

# The role and status of computing and participation of design clients in the curriculum

Jen Kokosalakis \*

*This paper is not intended as a fully researched exploration into architecture course coverage, but an attempt to introduce debate regarding some concerns on the role and status of Computing and consumer participation in the hope that CAAD peers will discuss and reflect with other specialists. A number of commentaries on serious deficiencies in the education of architects point to poor take-up of computing into the curriculum and an almost disassociation of the eventual designed building user from decisions on the design. By comparison it seems easier to find architects today who involve clients almost throughout the design process and increasing competency and continuity of CAAD usage in practices. The few brief references to Schools' curricula are not formalised random studies. Certainly many excellent features will have been omitted. The intention is to start the debate. Finally a few directions are noted and some conclusions proffered. An argument is made for 3D CAAD models as the backbone and direct negotiating focus for design arbitration between consumer, designer [or students] and other professional collaborators in designing buildings, particularly where complex forms and spatial relationships are involved.*

## 1 Introduction

This paper explores commentaries on a few brief studies of education and some cases from practice. The scope is to considering the role of computing and participation with the building consumer. The possibilities of relating these two important aspects is discussed to some extent. However an earlier paper (Kokosalakis 1996) dealt in more depth with the case for centring design/client dialogue at the computer. The argument in part that should the architect be persuaded to work from early stages of design ideas and development at the computer, this would bring an exceptional advantage for the client, giving insight to early visualisations and dialogue within the architect's mind and not normally expressed to others. A large part of the previous paper discussed and defined participation, its reality and abuse and what it can bring to successful design. Examples of the tragedy of omission were discussed. This paper builds on those matters and tries not to duplicate the material. However for those who want to explore participation as an issue for CAAD, it could be useful start. The intention here is to explore concerns that social issues and methods of approaching and communicating with the consumer or potential occupant of the building are disappearing from curricula. CAAD tutors also fear their curriculum share is not growing as it should. Have both issues been sidelined?

In the title I have used the term design clients in a very broad sense. I wish to clarify that my concern lies with regard to the eventual building occupant, or visitor/user, or world/citizen observer. In the text I have mainly used 'consumer' to embrace these various groups. There are many cases where the discussion could be extended to refer to all clients and even to the collaborative team of professionals who must work with the architect. In most cases it is simply a question of variation of degree of difficulty which each type of participant experiences naturally and the effort needed to reduce that difficulty. In this paper I shall mainly use the term consumer participation to imply a close, progressive involvement between consumer and architect to enable the consumer to define, discuss and achieve important needs and desires in the eventual designed building and to enable the architect to understand this fully and be able to interpret and develop these into quality design, which brings self respect and achievement, but is negotiated not imposed through strong presentational persuasion.

By participation I really do intend to mean full and meaningful participatory democratic decision making leading to delivery of design products which indicate compliance with the decisions made. Definitions abound and many public decision making processes have almost defiled this word and cheated communities into extended manipulative negotiations in the name only of participation. For a fuller discussion the reader could start with (Arnstein 1969) (Goodman 1972) (McDonald 1986) (Sasada 1995) (Kokosalakis 1996)

---

\* Senior Lecturer in CAAD & Planning Centre for Architecture School of the Built Environment  
Liverpool John Moores University, L3 5UZ England — email J.Kokosalakis@livjm.ac.uk

## 2 Recent public calls for change

### 2.1 Sustainability initiatives

Participation seems to have become an essential ingredient in popular world concerns, often acting as a catalyst by tagging it to funding. Congress, Agenda 21, Environmental Impact Analysis, Visual Impact Analysis and energy conscious, pollution-avoiding planning and building are targeted.

#### 2.1.1 *World Congress of Architects, Chicago —UIA/AIA (1993)*

—“We are ecologically interdependent with the whole of the natural environment; We are socially, culturally and economically interdependent with all humanity; Sustainability in the context of this interdependence requires partnership, equity and balance among all parties (*ie. participation, involving experts, professionals, building users, citizens, etc.*)”

#### 2.1.2 *European Agenda 21*

On sustainability issues the *EU insists on participation* in the development of policies and the EU maybe one of the strongest drivers for practitioner acceptance and consequently for common inclusion in education and training.

Studying Athens in the 90's, I have observed strong bonds between education, community and practice, culminating in whole day public meetings, including politicians. On the other hand, planners *had been* experiencing little practical impact and success in enforcing planning and building restrictions. Traditional public resistance, contempt and outright disregard of government administrations are considered to be based on centuries of domination by alien and culturally threatening administrations (for example Turkish and German occupation hardly offered participatory democracy and personal rights—not between occupier and occupied, though it may have intensified community co-operation and action networks).

However, recently, intensified public debate, professional activity and political empowerment has enabled speedy implementation of new measures towards a sustainable environment. The Organisation of Athens created to establish and coordinate the Master Plan has used European directions to underpin progression of sustainability with community participation. This included media activity, public meetings, action groups, discussion of technical data on pollution and options for reduction through extensively increased public transportation and major reduction in private vehicle rights. Interestingly, the *Organisation employed architects to develop CAAD models to assist public comprehension* of the more dynamic and complex proposals—including connecting sites by excavating sections of heavily trafficked routes to prioritise pedestrian movement. Following publication of general (Organisation for Planning & Environmental Protection of Athens, 1994) and specific proposals (OforP&EPofA, 1994), major works have been *accepted and completed* including completion of pedestrianisation of the Central Business Triangle *within one year*. (OforP&EPofA, 1996) Anecdotes do as usual abound!

