



the centre for the **BUILT ENVIRONMENT**

CBE NEWS

FLOOD DEFENCE

EXAMINING THE GEOTECHNICAL STABILITY
OF FLOOD DEFENCE EMBANKMENTS UNDER
EXTREME FLOOD CONDITIONS

RADIO CHIPS WITH YOUR CONCRETE, SIR?
NEW MARKETS FOR RECYCLED GLASS



MACKINTOSH SCHOOL
OF ARCHITECTURE
THE GLASGOW
SCHOOL FARE



PROJECT PART-FINANCED
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Working it work together

Issue 10
January 2005

EDITORIAL



Dr Branka Dimitrijevic,
Director

At the start of 2005, CBE wishes a prosperous and productive New Year to everyone working in the construction sector and in the organisations which contribute to its development!

At the end of 2004, we looked back at the project progress and set targets for the future. To date, CBE has provided services to over 400 companies and organisations, of which more than 300 are operating in the construction sector.

More than 2,000 delegates have participated in CBE activities and we aim to involve at least 1,000 more in 2005. We also aim to strengthen and widen our collaboration with providers of training and continuous professional development (CPD) across Scotland. If you have any suggestions regarding CBE's programme, please call me on 0141 249 9904 or email on branka@cbe.org.uk.

This issue of CBE News brings information on personnel changes in the CBE Steering Group and welcomes the collaboration of the Mackintosh School of Architecture in CBE activities. A report on the joint research event of academics who participate in CBE, outlines their current research interests and signals possibilities for joint research projects. If you are interested in joint academic/industry research, in any of the areas indicated in the report, please contact CBE and we will arrange meetings with academics.

If you were not able to attend some of CBE events, such as a workshop on family friendly policies, a seminar on mentoring, the exhibition and a seminar on allotments, and a seminar on race, residence and identity, this issue provides reports on these events. Articles on Radio Frequency Identification Devices and on Geotechnical Stability of Flood Defence Embankments report on the current research projects which will be presented at CBE events in forthcoming months. The newsletter also brings information on developing a recycled glass as a filtration medium and for a shot blasting purposes. We report from a major event on health and safety of construction sites, which included presentations on research undertaken at the Glasgow Caledonian University.

If you are interested in funding opportunities for direct knowledge transfer from academia into a company, you will find the advice in the article on Knowledge Transfer Partnership. We also inform on postgraduate architectural computing studies at Strathclyde University, Pulling Together initiative and international collaboration.

Take a look at the list of CBE's forthcoming events and let us know which one you plan to attend.

We look forward to welcoming you!

Cover: FLOOD DEFENCE
Full article by Professor Mark Dyer on page 13.



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CBE News is designed by:



PERSONNEL CHANGES IN CBE



CBE welcomes **Dr Graham Copeland**, Head of the Department of Civil Engineering at Strathclyde University, as a new member of CBE's Steering Group.



We would like to extend our thanks to **Prof. Michael Corcoran**, who is taking an early retirement, for his contribution to CBE.



Welcome to **Prof. David Langford**, Head of Postgraduate Studies at the Department of Architecture, University of Strathclyde, as a new Academic Co-Director of CBE.



CBE COLLABORATION WITH THE MACKINTOSH SCHOOL OF ARCHITECTURE

The Centre for the Built Environment is delighted to announce that the Mackintosh School of Architecture has joined the CBE project. The expertise available from the academics at the School is a welcome addition to our project, complementing those already available through Strathclyde University Department of Architecture and Department of Civil Engineering and The School of the Built and Natural Environment at Glasgow Caledonian University.

The Mackintosh School is well known internationally as one of the creative faculties of artists, designers and architects that comprise The Glasgow School of Art, University of Glasgow.

Please refer to page 16 for a full listing of expertise available to assist your company through knowledge transfer facilitated by CBE.

**MACKINTOSH SCHOOL
OF ARCHITECTURE
THE GLASGOW
SCHOOL OF ART**

CBE JOINT RESEARCH EVENT

BETWEEN THE UNIVERSITY OF STRATHCLYDE, GLASGOW CALEDONIAN UNIVERSITY AND THE MACKINTOSH SCHOOL OF ARCHITECTURE

CBE held a workshop in the Lighthouse on 21 October 2004 between academics representing the School of the Built and Natural Environment, Glasgow Caledonian University, Strathclyde University Department of Architecture and Department of Civil Engineering and the Mackintosh School of Architecture, University of Glasgow. The aim of the workshop was to identify areas of potential collaboration for research activity between the participants which could be developed into a proposal for funding. Prof. David Langford of Strathclyde University gave guidance to the group on the various sources of funding available.

