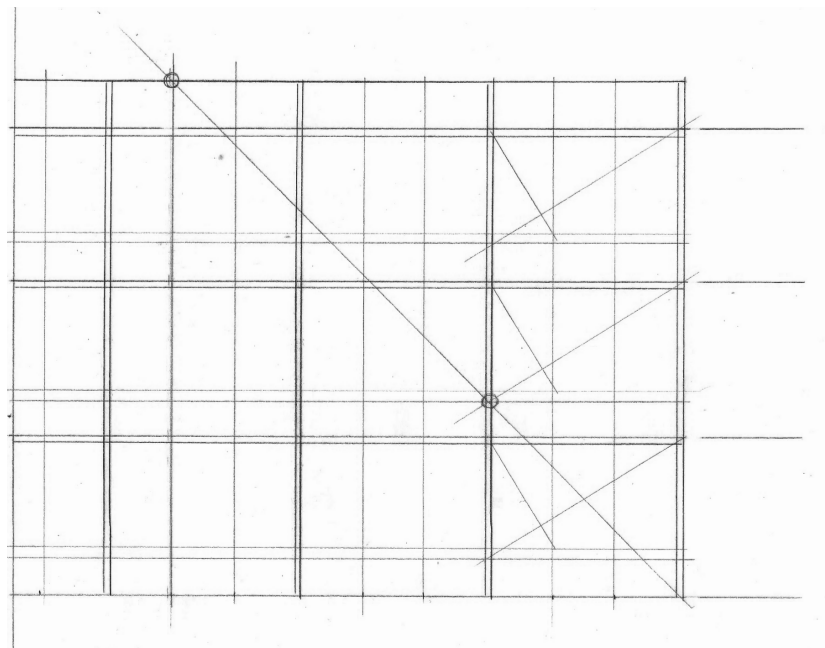
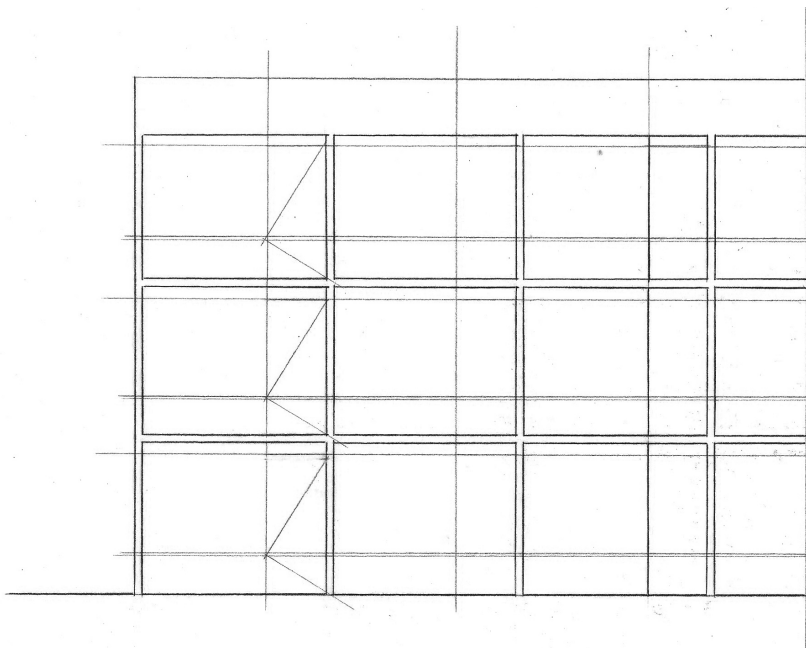
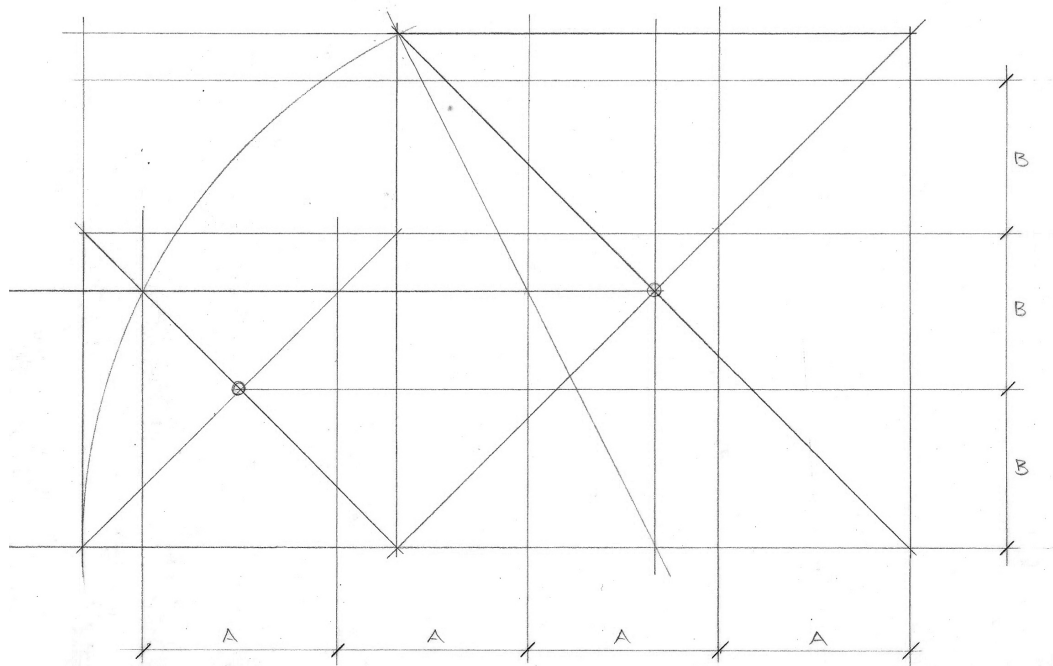
Facade Construction Sketch



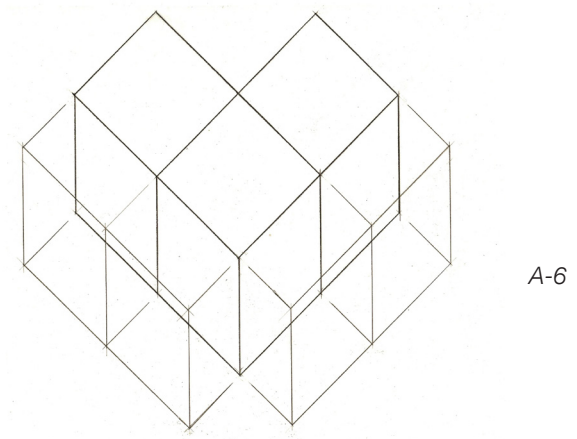
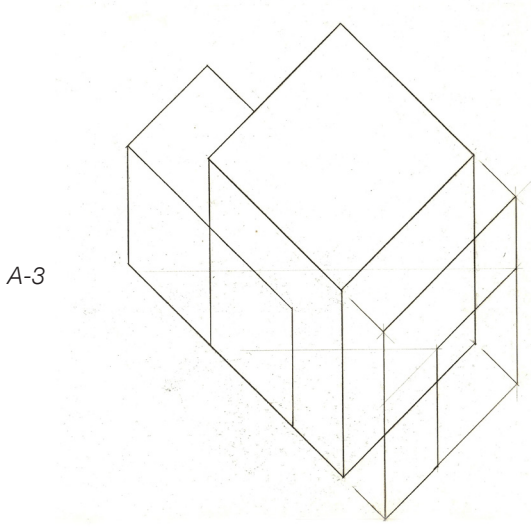
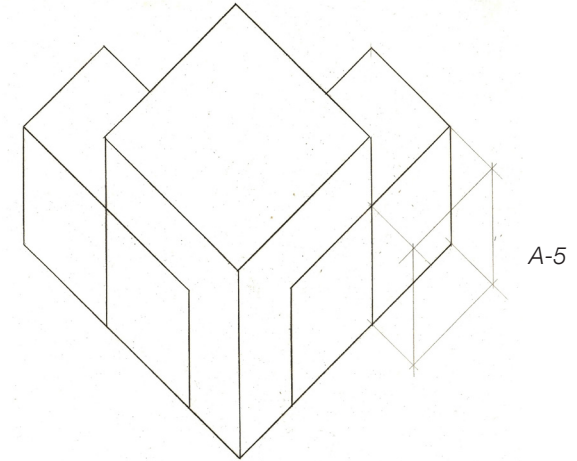
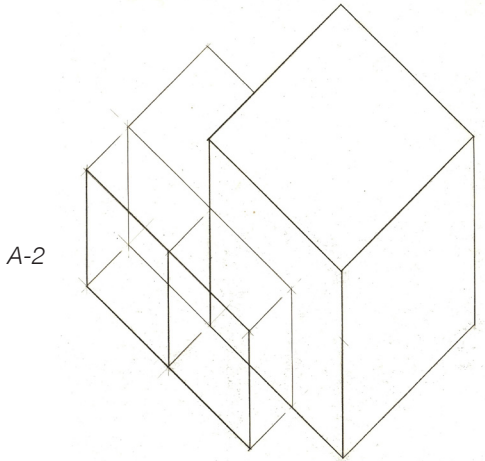
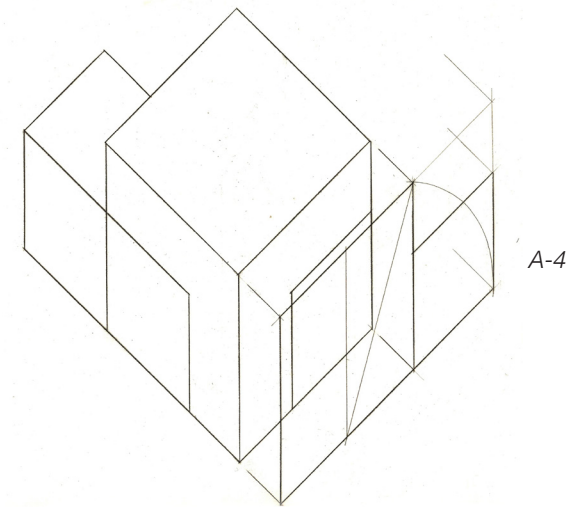
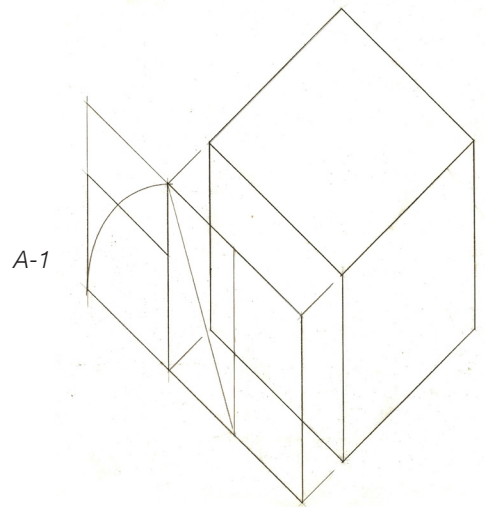
Golden Ratio Construction 1



Golden Ratio Construction 2

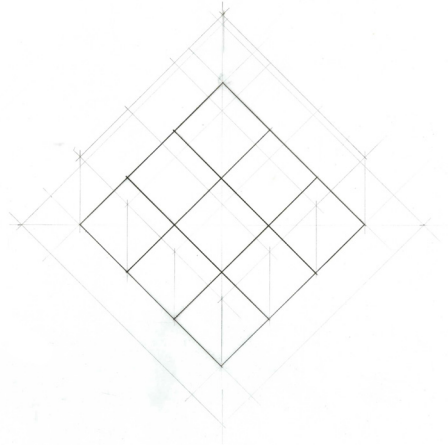


Facade Construction Schemes

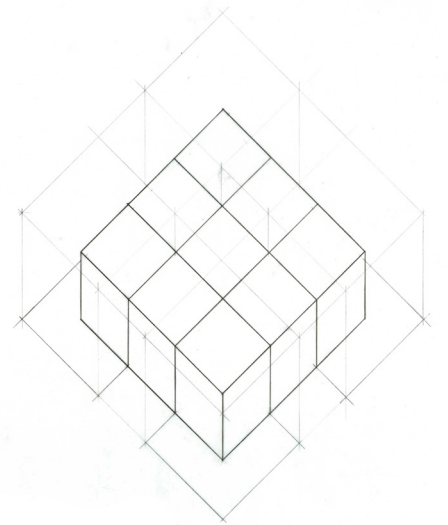


Construction Series A

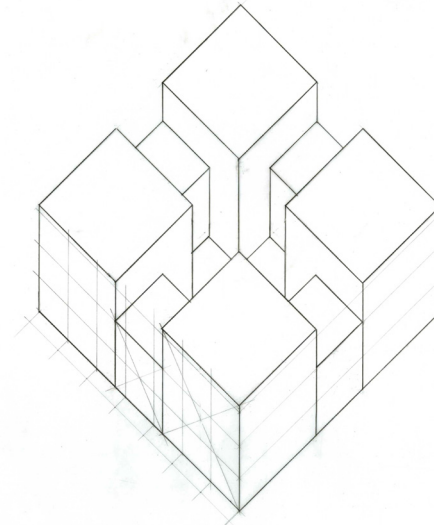
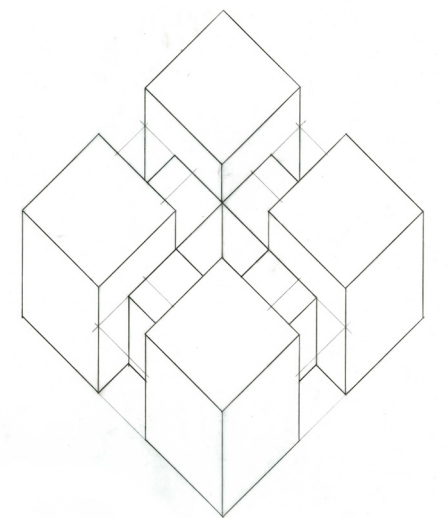
B-1



