

de•sign /di-zín/

n. form, configuration, style, motif, composition.

v. plan, invent, create, devise, originate, visualize, sketch out, develop, organize, frame.

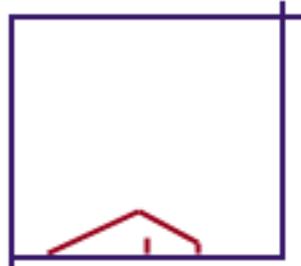
---Oxford Dictionary

Presentation by John Middendorf

GSD 6400 Kimo Griggs: Architectural Prototyping

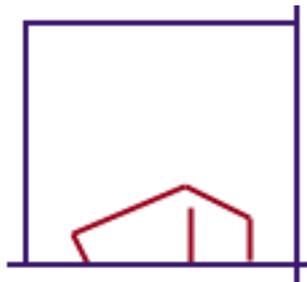
April 12, 2001

START RIGHT



- SET GOALS
- ASSEMBLE DESIGN TEAM

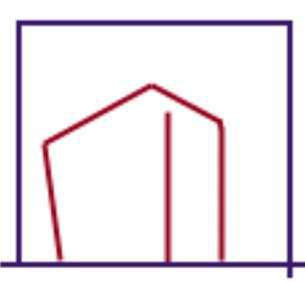
DESIGN PROCESS



PRE-DESIGN



SCHEMATIC DESIGN



DESIGN DEVELOPMENT



CONSTRUCTION DOCS

HENRY DREYFUSS

THE MODEL 500 TELEPHONE

ANALYSIS



SKETCHING



MODELING



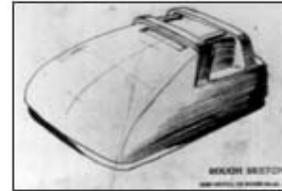
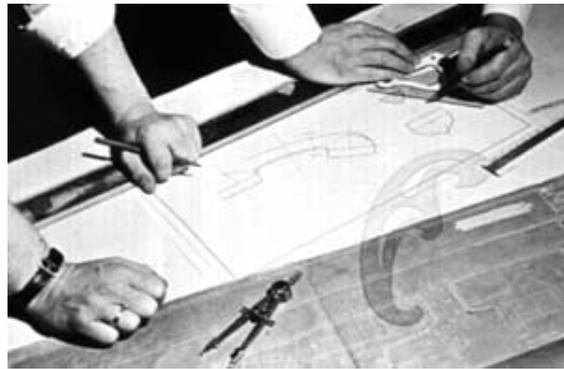
DRAWING

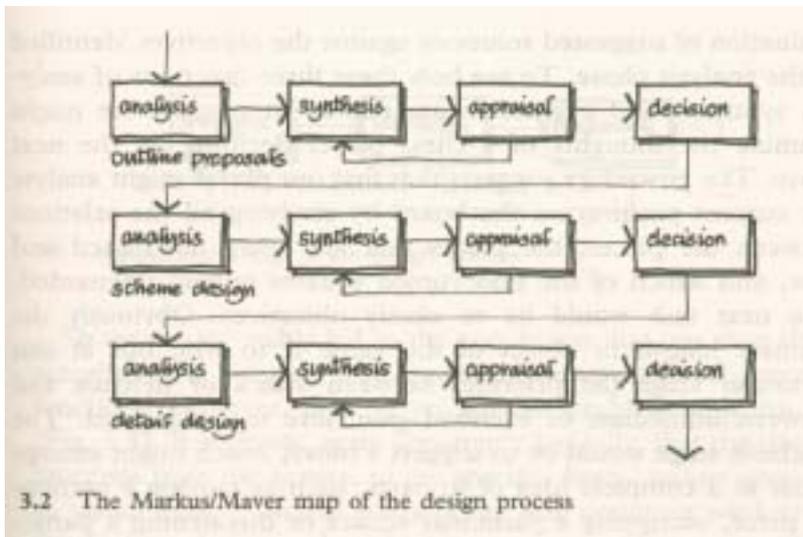


SHOWING

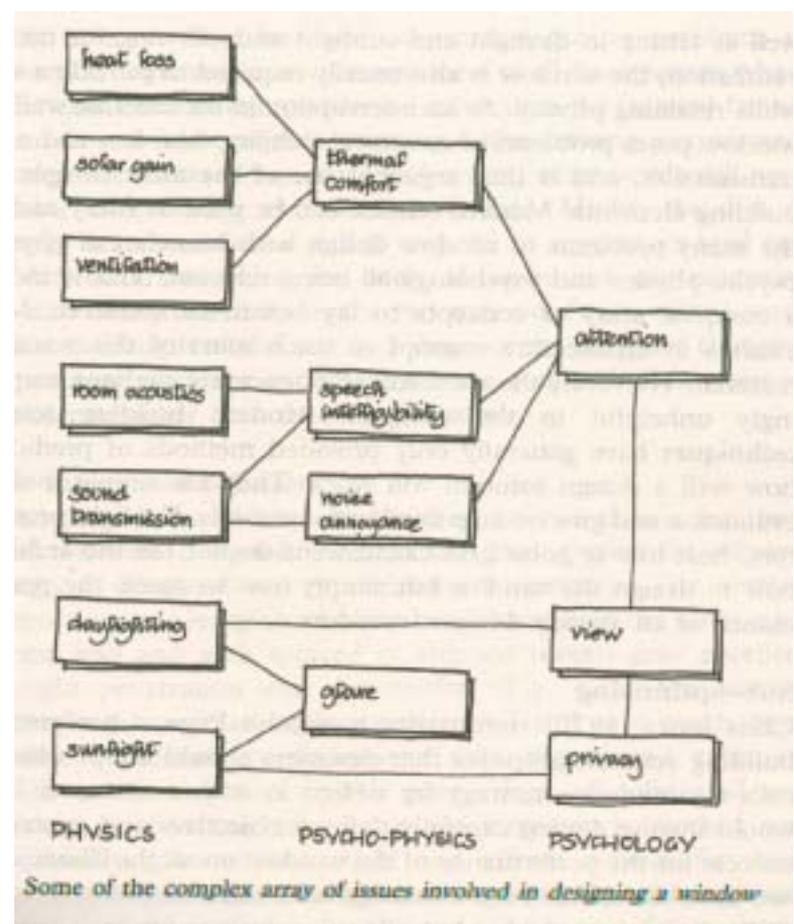
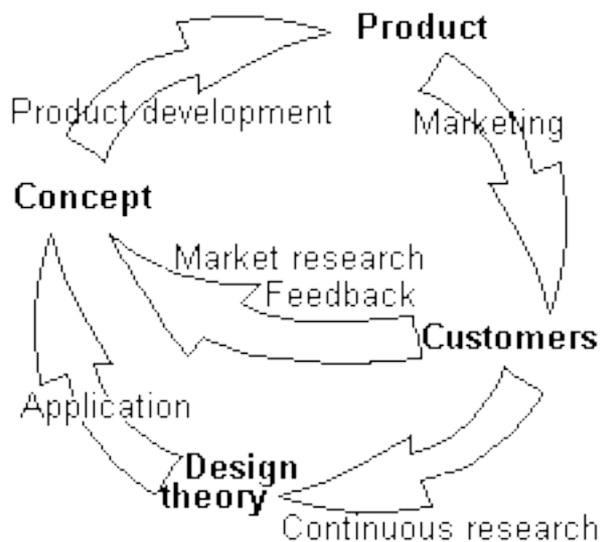
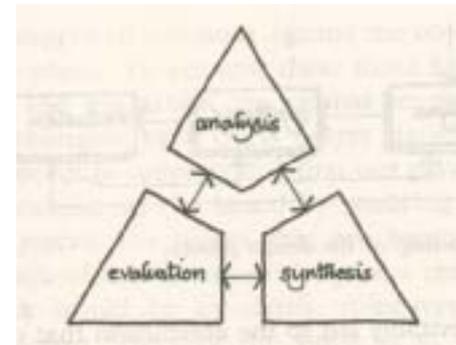


CRITIQUE



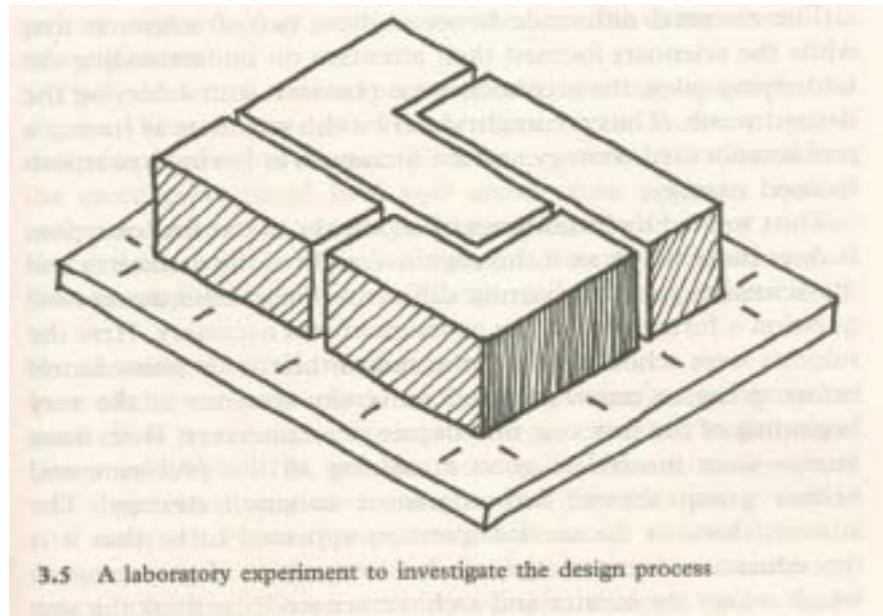


3.2 The Markus/Maver map of the design process



Some of the complex array of issues involved in designing a window

Lawson Experiment



Various colored wooden blocks, with combinations of red and blue vertical faces.

