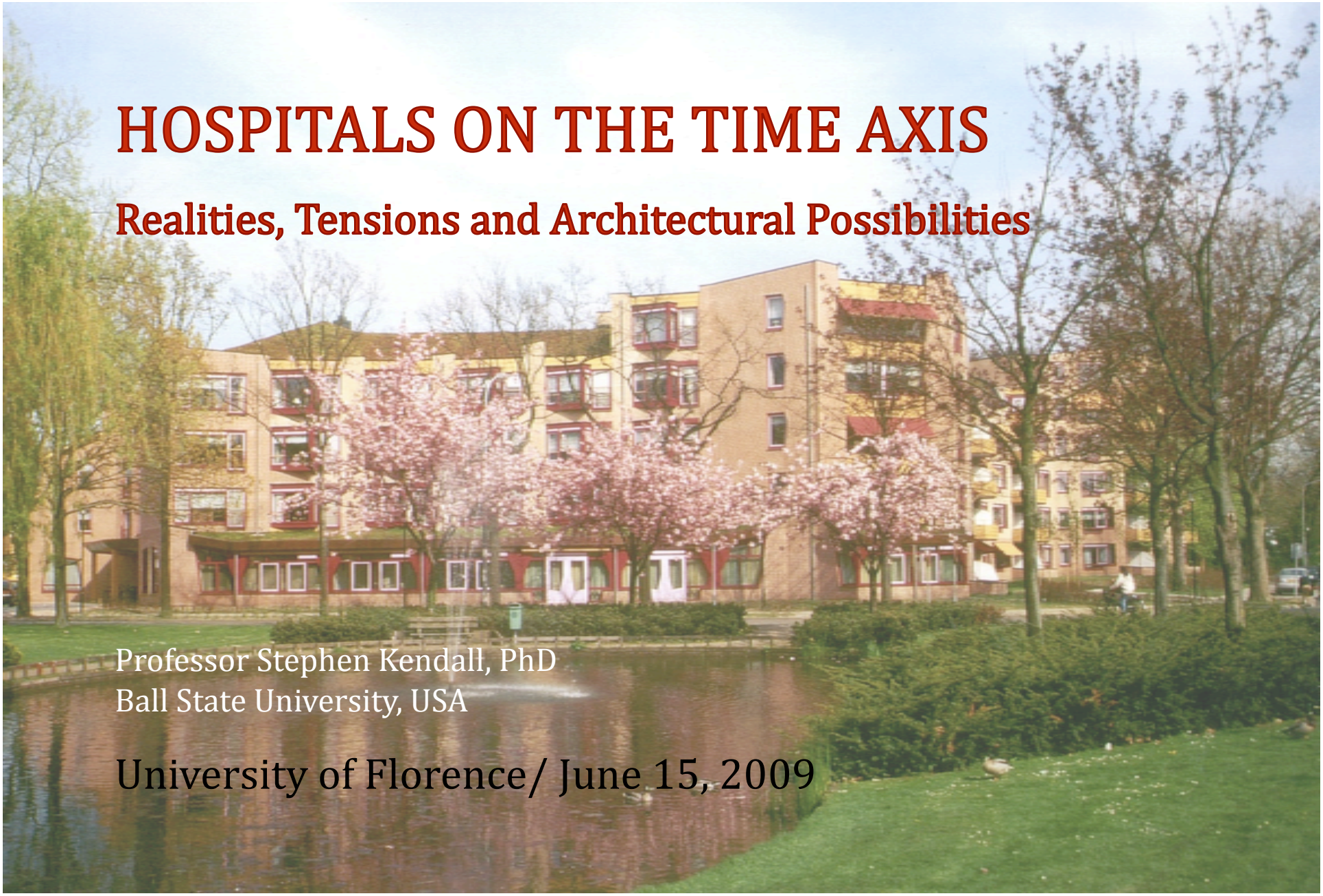


HOSPITALS ON THE TIME AXIS

Realities, Tensions and Architectural Possibilities

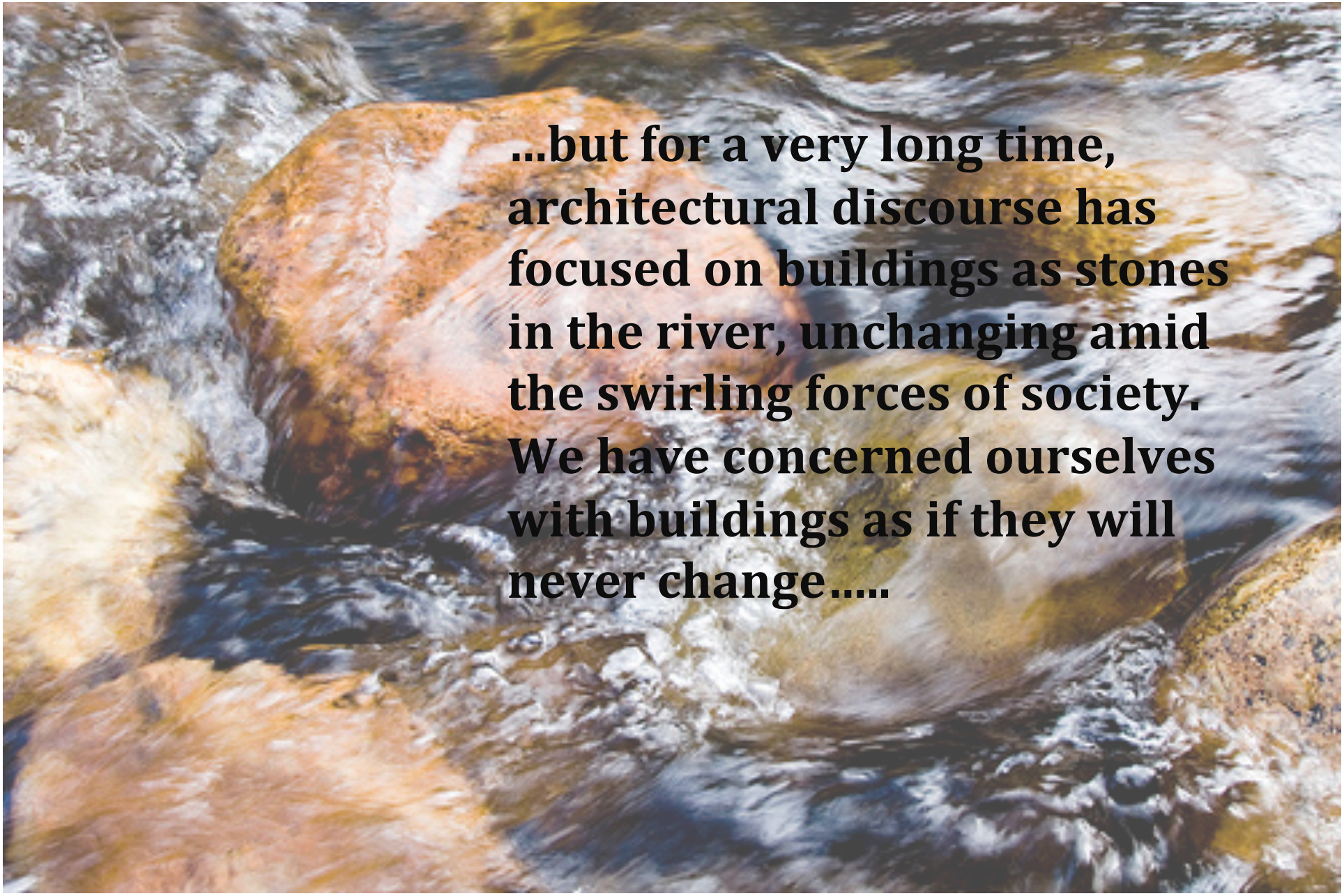
Professor Stephen Kendall, PhD
Ball State University, USA

University of Florence/ June 15, 2009

REALITIES

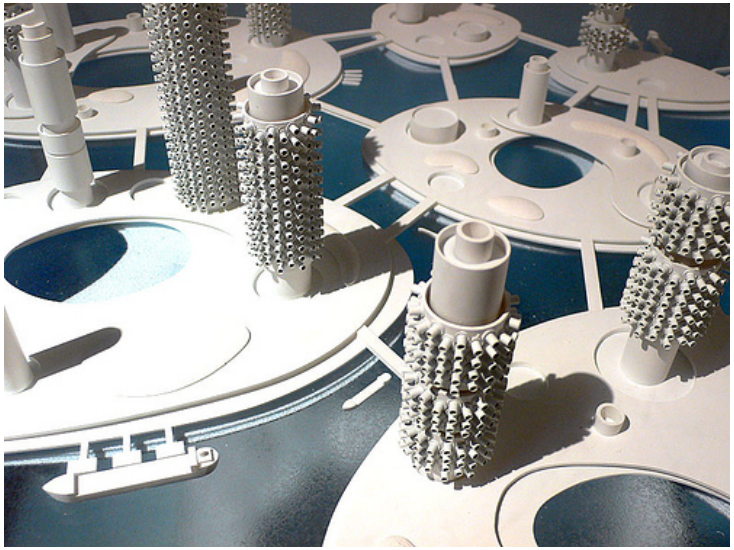
Like cities, hospitals are never finished....

The fact that hospitals undergo change has become a subject of interest on an international level.


...but for a very long time,
architectural discourse has
focused on buildings as stones
in the river, unchanging amid
the swirling forces of society.
We have concerned ourselves
with buildings as if they will
never change.....

The view of buildings as essentially static become enshrined in "functionalism". With enough scientific measurement, we could finally get the evidence to finally "get it right". Architects wanted respectability, too…

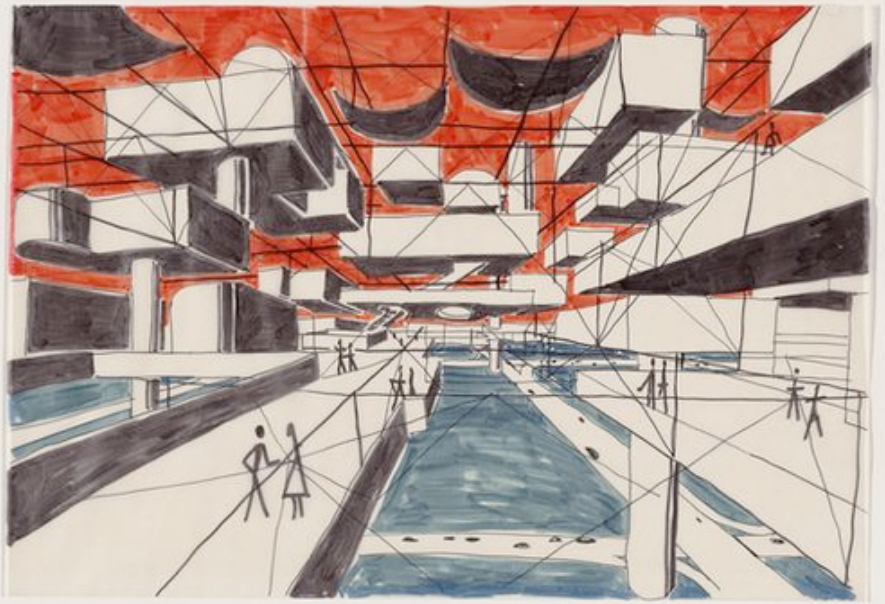
The detailed "architectural brief" became the necessary first step to design…



The idea of change has been formally explored.

For example, the Metabolists in Japan…and Yona Friedman in France. The idea of architecture as infrastructure …… responding to social mobility.

…impossible without centralized power
…only small projects were built and are rigid…



Hospitals on the Time Axis

So, while in general, architects have seen their work as resisting time, (and most histories of architecture focus on the monuments) there are signs of different ways of thinking.

In the late 20th century, handling change was very considered to be largely "technical".

Hospitals on the Time Axis

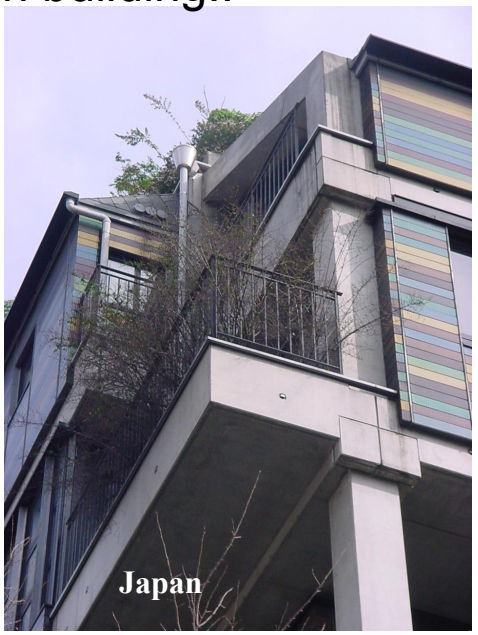
Heroic efforts were focused on the special building...

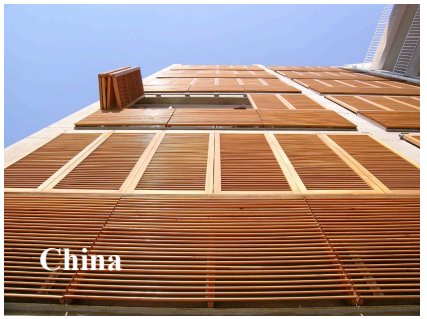
Meanwhile, the office building and the shopping center – very ordinary kinds of buildings – were already up for constant change.

Here, open building came into its own without much fuss and with no ideology…

A growing number of clients are asking for housing that accommodates change

Residential open building..





Hospitals on the Time Axis

Where does the hospital or medical clinic come into this picture?

