

# **EFFICIENCY OF MODEL ENDOSCOPIC SIMULATION**

**An Experimental Research at the University of  
Stuttgart**

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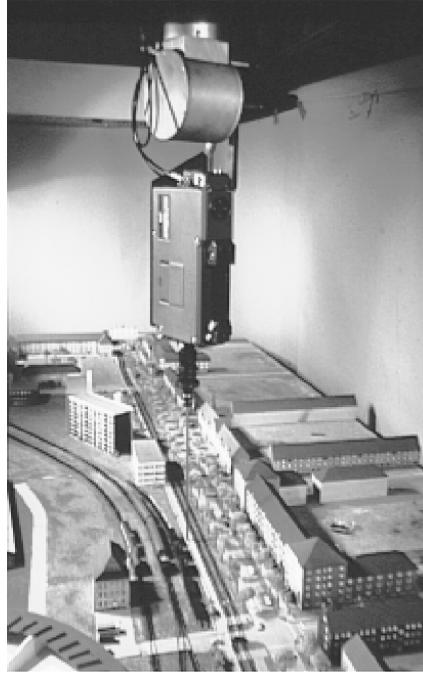
At the Institute of Urban Planning at the University of Stuttgart early experiments were made with the help of endoscopes in the late 1970's. The intention was to find new instruments to visualize urban design projects.

The first experiment included the use of a 16 mm film of a 1:170 scale model of the market place at Karlsruhe, including design alternatives (with trees, without trees etc). The film was shown to the Karlsruhe authorities, who had to make the decision about the alternatives. It was said, that the film gave a great help for the decision-making and a design proposition had never before been presented in such understandable way. <sup>(1)</sup>

In 1975-77, with the support of the Deutsche Forschungsgemeinschaft (German Research Foundation) an investigation was carried out into existing endoscopic simulation facilities, such as those in Wageningen, Lund and Berkeley. The resulting publication was mainly concerned with technical installations and their applications. <sup>(2)</sup>

However a key question remained: "Can reality be simulated with endoscopy?" In 1979-82, in order to answer that question, at the Institute was carried out the most extensive research of the time, into the validity of endoscopic simulation. Of special importance was the inclusion of social scientists and psychologists from the University of Heidelberg and Mannheim. A report was produced in 1983. <sup>(3)</sup>

The research was concerned with the theory of model simulation, its ways of use and its users, and then the establishment of requirements for effective model simulation. For the main research work with models or simu-



*Figures 1 and 2  
The first and the present  
endoscope.*

lation films, psychological tests were developed which enabled a tested person to give accurate responses or evidence without getting involved in alien technical terminology. It was also thought that the use of semantic differentials would make the work imprecise or arbitrary.

Among the research questions were those to do with the intelligibility of the image, the ability to judge the shown design and the environmental quality etc. The main results can be described in a simplified way like:

1. *Validity.* The first condition for the validity is a very realistic model. All experiments with simplified models went wrong.

2. *Environment.* The environment tends to look better in endoscopy as in reality. There is no disturbance, noise or smell. The colours are brighter, due to the processing technique.

3. *Media.* Comparing video with slides shows that video is not as exact as slide, but it gives more positively results.



*Figures 3 and 4  
Views from the  
Karlsruhe-project.*

4. *Script.* Script is absolute important for the presentation and understanding. The entrance, the movements, the viewing are also necessary for the orientation.

5. *Orientation.* The orientation can be supported by "anchoring", by using points of identification.

6. *Speed.* High speed or nervous viewing give wrong judgements.

7. *Music.* The use of music can but must not be a tool for manipulation.

8. *Professionals.* There is no remarkable difference in judging the environmental design between professionals and "others".

9. *Prognose.* Architectural endoscopy can not give a perfect prognose about future user reactions. But it allows aesthetical judgement, equal the one of a tourist.

10. *Reality*. Architectural endoscopy is not as good as the reality. But the results of the judgements are in both cases congruent.

This study was concerned with more or less technical questions about the validity of the presentation, about the perceptual quality and so on. Further questions like "How will the future quality of the environment be?" were not investigated. These will be problems for further studies.

### Notes

1. Markelin, A.: Erfahrungen bei der Anwendung sensorischer Simulation im Städtebau In: *Bauwelt 25/1977*.
2. Markelin, A. - Fahle, B. *Umweltsimulation*, sensorische Simulation im Städtebau. K. Krämer Verlag, Stuttgart 1979.
3. Fahle, B. - Häfele, J.: *Leistungsfähigkeit der Modellsimulation, Experimentelle Untersuchungen*. Manuscript Städtebauliches Institut der Universität Stuttgart 1983.
4. Markelin, A.: Modell oder Visualisierung. In: *Der Architekt 4/1988*.