

C.A.A.D. and Didactic in Bologna
Giorgio Praderio, engineer, Professor of Architectural Design 2
with Roberto Mingucci, engineer, Researcher of Architecture and Urban
Science Institute
Claudio Coppola, engineer, CAD laboratory manager
Giovanni Bacci, technician of the Institute
Architecture and Urban Science Institute, Engineering Department, University
of Bologna
Viale Risorgimento 2, 40136 Bologna

DESIGN PROJECT AND DIDACTIC

Among the didactic directions of professional training, which Architecture and Urban Science Institute includes. C.A.A.D. is set in the courses of Drawing 2 (2nd year of degree course) and Architectural Design 2 (5th year) : both ones belong to the didactic turn "compositivo" (drafting + design + project).

In the course of Drawing 2. C.A.A.D. is presented in a simple, first step way: the most emphasized aspects are technology and description (especially graphic, in 2D, 2.5D, 3D) of objects and places.

In the course of Architectural Design 2, CAD experience becomes project appliance and therefore simulation and modelling.

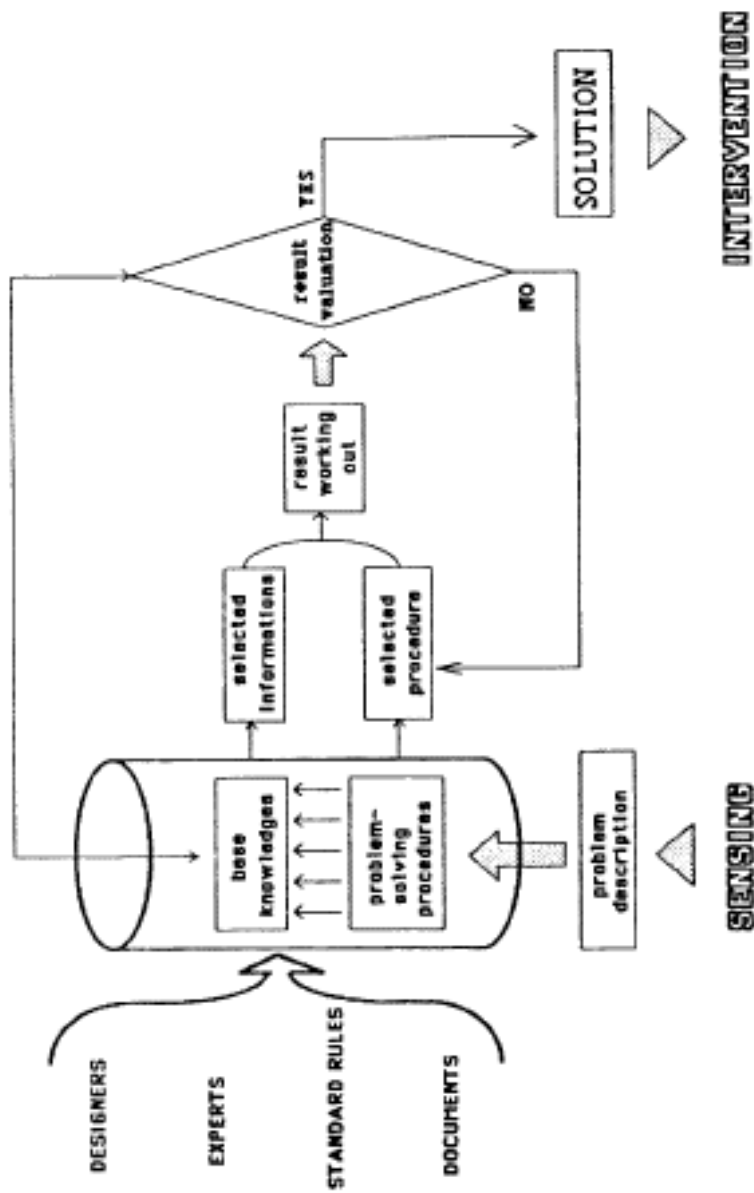
The didactic direction, which appears from that, suggests then to consider Drawing as description of objects (in the steps of project process) explored as knowledge. generation, valuation and decision.

The thematic aspects are Geometry, Topology, basic data, functions and context. Drawing assumes therefore a role of interface with linguistic features: menu constitutes among them the main "user interface".