Everyone was asked to write down a subject they were interested in relating to the broad topic of "Sustainability". The subjects were then sorted into three themes which were Environmental/Technical, Social and Economic. The participants were split into three groups for discussion. A representative from each group has provided a report on the outcome which we would like to share with you.

Technical and Environmental Discussion Group

author: Prof. Colin Porteous, MEARU, GSA

email: c.porteous@gsa.ac.uk

Prof. Michael Corcoran, University of Strathclyde, facilitated the discussion. By moving round the members of the group, as a means of quickly identifying diverse technical research activity and potential collaborative interest, five main areas were identified, most with sub-strands. The point was made that we should recognise respective strengths, but also acknowledge weaknesses.

1) IT

The two strands discussed were **building control systems** and **visualisation**.

1.1 Control systems ranged from fully automated 'smart' (exclusive) mode to hybrid (selective) mode interacting with users. Experience with the former suggests some negative outcomes relative to demand - e.g. inappropriate parametric switches, lack of well-being ('sick building syndrome'). On the other hand, the latter is vulnerable to poor personal judgement on the part of occupants as well as poor specification by the design team. The user-friendliness of the design and operation of controllers then becomes an issue. Many lay people are bamboozled by digital complexity.

1.2 The discussion on visualisation split into 'participatory design' and 'computer-led design' or 'generative design'. In the former case, non-specialist users can interact with the system

and thus become better informed. In the latter case, with the emphasis on the designer, existing architectural syntax can be encoded and then manipulated - a digital engine for change, with games-CAD relevant.

2) Materiality

Again there were two strands to the discussion: **physics/chemistry** and **aesthetics**.

2.1 Interests ranged from performance durability and micro-structural properties, with links to architectural interest such as 'breathing construction', absorption and condensation, to tensions between ephemerality and longevity (see 3 below).

2.2 The issue of longevity also impinged on discussion around sustainable aesthetics in urban design, with ephemerality now tending to dominate external appearance (short-life veneers to long-life shell).

3) Economics

Discussion centred round the 'PAL' principle - prolonging the value of buildings by prolonging their active life. Three important criteria are: relative longevity of layers (structural, insulating, cladding), flexibility of plan and section and added value or equity attributable to form and design - e.g. atria can save energy, improve air quality and add to general amenity.

4) Industry

Interest centred on two distinct areas with respect to sustainability: **prefabrication** and **structure**.

4.1 It was noted that prefabrication is central to John Egan's 'Rethinking Construction' and that IT has changed the nature of modular design (dimensional specials are no longer special). This area has also developed specialisms beyond the normal expertise of architects (e.g. façade engineering, which may involve passive or active/electronic 'intelligence'). Another relevant issue is that of thermal capacitance of components - light-weight construction has an energy downside.

4.2 Long-span structures imply flexibility over time, a sustainable benefit, but also imply a deep floor plate, which affects potential for daylight and natural ventilation.

5) Sustainability tensions

The group felt there were ongoing tensions, still not adequately explored physically, psychologically or economically - e.g. the play off between energy efficiency and health/well-being, with potential for solar energy to mediate with preheated air; airtight construction, with vapour control by membranes, versus breathing construction. This area of interest also linked to areas 1-4 above.

Conclusion: there is potential for collaboration within a group such as this, and, at the very least, there are areas of overlapping interest.

Social Indicators of Sustainability Discussion Group

author: Dr Rubina Greenwood, Sustainability Centre in Glasgow

email: Rubina.Greenwood@gcal.ac.uk

Discussion was focused on sustainability in the built environment, with particular reference to the impact of the built environment on communities and end users.

Various aspects of the built environment need thorough investigation in relation to end users, communities and society. In order to achieve 'sustainable communities', a number of issues must be studied. Firstly, what are the difficulties of constructing local community participation (especially in area of social deprivation and decline)? Secondly, to what extent are the local communities genuinely engaged in the sustainable management of community buildings and local spaces? Thirdly, what are the limitations of local grassroots-led participation in regeneration projects and how sustainable are they in the long-term? Finally, what are the key lessons to be learned from local grassroots public participation exercises? .

To achieve sustainability in the built environment, the influence of dynamic factors such as political, economic and environmental issues must be investigated. The rise of globalisation, changes in climate and information technology in society have altered community needs as well as the style and nature of the built environment. For example, new design requirements such as working from home and for people with special needs, the impact of climate change on urban and rural infrastructure, demand for single parent housing and technological changes in the built environment all require dynamic investigation.

