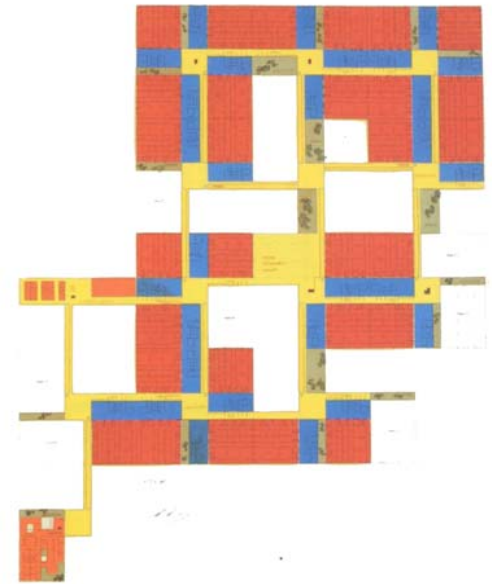
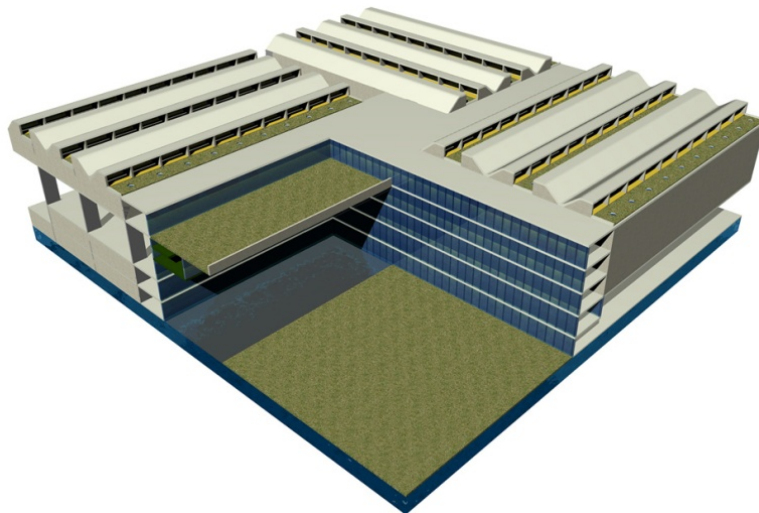




NTNU

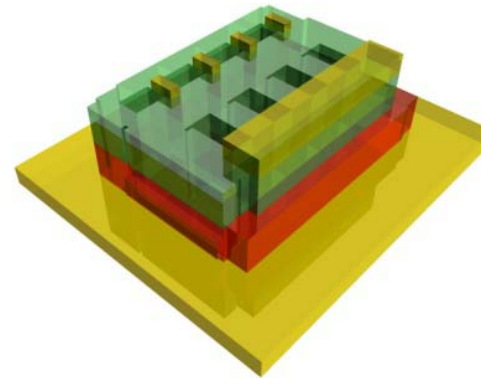
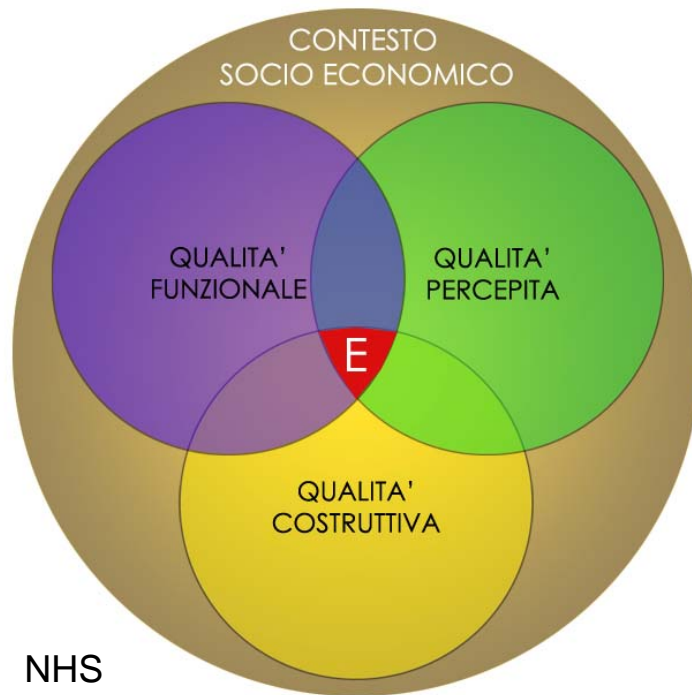
Innovation and Creativity

Morphological implications of passive control



"I didn't invent anything. I just designed an hospital that can be born, live and expand itself like an open hand", Le Corbusier

