

Education in Computer Aided Architectural Design in Europe

Bob Martens, President of eCAADe (with contributions from Tom Maver, Gerhard Schmitt and Andy Brown)

The aim and object of this account is to elaborate on the role of eCAADe within the present worldwide "CAAD-activities". Each of the associations dedicated to the field of CAAD has taken its very own course of development, many cases of overlap and interaction have resulted, some of them, however, merely based on personal contacts. The purpose of eCAADe is to promote the sharing of ideas and collaboration in matters relating to Computer Aided Architectural Design. This, jointly drafted paper outlines these global aims within a worldwide context.

The eCAADe umbrella covers both Europe and its periphery. Including the Middle East and North Africa. Though this does not apply as a kind of "territorial claim", the primary affiliation of regions to at least one of the current international associations is sought.

Historically, the early eighties are to be regarded as the period of first encounters with computers of larger proportions of people involved in architecture, simultaneously with the rise of personal computers. Thus various university sites acted as the forerunners in this field. Implementation of CAAD in teaching and research soon called for channeling the exchanges of experience via a suitable platform. The founding of ACADIA (the North American Organisation) in 1981, however, seems to have set the stage, as shortly thereafter the foundations for a European movement were laid.

eCAADe: the formal foundation

Since 1987 eCAADe has been a non-profit making association registered in Brussels (Belgium), which is also the "capital" of the European Community. Activities, without official registration however, already set in five years prior to this. It would take us too far to furnish a complete specification of the authorized bylaws (which can be seen at <http://www.ecaade.org/statutes.htm>) Only the portion defining the mission of eCAADe as follows in Art. 2 of this "dry" matter is issued below:

To further the general aims of the promotion of exchange and collaboration, the Association sets out to:

- create and information network about CAAD activities and facilities of special interest existing in the schools;
- search for solutions to facilitate the exchange of staff, students teaching programs and computer software between schools;
- make specific proposals towards the creation of closer relations between education, research and practice;

- establish contact with governmental, international and professional organizations and agencies.

These rather general formulations apply to a comprehensive scope of activities, the association deriving its basic character from the activities. Though "education" is explicitly included in the name of the association, the importance of the connection to research and practice is to be stressed. A possible division of teaching, research and practice is of an artificial nature, as the agenda/activities involved cannot always be clearly divided. The focus of eCAADe seems directed towards university education, but a "lively" connection of (architectural) teaching with research and practice surely will entail significant impulses for teaching. The impact of the European Union (EU) has been increasing ever since the first draft of these Bylaws in 1987, a clear evidence thereof being the various exchange programs.

Current Activities and Initiatives

The **Annual Conference** has established itself as the most meaningful activity leaving its major marks for eCAADe. Increasingly, future conference activities are to be pre-scheduled at the earliest convenience. A fair amount of competition has gradually developed regarding the university site to host the Annual Conference. Both timing and content of the following conference are to be determined at the previous conference. The conference site changes every year, whereby a generous interpretation of the geographic term "Europe" seems wise, provided this does not amount to unproductive overlappings with existing sister-associations. Meanwhile, the eCAADe-Council (an administrative body, description as follows below) passed the third version of the "Conference Guidelines", thus making knowledge - so far available only by oral communication - generally accessible.

Other than exceptionally, the Annual Conference should be uni-lingual (English) and take place in the month of September. The contributions are to be

published as Conference Proceedings, recently also on CD-Rom, this proving wise regarding production costs and layout. The variety on presentable media thus is enhanced by such means as animations and short films.

Some eCAADe-regions organize (informal) local events between the Annual Conferences, the **Polish Conference on CAD** organized by a team at the University Bialystok every spring since 1994 being one remarkable example thereof. Drawn up similar to a workshop (with an adequate number of participants) it always results in an intensive information exchange, the findings of which are published in a book.

A so-called **eCAADe-Forum** has been established, exclusively on the electronic basis. This also may add a vivid impulse to the association life between the Annual Conferences. This web-based discussion forum will not represent a redoubling of the present **Listserver "ecaade@strath.ac.uk"**, which is available for general communication and information interchange. The ABACUS Group at the University of Strathclyde is responsible for the administration. Entries are furnished to the subscribers online only once, archive filing is not offered, i.e. that the development is only accessible to the subscribers or the administrator in retrospect and naturally only within the subscription period.