Numerous studies have been undertaken on the impact of poor building conditions on human health. However, it would be beneficial to investigate the extent to which good conditions, orientation and type of building have improved health and whether other factors need to be studied, such as issues related to building regulations.

The following themes were identified for further research:

- Community and end-user participation at planning, design and management level;
- Evaluation of Good health vs Good Housing/Built Environment;
- Revising community needs/necessity and responsibilities for the built environment;
- Sustainable built environment for special needs population;
- Well being – family and working patterns and their impact on the sustainable built environment;
- Social/economic impact of retrospective building regulations;
- Evaluation of cost to the built environment to cope with climate change;
- Sociological foot printing: What communities are we trying to make sustainable and to what scale?

Economic Discussion Group

author: Prof. Charles Egbu, GCU

email: C.Egbu@gcal.ac.uk

This group was asked to discuss issues surrounding Finance/ Costs

Costs and Risks in Refurbishment

It was suggested that the cost and risk models used for refurbishment works are based on "New build" work, and the vagaries of refurbishment works are not considered. There is a need to develop appropriate models (payment systems for refurbishment works, especially complex refurbishment works). Refurbishment works are seen to have higher levels of risks and uncertainty when compared to similar size new-build projects. Also, the total amount of construction work cannot be fully ascertained until work is carried out on site.

Contribution of Knowledge to Innovations

The group discussed that it is likely that knowledge about design, construction, and other processes associated with construction is likely to impact upon innovations in the works being carried out. What is not well known is the exact role which knowledge plays on innovativeness. This is a complex area that needs further research. There are issues associated with people dimension, culture, organisational structure, market forces, the economics of the market place, psychology, etc. It was suggested that research in this area may be better undertaken with researchers from such fields as psychology and economics.

Design and Economics: The value of flexible Housing

The group discussed at length the notion of "building for special needs". One of the main issues discussed in this regard was that if we build correctly in the first place, and take account of relevant specifications, the quality of building would be such that it caters for a great number of people (including what is often called 'special needs building'). Another interesting point discussed was to do with the value of flexible housing and how this is accommodated at both the design and construction stages. The notion of flexible housing to accommodate the needs of the very many was also discussed.

Sustainable Economies

The main issue, here, was on the need to have a macro-economic model that best explains the complex and intricate issues involved in sustainable economic considerations. There is a need to get the 'right balance' in addressing concerns like: "How much can we borrow today to have a sustainable repayment for the future". An example was made of PFI projects. There is a need to try to get a balance against borrowing for the future for PFI projects going on now. These are complex, important and very worthwhile areas. It is suggested that research in this areas need the involvement of accountants.

The universities are keen to collaborate with companies in the construction industry, so if this is an area where you feel some specific research could benefit your organisation, please contact Anne Blacklock at CBE on 0141 249 9888 or email anneb@cbe.org.uk

SEMINAR BOOKING FORM



Contact Name: _____

Organisation: _____

Address: _____

Town/City: _____

Postcode: _____

Telephone: _____

Fax: _____

Please tick the appropriate box

I would like to book 10 places for £200 (a saving of £100)
(organisations taking up this offer can advise CBE on seminar/delegate choices up to one week before each event)

I would like to book for events on an individual basis

Name: _____ Seminar: _____ Date: _____

Name: _____ Seminar: _____ Date: _____

Name: _____ Seminar: _____ Date: _____

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Name: _____ Seminar: _____ Date: _____

Name: _____ Seminar: _____ Date: _____

Name: _____ Seminar: _____ Date: _____

Name: _____ Seminar: _____ Date: _____

Name: _____ Seminar: _____ Date: _____

Please copy and fax this form back to CBE on 0141 249 9906.
Alternatively, send it by post to CBE, The Lighthouse, 56 Mitchell Street, Glasgow G1 3NU.

You will be invoiced on receipt of your booking form

FORTHCOMING EVENTS

Thurs, 6th January
Planning and building in nationally con-
tested territories: The case of Jerusalem
 Samer Ghaleb Bagaeen, SU

Thurs, 13th January
Managing the Innovation Process:
Challenges and Opportunities
 Charles Egbu, GCU

Thurs, 20th January
Church Modernisation and Disability
Discrimination Act
 Nick Lunan, GCU & John Nicolson, CRGP Ltd.