Requirement to construct 4 x 3 configuration with sub-sets of the blocks (6000 possibilities).

Final arrangement needed to be as red or blue as possible on perimeter.

Hidden Rules regarding combination of blocks.

Different design response from scientists (rules) and architects (results).

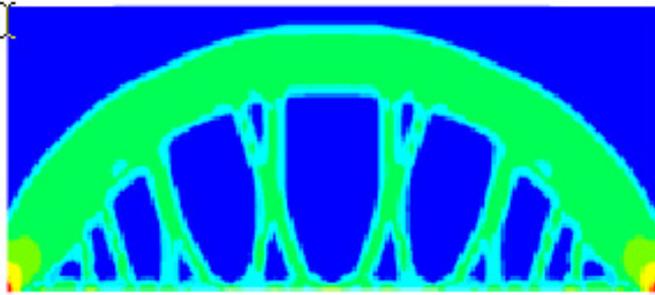


Figure 25: Topology Optimized Model

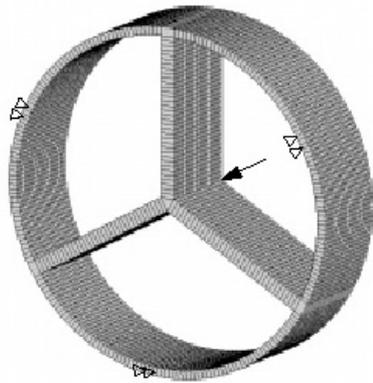
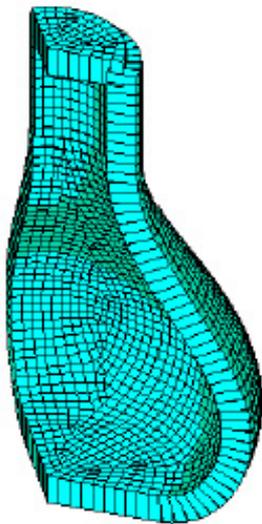


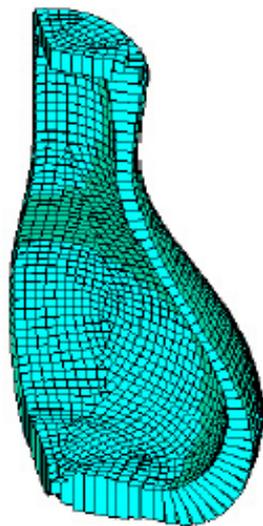
Figure 29: FE-Model with Boundary Conditions



Figure 30: Topology Optimized Model



Start Model



Optimized Model

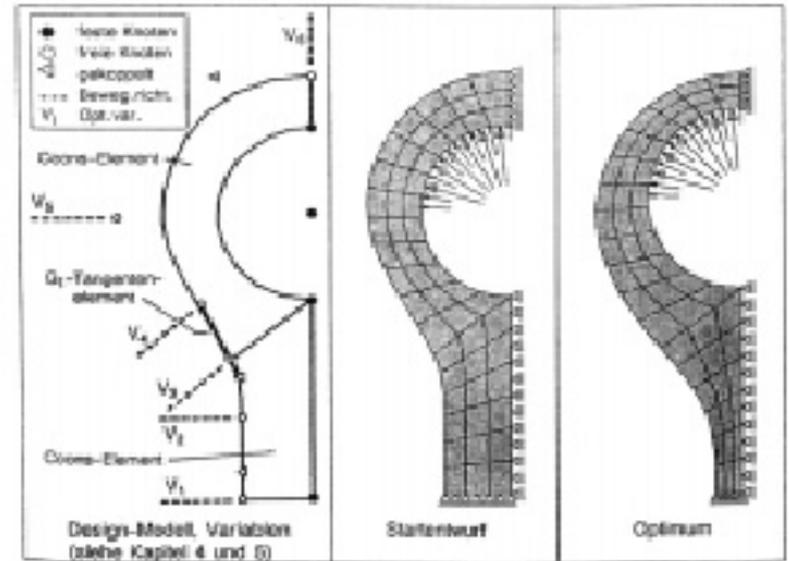


Figure 4: Shape Optimization based on a Geometry Model (6 Design Variables) [12]

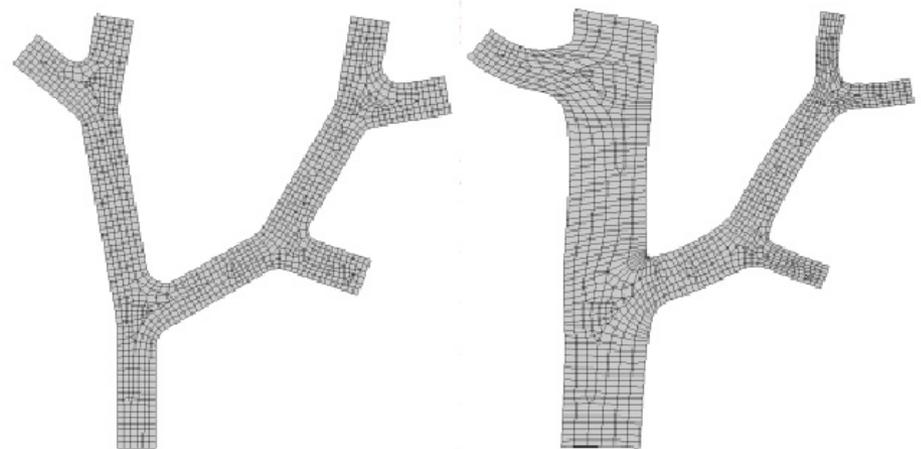


Figure 13: Comparison of the Mesh Topology before and after Optimization



J. Christopher Jones

- designing as the process of devising not individual products but whole systems or environments such as airports, transportation, hypermarkets, educational curricula, broadcasting schedules, welfare schemes, banking systems, computer networks;
- design as participation, the involvement of the public in the decision-making process;
- design as creativity, potentially present in everyone;
- design as an educational discipline that unites art and science and perhaps can go further than either;
- and now the idea of designing WITHOUT A PRODUCT, as a process or way of living in itself. (Jones. *designing designing*. London: Phaidon Press, 1991, p. ix).

Discussion of the point in the design process where the range of alternatives is so great that no single mind can optimize a path to the solution. At such moments the design process becomes arbitrary, and a decision based on only one person's common sense will be limited.

Design Methods

Ubiquitous sequence:

1. Divergent

2. Transformation

3. Convergent

The functional purpose of the study of methodology is to enable groups and teams to have a common language to best take advantage of the collective intelligence.

- Clear objectives--statement of design problem

- Clear evaluation determinants.

- Strategies for idea generation

 - Brainstorming

 - Synetics

Design as Craft

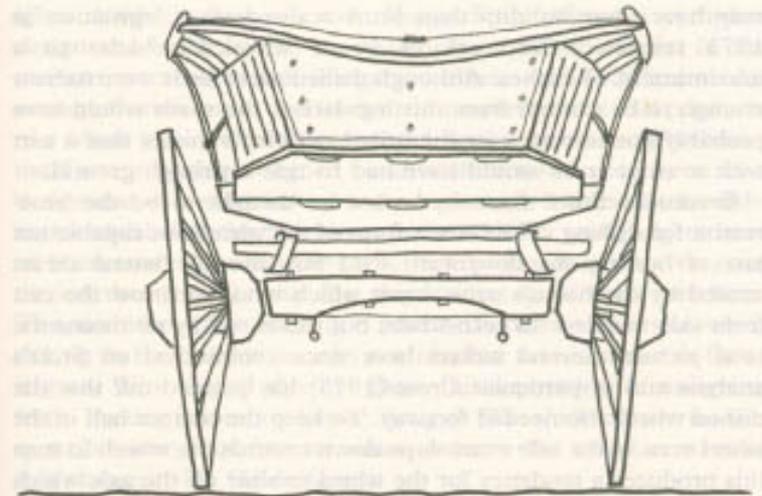


Varying explanations of dished wheels:

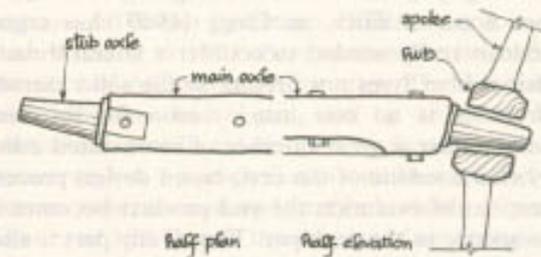
- compensation for the distortion involved with the hot iron tire iron assembly.
- advantage from extended wheelbase.
- increased lateral stability.

A characteristic of craft based design process is the interrelated advantages of a particular design.

