

Problem Generation

1- Well defined design problems:

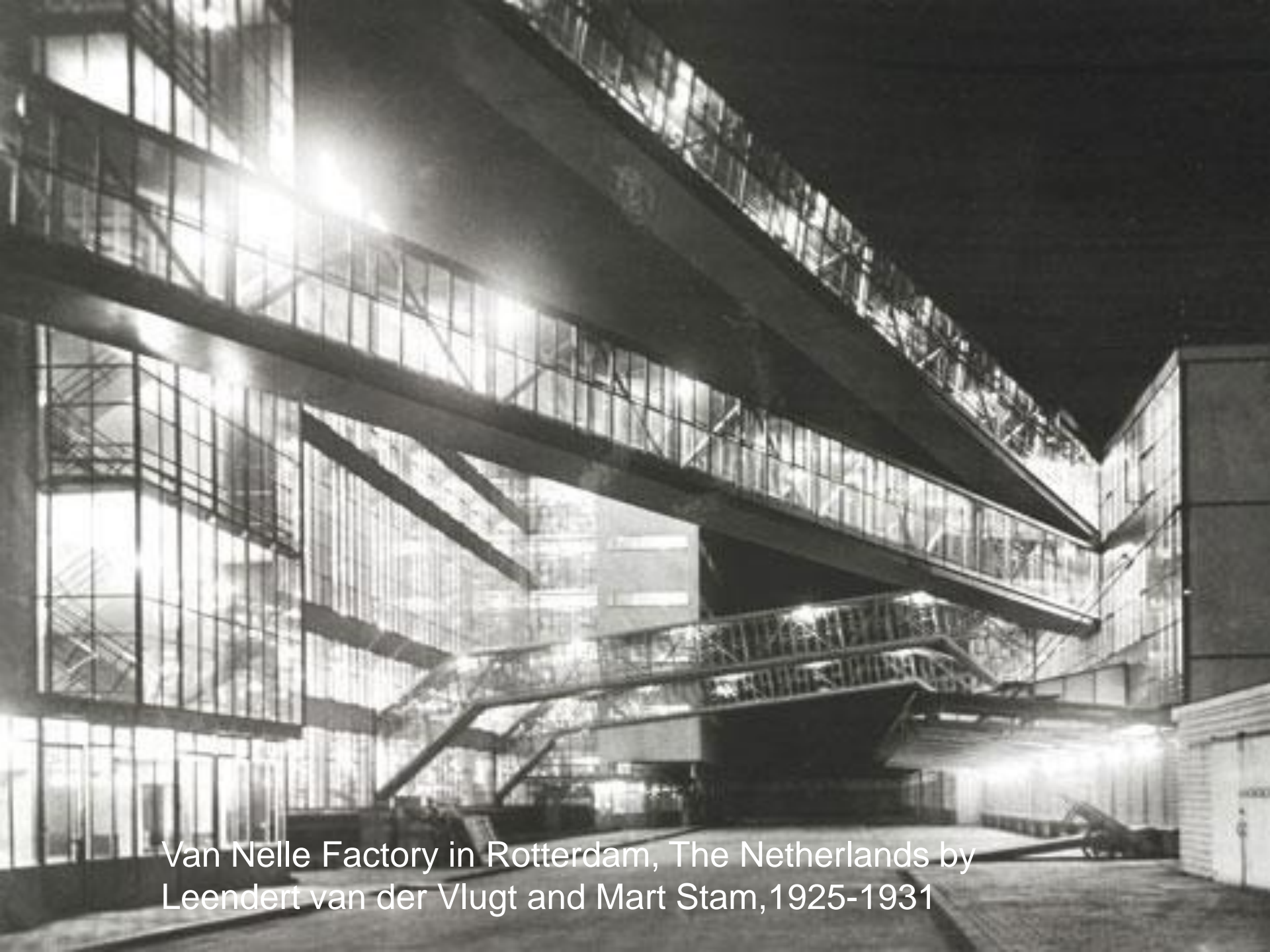
- clear objectives
- clear design criteria and
- clear evaluation criteria to test solutions
e.g. hospital, factory, airport terminal



Van Nelle Factory in Rotterdam, The Netherlands by
Leendert van der Vlugt and Mart Stam, 1925-1931



Van Nelle Factory in Rotterdam, The Netherlands by Leendert van der Vlugt and Mart Stam, 1925-1931

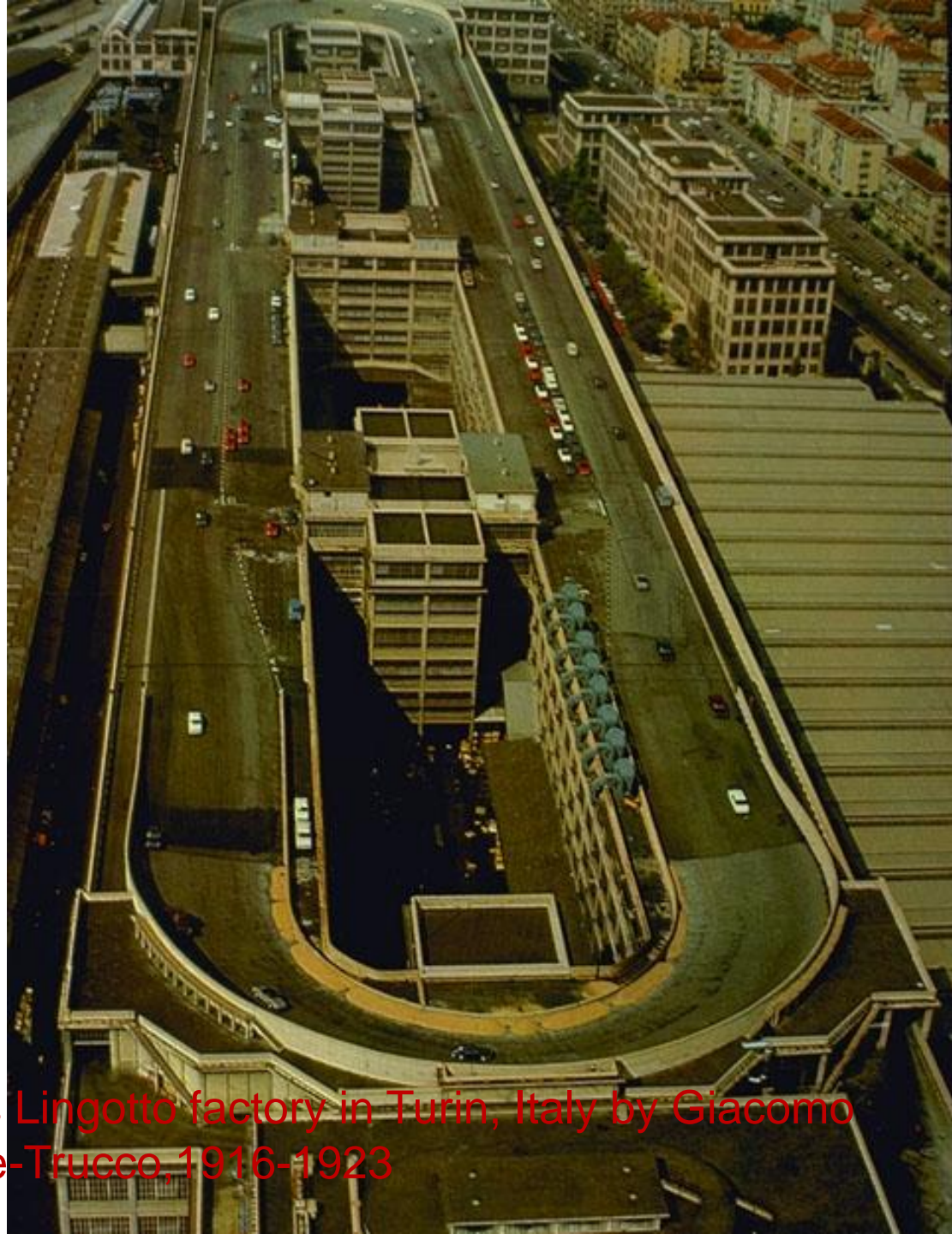


Van Nelle Factory in Rotterdam, The Netherlands by
Leendert van der Vlugt and Mart Stam, 1925-1931



Fiat's Lingotto factory in Turin, Italy by Giacomo
Mattè-Trucco, 1916-1923

FRANZETTI L.



Fiat's Lingotto factory in Turin, Italy by Giacomo Mattè-Trucco, 1916-1923



Fiat's Lingotto factory in Turin, Italy by Giacomo
Mattè-Trucco, 1916-1923



Fiat's Lingotto factory in Turin, Italy by Giacomo
Mattè-Trucco, 1916-1923



Fiat's Lingotto factory in Turin, Italy by Giacomo Mattè-Trucco, 1916-1923



Fiat's Lingotto factory in Turin, Italy by Giacomo
Mattè-Trucco, 1916-1923

2- Not-so-well defined problems:

- unclear objectives,
- unclear design criteria,
- additional considerations can always be added that would lead to reformulation of the design problem

Most architectural design projects lie within this category: e.g. library, cultural centers, housing, religious buildings.



Fábrica da Pompéia in São Paulo, Brazil by Lina Bò
Bardi's, 1977-1982



Fábrica da Pompéia in São Paulo, Brazil by Lina Bò Bardi's, 1977-1982



Fábrica da Pompéia in São Paulo, Brazil by Lina Bò Bardi's, 1977-1982



Fábrica da Pompéia in São Paulo, Brazil by Lina Bò
Bardi's, 1977-1982



Fábrica da Pompéia in São Paulo, Brazil by Lina Bò
Bardi's, 1977-1982



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Fábrica da Pompéia in São Paulo, Brazil by Lina Bò Bardi's, 1977-1982