Venice Hospital, 1965

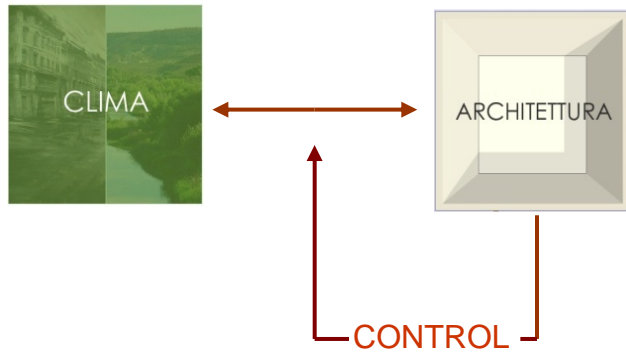


3 XV CENTURY

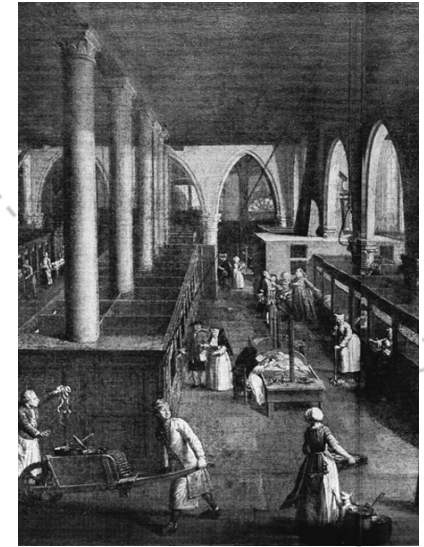
COURTYARDS, GALLERIES AND PORCHES

EXTERIOR / INTERIOR

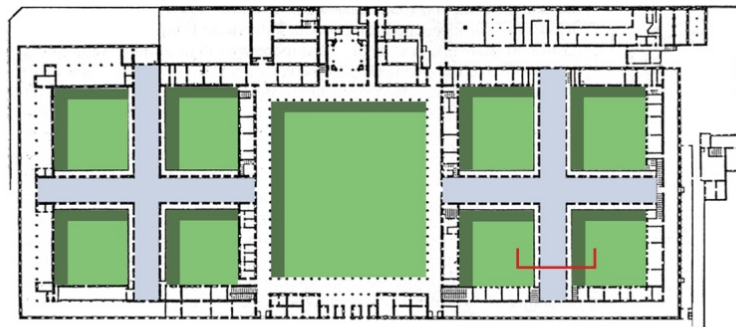
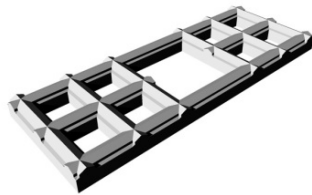
ENVIRONMENTAL DESIGN