The **eCAADe-Bulletin** so far is only issued in paper and contains the up-dated information and also brief reports (esp. conference reports). As editor in the broader sense of the word Andy Brown (andygpb@liv.ac.uk) has been in charge of the handling. Recently, the Conference proceedings are labelled with a ISBN-number, thus facilitating ordering. Individual proceedings have doubtlessly been collected in libraries, though complete archive recording of complete series of proceedings is rather rare. Compilation of every and all contribution since the earliest beginning surely would prove invaluable. The project **Cumulative Index on CAD - CUMINCAD** has set the stage for this endeavour in 1998. The overall design for this interface was created by Ziga Turk (ziga.turk@ikpir.fagg.uni-lj.si), the eCAADe

Regional Representative for Slovenia. As far as this is a web-based database, access and handling is rather comfortable. Costly connection time is avoided and the principle of mobility comes in useful, i.e. input may be carried out from any computer equipped with www-Browser, a procedure which surely was inconceivable until recently. The input mask permits the entry of bibliographic data with keywords, but also of summaries/abstracts, resp. an e-mail address of the authorship (to establish contacts) as well as a www-link. It is possible to receive a better insight into the contribution of interest, to look into further information on a URL (e.g. Full-papers, which are being provided in the www to an increasing degree) and to contact the authors so desired.

First of all the compilation of eCAADe-proceedings was tackled.. At the end of 1998 we will dispose of approx. 600 records. The next step will include the ACADIA-proceedings aiming at achieving a high degree of completeness by 2000 regarding the published Proceedings of the worldwide operating CAAD-associations. Not mere collecting is the object (information does not amount to knowledge and data-recording does not amount to information), but the possibility of investigating according to topics is to be provided. This might be of great importance for the "next generation to come". CUMINCAD could also prove invaluable for a Reviewing Committee. By 2000 the publishing period of practically 20 years surely would call for a general stock-taking of the recent developments putting CUMINCAD to use.

The CUMINCAD-INTERFACE allows for expansions. The entry of relevant dissertation and (research)-reports could be envisaged and the inclusion of "references" might prove meaningful, in order to demonstrate their "linkage" and to register the frequency of quotation like in a Citation Index. The URL of CUMINCAD is <http://www.fagg.uni-lj.si/cumincad/> with a direct link from the eCAADe-homepage (<http://www.ecaade.org>).

During the Midyear-Council-Meeting in February 1998 the idea of a **eCAADe Student Competition** was studied. The initial Idea is likely to be taken up

for the year 200 Conference in Weimar.

Within the eCAADe a EU-supported project titled **AVOCAAD: Avocaad Added Value of CAAD** chaired by Jahn Verbeke (Hogeschool voor Wetenschappen en Kunst, Brussels, Belgium) was initiated. The first AVOCAAD- conference served as a forum for discussion and exchange between academics and professionals on the topic of added value of CAAD. The group can be contacted at: tom.avocaad@advalvas.be.

Contributions in various **EU-programs** of the recent years such as Erasmus and Socrates all proved very successful. The central interface was the University of Strathclyde in Glasgow. A great number of students have taken part in exchange programs and the basic conditions have been consolidated. And again the concept is based on the "generation to come" as a meaningful background.

A special potential might result from the idea of a **Model and/or Student Work Archive**. Recently, "Virtual Design Studios" have been popping up like mushrooms, mostly utilizing the Internet as communication basis. But in what way and how are the findings and materials to be made available to others not directly involved? As already mentioned with regard to CUMINCAD Internet offers excellent possibilities of making information accessible to a vast public.

Current Membership Breakdown

The eCAADe-secretariat is held at the University Strathclyde (Glasgow/Scotland). Membership expires automatically after one year.

Throughout the period from 1994/95 to 1997/98 the paying members have come from 24 countries and 76 cities.