### 2.2 National: Latham Report

Latham (1994) accentuates the importance of the role of client and profession responses. He demands a Construction Clients' Forum be established. Clients should have more assistance to utilise their accepted responsibility for good design able and enabled to change the design. One named member of the design team must ensure client visualisation of the developing design. Education should explore approaches in which sequences of designing can achieve what clients want conceptually. Since clients do not always understand the design intentions from plans, conceptual drawings, discussions, descriptions, etc. He strongly promotes Knowledge Based Engineering and predicts client control through this representation as the vehicle for client comprehension and negotiation and even for the designer to see the design more accurately and respond and satisfy client notions for the design.

### 2.3 RIBA

#### 2.3.1 *RIBA Community Architecture group —chaired by Bob Fowles, the Welsh School,*

Respondents to enquiries by the group have brought them hope. They identified a number of valued community based projects and gained offers of educational input from practices and Technical Aid Centres. They had established an initiative in 1992 to promote the concept of user-client and community participation in design in schools of architecture:

- to engage students with social issues
- to recognise the benefits of consumer participation
- "to promote the architect as an enabler and facilitator of democratic participation of people in the design, construction and management of buildings."

Within the RIBA, the Community Architecture Group are personally involved in design participation with the consumer and comprise a formal membership of at least 12 Schools of architecture, 17 professionals, 31 trusts and aid centres and 7 Local Authority members.

Their educational initiative aims to engage students with social issues, raise the importance of participation of user-clients, building users and commercial groups in the design process and to recognise the benefits which result, promoting the architect as enabler and facilitator of the participation of people in design, construction and management of buildings.

The RIBA Education Steering Group survey report, 1992 found from 17 questionnaires:

12 Heads showed interest in community architecture,

69 staff were deemed to express interest in "design participation by community and end users,"

12 replies indicated teaching community architecture through lectures and seminars,

Many schools expressed interest in a Community architecture course or visiting lecture.

10 Schools in England and Wales are most likely to respond favourably (if targeted) to become centres for the development of a programme of lectures and projects in their curriculum and it is hoped that many more will increase emphasis on social issues in other ways. It is not clear whether any of this specific participation is progressed through CAAD involvement, but certainly at least four are known to have a strong involvement in CAAD projects.

*After more than ten years of exemplary work, it would be beneficial if we could add to this persuasion of schools and practices to increase the usage of consumer driven CAADesigning*

### *2.3.2 Presidential pressure, 1995*

**Frank Duffy**, during his office as RIBA President spoke strongly on the urgent need for vital change. A paper to the symposium on Educating Architects at Portsmouth (ed. Pearce, and Toy, 1995) includes remarks of relevance to the points I seek to address in my paper: ". . . I am angry about the situation in which we find ourselves, anxious that we should push ourselves much harder . . . I think we have not come to terms with the enormous consequences of the use of information technology in architecture, which enables us to rethink the process by which buildings are designed and erected. Also we have failed collectively to understand systematically what the clients want from us, It is extremely hard to simulate client politics in the studio/educational realm. . . . neglect is very evident in the way in which architecture is taught in the 90s."

### *2.3.3 Burton report*

The Summary of the Richard Burton Report to which Duffy refers (Pearce and Toy, 1995) as presenting a positive programme to correct such neglects and criticisms, includes interesting statements regarding clients: "Architecture bridges . . . between the client/consumer and built form. The resolution of these in harmony is vested in the architect through design, design management and . . . reviews will lead to greater relevance of the courses to the contemporary requirements of clients, users and industry. . . . monitored by the professional validation system. Our project-based learning systems a jewel which accepts and encourages response to change and development of judgement. It is an iterative system facilitating cross-disciplinary work. We agree it must be supplemented by further specialisms. We cannot risk not having the time for it. . . . exploiting the wide connections available with such disciplines as social science, design business and art."

Both reports also emphasised the essential need for a process of continuing education throughout architects careers.

### 3 "Educating Architects" conference's missing emphases (Pearce & Toy 1995)

Yet in the same symposium it would seem that the RIBA—Duffy and Burton are right to be so concerned and forthright, since amongst the other papers from two dozen world educationalists little is evidenced on:

#### *3.1 Need to understand social aspects and implications of design:*

The most sympathetic view by **Jones** outlines how the sixties underwrote his subsequent attitude to teaching and practice—"a certain fallibility began to emerge" he embarks on a telling review of destructive British social housing programmes from which "critical resistance and reassessment was necessary". **Broadbent** mentions the RIBA Oxford Conference, 1958—engineering sociology and economics. should inform the architecture course. In 1967 he co-ordinated a 'pluralist' and an 'Oxford' approach appointing a psychologist, anthropologist and philosophers. "Our graduates brought a human rather than a 'formal' approach . . .". He suggests the Hampshire Schools followed suit, but this appears to be less common or less remarked upon today.