George Sturt, *The Wheelwright's Shop*, 1923



2.4 The cartwheel for horse-drawn vehicles was constructed in a complex dished shape



2.5 The axle had to be tilted down (pitch) to enable the cartwheel to transfer load nearly vertically to the ground, and then angled forward (foreway) to prevent the cartwheel falling off

Design as Style



Raymond Loewy
1893-1986

“Most Advanced, Yet Acceptable” (MAYA)

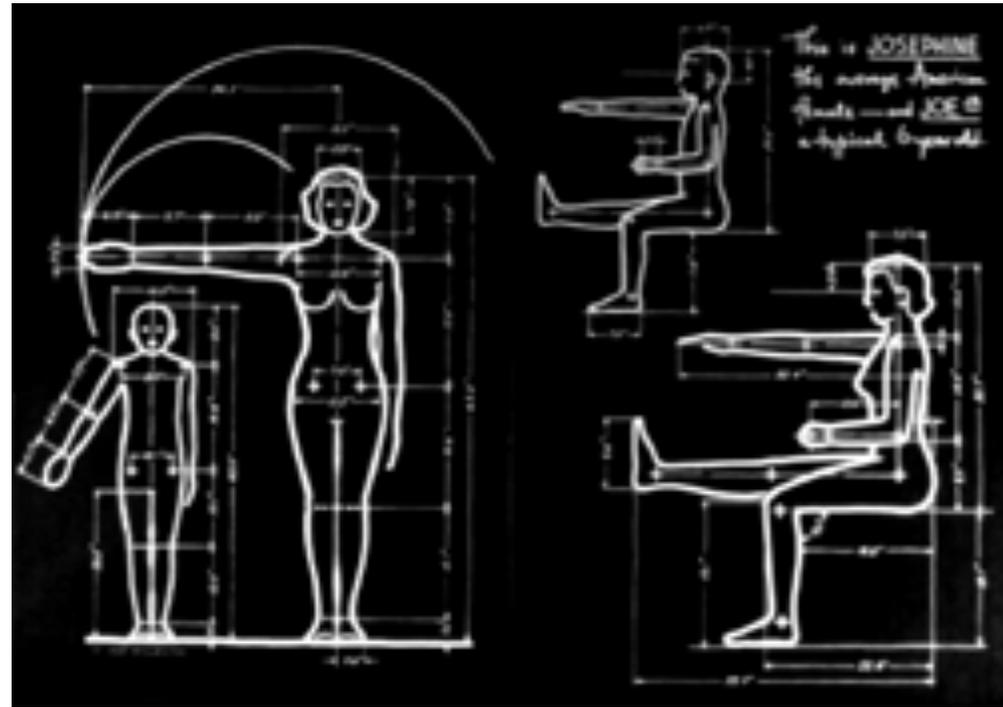
“La laideur se vend mal” (ugliness doesn’t sell)

Design as Ergonomics

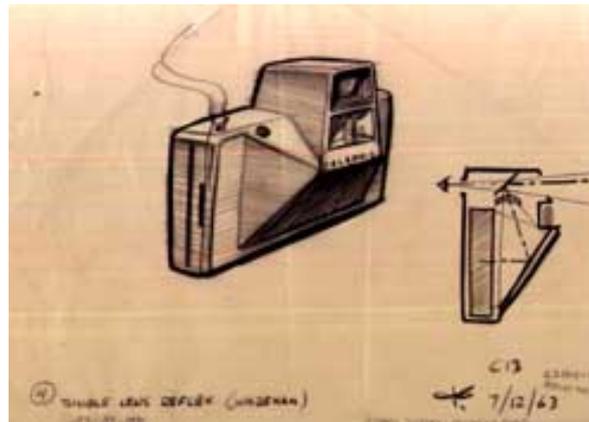


Henry Dreyfus 1904-1972

Designing for People, 1955



Deere, 1937



Polaroid, 1965



Honeywell, 1941

Design as Innovation



Mark Sanders, MAS design

TRIANGULAR FRAME
 204893 8/1978 Pat. Rep. of Germany 583/217

[16] Inventor: Mark A. Sanders, 16 Green Lane, Walscott, Detroit, United Kingdom

[21] Appl. No.: 988,101

[22] PCT Filed: Feb. 24, 1986

[18] PCT No.: PCT/GB86/01660

[37] Date: Oct. 16, 1986

[3] Filed Date: Oct. 16, 1986

[17] PCT Pub. No.: WO/86/08185

[13] PCT Pub. Date: Sep. 12, 1986

[10] Foreign Application Priority Data

Feb. 27, 1985 (GB) United Kingdom 8702070

[12] Int. Cl. B62K 15/00

[11] U.S. Cl. 280/278, 281/2

[19] Field of Search 280/278, 281/2

[14] References Cited

U.S. PATENT DOCUMENTS

3,900,119 12/1978 int. 280/278

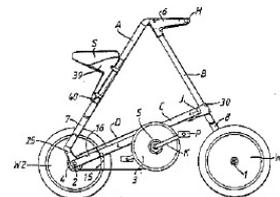
FOREIGN PATENT DOCUMENTS

16084 10/1977 Pat. Rep. of Germany 583/217

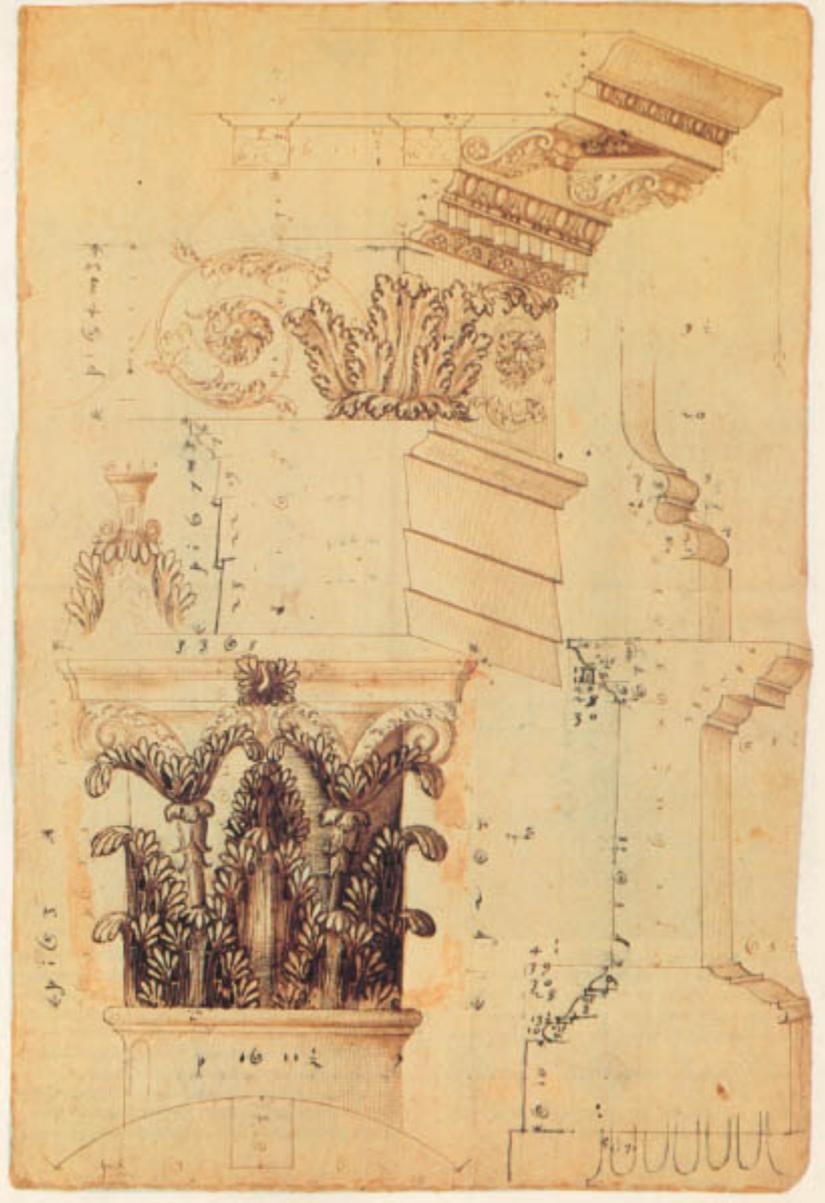
ABSTRACT

A collapsible bicycle comprises a triangular frame formed from three struts A, B and C. The bottom strut C can be disconnected from the forward strut B by operating a releasable pivot joint J so that the strut C can be folded up against the rear strut A. A universal joint between struts A and B then allows these two struts to be folded to lie alongside one another with the pair of wheels W1 and W2 lying side by side. Crankset portions 7 and 8 of the struts A and B provide offset supports for the wheels in one state only so that they can readily be positioned side by side and rigidly locked together. The folded framework can then be transported. If required, by grasping a support 6 on handlebars H and turning it out along the ground on the pair of wheels W1 and W2. A saddle S is adjustably mounted on the rear strut A by a sliding support 29 having fixing clamps 40. The bicycle is preferably driven from pedals 7 by means of a drive lock D rather than a chain and the frame pulley 3 can incorporate a free-wheel unit 9 and/or gearing.