THERAPEUTIC ROLE

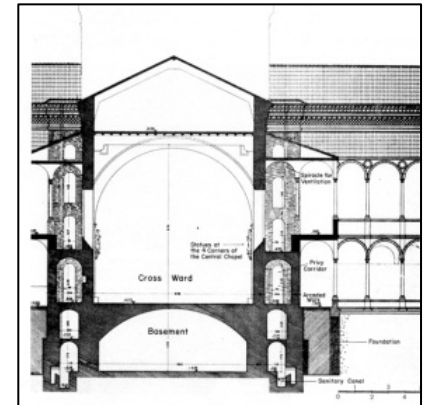


ABBAZIE OF CLUNY



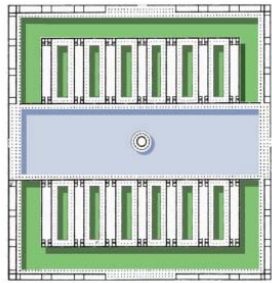
0 25 50m
6 15 30sec

OSPEDALE MAGGIORE, MILAN

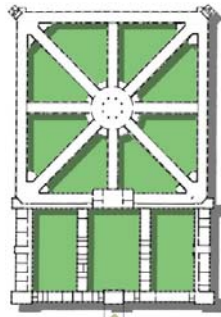


NTNU
Innovation and Creativity

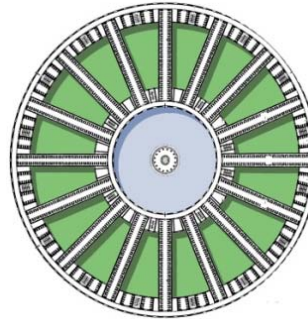
4 COURTYARD AND PAVILLIONS



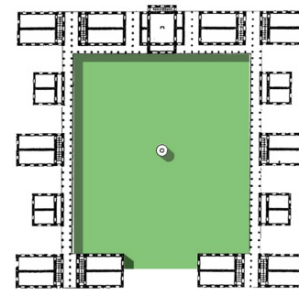
Durand



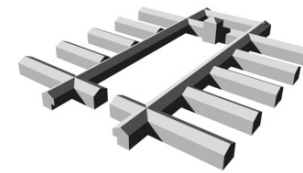
Desgodets



Poyet y Coqueau,

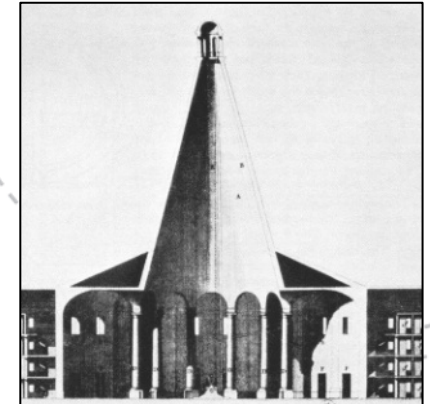


Royal Naval hospital

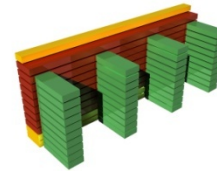
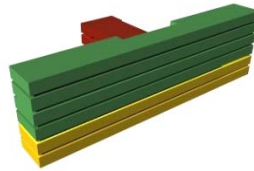
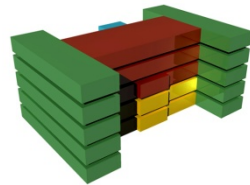
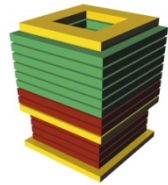


EXTERIOR/INTERIOR

THERAPEUTIC ROLE



5 COMPACT TYPOLOGIES

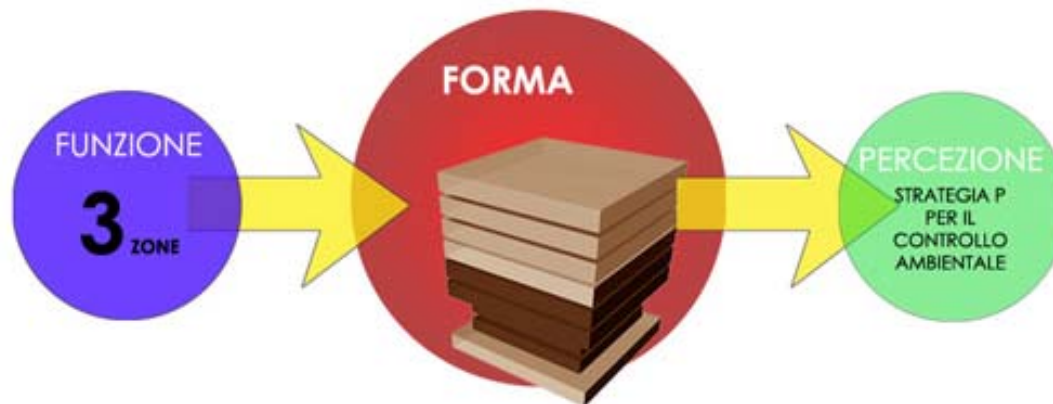


THREE ZONES

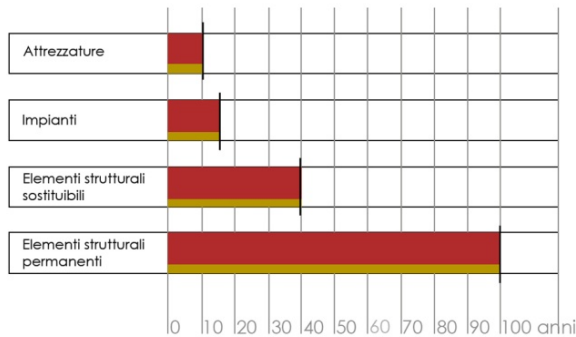
FUNCTIONAL PROGRAM

- General services
- Diagnosis and treatments
- Nursing wards

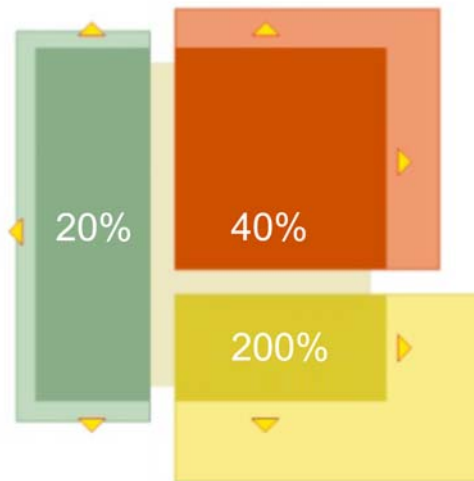
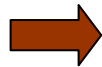
- Lift diffusion
- Increased cost of urban fields
- Pasteur and Koch discoveries - role of bacteria