No personnel costs arise from this honorary (unpaid) activity, thus the budgetary estimate is kept low and the main expenses particularly arise from the eCAADe Bulletin and the travel expenses to the sister-associations for the respective Annual Conferences. The financial management of the eCAADe-

conferences and workshops lies with the local administration, both as far as profit and loss is concerned.

Some Facts on Architectural Education and Practice

Surveys of a quantitative nature only serve as a numerical approach for the European area of activities (global comparability). Here again the heterogeneity and the specific constellation of European regions which might be partly identical with the political countries are to be accounted for. If e.g. a survey is not performed centralized the findings are to be taken with a pinch of salt, but may serve as indicators.

As an approach to this issue investigations were made, as to which "institution" could have been in charge of the specific data compilation. The Architects Council of Europe (ACE) located in Brussels was the first contacted in this respect. The statutes of this association determine, that the ACE "is dedicated to the better understanding of cultural values and the promotion of the highest standards in education and practice in architecture". A survey performed by the ACE in 1995 showed that the EU-member-states have practically 300.000 registered architects.

The EAAE (European Association for Architectural Education - <http://www.eaae.be>) being the second contact, started out in 1975, shows remarkable parallels to eCAADe. The EAAE Index (1998 edition) states impressive figures: "The EAAE counts over 130 active member schools in Europe from the Canary

Islands to the Urals representing more than 5,000 tenured faculty teachers and over 120,000 students of architecture from the undergraduate to the doctoral level". Presently, a "Guide to European Schools of Architecture" giving basic information on admission, organization, curriculum and teaching staff of active member schools is being drawn up.

Structure and Organizational Framework

The Bylaws (Statutes) deal with this matter very thoroughly. Article 3 regulates **membership** distinguishing between active and sponsor members. The first category is split up into corporate and individual members. Presently active membership dominates in the category "individual".

The **General Assembly** is invested with the full authority to further the realization of the aims of the Association. The Assembly meets during the Annual Conference, as a majority of members naturally gets together at this occasion. The different tasks of the **Administrative Council** are described in Art. 11 and 14. The configuration is determined by the General Assembly and is made up of a **President** and not less than three **Administrators**. The **President** of the Association is according to Art. 17 the Chairman of the Administrative Council and the General Assembly; The President represents the Association. The Current Administrative Council and Regional representatives panel are detailed in Figures 1 and 2.

President	Bob Martens (bmartens@email.tuwien.ac.at)
Vice-President	Jonas af Klercker (Jonas.af_Klercker@caad.lth.se)
General Secretary	Jelena Petric (j.petric@strath.ac.uk)
Treasurer	Johan Verbeke (pub00730@innet.be)
Research	Tom Maver (t.w.maver@strath.ac.uk)
Communication (General and Bulletin Editor)	Andre Brown (andygpb@liv.ac.uk)
Communication with Eastern Europe	Ivan Petrovic (aivan@eunet.yu)
Communication with Regional Representatives	Henri Achten (H.H.Achten@bwk.tue.nl)

Figure 1 (left). eCAADe Officials as of 1998.

Figure 2 (right). Listing of eCAADe-regions and Representatives as of 1998.

AUSTRIA	Andreas Voigt	voigt@ifoer.tuwien.ac.at
BELGIUM	Johan Verbeke	pub00730@innet.be
CROATIA	Bojan Baletic	bbaletic@arhitekt.hr
CZECH REP. & SLOVAKIA	Igor Kosco	kosco@dcaad.fa.stuba.sk
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FRANCE	Mikhael Porada	michel.porada@evcau.archi.fr
GERMANY	Michael Lenhardt	lenhart@rhrk.uni-kl.de
GREECE	Nicos Tsinikas	tsinikas@iktinos.arch.auth.gr
HUNGARY	Mihaly Szobolay	szoboszlai@arch.bme.hu
IBERIA	Javier Monedero	monedero@ega1.upc.es
ISRAEL	Rivka Oxman	arro01@technion.ac.il
ITALY	Benedetto Colajanni	bcolajan@mbox.unipa.it
NETHERLANDS	Henri Achten	h.h.achten@bwk.tue.nl
NORWAY	Birgit Sudbø	sudbo@ark.ntnu.no
POLAND & FORMER USSR	Aleksander Asanowicz	asan@cksr.ac.bialystok.pl
PORTUGAL	Pedro Henriquez	pgameiro@civil.ist.utl.pt
SLOVENIA	Ziga Turk	ziga.turk@ikpir.fagg.uni-lj.si
SWEDEN	Jonas af Klercker	jonas.af_klercker@caad.lth.se
SWITZERLAND	Gerhard Schmitt	schmitt@arch.ethz.ch
TURKEY	Nigan Biazit	bayazit@sariyer.cc.itu.edu.tr
UK	Andy Roberts	robertsas@cf.ac.uk