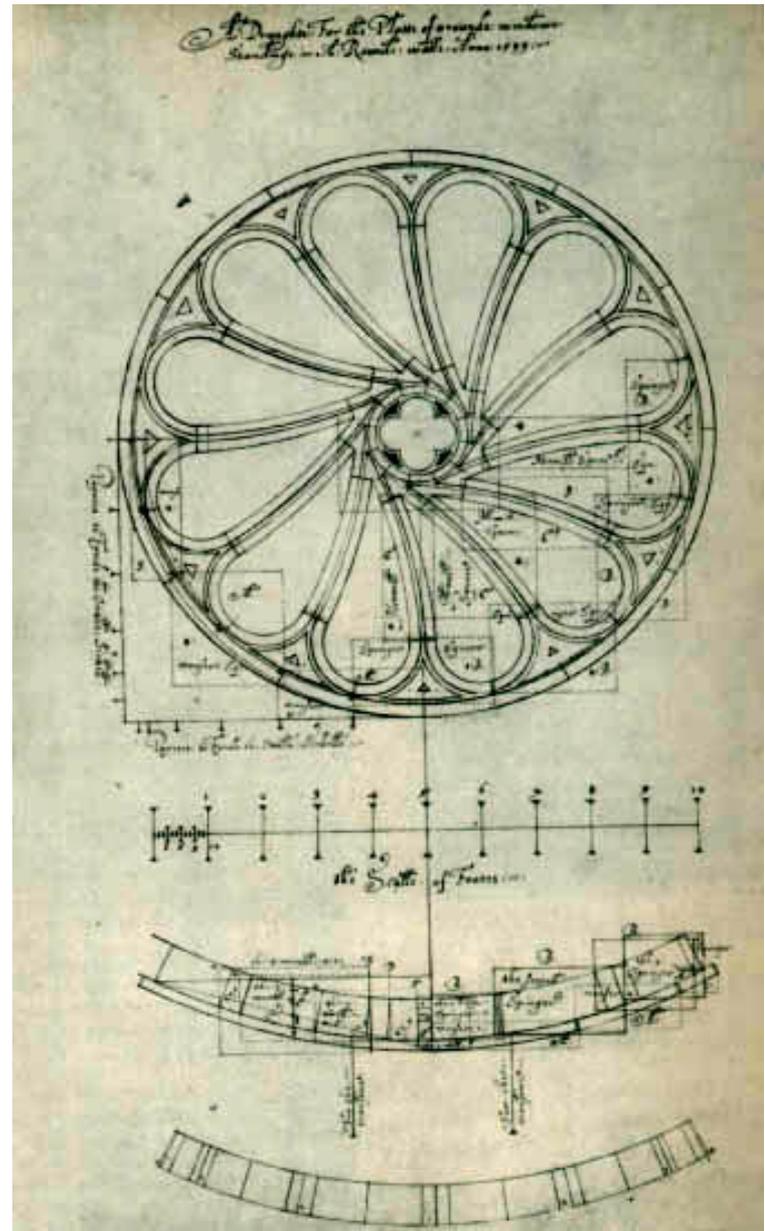
21 Claims, 26 Drawing Figures



Design Drawing

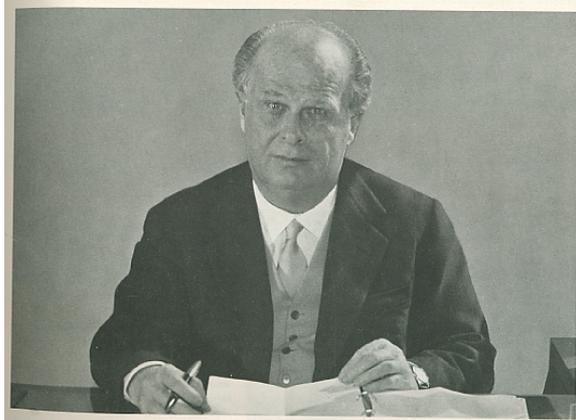
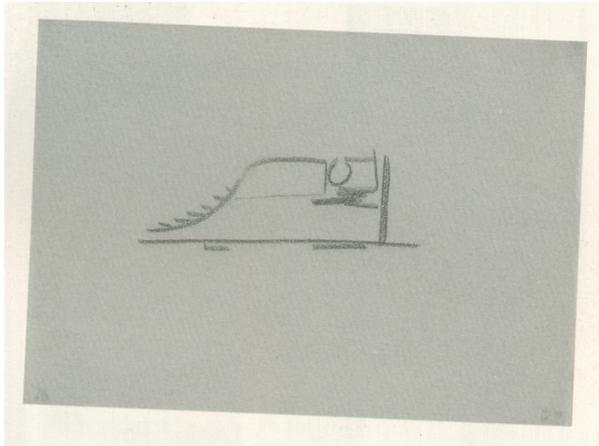