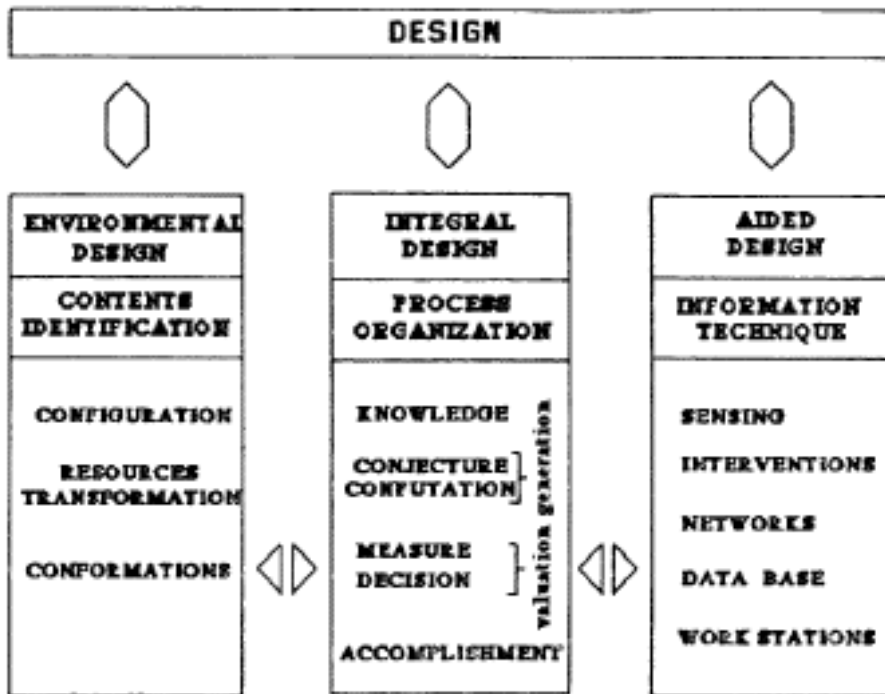
At the end of this didactic direction, C.A.A.D. experiences are emphasized in their complexity, dealing with the phasis of Generation and Valuation by a decisional rationality (imposed by features of Engineering schools and requests of feasibility studies and integrated projects) .

Professional reference, which gives value to these general lines, is the rise, also in the Italian building market, of the figure of Project Manager (P.M.). This figure sets himself near the classic character of Master Designer(M.D.): the former has got a training base in technology, economy and computer science, the latter has instead humanistic, design and historical roots.

CAD is mixed with CAE and sets into the view of "Design Machine" : this reassembles project theory, personal architectural languages, automatic loops and interactive procedures.



The general plan for CAD development with an interaction between knowledge basis and solving problem procedures: towards the system of the "architecture experts".



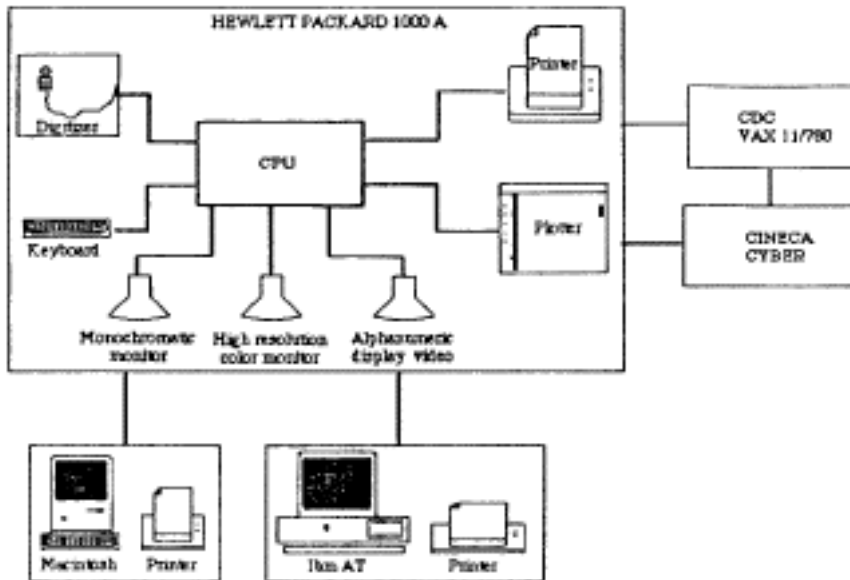
The components of the project in didactic programs: the contents (environmental design), the process (integral design), and the rests (Computer Aided Design = CAD).

