Construction or Deconstruction:
Which is the Best Way to Learn Architecture?

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The actual shift of the teaching methods from teacher-centred expository methods, to learner-centred exploratory ones. The educational goals are no more the construction of a solid theory knowledge from which the behaviour is driven. It is the acquisition of capabilities and skills directly related to the professional activity. The consequence is that the teacher has the task of endowing the student not only with a large amount of documentation but also with at least suggestions of the way to use it. One of these suggestions is the deconstruction (in a literal and not philosophical sense) as a way of investigating the structure of buildings. In a first phase in order to acquire, through generalisation a systematic knowledge of the way the parts of a building (their subsystems) contribute to the global architectural organism. In a second phase in order to explore buildings of special interest aiming at mastering their peculiar solutions. An example of this method is presented, limited to the spatial analysis only both for brevity sake and for particular difficulties presented.
***Keywords**: Deconstruction; learn architecture; learning by experience.*

Introduction

The classical learning paradigm in the Schools of Architecture has always been *learning by doing*, in which doing is almost always, *designing*, and the task of the teacher is correcting the possible faults and explaining the sense of the corrections. A sort of trial and error in which the student tries, the teacher detects the error and suggest the student how to try again, what the student does (Schon, 1984). Nowadays the paradigm has been expanded in learning by experiencing (Schank and Cleary, 1995), with a significant shift in the teacher function. From the task of correcting the errors of the student and suggesting the solutions he thinks the right ones, (which unavoidably entails a certain imposition of his personality on the student's one) to a role of preparing all the conditions which allow the student to do experiences that will lead her/him to mature a personal consciousness and knowledge of the ways to cope with design problems. An important part of it consists in preparing learning objects, objects that can be operated by the student that learns just as a result of its operations which bring her/him in the core of the topics the learning object deals with. Also if the maximum of freedom has to be left to the student, in operating on the object, to give the student some conceptual bases and methods that will guide her/him at least in the first experiences of self teaching remains always one of the teachers tasks.

The base culture of an architect student certainly comprises the knowledge of the set of "technological subsystem" a building is made of.

This knowledge can be acquired either declaratively, through the enunciation of the list and the composition of the subsystems, or through the "exploration" of a certain number of buildings carried

as long as it is necessary to generalise the experiences. Most likely is a mixture of the two methods starting from a very general enumeration of elementary types followed by a verification and deepening of this knowledge by means of a certain number of building deconstructions.

The analysis of a building is one of most frequent activities of a student. Besides the motivation we have just said it can be, to understand the specific solutions and characteristics of an architecture of particular interest. But in any case some initial guide to this kind of experiences looks necessary.

Often this kind of deconstruction is difficult because of the superficiality, or worse, of the way the documentation is presented by the architectural magazines. It is not rare that the drawings presented, correspond to previous states of the design process, only because they are looking better than the final ones, so that the reconstruction of the whole architectural organism requires a Sherlock Holmes approach from the student. Which, paradoxically from an educational point of view, is not, also if involuntarily, negative.

An experience

Here we present a simulation of such a possible experience carried on the Giovannitti House of Richard Meyer. The choice depends on its being small enough for not requiring too long a work but complex enough to present interesting spatial solutions implying in turn particular structural choices.

The student is supposed to satisfy two preconditions: to be able to work with the software most in use in an architectural (Architectural Desktop, 3D Studio VIZ, VRLM, and so on); to be able to pose the right “questions” to the building he is examining. Of course the starting point is a documentation extended enough, comprising at least the plans of all floors, a certain number of cuts, the elevations of all sides and as many exterior and interior views as is possible to find.

He knows that every building has two fundamental aspects: environmental-functional and technological. The first is represented by the set of spaces in which the activities the are performed; the second by the physical objects by which the spaces are shaped and bound. He has to investigate both systems separately and then their interrelations.