#### *3.2 regarding CAAD involvement:*

No CAAD specific tutors gave papers, nor even leading institutional educationalists with either awareness or valuing of their own CAAD activists. However speaking comparatively pioneeringly, **Tschumi** said architects "do not prepare construction drawings. Job architects do." His answer is for architects to take control of 'construction of technology' . . . involved with new computerised technologies . . . they should . . . design new conditions . . . new attitudes towards activities that take place in architectural spaces they design . . . programmes and the production of events, so as to reconfigure and to provide a rich texture of experiences."

#### *3.3 occasional mentions of the need for concern re building and users:*

**Pellegrino** remarks—"The criticism of architecture is mainly concerned with its integration in the world of human amenities. Discussions always end by questioning . . . the very definition of architecture in terms of the responses it makes to the social needs of human beings". **Woods**, following experiences in Sarajevo, insists that—"Architecture . . . must now find ways to inhabit this space along with the people architecture purports to serve." **Salvestrini** includes in teaching—"Case-studies (to) allow critical analysis and interpretation of design solutions adopted by architects . . . in order to satisfy specific users' needs." **Rhowbotham**, (perhaps the most critical view) who accuses the profession of seeing "external to their concern . . . the nature, source and margin of client profit, the appropriateness of building to context, the motive of the client to build, or even the pertinence of the client's brief to user requirements"

#### *3.4 real client-centred studio project activity is only heard from:*

**Hanson** describes how his students work with architect Christopher Alexander on the Visitor's Centre at West Dean, where design work is based on the real site and a 1:200 model at the site with drawings only acting as records of decisions. The planner and the client are involved directly with the real site giving the client a sense of being a greater participant than usual. **Tschumi** also does give brief historical mention to "a new social conscience" emerging in 1968; "architects establish advocacy planning and community workshops".

#### *3.5 no real Computer Aided Architectural Designing involvement is mentioned nor thereby bringing together: architect, consumer, sensitivity, communication at computers*

*3.6 Amongst meagre references to communication in architecture: Delage and Marda* describe with great clarity—(which in turn suggests clarity of perception and probably clarity of teaching and learning)—"A student has to learn how to talk about his models/drawings in a coherent way, as well as to express his concepts through drawings and models" and **Birgit Cold's** quotation of Annie Riis's poem is very pertinent to communication and participation —

#### "The Sketch

- The sketch is communication
- between 'me' and 'I'
- between me and you
- between student and teacher
- between architect and client"

*How many other tutors would see this communication so clearly? More importantly, how many Schools would seek to provide theoretical and practical support to students in developing these*

*dialogues? Finally how much of this communication can be seen occurring with the computer as the vehicle for these dialogues in education, or even in practices. Fortunately there is some evidence. Is not this a tragic failure that so few take advantage of such communication opportunity and its obvious value in being an image based dialogue. The major significant attitudinal restructuring achievements which Duffy and Burton were pressing for seemed absent from this conference.*

#### 4 Practising architects and consumers of their buildings

The emphasis of this section is on a search for evidence of changing usage of computers and involvement of the consumer throughout the design process. The outcome desired is to find cases where architect and client observe the screen together and as they observe, share ideas and actively modify, discard and / or accept.

##### 4.1 Analysing Lawson's evidence in Design in Mind (1994)

Contrasting with the conference of educationalists, he gives insight to methods of strong, extensive, collaboration (occasionally persisting throughout the design process) between practising architect and client, for which students may not be prepared. They seem to answer the spirit of Duffy and Burton's reforms. Lawson's study is taken as a reliable recent study of practices despite no indication of representativeness. My interest is with two aspects:

###### 4.1.1 *Firstly concerning his findings on participation with the client:*

He finds **Richard Burton**, likes to involve the client in the early design stages, see the drawings and contribute ideas. He finds an effort to gather data (including by social psychologists) and involve users "interactively" in the design process not simply to form the brief or feedback on the completed design. According to Burton, Newton and Coleman complete their social science user research as a "prescriptive formulae for designers to follow." but he finds this misses the opportunity to achieve much more through ongoing collaboration.

Of **Hertzberger**, Lawson notes "There can be little doubt that user constraints form the most potent primary generator . . . His passion for collaboration with users brings greatest pleasure when his design involves users who are originally isolated by not" being the formal "client", however he prefers to observe them than traditionally participate with them.

**Jiricna** values close interactive participation of the client in designing so greatly she would dislike to work solely from the brief. They need to learn of each others input to understanding "what the end product is for. . . . I try to express in words what they want and then I try to twist it into a different statement and then draw it."

**Venturi and Scott Brown** value total trust, faith and total involvement from the client to the point where they can speak freely and spontaneously without fear of misinterpretation. They have a great deal of experience and enthusiasm and insistence on collaboratively driven design. "We think that architecture has to derive from collaboration . . . and we learn a lot from the client . . . we get some of our best ideas from clients, we love collaborating with them."

**Ritchie's** commitment to dialogue with the client is total and continuous. Establishing a successful "working relationship" with client, industry and designers if this fails and cannot be made to work he prefers to abandon the job. He is concerned that "There is nobody who ever trains a single client on how to commission or deal with an architect". Should we be asking are students prepared for the role of establishing relationships with clients?