SOFTWARE ROUTINES

The researchers of CAD and Computer Graphics, developed in the Institute since Seventies, have brought to the definition of graphic software package GBG with many functions, recently integrated by a 3D solid model and other routines for civil engineering. Risen from degree thesis in 1976 (S.Cinti Luciani and F.Zuccarello) and then improved by CAD.LAB, which an unbroken cooperation is open with, today GBG is loaded in the HP 1000 system of Institute CAD Laboratory.

The results of this cooperation, as the development of CAD market and communication networks witnesses have proved it, at chosen line was right. Nevertheless, the same evolution and the new professional services (OEM, System and Software houses,...) today allow to prepare products and services "to measure", also using in formative resources and instrumented utilities, already existing in the market, on condition that they are correctly adopted.

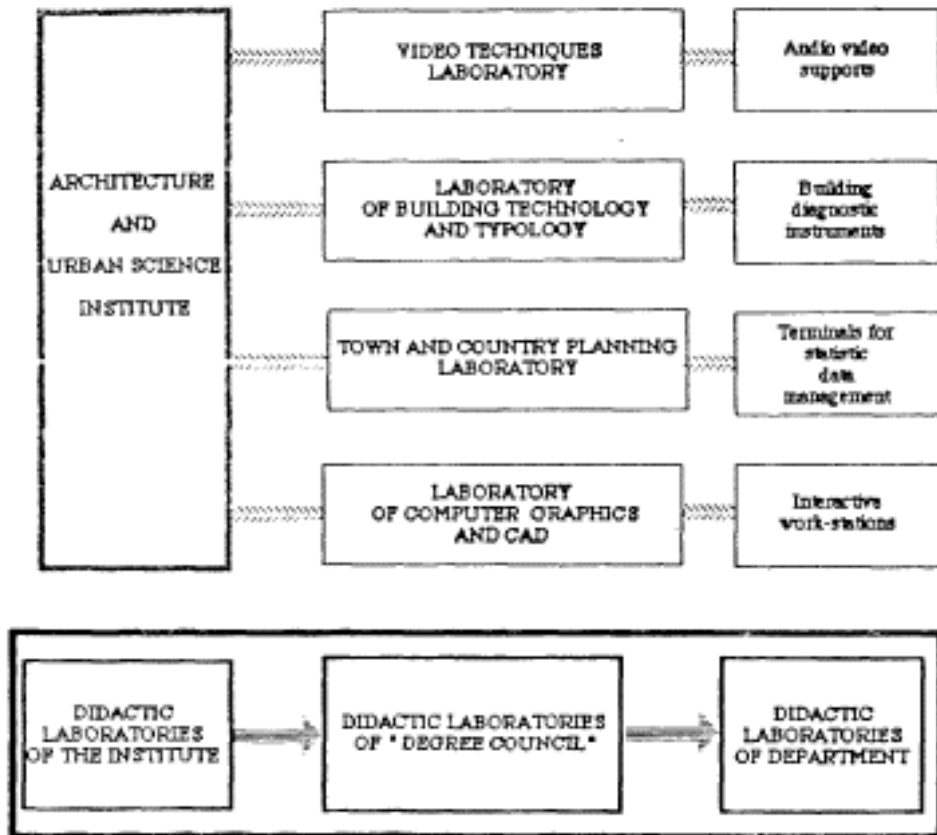
Since 1984-1985 academic year, we have regarded as possible a new didactic line which, not limiting itself to setting up of own exclusive products, can realize new project experiences collecting these components.



The CAD laboratory of the Architecture and Urban Science Institute: present configuration foreseen developments in 1986 and networks of external centres connections.