6 1950 - MEDICAL SCIENCE ACCELERATION



Font: F. R. Prodi, A. Stocchetti

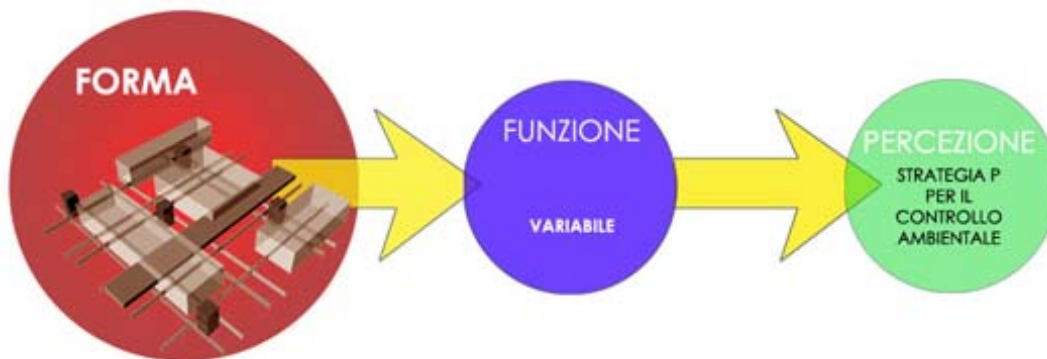


COMPLEXITY

UNPREDICTABILITY

"The study of functions doesn't represent anymore a solid base for hospitals architectural design. Functions change so often that architects will not have to aspire to the optimum between form and function. The real requirement is designing buildings that would allow functions to change"

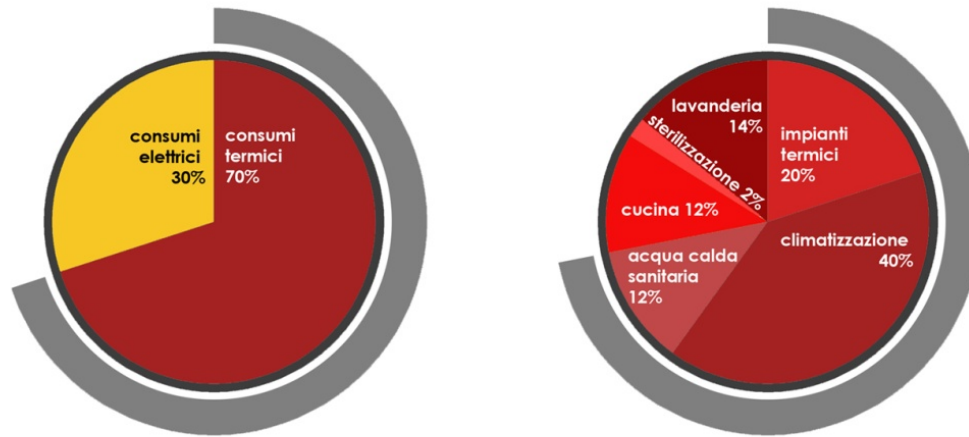
John Weeks



7 ENERGY CONSUMPTION

THERMAL DEMAND

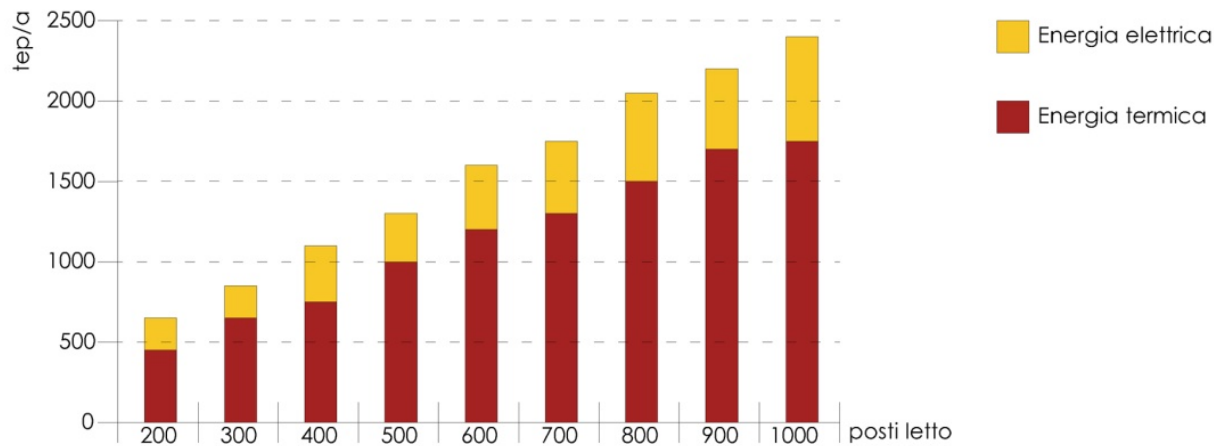
ALMOST 70% OF TOTAL CONS.