Hospitals on the Time Axis

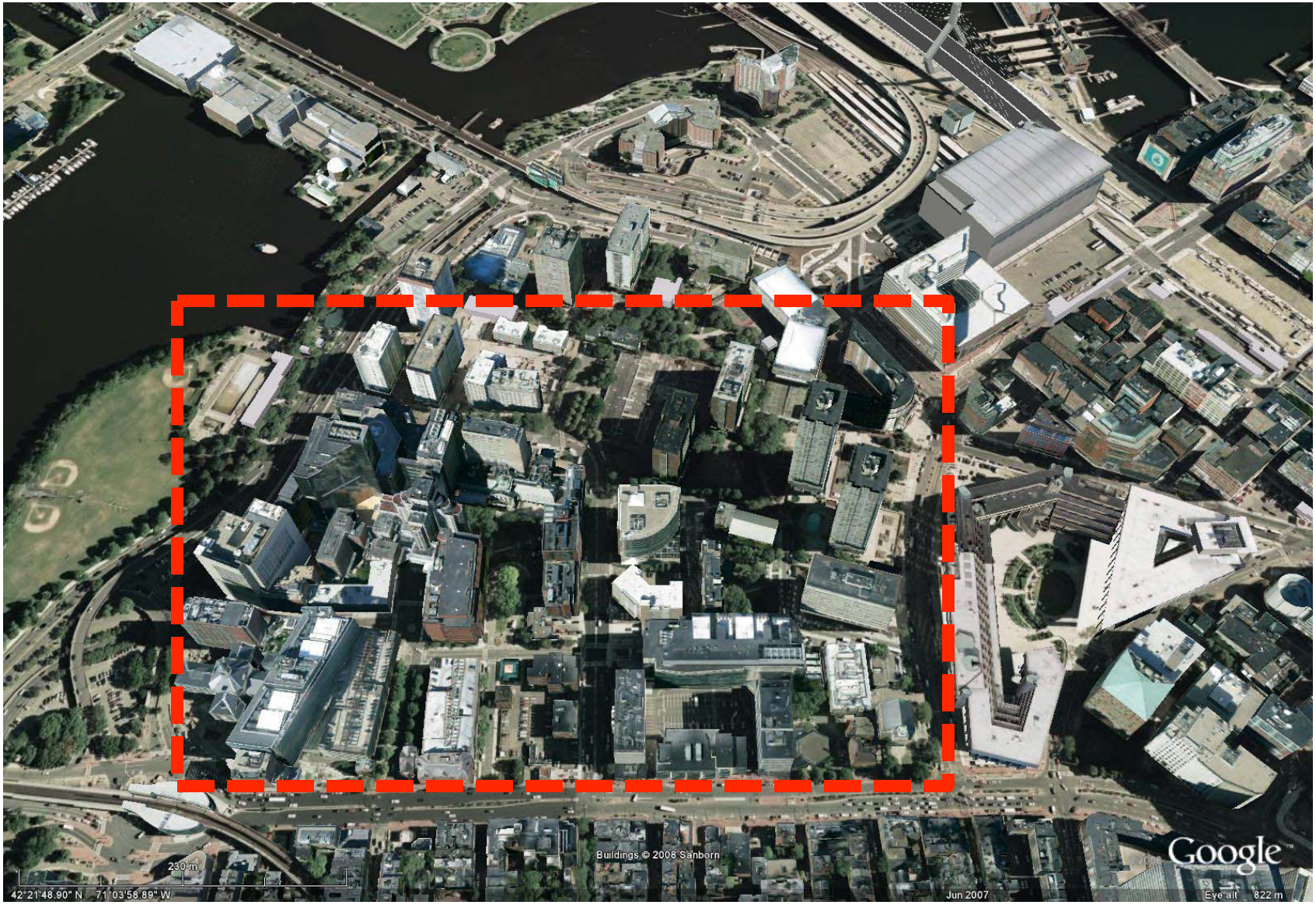
TENSIONS

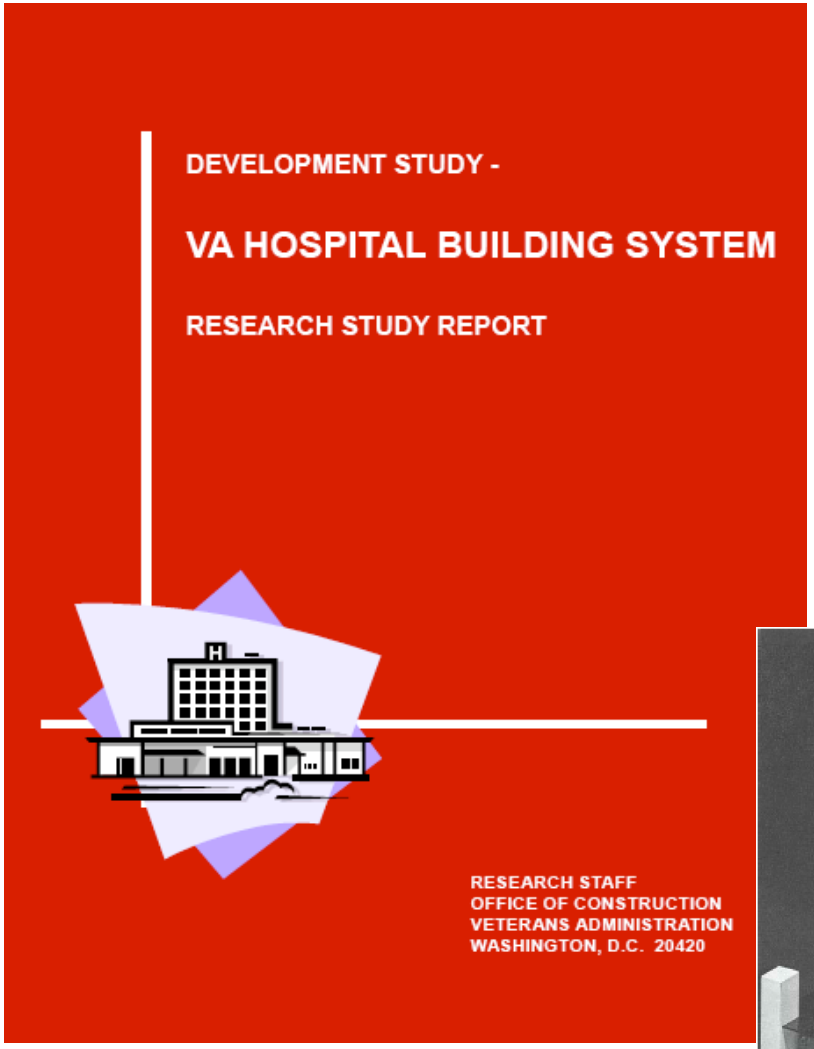
There are strong tensions between the constant change of practices, regulations and medical equipment…

and the idea of stable and curative places of wellness

The tensions are a matter of scale, quality, view of life, and architectural form…

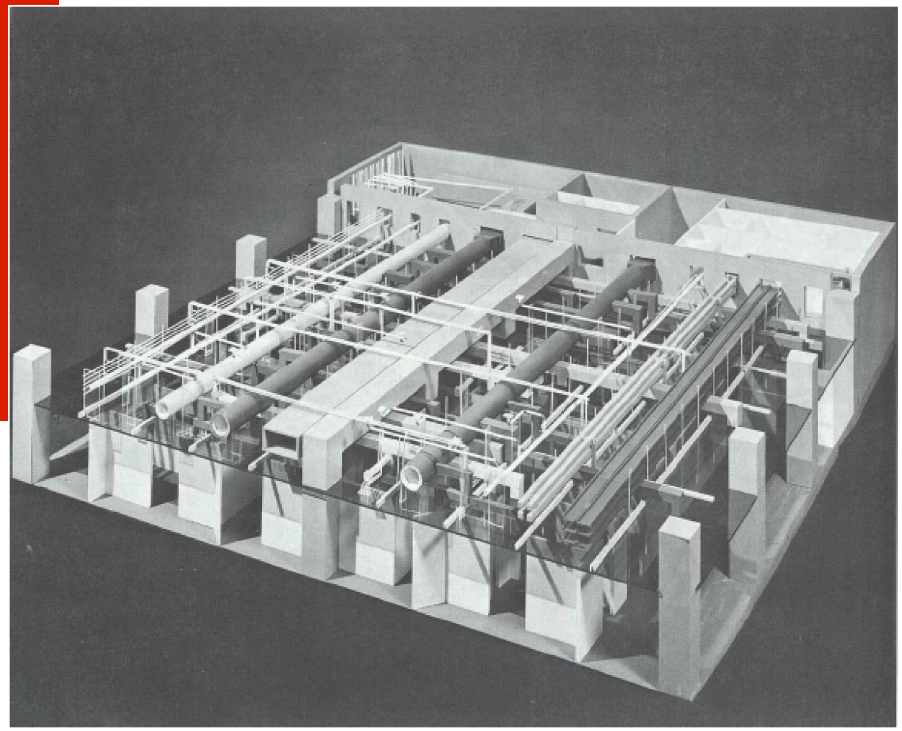
Then there are the tensions between the individual human being and the large urban hospital





…we learned to make space standards, process standards, and design manuals.

…examples include the US Veterans Administration's 800-page manual…



...groundbreaking hospitals such as the McMaster Hospital in Canada were built in 1972 at the height of the "systems building" era...planned for change...

Now, we see a new generation of clients demanding "change-ready" hospitals…in many countries…

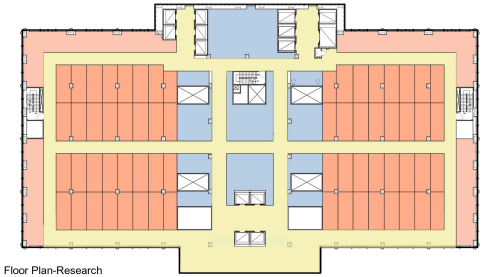
How well do their architects resolve the tensions between the hospital as a machine for changing realities of healthcare, and the curative center of wellness and healing?

I think the answer is not very well.

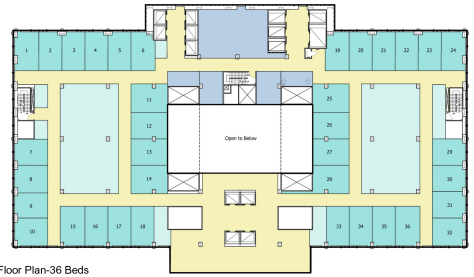
Architectural possibilities

We need many examples so we can study and compare them…

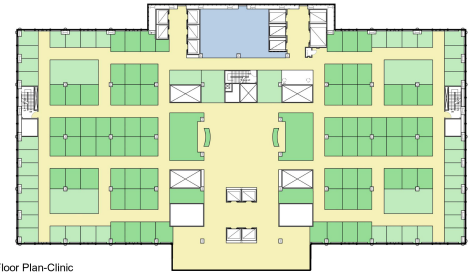
Each floor can accommodate different functions