The introduction of **Regional Representatives** is not explicitly indicated in the Bylaws, they act, however, as the interface between the appointed bodies and the membership. In order to promote coordination in this significant field an Administrator for Communication with the Regional Representatives was installed (Henri Achten, The Netherlands).

Membership Benefits

Members enjoy a number of benefits including receipt of the eCAADe Bulletin and Occasional Reports and a concessionary rate at the Annual eCAADe Conferences. A promotion-measure initiated last year, i.e. a CD-Rom - free of charge - with the eCAADe

Conference Proceedings for every renewal or new membership was already mention.

Outreach Efforts

The question as to improving know-how transfer to those not directly involved has been already raised in the brief description of the EAAE (= European Association for Architectural Education). The University Leuven recently (Nov. 13-14 Nov. 1998, Belgium - <http://www.asro.kuleuven.ac.be/eaee/welcome.htm>) hosted a Joint EAAE/eCAADe Workshop-event titled "Computers in Design Studio Teaching". The key issues were: how and for what purpose are computers used in the design studio, why

and for what purpose are computers not used in the design studio, when and how to start with CAAD in the curriculum, and what is the relationship between CAAD teaching and architectural and/or design theory?. In bringing together the EAAD and the eCAADe community, an interesting and fruitful exchange of ideas amongst teachers in architecture took place.

eCAADe is also affiliated with the Elsevier's Journal "Automation in Construction" as is ACADIA. Special Issues arising out of eCAADe Conference presentations will appear.

Future Issues and Trends

Further conference venues are in the stage of planning, such as the 18th eCAADe Conference 2000 in Weimar (Germany; This city accommodated the first Bauhaus!). For the year 2001 several candidates are competing to act as Conference Chair for the 19th eCAADe Conference, such as Copenhagen (Denmark), Naples (Italy) and Tampere (Finland). In the magic year 2000 an online-event such as a Virtual Design Studio with delegates of the CAAD-Association using videoconference-structures could be considered (e.g. on the basis of ATM or Internet-based technologies).

Perhaps the development of a joint umbrella-structure for ACADIA, eCAADe, CAADRIA, SiGraDi and CACDA seems like a pie in the sky at present. But joint activities, such as CUMINCAD, Joint Student Competition or cooperation on joint publications might be fostered.

Opinions about our Hopes and Aspirations for CAAD

Tom W. Maver (University of Strathclyde) has acted both as "founder" and "pioneer" as well as "keyplayer". The following contribution to the topic "The History of eCAADe" was submitted by him:

eCAADe was born during the closing discussions of a small conference held at the Technical University of Delft (TUD) in the Netherlands in 1982. The conference - which is now identified as the first in what has become a series of 17 conferences - was put together by Rik Schijf, then teaching at TUD, Rifka Hashimshony, on attachment to TUD from the Technion in Israel and Tom Maver, a visiting lecturer at TUD from the University of Strathclyde in Scotland. It was clear to those who attended that first meeting that the potential for the use of computers in architectural education was immense but that it would be a long and difficult task to convince our fellow teachers to embrace the technology. The formation of ECAADe was seen as the best way forward.

The group, somewhat increased in numbers, met a year later at the Vrije Universiteit, Brussels and, over an important formative stage in the evolution of ECAADe, two young women from that Institution - Marijka Molleart and Hendrieka Buelinckx - kept the small group of enthusiasts in touch with each other. Over this period, Tom Maver acted informally as the President of the association as the Annual Conference went from Helsinki in '84 (when the logo first appeared), Rotterdam in '85 and, Rome in '86.