*However in summary, Lawson finds most of these architects have developed approaches which involve clients in close communication dialogue and even education, throughout the design process. They do not find working from a predetermined brief at all helpful. even Wilford insists on dialogue and presentation and discussion of early alternative designs.*

*Here education fails to prepare students for such a practice of design activity based dialogues. Although in tutorials, critics and reviews many design tutors perform a variety of questioning and demanding roles including the client (whose needs are often defined in the brief). The other roles played—structural engineer, planner, architectural design director, etc. may confuse this issue. The tutor rarely acts explicitly to state "Now assume I am the client". Certainly it is not normal to expect the students to direct to the degree described above by practitioners with their clients. Nor more importantly do we usually see evidence of distinct curriculum areas dealing with such techniques and the theoretical bases from which they stem in terms of 'democratic rights,*

*participation theory, social issues, communication, responsive surveys and combined collaborative designing dialogue and activity.*

#### 4.1.2 *Secondly on use of computers in this process:*

**Burton** considers he is unable to alter drawings directly enough with CAAD. In fact he claimed to not use it but valued his team's use of computer-aided draughting.

**Ian Ritchie** is concerned in the design process with a sense of balanced and integrated roles of computer model, physical model and traditional drawings, each bringing unique features. CAAD is used to explore sketch design, but looking for selected information, which does not then appear to be extracted, since he excludes clients from them fearing, they may not see the intent within the full picture. A strange exclusion given his commitment to client/design teams' "day-in day-out" relationships and since he also perceives that it "can actually get you to an eye view that a model can't" and the model "doesn't take you in as a human being".

**Hertzberger** does not wish to invest time in learning CAD, but is not antagonistic in principle. Lawson illustrates **Venturi and Scott Brown** as particularly acceptant of CAAD for designing. Descriptions suggest their team are very skilful (they speak of those who use them "imaginatively" and that even Venturi utilises them).

*Half those reviewed by Lawson used CAAD to varying degrees. Venturi and Scott Brown meet the two criteria of interest in my paper— seeking and understanding how to participate with the client and involving them in design and utilising computing substantially.*

*Lawson's selection process for the reviews is not apparent, however other practices utilise CAAD as part of the client participation process. Secondly even if there were not at present it would be a natural progression as architects become more competent and confident.*

*For this reason education should be leading by assisting with methodologies and experience of CAAD based projects where participants' dialogue with the student is at the system. More tutorials by studio tutors with the 3D CAAD model as centre of dialogue would help.*

#### 4.2 Nicholas Grimshaws and Partners (Stokdyk 1993)

"Dean Wyllie uses an Apple PowerBook to carry a computerised presentation to the client's office, where it can plug into a standard 14-inch Apple colour screen, evidencing participatory dialogue at the screen. 'Some of our work involves fairly complex 3D shapes and forms, and getting those down on paper manually would take a lot more time and people. Working in 3D can give you a better idea of how details are working - you have more control in 3D space.'"

#### 4.3 Innes Wilkin Ainsley Gommon —JK Interview

*Regarding consumer participatory activity, Innes Wilkin Ainsley Gommon—were involved in community architecture in the late seventies.*

*They support understanding communication, social issues, consumer needs and preferences through students and practitioners visit their Hesketh Street Co-operative.*

*Regarding their degree of Computer Aided Architectural Designing involvement., David Ainsley of today's Ainsley Gommon Wood described to me how the practice has grown to use computers for developing design work. He mentioned a CAAD scheme for 150 homes where participatory discussion amongst several large groups centred on huge CAAD drawings.*

*Bringing together architect, consumer, sensitivity, communication at computers. A group called Forum were only recently invited in to the first experimental attempt at client architect dialogue at the computer. Success can be measured by Forum asking for further such sessions.*

#### 4.4 Blackburne House Centre for Women (AJ Building Study 1996) and JK interview

The AJ study is supplemented by informal interview with Gladys Martinez and direct knowledge of partner Maggie Pickles and consultant, Danielle Pacaud. For each specific aspect of the design (eg. theatre, nursery, etc.) *intended user groups and experienced professionals met to discuss and define design and production requirements, such as space, form, materials,*

colours, precedents, etc.—fundamental to the definition of the brief. [Doubtless, Danielle Pacaud's gentle *participatory and communication skill*, [demonstrated to peers and students in the earlier Liverpool Women in Architecture group] lead through the feasibility process to the "fused vision and rationale, crystallising the brief in harmony with the building." Martinez values the co-operative and intelligent organisation of meetings established by the clients. The *resultant brief* proved a particularly full, reliable and successful basis. The clients then gave the architects full freedom to proceed to develop the design in response. *Marcus Field's appraisal* (AJ 1995), *speaks of "Pickles Martinez' deft transformation" which "stands as a fine model of urban regeneration; not only for its architecture, but because it has received one of the greatest accolades of all: it is loved by its users."*

Architectural education appears to concentrate on training in design, yet less and less time is available in the work load of today's architects for dealing with planning issues and design intent. They are normally required to apply vast layers of skills as administrators, diplomats, managers, communicators, etc. This was a particularly responsive and informed group, but Martinez believes courses should include in professional competence, *concerned attitudes on social and human issues and ability to be fully informed on the necessary activities required by users and ability to fulfil those needs fully*. She feels that architectural courses brush the surface and omit on vital skills such as communication and social and human needs, leaving it to experience. In her studio teaching at Liverpool University she likes to be involved in projects with wider issues relating to the human end user. Happily, Pickles lecturer also lectures and campaigns for more women in architecture.