Floor Plan-Research

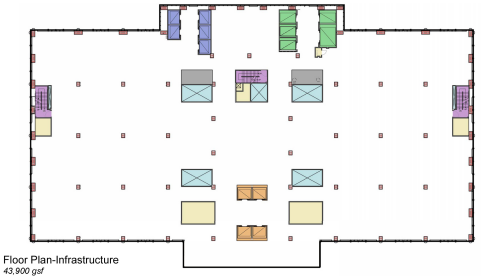


Floor Plan-36 Beds

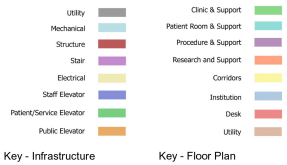


Floor Plan-Clinic

Floor Plan-14 Beds



Floor Plan-Infrastructure
43,900 gsf



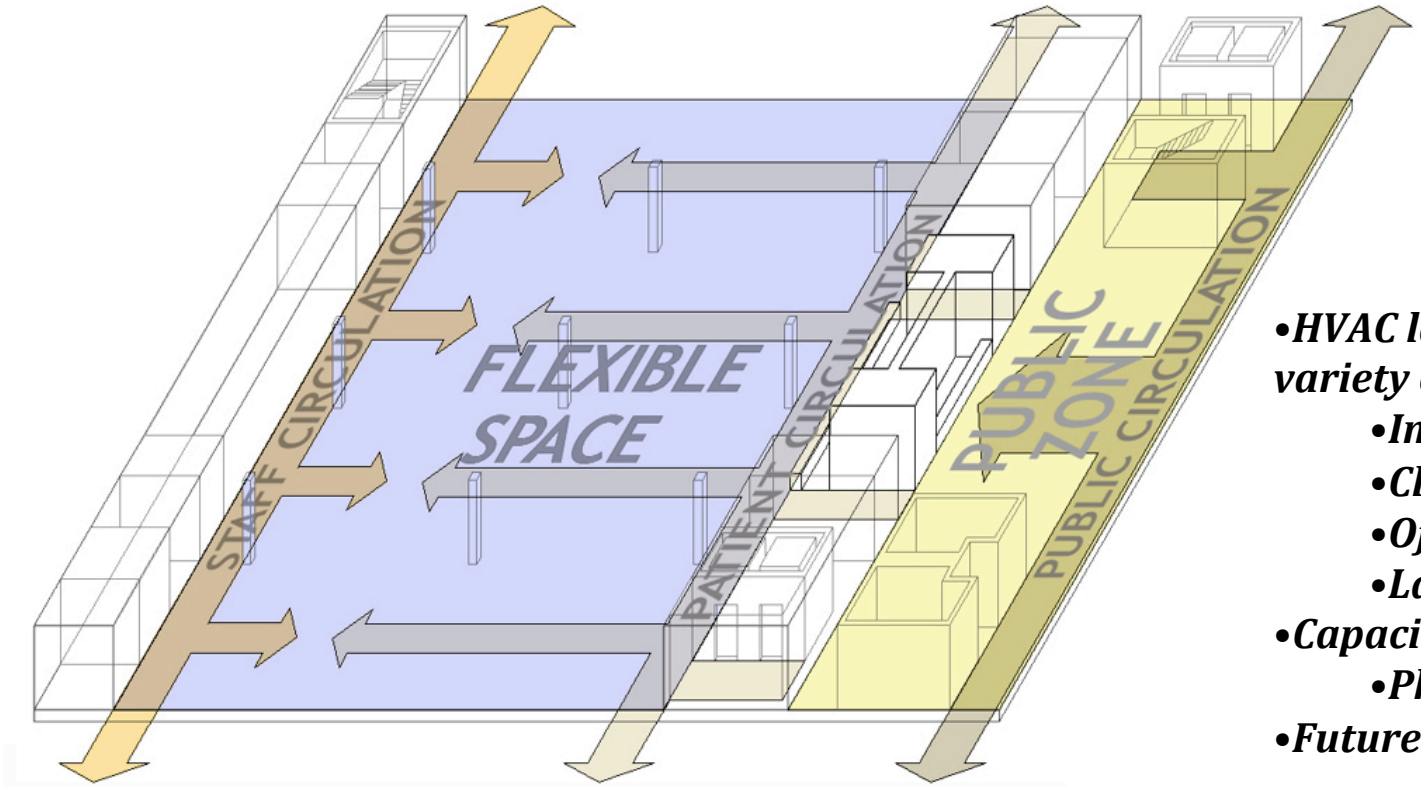
Phase Three

The “core and shell” or base building

The Gonda Building at the Mayo Clinic
Ellerbe Becket, Architects

Hospitals on the Time Axis

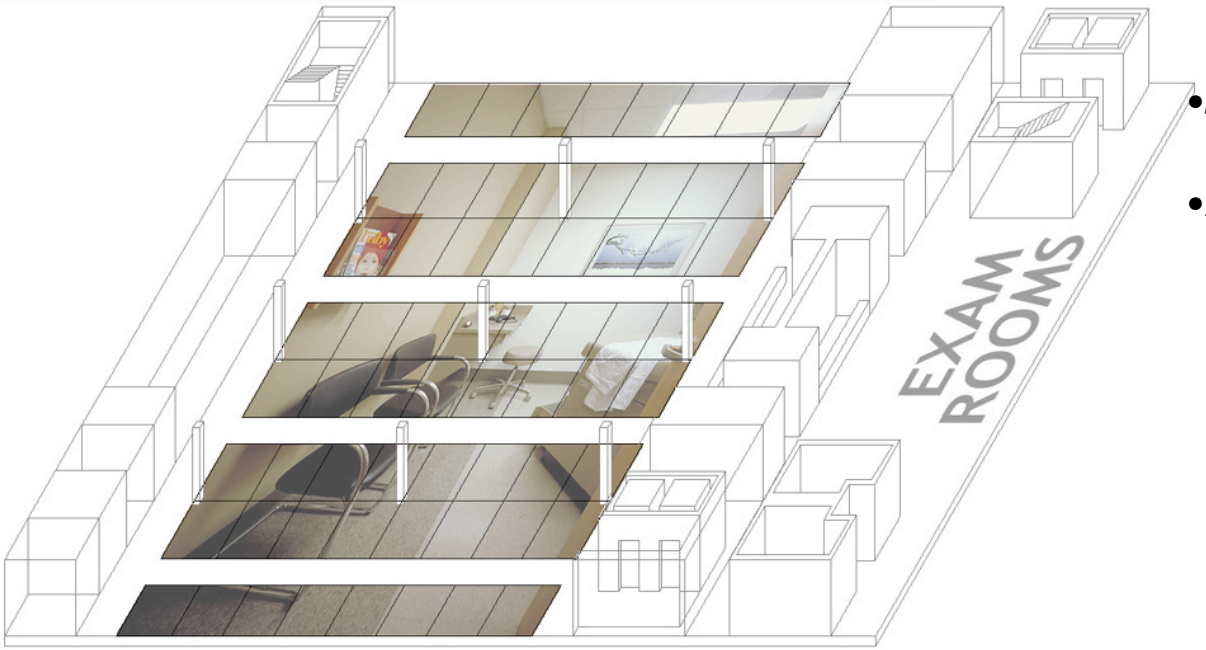
Conceptual Model - Separation of Circulation



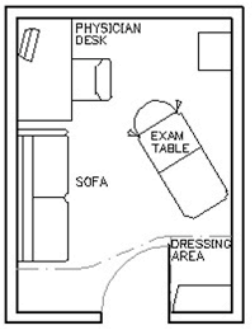
- *HVAC layout to allow for a variety of functional layouts*
  - *Imaging*
  - *Clinic*
  - *Office*
  - *Labs*
- *Capacity for any use*
  - *Physician Office*
- *Future capacity for change*

The Gonda Building at the Mayo Clinic
Ellerbe Becket, Architects

Conceptual Model - Clinical Module



- *10' x 13' common module*
  - *Exams*
  - *Offices*
  - *Treatment*
- *Supervision*
  - *Staff Efficiency/Teaming*
- *Remodeling flexibility*

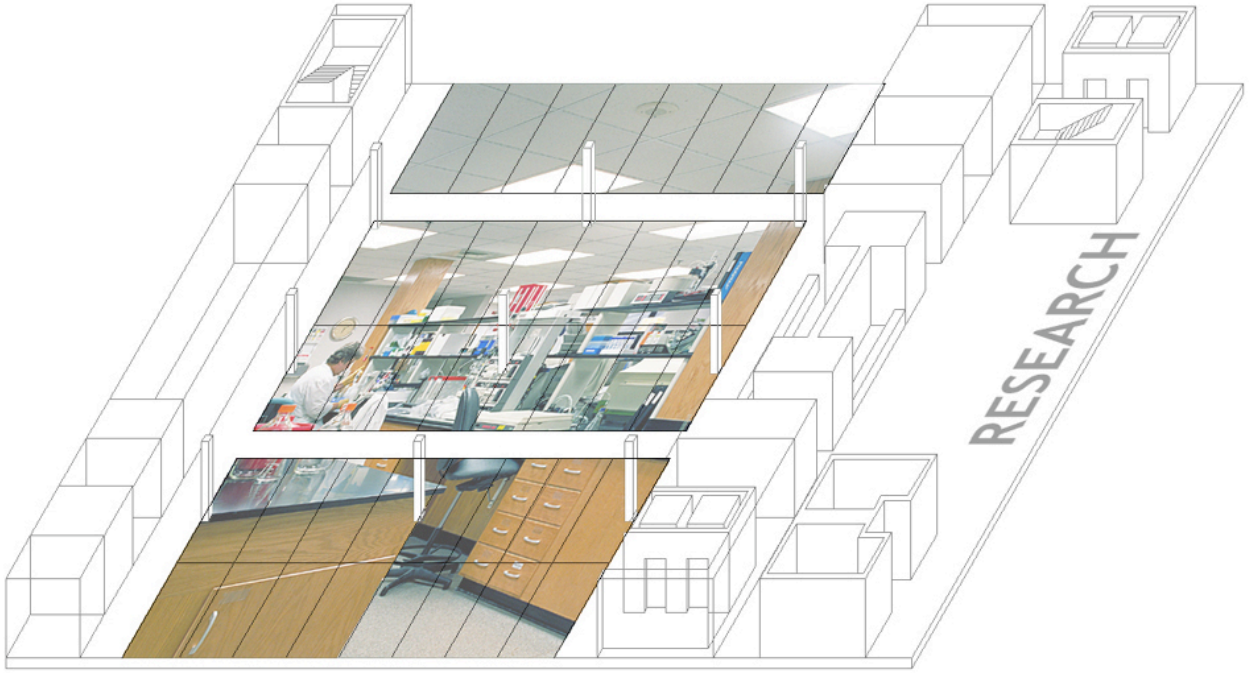


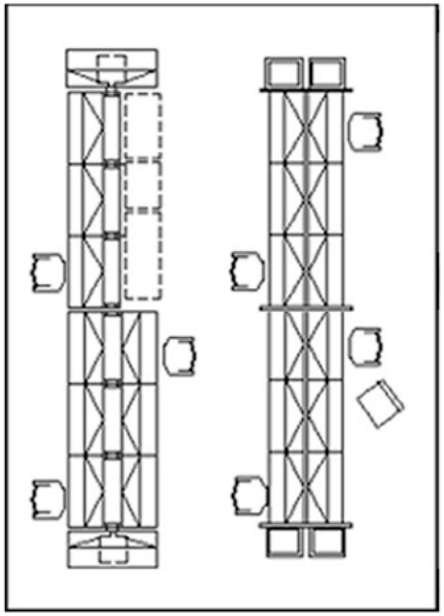
The Gonda Building at the Mayo Clinic
Ellerbe Becket, Architects

Hospitals on the Time Axis

Conceptual Model - Research Module

•10' x 13' common module
•Offices
•Labs
•Supervision
•Staff Efficiency/Teaming
•Remodeling flexibility

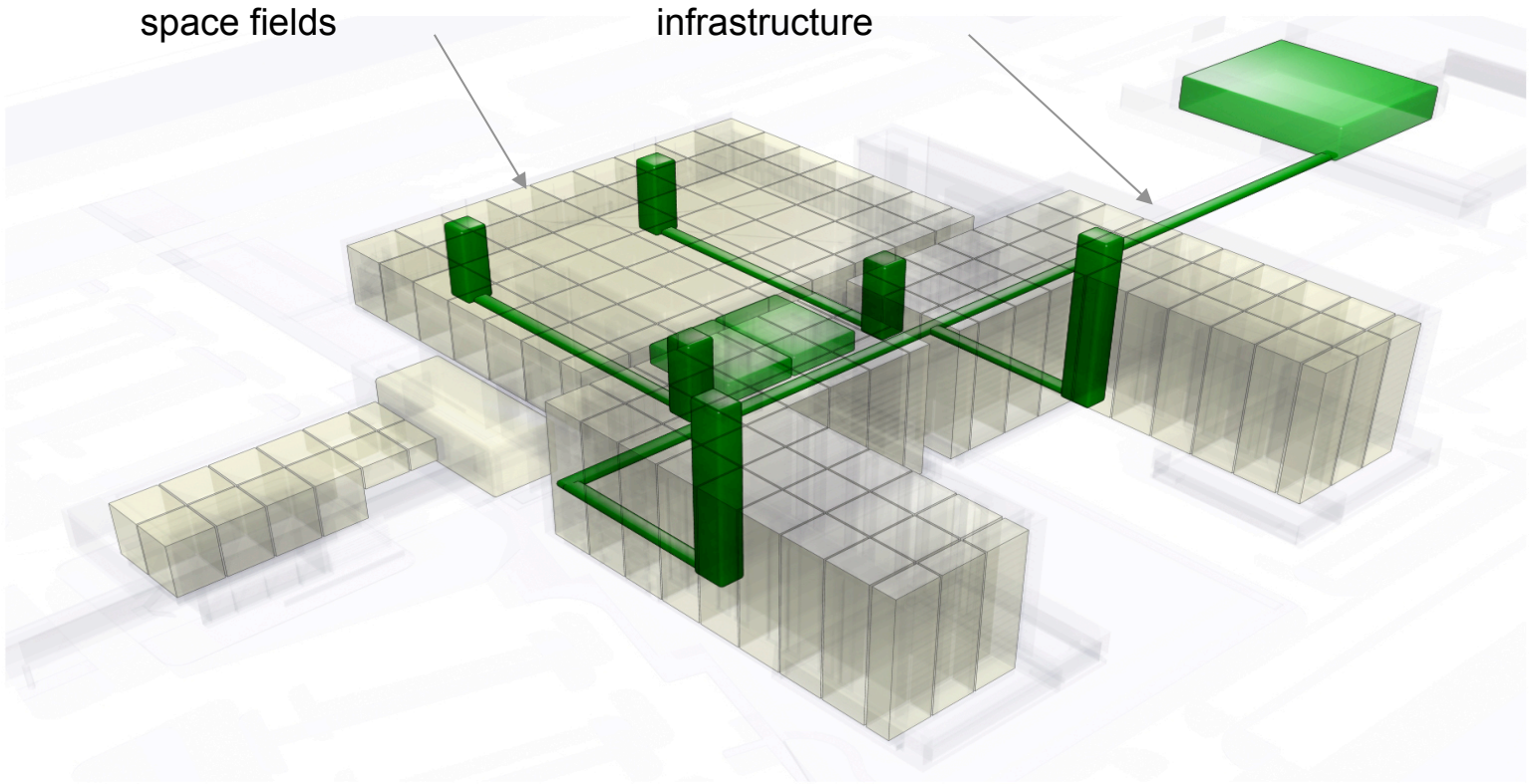




The Gonda Building at the Mayo Clinic
Ellerbe Becket, Architects

Another is the recently completed Banner Estrella Hospital in Phoenix, Arizona, designed by NBBJ Architects.