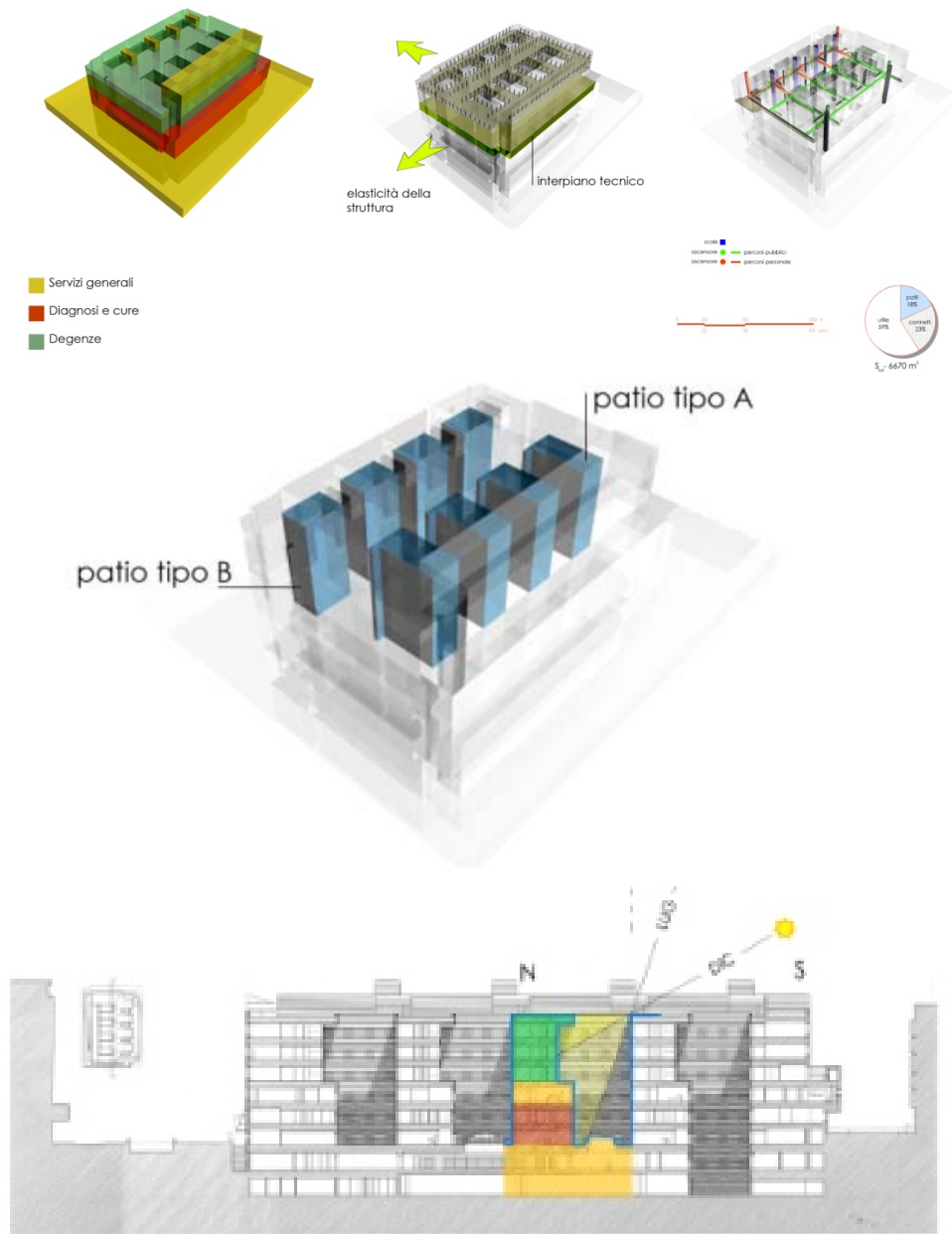
PRINCIPALI INDICATORI DI CONSUMO ENERGETICO ANNUO

Energia termica impiegata per	Consumo tep/p.l.
Riscaldamento	1,40
Usi tecnologici	0,80
Acqua calda	0,15
Lavanderia	0,20
Preparazione alimenti	0,02
Altri usi	0,03
Energia elettrica	0,70
Totale	3,60

Thermal energy used for environmental comfort represents more than two thirds of the total consumption. Font: ENEA, 1996