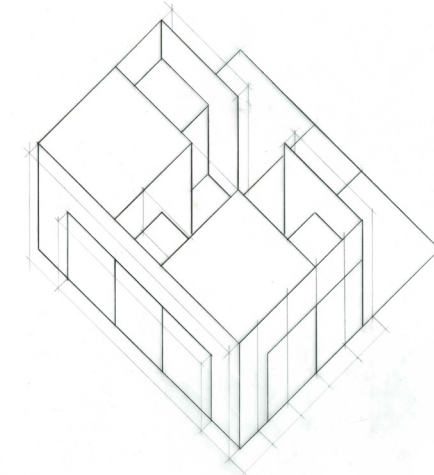
B-2



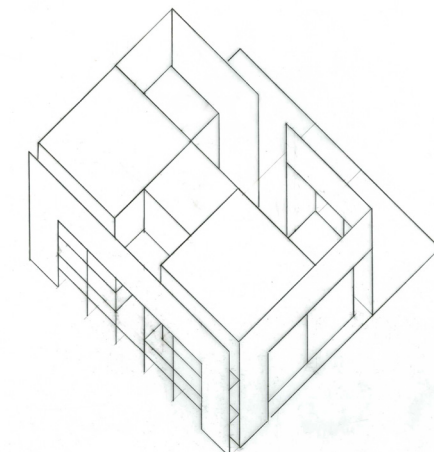
B-3



B-4

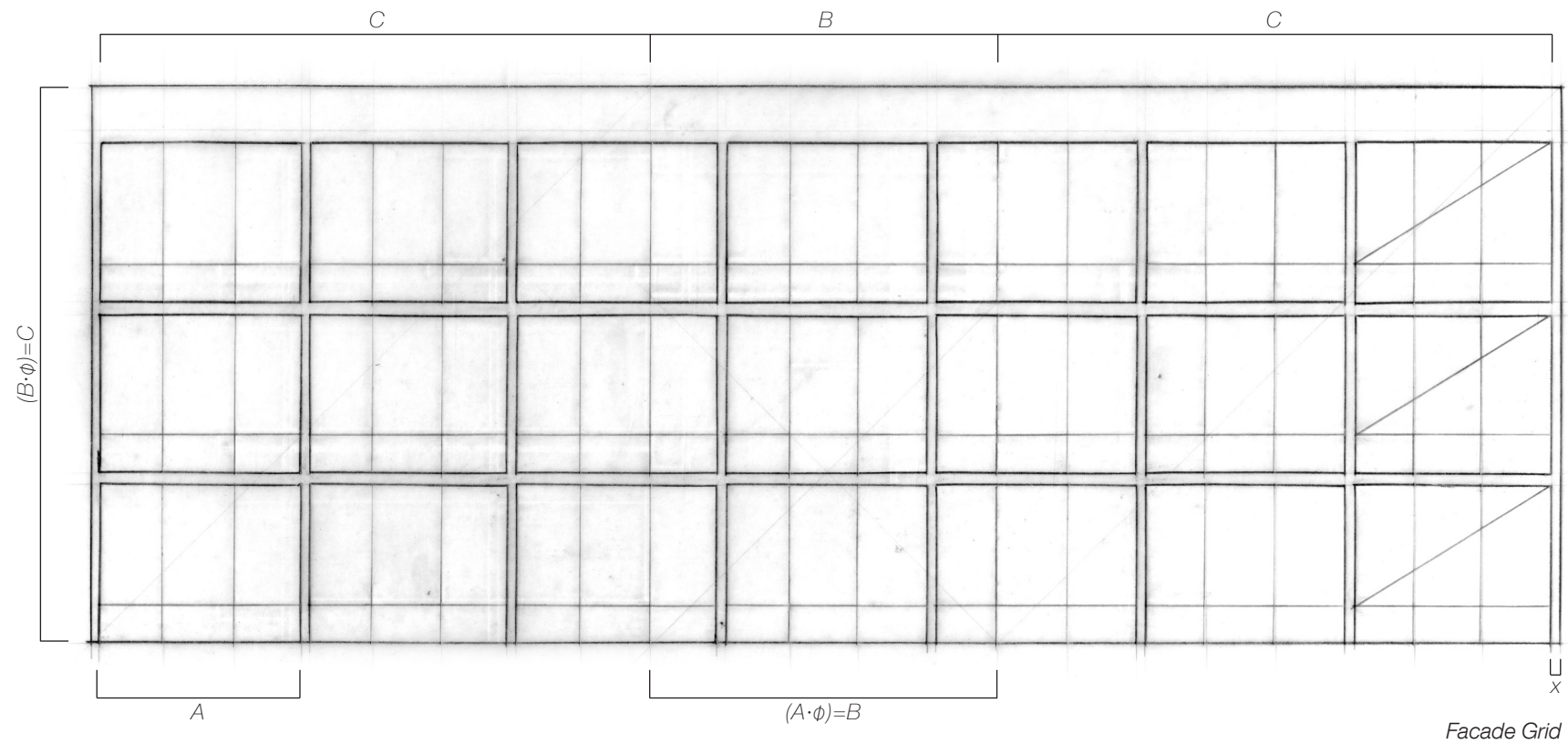


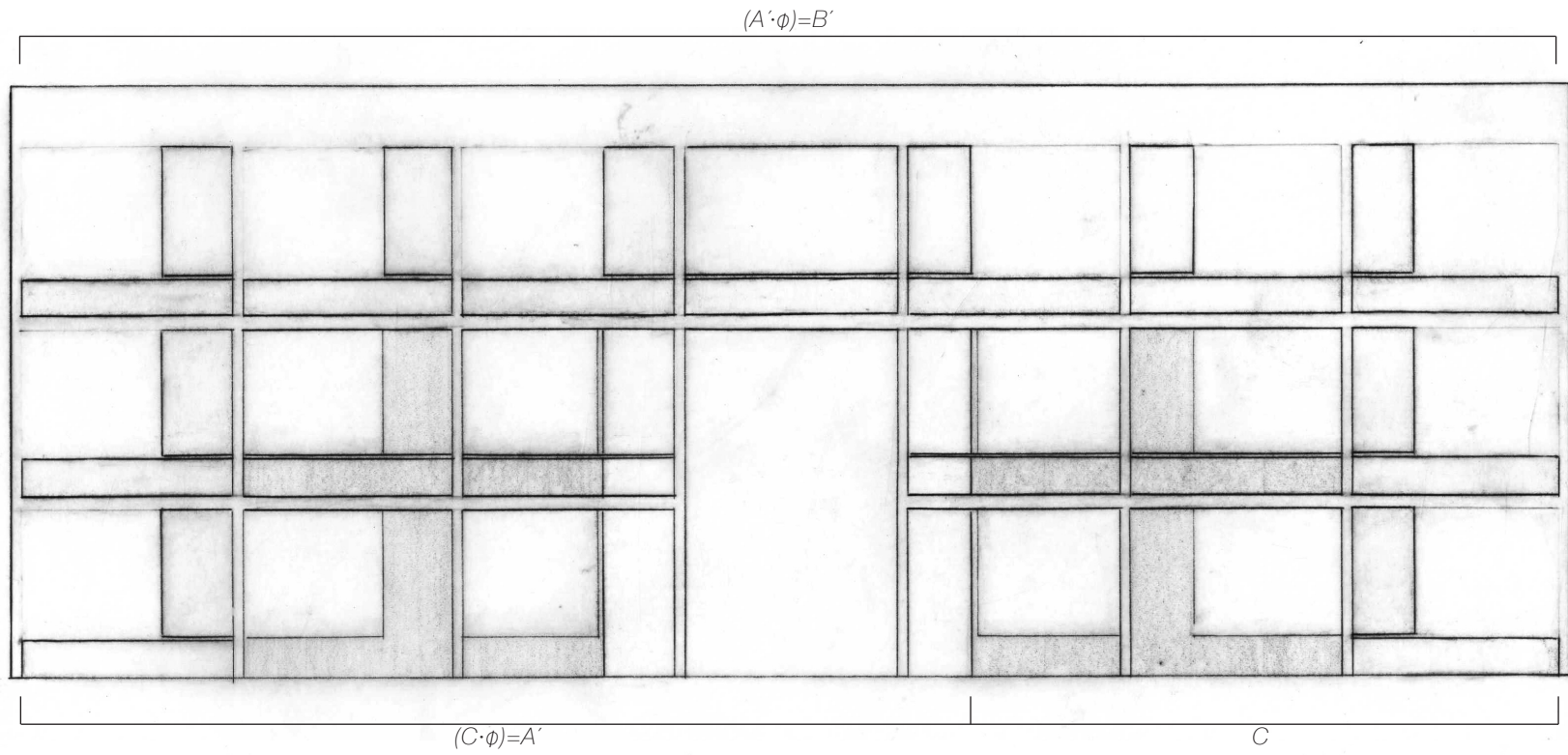
B-5



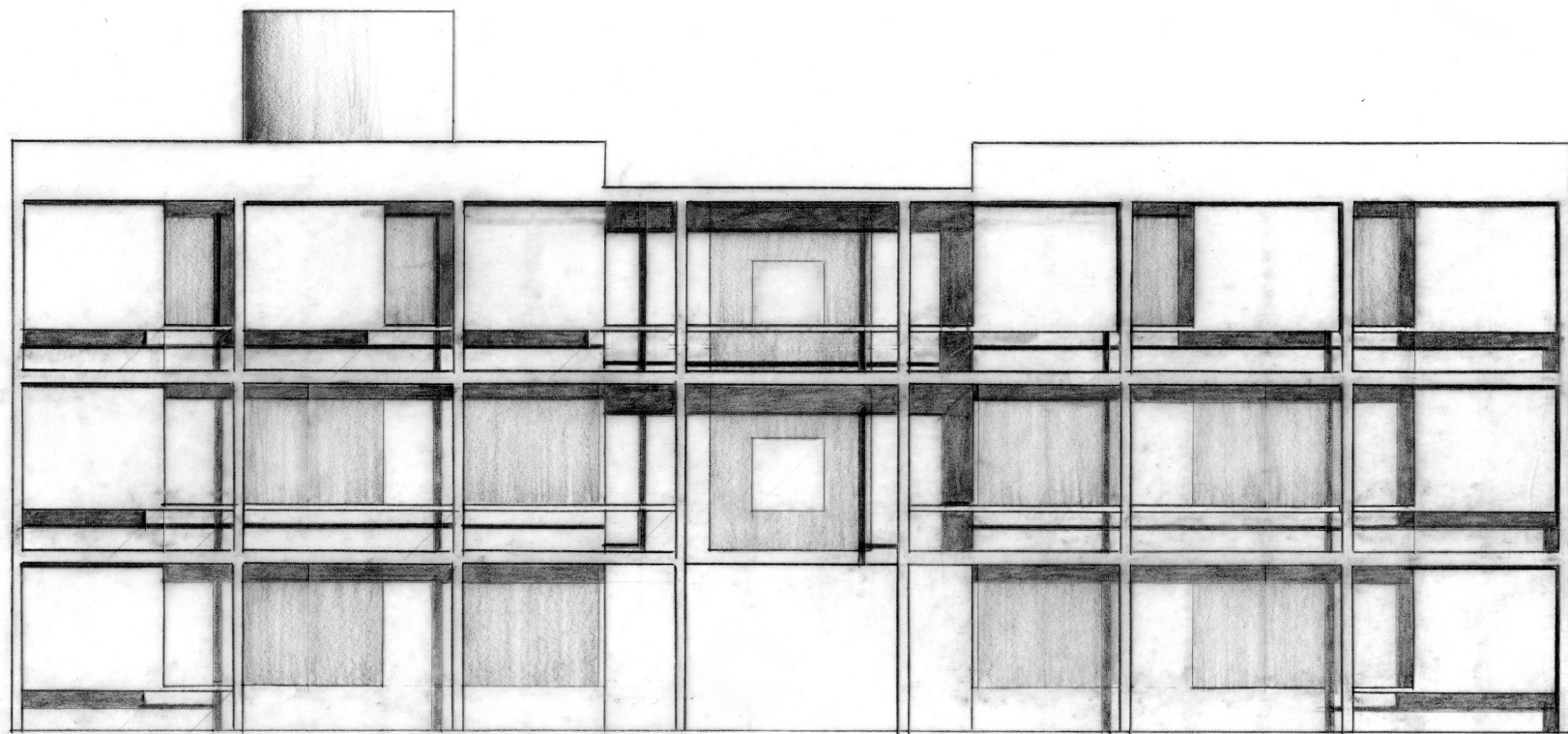
B-6

Construction Series B

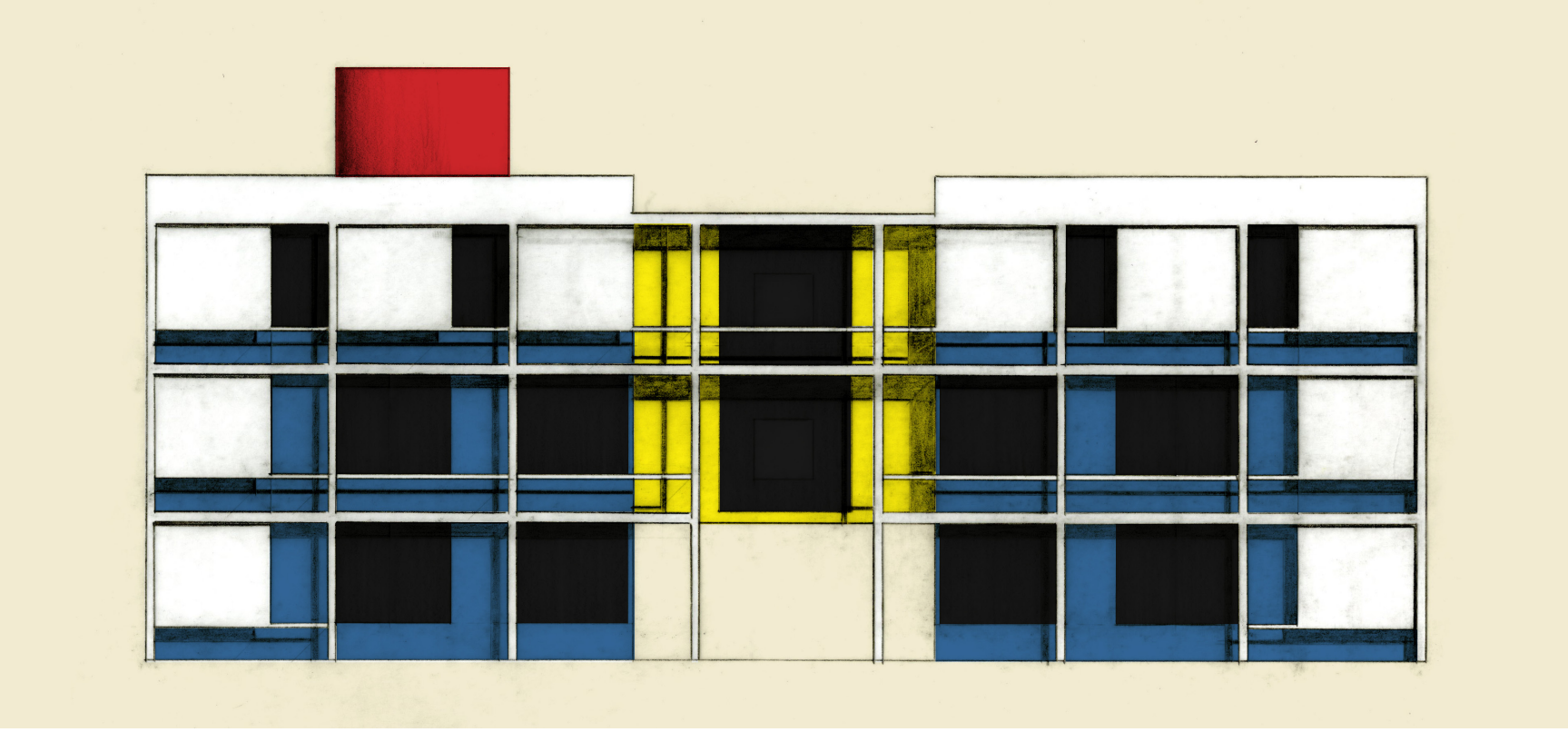




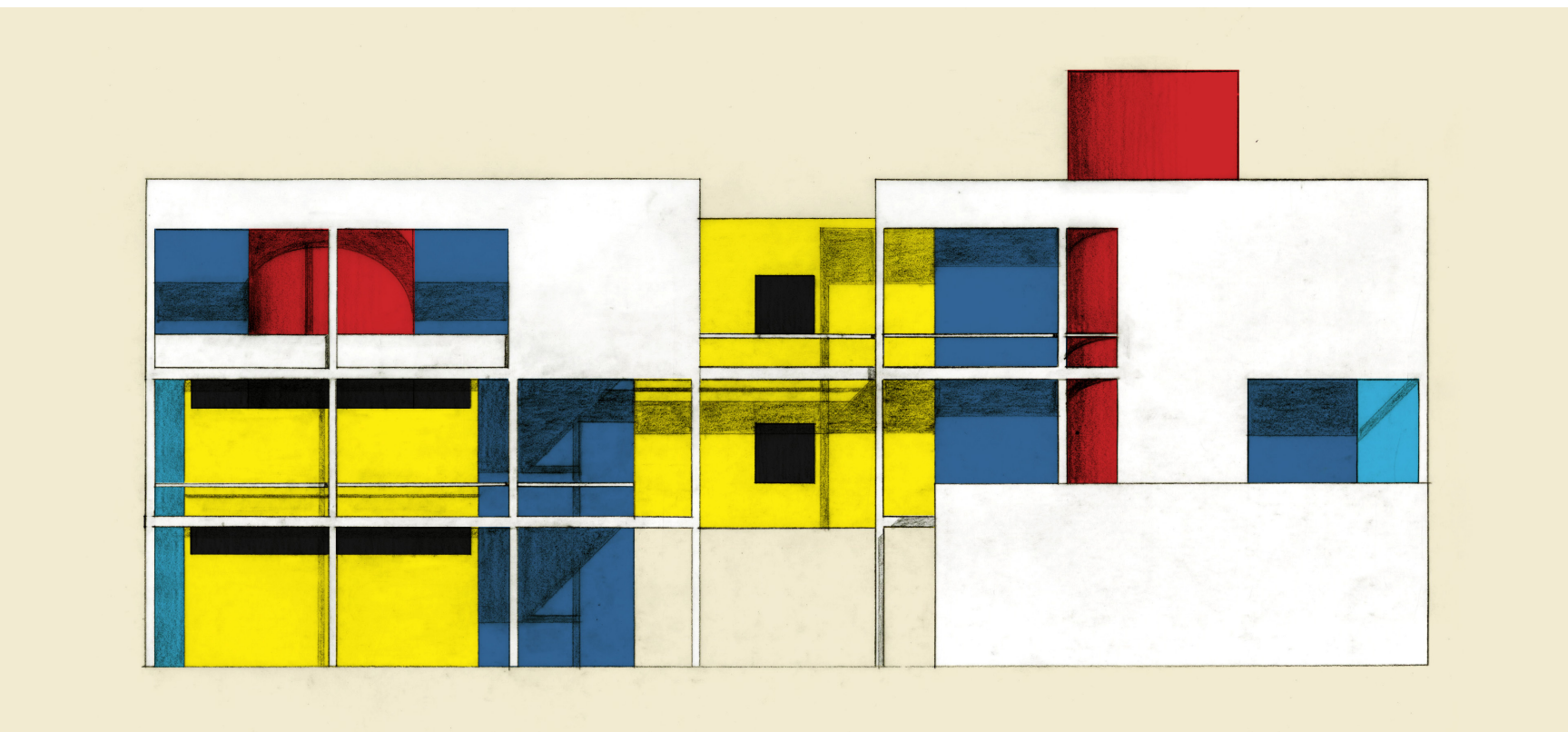
Front Facade 2



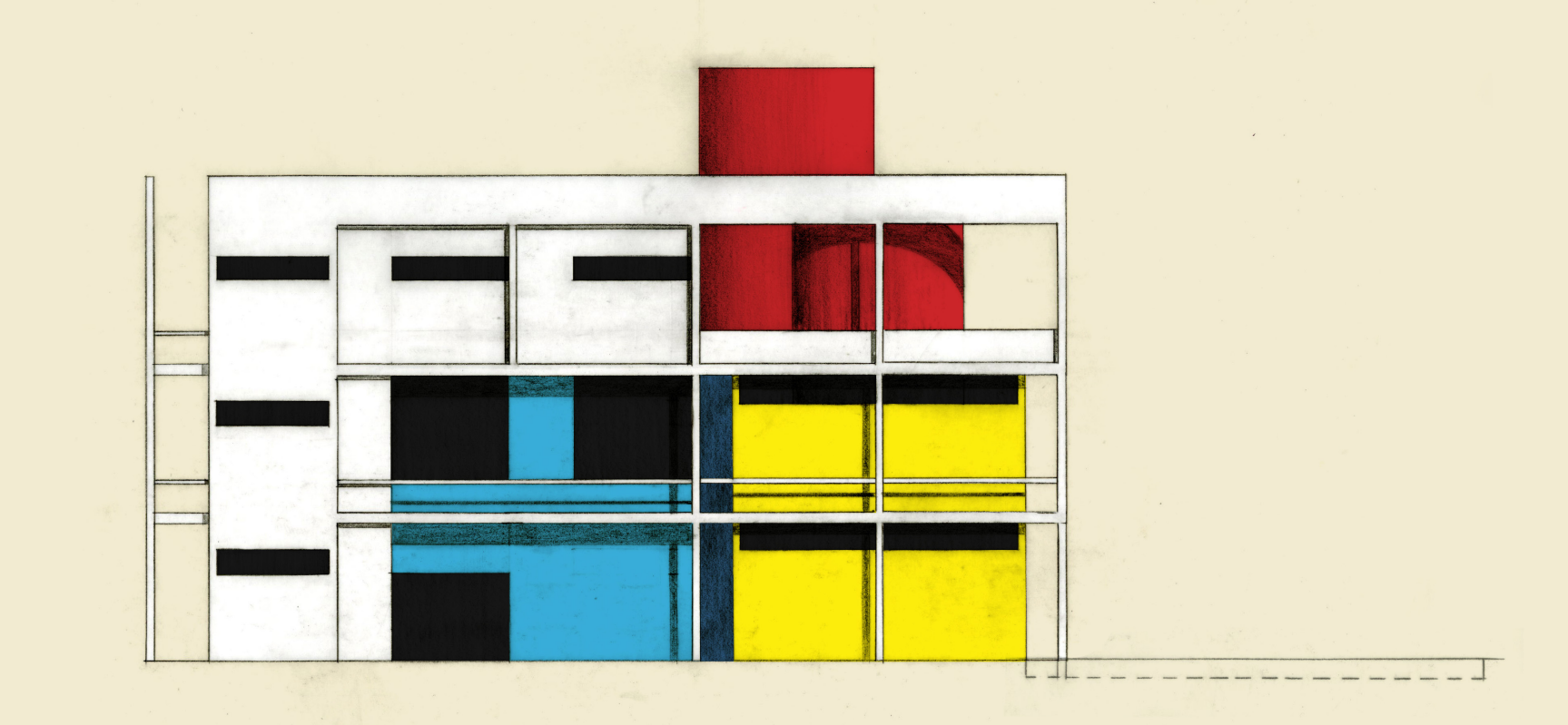
Front Facade 3



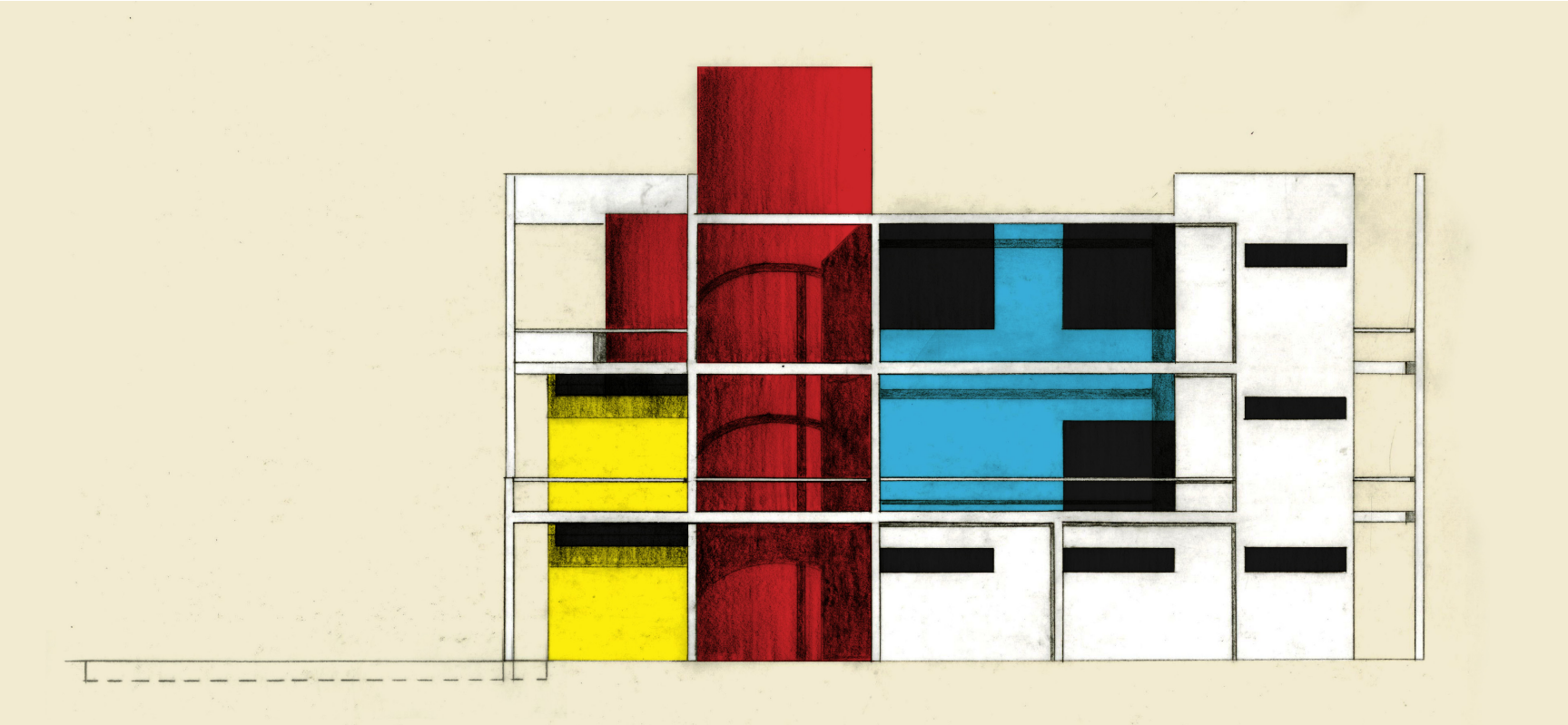
Front Facade Drawing



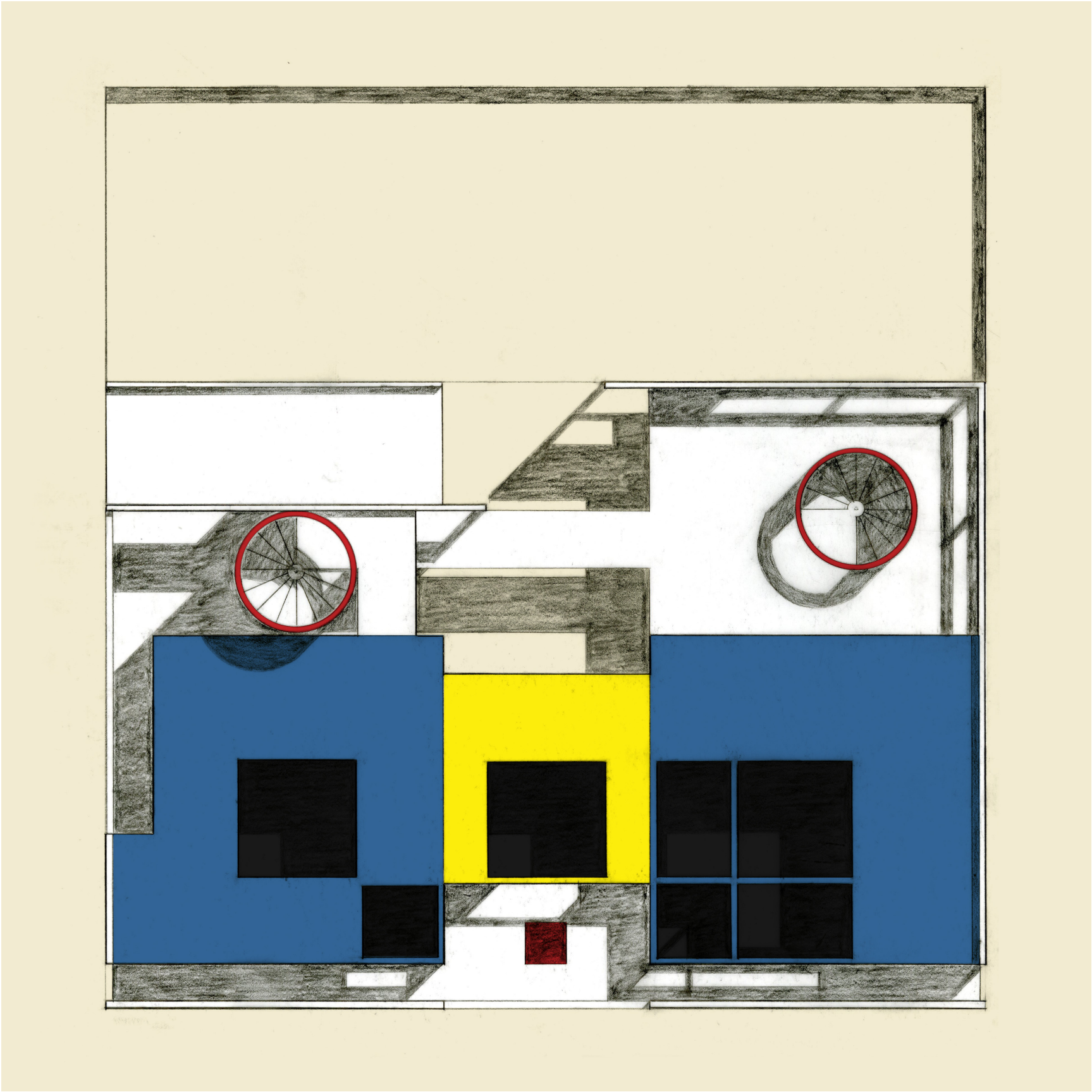
Rear Facade Drawing



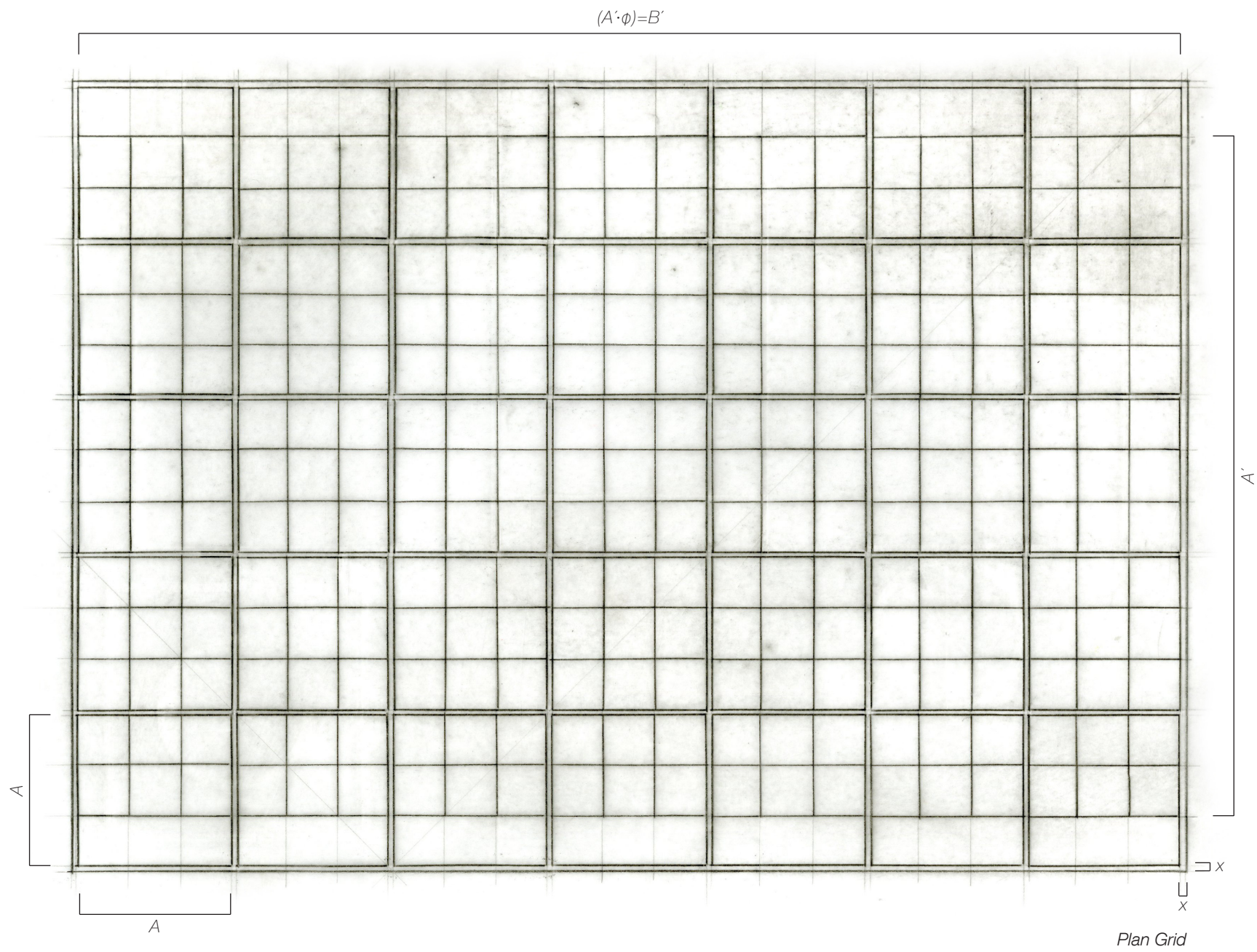
Right Facade Drawing