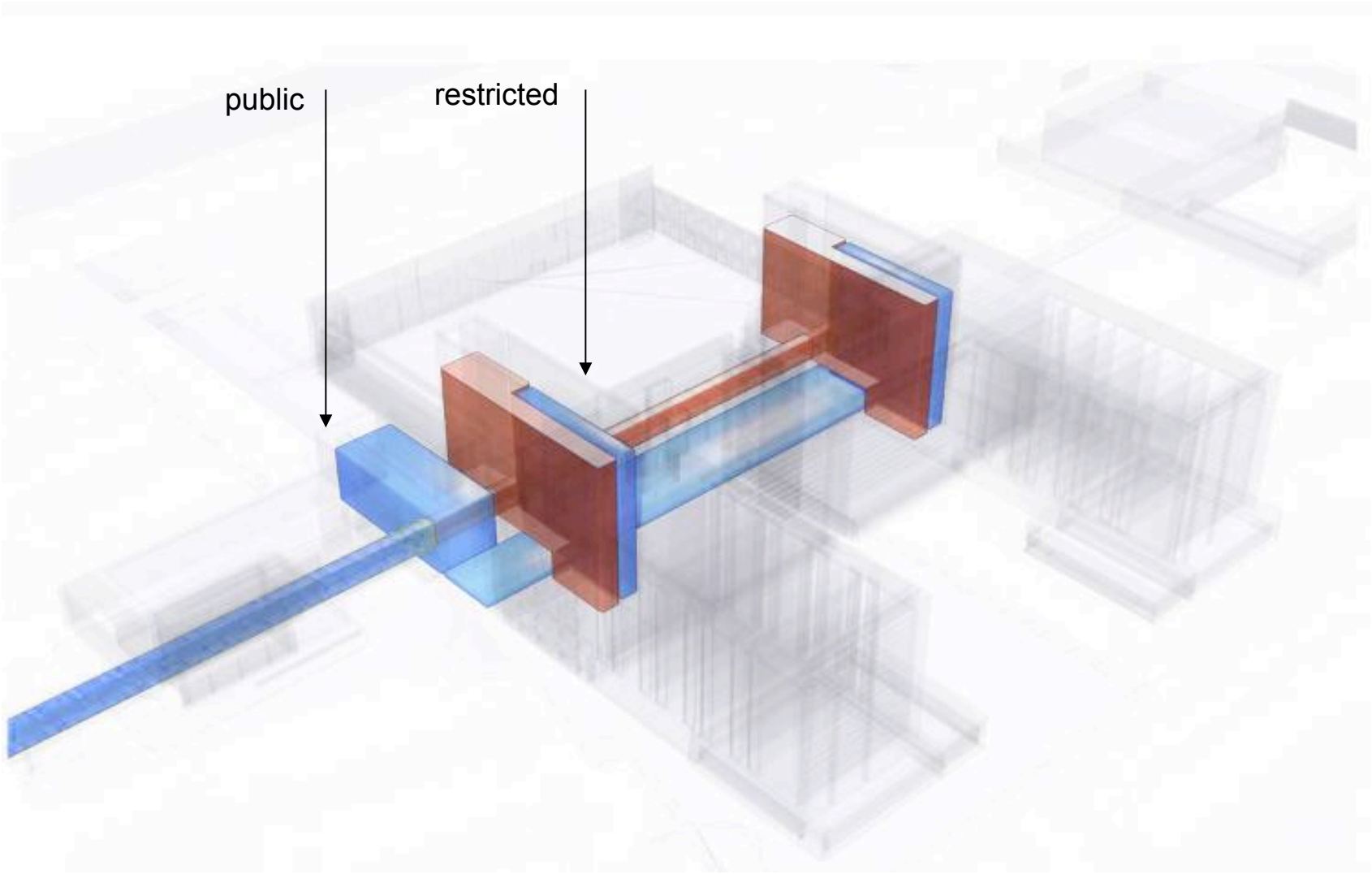
Hospitals on the Time Axis



Permanent infrastructure relative to space fields

Banner Estrella
NBBJ Architects

Hospitals on the Time Axis



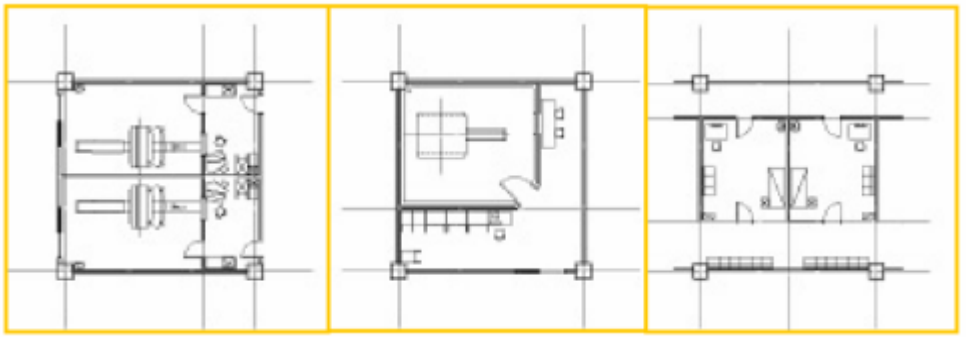
Permanent & Temporal Zones - Circulation

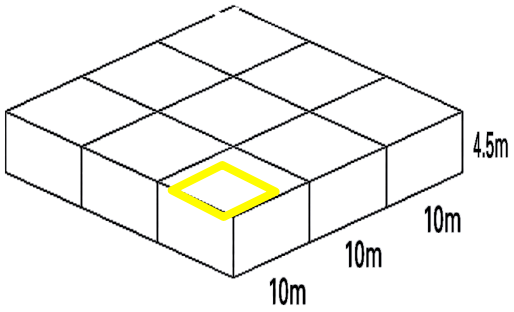
Banner Estrella
NBBJ Architects

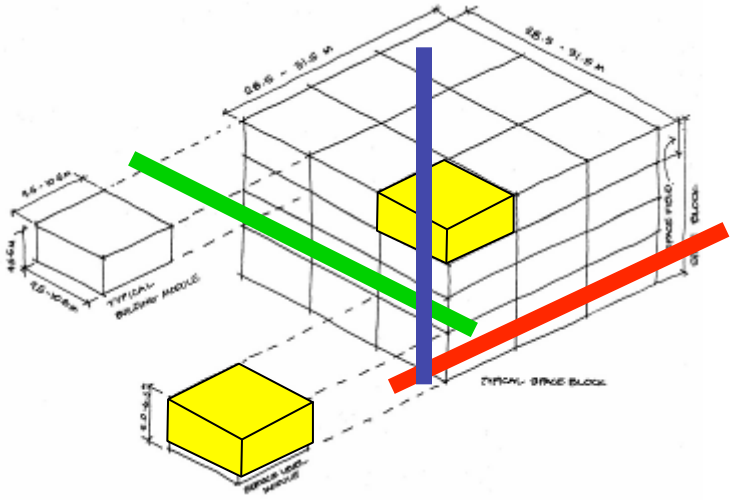
Hospitals on the Time Axis

The Space Field

- Short term change
- Long term change
- Growth

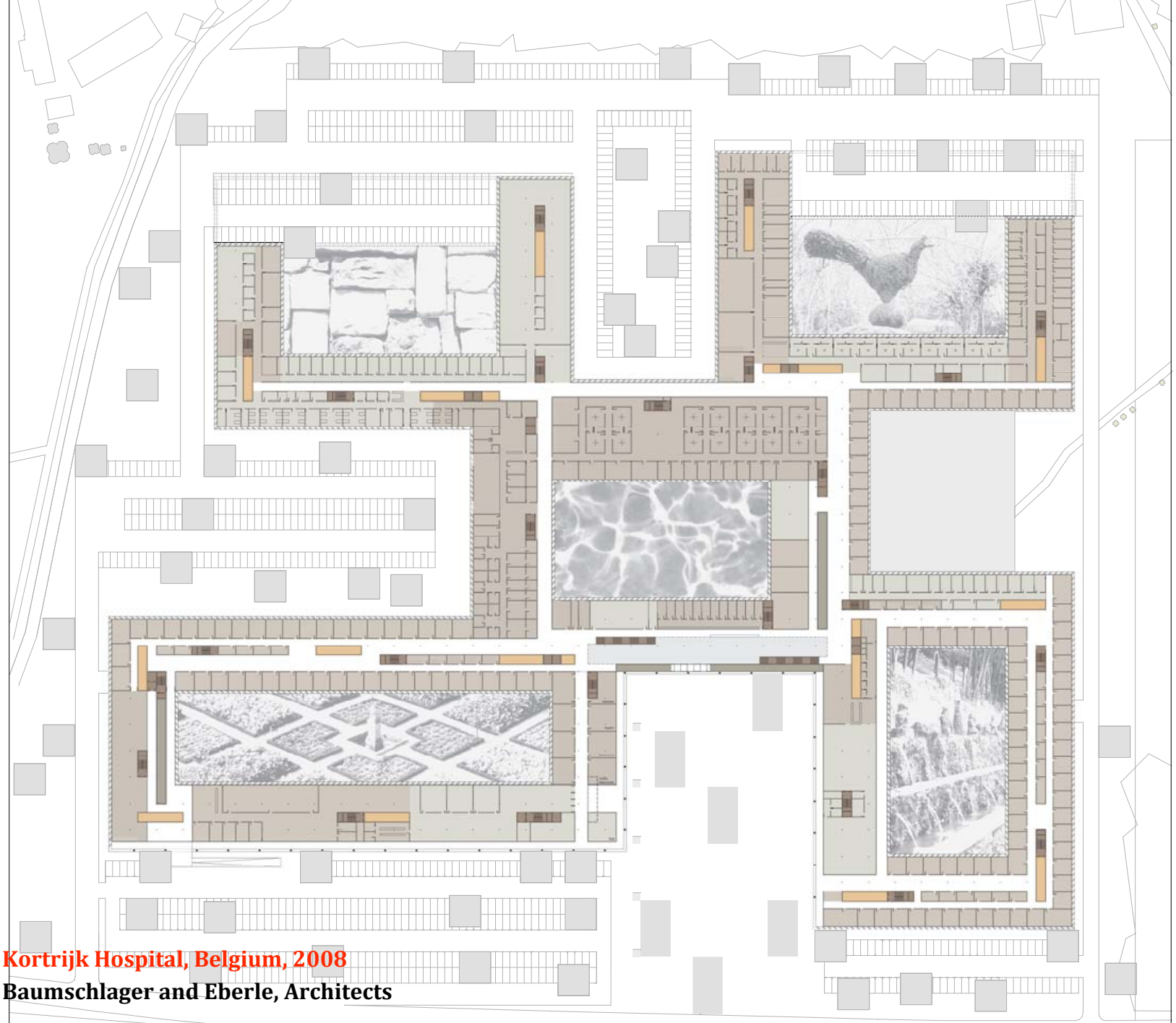






Banner Estrella
NBBJ Architects

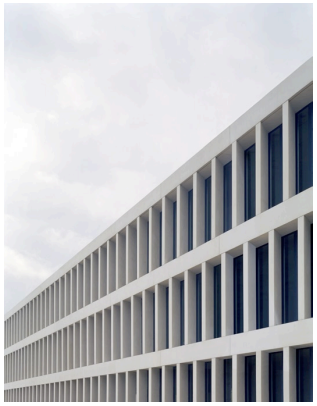
Hospitals on the Time Axis



Kortrijk Hospital, Belgium, 2008

Baumschlager and Eberle, Architects

Hospitals on the Time Axis



Kortrijk Hospital, Belgium, 2008

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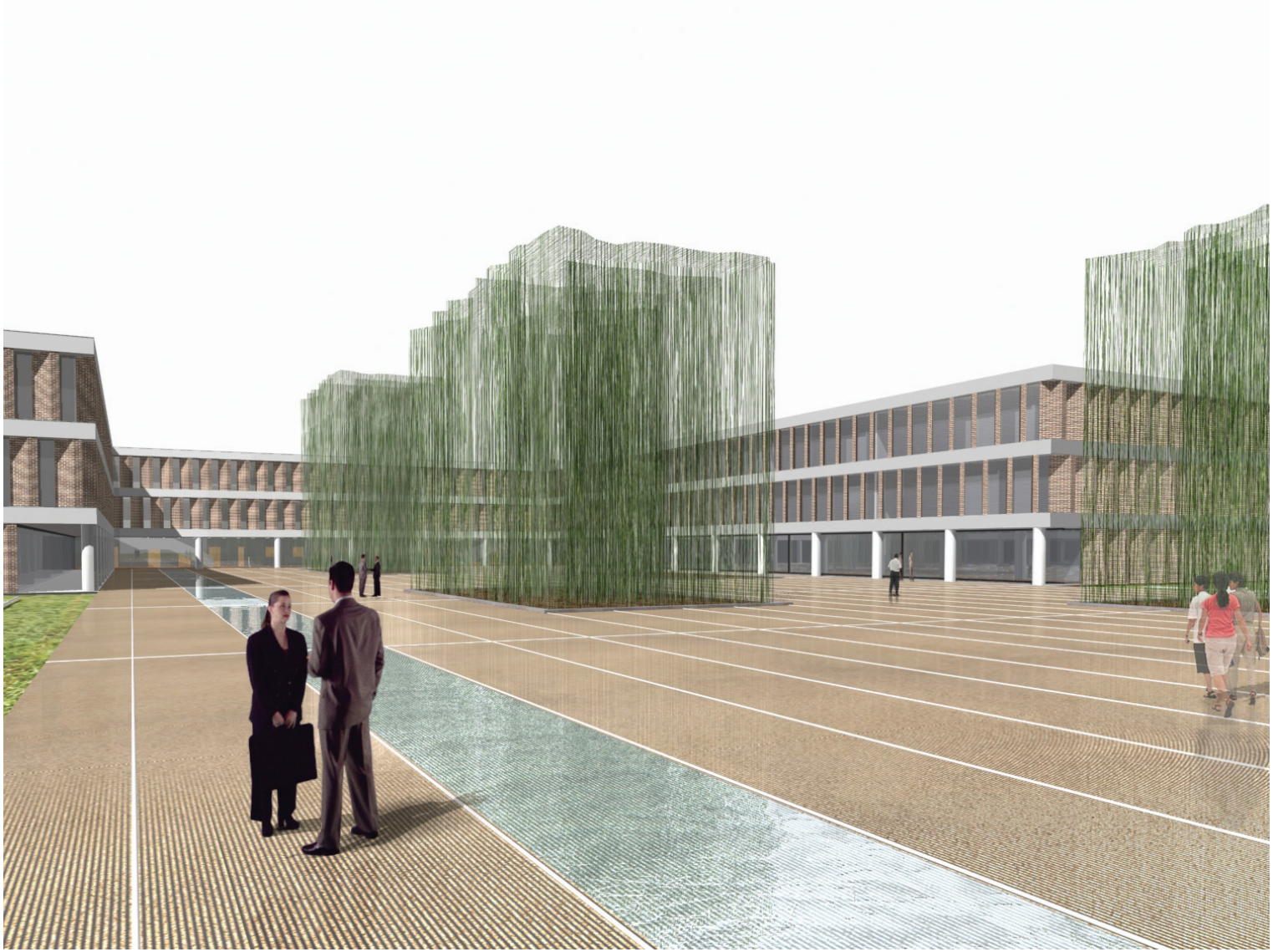
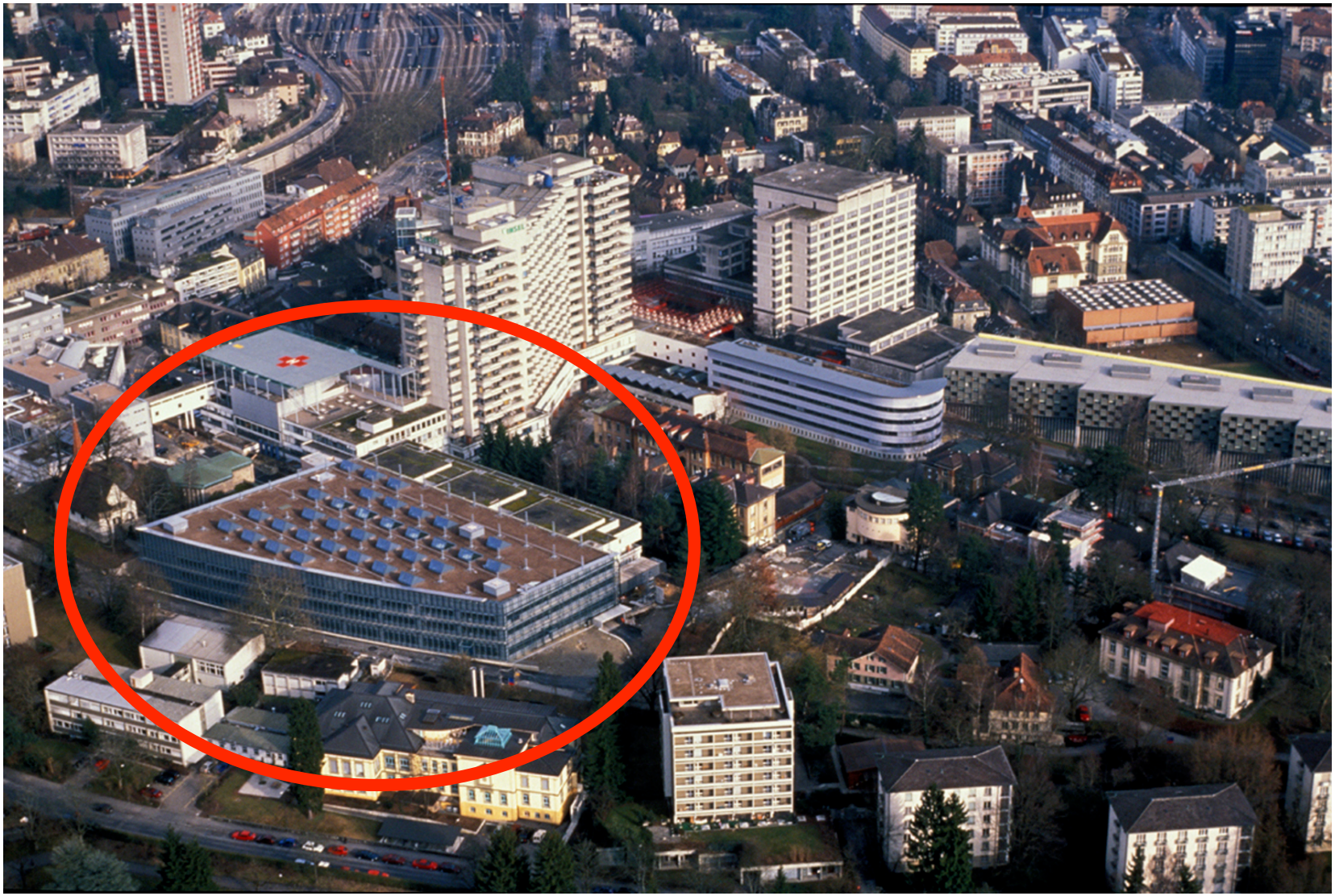