Thurs, 20th January, 14.00-17.00 hrs
Supply Chain Management (workshop)
 Construction Productivity Network, Scottish
 Construction Clients Forum and CBE

Thurs, 27th January
Solidification and stabilisation of margin-
al materials and in specific sewer sludge
 Nick Hytiris, GCU

Tue, 1st February, 12.30-16.00 hrs
Discrimination and Promoting Inclusive
Employment Practices
 ESRC funded workshop (free), SU and GCU

Thurs, 3rd February
Factors Influencing Scottish Construction
Accidents (half-day workshop)
 Iain Cameron & Billy Hare, GCU

Thurs, 10th February
Renewable Energy - Opportunities for
Development and Tools for Feasibility
Studies
 Stas Burek, GCU

Thurs, 17th February
Concepts and case studies for in-situ
bioremediation of contaminated land in
Europe
 Mark Dyer, SU

Tue, 22nd February
Performance Management
 James Sommerville, GCU

Thurs, 24th February
E-nose systems for Health in the Built
Environment
 Mike Hepher, GCU

Tues, 1st March, 9.30-14.30 hrs
ESRC workshop
Risk, Safety and the Working
Environment

Thurs, 3rd March
Climate change, flooding and repair of
buildings
 Chris Sanders & Mark Phillipson, GCU

Thurs, 10th March
Saving money on materials movement in
construction
 John Tookey, GCU

Thurs, 17th March
Safety in Design - CDM best practice
development
 Iain Cameron, GCU

Thurs, 17th March, 17.30-18.30 hrs
A lecture by architect John Spencley,
London
(to be held in the Department of Architecture,
University of Strathclyde)

Thurs, 24th March
Knowledge Transfer Partnership
 Jamie Henderson (West of Scotland KTP
 Centre) and Andrew Reid (Mastclimbers)

Thurs, 31st March
A Wheelchair Virtual Reality Simulator
for Disability Discrimination Act
Compliance
 Colin Harrison, SU

Thurs, 7th April
Air Quality modelling for the Urban
Environment
 John Crowther, GCU

Thurs, 14th April
Control of Biocontaminants in the indoor
environment
 Colin Hunter & Paul Baker, GCU

Thurs, 21st April
Collaborative working and the use of the
'Integrated Toolkit'
 Paul McDevitt & Brian Jukes, Business Fix Ltd

Thurs, 28th April
The Reformed Urban Block: The Culture
of Metropolitan Housing
 Wolfgang Sonne, SU

Thurs, 5th May
Using strategic environmental assess-
ment to improve local development
plans: problems and possibilities
 Elsa João, SU

Thurs, 12th May
Optimal Design of high performance
cementitious composites exposed to alter-
nated environmental conditions Agnieszka
 Klemm, GCU

Thurs, 19th May, 17.00-19.00 hrs
The use of scenarios for strategic
planning in construction (workshop)
 David Langford, SU

Thurs, 2nd June
Sustainable Evolution of Construction
 James Simpson, Simpson & Brown Architects

Thurs, 9th June
The Use of Scottish Timber
 Jenny Hamphries, Simpson & Brown Architects

Tues, 5th July
The Impact of Information technology on
Work-Life Balance (ESRC workshop)

*There will be no seminars in
 August or September.*

Please check our website for information on
 upcoming seminars relating to the **Scottish
 Parliament Building Project** and the
Kelvingrove New Century Project

KEY

- lunchtime seminars 12.00-14.00 hrs
- lectures
- workshops

FAMILY FRIENDLY EMPLOYERS: MYTH OR REALITY?

NEWS FROM THE THIRD ESRC FUNDED SEMINAR.

Whether you're married with children, or single with priorities that extend beyond your career, options typically available in a family friendly workplace can greatly enhance your quality of life. Holding down a job is hard. Bringing up children or taking care of elderly parents is tough. Doing both - and getting the balance right - is doubly difficult.

As employers begin the new business culture of the 21st century they are asking the question: Do family friendly benefits make sense? The answer is a resounding yes! In order to attract and retain employees, employers must make the bottom line case for family support at work. In order to compete in a global economy, employers are looking for ways to be more efficient. Look no further, family friendly policies make bottom line sense by creating a more committed and productive workforce, reducing absenteeism and lowering turnover. For a growing number of employers and employees, taking care of business also means taking care of family needs. Family Friendly Policies make good business sense for any size company.