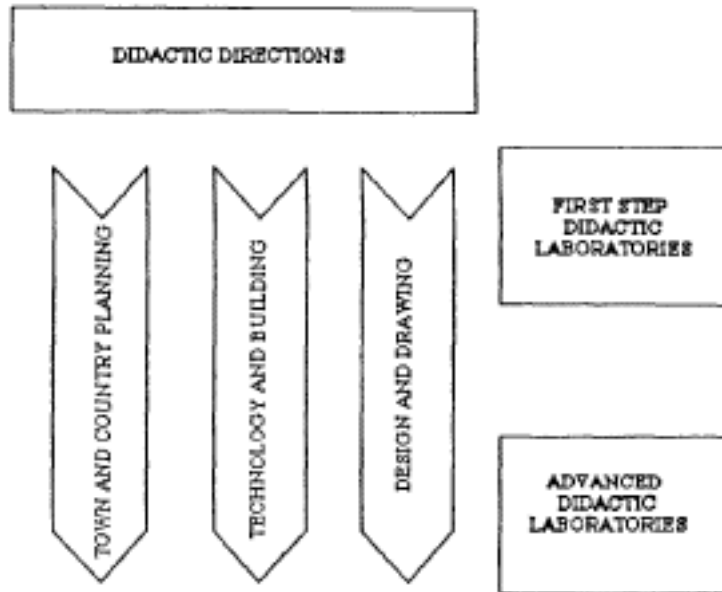
THE LABORATORY-ATELIER

The CAD laboratory of the Institute, with external cooperations, becomes therefore the final result of didactic choices: it is the places to make active technological aspects, as methodological conditions it is a place of project novelty, as mutual connection of project components (own or bought), at last, as chance of didactic experiments. It appears as a group of operative supports, not reducing only to computer, because this whole has to be seen also as "atelier" of operator and group. The last university act suggests, in fact to experiment new didactic solutions. So, CAD systems in the architecture university laboratories are proposing themselves as instrumented resources, which place man's cultural resources at project disposal, removing from this field the traditional poverty of technological instruments and giving process back flexibility. In this historical period of relative overcoming of mass university and transfer of students from civil engineering to electronics and computer science , it is possible to see new conditions of didactic spaces feasibility and right relations between professors and students. These conditions are finding in didactic laboratories a coordination and a new throw .



The parts of the laboratory (director: prof. Ivo Tagliaventi) of Architecture and Urban Science Institute and the didactic steps.