Kortrijk Hospital, Belgium, 2008

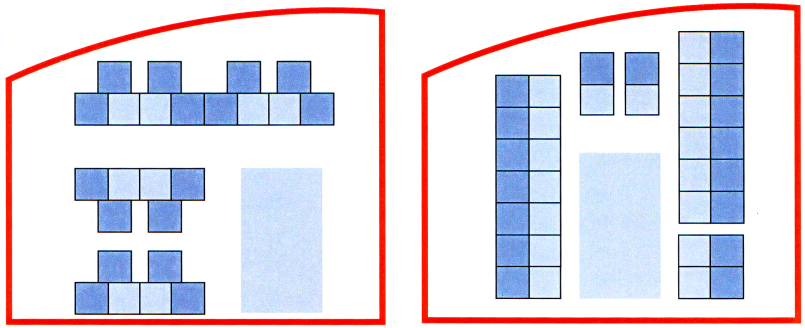
Baumschlager and Eberle, Architects

Hospitals on the Time Axis

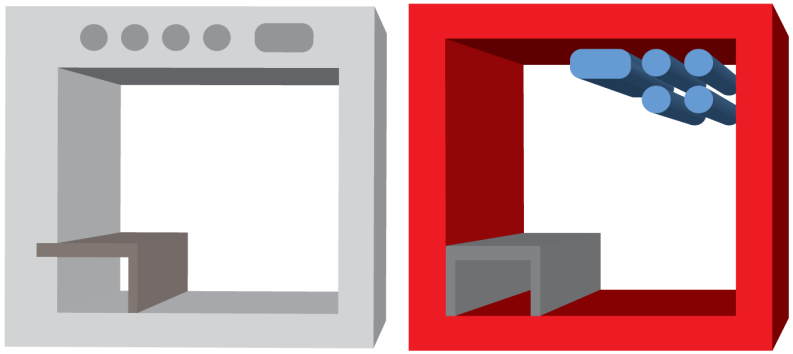
The INO project at the Bern Inselspital is another good case.
It exemplifies what they call SYSTEMS SEPARATION.



System Separation
= Flexibility + Separation of Construction Elements



changing the concept of the operating rooms took place during implementation



separation of construction elements of varying life cycles and duration of use

Canton Bern Office of Properties and Buildings

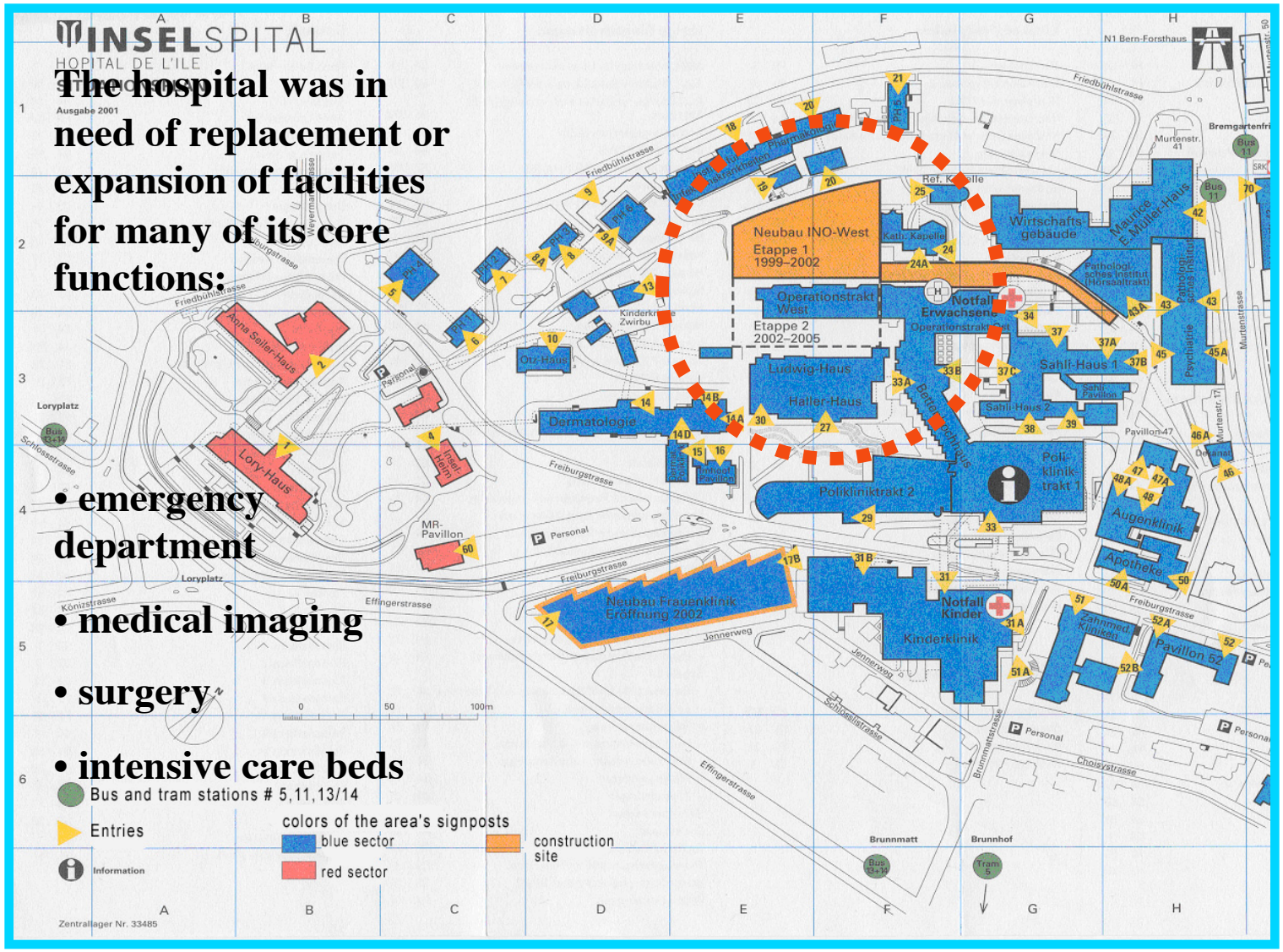
Primary System
Life cycle: 50-100 years
long-term investment, unchangeable

Secondary System
Life cycle: 15-50 years
medium-term investment, adjustable

Tertiary System
Life cycle: 5-15 years
Short-term investment, changeable

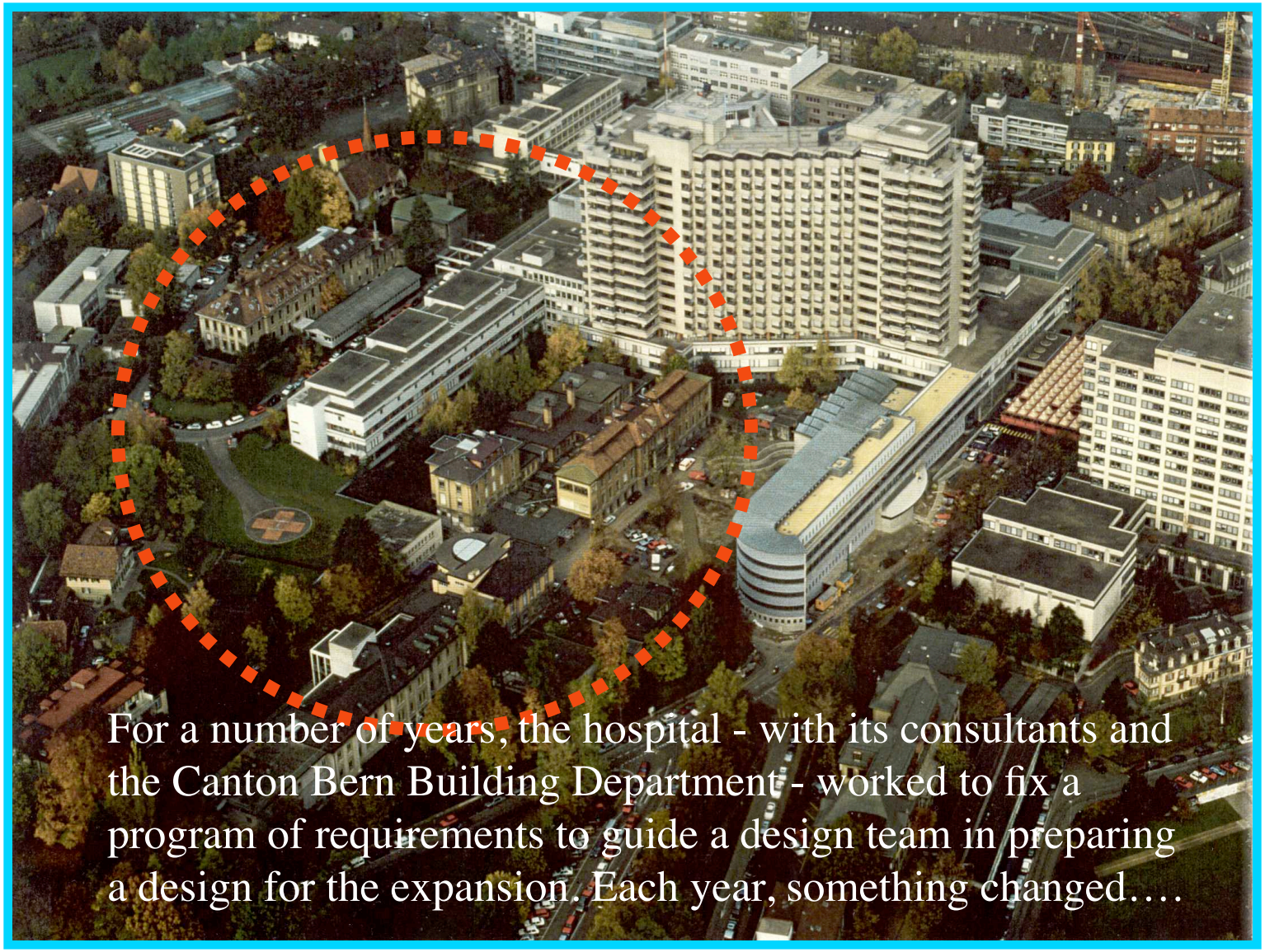
Canton Bern Office of Properties and Buildings