Tim Doyle, presenting Halcrow Group initiatives

The first speaker was Tim Doyle of Halcrow Group, a global firm of Consulting Engineers, employing over 4000 people. Tim Doyle, an HR Manager based in the UK, has a general responsibility for around 1500 employees. Tim has worked in HR for 15 years for such companies as Nationwide, Astra Zeneca, Vodafone and Mouchel. His particular areas of expertise are Recruitment, Management Development, Employee Relations, Personality Profiling, Organisational Design and Process Improvement. Tim is a committed believer to the principles of work-life balance. Happy employees are the best ambassadors for the company!

The second presenter at the workshop was Lucy Daniels, a consultant with over two decades experience in helping employers, governments and individuals reconcile work and family life. Lucy pointed to the rapidity of change in today's workplace and to demographic trends.

If companies want to stay ahead in this environment, they need to take more corporate social responsibility for enabling employees to manage their work-life and to recognize the need for family friendly policies to assist parents and other carers. She underlined that that this approach was most successful when work-life strategies were aligned with business objectives and this message was understood by everybody from the top to the bottom of a business. Lucy spoke about recent changes to legislation (maternity leave, parental leave, right to request flexible working) that will set the scene for future developments in this area. She pointed out that there is now a wealth of information and case studies on the subject, from all sizes and sectors for others to draw from. Moreover she detailed the government support for this and referred to the role of the Department of Trade and Industry (DTI) in supporting and funding research and consulting. Companies can find out more about help in the area of building high performance teams and work-life by contacting their local Business Links.

Lucy explained that the size of an organisation has a direct influence on how companies adopt work-life balance initiatives. Small and new businesses tend to have more informal arrangements tailored to their workforce whereas large

organisations tend to have more formalised procedures. Lucy demonstrated this by contrasting a 5 employee architectural practice with the Ford Motor company who has 20,000 employees.

The adoption of new work practices are not without resistance and Lucy's extensive experience revealed some interesting insights. Apparently, family friendly issues are often viewed as 'women only' initiatives. Furthermore, as Tim pointed out, the fear of change leads some critics to expect an organisation to turn to anarchy if everyone were to request flexible working. Moreover, there continue to be doubters who consider that the business case for adopting family friendly policy need clarification and Lucy also referred to some resistance from unions.

Lucy concluded her presentation by reinforcing the need for organisations to think 'outside the box' on this issue and in particular the need for strong leadership in communicating a cultural change. She specifically advised against a 'one size fits all' approach as work life balance initiatives are required to be tailored to individuals and businesses, a contingency approach. This is possible through internal/external benchmarking and the use of best practice models can also help to convert the sceptics within an organisation. Lucy finished with pertinent advice for the delegates in attendance. She recommended that they consider their own organisation and think about what they have done to:

Win support at the top
Outline a clear business case
Respect work-life for all
Know teams' concerns

Learn from what others are doing
Introduce overarching guidelines
Flag up success stories
Evaluate and measure progress

WHAT IS MENTORING?

A SUMMARY OF A CBE SEMINAR

Apart from providing knowledge transfer between academia and the construction industry, CBE assists in identifying expertise available in companies which provide services to improve the industry's performance. The article below is a summary of the presentation on mentoring at the CBE seminar held on 11th November 2004.

The origins of mentoring are from Greek mythology. Before Odysseus left for his epic journey, he entrusted the care and upbringing of his son, Telemachus, to his learned and trusted friend, Mentor. Over time, this term has come to represent a range of significantly different approaches.

Types of approaches to mentoring include:

- **Succession Planning**
- **Coaching: based on short-term tasks and job requirements**
- **Counselling: Short-term individually focused**
- **Developmental alliance between the mentor, mentee individually focused on the long term**

Example definitions of mentoring are as follows:

'Off-line help by one person to another or making a significant transition in knowledge, work or thinking.'

'Improve performance, career development, sharing knowledge and for some wider 'learning-focused' view.'

Boydell et al 1991

The Benefits of Mentoring in Practice

The Potential Benefits to Mentees

Mentoring can provide newly qualified staff with the opportunity to broaden their learning beyond the more formal aspects given in university. Entering into a mentoring relationship will enable them to apply their learning to specific issues and situations that they face in the workplace and to learn from their experiences, as well as gaining valuable insights from the mentor.

Mentees will benefit from mentors who are willing to share their;

- Skills
- Knowledge
- Experiences
- Views & Behaviours
- Interests

The Potential Benefits to Mentors

As mentoring is not a one-way relationship, the mentor can also expect to benefit from the alliance. The mentor may be offered:

- A different perspective
- Insight to other organisations
- An update / refresher
- Exploration of 'hot' topics
- Challenge
- A learning experience

Factors Influencing the Success of

Mentoring Programmes

Organisational Culture: Mentoring works when it goes with the flow of other initiatives in the organisation.