Palladio 1540

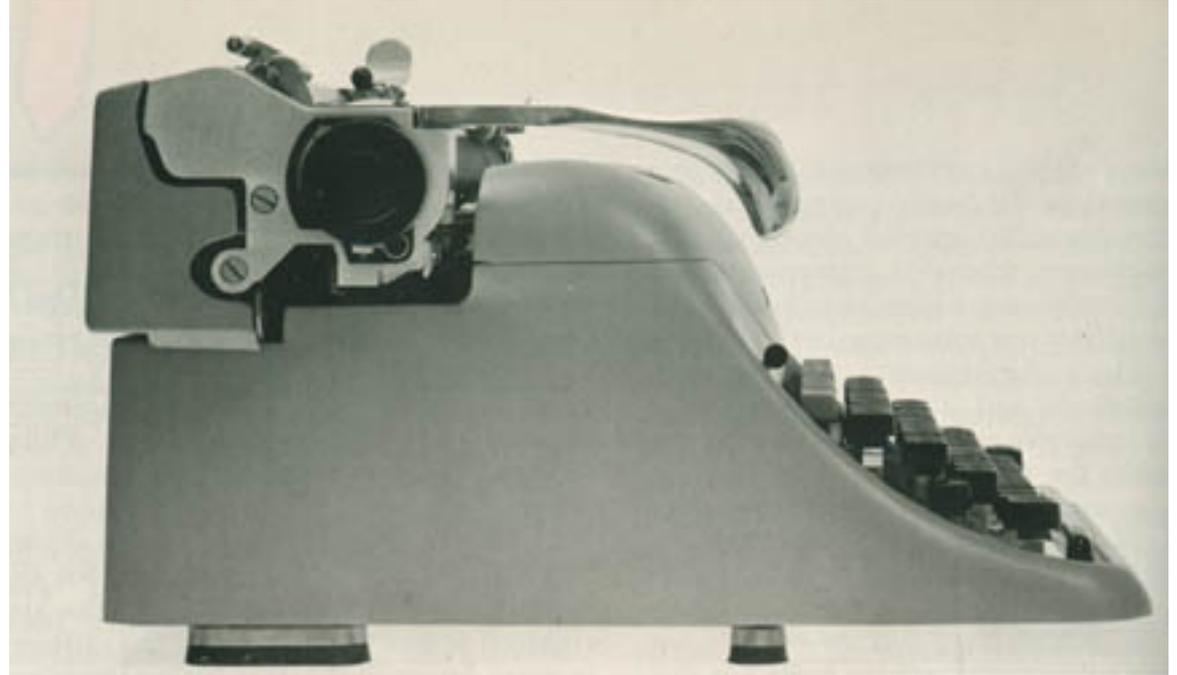


Robert Smythson 1599

Product Design



Adriano Olivetti

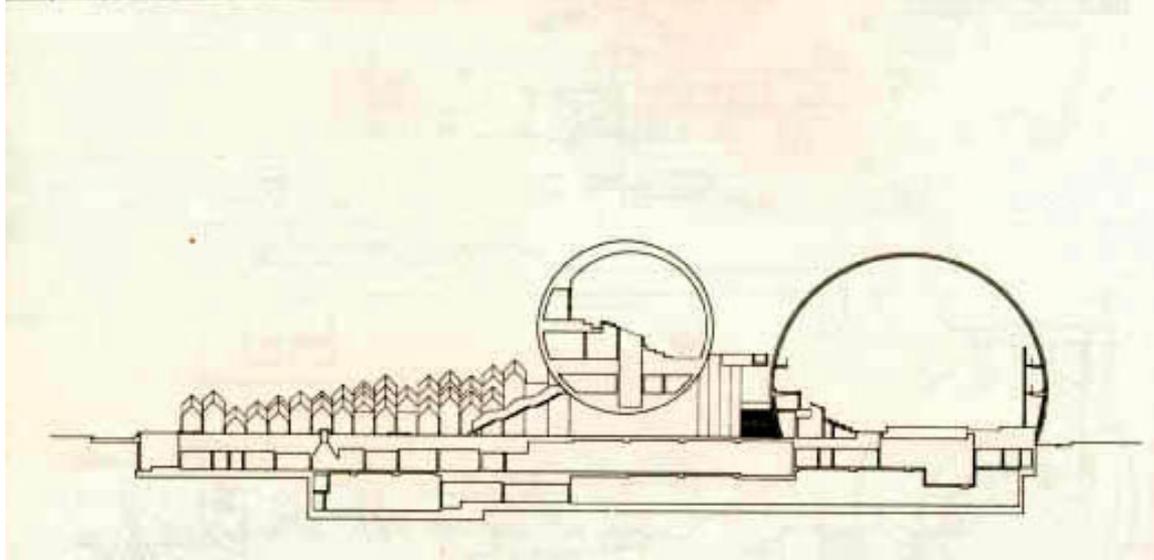
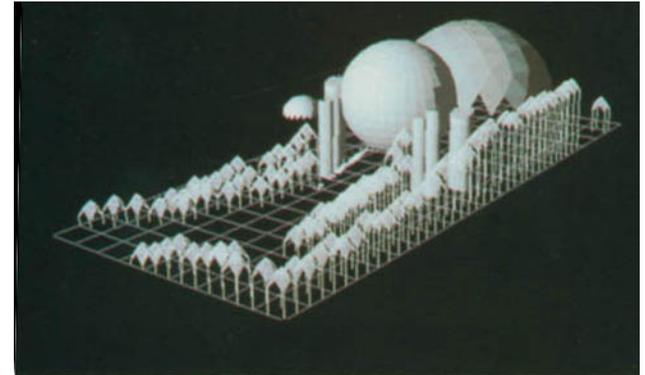
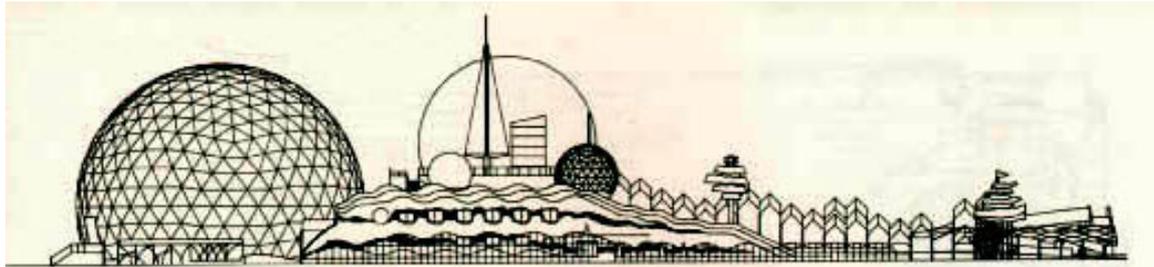
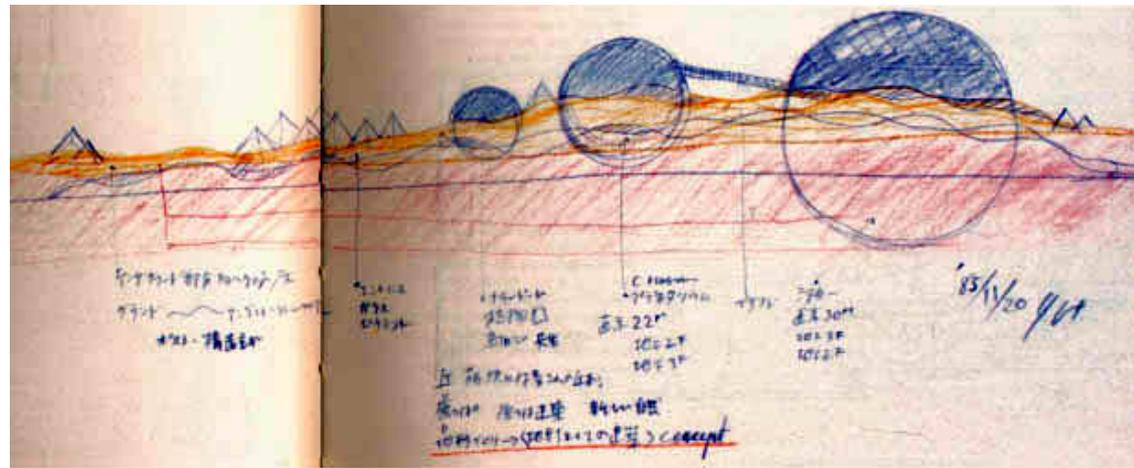


Lexicon 80 (1948) by Marcello
Nizzoli (1887-1969)

Architectural Design

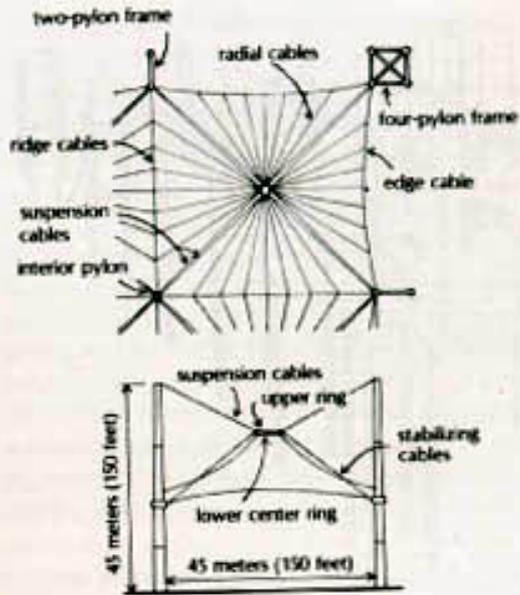
Itsuko Hasegawa, 1991

Shonandai Cultural Center



Haj Terminal

Horst Berger 1980



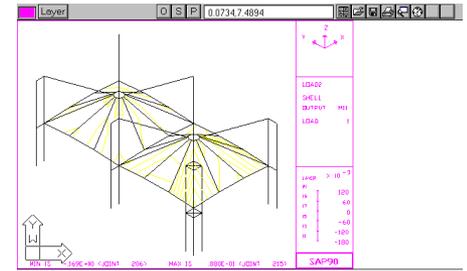
Initial Design



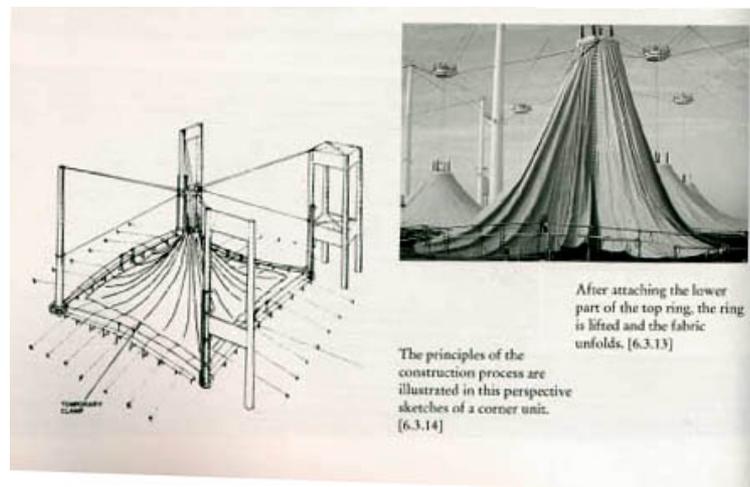
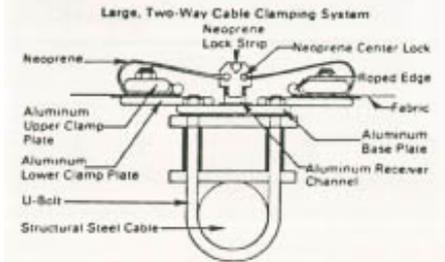
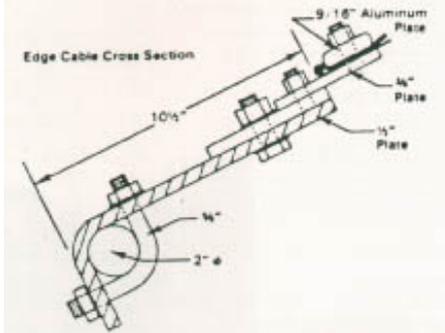
--JM Meeting with Horst 4/6/01