Fábrica da Pompéia in São Paulo, Brazil by Lina Bò Bardi's, 1977-1982

Exp. ENTRE ATO PARA Crianças



Fábrica da Pompéia in São Paulo, Brazil by Lina Bò Bardi's, 1977-1982



Fábrica da Pompéia in São Paulo, Brazil by Lina Bò Bardi's, 1977-1982

Fábrica da Pompéia in São Paulo, Brazil
by Lina Bò Bardi's, 1977-1982

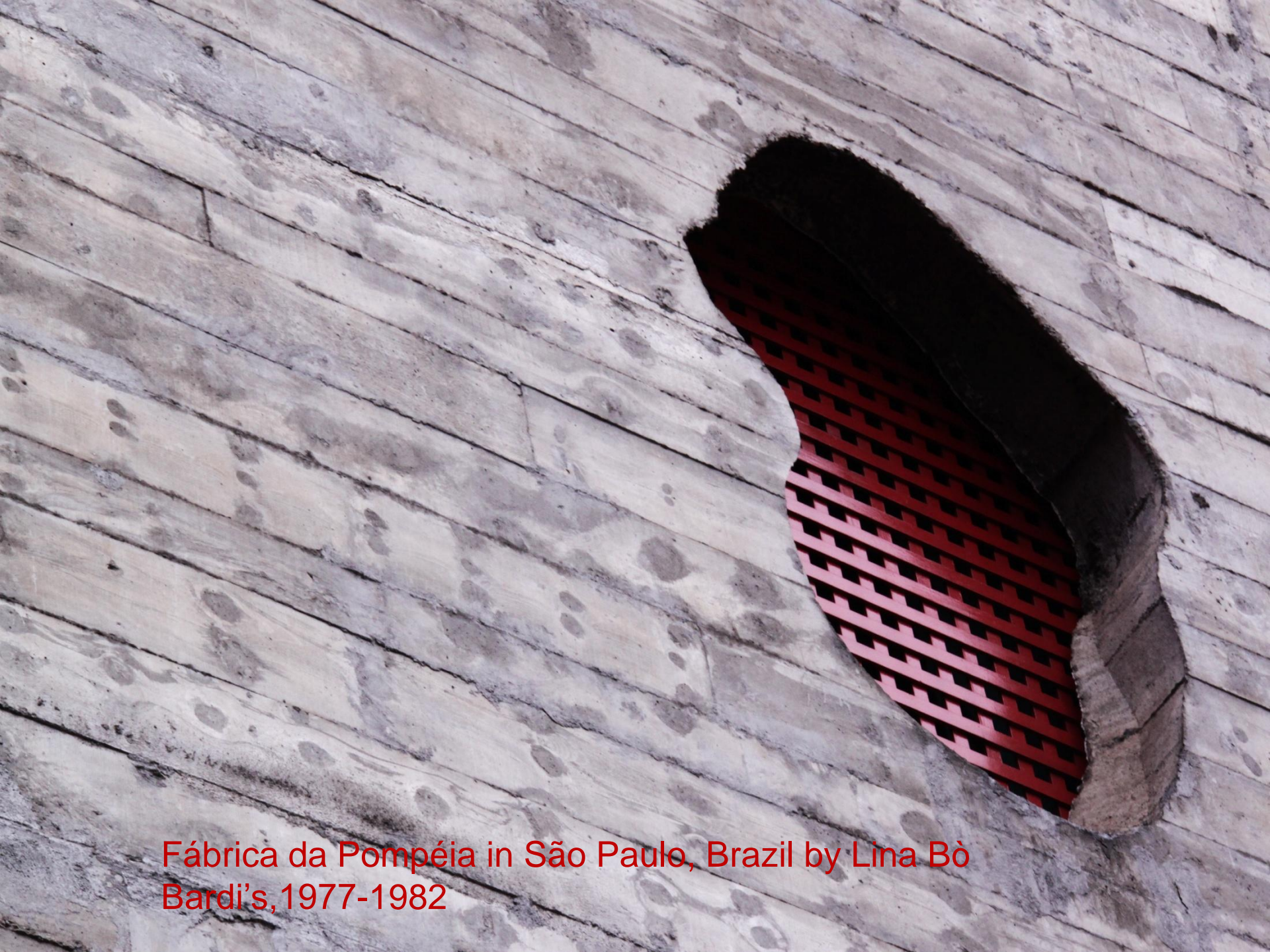




Fábrica da Pompéia in São Paulo, Brazil by Lina Bò
Bardi's, 1977-1982



Fábrica da Pompéia in São Paulo, Brazil by Lina Bò Bardi's, 1977-1982

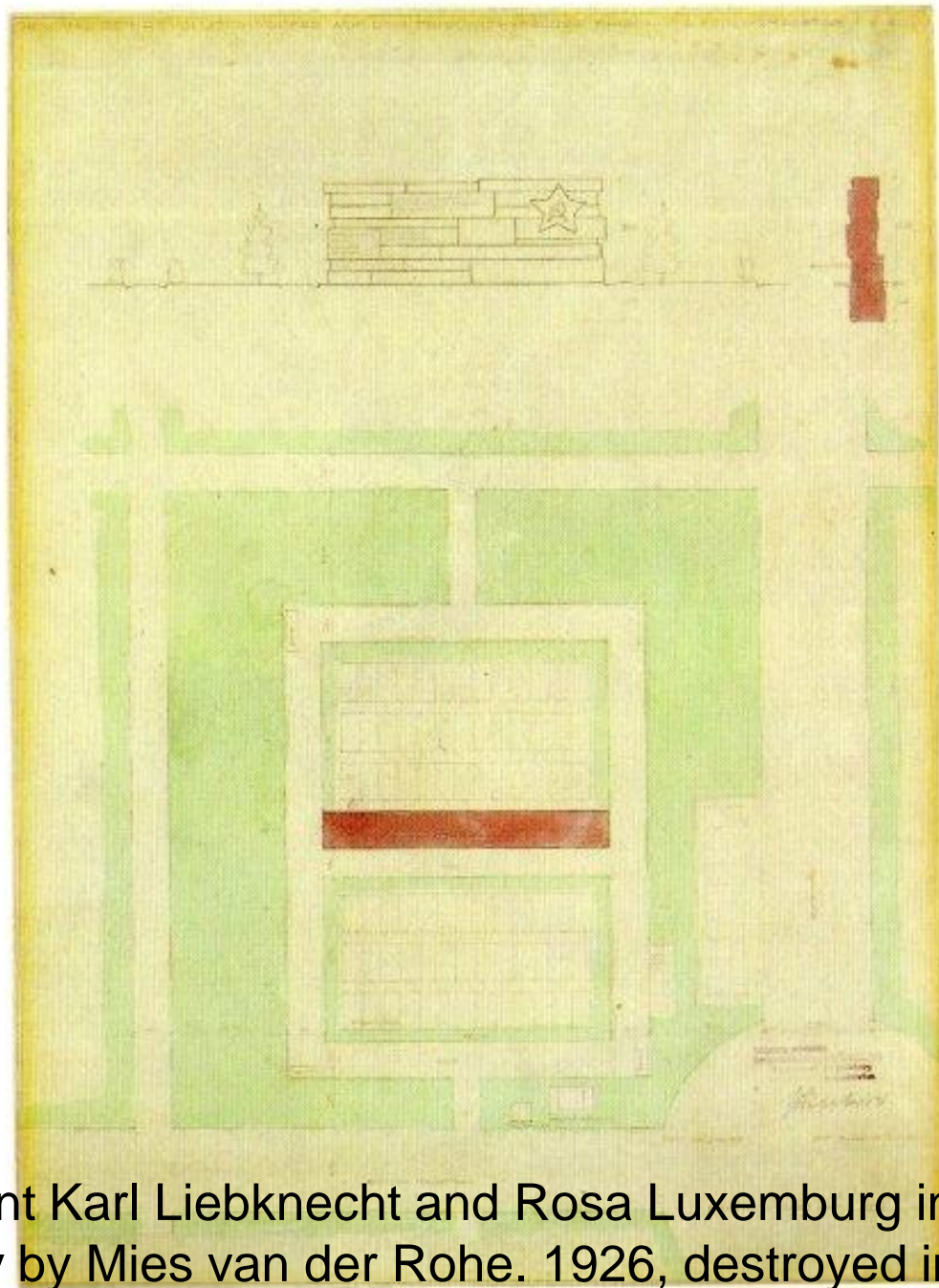


Fábrica da Pompéia in São Paulo, Brazil by Lina Bò
Bardi's, 1977-1982

3- Wicked design problems:

- each preconception of the goals leads to a different set of solutions –
- no stopping rule, problem solving can go on for ever –
- no correct or incorrect solution because there is no evaluation criteria
- additional considerations can always be added to reformulate the problem

e.g. war memorial or solid façade of a mall



Monument Karl Liebknecht and Rosa Luxemburg in Berlin, Germany by Mies van der Rohe. 1926, destroyed in 1935



Monument Karl Liebknecht and Rosa Luxemburg in Berlin, Germany by Mies van der Rohe. 1926, destroyed in 1935



WIR SIND NICHT ZU VERBIETEN! Von KARL LIEBKNECHT

Trotz Zügelhals Gammeklipperatlacke, trotz aller Demonstrationsverbote erkünfte sich die Berliner Arbeiterschaft die Straße, um in der Lenin-Liebknecht-Luxemburg-Woche für die Idee ihrer großen Taten zu demonstrieren

Und wenn ihr uns verboten habt,
Wir sind nicht zu bezwingen,
Wir regen doch, den Adlern gleich
Nur kräftiger die Schwingen.
Und habt ihr uns verboten,
Wir kämpfen weiter bis zum Tod,
Wir sind nicht zu verbieten!

Wir sind der Sturm, wir sind die Glut!
Wir sind des Volkes Stimme.
Wir stürmen wie des Wassers Flut
Und trotzen Eurem Grimme!
Wir sind der Sturm, wir sind die Glut!
Wir sind des Volkes Stimme.
Wir stürmen wie des Wassers Flut
Und trotzen Eurem Grimme!



Rechts: An der Lichterkleinbrücke über die Rosa Luxemburg in den Landwehrkanal gesenkt wurde, waren die Arbeiter Köpfe wieder



Monument Karl Liebknecht and Rosa Luxemburg in Berlin, Germany by Mies van der Rohe. 1926, destroyed in 1935

Problem Solving Behavior

(Rowe, P. 1987: pp. 56-73)

1- Trial and Error:

Characteristics:

- Random manner of choosing a solution
- Unclear desirable properties, unclear design criteria
- Tacit, unclear methods of evaluation; evaluation of each trial is very simple
- Each trial is independent from the results of the previous one

Appropriate for: When design problem is wicked or poorly defined, or in certain portions of the project such as. very early stages, or façade design...etc.



New Museum in New York, NY by SANAA, 2002-2007



New Museum In New York, NY by SANAA, 2002-200



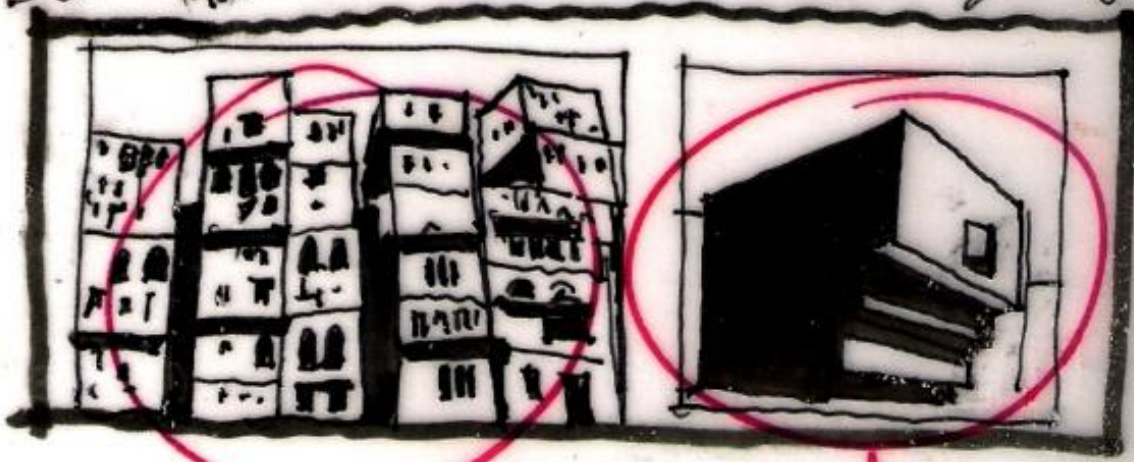
New Museum in New York, NY by SANAA, 2002-2007



New Museum in New York, NY by SANAA, 2002-2007

Sana Marzotto

Marcel Breuer
Whitney
Museum
1966



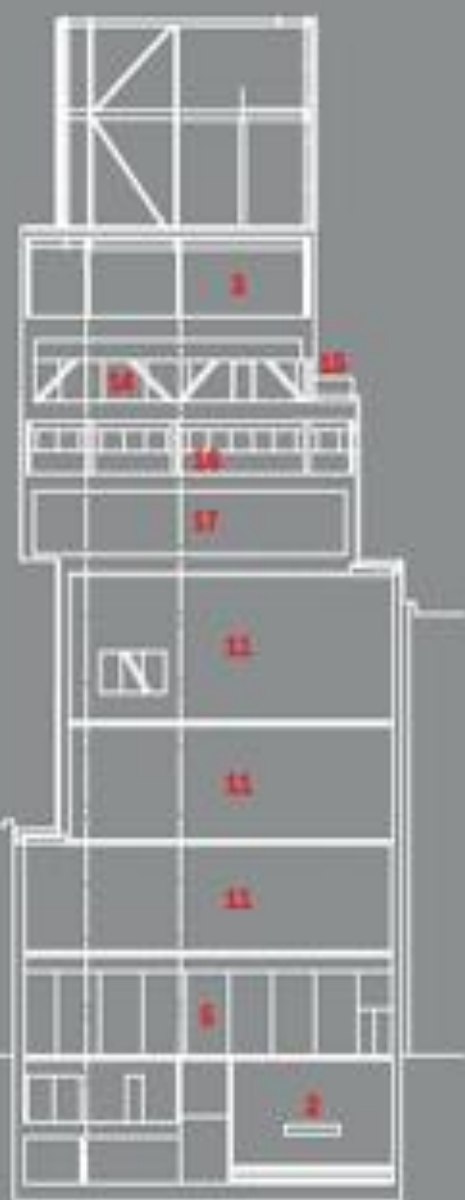
Eliin Bar
2010

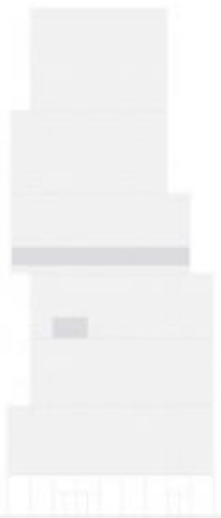
SANRA
Museum
of Contemporary
Art 1995-1999



New Museum in New York, NY by SANAA, 2002-2007

1. Storage
2. Theater
3. Mechanical
4. Vestibule
5. Lobby
6. Ticket desk
7. Coatroom
8. Loading
9. Shop
10. Cafe
11. Gallery
12. Skylight above
13. Roof below
14. Multipurpose
15. Terrace
16. Pantry
17. Education
18. Office





WEST ELEVATION
1/500



SOUTH ELEVATION

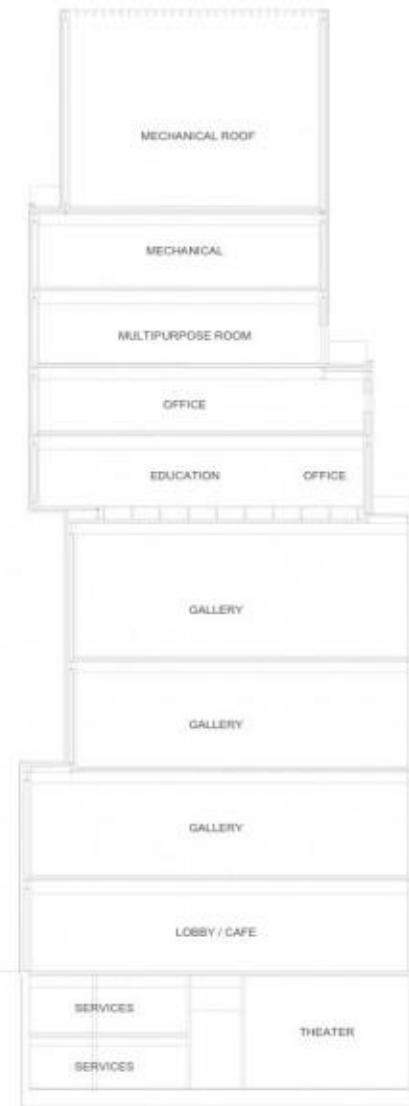
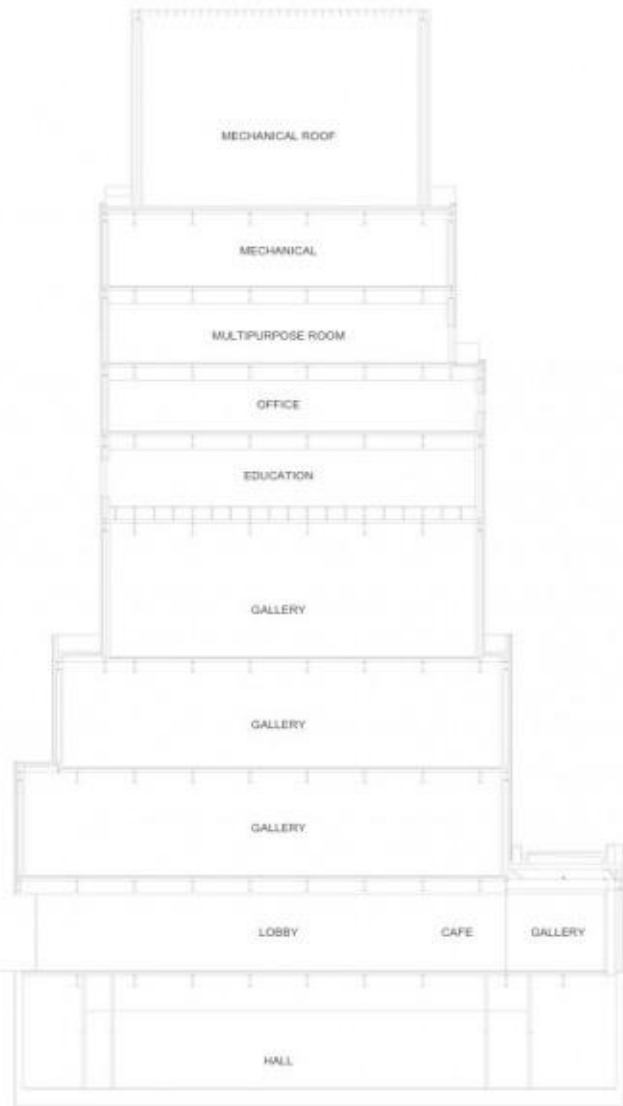


EAST ELEVATION



NORTH ELEVATION

New Museum in New York, NY by SANAA, 2002-2007



New Museum in New York, NY by SANAA, 2002-2007

2- Generate and test:

Characteristics:

- The results of each test guides the subsequent solution; the design solution is refined more with every trial.
- Each attempt is compared to the previous one, IF it is better then it is accepted as an improvement, IF it is worse, then the earlier arrangement is used as a basis for further improvement.
- The problem is explicitly bounded, and properties of the solution are well defined.
- Evaluation of each attempt is based on the conformance of the attempted solution to the required solution properties.
- It is difficult to decide upon a stopping rule

Appropriate for: When required solution properties are relatively explicit so as to be able to use them in testing each trial..



