# TECHNICAL CONCEPTION OF VIDEOSYSTEMS LABORATORY AT MOSCOW INSTITUTE OF ARCHITECTURE

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I would like to dwell upon the main technical conceptions of our laboratory, which supports architectural education and real design.

The basic point of our conception is not to submit the architect to technical means, but give him freedom of choice and the opportunity to work in the environment closest to the real one. In our situation it means, that we should provide work in real videoinformative space. Thus, our conception of education is to give all the junior students compulsory general information about videosimulation, and to ensure optional more professional work of undergraduates while carrying out their school projects.

We consider, that in the architect's activity simulation (making small-scale models) plays an essential part, because the small-scale model is the first and the only source of true three-dimentional information about the object designed. At the same time videosimulation does not deny or substitute computer-aided design.

To get reliable visual information from the model is possible with the help of special technical means equiped with periscopic devices. In Moscow Institute of Architecture this work has been carried out for 10 years.

We have invented a number of devices, got 6 patents of the USSR and Russia, set up the production of a small series of training equipment to supply other architectural departments.

In 1992 on the basis of our research-group a Laboratory of Videosystems was formed. The Laboratory is beginning to use the equipment of a new generation, and

that will allow to solve some more difficult problems.

The main activities of our Laboratory are as follows: teaching students, post-graduates, teachers and architects how to use video-equipment in their design work; use of videosimulation equipment in designing (mostly in training); scientific and research work (working out systems and the techniques for using the equipment); coordination of Russian Architectural Institutes' and Departments' activity in the field of videosimulation (because Moscow Institute of Architecture is the leading one in Russia).

The tasks we perform call for using simple and reliable equipment, therefore we have not been trying to complicate them through automatization. The basic element of all the equipment is the video-camera and the endoscope.

Because in teaching practice and as a rule in real design colour models are not used, we have been so far employing simple and inexpensive black/white video-cameras. As an optical device we use medical endoscopes produced in Russia as well as optical tubes specially designed for us by one of the private firms (they have considerably better parameters). To teach first- and second-year students (because their models are rather simple and have small size), we use endoscopical tubes or simple wall devices, the model is moved by hand under the endoscope.

Simplicity, reliability and low cost of such equipment allow to have several units in the laboratory, and that is quite important for the initial teaching of all the students (we normally have about 10 groups with 20 students in each).

For the work of the undergraduates and the other above-mentioned people we have worked out the system called "telemaketoscope" (it is similar to environmental simulator). It works in rectangular system of coordinates and lets observe the models of 1200 mm wide.The model is mounted motionlessly on a special table, regulated in level, and a small cart, where a video-camera, a photo-camera and an endoscope optical system are mounted.

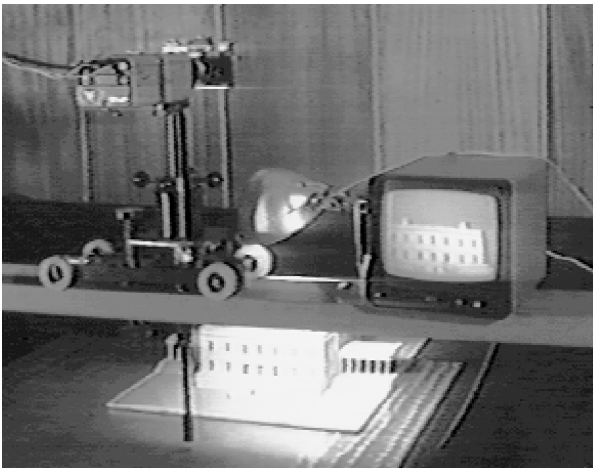

*Figure 1*
*Telemaketoscope*

The cart is moving over the model with the help of the coordinate device. The endoscope optical system is alternately connected with the video-camera and the photo-camera.

The construction of the system provides movement along any horizontal line, lifting and lowering of the optical device, turning around the vertical axis. The mobile lower mirror of the periscope ensures ”lifting and lowering the head” within wide limits. The horizontal visual angle is about 50 degrees. All mobile elements are supplied with brakes. They help to safely fix the system in the chosen position for taking photographs. A special micrometr screw gives the opportunity to successively take shots, ensuring three-dimentional observation from actual eye level.

The video-camera is connected with the monitor either directly, allowing to see the video series on the screen, or through a videocassete recorder, providing recording together with the observation.The shots chosen on the monitor can be taken with the photo-camera, after the prism of the optical device has been turned.

Further complicating of the equipment is, for example, connecting the output of the monitor with the personal computer by means of videoadapter. Now there is an opportunity of computer processing of the picture and

the output of the necessary shot, for instance, on the lazer printer.

The nearest perspective of the development of the laboratory is putting into operation new premises of about 120 sq.m. There will be placed a mini-videostudio withs S-VHS ”Panasonic” equipment, supplied with a videoprinter and a computer IBM PC/AT 386/387 with videoadapter.

We are planning to set up a video-system, the available telemaketoscope linked with it, later on there will be used a new automatized telemaketoscope that we are working out now. It is being planned to use a videoprojection system with a large screen. The system will ensure building models into the actual environment as well as making films for training purposes.

While carrying out scientific, mehtodical and technical research we aim at creating training system for videosimulation,i.e.simple,reliableandreasonablypriced one taking into account the present economic situation in our country. The system is going to be used by Architectural Institutes and Departments.

Our Institute has begun to create in Russia (and the former USSR) the association of users of videosimulation means in architecture on the base of the equipment that we recommend.