ENDOSCOPY AT THE UNIVERSITY OF STUTTGART

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Endoscopy has been an important part of the activities of the Department of Urban Design at the University of Stuttgart since 1970. It started with an concentrated effort on the Theories and Methods of Urban Design, including Meetings and Symposions with internationally known Colleagues like Kevin Lynch, Gordon Cullen, Derk de Jonge, Marc Emery, Michael Southworth, Arnold Whittick and many others, under the Direction of Michael Trieb, then a young assistant, working on his doctorate theme about Urban Design Theory in the years 1970-1973 (today ass. Professor of Urban Design on the Departement, Stadtbauliches Institut). Soon it was obvious to search after technical tools to simulate the reality, giving a chance to comparative studies about Urban Design Projects. This question was additionally actualized through the growing Interest of public participation in many kinds of Urban Projects. Here came the Endoscopy as a useful tool in. Through different informations and partly through the literature there was some knowledge about already existing activities, where the endoscopical simulation with architectural models was practiced.

So the next step was to visit these Institutions and to see what is already going on. First of them was the Agricultural University of Wageningen in Holland with Prof. H. van Leeuwen, one of the pioneers of the Endoscopy. Then the University of Lund in Sweden with Prof. Acking and Mr. KÜller, further the Technical Universities of Delft and Eindhoven, both in Holland, the Bouwcentrum in Rotterdam and at last the Office of the famous Dutch architects van den Broek and Bakema, who used a very simple, hand-driven rig with an endoscope to visualize their projects. All these laboratories were in 1975 able to produce animated movies on video or film of urban situations in models.

These visits were accomplished in 1976 by visits to the University of California in Berkeley, which then had the largest machinery, called "Environmental Simulation Laboratory" under the advisory of Donald Appleyard. Of course the problem there was the lack of suitable projects for this technique. Later, as I heard, small projects were found in the field of Public Participation. The next stop was Los Angeles, where Bill Mitchell - today Dean at the MIT - had started his first experiments on simulations Computer Graphics in the UCLA. Very exciting was the the visit in the studio of Charles Eames, who produced his famous movies simply by first making slides with his Hasselblad and then filming them with a movie camera. These were the fundamental experiences, which were used on the work, which was to follow in Stuttgart.

The next step was to construct a simple rig, a machine to transport the camera, something as we had seen it in the office of Bakema, a hanging construction, moved by hand. Soon the first orders came in and this helped to accomplish the equipment, specially with Cold-Light-Lamps, which did not heat up and break the models. It was finally possible in 1980, through governmental financing, to construct a full movable electronic-mechanical driven Endoscopy Simulator of the size of 4,5 x 2,5 meters, which in 1997 still is in use and which provides perfect imagines, sharp and without any vibrations.
the use of the simulator  From the beginning the first question concerning Endoscopy was the practicability of the technique. The simple presentation of architectural projects seemed to be the first and also the most lucrative way to use the technique. Next was the problem of the architectural education, mainly in the design of spaces, where the students could bring their own models and experiment with their own design schemes. As a third field was seen the psychological research, which maybe could use the technique in testing human behaviour in artificial (simulated) environments.

The first results of the research for the good simulation technique were published in a book called 'Umweltsimulation' (Karl Krämer 1979). Next was in 1980 - 83 a research-project by the name "The Efficiency of Endoscopic Model Simulation", worked out with the emphasis on psychological aspects of Endoscopy, like the validity (how real is this?), or the choice of Media (slide or movie?), or the manuscript (what is the story?) and so on.

As typical results of the research I would like to mention:

• The use of Endoscopy in the education prefers simple technique, easy to use by the students.

• The use of Endoscopy in the participation with citizens prefers a high grade of validity (reality), which means the need of a very qualified model, then a story, and, at the end something like a movie director.

After that the problems about Endoscopy seemed to be solved. As also the technique (endoscope, light, movement a.s.o.) seemed to have reached its limits, the question was to widen the field of search into new problems for the use of Endoscopy. One very real and actual was the one of the Street Lighting or the Lighting of the Urban Environment. This is a new and a fascinating field of Urban Design and it has found large interest in the Laboratory and also among the students. Some of the results will be presented here at this Conference.

At last I want to mention a co-operation with the National Institute of Technology of Taipei, where a endoscopic laboratory has been constructed, following the experience made in Stuttgart.

Publications:

• Markelin, A., Erfahrungen bei der Anwendung sensorischer Simulation im Städtebau, in: Bauwelt 25/1977


• Markelin, A., Modell oder Visualisierung, in: Der Architekt 4/1988