REHAB Centre in Basel, Switzerland by Herzog & de Meuron ,1998-2002



REHAB Centre in Basel, Switzerland by Herzog & de
Meuron , 1998-2002



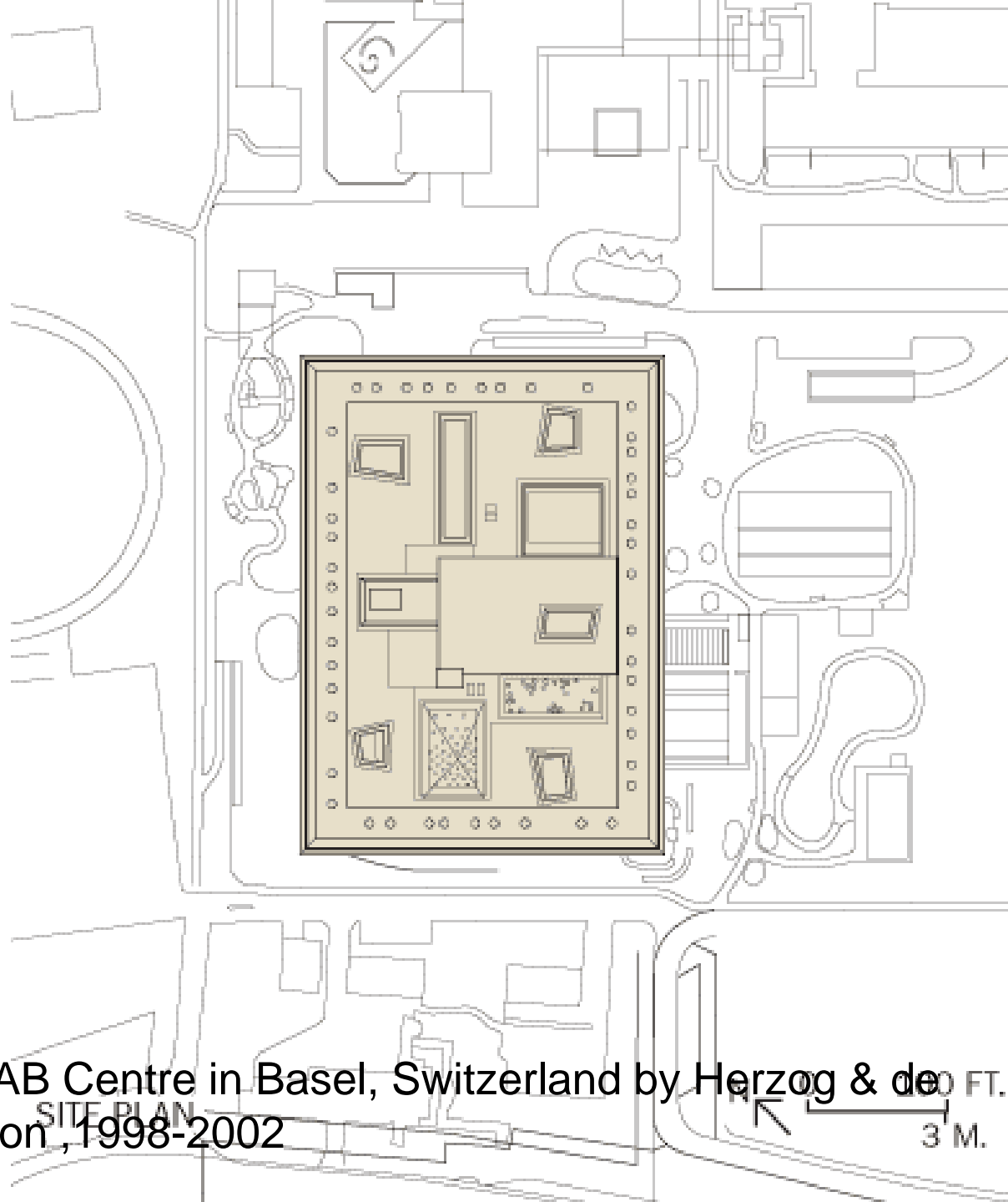
REHAB Centre in Basel, Switzerland by Herzog & de Meuron , 1998-2002



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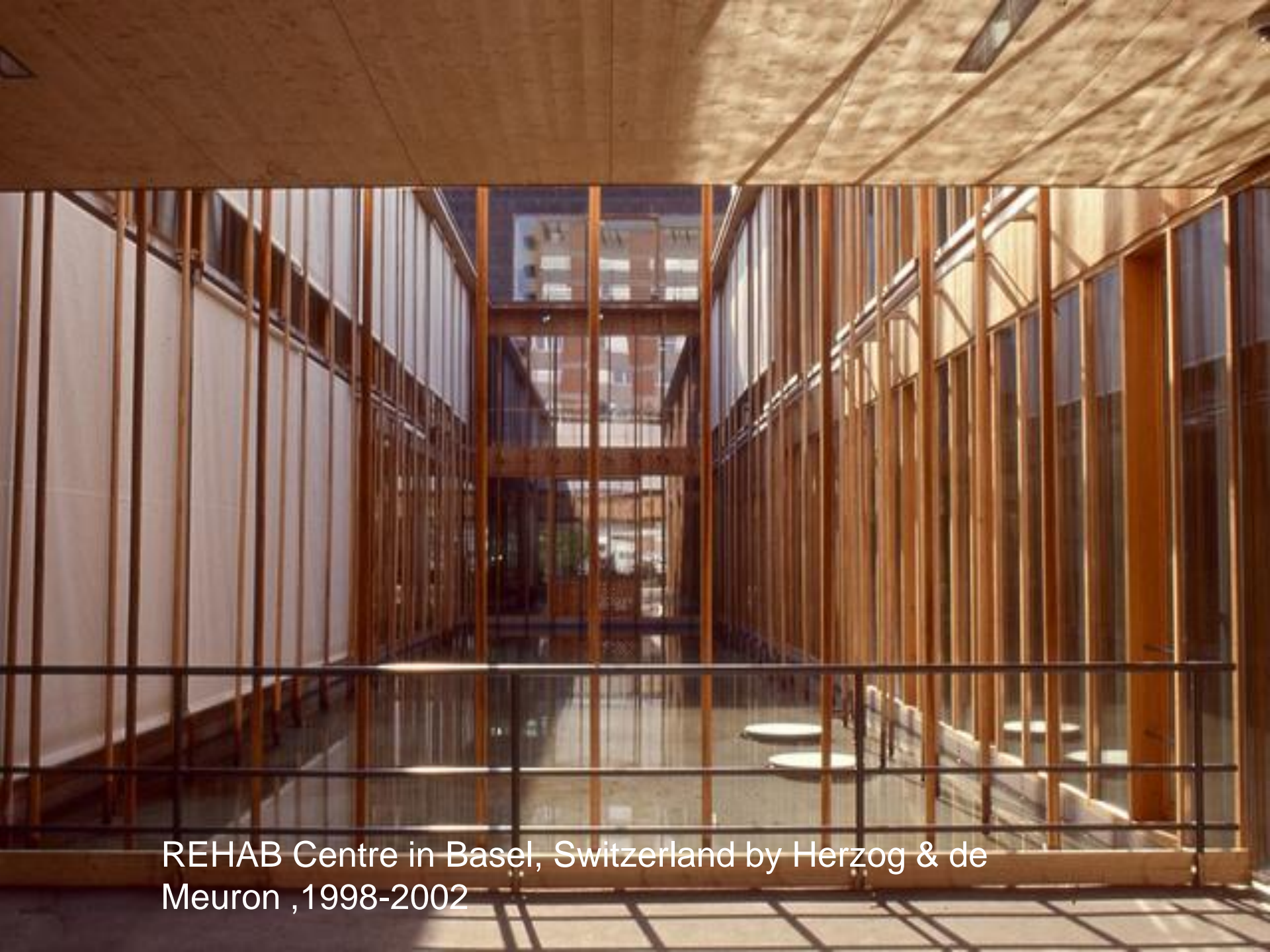
REHAB Centre in Basel, Switzerland by Herzog & de Meuron ,1998-2002



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REHAB Centre in Basel, Switzerland by Herzog & de Meuron ,1998-2002



REHAB Centre in Basel, Switzerland by Herzog & de Meuron ,1998-2002



SECOND FLOOR



FIRST FLOOR



REHAB Centre in
Basel, Switzerland by
Herzog & de Meuron,
1998-2002

- | | | |
|---------------------------|---------------------------------------|-------------------------|
| 1. Entrance court | 8. Occupational and
speech therapy | 14. Medical services |
| 2. Outpatient rooms | 9. Therapy pool | 15. Diagnostics |
| 3. Day hospital | 10. Physiotherapy | 16. Courtyard with pool |
| 4. Cafeteria | 11. Multipurpose space | 17. Patients' bedrooms |
| 5. Administrative offices | 12. French garden | 18. Services |
| 6. Reception | 13. Intensive care | 19. Offices |
| 7. Neuropsychology | | 20. Lounge/dining |



Cartagena Auditorium & Conference Centre, Spain by Jose Selgas y Lucia Cano, 2002-2006



Cartagena Auditorium & Conference Centre, Spain by Jose Selgas y Lucia Cano, 2002-2006



Cartagena Auditorium & Conference Centre, Spain by
Jose Selgas y Lucia Cano, 2002-2006



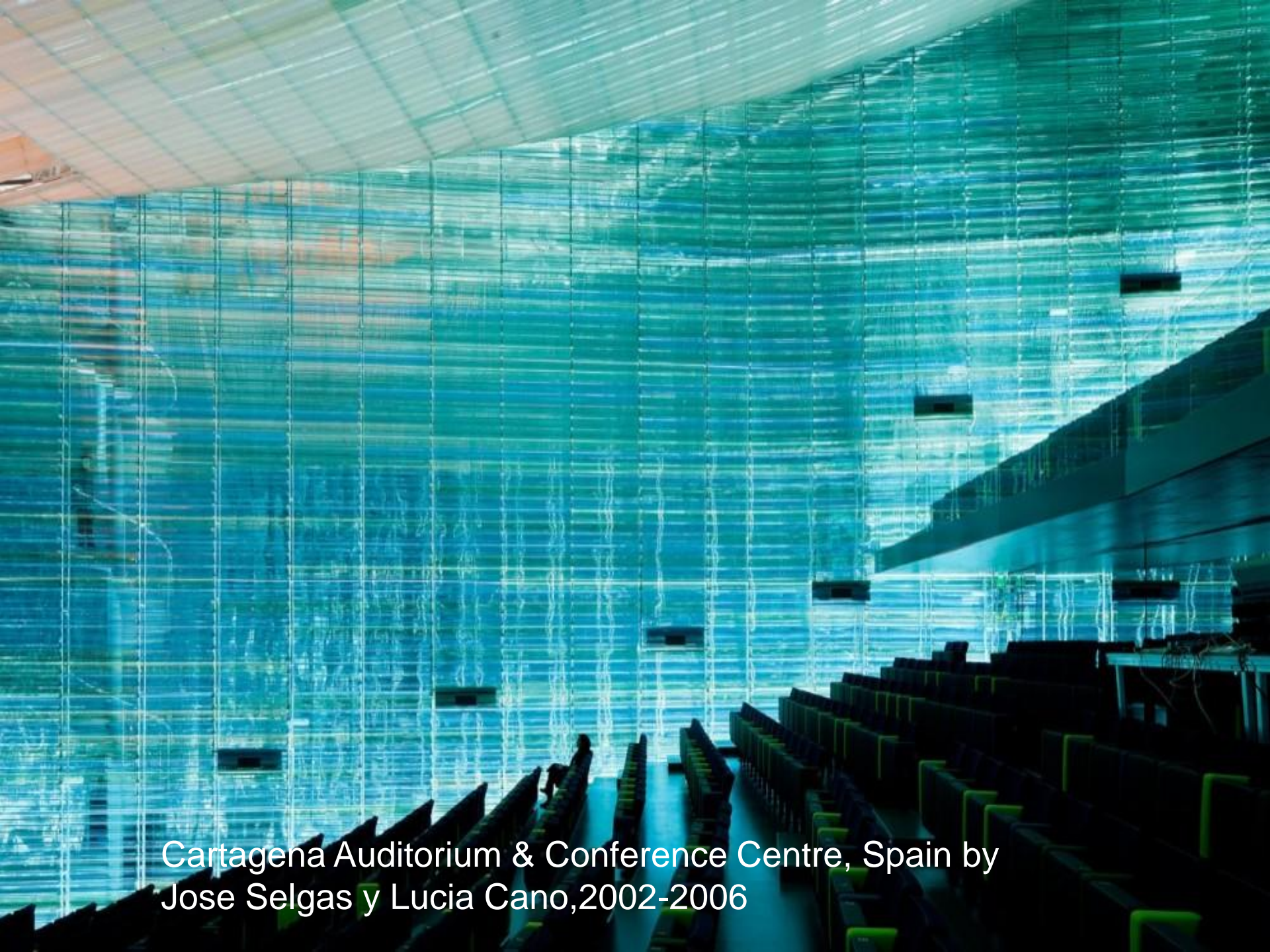
Cartagena Auditorium & Conference Centre, Spain by
Jose Selgas y Lucia Cano, 2002-2006



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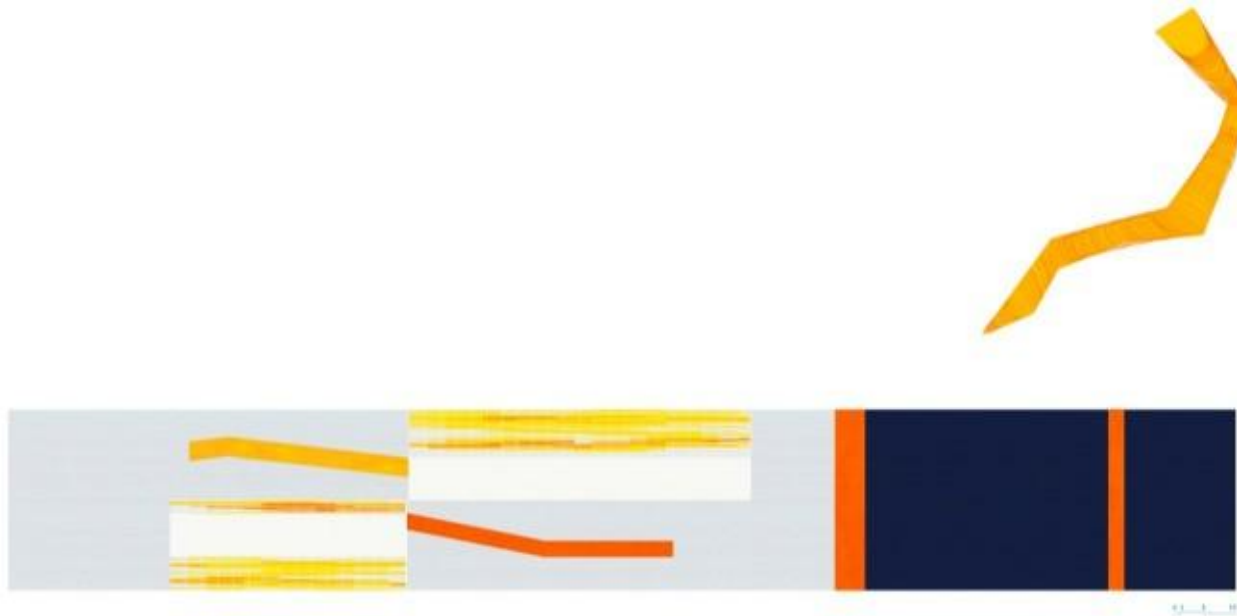
Cartagena Auditorium & Conference Centre, Spain by Jose Selgas y Lucia Cano, 2002-2006