Currently Martinez sees the *computer* as too mechanical and cumbersome to handle the architect's ideas during inspiration and creativity and dreams of a streamline connection and action of the computer through thought-sensing control. She may not be so far from her hopes. A recent TV programme, "Future Fantastic", (BBC1 1996) in a series on science fiction becoming fact, (presented by X Files star, Gillian Anderson) showed experimental work linking the brain directly to various systems.

#### 4.5 Practice makes perfect! Wilkinson Hindle Halsall Partnership

Speaking of their attitude to job description when interviewing architects including Halsall, McDonald (1986) writes: "the important difference between the Weller Streets and the corporation tenant is that the member of Weller Streets co-operative does have a choice. . .

- 1 The people must be the ones who tell the architect what should be built.
- 2 The architect's involvement with the co-operative must be total.
- 3 The architects act as advisers and scribes (tell us what is and isn't possible and suggest alternatives).. . . nobody but the very rich had their own architect for an individual house, had this kind of control. The members said 'We design the houses and you hold the pen'."

##### 4.5.1 *Our Development in parallel of participatory methodologies for practice and education*

Both David Wilkinson and Bill Halsall are strong practitioners of consumer participation. Wilkinson's participatory style [based on my direct observation and on Morton (1994) seems to consult to establish the brief, followed by extensive cycles of experimental design response, open meetings with end users to identify, discuss and quantify reactions, definition of what is acceptable by comparison with what is presented, discussion of reasons for client reactions (eg. This looks like scaffolding and would encourage people to climb up to the upper storeys). A commitment to act as *drivers* of the design *for end user satisfaction. Their methods and outcomes in forming productive organisational groupings and in their means to position the consumer to lead the design development and formulate their own ideas is very striking*. In the context of planning education I have run a number of research projects in parallel with both of their activities. These projects followed a *slightly different but complementary method of community contact, dialogue and data gathering based on the consumer/participants predefinition of the issues* relevant to the survey. *I involved students in collaborative work to develop a series of alternative components as 3D CAAD objects and house type CAAD libraries*. This was during an austere period [to bring in an alternative designing method starting by picking from a set of 3D CAAD parts], when they feared government funding changes might disable adequate time allocation to their usual forms of dialogue with the potential consumer group. Halsall commented (AJ March, 1988), [working then as architect to the

Eldonians Co-operative], "The Merseyside model . . . with full client participation must be retained and treated as special needs projects . . . additional costs of co-operative education and participation must be seen as an investment— in housing and adult education, community development and regenerating run down urban areas." Yet, count the financial waste and social and personal misery and economic decline often resulting in demolition of buildings where architects have failed to design with or for the human consumer—see (Kokosalakis, 1996)

#### 4.5.2 *Bill Halsall's methodologies*

In his article on Participatory Design and Housing Co-operatives, Halsall, (1984 & 7) describes a variety of techniques which he innovatively developed with this and three other Co-ops. Various means were employed to identify *future occupants views. [co-op-developed] questionnaires, visits to existing housing to stimulate ideas and assess reactions. Comparisons of alternative house plans and house type models*, to develop new and individual types for co-operative members. Site visits during construction to review progress and refine details."

"*The Identikit house*" with different options of design parts on acetate layers was used with the Portland Gardens group. "The Allocation Game" was played with Southern Crescent where each member had their own coloured house type card to move around the agreed layout plan to their own choice and negotiation.

"Using *block (wooden house type) models* to explore layout Leta/Claudia" Here members moved the blocks around to twelve different alternative layouts in the design process.

"*The group draw-in: Weller Streets*" using felt pens, acetate sheets and a calculator.

The techniques were *not arbitrarily applied to unsuspecting groups of people—they were evolved in discussion. . . . to fulfil the requirements of a particular stage of the design. . . . can only be seen as a useful way of developing and communicating design ideas in the context of a much wider discussion and debate at many different levels. finally all designs and details had to be democratically voted on.. Halsall's consumer participatory design approaches provide us with extremely clear theoretical and practical educational material.*

The practice has become computer based, since these references.

#### 4.6 *Rob MacDonald, Liverpool John Moores University*

Dr Robert G. MacDonald, Reader and colleague in Architectural Design and Urban Design has been directly associated with community architecture working as project architect for Portland Gardens Housing Co-operative and Fieldway Elderly Persons Housing Co-operative and as architect for the North Liverpool Eldonian Housing Co-operative's Eldonian Health Villa. Rob's interest in consumer control and user participation started as student. secretary to the first new build co-op. He claims (MacDonald,1989) "The variety of urban form indicates what has actually been achieved in terms of responsive urban design in the inner city."

