

Computer-Aided Architectural Design Futures

Edited by Alan Pipes



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International Conference on Computer-Aided Architectural
Design

Department of Architecture, Technical University of Delft
Berlageweg 1 Delft, The Netherlands

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Preface

Computer-Aided Architectural Design Futures was conceived late one evening in the bar of the Metropole Hotel in Brighton, UK. Those present — veterans of a hundred and one CAD conferences — were bemoaning the degree to which big business was taking over the conference scene: exhibiting was replacing conferring, selling was replacing thinking, products were replacing ideas. Wouldn't it be nice, we agreed, to get back to an 'academic' conference which would take stock of current developments in CAAD and attempt to anticipate the direction of future developments and their impact on architectural practice, on the building industry and on the quality of the built environment?

The concept might easily have evaporated in the cold light of morning had it not been for the Dutch Ministry of Housing. Already committed to hosting the 1985 meeting of the CIB Working Group on Integrated CAD Systems at the Bouwcentrum, the Ministry agreed to provide the venture capital for the conference. Around these two events, further CAAD activities began to cluster — the annual meeting of eCAADe and an ambitious (perhaps over-ambitious!) series of tutorials and workshops. Together they made up B-CAD 85 — a festival of computer-aided building design.

Four major themes are explored in CAAD Futures:

- Systematic design;
- Drawing and visualization;
- Artificial intelligence and knowledge engineering;
- Implications for practice.

Stimulus papers on these four themes were circulated prior to the Conference, and the conference papers themselves elaborated the issues raised in the stimulus papers in such a way as to encourage discussion. The resulting book, we believe, will be a major reference text for students, researchers and practitioners.

The conference planning committee (Rik Schijf, John Chalmers, Harry Wagter, Andrzej Kociolek, John Lansdown, Andrzej Sambura, Alan Pipes, Marc Labadye and Chris Mullins) worked hard to get the style and content right, but its success depended, in large measure, on the lively participation of all who attended. The most important mark of its success was a decision to make this conference the first in a series.

*Tom Maver
February 1986*

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Contents

Part One: *SYSTEMATIC DESIGN*

Chairman: Harry Wagter	2
1 Any progress in systematic design? A. H. Bridges	5
2 Design methodology: how I understand and develop it W. Gasparski	16
3 Layout design problems: systematic approaches E. Shaviv	28
4 The profits of CAAD can be increased by an integrated participatory design approach S. K. Wrona	53

Part Two: *DRAWING AND VISUALIZATION*

Chairman: John Lansdown	61
5 Computer graphics and visualization D. P. Greenberg	63
6 Three-dimensional input and visualization R. Aish	68
7 3RM: a spatial relational reference model M. de Jong	85
8 Three-dimensional visualization: a case study D. J. Vanier and J. Worling	92

Part Three: *ARTIFICIAL INTELLIGENCE AND KNOWLEDGE ENGINEERING*

Chairman: Thomas Maver	104
9 An overview of knowledge engineering and its relevance to CAAD J. S. Gero	107
10 Requirements for knowledge-based systems in design J. Lansdown	120
11 Designing with words and pictures in a logic modelling environment A. Bijl	128
12 Constraint-bounded design search G. Carrara and G. Novembri	146
13 Representing the structure of design problems B. S. Logan	158

Part Four: *IMPLICATIONS FOR PRACTICE*

Chairman: John Chalmers	173
14 CAD in the Netherlands: integrated CAD R. Schijf	176

15 CAAD: shorter-term gains; longer-term costs? R. Walters	185
16 How can CAD provide for the changing role of the architect? S. Ruffle	197
17 A unified model for building B. J. Q. Wheeler	200
18 Problems in CAD practice K. Straub	232
19 CAD in Polish building A. Kociolek	235

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Opening Remarks

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First of all I should like to extend a hearty welcome to you all, in particular to all the speakers, some of whom have come from afar, and to the members of the organizational team from Poland, the United Kingdom and the Netherlands.

This is the first in a series of conferences focusing on new developments now and expected in the near future in the field of computer applications in the construction industry. You are regarded as being among the *avant garde* in computer applications in this field.