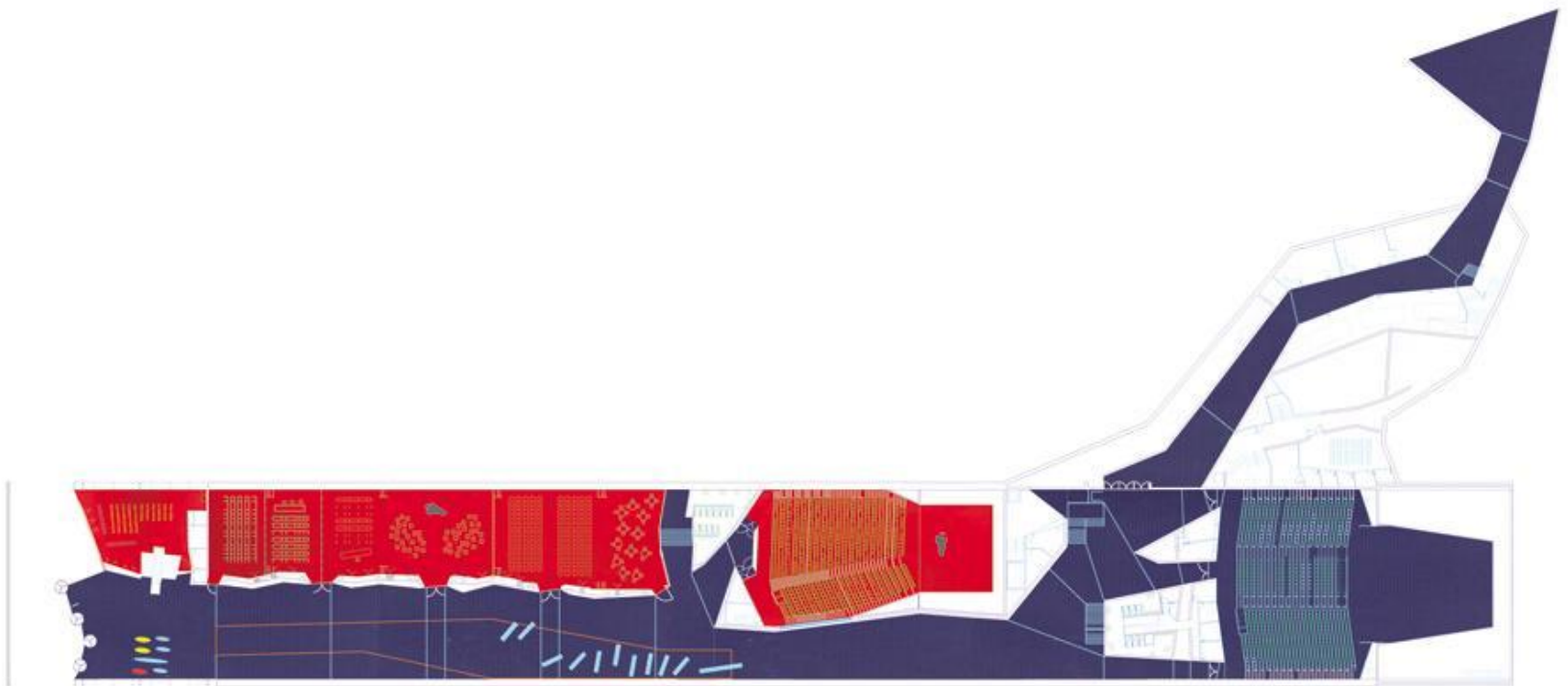
Cartagena Auditorium & Conference Centre, Spain by
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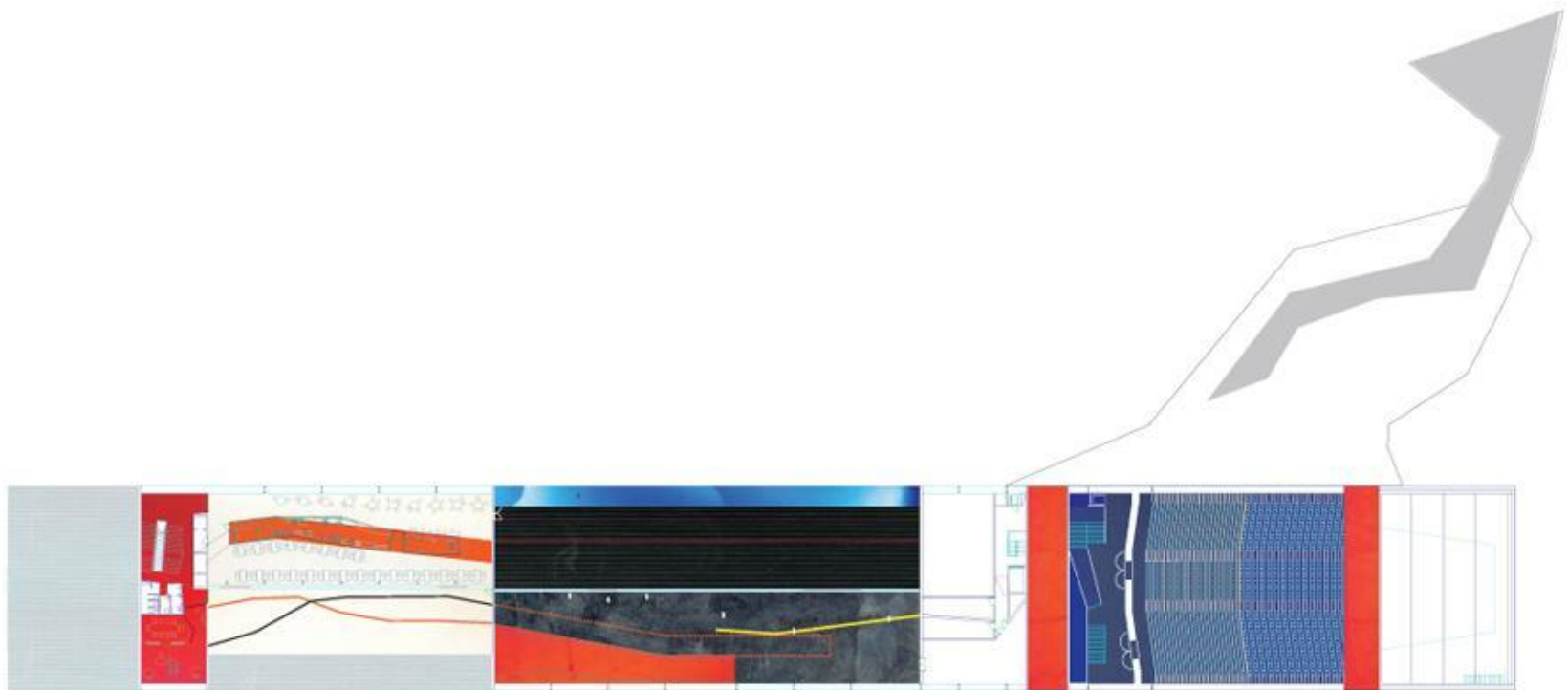
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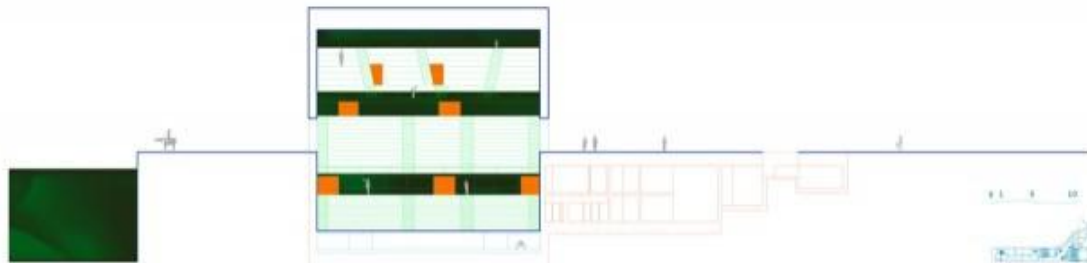
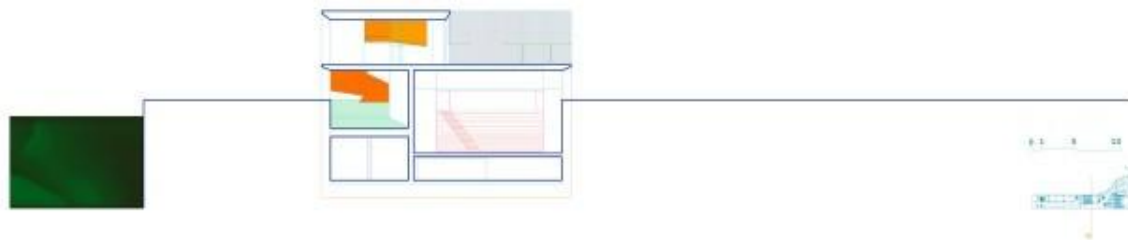
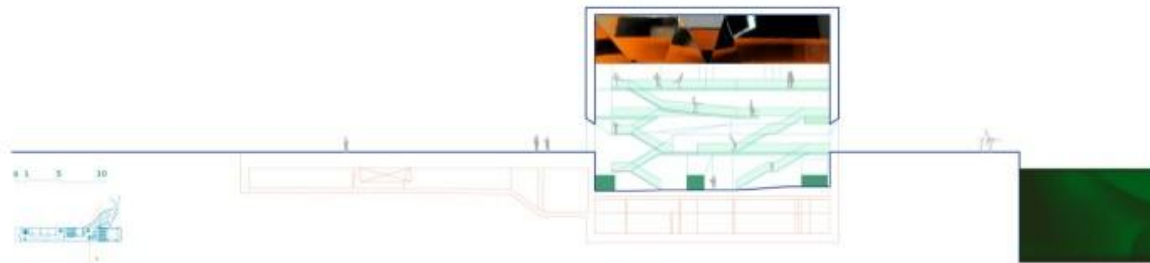
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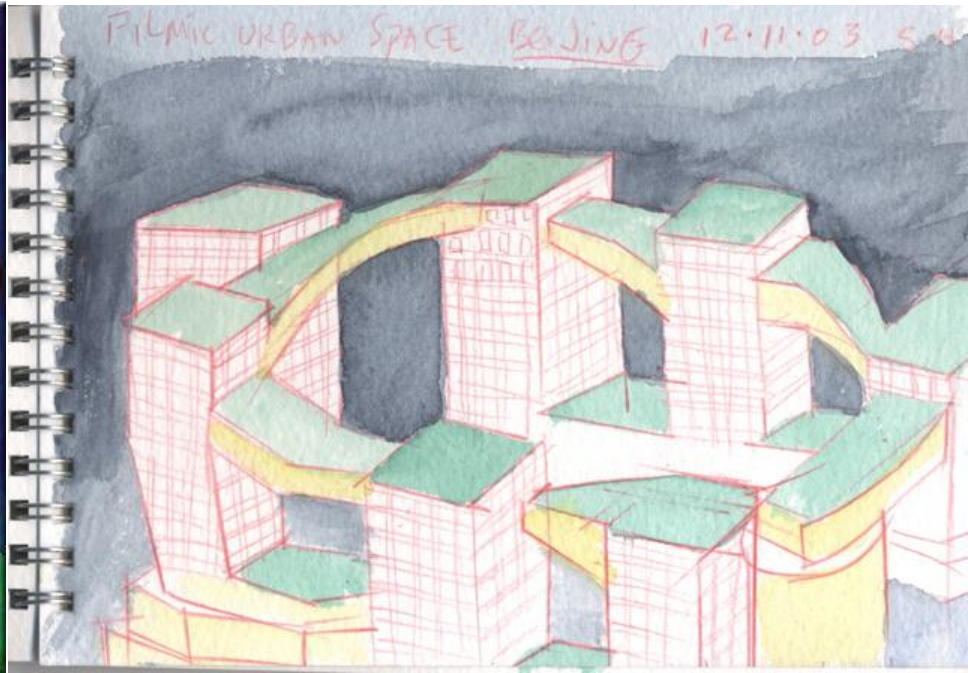
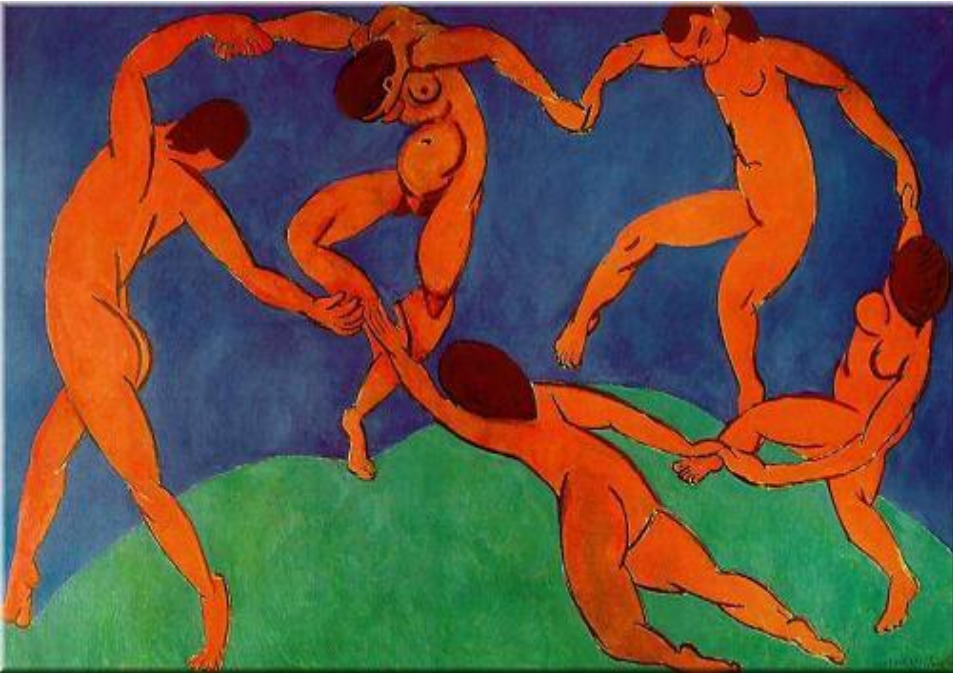
Cartagena Auditorium & Conference Centre, Spain by Jose Selgas y Lucia Cano, 2002-2006

3- Means and Ends Analysis:

Characteristics:

- A prescribed set of actions (means)
- A prescribed set of goals (ends)
- A set of decision rules
- A variety of alternative solutions may result from following the prescribed set of actions and decision rules.