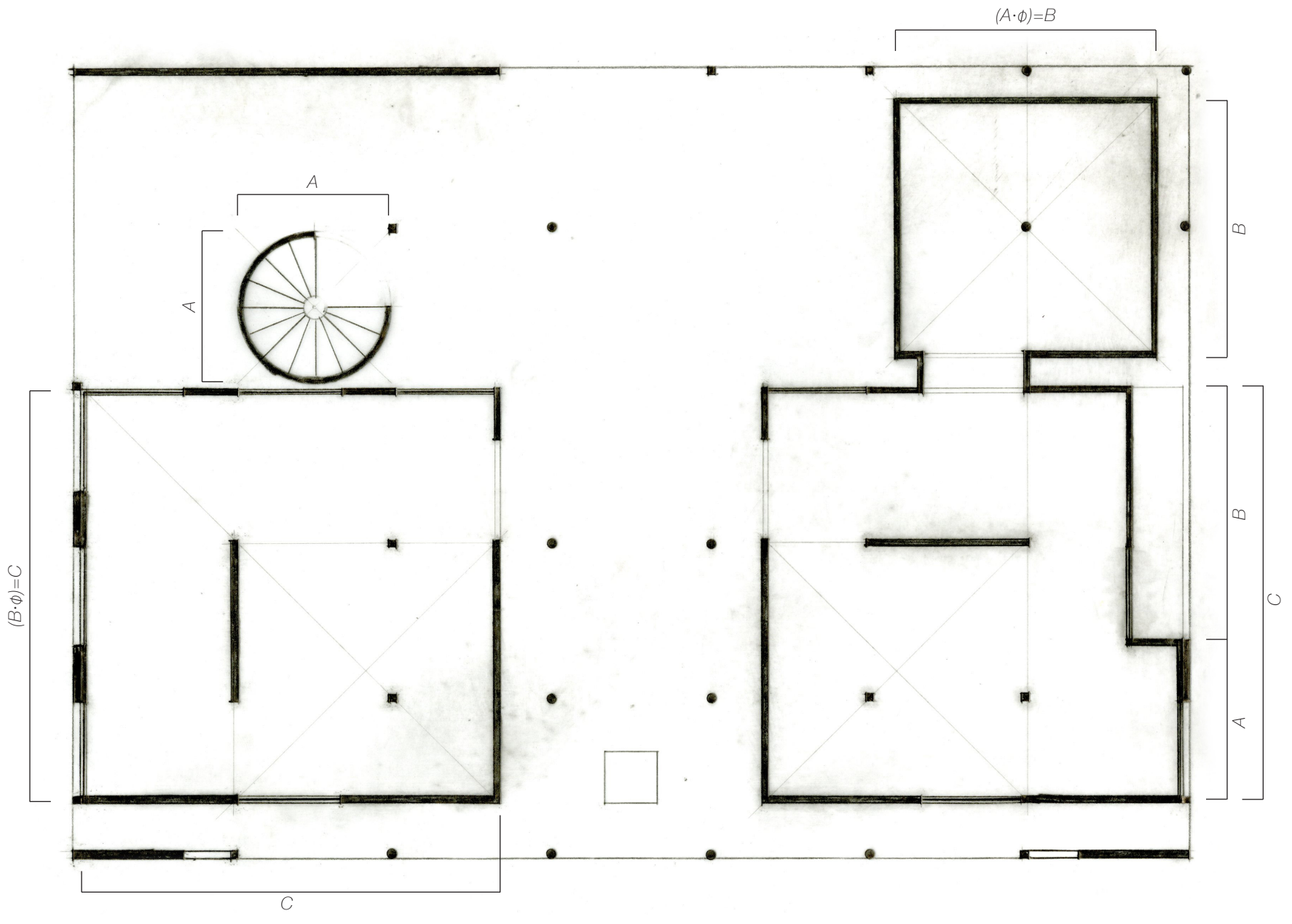


Left Facade Drawing

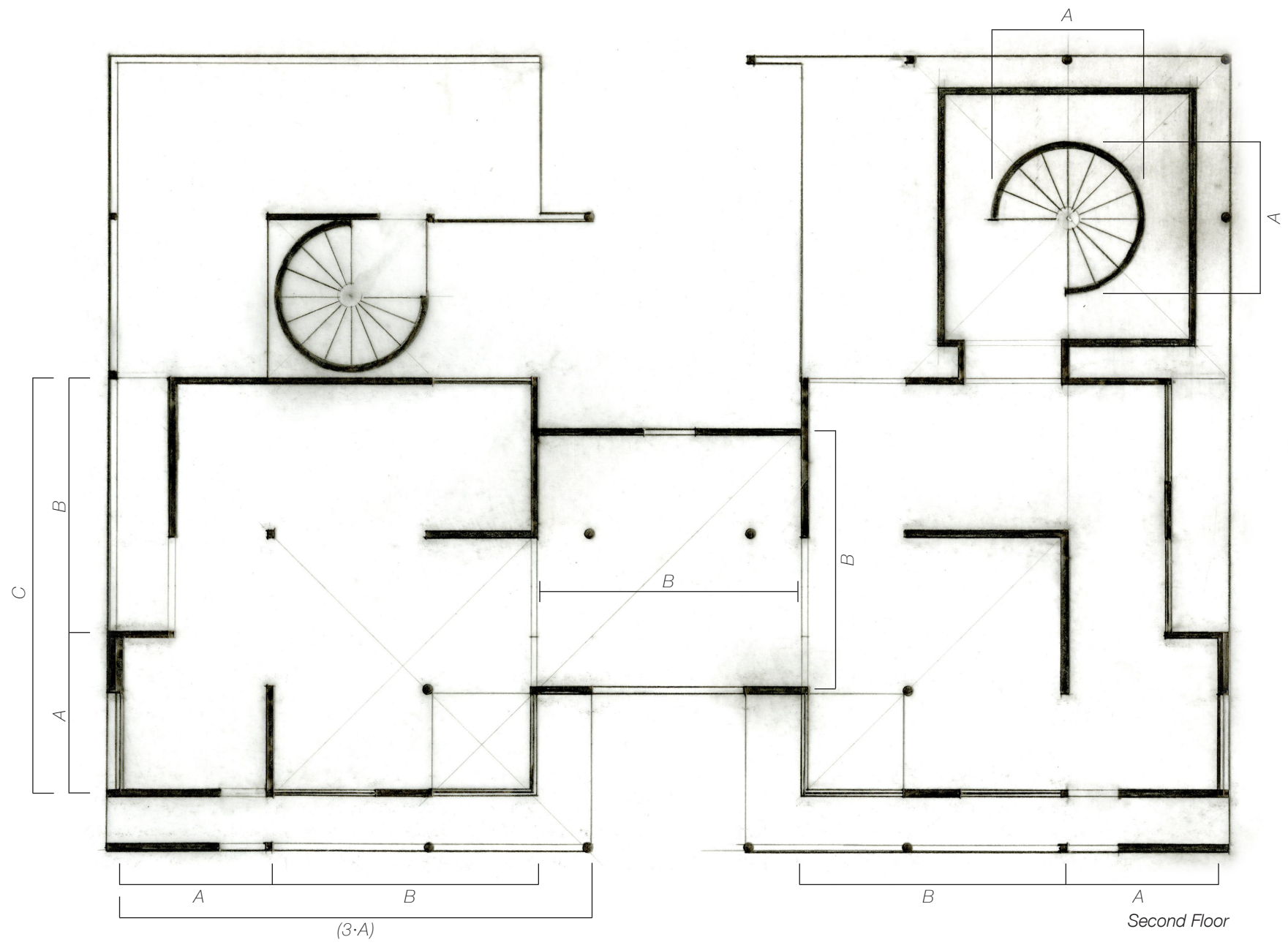


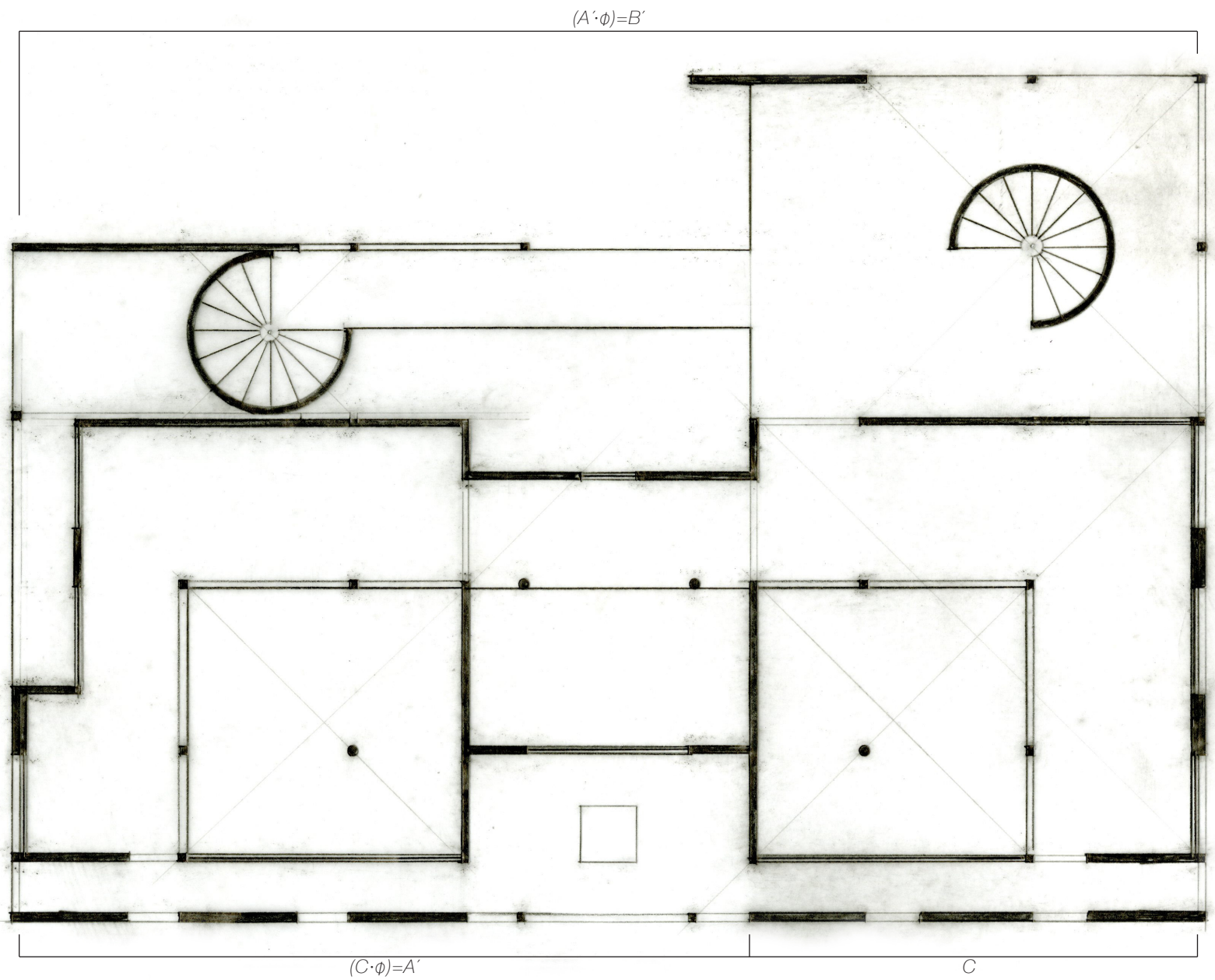
Top Facade Drawing



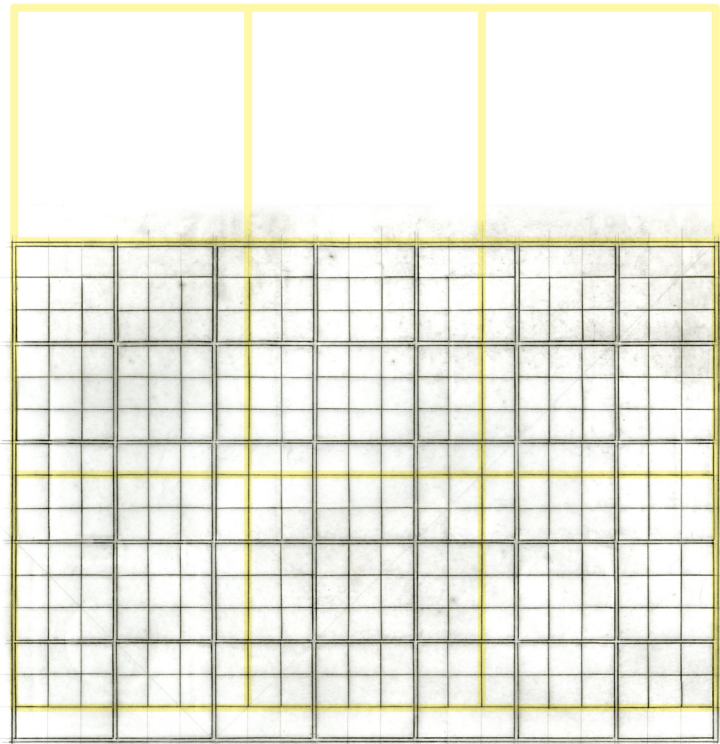


First Floor

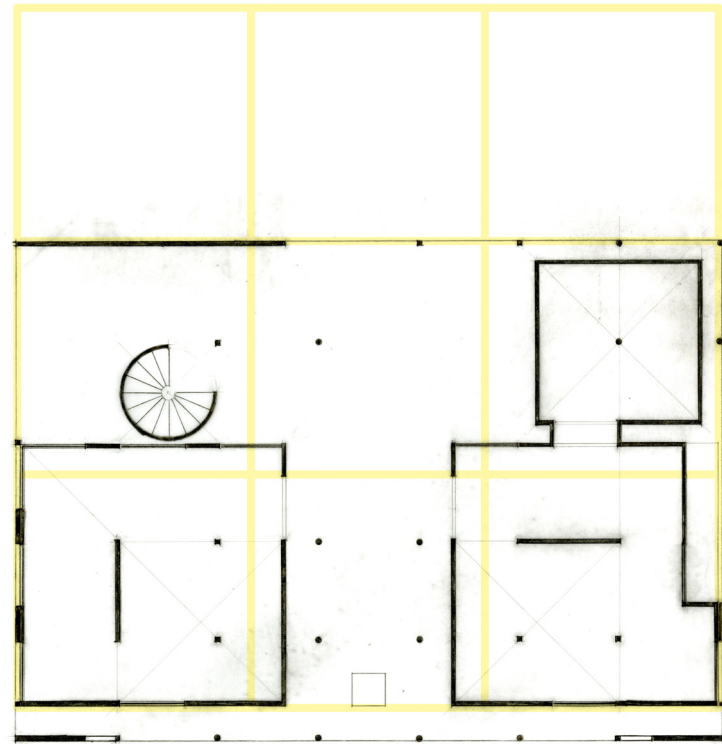




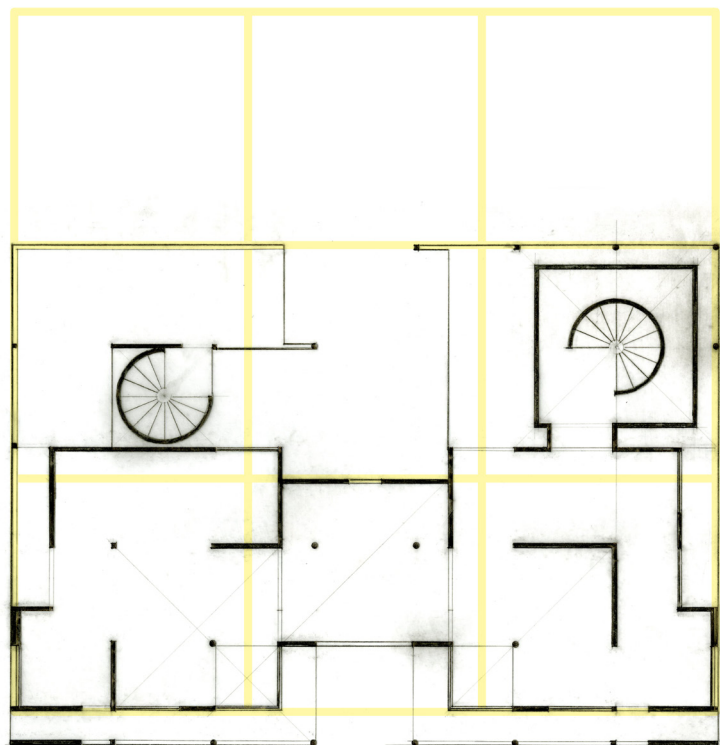
Third Floor



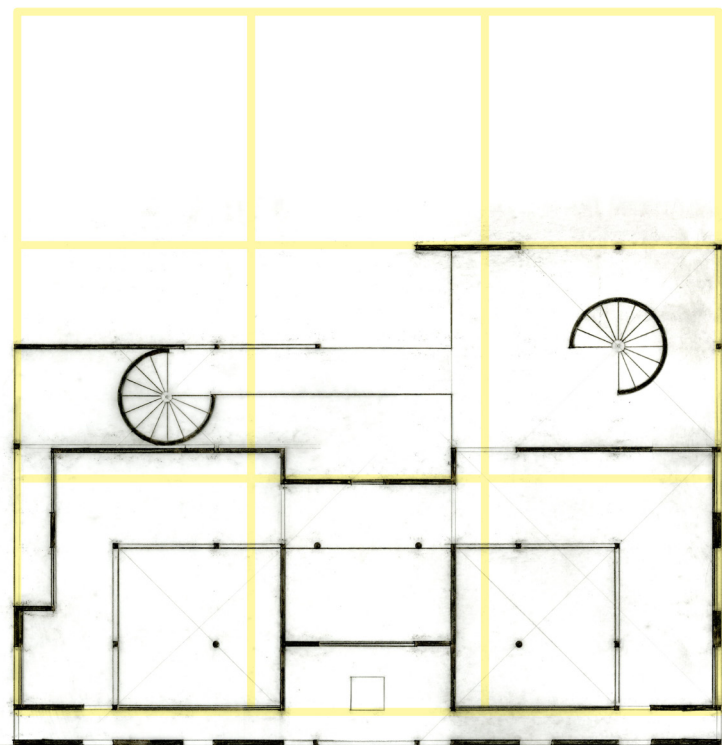
Plan Grid Overlay



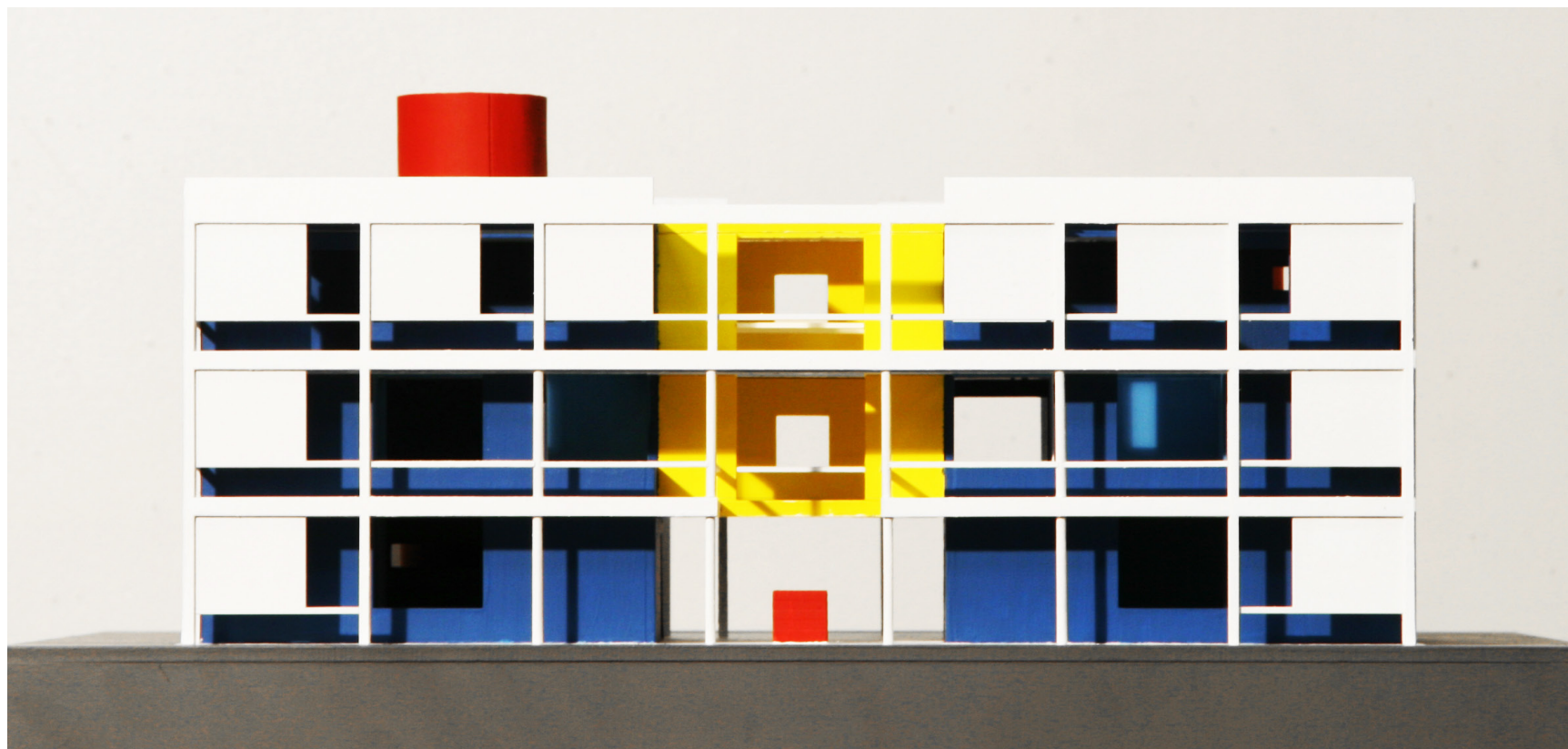
First Floor Overlay



Second Floor Overlay



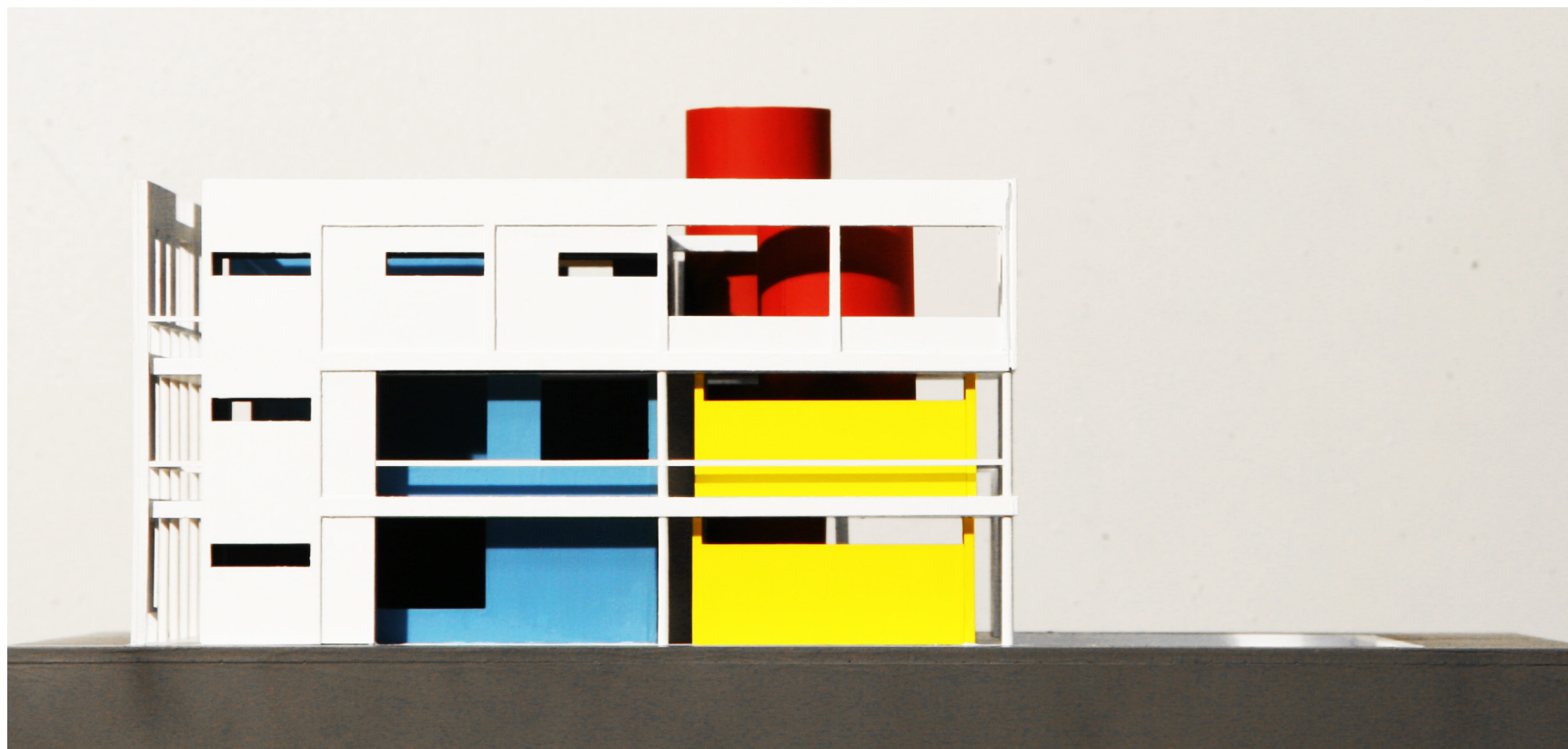
Third Floor Overlay



Front View



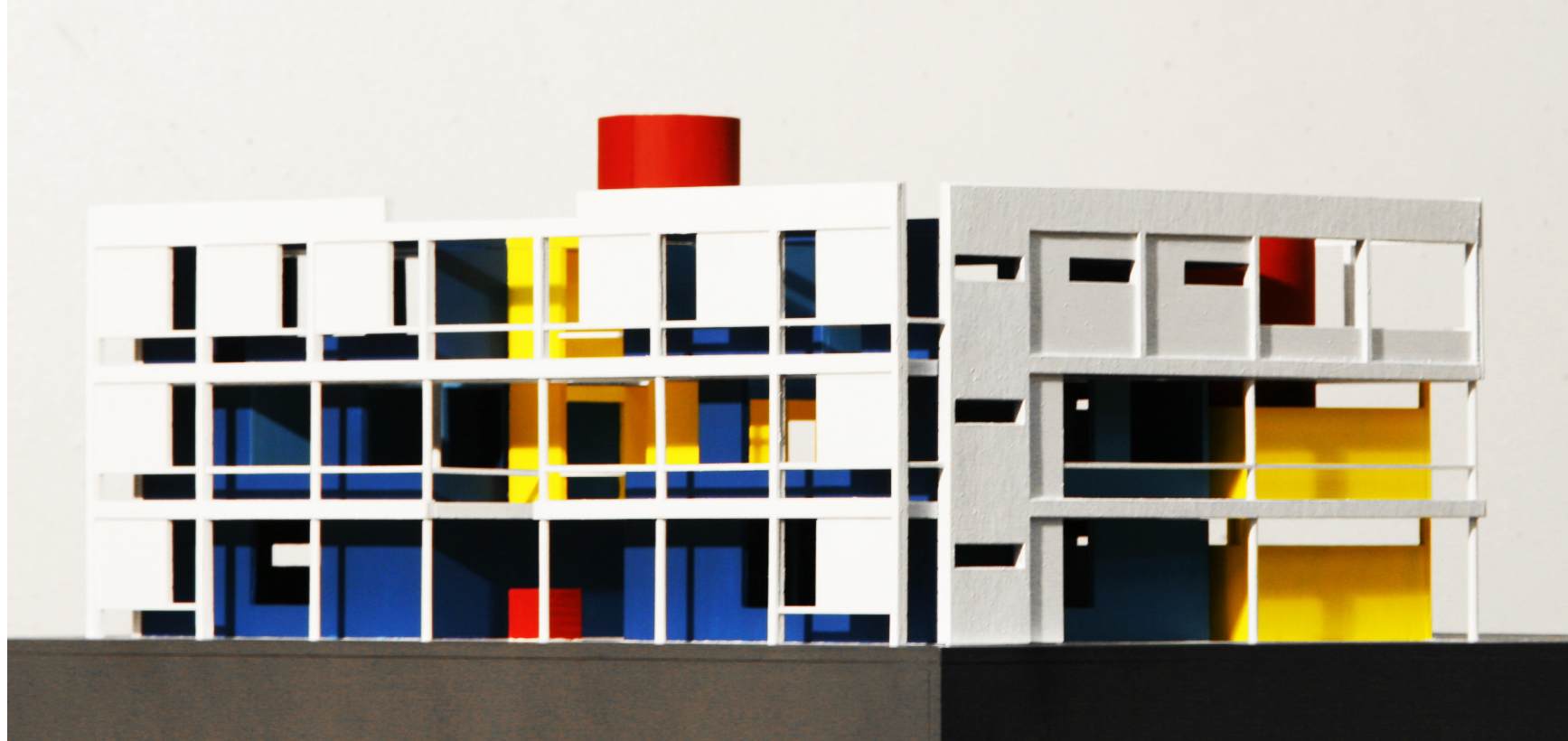
Rear View