## 5 Schools activity

### 5.1 Liverpool John Moores University

In the foreword to the Architecture Diploma and Civil Engineering collaborative project for a new Tramway (Lesley 1996) the Vice Chancellor states that " Liverpool John Moores University is committed to urban regeneration" "students make good use of their real world laboratory to produce relevant work of the highest calibre" Illustrations include results of using CAAD innovatively for tram stop designs. This publication is to form the start of public debate. *I believe learning on architecture courses will function best if centred on a computer based core learning structure, with other learning material, approaches, definition of required outcomes, coursework, assessment and feedback keyed into this.* A significant move towards this possibility has occurred at the Centre for Architecture, LJMU. For half of the studio projects throughout all years, students will be expected to develop the design using 3D Computer Aided Architectural Design. [The others based on physical modelling]. Restructuring of the architecture courses has seen yet greater emphasis on studio / project based learning. Integrated intensive grouped lecture inputs bring the relevance of architectural education directly to the studio project, combining the best features of project briefings and formal lectures and bringing improved quality, clarity and structure to active learning processes. In addition to lectures integral to and programmed

appropriately throughout progression of the studio modules, the more formal lecture modules are concentrated and more focused. A major structure was erected to display this work to the local community and some material was published (Clelland 1995) CAAD and the consumer and social, human aspects are keyed into this structure.

#### 5.2 Dundee—Charles McKean 1996) *A cosmopolitan approach up north*

This article discusses "close client and user involvement. The school is focused on real life issues and was much involved with community based regeneration of the peripheral housing estate of Whitfield and is undertaking studies on self-build and client briefing."

#### 5.3 Huddersfield School: Derek Hales (1996)

Acceptance of opportunities for client control at the computer screen indicates Hales position. The underused three-dimensional building modeller combined with interactive media facilitates control at design stages and can guide "clients through the spaces envisaged in understandable, carefully choreographed sequences and give the viewer control over navigating our scenes, presents the profession with incredible opportunities for getting it right by enhancing our own three-dimensional comprehension." It also offers the perfect vehicle for others to make architects properly illustrate what they are proposing, and you can rest assured that public pressure is ensuring this is happening—a recent letter to the Guardian to architects demanding proposals in a "form that people could understand" re Manchester city centre.

#### 5.4 University of Central England

I had only access to an old course document, from Steve Farrar, this showed evidence of a major project for which students must live within the community they design for. and make imaginative responses to people's needs and their environment to complete a building to serve this live community.

A module on Theory, History and Design Methods, includes identification and analysis of design methods which can be employed in relation to development of the brief, communication with clients and building users. such expectations from students are not unknown in other courses, but these descriptions were explicit and quite comprehensively dealing with participation and social issues.

#### 5.5 The Welsh School, Cardiff

Here, **Bob Fowles** runs a number of initiatives which handle concerns in this paper: Social aspects of architecture is a lecture and written exam based module with the aim of introducing social process in architecture and to examine the responsibilities of architects to clients, users and society. Following historical contexts, he deals with housing, socially evolved architecture, flexibility, history and theory and practice of design participation. He has resumes of resumes of Arnstein's (1969) classic work, dilemmas, socio-ecological and sustainable issues. This is a very comprehensive course and from Bob Fowles' articles (1995 & various) it is apparent it must also be very competent. His students presumably have access to his articles. My only additions would be to include material on responsive survey, including informal unstructured interviewing methodology, dangers of preconception and bias avoidance, and to facilitate these activities with CAAD 3D modelling. This course is balanced by a residential participatory design task in association with various architectural and community groups.

#### 5.6 Strathclyde University's example

Professor Maver (1982) of ABACUS at Strathclyde set an early example in standards of Computer based participatory design. He included in his future predictions greater involvement in design decision-making by those people who are affected by design decisions. *ABACUS programs do not simply support learning opportunities on the local course but are distributed to European schools.* Research here is not simply based on CAAD modelling or even the development of CAAD models, but constantly extends to apply it to design work appraisal. eg. GOAL allows entry of design and makes appraisals of performance of economic and environmental standards. Maver suggested architects' "subjective value judgements", user need's being "liable to misinterpretation", together with "lack of a reliable interface between the two parties could explain "growing dissatisfaction" from building users. The PARTIAL (PARTicipation In Architectural

Layout) allows user participation in design to be studied and was developed at ABACUS for graphical designing of layouts at the computer by lay building users. Maver remarked that it enables their appraisal from computer generated objective cost, heating and lighting performance and subjective visual and spatial appraisals and findings show the users as skilled in evaluation and able to build on a number of their individual designs to produce an even more successful design. Aish (1985, Building Oct.) quotes one participant saying after few minutes introduction—"You can go away now, I am going to design my building." A panel of architects and professional teachers reviewed a number of professionally designed nursery schools, amongst which was anonymously positioned one designed by nursery school teachers using the system from ABACUS. The panel teachers preferred the one they did not realise was designed by fellow professionals and the architects had equal preferences for all. This is an interesting commentary on what architects believe they are doing in design. Aish reassures architects by saying "CAD for design participation is not a challenge to architects. Rather it is a valid way by which building users can express their requirements and ideas." . . . "these projects demonstrate that there is a tremendous creative potential which people feel about the building environment." Still new participatory work is being emphasised: 4th year studio design use of GOAL was reported by Petric and Maver (1993) and Professor Sasada [advanced protagonist and practitioner] was invited by Maver, (1994) to speak of animation based participation achievements, [later extended and reported in CAD Futures (1996) as having become Web based through work by/with ODE]. The latest 'participatory' venture reported (Maver 1996) describes a dynamic sharing of the complementary course strengths of the Mackintosh and Strathclyde Schools, served by a high capacity fibre cable network. This includes video conferencing, virtual lecture attendance, common web served multimedia materials, developing new, and investigating current technologies to serve quality education and practice. The most immediately relevant to this paper is the proposal for cross school interactive participation in student design crits. This suggests for me a further opportunity for client interactive involvement.