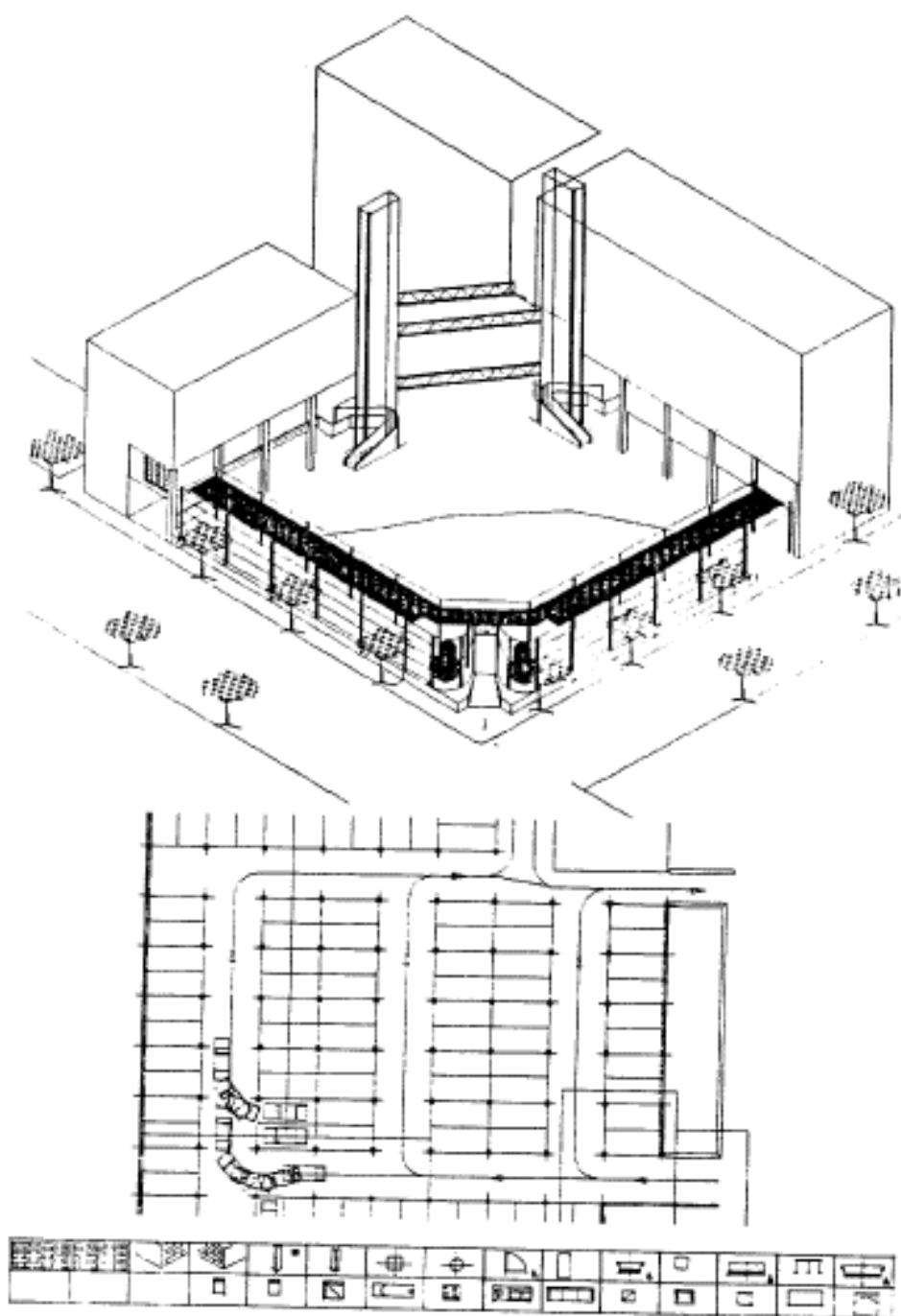
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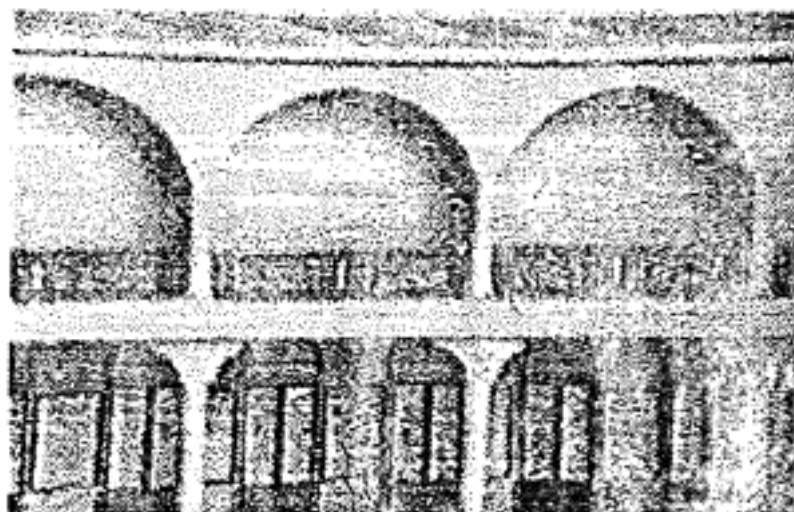
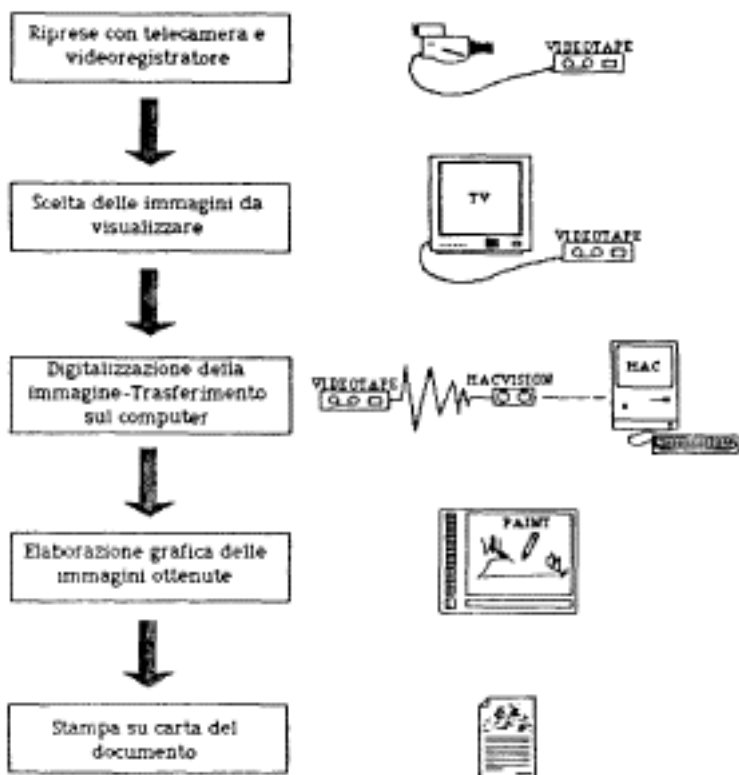
The didactic directions within the limits of the Architecture and Urban Science Institute.