Right View



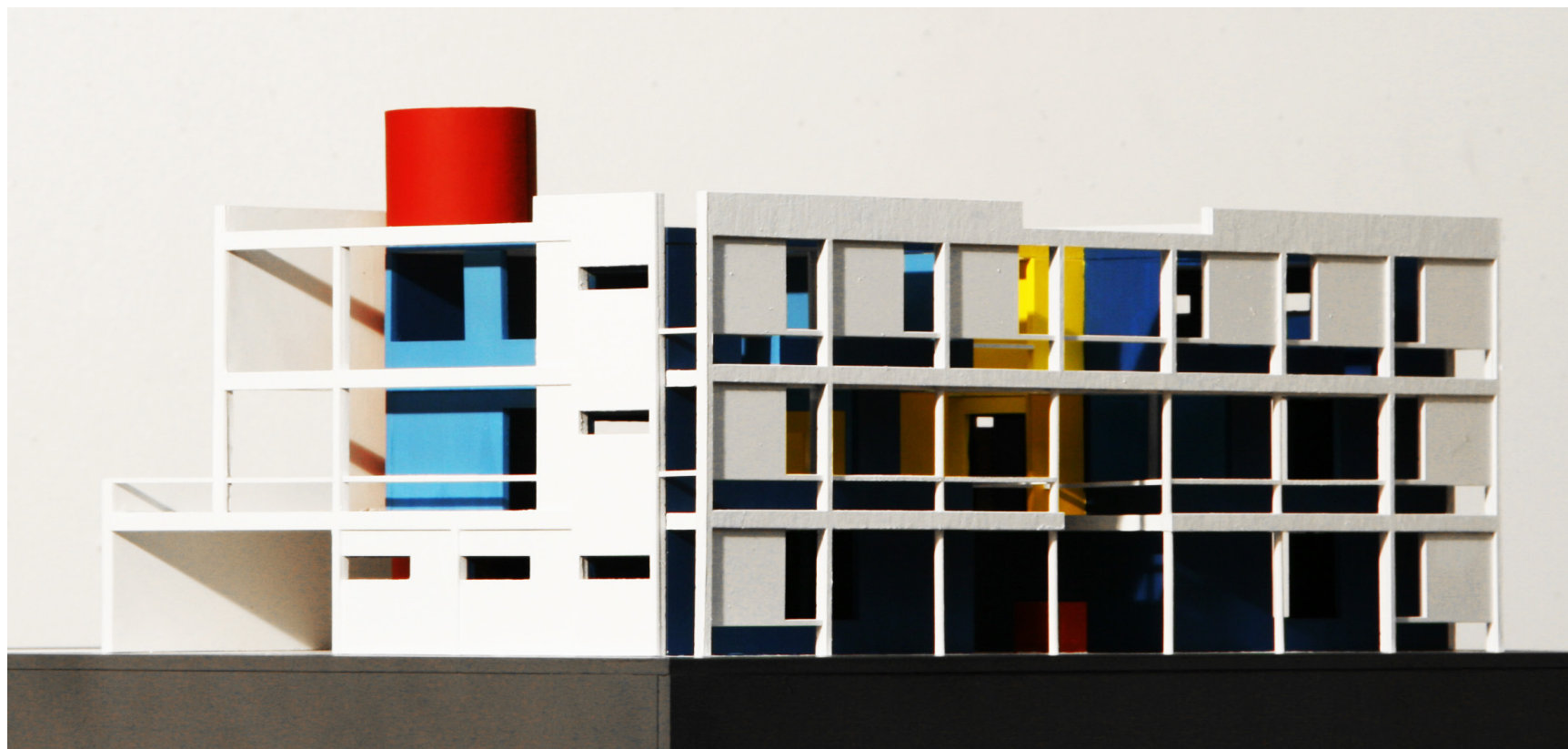
Left View



Front-Right View



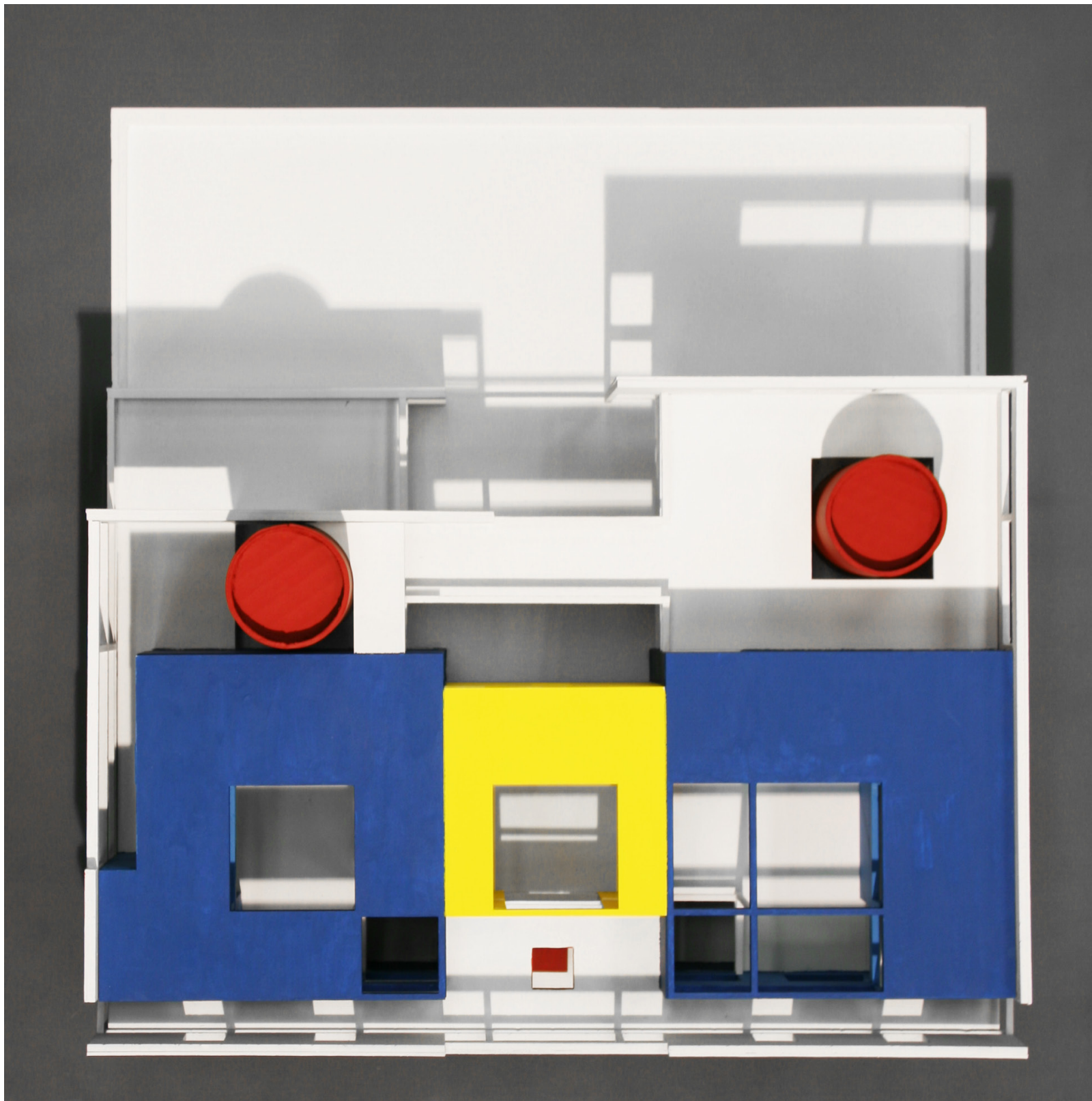
Rear-Right View



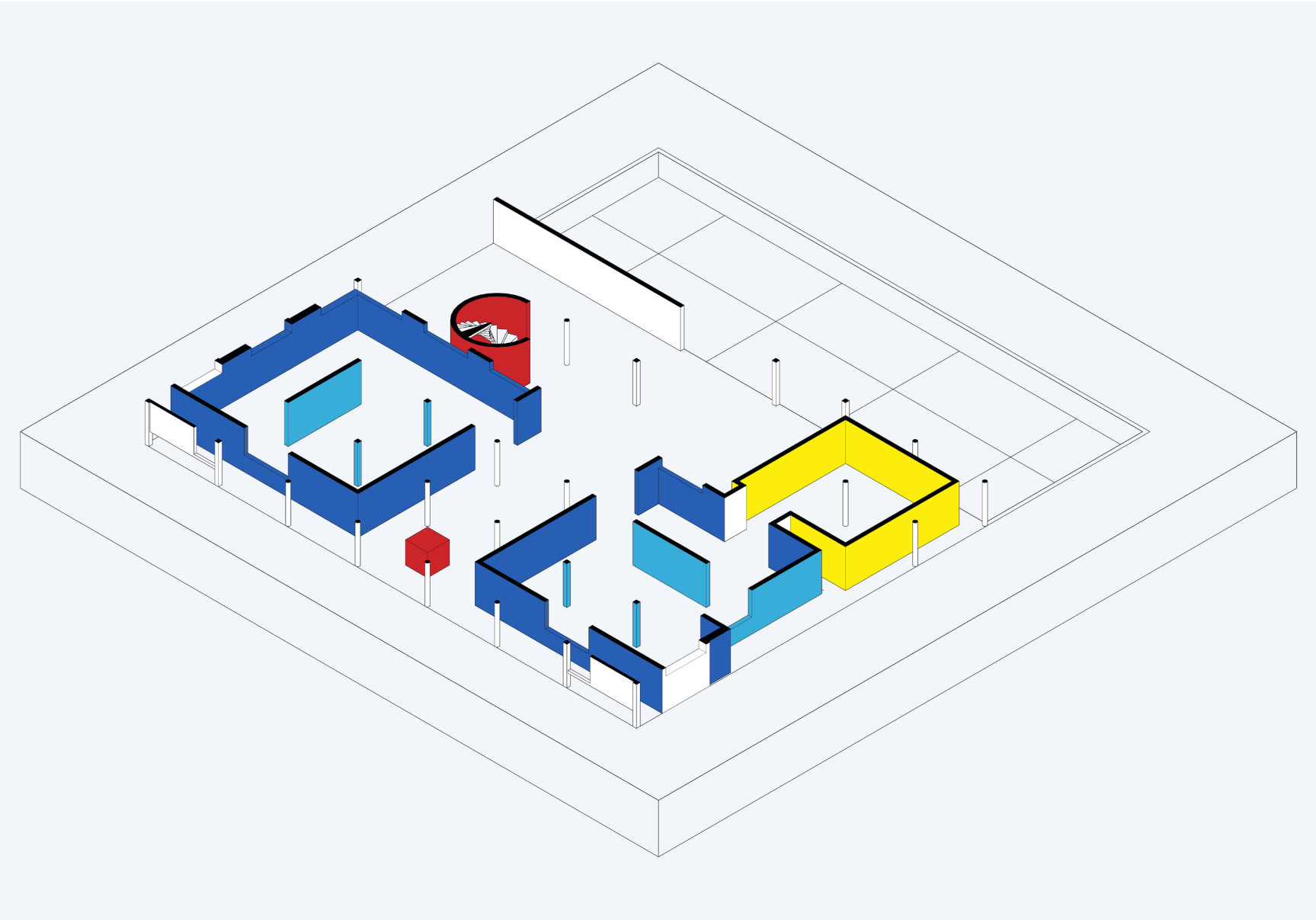
Front-Left View



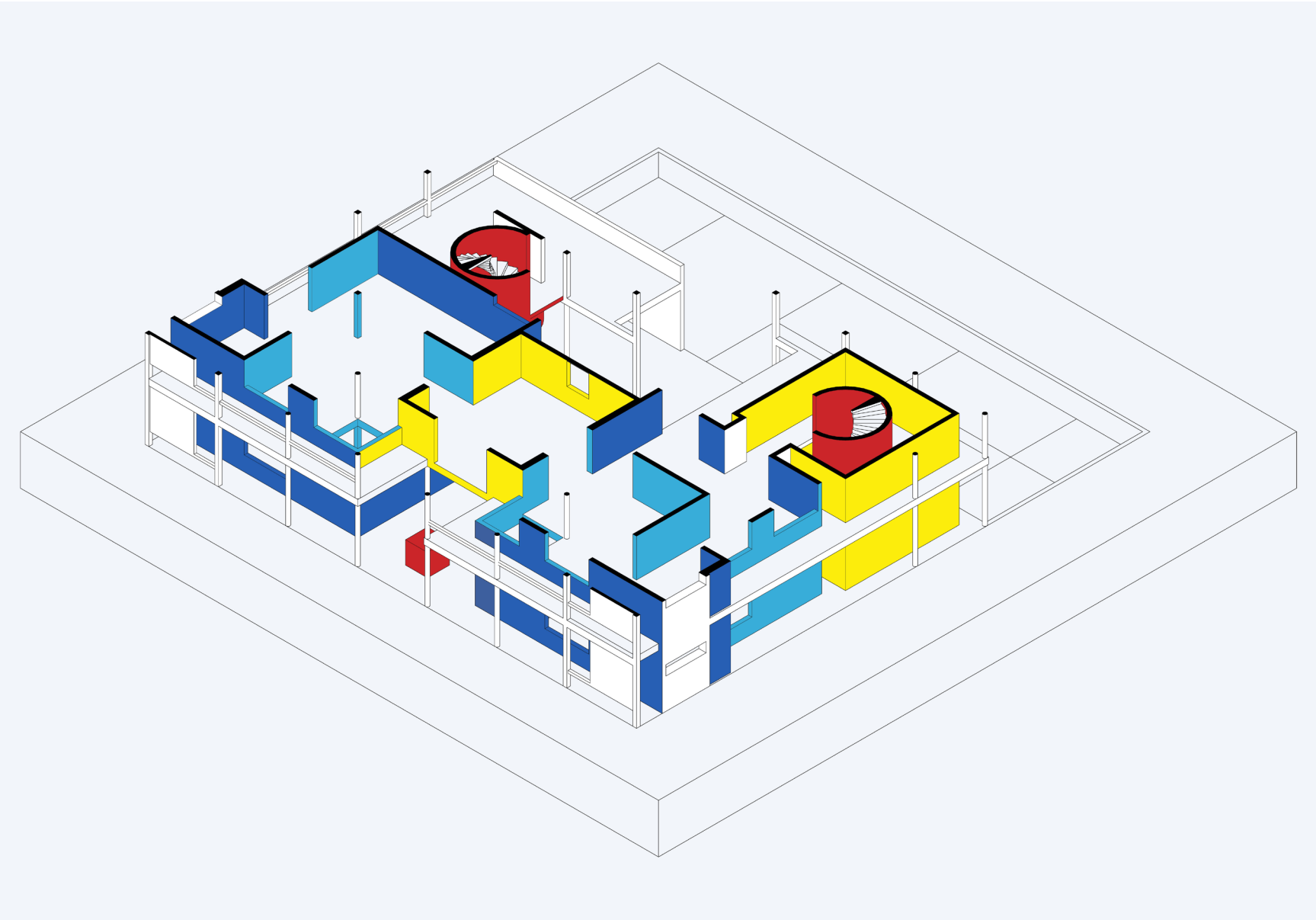
Rear-Left View



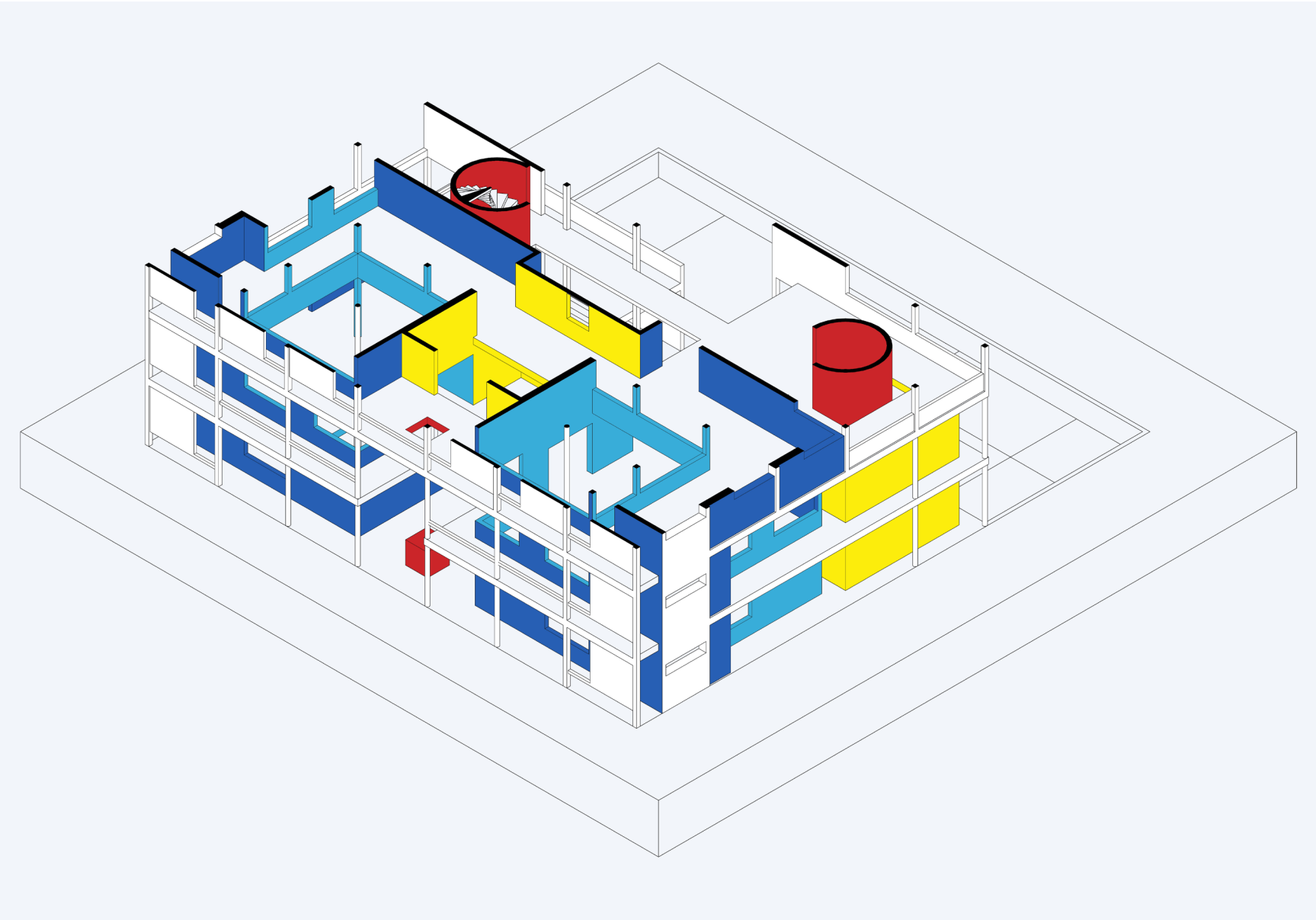
Top View



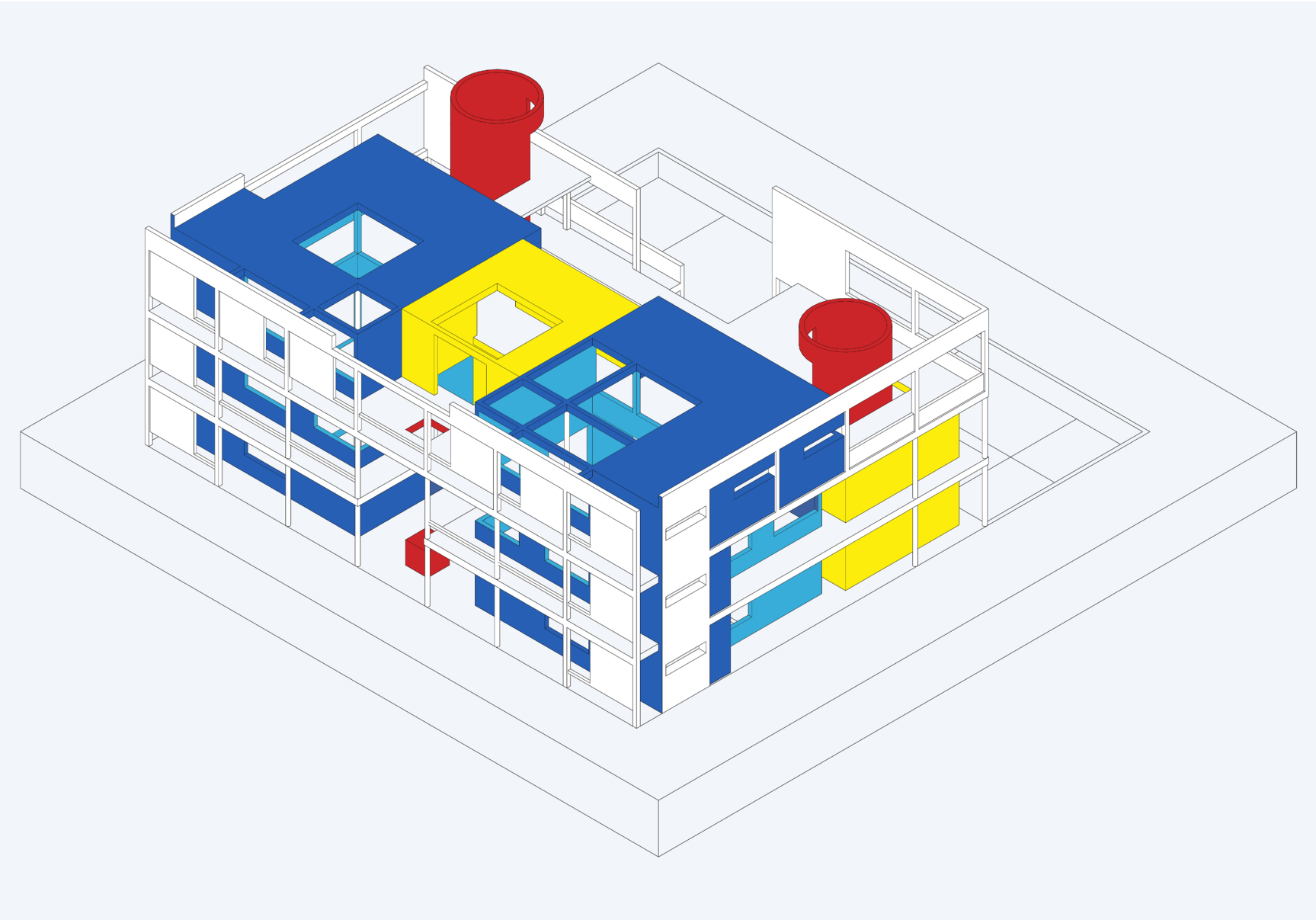
First Floor Axonometric



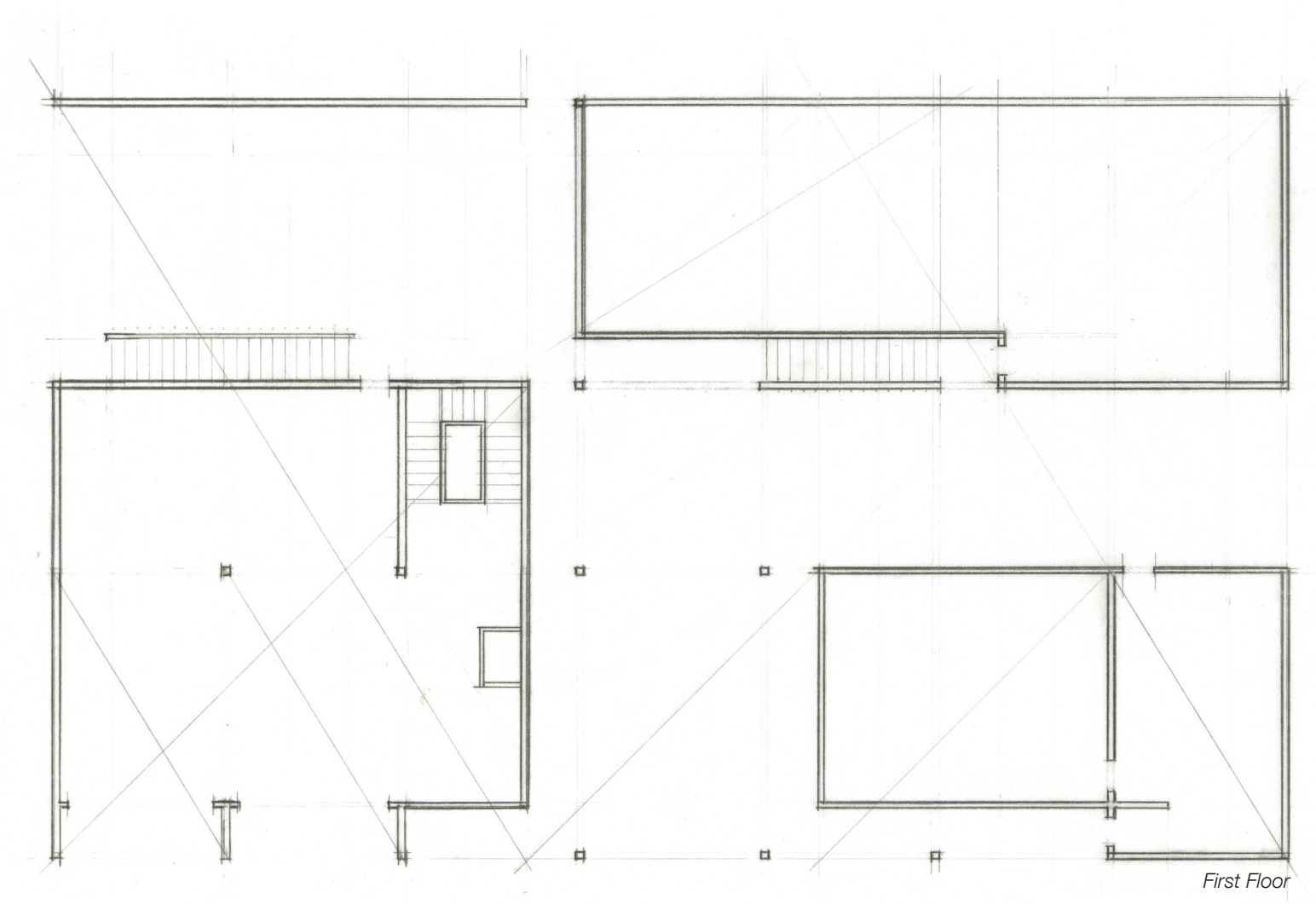
Second Floor Axonometric

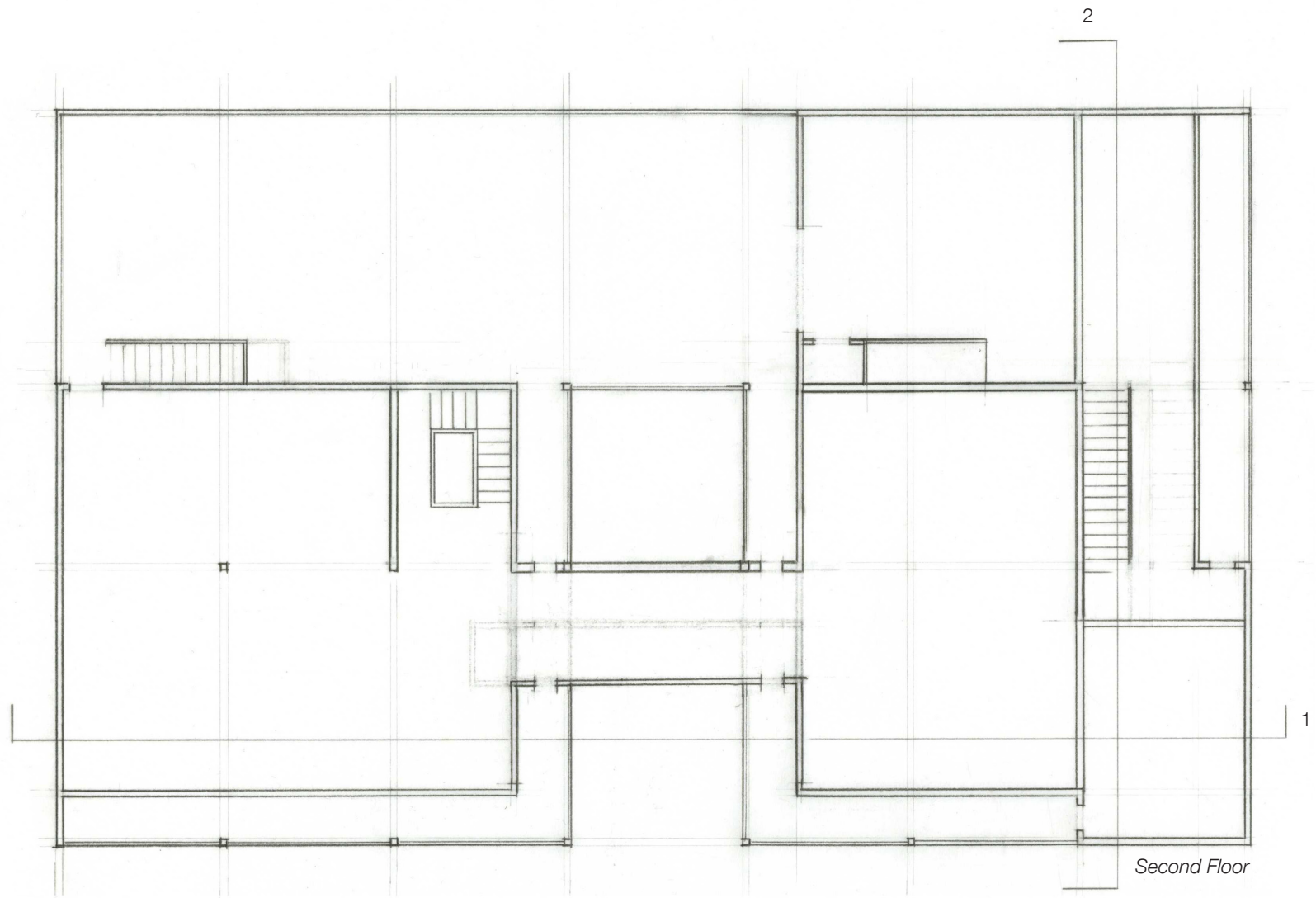


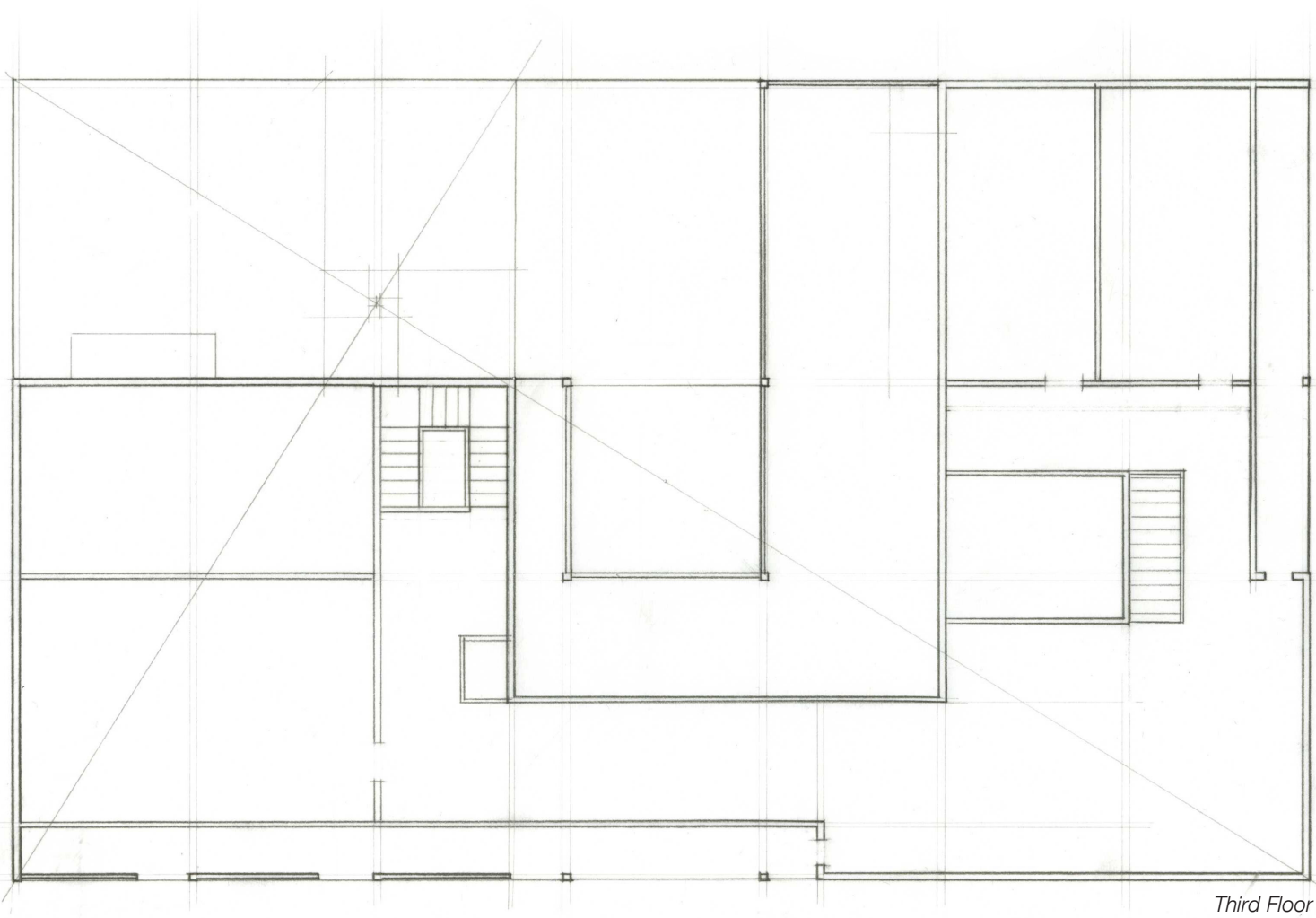
Third Floor Axonometric

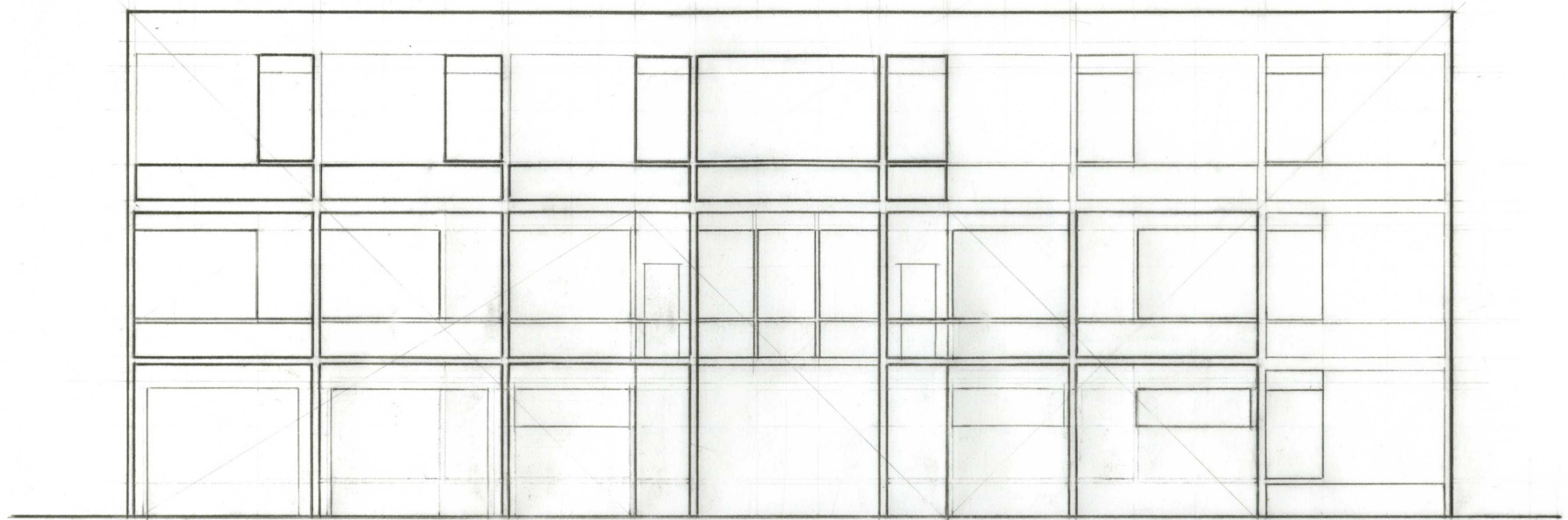


Full View Axonometric