Completed Structure



Computer Analysis



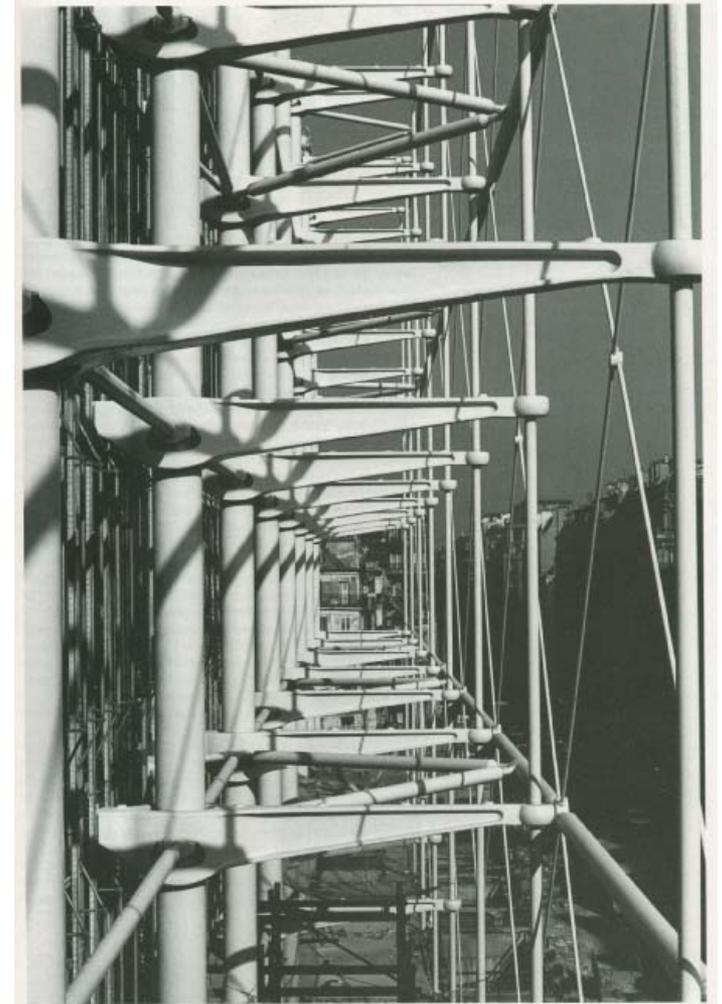
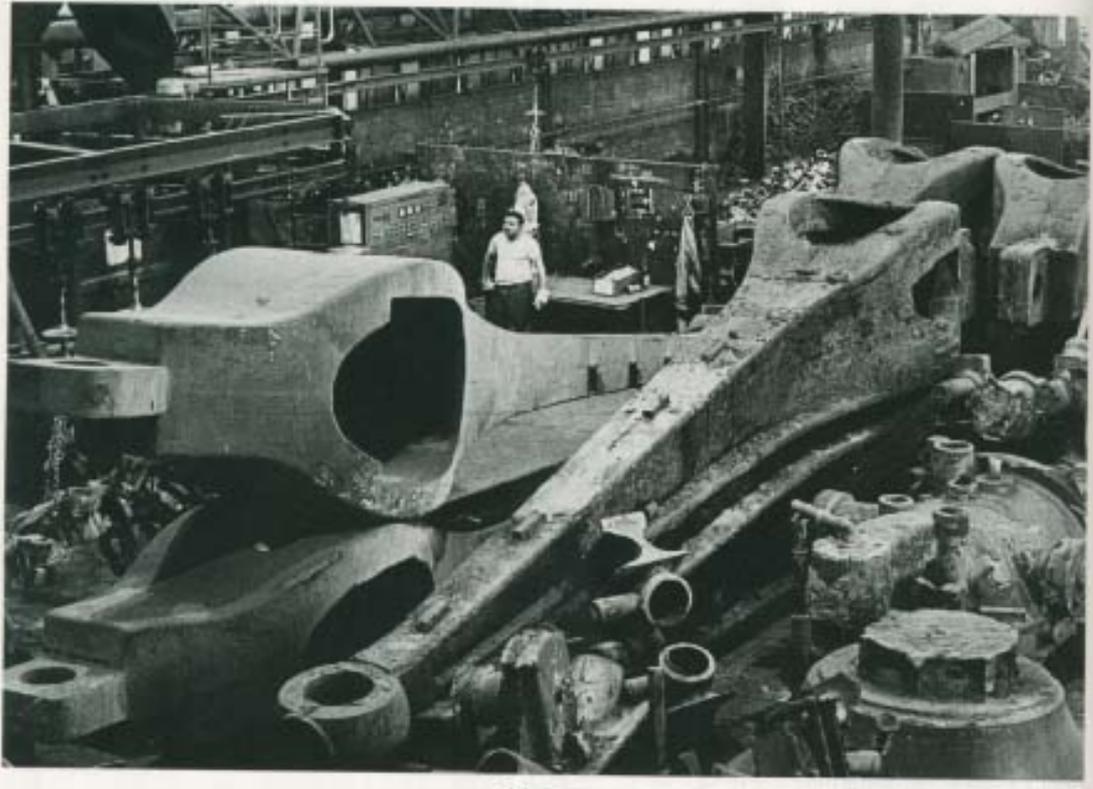
Assembly Planning



Detail Work

Centre Pompidou, Beauborg

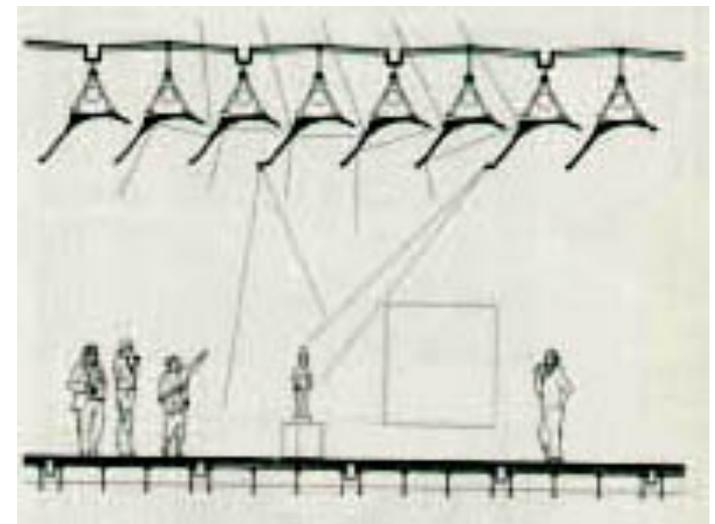
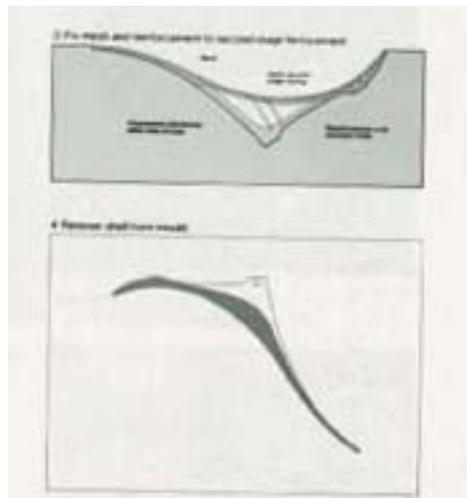
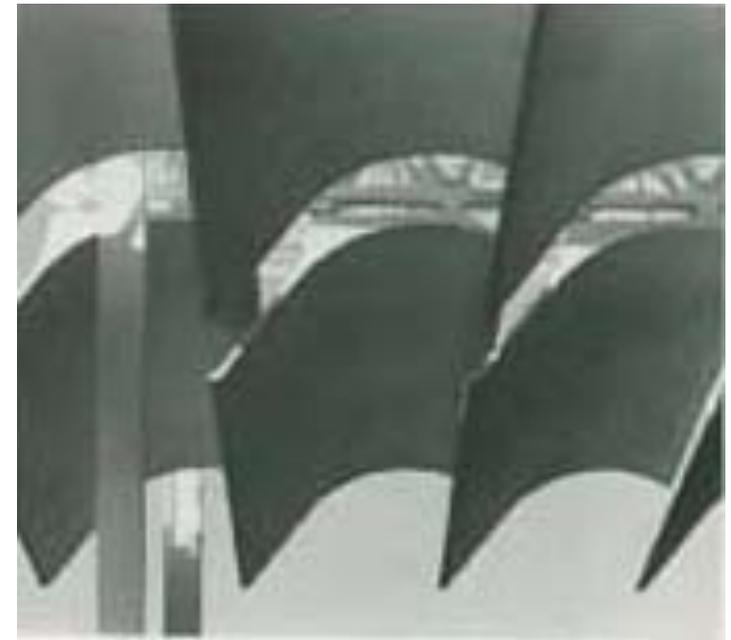
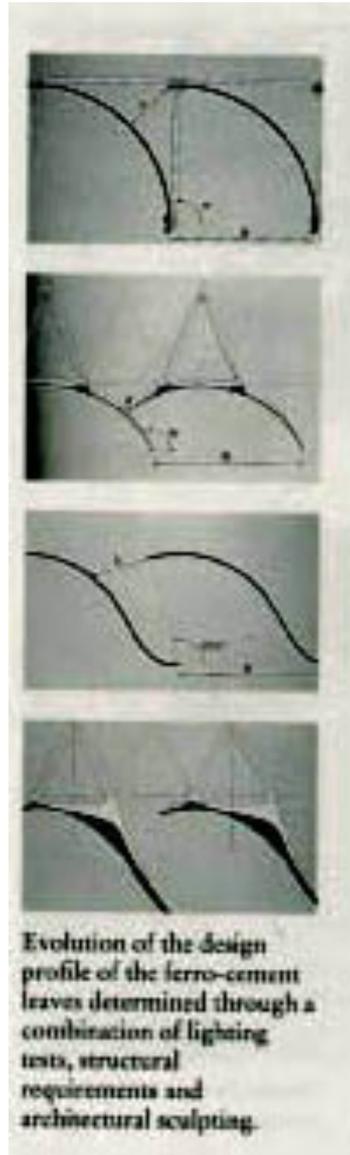
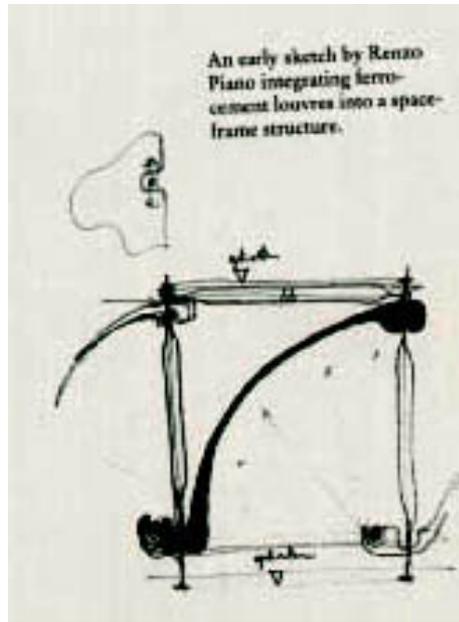
Richard Rogers, Renzo Piano, Ove Arup w/ Peter Rice