He intends to deconstruct the building. As deconstruction we mean the individuation of the subsystems of homogeneous (having the same function) parts and their separate representation also in exploded position. In order to understand and rightly represent the position of the building elements the student needs a set of reference lines, to which relate the position of the building components. Probably the plans of the building he is examining already present reference lines which mark alignments structuring the layout, as this is customary in architectural drawings. If this is not the case the student draws some of them in the alignments he supposes to be most important in the formal organisation of the building (fig. 1).

Experiencing the space system

The student is well aware that the environmental system is the main goal of the building. Then, the first thing he does is investigating the space structure of the building. From the plans and the cuts he constructs a set of volume-objects each of which corresponds to an internal space. The frontiers of the volumes are the interior faces of walls, partitions, ceilings and floors enveloping each of them.

A first representation leaves those volumes in place, a second explodes it putting the volumes apart in order to have a clear view of each of them (fig. 2). Arrows representing accessibilities can be added in order to represent the functional structure of the building. It can be questionable if the representation of a space (a void) with a volume (a solid) is an efficacious way. Indeed it requires some sort of abstraction capability, also if looking at the volumes without the elimination of the hidden lines, they can be seen as boxes, that is as voids.

Each volume representing a space, as well as any other further component representation can have geometrical topological and alphanumerical

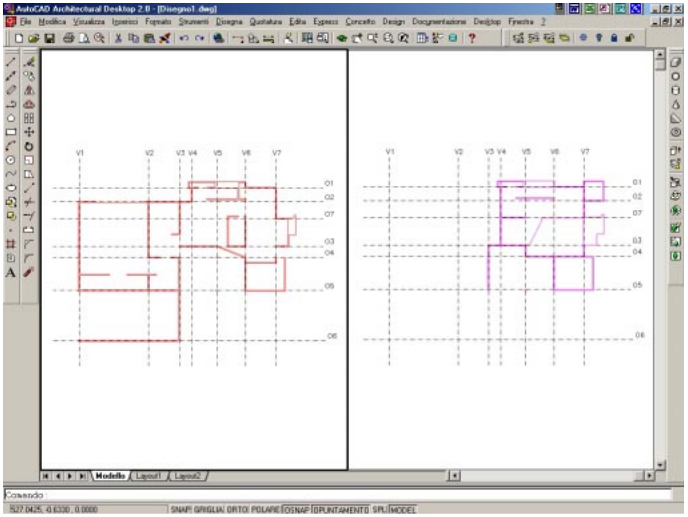

Figure 1. The set of reference lines on the plans.

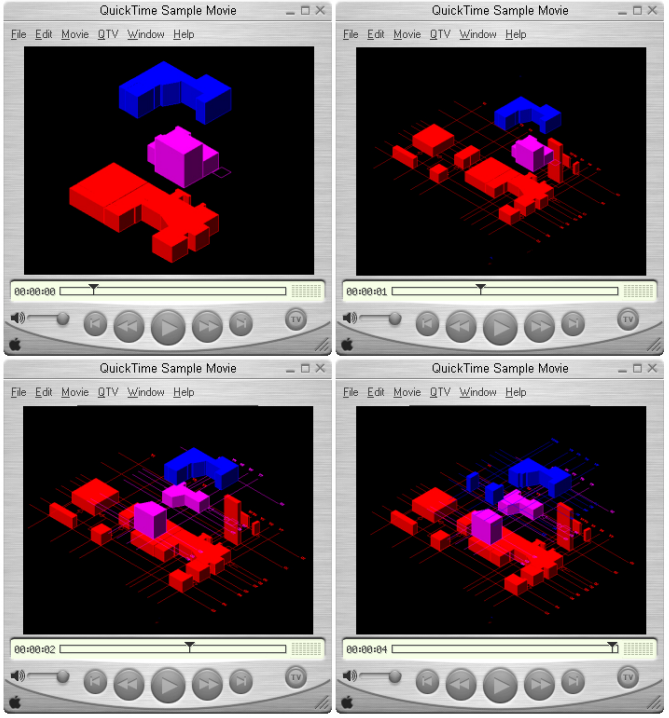

Figure 2. The sequence of deconstruction shown in animation. From links on in clockwise order: disassembly of the spaces in the floors and disassembly of the spaces of the floors.

characteristics. Then to each space-volume any other information can be added* (fig 1).