Hospitals on the Time Axis



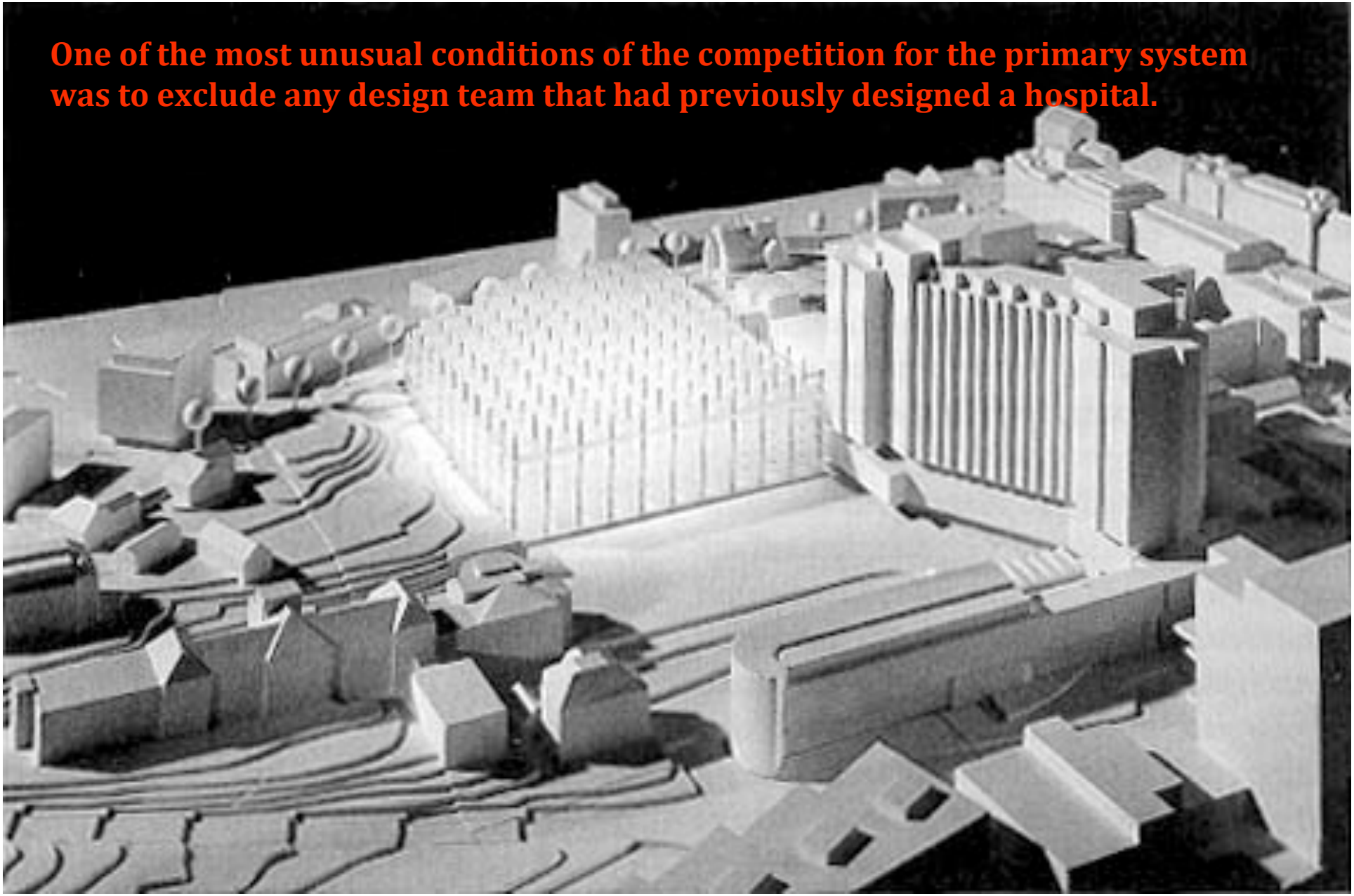
Canton Bern Office of Properties and Buildings

Hospitals on the Time Axis

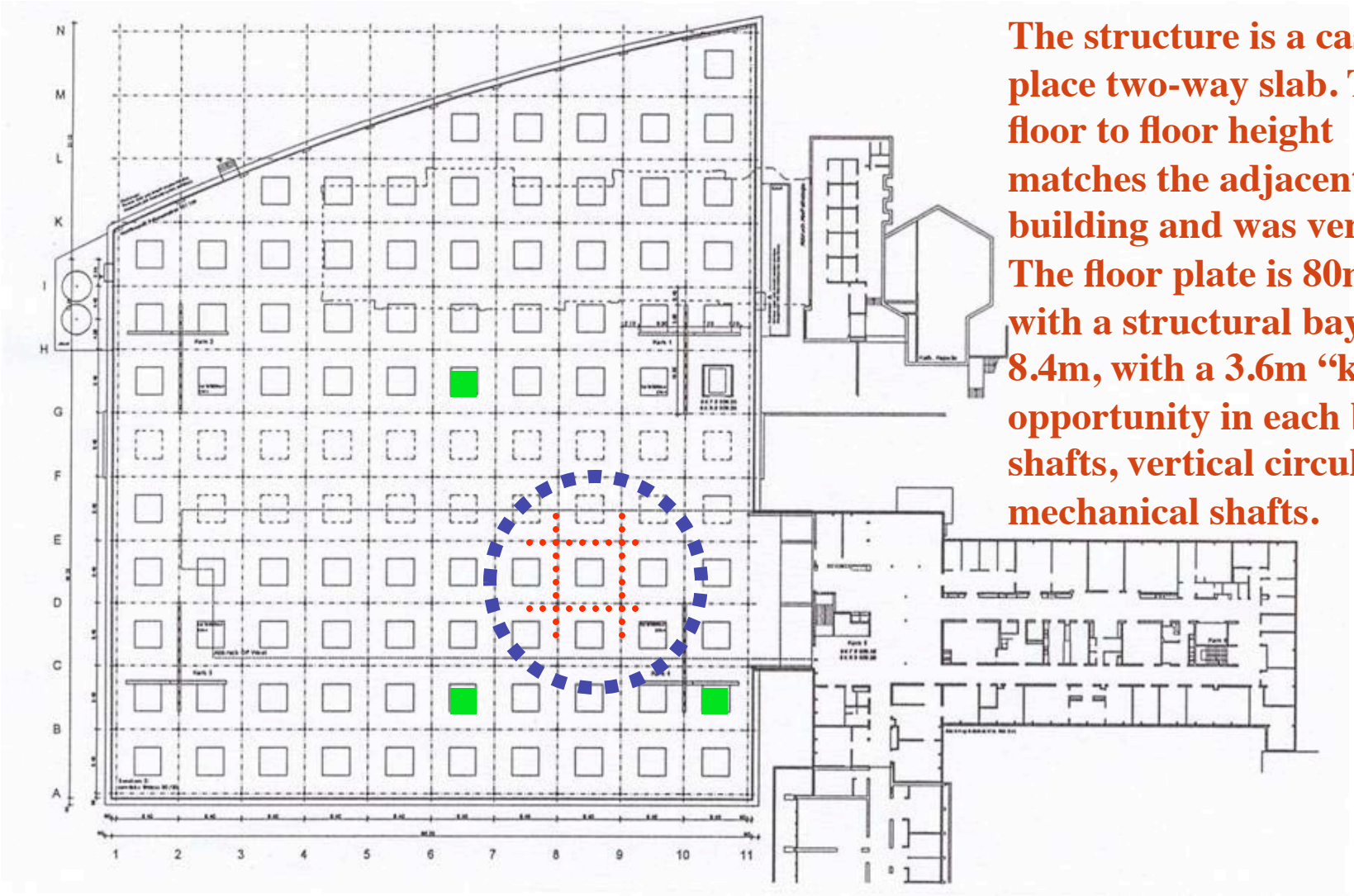


Canton Bern Office of Properties and Buildings

Hospitals on the Time Axis



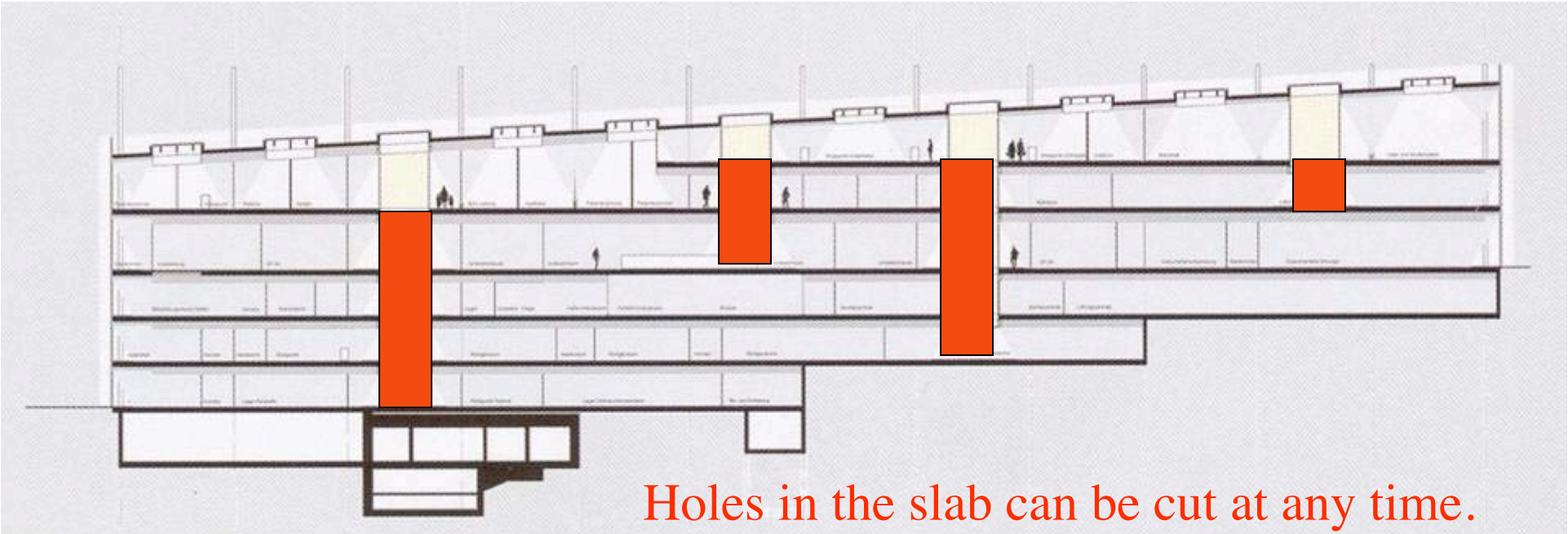
Hospitals on the Time Axis



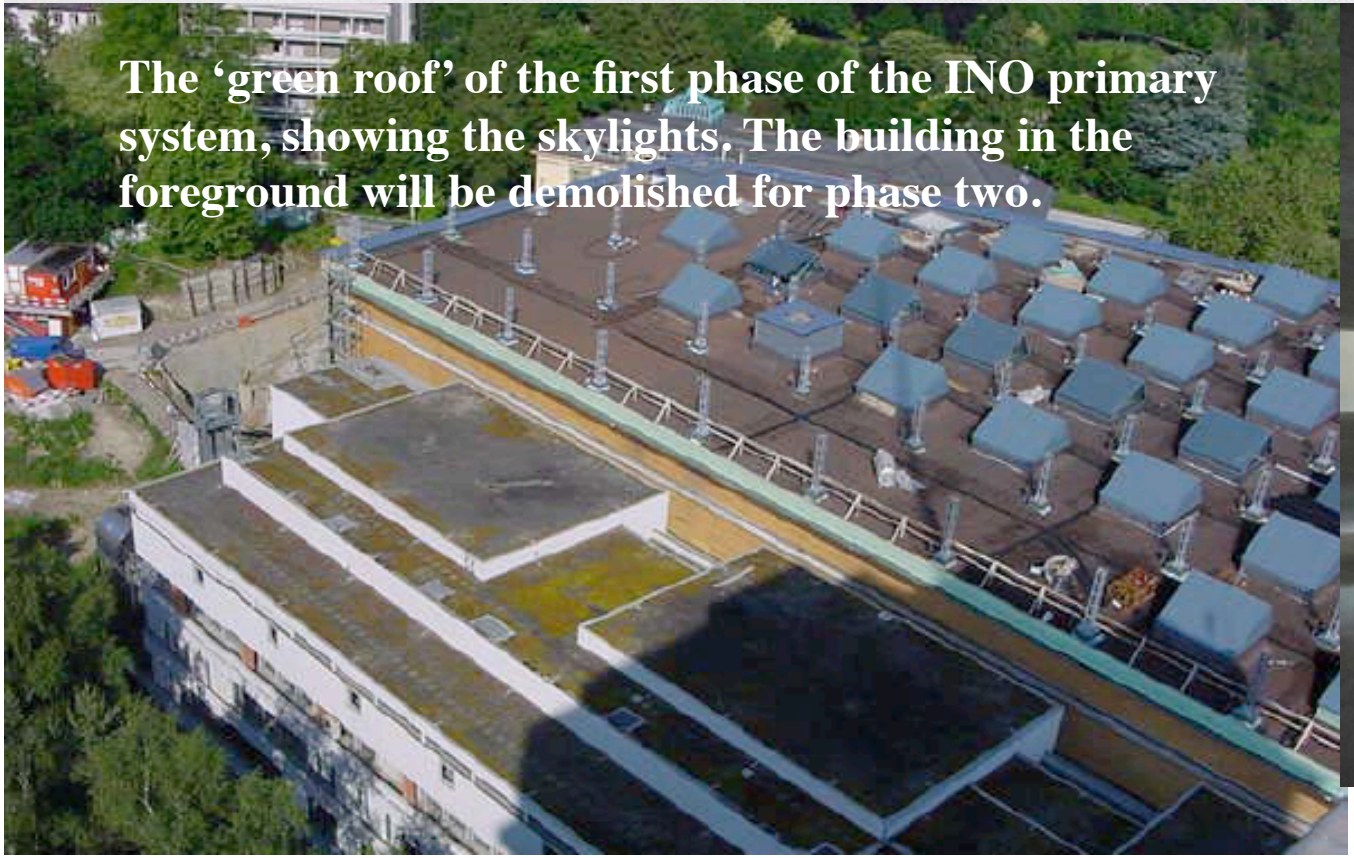
The structure is a cast-in-place two-way slab. The floor to floor height matches the adjacent building and was very low. The floor plate is 80m x90m, with a structural bay of 8.4m x 8.4m, with a 3.6m "knock-out" opportunity in each bay for light shafts, vertical circulation, or mechanical shafts.