Appropriate for: When there is strong conviction (theory / strategy) that particular design goals (ends) can be solved through certain protocols (means or when a variety of solutions are required within a common framework (e.g. housing and museum)



Linked Hybrid Project in Beijing, China by Steven Holl, 2009



Linked Hybrid Project in Beijing, China by Steven Holl, 2009

BEIJING 6.12.14.07 S. HOLL

URBAN SPACE

BEIJING PRE-1980 (HORIZONTALITY)



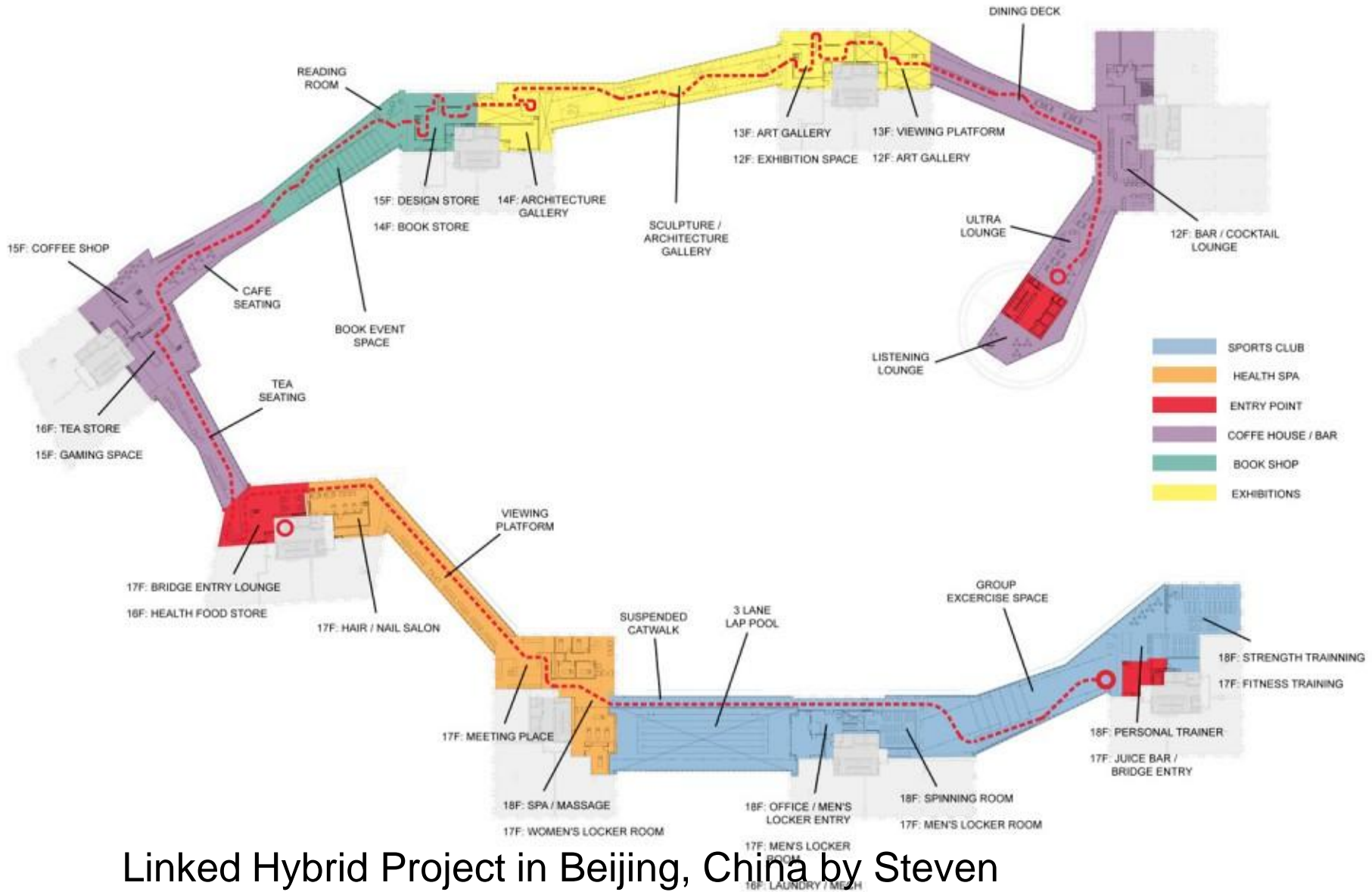
BEIJING POST-1980 (VERTICALITY)



PROPOSED (HYBRID SPACE)



Linked Hybrid Project in Beijing, China by Steven Holl, 2009



Linked Hybrid Project in Beijing, China by Steven Holl, 2009



HYBRID TOWERS:

2 TRAPEZOIDS

6 SQUARES

(1 cylinder)

Linked Hybrid Project in Beijing, China by Steven Holl, 2009

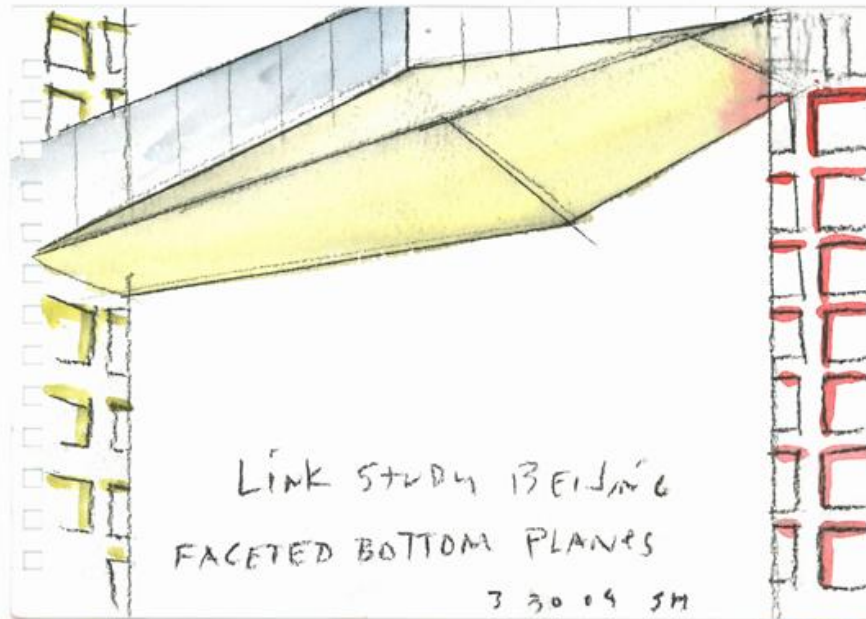
BEIJING 12/A/03 S.H.

4 MAIN PASSAGE ROUTES

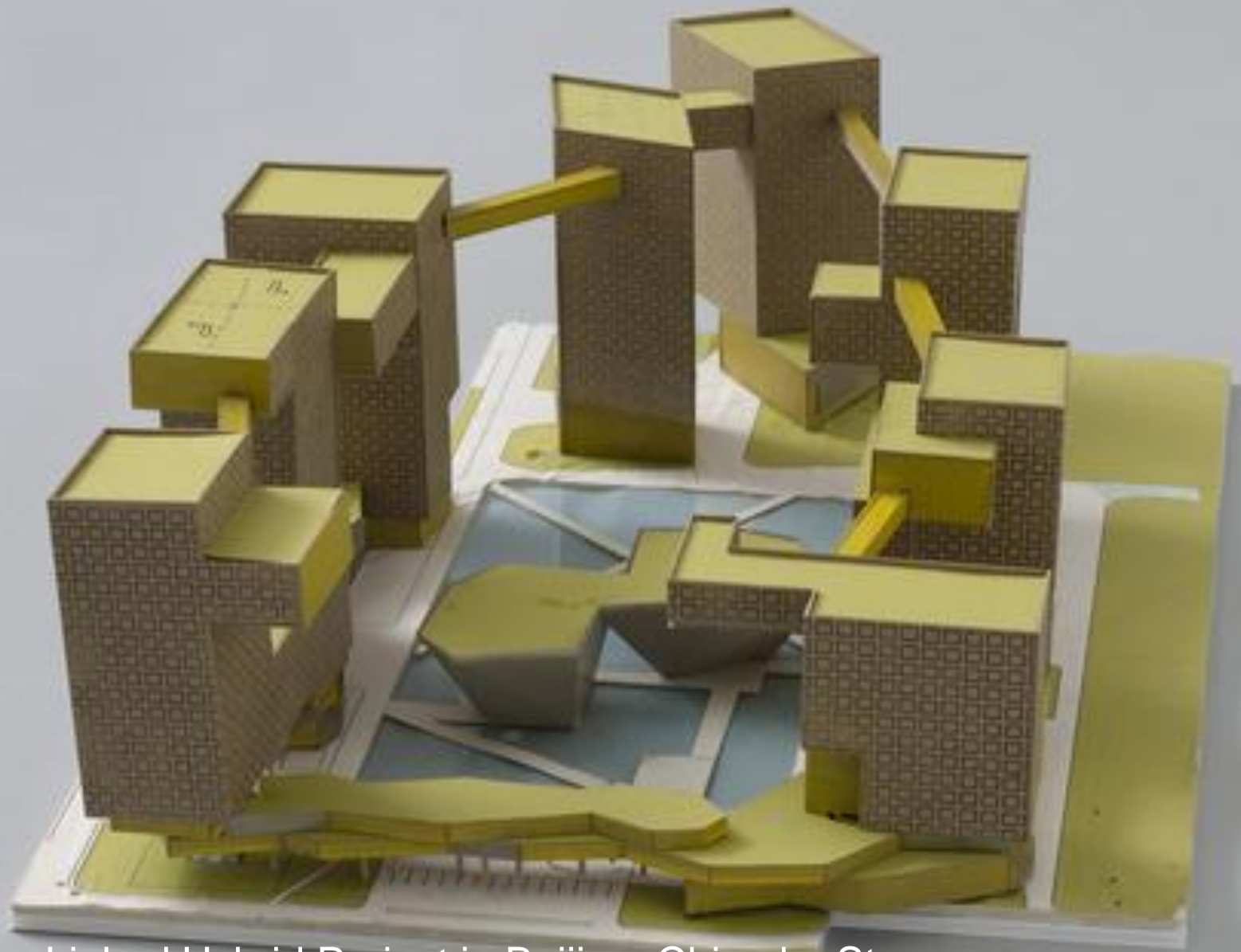
- A = FROM PARKING TO MAIN PLACE
- B = SHOPPING / CAFES / CINEMA
- C = WORK & OFFICES
- D = Gyms & REC SPACE