Experiencing the technological system

Second investigation: the technological system. First part of it: the bearing structure. Normally in frame structure buildings only columns and walls are drawn in the plans while some information about the beams, can sometimes be drawn from the cuts. The student redraws the sections of the columns and (if recognisable) the bearing walls marked on the plan in a layer superimposed to the plan of each floor. Then he tries to recognize the most likely beam system consistent with the other constraints (span between columns, correspondence with partitions and so on). If the columns are not enough to draw a consistent set of beams, some walls must be bearing walls and they can be recognised from their thickness and position. If he has not enough information to reconstruct the beam set he then makes hypotheses on the base of some criteria (for instance maximum span, correspondence with partitions, closed fields, etc.).

The control of the geometrical reliability of the hypotheses is done again constructing models of the entire frame both continuous and exploded by floor. The choice of the eventual hypothesis is a good design exercise that in some cases, can necessitate some static calculation. This is the case of the present example: the upper right corner of the last floor plan shows an unclear situation as the marked columns seem too much distant and the overhang too protruding.

Conclusion

About the proposed kind of experiences some remarks can be done. The first is about the definition. *Deconstruction* is a word became ambiguous after Derrida's irruption on the stage of Architecture (Wigley, 1995). Deconstruction as dismantling the construction, the strong set of bounds tying the parts of a building in order to distort and reassemble them according to personal criteria is not what we are aiming at. Probably, *disassembly* could be a clearer way of describing the sense of the proposed operation, were it not for the fear of transmitting the idea that a building is merely an assembly of pieces and not an organism in which is possible, *conventionally* individuate pieces, hierarchically ordered in subsystems.

Our goal is just the contrary of deconstruction in the cited sense. It is the acquisition of the knowledge of the conceptual structuration of the building, of the space system and of the technological one. Some doubts can exist about the effectiveness of the representation of spaces as volumes that is of voids as solids. This can be partly overcome viewing the space-volumes without hiding the hidden lines so that the volumes can appear as boxes i.e. as voids (fig. 3). Indeed this operation is midway between iconic and symbolic (abstract) representation. However we must give for granted a certain abstraction capability of the student. More, we have to develop such a capability. What we can get from this kind of exercise is not, of course the meaning of the architecture we are examining. We can get only information about the structuration of the building, acquired through the knowledge of its functional components and their relations. Transformation of information into meaning is a difficult operation that can be committed only to the critical sense of the student. What is necessary is to give him an information apt to be "worked on" in direction of such a goal, and this is the task of our proposal.

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* This can be done later, for other possible uses of the model, like cost computing or environmental performance verifications.

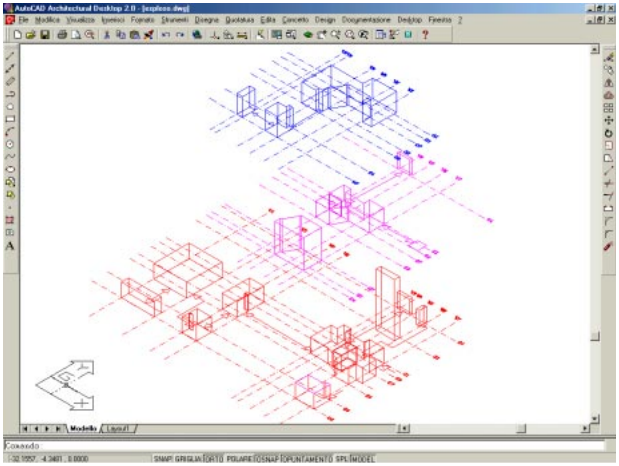

Figure 3. Space- volumes seen as voids.

Figure 4. Giovannitti House (R. Mayer): the final reconstruction.

Go to contents 12

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