8 MORPHOLOGICAL ANALYSIS



SHAPE COEFFICIENTS

ENVIRONMENTAL BEHAVIOUR



Pediatric hospital Gregorio Marañón

Location: **Madrid**

Architect: **Rafael Moneo**

INDICI DI FORMA

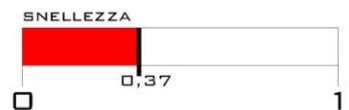
$$C = \frac{S_{eq}}{S_g}$$

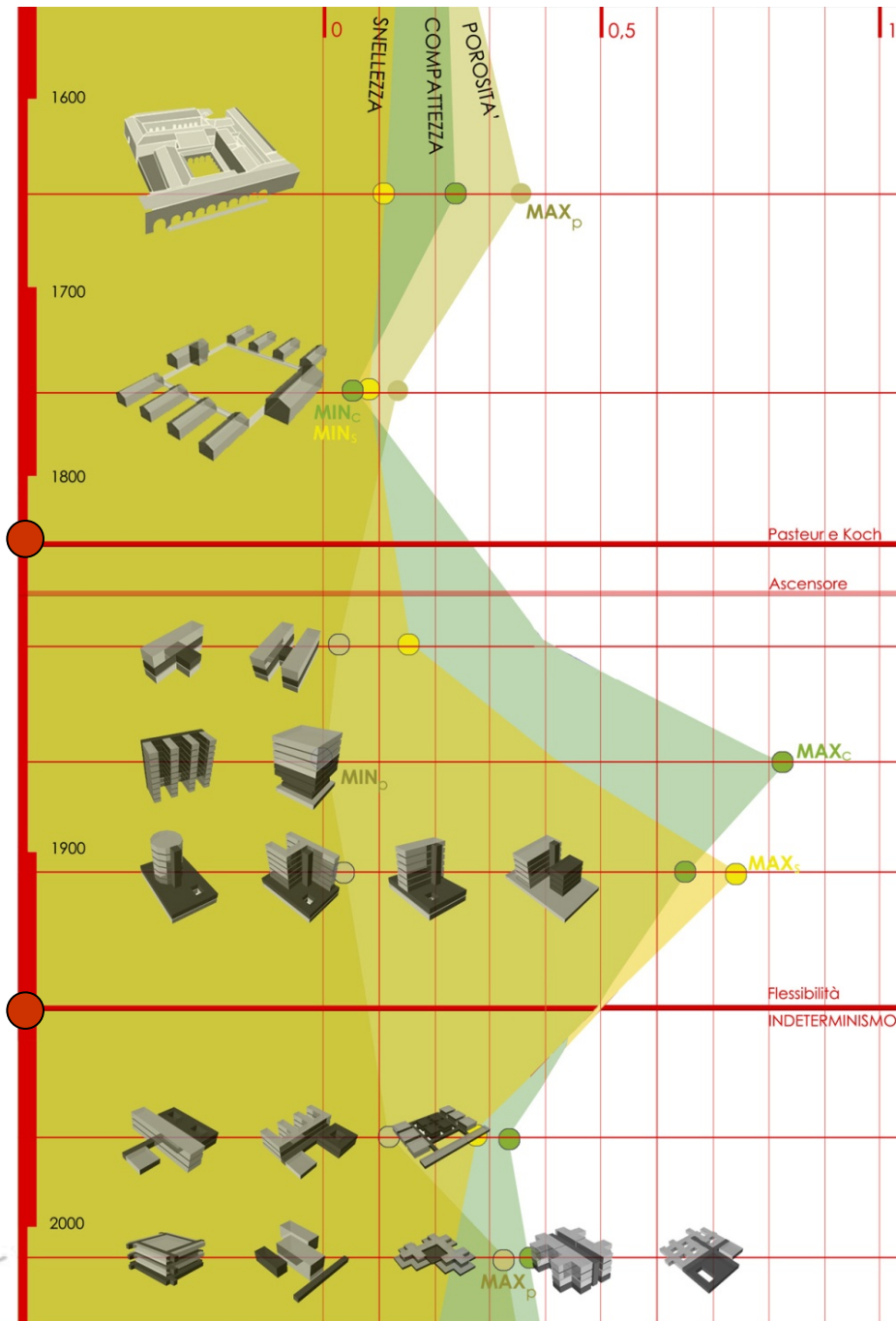


$$p = \frac{V_{ep}}{V_t}$$



$$e = \frac{h}{d}$$





COURTYARD AND PAVILLION TYPOLOGIES

- XV - XVIII CENT
therapeutic role of natural light and ventilation



COMPACT TYPOLOGIES

- XIX CENT.
role of bacteria, HVAC, lift



FLEXIBLE TYPOLOGIES

- XX CENT.
Medical science acceleration and functional organization unpredictability.