Before I go on to speak about the subject of this conference I should like to make a few general points on the role of the government in this context. The department of the Ministry which I represent acts as a bridge between the construction industry and the coordinating minister for this sector. The fact is that building is an aspect that concerns the policy of practically every ministry.

My department is the one to which the construction industry can turn with all kinds of questions. It can help to solve problems by the direct input of manpower and funds, but it can also interpret the problems with which it is confronted into policy recommendations to the Minister. This is first, relevant to the Minister's own policy and second, certainly no less relevant to his assessment of general government policy and the policy of other ministries with reference to building.

One of the major topical problem areas, alongside the demand for additional funds for more building jobs, is policy on technological innovation. Such a policy has three main aims:

- (1) To improve quality and control or reduce the cost of building, management and maintenance at a time of economic cuts.
- (2) In the Netherlands and in a number of other Western European countries construction assignments are changing. The market is shrinking and there is a growing demand for diversification and small series. This is why the building industry will have to transform itself in part from a service industry to one which provides a product, from a craft-oriented sector to an industrially oriented one. So, the second main aim of innovational policy is to promote this development by a policy to create conditions and give support.
- (3) In the third place policy has a social and economic aim, which is to create and maintain as many jobs as possible and of the best possible quality. It is crucial that the social image of the construction industry be boosted and that the working conditions in which the product is created be improved. Ergonomic aspects are particularly relevant. In

this respect the construction industry has scarcely been able to keep up with the progress made in other sectors of the production industry.

The application of information technology will play a definitive role in achieving these aims. I believe that there is a consensus in the construction industry that promotion of computer applications should have priority now.

However, in introducing new technologies the building industry has to cope with a number of specific problems, which I can summarize as follows.

The construction process does not take place within a context comparable with that of other production processes. Construction works are a more or less coincidental, incidental and short-term cooperative venture of numerous parties and disciplines. On top of that, the construction industry as a whole is characterized by:

- (1) Fragmentation;
- (2) Clashes of interests;
- (3) A defective system of unification, classification and coding;
- (4) Defective communications; and
- (5) A largely craft-based production system.

These factors mean that there is still no clear picture of how information technology can be integrated across the board into the construction industry. It is a problem which not only stands in the way of computer applications as such but also diminishes the chance of computers being used successfully and profitably throughout the industry. The incentive to make major financial sacrifices to introduce automation into the building industry is consequently not high, partly as a result of the organizational factors I referred to. The result is that fragmentation is encouraged and the vicious circle remains closed.

The Ministry responsible for this sector wants to tackle this problem immediately by means of a two-part strategy.

To coordinate R&D capacity and the activities of the universities of technology and research institutes to the needs of industry, research programme committees geared to innovation (IOPs) have been set up for a number of sectors of industry in the Netherlands. As a part of the IOP programme for the construction industry, a strategy has been drawn up for an interdisciplinary infrastructure for information technology in the building industry. Advanced computer-application projects will be inventoried and promoted and an appropriate model will be developed for integral use of the computer.

Second, my department is at present working on a study which aims at coordinating all the initiatives in the development and dissemination of software, in particular those which are at present being carried out by numerous parties but in an uncoordinated way. The idea is to structure supply and demand and to become familiar with each other's fields of work, objectives and ambitions.

To realize a successful automation policy in the construction sector much closer cooperation between and within the disciplines will be needed and — more specifically — there has to be readiness to exchange knowledge

which is already available. It is crucial for the building industry to avoid strictly isolated developments which in turn lead to isolated applications. If this is achieved a basis will be laid for uniform and integrated applications. Close consultation will be required between software designers and constructors of the infrastructure referred to. I hope that this line of approach will also be taken into consideration during your discussions at this conference. This would confirm my opinion that, last but not least, support for events such as this one form a major element in our policy plan.

Duplication of expensive research and wasted energy can be prevented by coordinating and exchanging information. This will in turn lead to the effective input of knowledge and scarce funds, within a relatively limited segment of the market, in the total process of introducing information and computer technology.

I hope, therefore, that this symposium, where new knowledge and experience is being passed on and initiatives can be taken and coordinated at international level, will be extremely successful and an event worth repeating.

On behalf of the Minister of Housing, Physical Planning and Environment, I have the pleasure of declaring this symposium open.