This trend is confirmed in Bologna by the rise of several information services, already existing (CITAM, as information services of department and data bases for didactic and research; development of interactive services of department EDP centre; strengthening of CINECA as inter-universities centre) or foreseen with feasibility studies on the occasion of 9th centenary of Bologna University in 1989 (University Informative System, which forecasts "didactic islands" for department and degree council).

The didactic proposals, which have been formulated in Bologna, don't limit themselves to suggest technological innovation also for architecture: they image not only the traditional CAD workstations but also informative networks, data bases, building diagnostic and generally automatic loops, integrated and interactive among project centres, technical offices, environmental places and structure yard. They don't stop to programs of first and second step for computer science culture. Proposals in fact foresee that technological resources, in some way attributed to students, produce particular didactic solution "to measure", based on possible agreements among university, production firms and the same students (among whom the percentage of student-workers is higher and higher). The final step, which we aim towards, is no longer only CAD systems in laboratory spaces, but a large connection among students, teachers and EDP resources, which involves didactic coordination, programs, communication techniques in lectures and seminars, and proposes again time flexibility and a solution among university seats, students' houses and production places: the "university at a distance", made possible by information technologies, as a formula which is studied in Italy today.

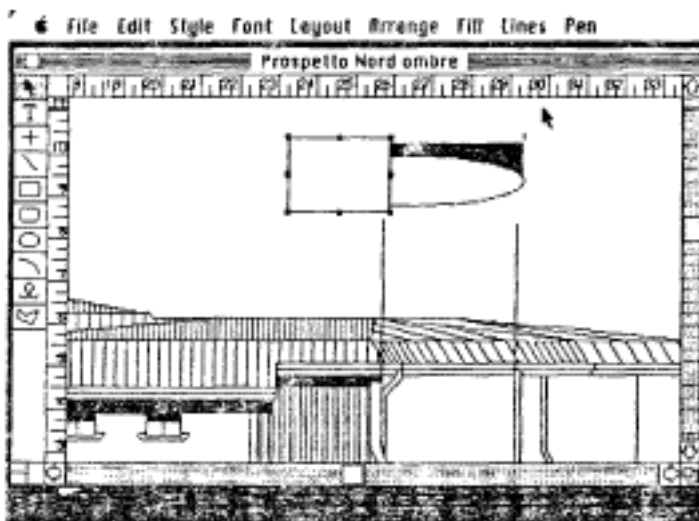
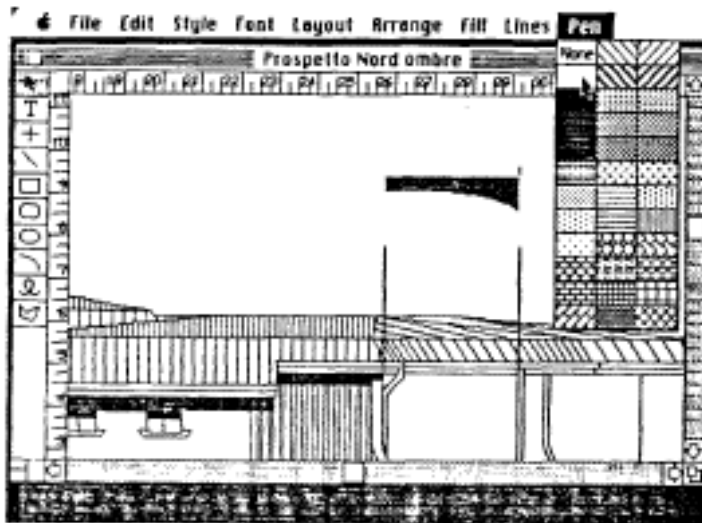


The project of a residential block with facilities obtained by an Autocad 3D simulation of the square and the underground parking places (students: G. De Nuzzo, F. Manzoni, D. Zavagno).



The technological chains for modelling, which is integrated by graphic in the course of "Drawing 2" (G. Galassini, G.Bacci).

Graphic simulations are realized at a work-station Macintosh.



Shadows drawn above a building: elaborations obtained at a work-station MacIntosh.

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