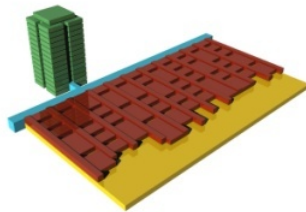
10 DETERMINISM

ATTEMPT OF FORECASTING CHANGE

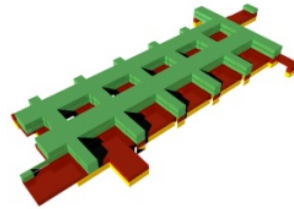
FORM OF ORGANISM

FUNCTIONAL PROGRAM

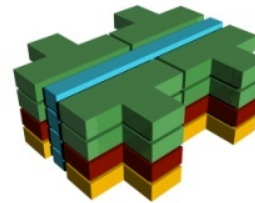
VERTICAL



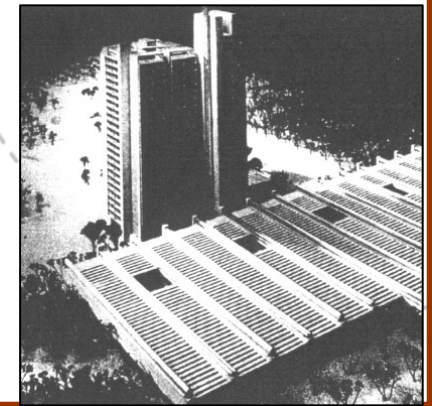
SLAB AND TOWER



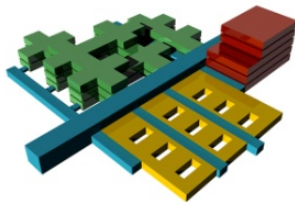
ARTICULATED SLAB



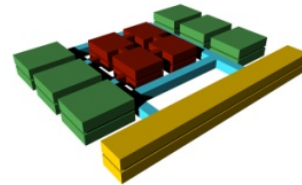
GALLERY



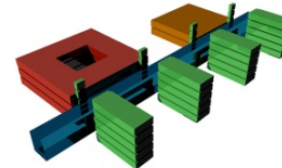
HORIZONTAL



MODULAR PLANT WITH COURTYARDS

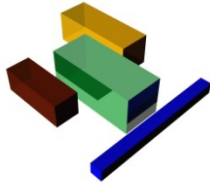


SPINE AND PAVILLIONS



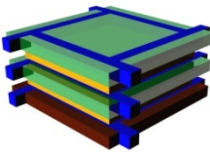
- General services
- Diagnosis and treatments
- Nursing wards

1

**ADAPTABLE BUILDING**

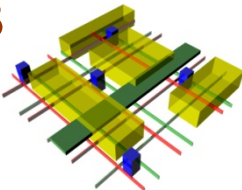
Isolated structures able to change independently

2

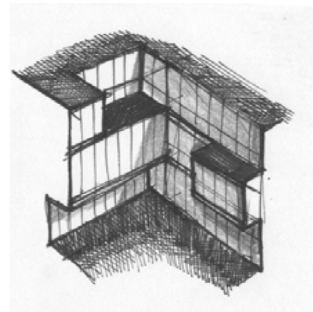
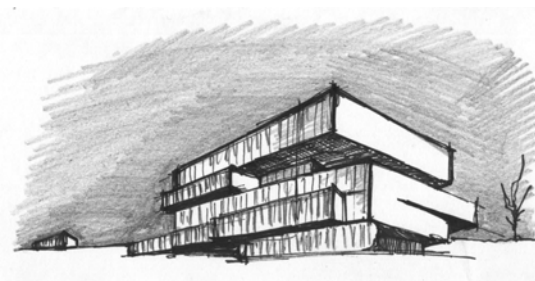
**UNIVERSAL BOX**

Box of big dimension – any point of the structure is able to host any sort of function

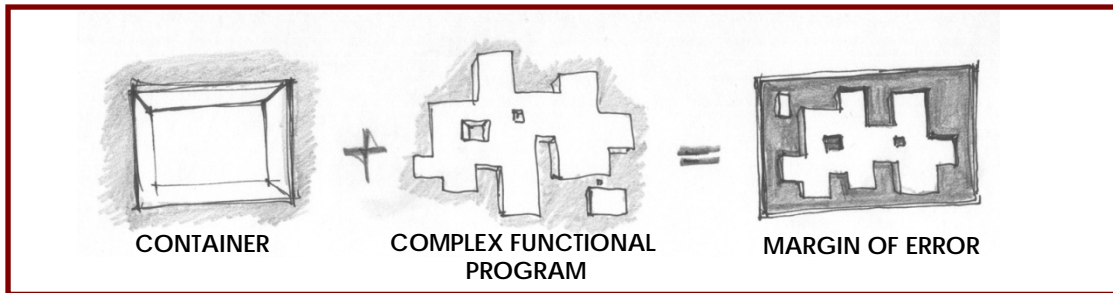
3

**MAT BUILDING**

The mail guarantees growth and order

ORGANISM SHAPE**SKIN****VERTICAL PARTITIONS****HORIZONTAL PARTITIONS****INTERNAL PARTITIONS****VERTICAL CONNECTIONS****RELATIONS MAIL****FUNCTIONAL BLOCKS****STRUCTURE****SPATIAL CELLS**

12 INTERSTITIAL SPACES



FONDAMENTAL QUALITY – COLLECTING INSIDE THE PERIMETER INTERSTITIAL SPACES, SMALL FRAGMENTS OF AIR AND DAYLIGHT WHOSE CONDITIONS MIGHT BE CONTROLLED AS AN INTERNAL SPACE