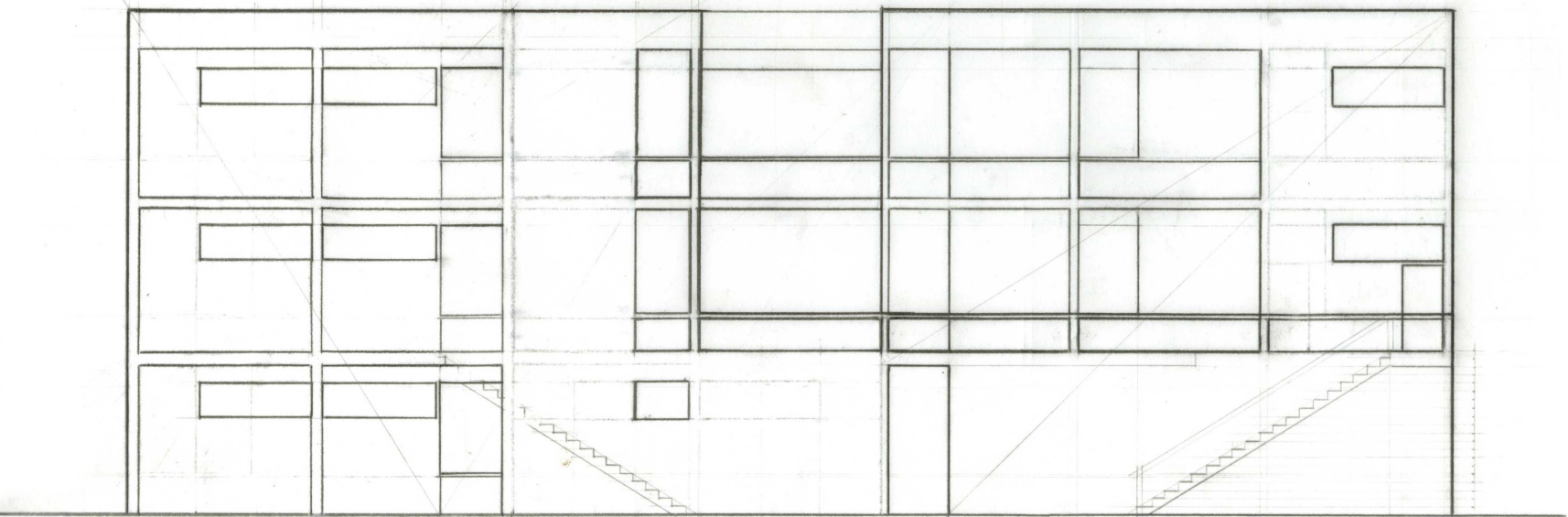




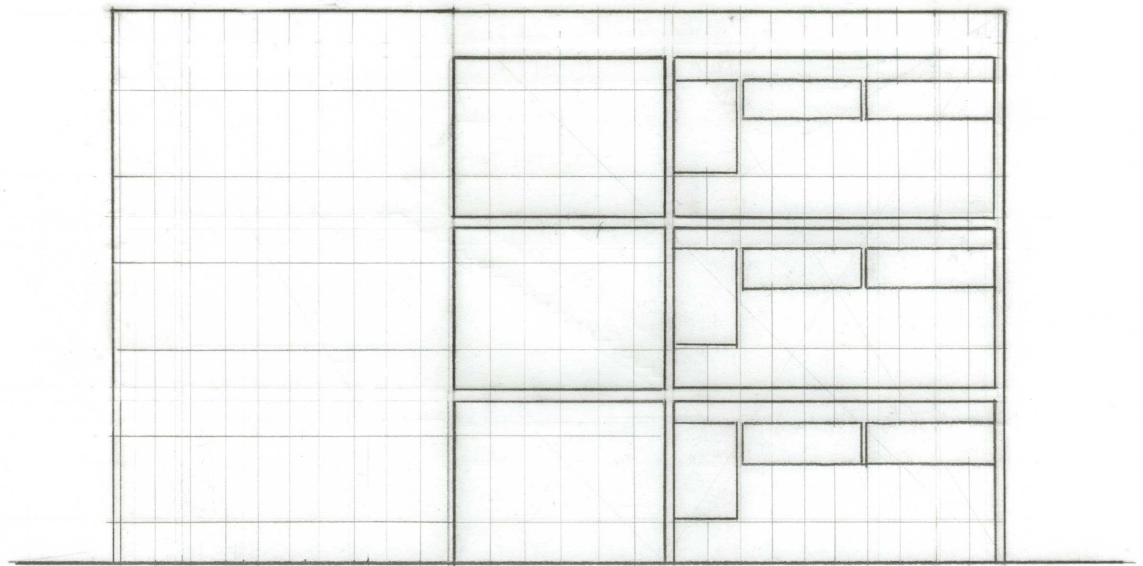




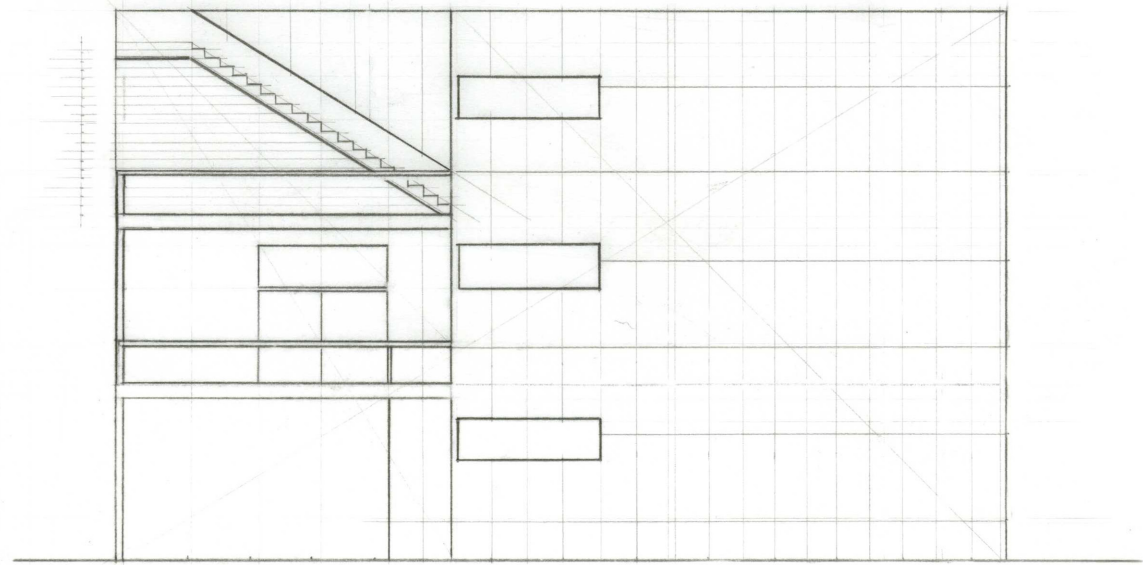
Front Facade



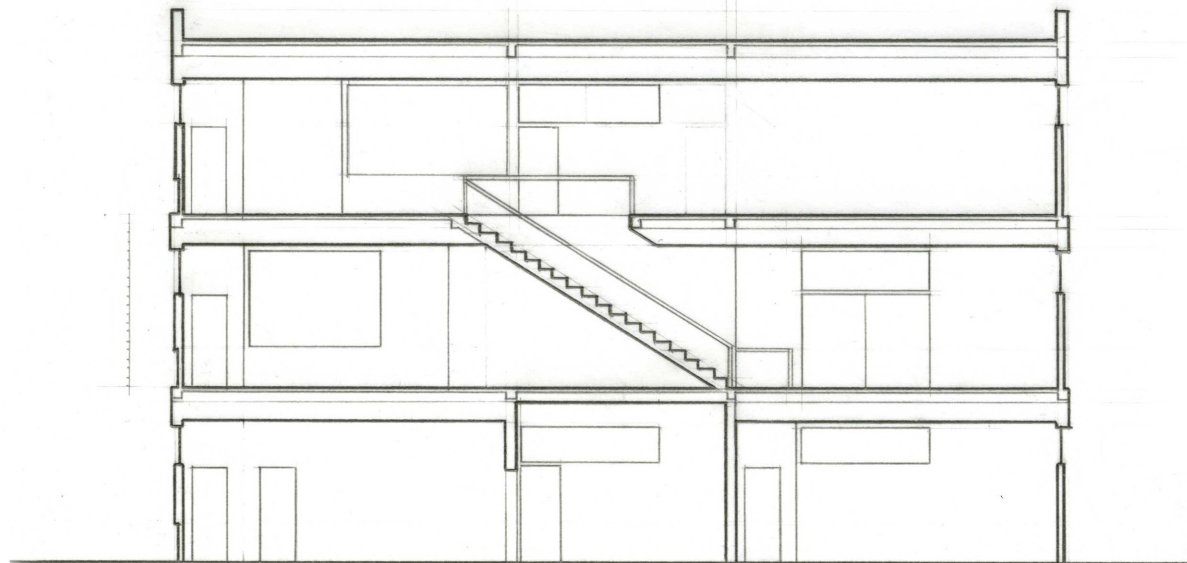
Rear Facade



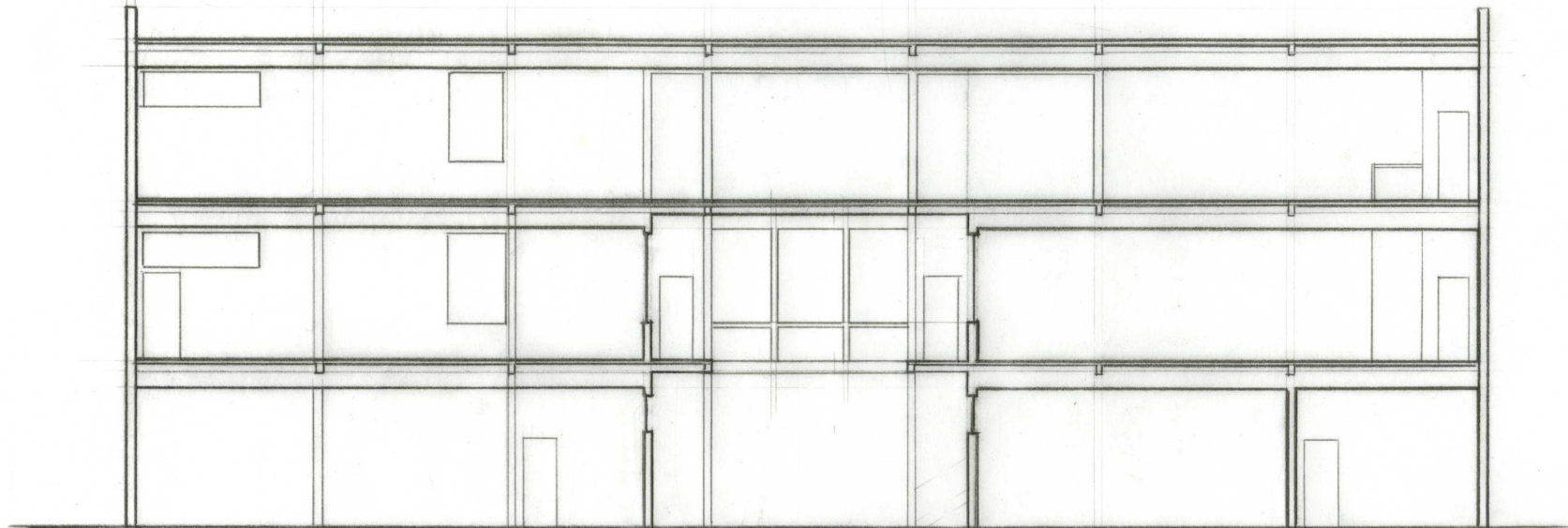
Right Facade



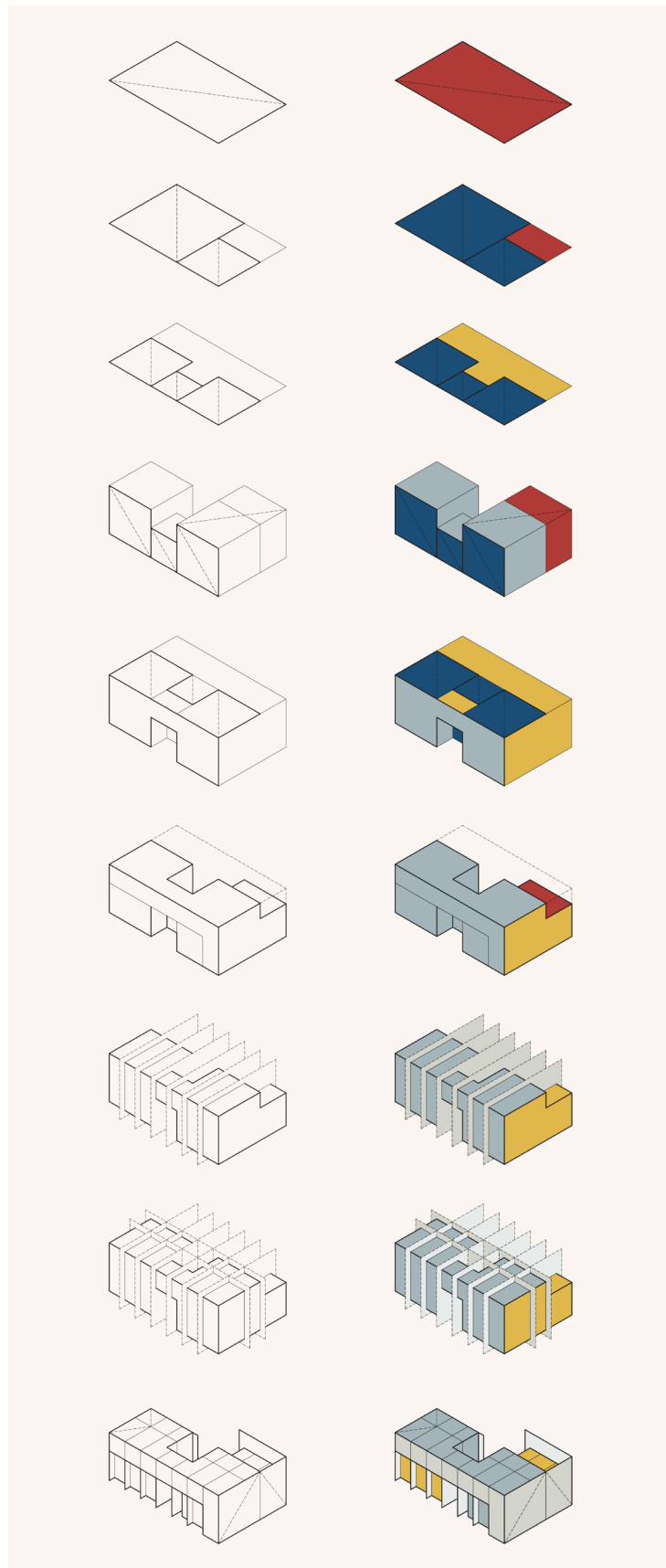
Left Facade



Section Drawing 1



Section Drawing 2



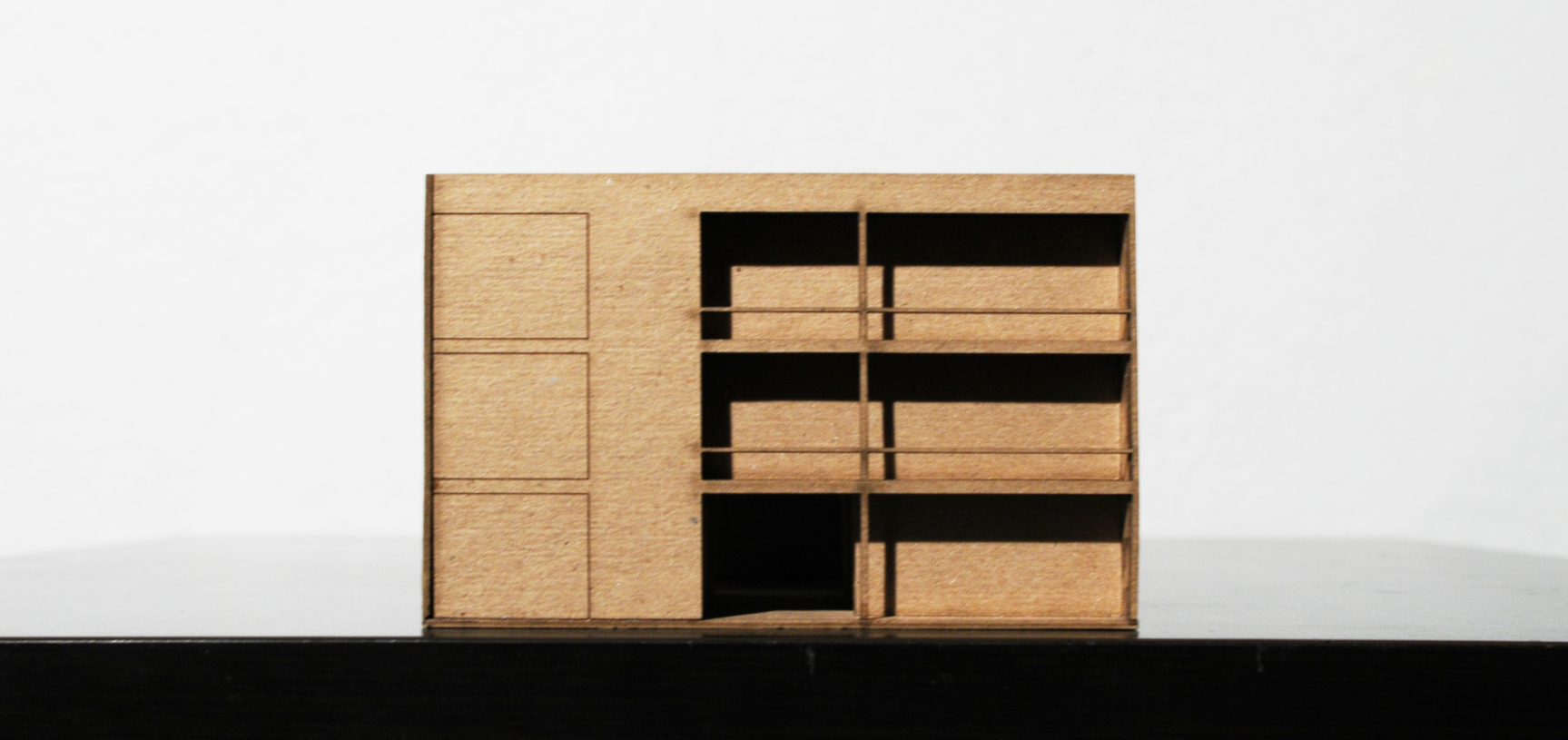
Formal Construction Series



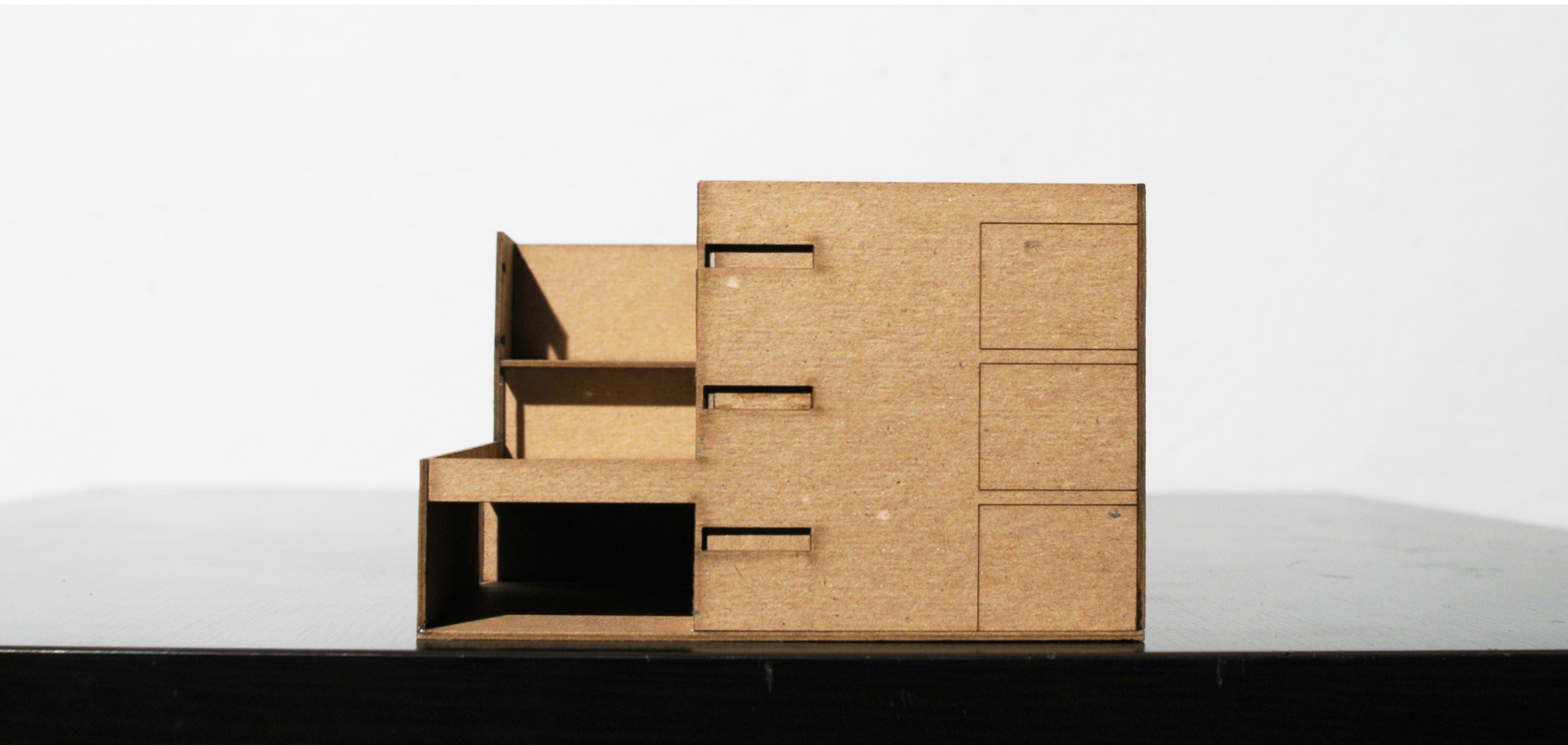
Front View



Rear View



Right View



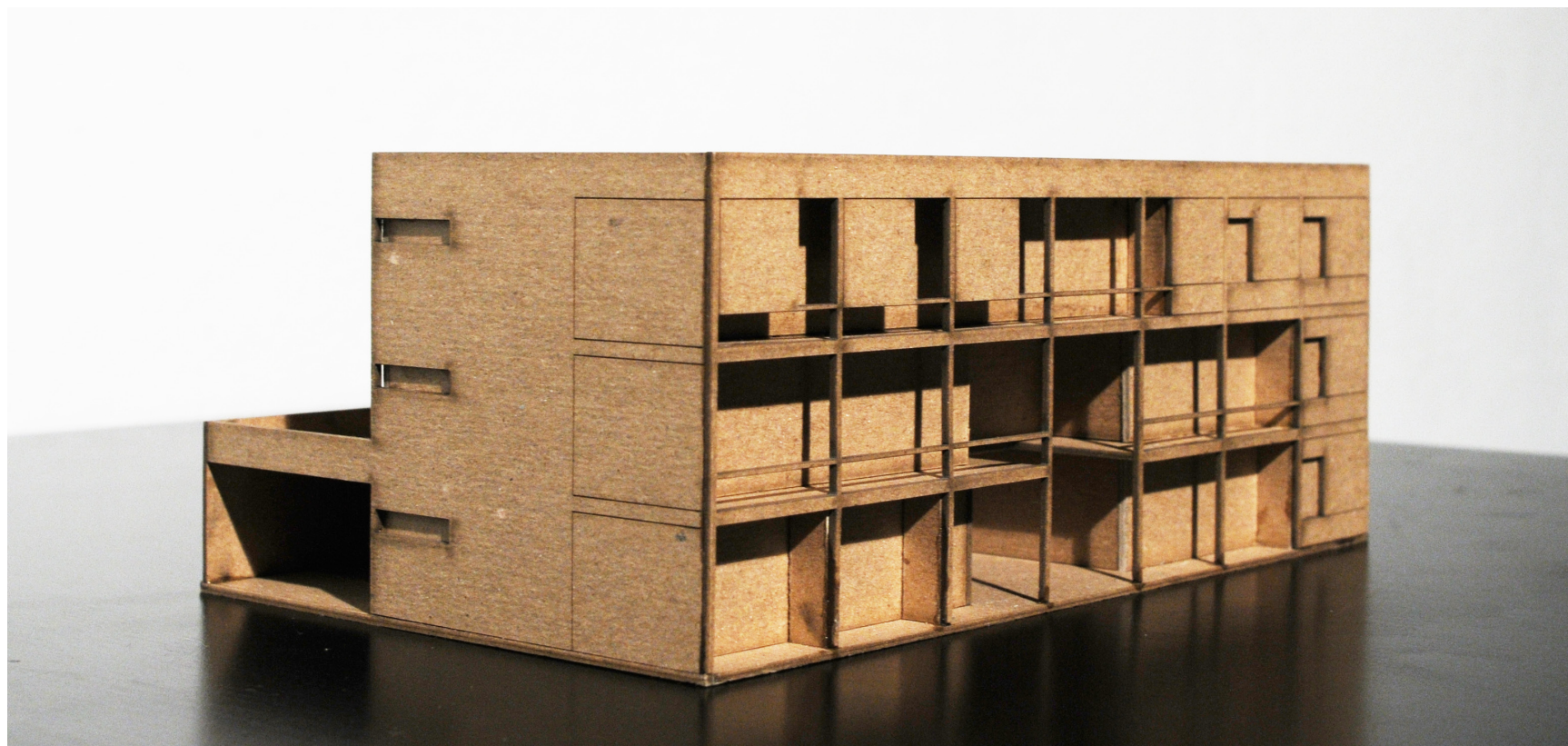
Left View



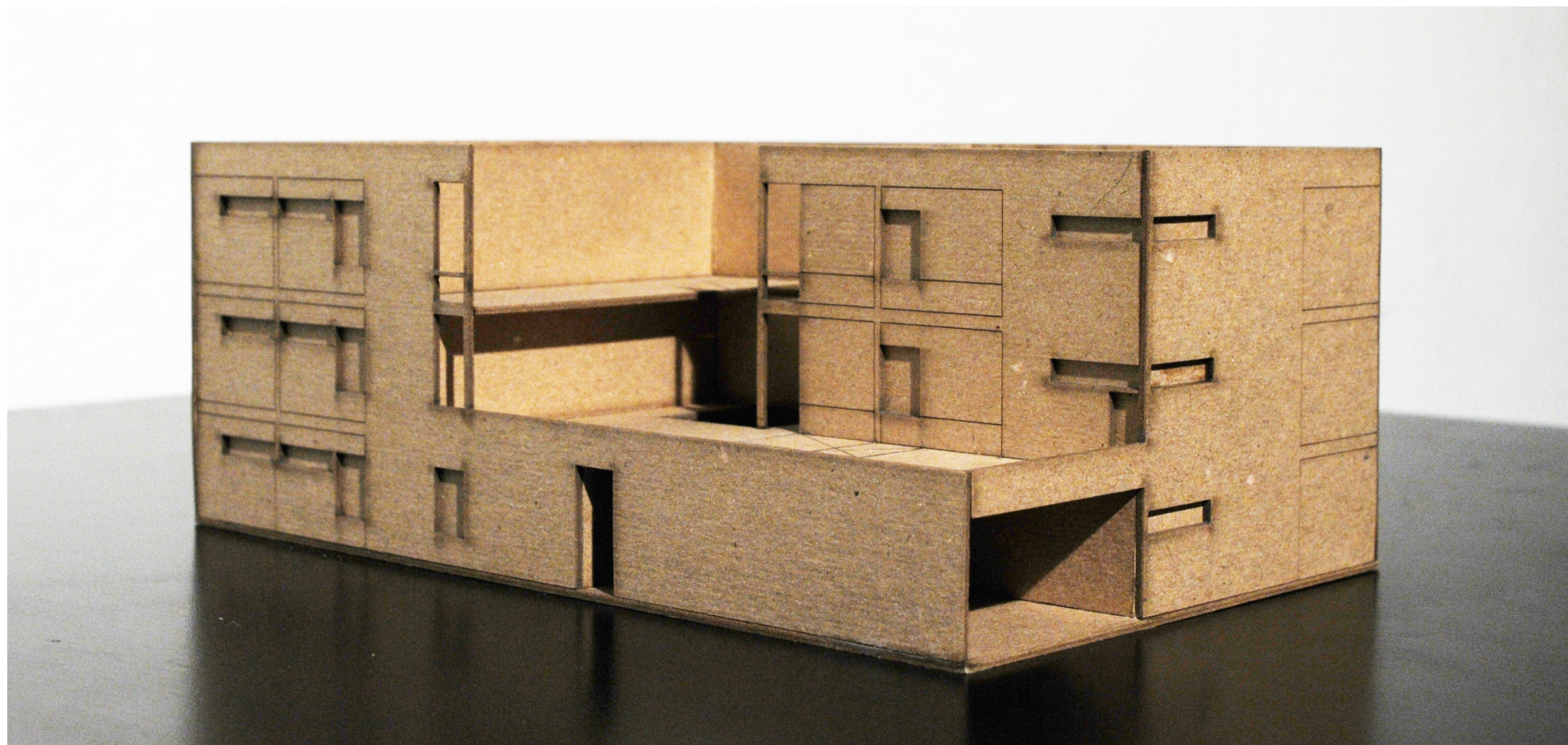