When Tom Maver took up a part-time Professorship at the Technical University of Eindhoven in 1980, it was logical for the Secretariat of the association - long supported by Geert Smeltzer from the TUE - to be assumed by Geert and his colleague Marlyn Aretz. Geert and Tom drove back and forward between Eindhoven and Brussels to establish the formal Statutes. Although not formally established until 1987, the principles were agreed at the Rome conference hosted by Gianfranco Carrara - outstandingly successful in both academic and social terms. Tom Maver handed over the Presidency of ECAADe at the annual general meeting in Rome to Herbert Kramel who was to maintain it for the next 6 years and the Secretariat was formally assumed by Geert and Marlyn.

The Association now had a constitution and a formally elected President and continued to grow in

numbers and in confidence. Herbert Kramel hosted the 1987 Conference in Zurich (jointly with EAAE). The association failed to find a host Institution in 1988, but the Danes revived enthusiasm (with some wonderful jazz dancing by Nils Ole Lund) at the Conference in Aarhus in 1989. The Budapest Conference in 90 saw the wonderful city pedestrianized by the first transport strike this century, in 1991 Munich did the business with style and grace and the 1992 Conference in Barcelona hosted by Txatxo Sabater re-established dancing at the baroque Paloma as a social grace.

Despite the success of the Annual Conferences the Association was experiencing constitutional crises - few institutions willing to host conferences and few members willing to work for the association. In a crisis meeting in Eindhoven, Geert Smeltzer generously agreed at short notice to host the 1993 Conference at which Gianfranco Carrara was elected President, Jelena Petric and Jean Dick agreed to take over the Secretariat, based at the University of Strathclyde in Glasgow. Glasgow was the venue of the 1994 Conference - the Virtual Studio - attended by a record number of 130 participants.

Palermo, capital of the beautiful island of Sicily was the site of the 1995 Conference (which made multi-media its theme) and the Conference went north to Lund in Sweden in 1996 to be royally entertained by SPEX - an extraordinary student cabaret. The new President, Bob Martens, was elected at the excellent Conference hosted by the Vienna University of Technology (1997) and, in common with ACADIA, ECAADE organised its 1998 Conference in a French speaking city - Paris.

Over the formative period of the evolution of ECAADE some funding from the European Community was obtained for student exchanges, through the ERASMUS/SOCRATES program, and for conference attendance by young researchers which, over the period 1991-94, enabled the participation of a new generation of members. In 1985 the EC commissioned a report on the Social Impacts of CAD, a seminal document published in Design Studies, Vol

7, No. 4.

The predictions in the ECAADE report to the EC on the Social Impacts of CAAD in 1985 were quite explicit and comprehensive and exemplified all the characteristics of "macro-myopia" - the tendency to exaggerate the likely short-term consequences of new technology and to underestimate the long-term impacts. It is clear to me, however, that the benefits predicted by the small group of people who compiled the report back in 1985, through sustained endeavour by them and by the growing number of dedicated and visionary academics within ECAADE and its sister organizations, are already being realized to the enormous benefit of architectural education and the quality of the built environment

Also **Gerhard Schmitt** (ETH Zürich) is a well-known pioneer and keyplayer within the eCAADe-community. On the theme "CAAD - Hopes and Aspirations" he provided following contribution:

CAAD has been established as an option in architecture - not as originally intended and predicted, perhaps, but as an indispensable instrument for the architectural and engineering office. The assumption, that research topics would eventually become part of mainstream development, proved to be correct. Astonishing, however, that even in a dynamic field like CAAD, more than twenty years must pass between research and application. The best examples for this observation are data base applications in design and computer supported collaborative work in distributed environments. Researchers at Carnegie Mellon and other universities explored these possibilities in the 1970s.