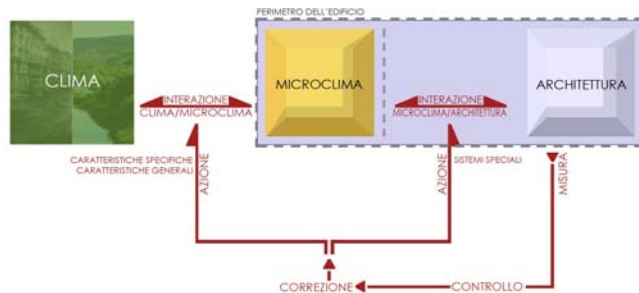
INTERSTITIAL SPACES

INDIFFERENT VERSATILE SPACE

ZEIDLER

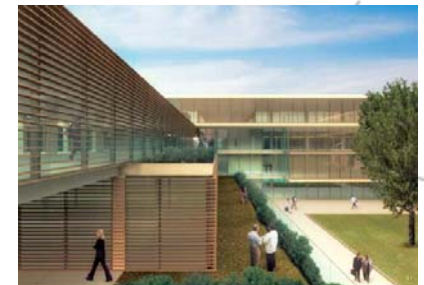
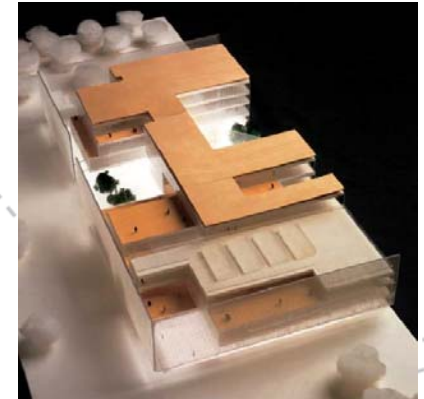
AVAILABLE SPACES

JOHN WEEKS



PHYSICAL EXPRESSION

FLEXIBILITY



MORPHOLOGICAL CHARACTERISTIC → ENVIRONMENTAL QUALITY

VERSATIL INTERSTITIAL SPACES
INTERNAL TO THE PERIMETER

ENVIRONMENTAL SENSITIVITY
FORM/CLIMATE

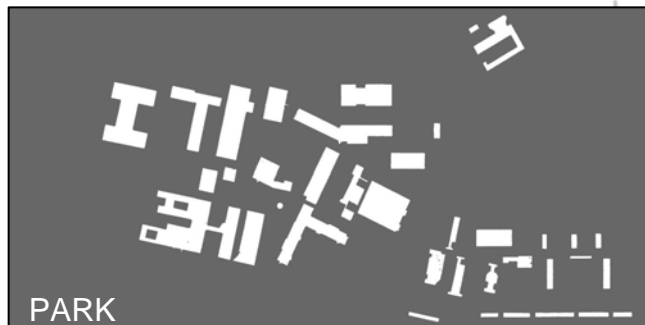
13 ENVIRONMENTAL CONTROL

STRATEGIES

INTERSTITIAL SPACES



ADAPTABLE BUILDING

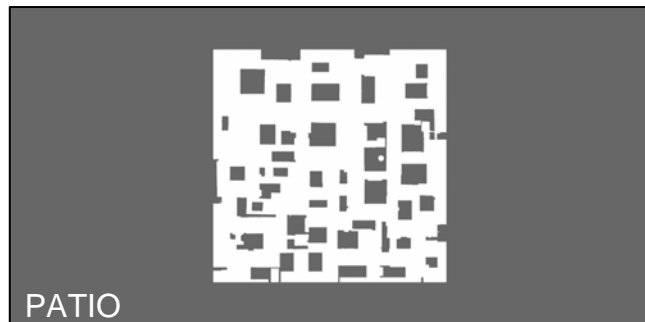


PARK

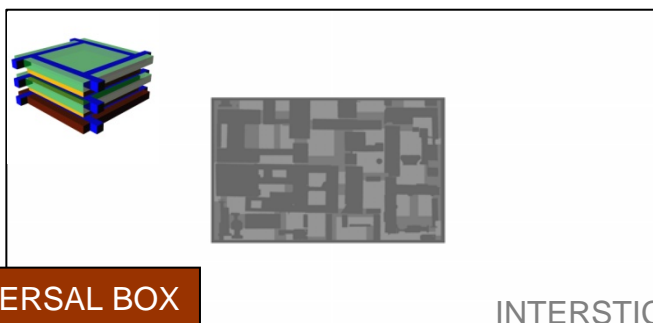


MAT BUILDING

NO EXTERIOR, IN-BETWEEN



PATIO



UNIVERSAL BOX

INTERSTICE LOW COMPARTIMENT. / EDICOLAR ARCH.