## 6 WHY NOT PAPER PARTICIPATION

### 6.1 Fresdam

Since the 1960's and 1970s manufacturers in Japan have a particular understanding based on development and use of their own systems. Kuragano (1992) speaks of the (Sony)*FRESHAM system for design of aesthetically pleasing free-form objects and generation of collision-free tool paths*. The system must be capable of representing the evolving design on a colour display, so that the designers can inspect contour lines, highlighted lines, shading, etc. . . . Speaking of conventional design he says "Because mockups, moulding dies and prototypes are made on the basis of 2D drawings, each of these steps can result in a slightly different version of the designers' ideas." this means frequent numerous remodellings . . . until the models accurately reflect their ideas."

### 6.2 Accuracy and reliability of communication at the computer face

I acted as CAD driver of the site architect's shelf planning exercise, (Kokosalakis, Farrow and Spalton 1993) as a part of the very well intentioned user group participation in the design work of the Aldham Robarts Learning Resource Centre. Nick Spalton was shocked to find as we set out the building model and explored his shelving ideas, the accurately set out dimensions in the CAAD system did not match what he had *misunderstood as available spacing and modular standards from the CAAD paper plots* previously used for earlier negotiations by University consultant architect Geoff Hackman (1994) **and Glen Ombler** of Austin-Smith: Lord.

### 6.3 Aish warns of missing information in traditional drawings

In Penz (1992) Aish warns: "The user" (of CAD) "balances competing requirements as a mental exercise and generates a design solution independent of its physical embodiment. This vastly extends the range of problems and solutions open for discussion. But the disadvantage of a conventional paper-and-pencil design process is that it uses multiple representations of both the design problem and the solution. . . . Another disadvantage is that the interaction between designer and the form is no longer dynamic."

On further investigation we can see that architectural drawings often *mix correct orthogonal projections of three-dimensional objects with symbolic graphics* which are not true projections.

Accurate three-dimensional representation substantially reduces the need for conventional drawing output. CAD based on associative geometry . . . we can anticipate one fundamental side effect - . . . *a two-dimensional drawing cannot record or communicate the associative design relations.* Therefore the two-dimensional drawing is a filter which *may reject important design information* and only transmit a simplified 'snapshot' of the design. Associative geometry can be considered as a new medium for architectural expression, with this prospect in view, it is difficult to see how future users will be satisfied with two dimensional drawings as a medium of design communication."

This statement makes a particularly strong case for architects not only to start to use computing, but to cease from using traditional drawings, through which they may fail to resolve some design features and may miss an opportunity to design more dynamically and to produce more dynamic designs. The shorthand and the symbolic graphics of which Aish speaks are as explanatory, comprehended, vital and essential to expression and understanding to the traditional architect, as they are difficult, or impossible to interpret into a visual conceptualisation for the building consumer. This spills over into education, since most of those still teaching architecture were taught through the conventions of traditional drawing, so the most difficult task might be to teach their students to design if restricted to computers.

The temptation still exists [as happened in early CAD usage in practices], namely to make no change, but the draughtsman to draw the same traditional drawings on the computer. Despite these obstacles, some of the not so young are able to transcend these difficulties and transform their designing and teaching. Many practitioners have gained command directly or have a sufficient perception to manage their teams' usage successfully.

## Conclusions

Interesting issues arise from the various inputs to the paper. *Learning on architecture courses will function best if centred on a CAAD/project based core learning structure, with other learning material, approaches, definition of required outcomes, coursework, assessment and feedback keyed into this. The idea of studio design work being centred on either 3DCAAD or physical modelling techniques provides excellent vehicles for involvement of the community, since very comprehensible to potential consumer/occupants/design clients and so assist increased involvement with real client groups and key on to that theoretical and practical learning of group processes and responsive survey techniques.* With CAD/CAM and 3D digitising lasers, design activity driven by either vehicle could be interchangeable. Research could inform learning on alternative approaches to consumer involvement, variety of designing approaches in client based activity and in CAAD based activity and their relationship. Education could beneficially reemphasize material on the meaning, value and relevance of social aspects and issues, participation theory, communication, investigative methods, and comprehension of motives, experience, intention and processes to enable students to work effectively and satisfactorily with consumers, politicians, financing clients and other professionals, etc.. Changed approaches to designing should include CAAD, VR, WWW. Gradually bringing its role of the spine of learning, introduce learning in relation to the variation and relative value of alternative media to enable the student selectively to bring the particular advantage of a particular medium to a specific designing need. Other topic learning can be co-ordinated through relevant integration and reference to the project.

A case is repeated for 3D CAAD models as the direct negotiating focus for design arbitration between consumer, designer [or students] and other professional collaborators in designing. Most practices use CAAD to some degree and could make a start on early involvement of the consumer at the system (problem early conceptual design innovatory design stages especially now aided by data display wall projection devices for large groups to comment on, but how many practices don't have simultaneous editing of the identical file?

The conclusions should bring some glimmer of hope that we can bring common experience of all these issues together by sharing and support between Schools and with practices and still avoid jealousy by retaining each School's particular flavour. Through great improvements in user interfaces and activities with new browsers, a novice is enabled to move into consumer computer design involvement more rapidly and easily than by the slower traditional CAAD learning, I hope to persuade educationalists that centring design and its associated learning (including social, communication and participatory techniques) on this computer device linked to actual consumer involvement in projects can bring easier and deeper richer learning.