Front-Right View



Rear-Right View



Front-Left View



Rear-Left View



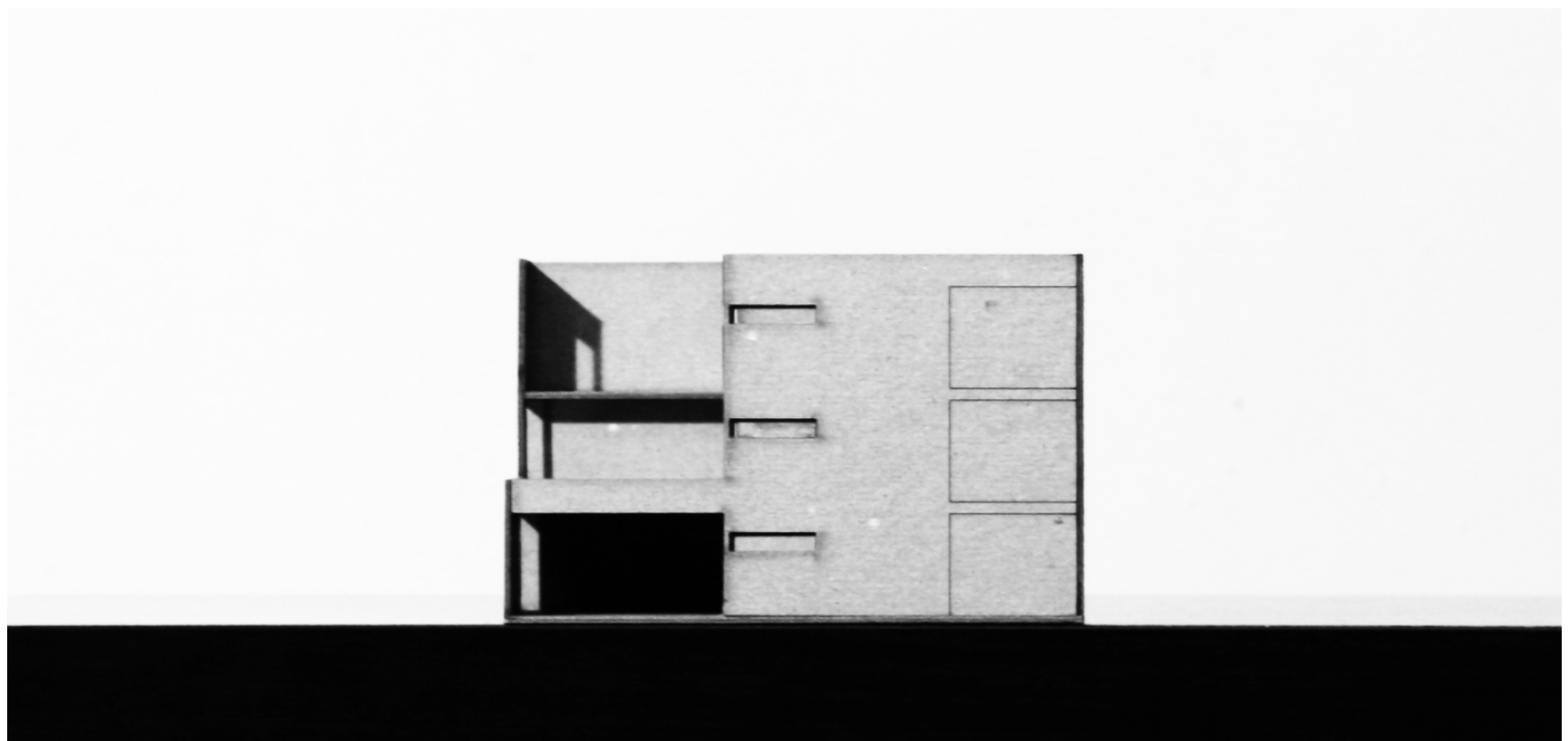
Front Projection



Rear Projection



Right Projection



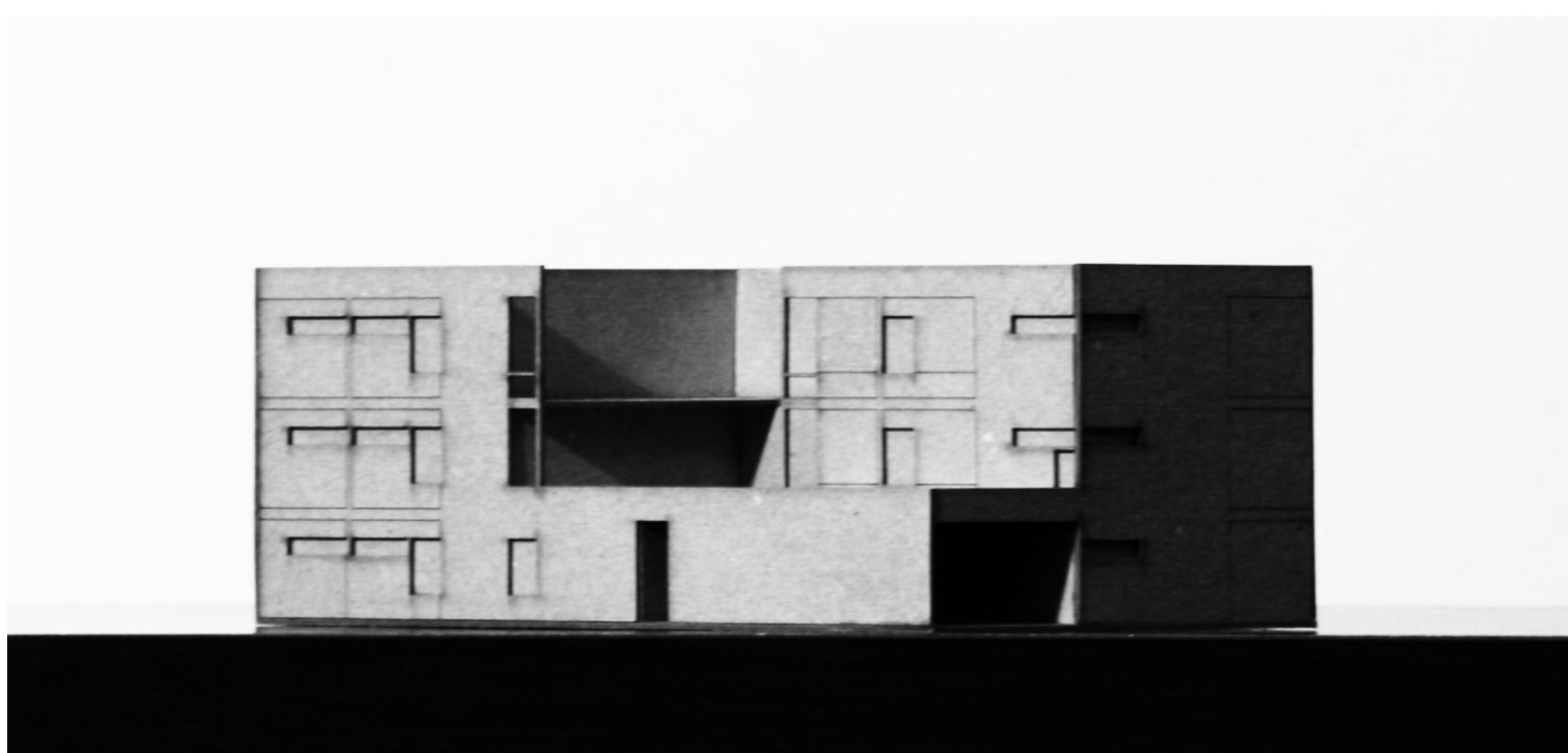
Left Projection



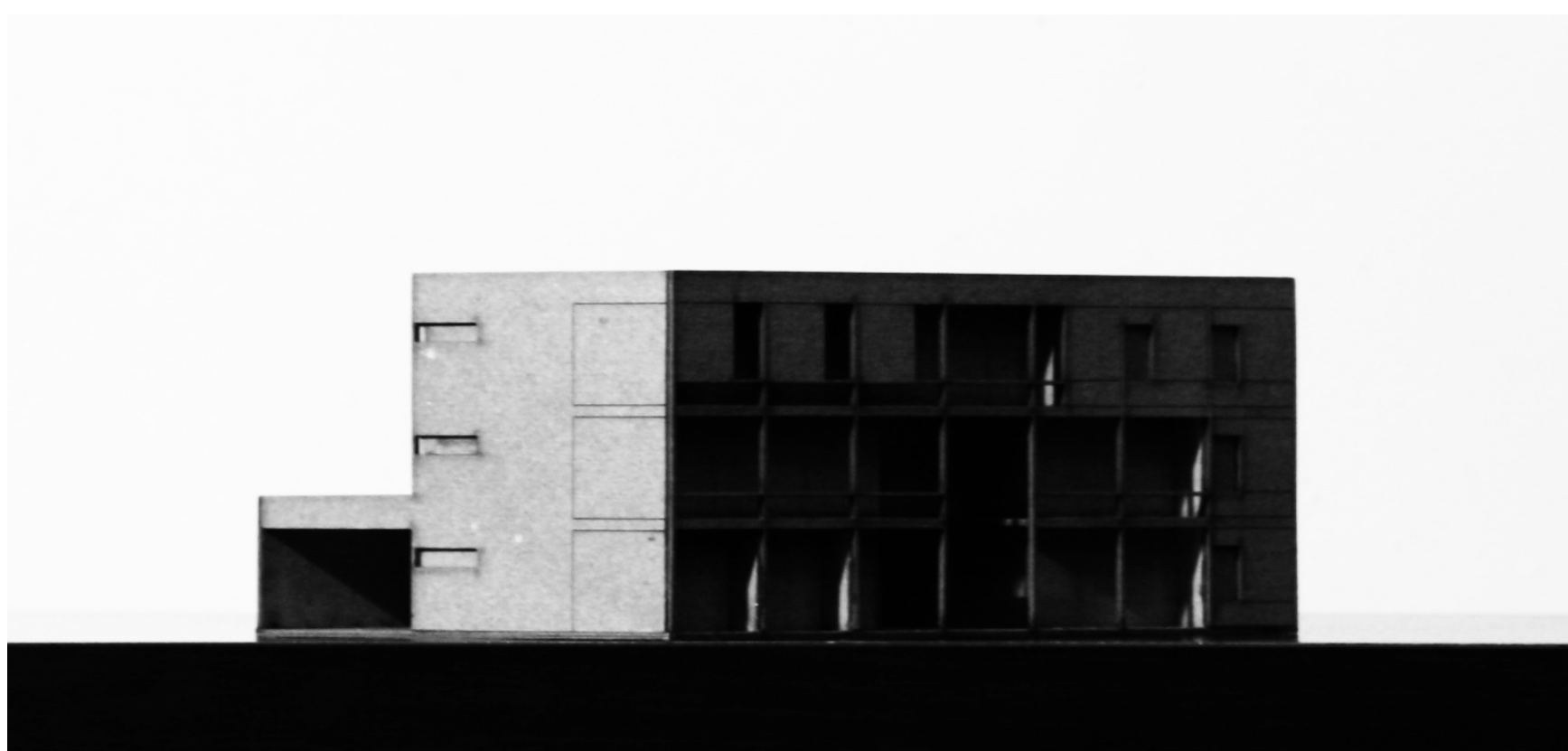
Front-Right Projection



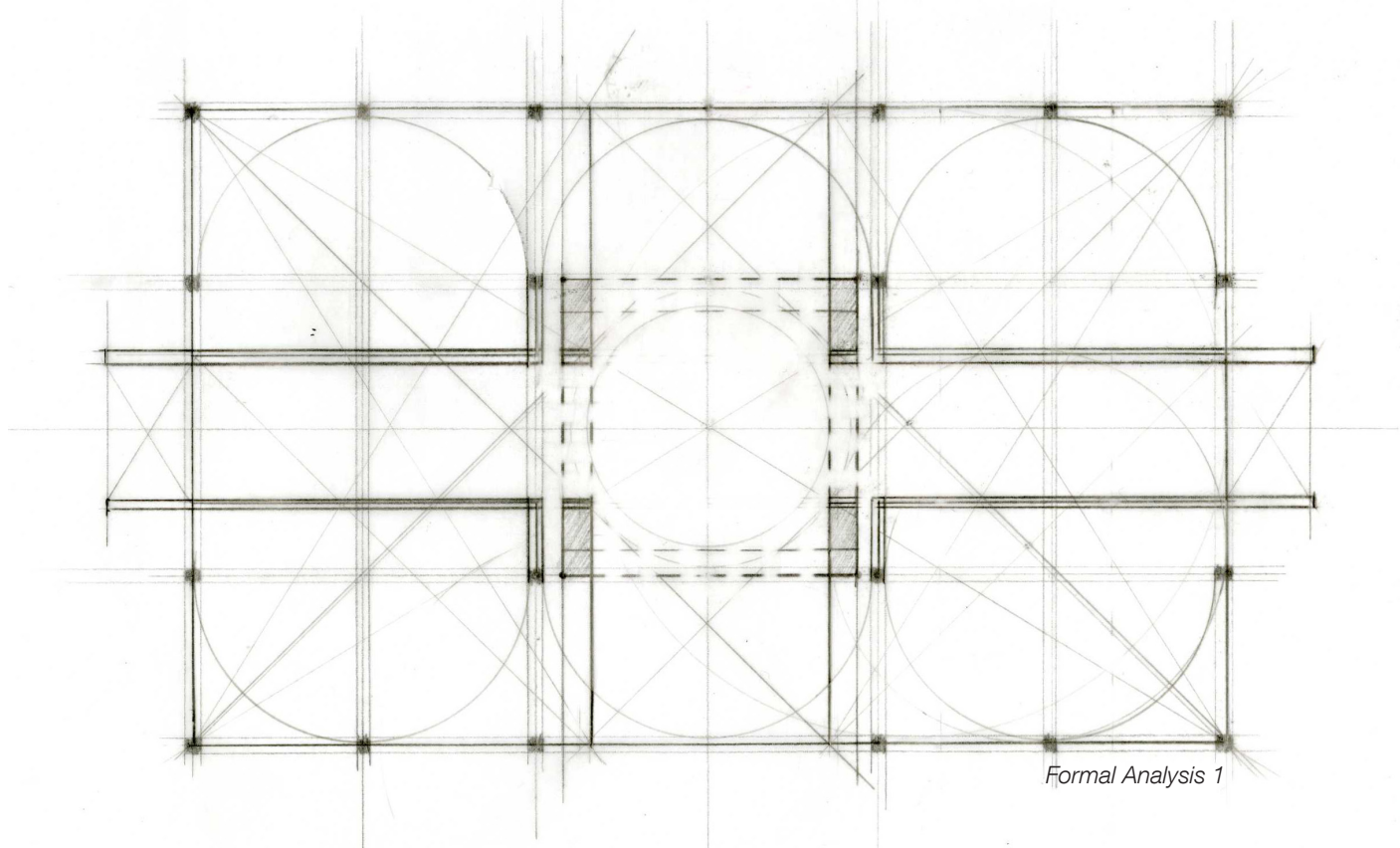
Rear-Right Projection



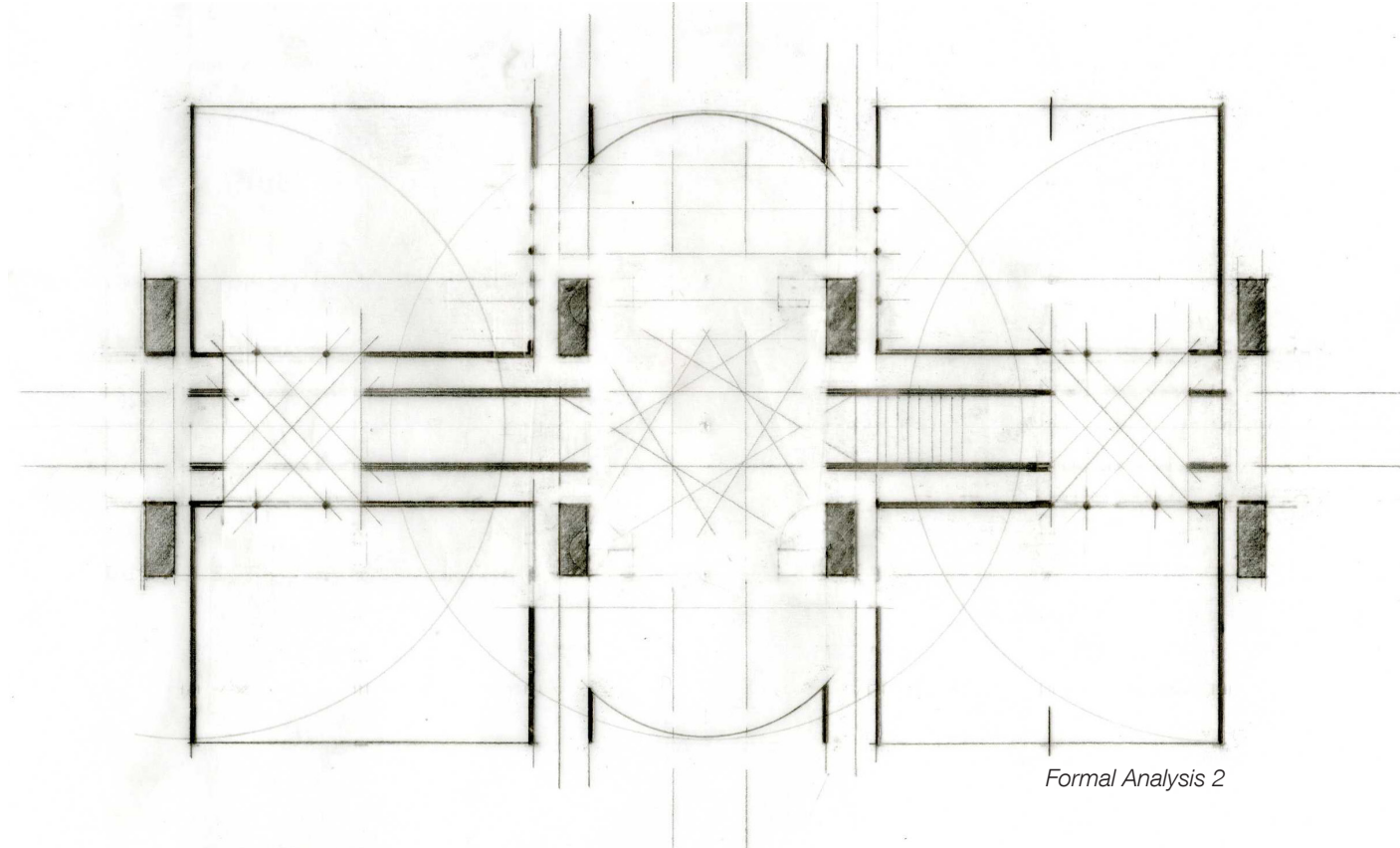
Rear-Left View



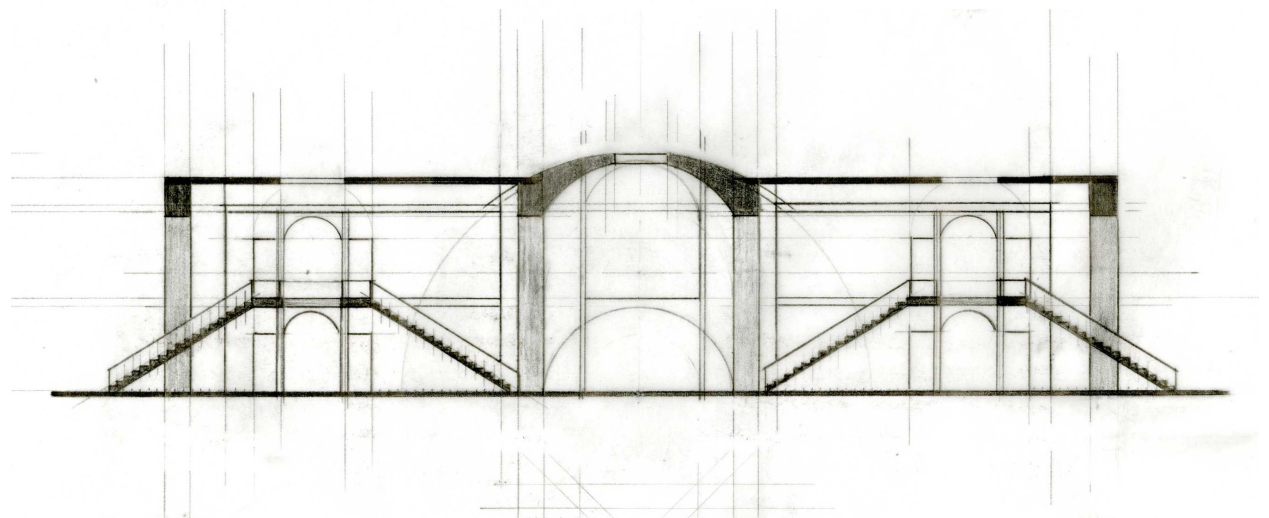
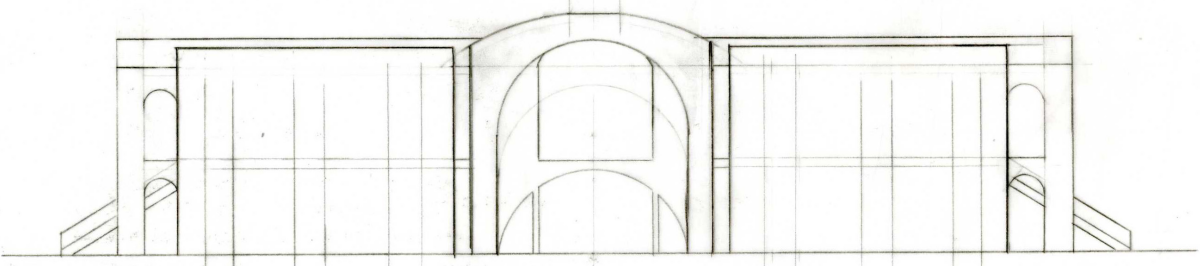
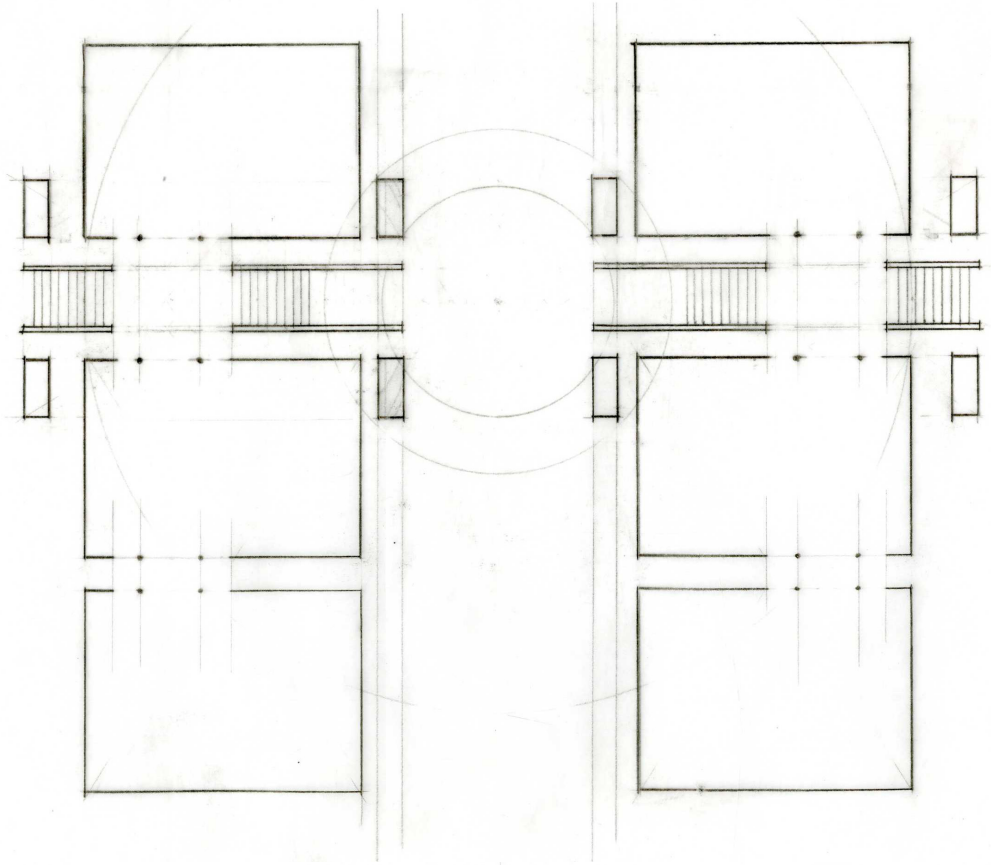
Front-Left View



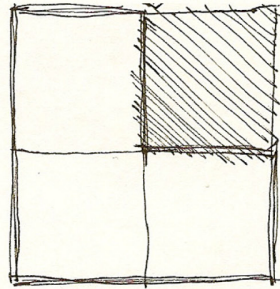