Canton Bern Office of Properties and Buildings

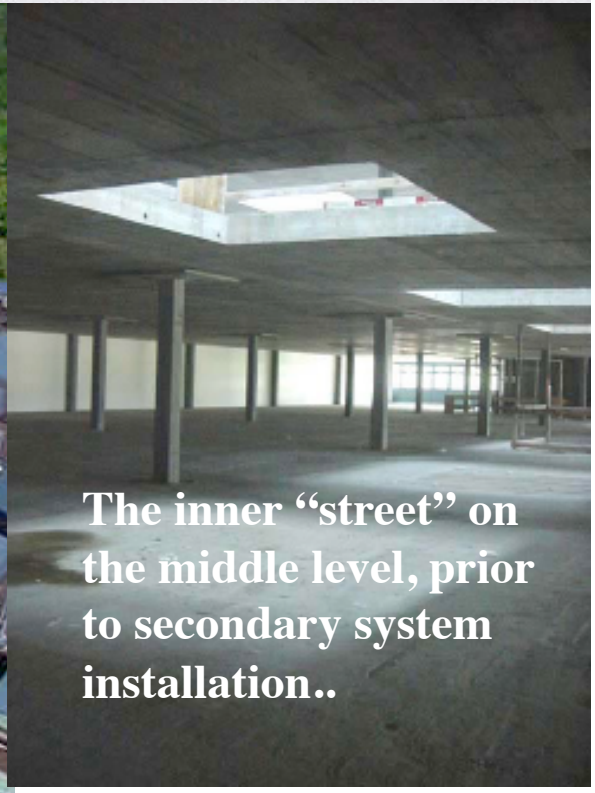
Hospitals on the Time Axis



Holes in the slab can be cut at any time.



The ‘green roof’ of the first phase of the INO primary system, showing the skylights. The building in the foreground will be demolished for phase two.



The inner “street” on the middle level, prior to secondary system installation..

The INO's double skin was designed to meet the stringent energy codes of Switzerland, and to allow the building to "breathe" with operable windows. Operable "blinds" can be used to control the sun.

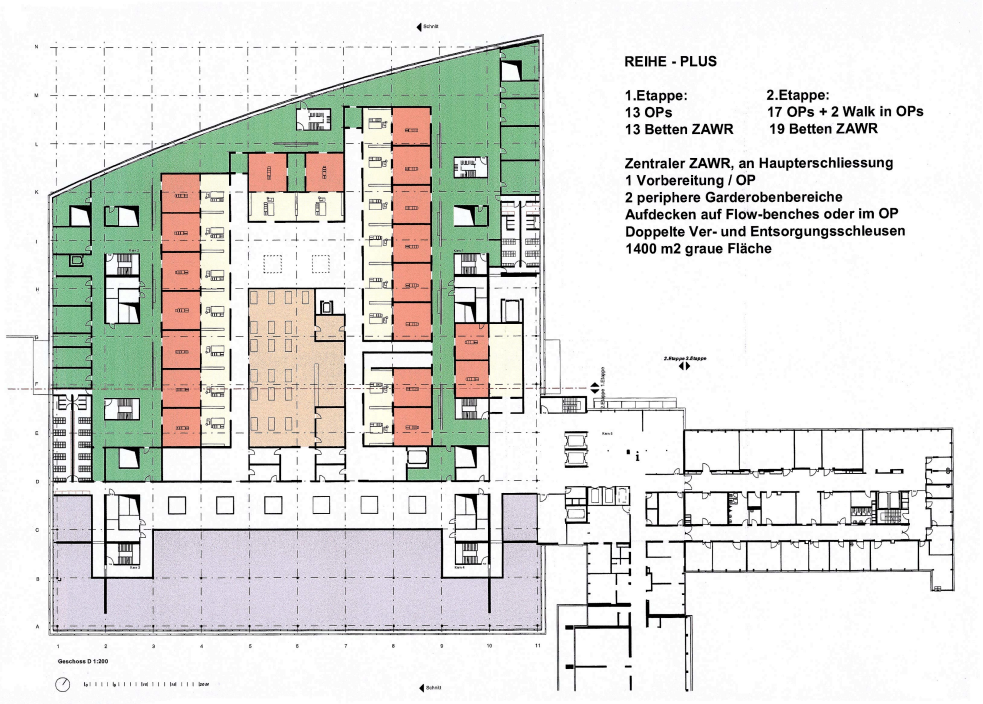
This diagram indicates the variety of functional layouts possible on one typical floor of the base building.

Each layout is a proposal from one of the firms competing for the Secondary System design.

Remember that the firm selected for the Secondary System had to accept the Primary System as its "site".

Notice that in all cases, four vertical mechanical shafts are visible.

Two alternative layouts of the surgery suite in the base building…



INO Phase 1 fully in operation last week…Phase 2 under construction due to be completed 2011.

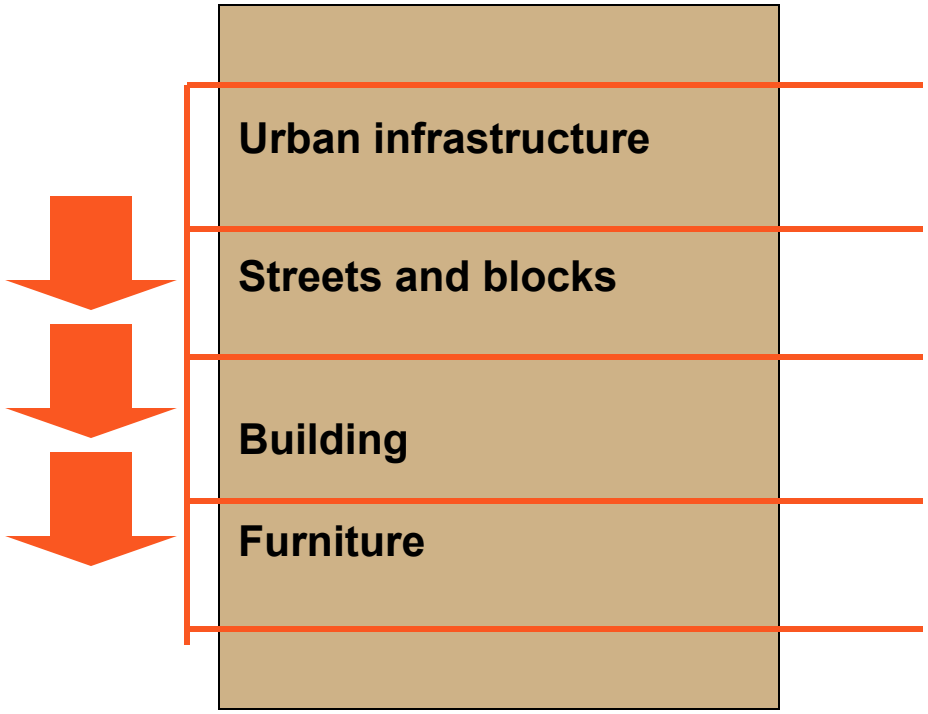
Hospitals on the Time Axis

General Principles at work...

- Levels of intervention (base building, fit-out, etc)
- Distribution of design tasks;
- Territorial claims;
- Coordination and cooperation;

Levels of intervention

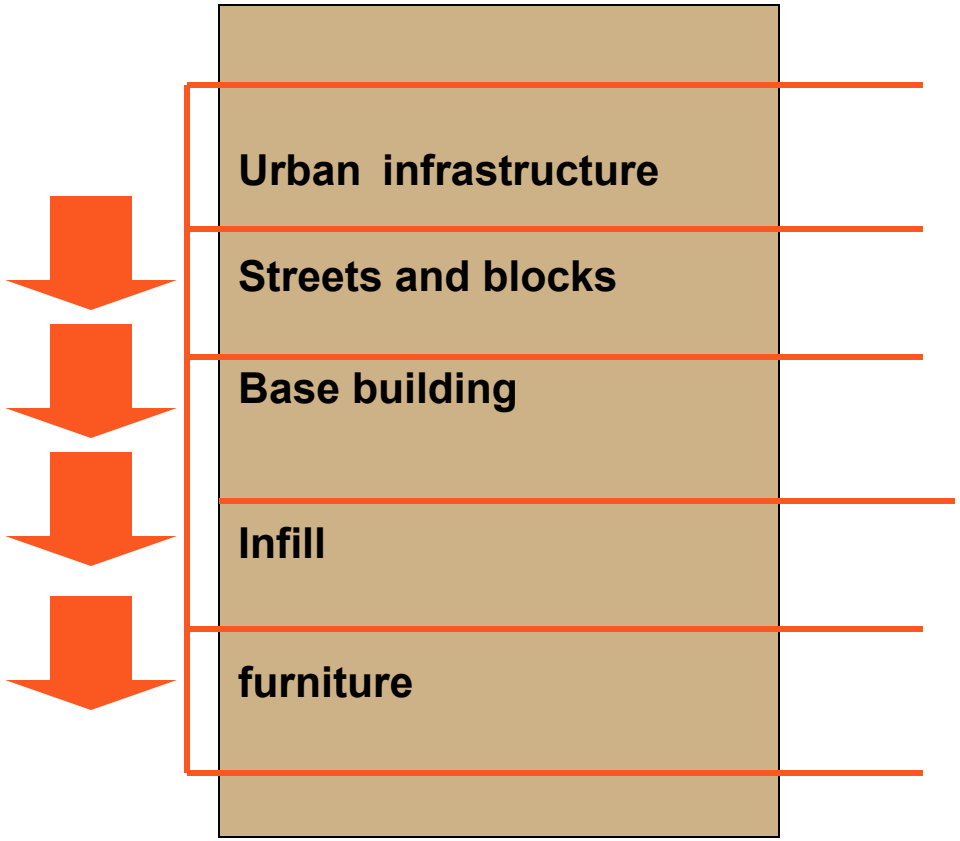
- **DISTRIBUTION OF DESIGN CONTROL**
- **Levels and the identity of professionals**
- **A vertical relationship among designers**