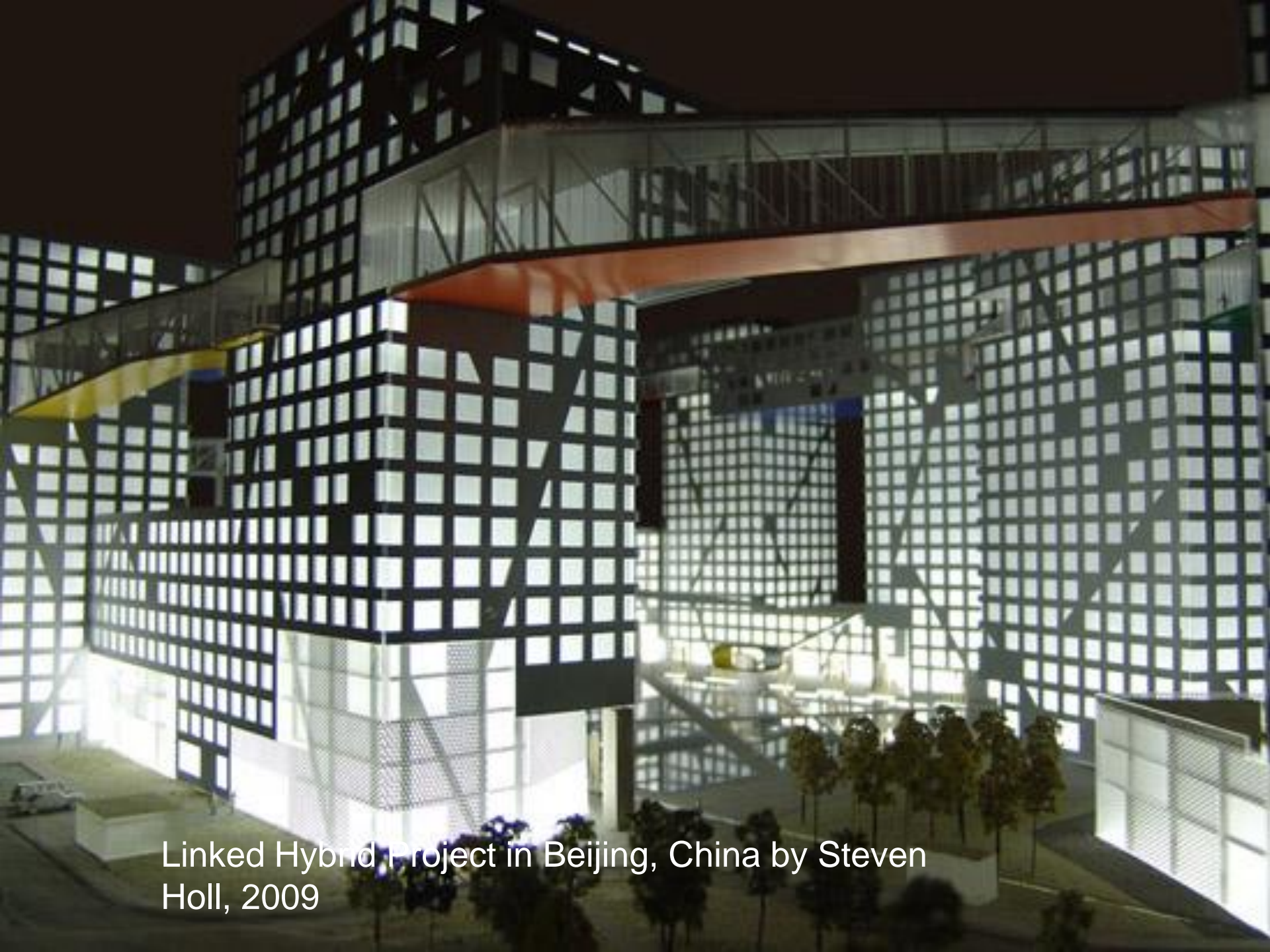
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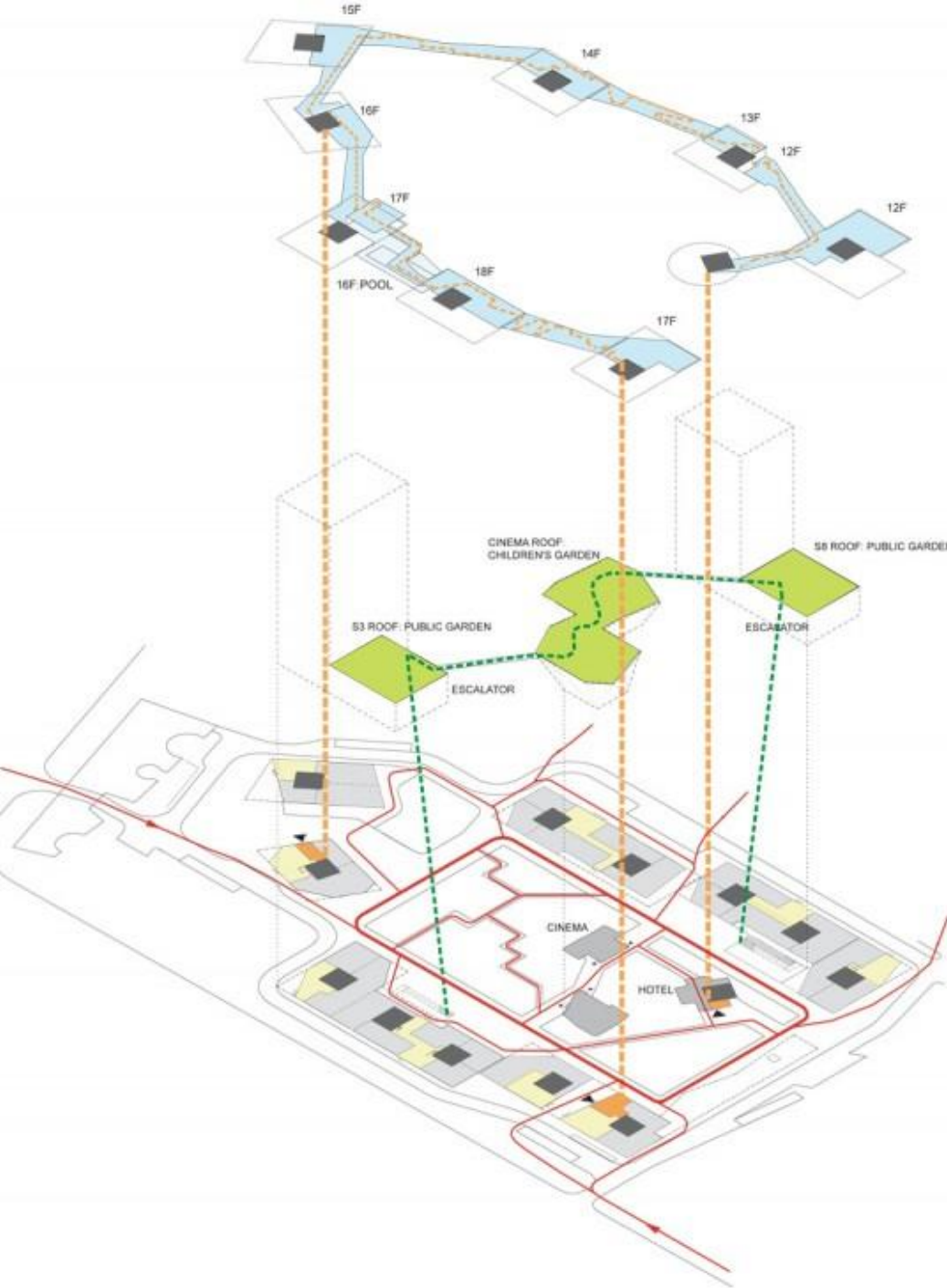
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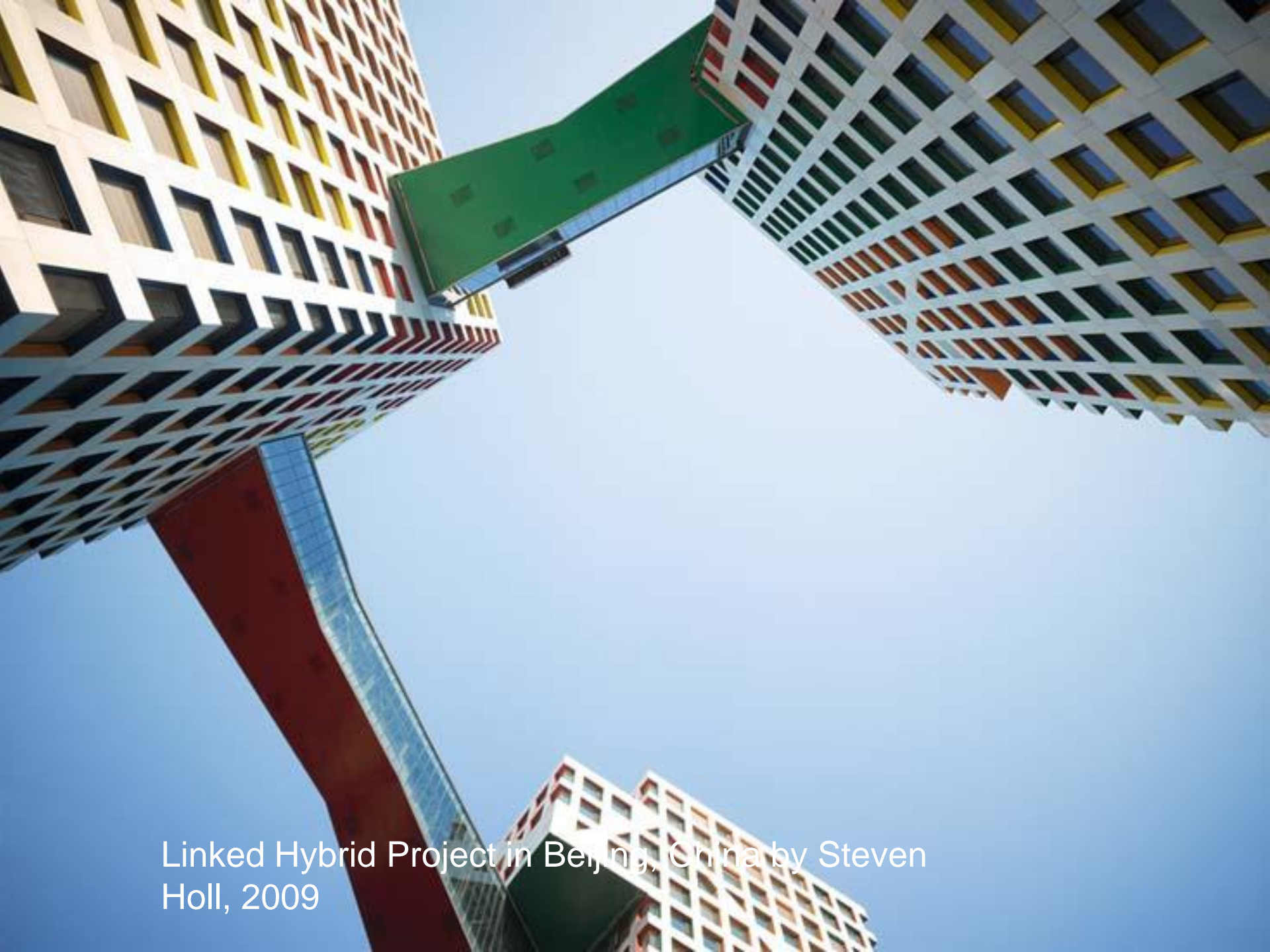
PEDESTRIAN CIRCULATION DIAGRAM

- - - PUBLIC GARDEN ACCESS & CIRCULATION
- - - BRIDGE LEVEL ACCESS & CIRCULATION
- - - ACCESS FROM B1 PARKING LOT
- GROUND LEVEL CIRCULATION
- COMMERCIAL
- LOBBY TO APARTMENT
- ACCESS LOBBY TO BRIDGE LEVEL

PEDESTRIAN CIRCULATION DIAGRAM



Linked Hybrid Project in Beijing, China by Steven Holl, 2009



Linked Hybrid Project in Beijing, China by Steven
Holl, 2009

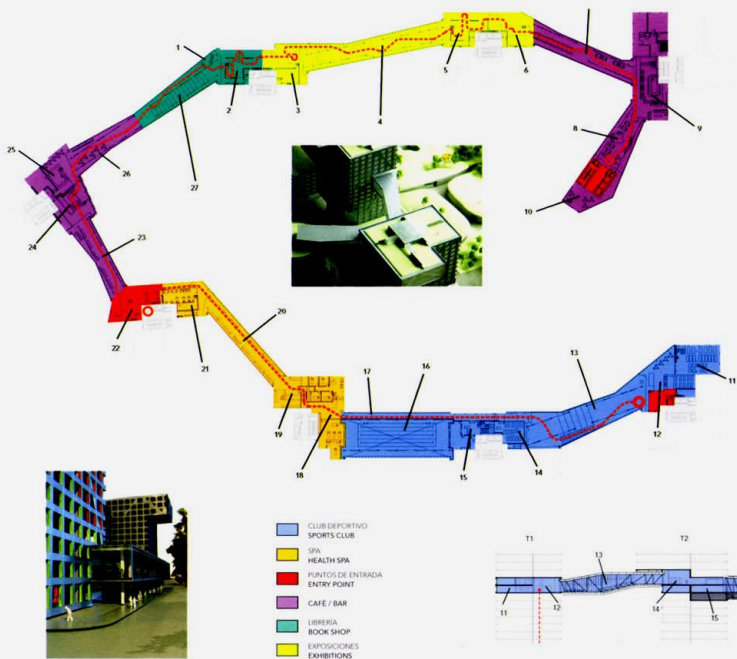


Linked Hybrid Project in Beijing, China by Steven Holl, 2009



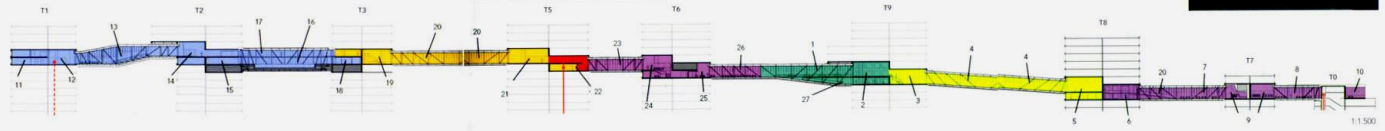
Linked Hybrid Project in Beijing, China by Steven
Holl, 2009

AD

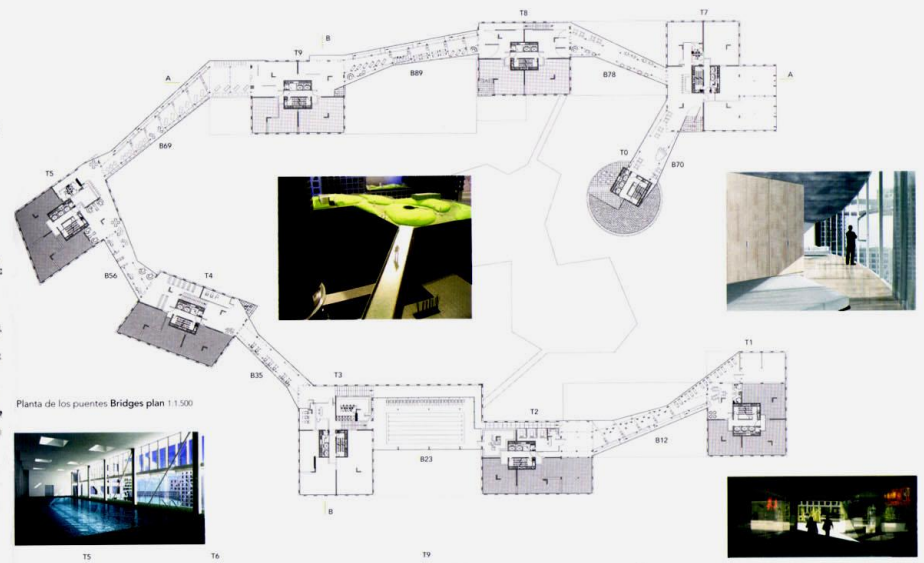


- 1 SALA DE LECTURA
- 2 NIVEL 15, TENDA DE DISEÑO, NIVEL 14, LIBRERIA
- 3 NIVEL 14, GALERIA DE ARQUITECTURA
- 4 GALERIA DE ESCULTURA
- 5 NIVEL 13, GALERIA DE ARTE, NIVEL 12, SALA DE EXPOSICIONES
- 6 NIVEL 11, MIRADOR, NIVEL 12, GALERIA DE ARTE
- 7 CUBIERTA RESTAURANTE
- 8 SALON
- 9 BAR DE COPAS
- 10 SALA DE MUSICA
- 11 NIVEL 18, GIMNASIO, NIVEL 17, GIMNASIO
- 12 NIVEL 18, ENTRENADOR PERSONAL, NIVEL 17, BAR
- 13 SALA DE EJERCICIOS EN GRUPO
- 14 NIVEL 18, GIMNASIO, NIVEL 17, VESTUARIO MASCULINO
- 15 NIVEL 18, DESPACHO ACCESO AL VESTUARIO MASCULINO, NIVEL 17, VESTUARIO MASCULINO, NIVEL 16, LAVANDERIA
- 16 PISCINA DE IGUARRILES
- 17 PASARELA ELEVADA
- 18 NIVEL 18, RELAX MASAJES, NIVEL 17, VESTUARIO FEMENINO
- 19 NIVEL 17, AREA DE ENCUENTROS
- 20 MIRADOR
- 21 NIVEL 17, PELUQUERIA
- 22 NIVEL 17, VESTIBULO DE ENTRADA, NIVEL 16, TENDA DE ALIMENTACION
- 23 SALON DE TE
- 24 NIVEL 16, TENDA DE TE, NIVEL 15, SALA DE JUEGOS
- 25 CAFETERIA
- 26 CAFETERIA
- 27 SALA DE LECTURA
- 28 LIBRERIA