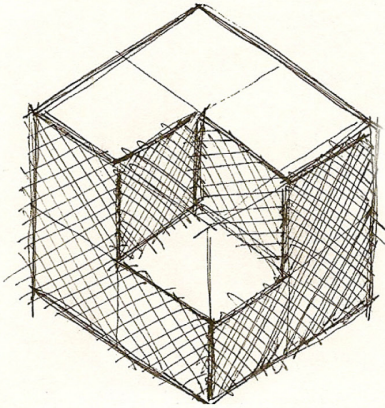
Formal Analysis 1



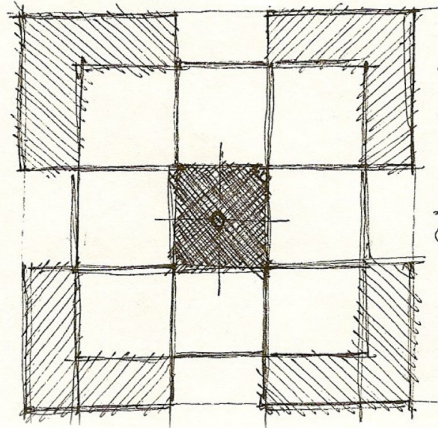
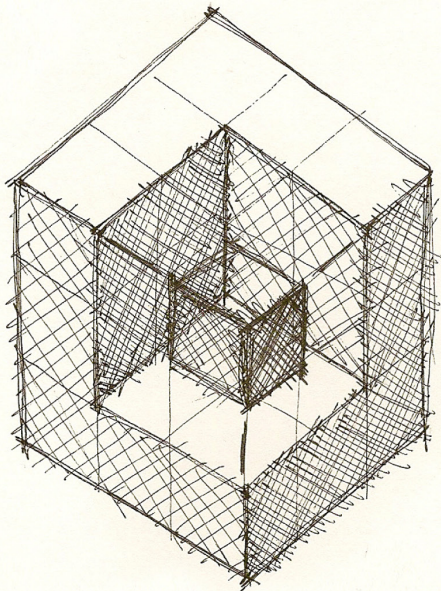
Formal Analysis 2



Early Building Study



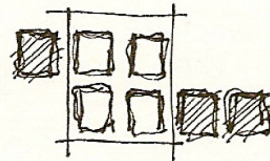
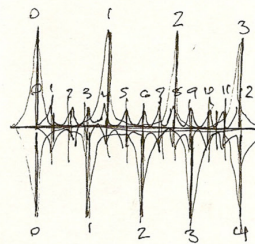
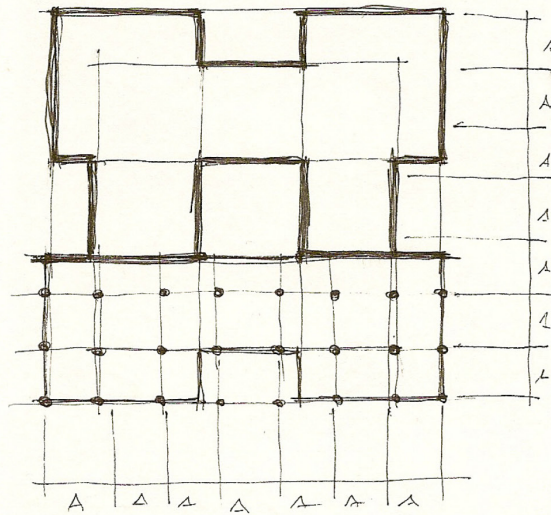
PROPORTION OF 3 TO 4
 PROPORTION OF 3 AND
 SUGGESTION OF THE 4

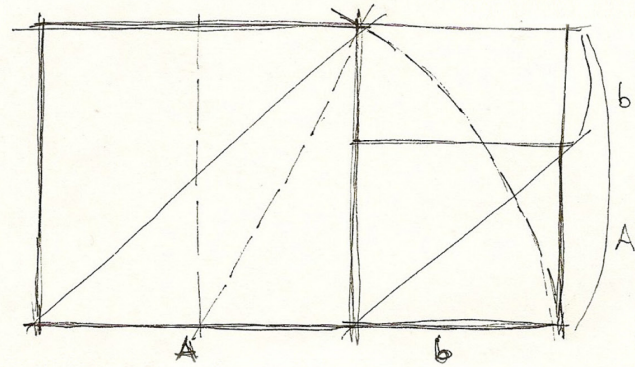
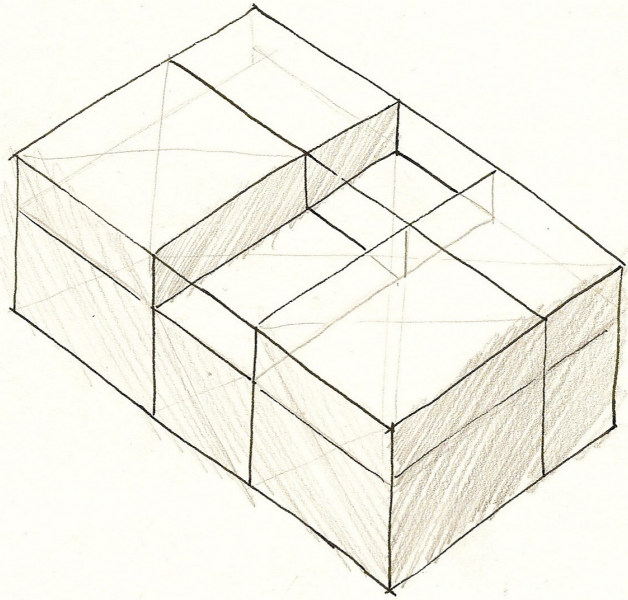


9 SQUARE WITH
 CENTER SQUARE
 REMOVED.

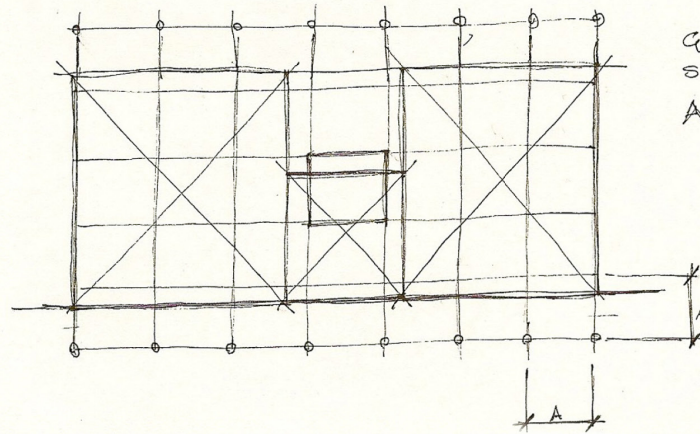
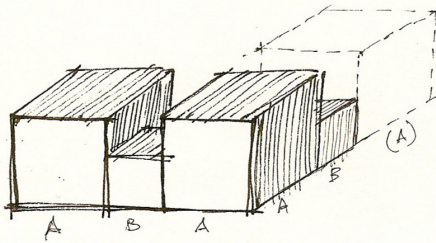
INVERSION OF CENTER
 (TRANSFORMATION)