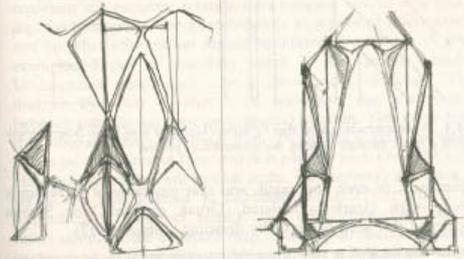


Design and Manufacture of Gerberettes

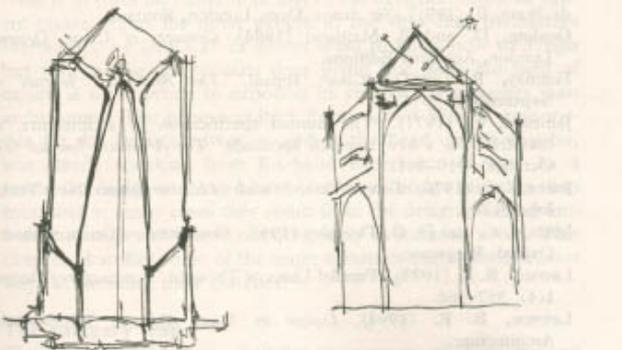
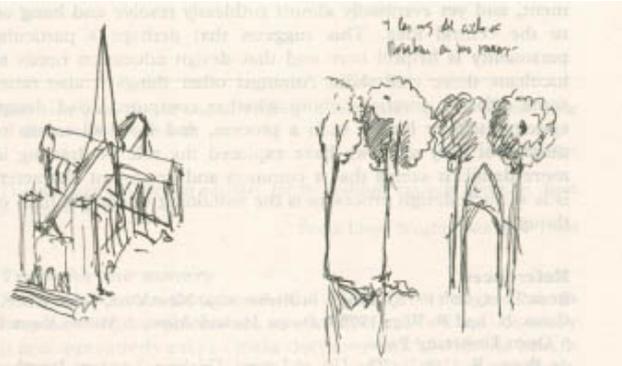
Natural Lighting Design

Renzo Piano, Peter Rice

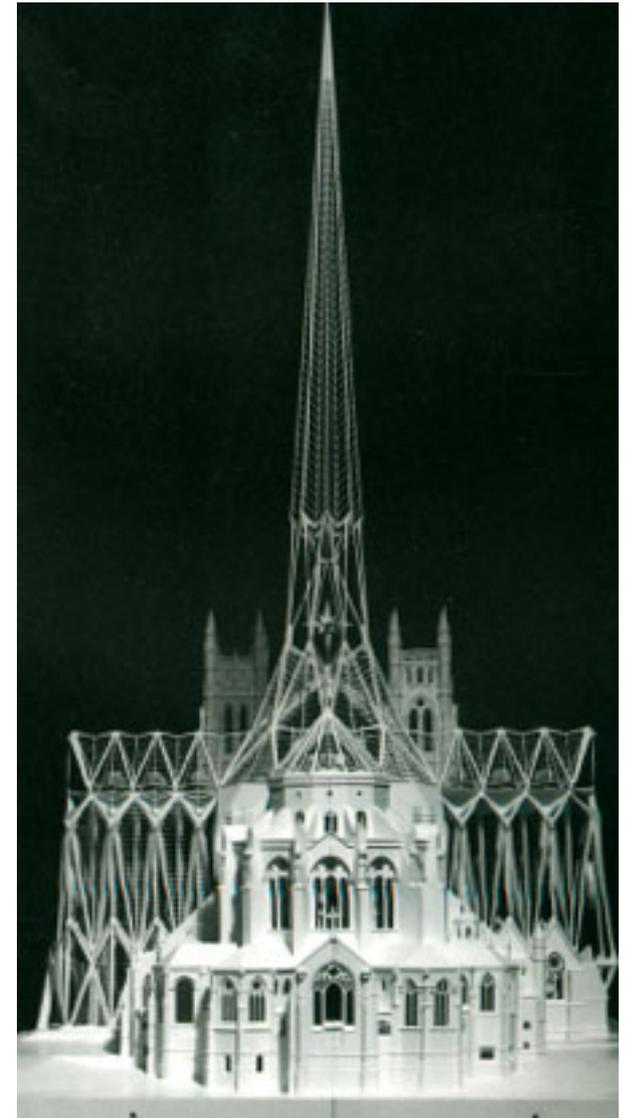
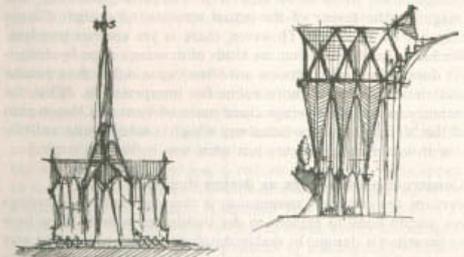
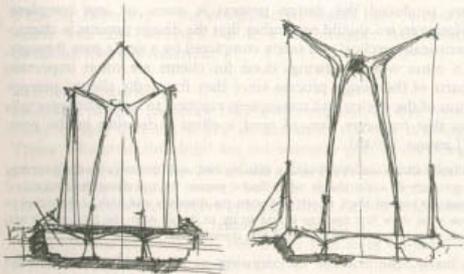




Calatrava



12.7 A sequence of design sketches by Santiago Calatrava for the cathedral of St John the Divine in New York



Cathedral of St. John the Divine

Design as Theme



Droog Design®

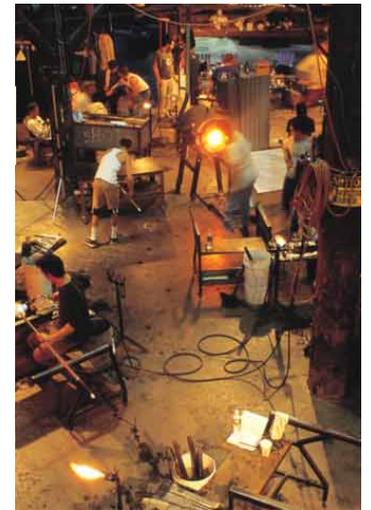
Droog Design stimulates discussion on design.
Droog Design is a selector, a collector, a developer, an initiator and a network.
Droog Design is not a studio or a producer. Droog criteria are inspired by product culture. Droog Design maintains a collection, but there's no showroom. Some items are a manifesto, others are more quiet.
The collection represents a mentality.

Since its debut during the International Furniture Fair in Milan in 1993, the [Droog collection] has been steadily growing.
Droog Design has won awards and so have some Droog products. Many are now to be seen in museums. Utrecht Centraal Museum bought the entire 1993-1999 collection.

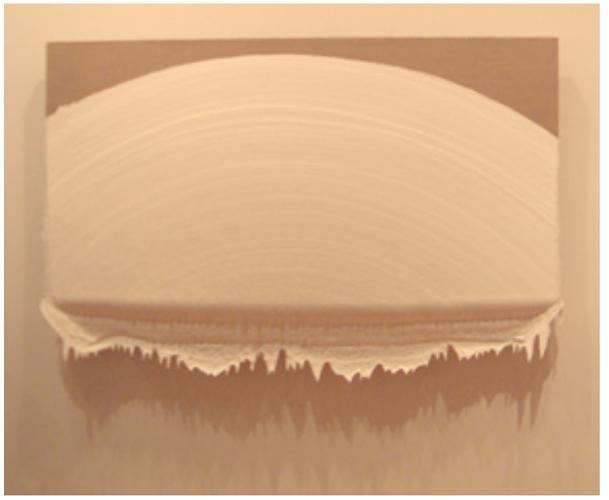
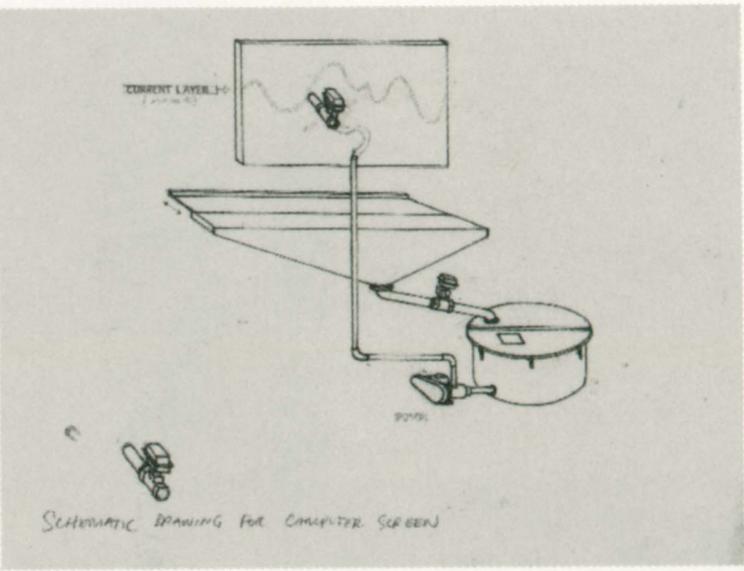
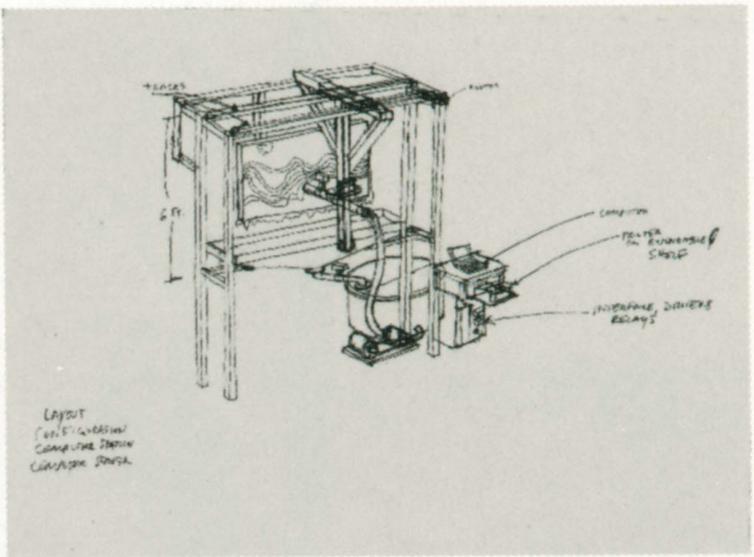
This is the framework:
Ideas have to be Droog.
Concepts must be valid.
Products should function.
Anything goes.