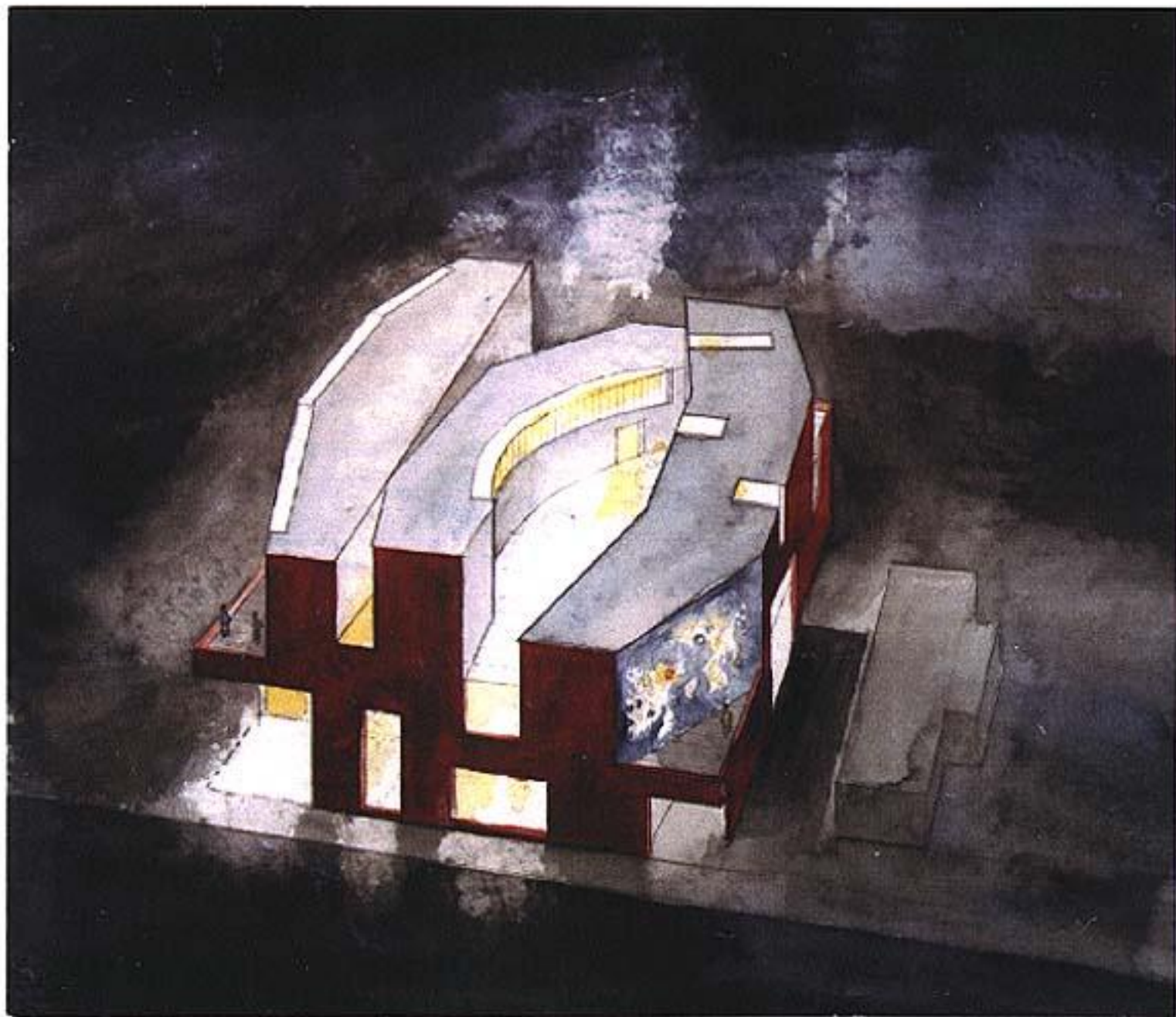
- CLUB DE PORTUO SPORTS CLUB
- SPA HEALTH SPA
- PUNTOS DE ENTRADA ENTRY POINT
- CAFE / BAR
- LIBRERIA BOOK SHOP
- EXPOSICIONES EXHIBITIONS



- 1 READING ROOM
- 2 15F DINING STORE
- 14F BOOK STORE
- 3 14F ARCHITECTURE GALLERY
- 4 SCULPTURE ARCHITECTURE GALLERY
- 5 13F ART GALLERY, 12F EXHIBITION SPACE
- 6 13F VIEWING PLATFORM, 12F ART GALLERY
- 7 DINING DECK
- 8 ULTRA LOUNGE
- 9 BAR / COCKTAIL
- 10 LISTENING LOUNGE
- 11 18F STRENGTH TRAINING, 17F FITNESS TRAINING
- 12 18F PERSONAL TRAINER, 17F JUICE BAR / BRIDGE ENTRY
- 13 GROUP EXERCISE SPAG
- 14 18F SPINNING ROOM, 17F MEN'S LOCKER ROOM
- 15 18F OFFICE / MEN'S LOCKER ENTRY, 17F MEN'S LOCKER ROOM, 16F LAUNDRY MECH
- 16 13 LANE JAR POOL
- 17 SUSPENDED CATWALK
- 18 18F SPA MASSAGE, 17F WOMEN'S LOCKER ROOM
- 19 17F MEETING PLACE
- 20 VIEWING PLATFORM
- 21 17F HAIR / NAIL SALON
- 22 17F BRIDGE ENTRY LOUNGE, 16F HEALTH FOOD STORE
- 23 TEA SEATING
- 24 16F TEA STORE, 15F GAMING SPACE
- 25 COFFEE SHOP
- 26 CAFE SEATING
- 27 BOOK EVENT SPACE
- 28 BOOK STORE



Linked Hybrid Project in Beijing, China by Steven Holl, 2009



Architect Steven Holl Watercolor New Bellevue Art Museum



Bellevue Art Museum, Washington by Steven Holl, 2001



Bellevue Art Museum, Washington by Steven Holl, 2001



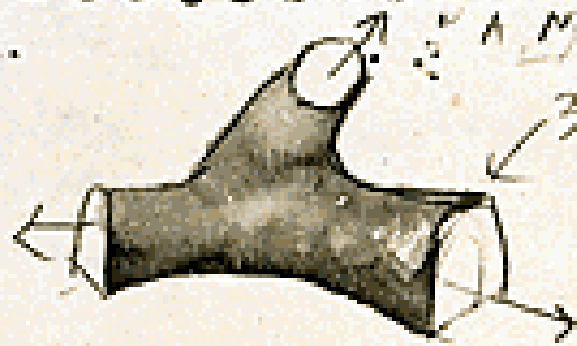
Bellevue Art Museum, Washington by Steven Holl, 2001



Bellevue Art Museum, Washington by Steven Holl, 2001

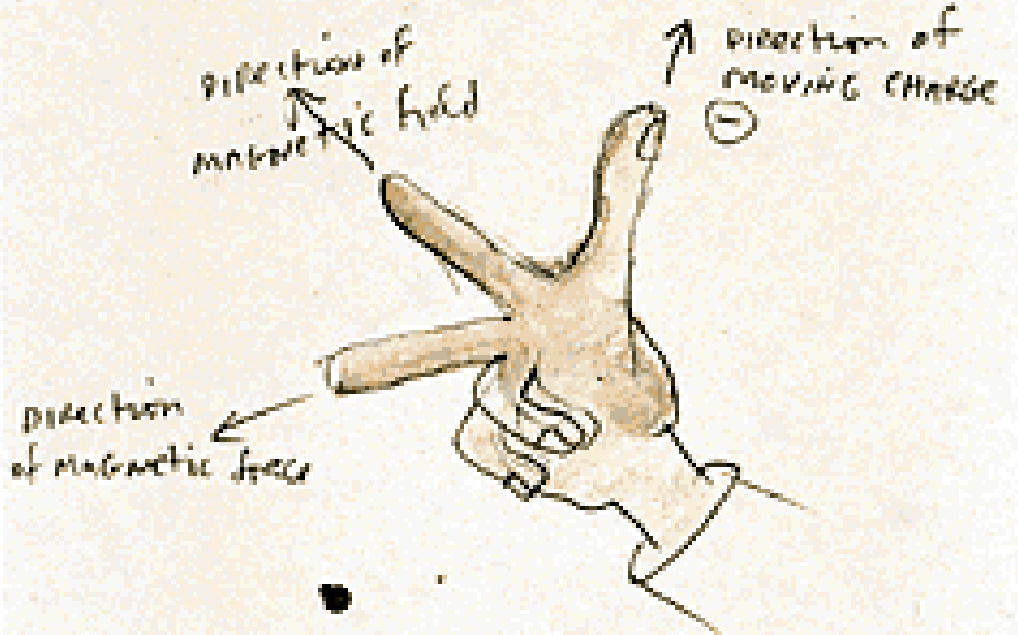


Bellevue Art Museum, Washington by Steven Holl, 2001



A NON-DIALECTIC
TUBE:
3 AXIS CUSP
SPACE

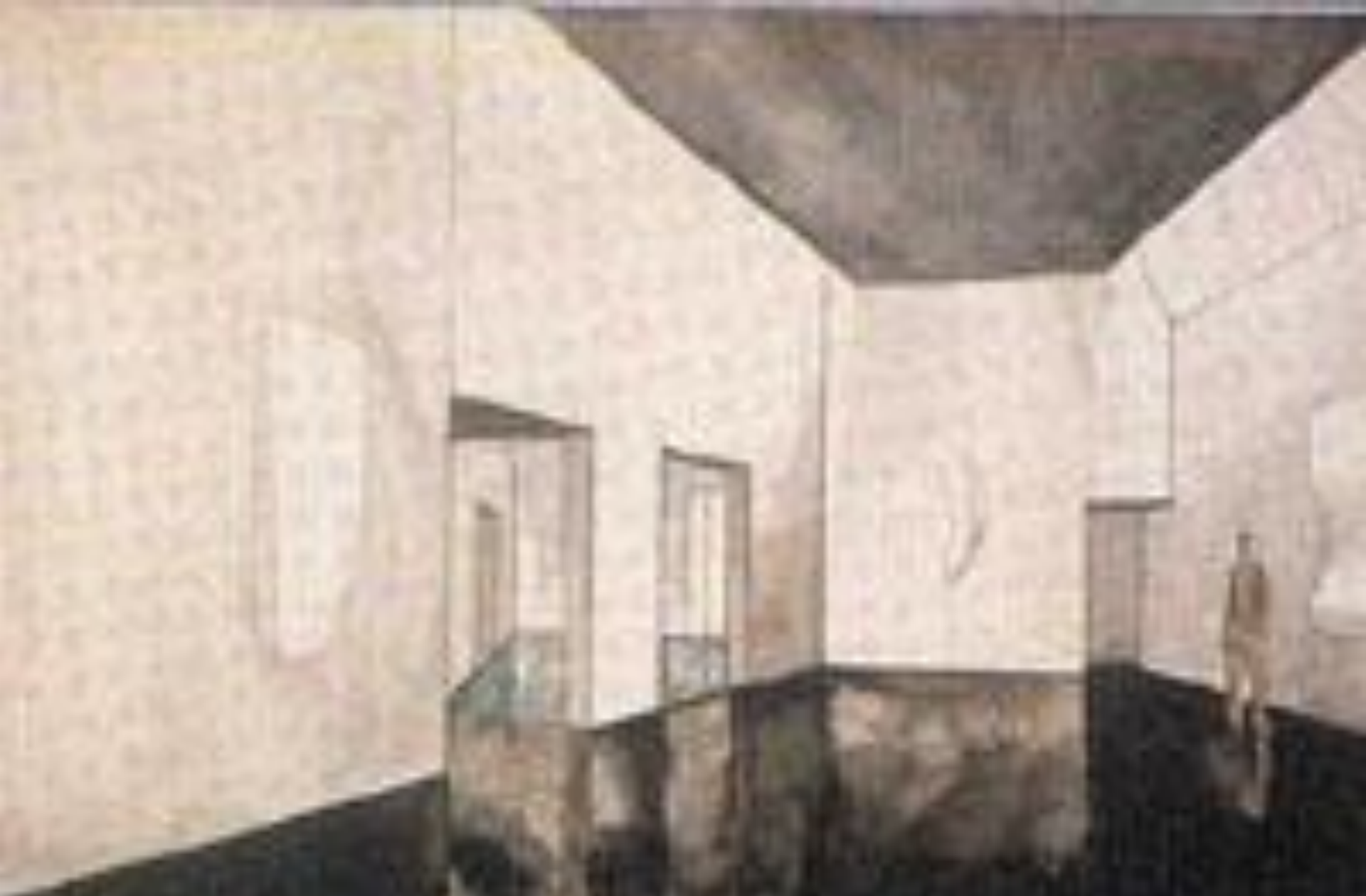
Analogous to:



RIGHT HAND RULE = Gives
the direction of movement of a
negatively charged particle
(electrons) in a magnetic field



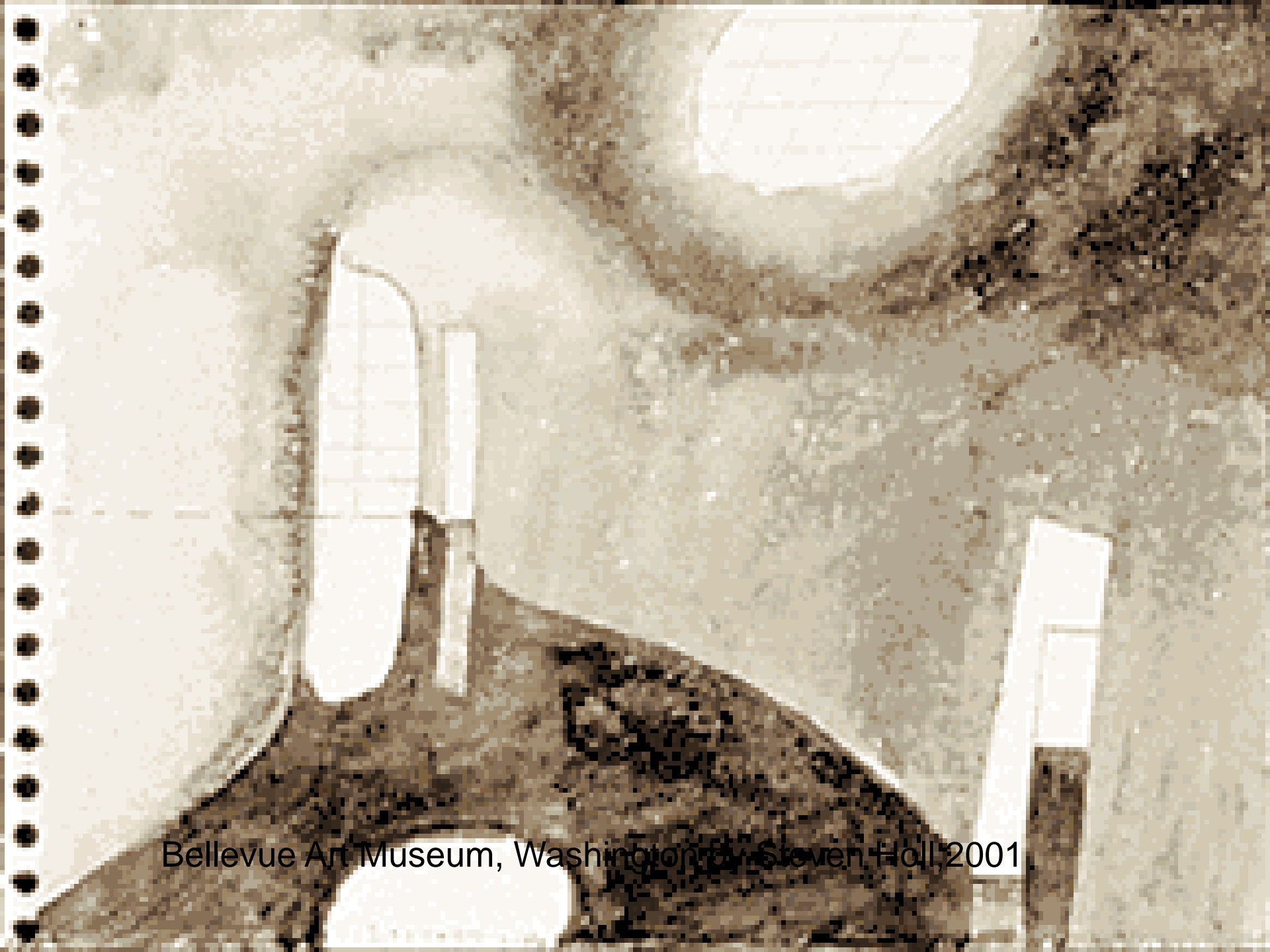
Bellevue Art Museum, Washington by Steven Holl, 2001