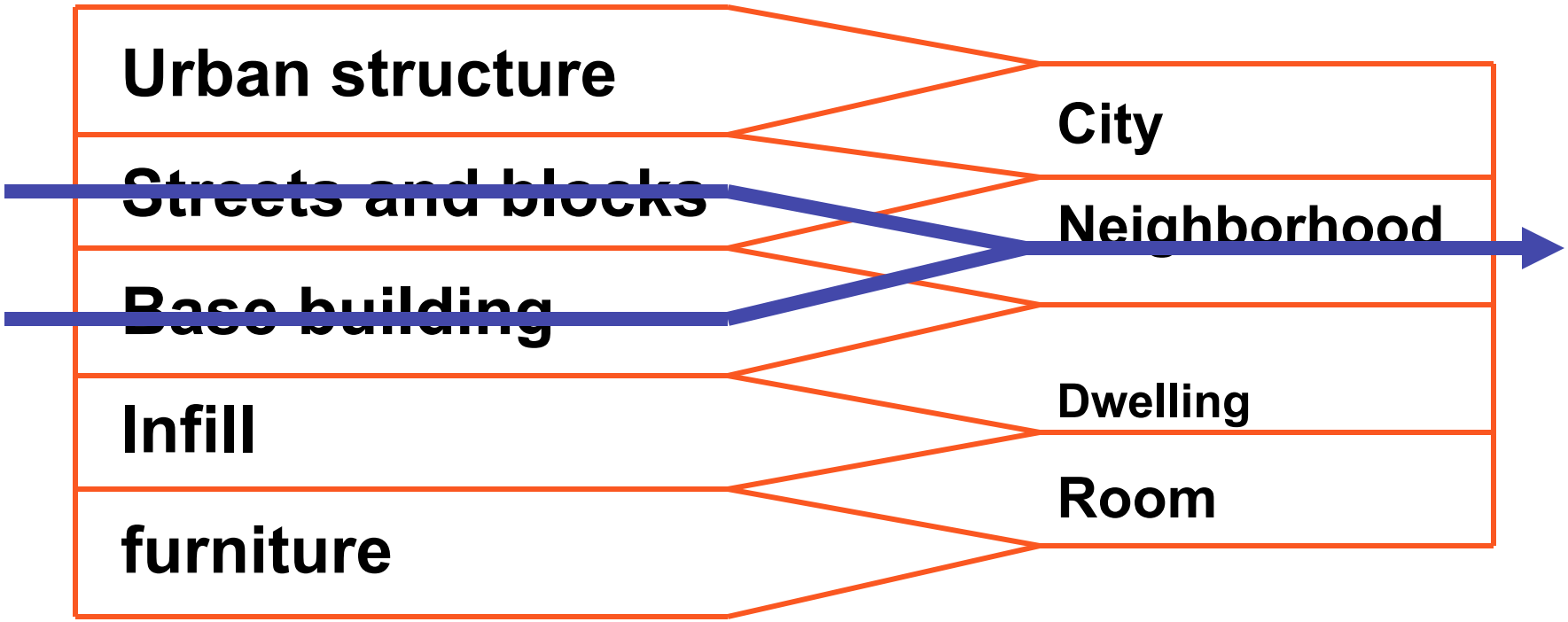
Levels of intervention

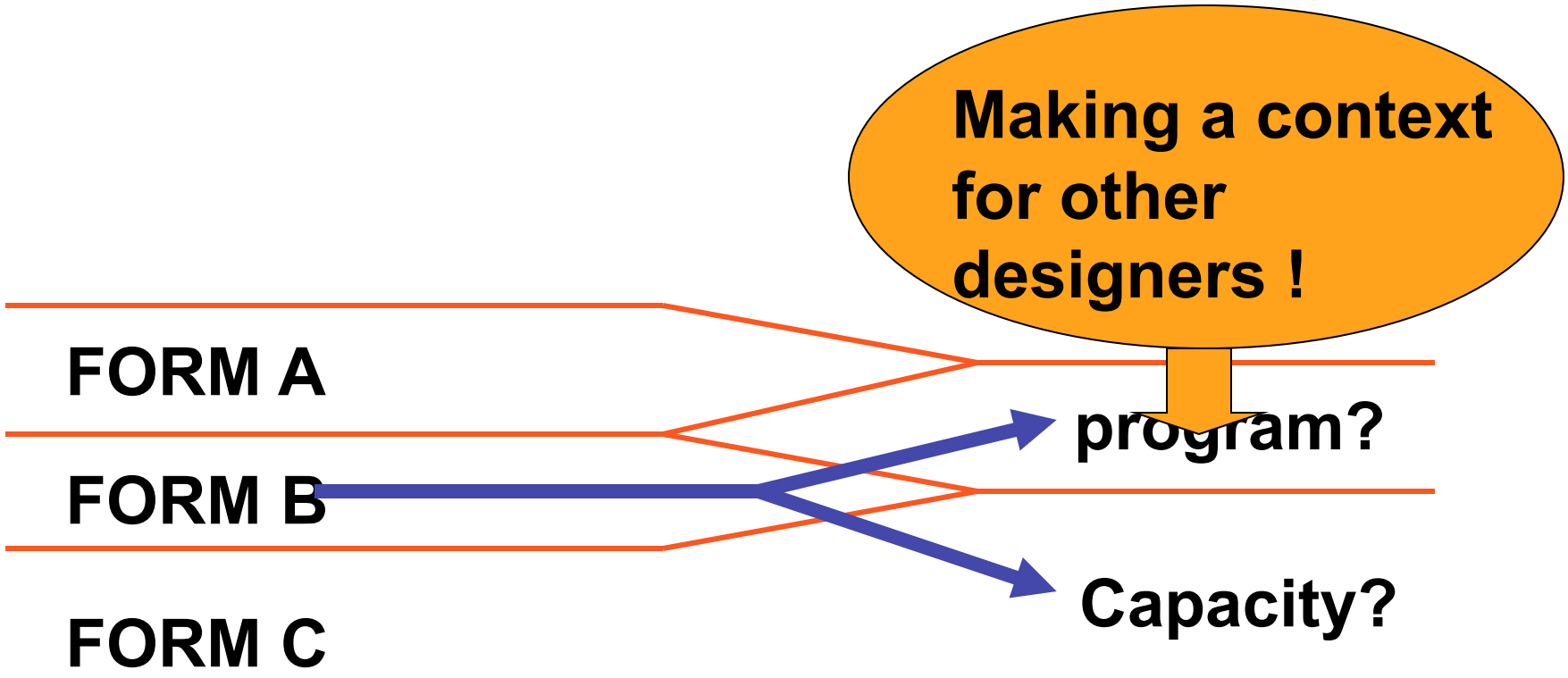
DISTRIBUTION OF DESIGN CONTROL

Introduction of a new level



Levels of intervention




Making a context for other designers !
FORM A
FORM B
FORM C
program?
Capacity?

We have been taught to seek centralized design control, an ideal still taught in schools of architecture…a seductive illusion except in rare cases…

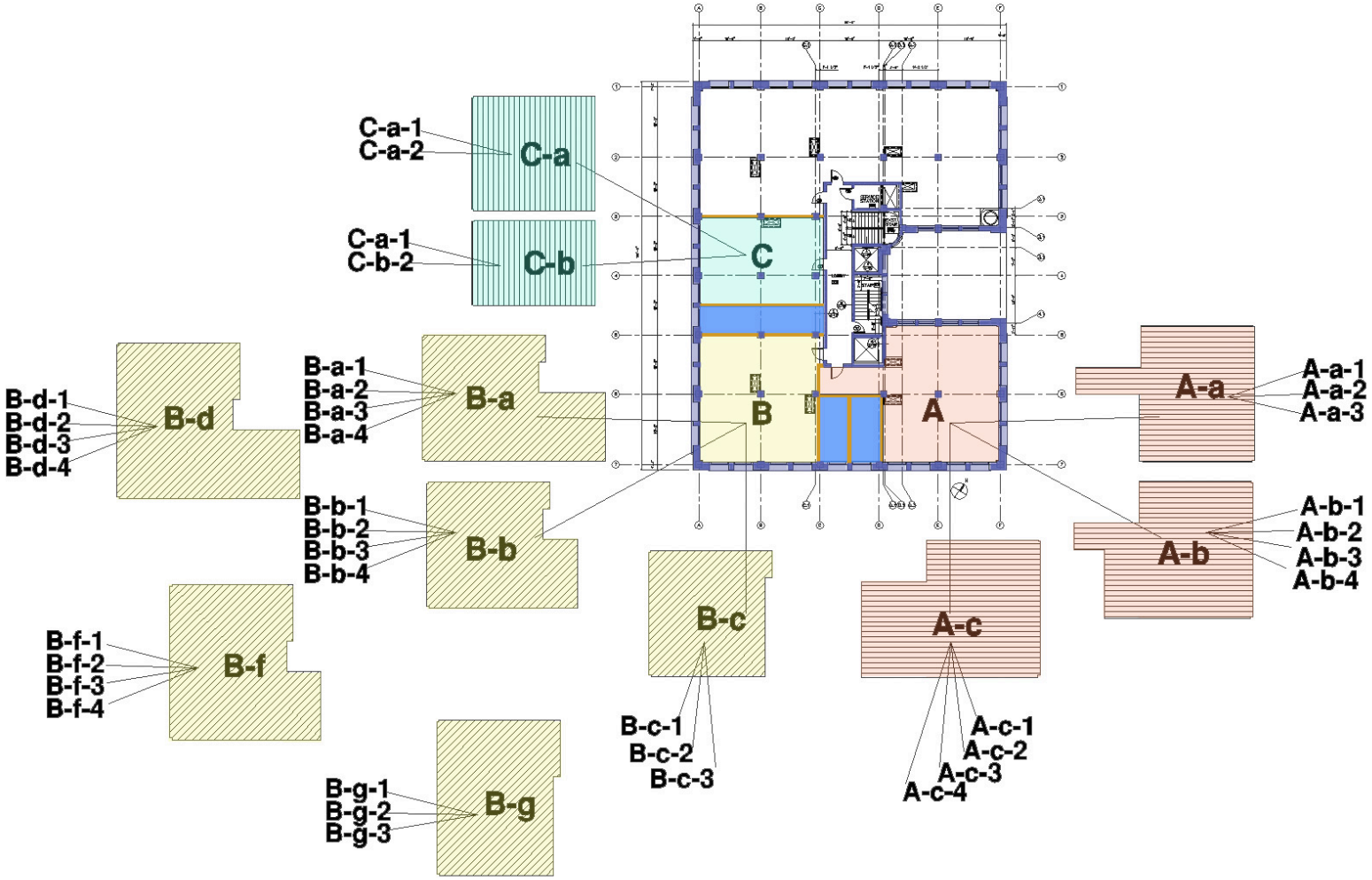
Frank Lloyd Wright

Unfortunately, distribution of design control does not figure in architectural theory, it is not discussed very much in professional circles, nor is it taught in professional schools.

But it is a fact of life.

And they call for good methods

“For the methodologist whose position is inevitably academic, what happens in the field is of fundamental importance. It is our primary source of knowledge: the inescapable reality where habits and conventions make work possible and where new trends of working appear under the pressure of changing technology and evolving demographic and social forces. The observation of this real world invites clarification of what is emerging, raises new questions to be answered, and opens the possibility of generalization and extrapolation that, in turn, must be tested against what is actually happening on the drafting tables, in the management meetings and on the building site.”



Of greatest importance…CAPACITY

Architecture on the Time Axis

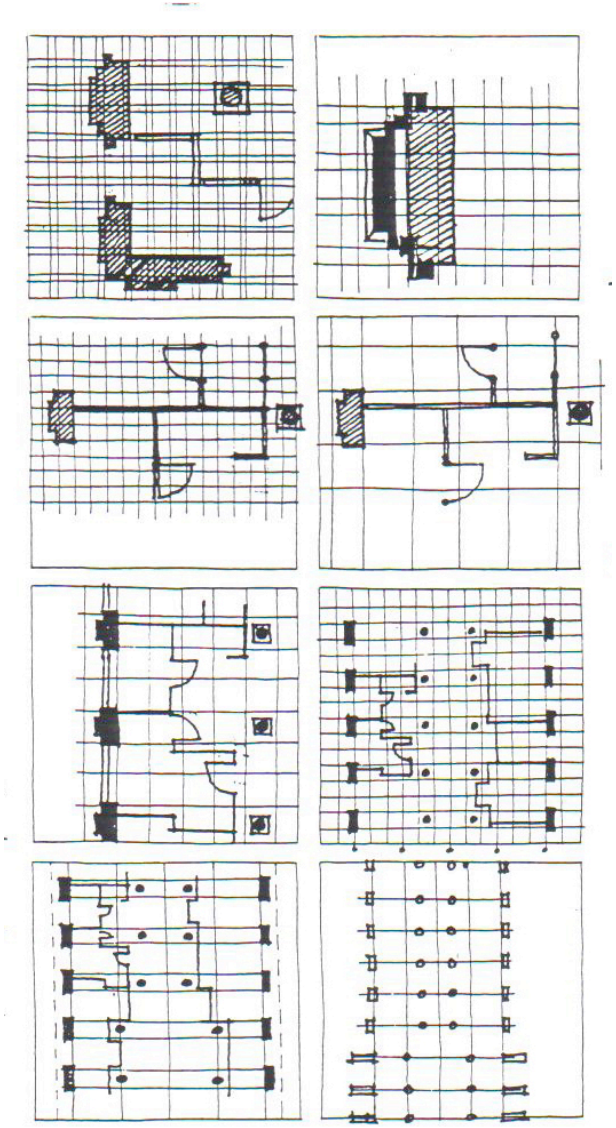
Coordination

Hospitals on the Time Axis

Positioning objects in space is of prime importance for all environmental designing

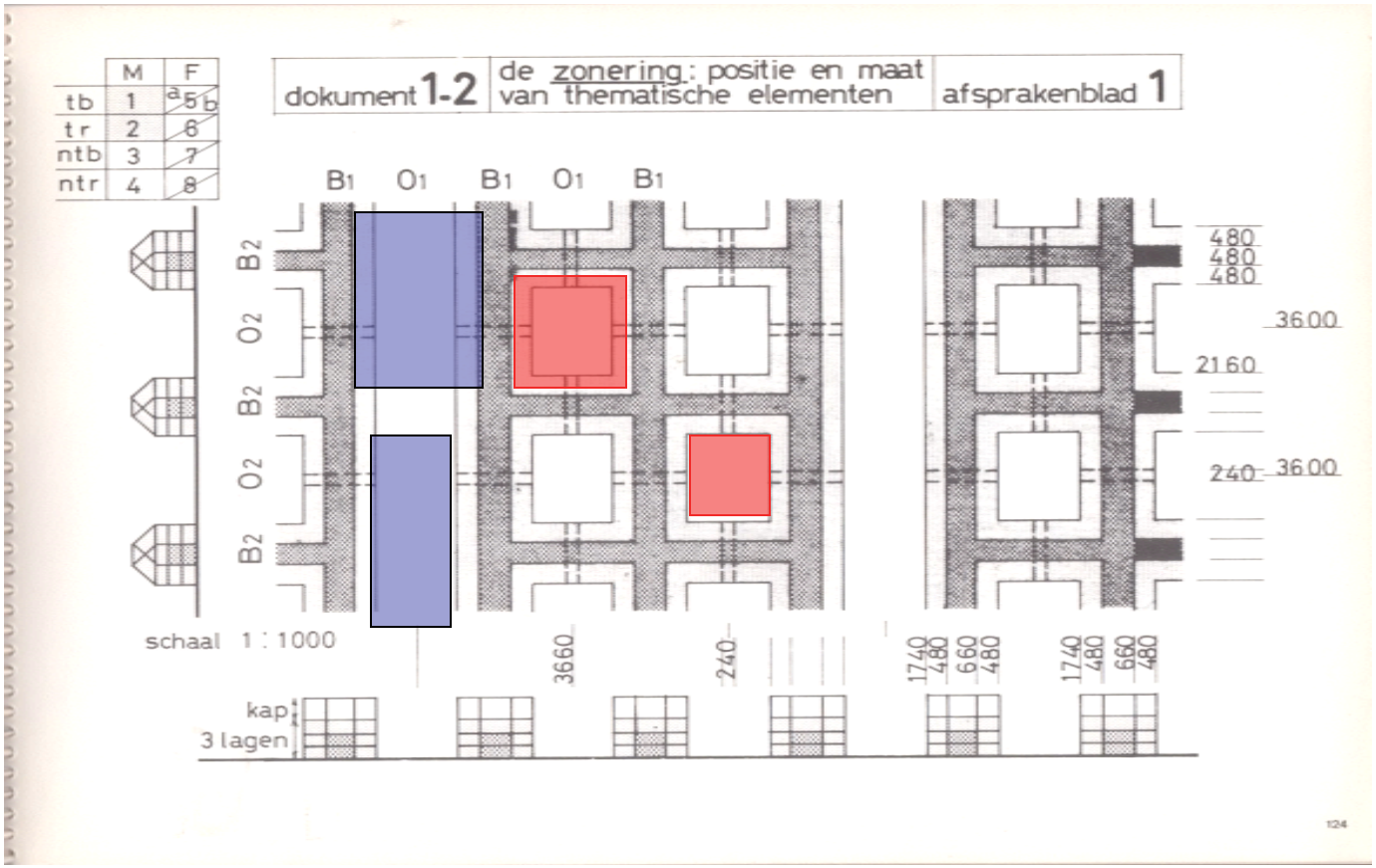
The physical interfaces between the stable part and the more changeable parts need to be organized

Open Building needs position rules for the placement of physical elements



Positioning

Position rules or zones can also be used to define public and private use at the tissue level



Zones

In conclusion:

1. The build field is continuous in time and space
2. The design of the built field is not a solo act
3. Since design is distributed, we need good concepts for partitioning the tasks
4. The built field has an hierarchical structure – levels of intervention make change possible
5. Distributing the work requires good communication
6. And good communication requires good design methods

There are implications for practice and for education

Perhaps the open building approach is relevant for the architectural profession at large and for the design of hospitals in particular.

But the tensions remain… between the technology of medicine and its constant change…

And the perhaps timeless paradigms of wellness and curative healing

Vidar Clinic, Sweden, EricAsmussen, Architect

INO Hospital, Bern


Thanks to Professors Torricelli and Del Nord
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Lets have a discussion!