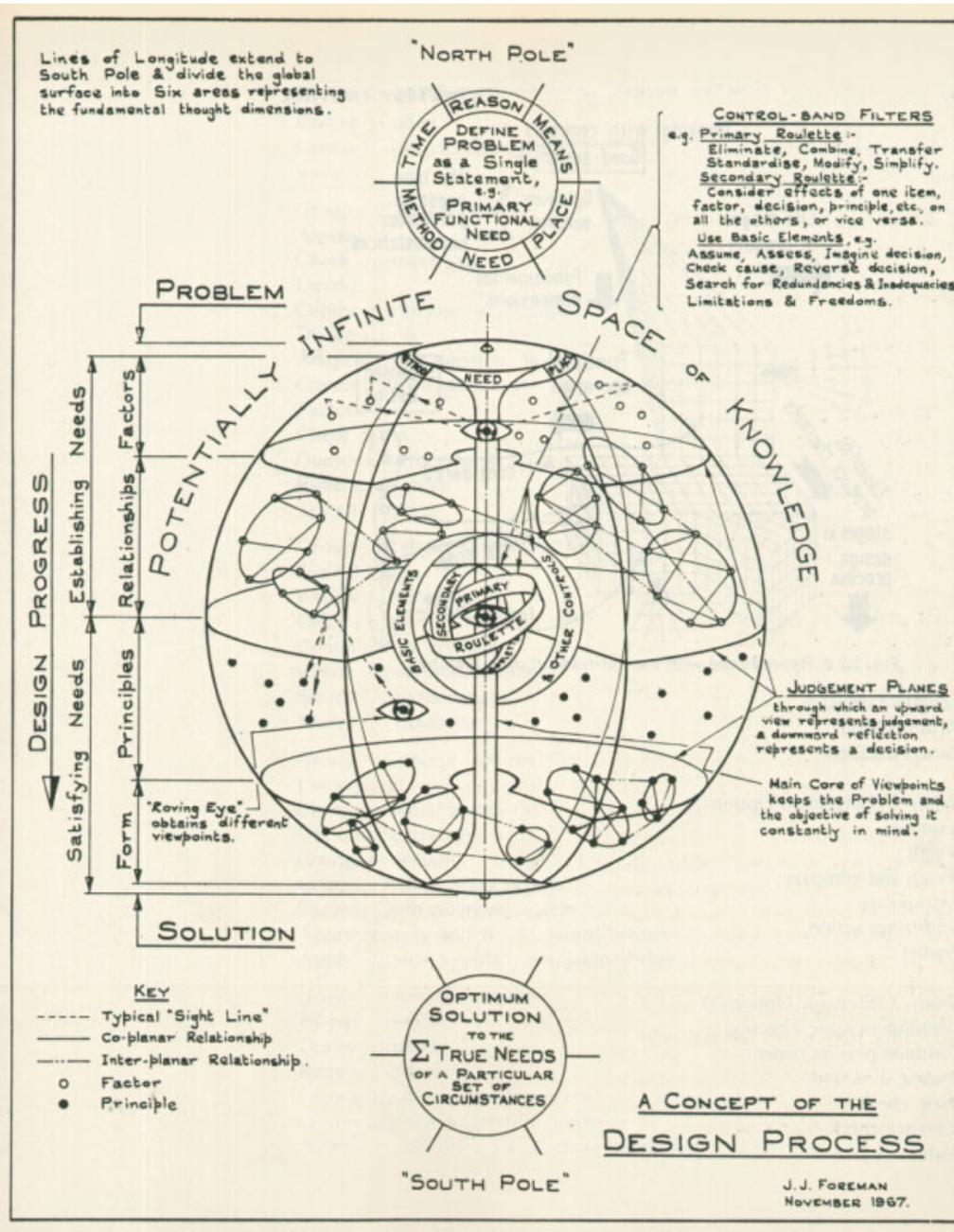


Chihuly

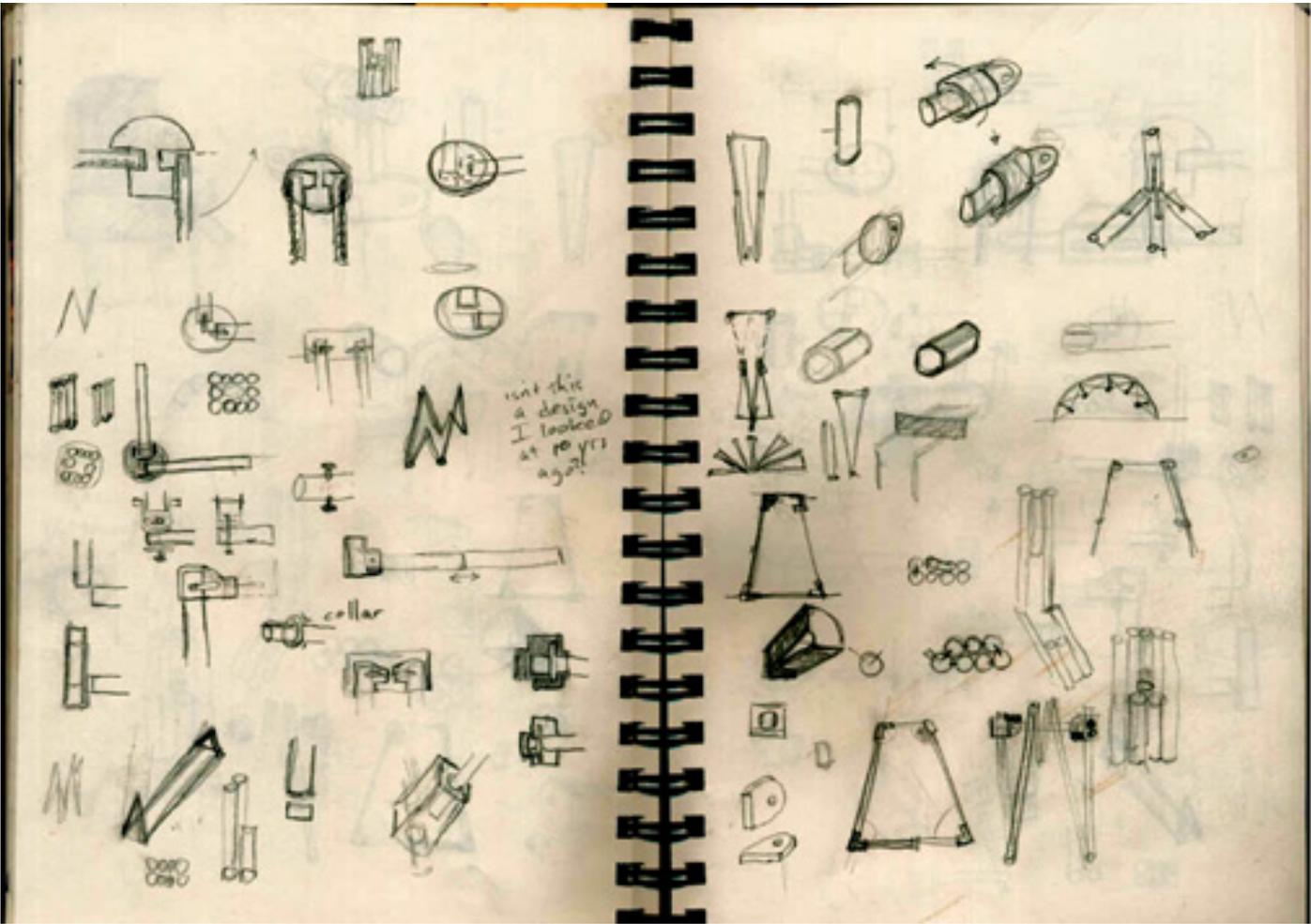


Roxy Paine





E. Matchett, Fundamental Design Method



with this
a design
I looked
at 10 yrs
ago!

collar

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