Bellevue Art Museum, Washington by Steven Holl, 2001



Bellevue Art Museum, Washington by Steven Holl, 2001



Bellevue Art Museum, Washington by Steven Hall, 2001



Bellevue Art Museum, Washington by Steven Holl, 2001



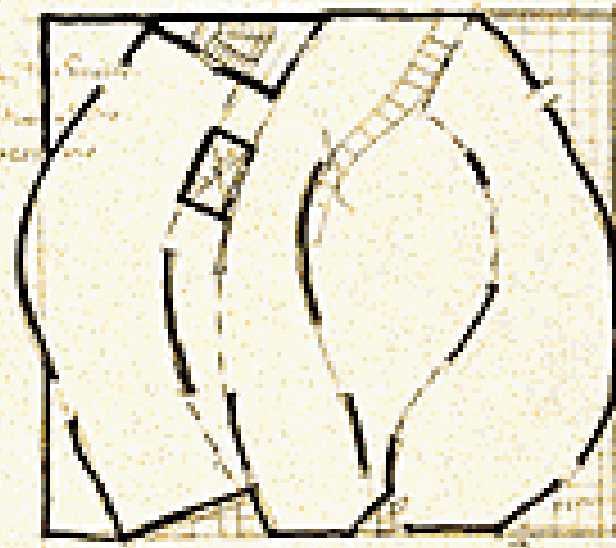
N ←



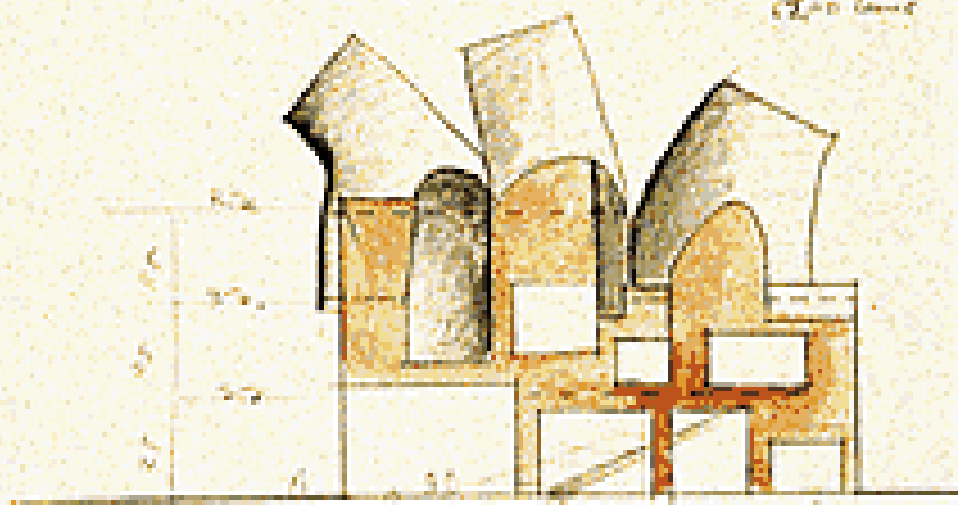
3 Spatial Expts
(above & below hand)

1/10/1912

Throat is under right
distal is over left
distal is under right
very narrow the space
of distals



1/10/1912

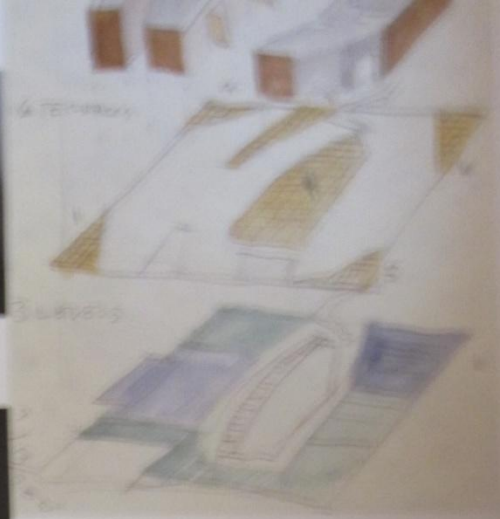


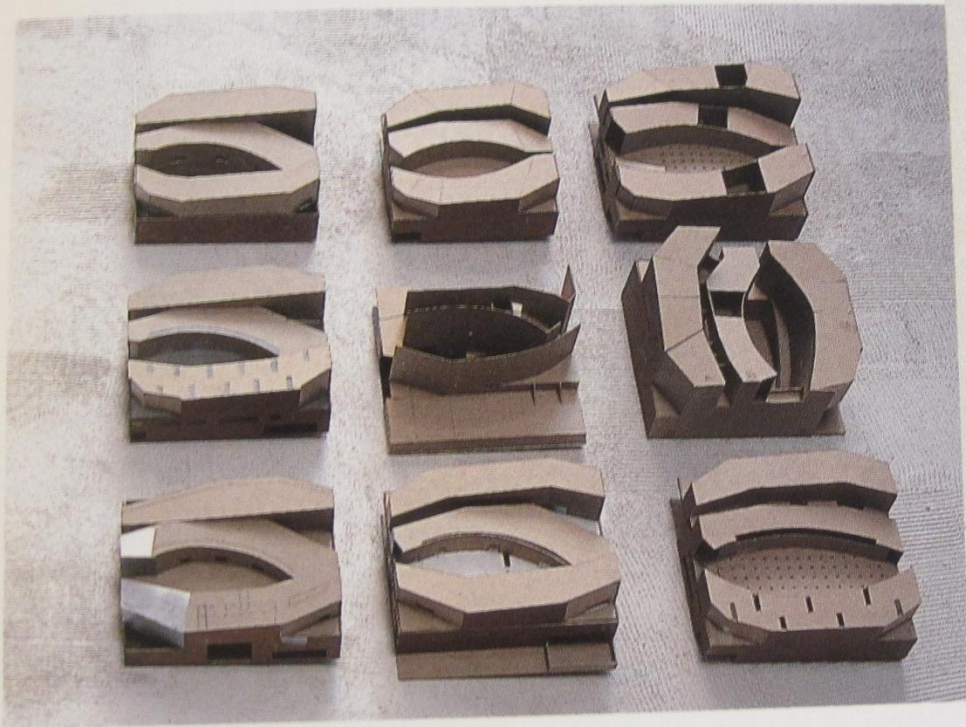
1/10/1912

1/10/1912

1/10/1912

1/10/1912





Bellevue Art Museum, Washington by Steven Holl, 2001

TRIFLENESS;

"SEE / EXPLORATION / MAKE"

3 Gallery levels:

- A) North wing
- B) South wing
- C) E-W wing



6 TERRACES



3 LEVELS



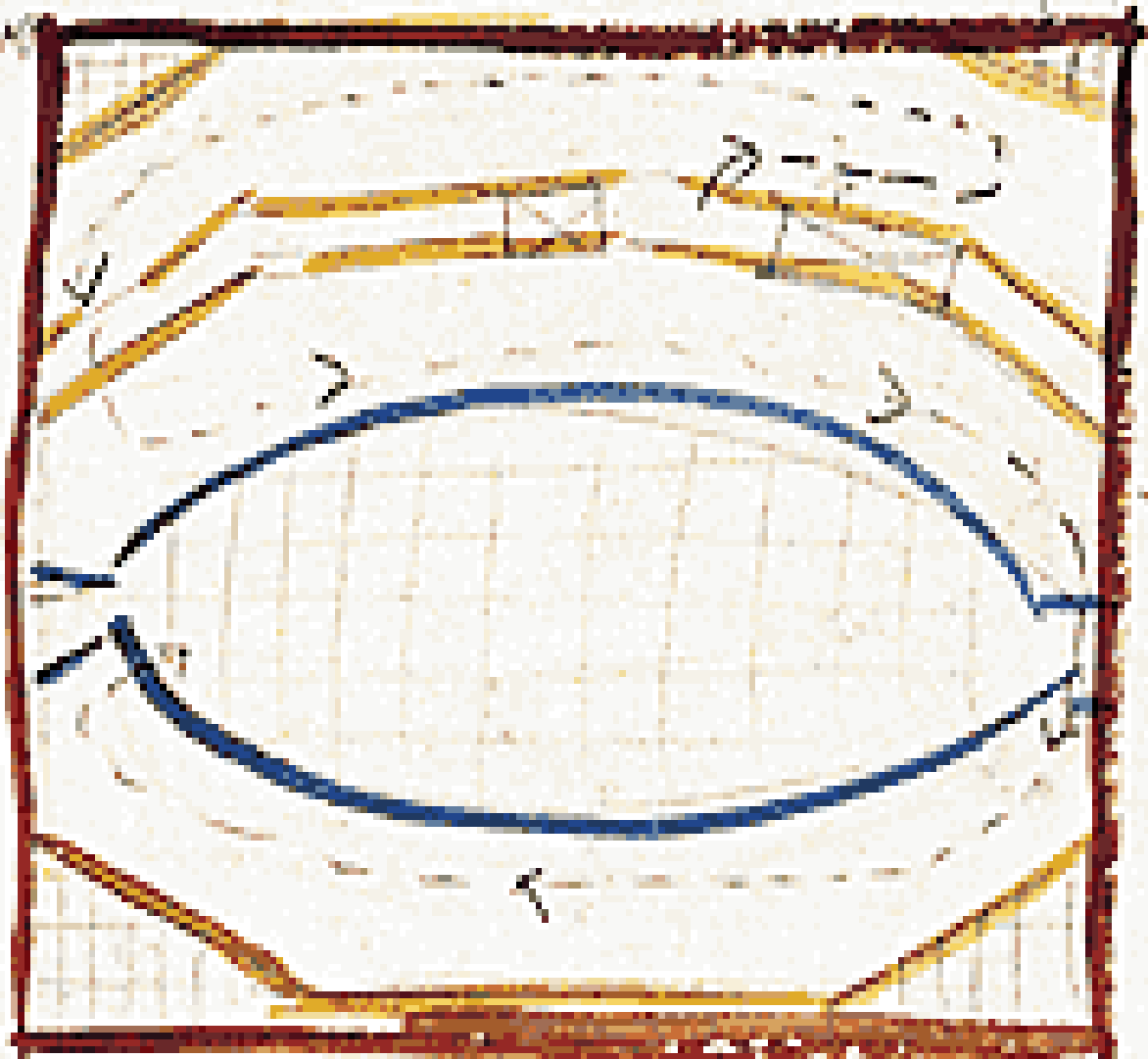
TIME: THREE opposing conceptual levels;

① Great cyclical time:

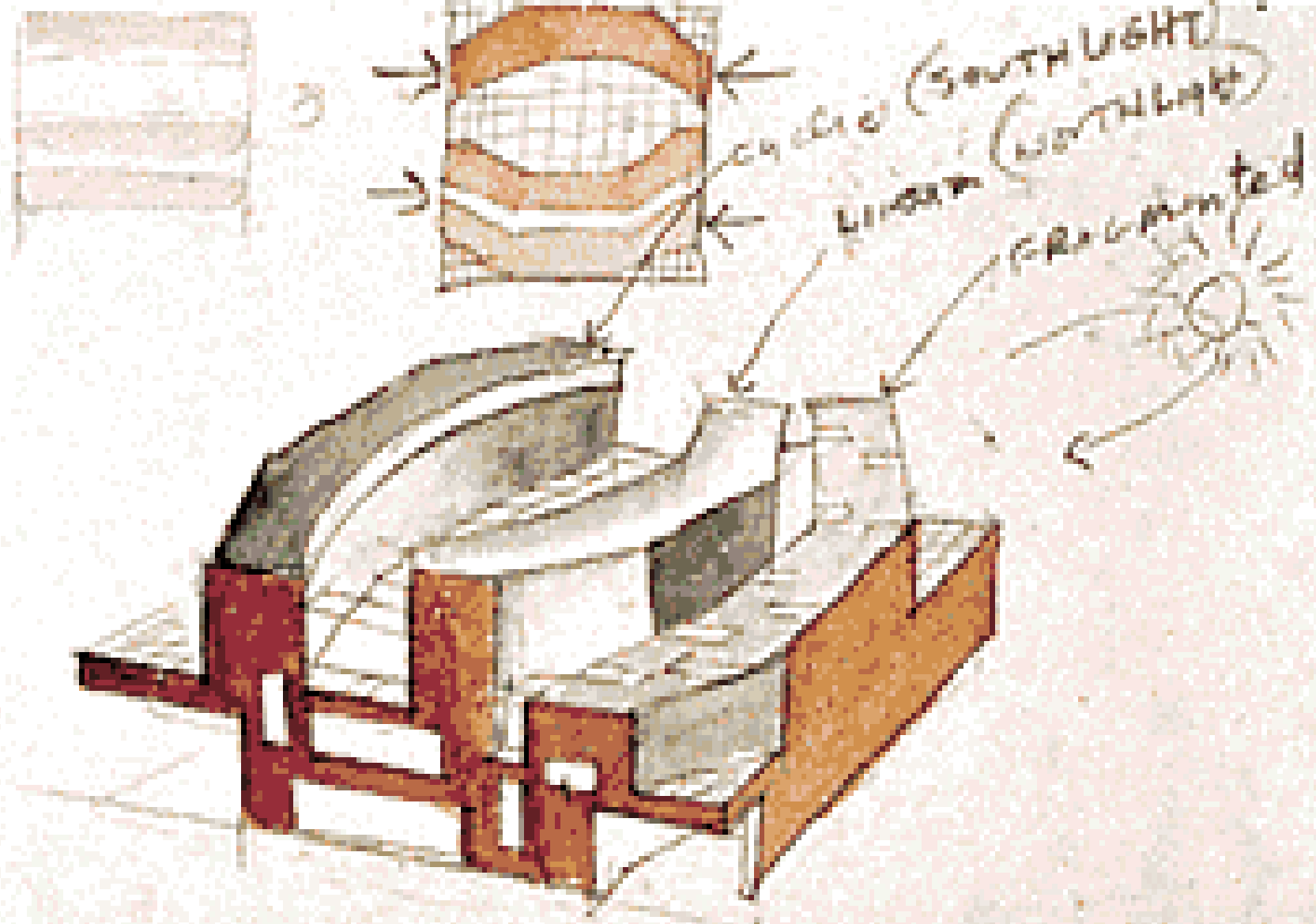
② modern/western: linear time

③ Gnostics:
seeds cycle of
will of Christ

THREEFOLD



1/11/90



2 16/18

Architectural Plan Study



Bellevue Art Museum, Washington by Steven Holl, 2001