## References

- Aish, R.** (1985) *Design participation for house buyers* in Building, 4 October, p83/4
- Aish, R.** (1992) Design is an abstraction of the craft process. in Penz (ed) *Computers in Architecture: Tools for Design*, Longman, Harlow
- Arnstein, S.R.** (1969) *A Ladder of Citizen Participation* in Journal of American Institute of Planners, July
- BBC1**, (1996) *Future Fantastic*, Presented by Gillian Anderson, Friday 16th August
- Clelland, D.** (1995) *City Works I*, Liverpool John Moores University, Centre for Architecture
- Davies, D. and Smith, G., (1992) (NEDO Proposal) in Building Design Jan 31
- Field, M.** (1995) *Blackburne House A Centre by Women, for Women* in the Architects Journal, 16 Feb.
- Fowles, R. A.** (1995) 'Symmetry of Participation': A prerequisite for sustainable development' in Defining the Urban Condition: Accelerating Change in the Geography of Power—(Proceedings of the Association of Collegiate Schools of Architecture Conference), Lisbon, Portugal
- Fowles, R. A.** (various) *A further series of papers obtainable personally from the Welsh School Cardiff and Chaired papers and reports of the RIBA Community Architecture Group*
- Goodman, R.** (1972) *After the planners* Harmondsworth, Penguin Books
- Hackman, G.**, (1994) *Campus focus and city landmark*, Architects Journal 13th 1994 p34
- Hales, D.** (1996) *Pachydermatous parallels* in Building Design July 26 page 29
- Halsall, B.**, (1988) Architects Journal, March
- Halsall, B.**, (1984&7) *Participatory Design and Housing Co-operatives* in Co-operative Development Services Ltd. Building Democracy, a guide to new build housing co-operatives on Merseyside p6
- Kokosalakis, J., Farrow, J. and Spalton, N.** (1993) *The introduction of 2D and 3D CAD into the Library & Information Studies curriculum*, in Smeltzer, G. (ed.) *ECAADE '93 Conference proceedings*, Eindhoven, Calibre Institute, Eindhoven Technical University.
- Kokosalakis, J.** (1996) *The Computer Aided Architectural Composition 3D model as the focus, seat or vehicle for effective participation with the design's client, observer or user* in Asanowicz, A. & Jakimowicz, A. (ed) *Computer Aided Architectural Composition* Faculty of Architecture, Technical University Bialystok, Poland
- Kurugano, T.** (1992) FRES DAM System for design of aesthetically pleasing free-form objects and generation of collision-free tool paths in computer-aided design vol 24 no 11
- Latham, Sir M.** (1994) *Constructing the Team Final report of the Government/industry review of procurement and contractual arrangements in the UK construction industry DDPServices D of E, London*
- Lawson, B.** (1994) *Design in Mind* London, Butterworth Architecture.
- Lesley, L.** (1996) *A New Tramway for Liverpool* School of the Built Environment, Liverpool
- MacDonald, R. G.**, (1989) *Architecture of Cooperation* in Liverpool Decline or Rebirth? Revisiting Architecture and Urban Design Parametro, No. 173, August, 1989
- Maver, T.W.** (1984) *The new generation of computer-based design aids in architectural practice and education* in Langdon, R. and Mallen, G. (eds) *Design and Information Technology*, London, The Design Council.
- Maver, T and Petric, J.** (eds) (1994) *The Virtual Studio* StrathClyde, Glasgow
- Maver, T.** (1996) *Glaswegian Partnership* in Building Design June 28, page 27
- McDonald, A.**, (1986) *The Weller Way: The Story of Weller Streets Housing Co-operative* by Alan McDonald for the Weller Streets Weller St Publishing Company, Faber and Faber, London, Boston
- McKean, C.** (1996) *A cosmopolitan approach up north* *Building Design June 28th 1996 page 28*
- Morton, J.** (1994) *From Southgate to Hallwood Park - 25 years in the life of a Runcorn Community*, Liverpool, Merseyside Improved Houses
- Organisation for Planning & Environmental Protection of Athens** (1994) *ATTIKH SOS*
- OforP&EPofA** (1994) *Master Plan and program for Environmental Protection of Athens Greater Area*,
- OforP&EPofA** (1996) *The Athens Metropolitan Region Planning Towards Sustainability*, ATHENS
- Pearce, M. and Toy, M.** (eds.) (1995) *Educating Architects* Academy Editions, London, pp 120-123
- Petric, J. and Maver, T.** (1993) *CAD in the Design Studio* in Smetzer, G. (ed) *eCAADE*, Technical University of Eindhoven
- Stokdyk, J.** (1993) *Mac nuggets* in Building, 15th October, page 47
- Sasada, T.T.** (1995) *Computer Graphics as a Communication Medium in the Design Process* in Tan, Dr. M. (ed.) *CAD Futures 95 Pre conference papers received*, Vol. 2, University of Singapore, School of Architecture

**Order a complete set of  
eCAADe Proceedings (1983 - 2000)  
on CD-Rom!**

**Further information:  
<http://www.ecaade.org>**