In the past, CAAD helped to materialize ideas and to translate "the virtual" into "the real". In the future, CAAD will be essential for establishing information structures that are totally independent from physical counterparts. Thus, architectural education needs to include CAAD as a preparation to design information architecture in the information territory. I am convinced that architecture as a discipline is capable to influence

the future of the information territory, but it will depend entirely on the degree of enthusiasm and competence that architects show to develop the new field. In the middle of the 21st century, only a fraction of architecture will be of physical nature, and more than two thirds of architects will design, construct and maintain information architecture. A non-obvious result of this scenario is the increased importance of architectural history and design methods: The part of architectural education that concentrates on design and construction techniques for physical architecture will be less relevant in the information territory; but design process, design methods and knowledge about architectural history will determine the quality of the emerging information structures. With information becoming the raw material of future architecture, information design, construction and maintenance of information structures will be key issues of future architectural design education.

Andy Brown is one of the pioneers within eCAADe and he submitted the following vision on "Publications - Communications and Interchange":

In the early days of eCAADe, before we all took email for granted, it was agreed that a bulletin be produced. For some years the Bulletin was produced at the University of Eindhoven by two of the early protagonists in the world of eCAADe, Geert Schmeltzer and Marilyn Aretz. These bulletins were well produced and did a good job of keeping members informed of news and activities.

Herbert Kramel, during his period as President was aware that what would be worthwhile, in addition to the Bulletin, would be to produce an update of research work at a variety of institutions. That resulted in a set of publications called 'Work in Progress' which allowed researchers to tell everyone what they were doing so that collaboration and interaction could take place. They were like web sites made physical and now the kind of thing that we see commonly on personal and research group web sites. Kramel's often stated aim was that eCAADe members should do as

the Rio summit implored us to do, "think globally and act locally". Our communications strategy has tried to support this timeless idea.

In terms of communications and working towards a common goal the idea that has surfaced on several occasions is that of having common CAD models for all members to share. In particular the idea of having each member create a model of their City so that, in the end there would be a valuable distributed database of city models around the world which we could all access still remains as a worthwhile goal. If we could achieve that it really would represent a collaborative CAAD venture of major proportions.

Presence in the Web

The **eCAADe-Homepage** meanwhile has been installed in an individual domain, i.e. <http://www.ecaade.org>. This electronic counterpart to the Bulletin - constantly "under construction" - is also being up-dated by Andy Brown (andygpb@liv.ac.uk), with Phil Berridge (p.berridge@liv.ac.uk) acting as Webmaster.

The most recent additions to the web site to enhance communication are:

- A list server based at the University of Strathclyde
- A Forum for discussion groups organised by Ivan Petrovic at the University of Belgrade
- A Cumulative index of CAAD research papers, CUMINCAD

Publications

Below is a listing of the eCAADe Conference Proceedings which may be ordered directly in bookshops via the ISBN-Number (1994 -1997), or from the Conference Organiser:

- 1983 Brussels: De Wilde, W.P. et al., eCAADe Proceedings of the International Conference

- 1984 Helsinki: Poyry, M., eCAADe 84 - Third European Conference
- 1986 Rome: Carrara, G., Teaching and Research with CAAD
- 1987 Zurich: Kramel, H., Architectural Education and the Information Explosion
- 1989 Aarhus: Agger, K.; Lentz, U., CAAD - Education Research and Practice
- 1991 Munich: Pittioni, G., Experiences with CAAD in Education and Practice
- 1992 Barcelona: CAAD Instruction: The New Teaching of an Architect
- 1993 Eindhoven: Smeltzer, G., Education in Computer Aided Architectural Design
- 1994 Glasgow: Maver, T.; Petric, J., The Virtual Studio (0-9523687-0-6)
- 1995 Palermo: Colajanni, B. et al., Multimedia and Architectural Disciplines (0-9523687-1-4)
- 1996 Lund: Af Klercker, J. et al., Education for Practice (0-9523687-2-2)
- 1997 Vienna: Martens, B. et al., Challenges of the Future_ (0-9523687-3-0)
- 1998 Paris: Porada, M. et al., Computer Craftmanship in Architectural Education (0-9523687-4-9)

Furthermore, the individual contributions of the publication can be looked into in the "Cumulative Index CAD" under the following URL:

<http://www.fagg.uni-lj.si/cumincad/>

Notes

The Address of the Secretariat is:

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