CORNER SQUARES
 SCALED BY GOLDEN RATIO

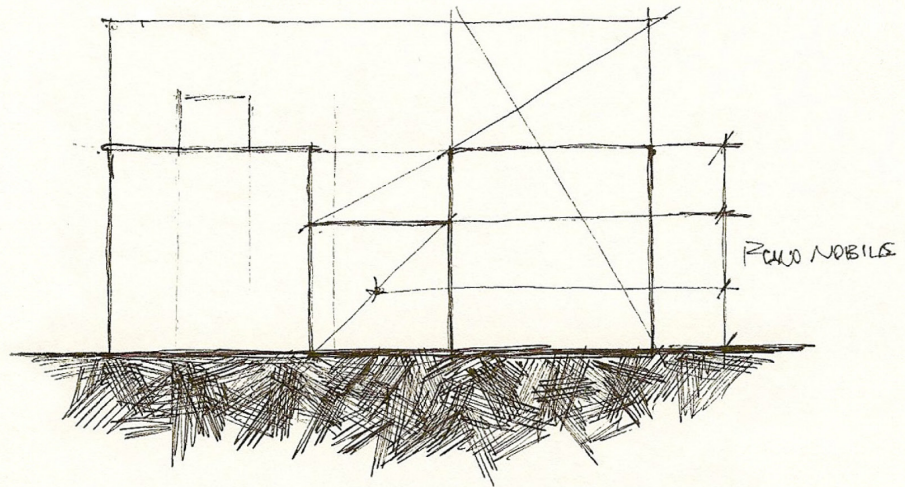
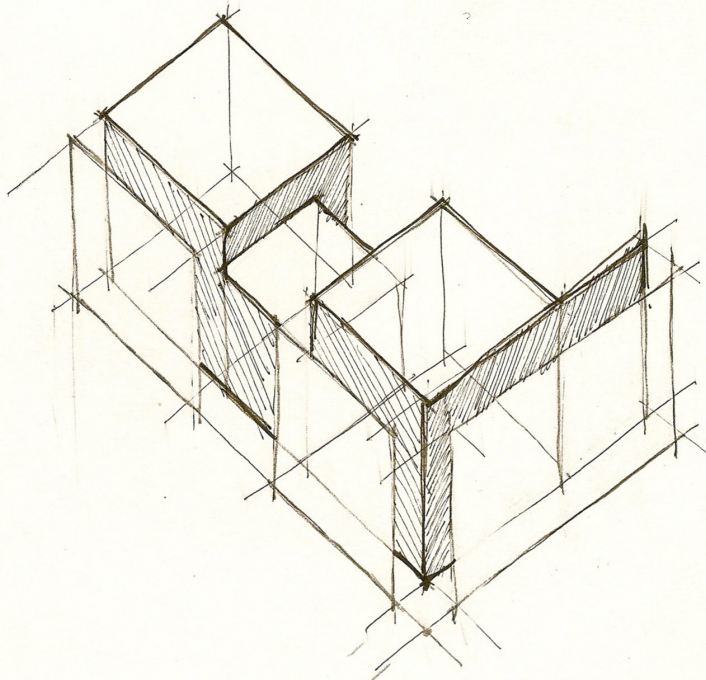




CONSTRUCTION
OF THE GOLDEN
RATIO.

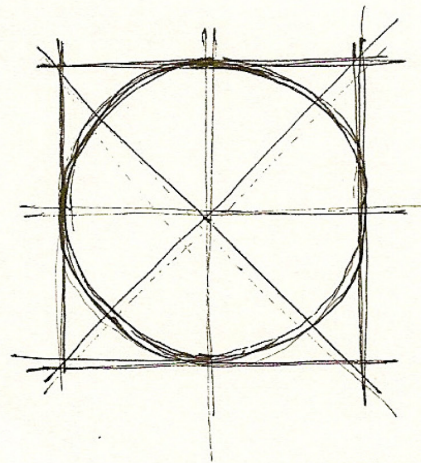
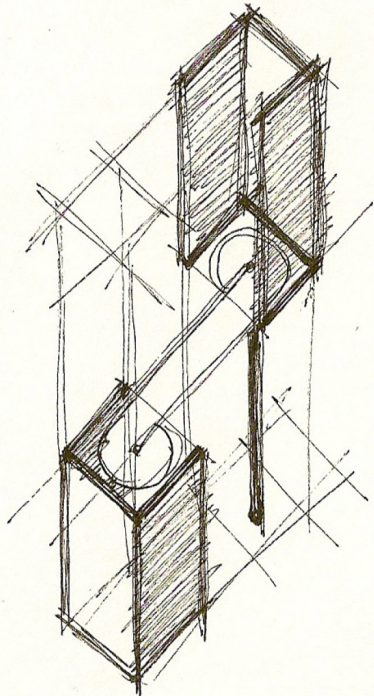
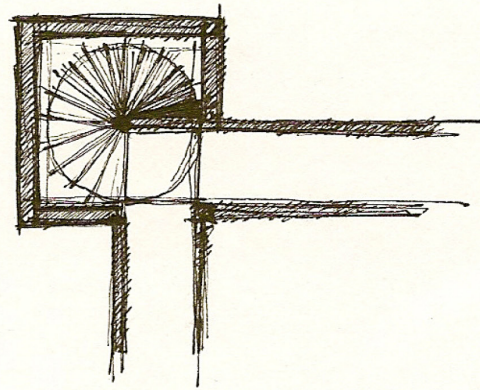
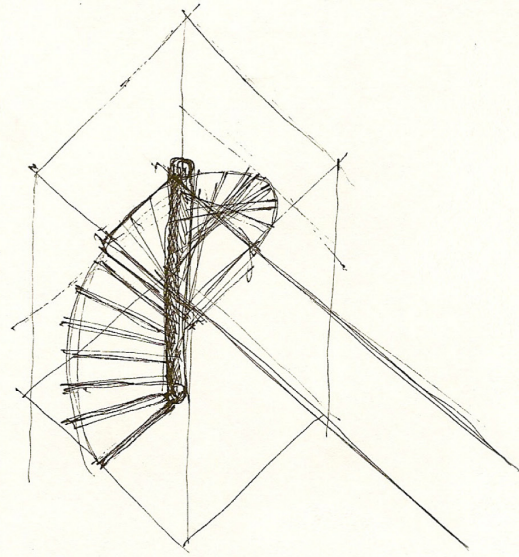
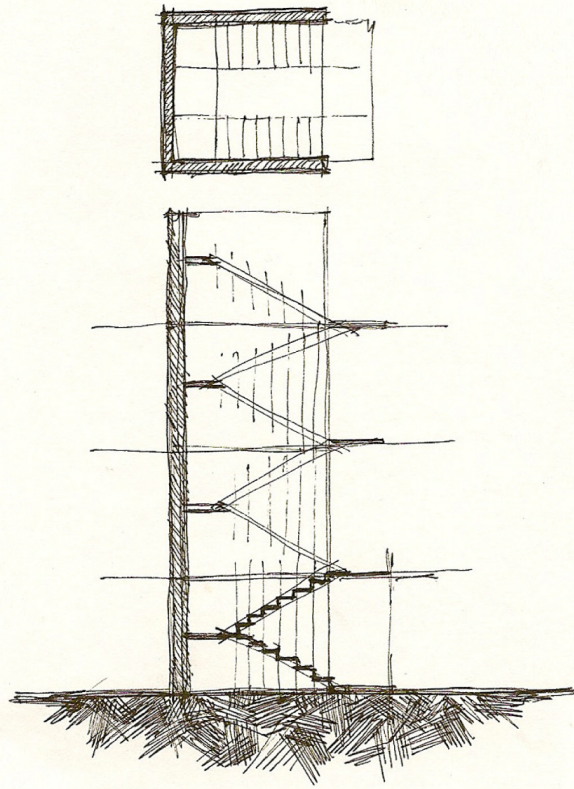


GRID SYSTEM OF
STRUCTURE ORDER
A=A, SQUARE GRID

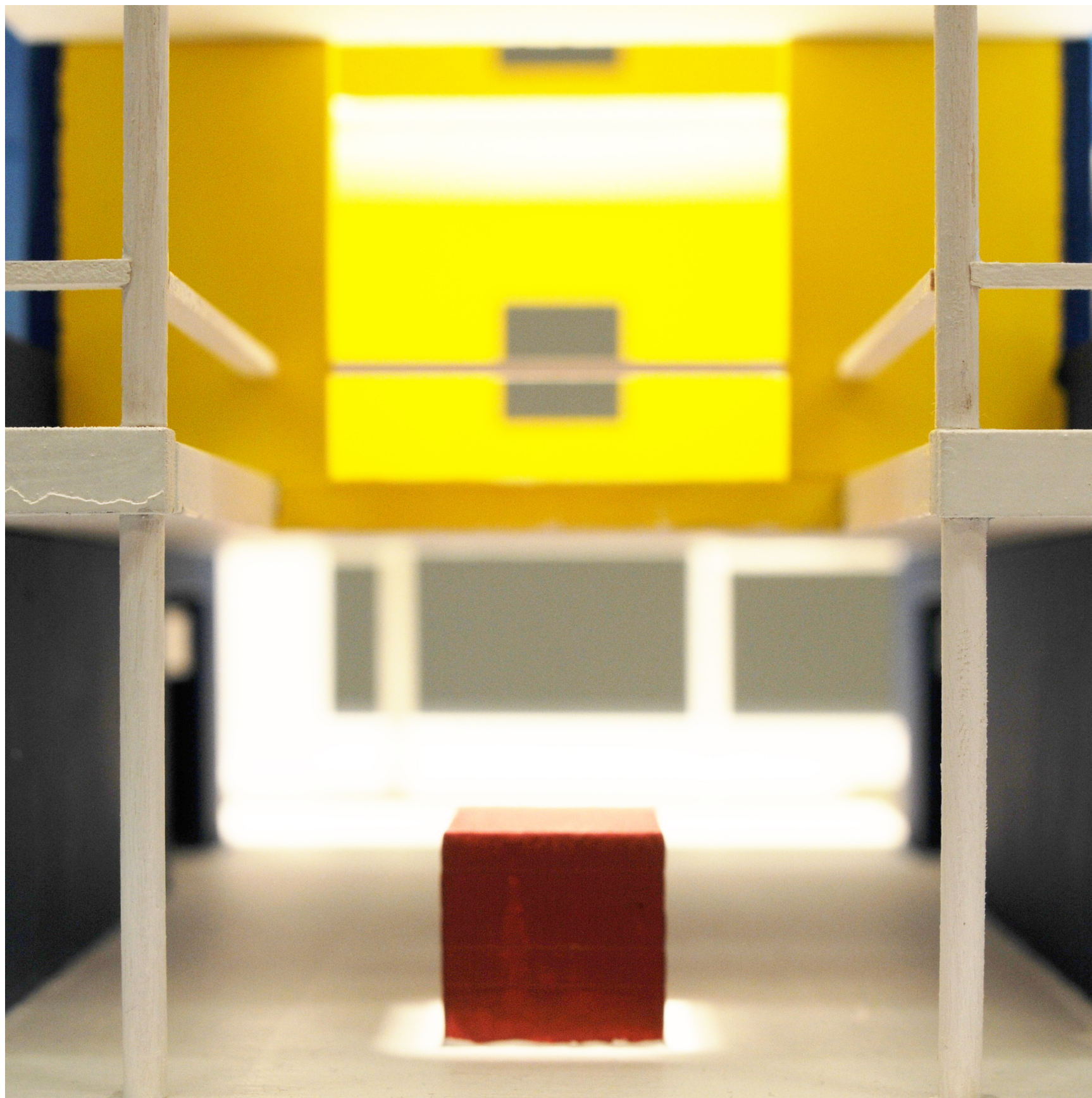


PILLO NOBILE

Analytic Sketches 2



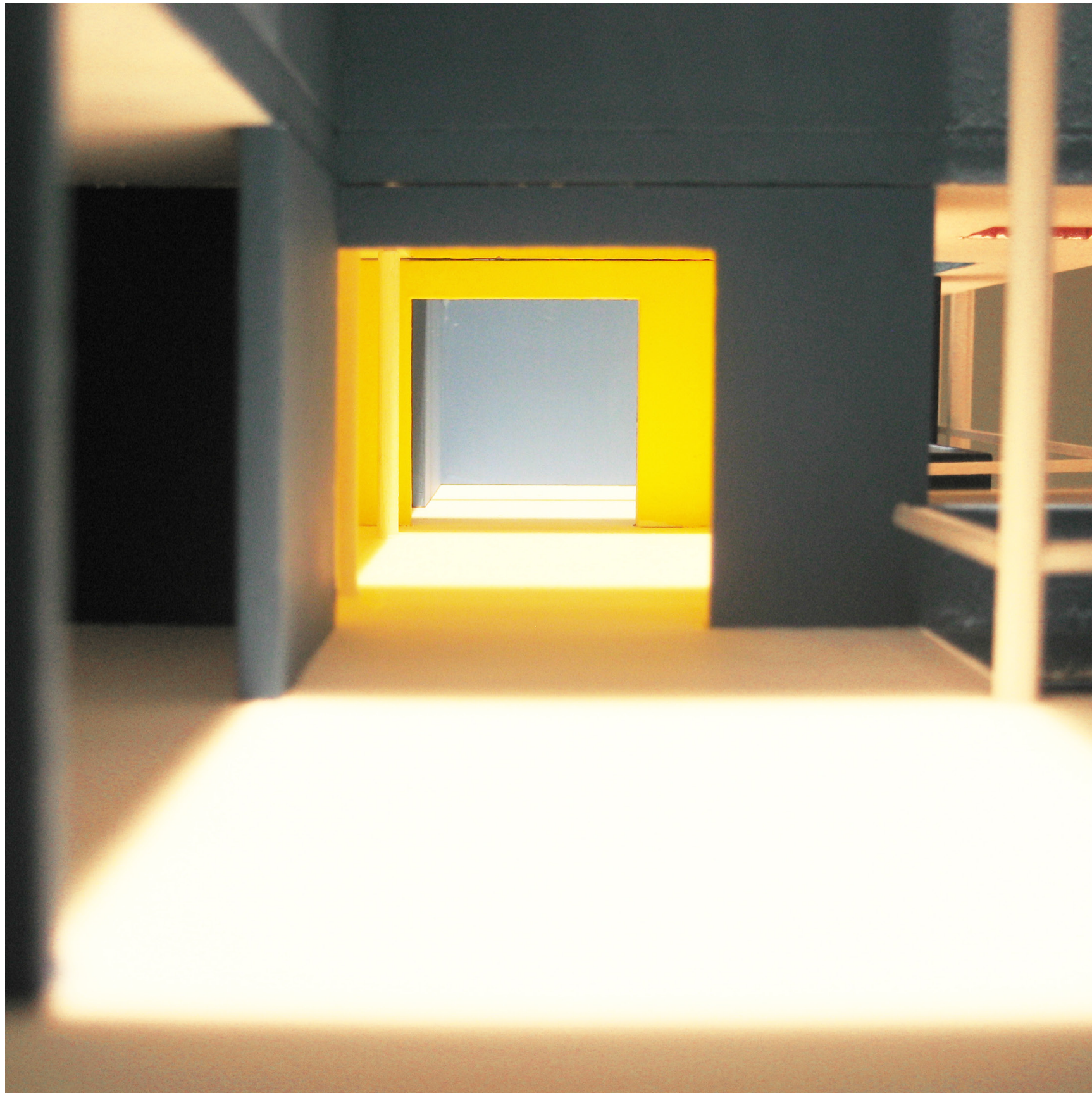
Analytic Sketches 3



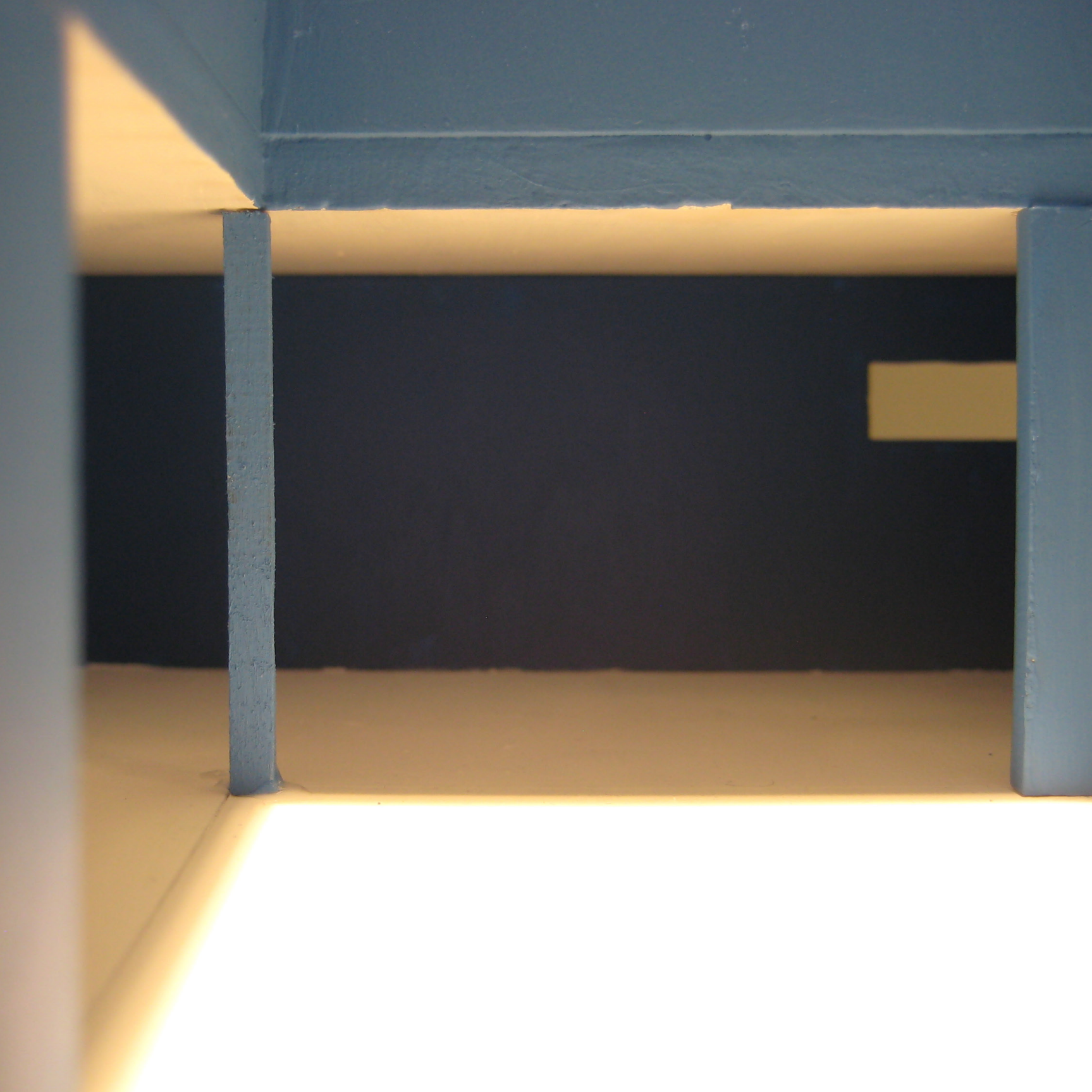
Fragment 1



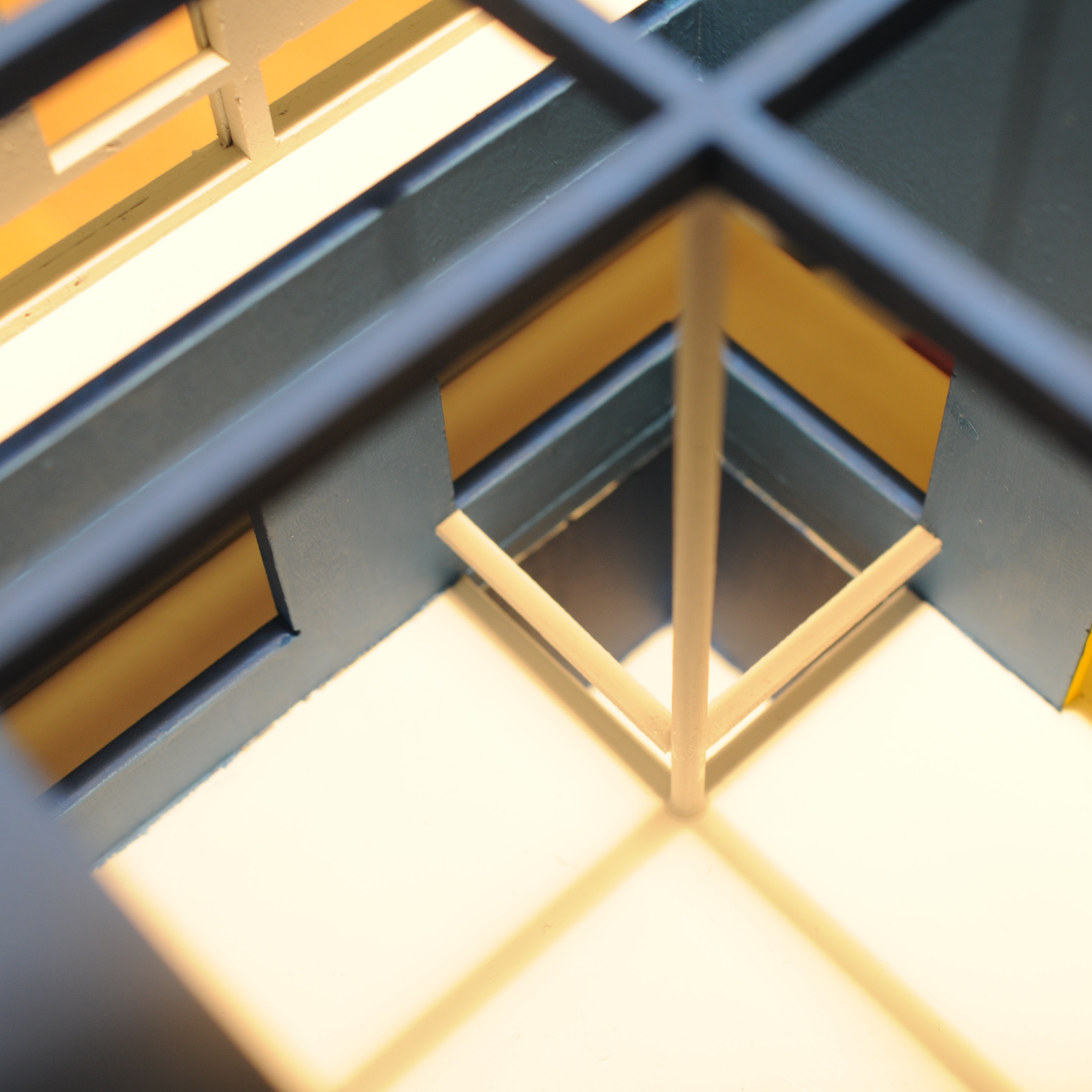
Fragment 2



Fragment 3



Fragment 4



Fragment 5

- Aureli, Pier Vittorio. 2011. *The Possibility of an Absolute Architecture*. Cambridge, Mass.: MIT Press.
- Eisenman, Peter. 1982. *House X*. New York: Rizzoli.
- Hejduk, John, Richard Henderson, Elizabeth Diller, Diane Lewis, and Kim Shkapich. 1996. *Education of an Architect*. New York: Rizzoli.
- Hejduk, John, and Kim Shkapich. 1985. *Mask of Medusa : Works, 1947-1983*. New York: Rizzoli.
- Hofer, Nina, and Peter David Eisenman. 1985. *Fin D'ou t Hou s*. London: Architectural Association.
- Museum of Modern Art (New York, N.Y.). 1975. *Five Architects : Eisenman, Graves, Gwathmey, Hejduk, Meier*. New York: Oxford University Press.
- Rossi, Aldo. 1982. *The Architecture of the City*. Cambridge - Mass. & London: MIT Press.
- Schumacher, Thomas L. 1985. *The Danteum : a Study in the Architecture of Literature*. Princeton, NJ: Princeton Architectural Press.
- . 1991. *Surface & Symbol : Giuseppe Terragni and the Architecture of Italian Rationalism*. New York: Princeton Architectural Press.
- Terragni, Giuseppe, Peter Eisenman, and Manfredo Tafuri. 2003. *Giuseppe Terragni : Transformations, Decompositions, Critiques*. New York: The Monacelli Press.
- Note: All images by the author.*