Aims: Clarity of purpose is essential for designing mentoring schemes.

Mutuality: Successful schemes have a strong element of mutual benefit for mentors and learners even when there is a huge difference in circumstances between them.

Piloting: This can lead to success in an organisation where there is hostility or misunderstanding as potential problems can be identified before the scheme is set up.

Training: Level of training for mentors and mentees varies in different schemes. However, the level of support and integration into other activities within an organisation has a direct correlation with success. Where support at the top is missing and the mentoring is not integrated into other projects, the less effect training has. Sometimes training needs are not apparent at the start and come after participation in the process.

If you'd like to know more about how mentoring could work in your practice, please contact Posy Maitles of Salomons on 0141 548 8140 or p.maitles@solomons.org.uk

RACE RESIDENCE AND IDENTITY

A COMPARISON BETWEEN GLASGOW AND LIVERPOOL

This seminar - given by Ola Uduku, of Strathclyde University, on Wednesday 10th November 2004 - looked at the issue of racial residence and identity in Glasgow and the West of Scotland.

It suggested, that despite Scotland's reputation of being historically welcoming to foreigners, it has a low rate of settlement amongst ethnic groups. Its main ethnic minority population, the Pakistanis, also have had only limited success in integrating into West of Scotland society. Comparing Glasgow with Liverpool, a

similar historical Western Seaboard seaport city, she suggested that Liverpool has been more successful in transforming itself into a 'multi-cultural' city, with ethnic groups and cultural quarters being part of the city's new renaissance.

It was suggested that Scotland in general, and Glasgow in particular, needed to do more to encourage the growth of exiting ethnic minority communities, and the formation of new ones, with adequate housing and social infrastructure, as a means to both stem the population decline and also boost the local and national economy, through entrepreneurship initiatives and their

significant contribution to the knowledge sector. The establishment of these initiatives and the identification of successful cultural areas will further serve to help the Scottish Executive's new "Scotland is the place" campaign.

The re-developing of Glasgow as a multi-cultural city, that new recruits can identify with and engage with spatially, may ultimately be the key factor influencing the decision to choose Scotland as a country in which to settle.

FROM ALLOTMENTS TO URBAN AGRICULTURE AND FORESTRY

CBE SEMINAR, JOINTLY ORGANISED BY THE UNIVERSITY OF STRATHCLYDE, THE SCOTTISH ALLOTMENT & GARDENS SOCIETY AND THE UNIVERSITY OF DUNDEE

Introduction

This seminar, organised by CBE, involved a group of people interested in the beneficial use of open spaces in the city – from green wedges at urban level to individual plots of land at local level – for a variety of purposes. Contributions were made by Dr Hildebrand Frey and Douglas Bodell, from the Department of Architecture at Strathclyde University, Dr Hester Parr, from the Department of Human Geography at Dundee University, and Andrew Reid from the Scottish Allotment and Gardens Society. All contributors share a strong interest in the benefits of the use of open green spaces in the city for a range of activities, spanning from urban agriculture and forestry at city level and beyond, the cultivation of small plots of land to grow vegetables and flowers, to innovative ways of achieving the social inclusion of people with disabilities, specifically with mental health problems, traditionally marginalised by mainstream society.

Due to the wide variety of interests and experiences of the contributors, the 'allotment' seminar, held at the Department of Architecture at the University of Strathclyde, was an interesting and highly significant event in which the social, environmental, economic and ecological value of open green spaces was discussed and demonstrated on city region, city and local levels.

Summary of contributions

Contribution by Dr. Hildebrand Frey, Director of the Urban Design Studies Unit (UDSU), Strathclyde University

The seminar's first contribution sketched out the intense discussion of and search for sustainable urban forms and structures, initiated in 1987 by the Brundtland Commission's definition of sustainability which in essence calls for the preservation of irreplaceable sources to guarantee their availability for future generations (WCED, 1987)¹. He summarised shortly the intense search for sustainable city models that was triggered by the Brundtland Report, from the compact (European) city (compare CEC, 1990)² to decentralised concentration or the Polycentric City³. These models focused primarily on environmental impact of the city, leaving largely aside consumption levels which

today are understood to have a by far greater impact on sustainability as a result of people's insatiable appetite for not only for man-made but also for natural resources. Consequently, discussion soon expanded to include issues of socio-economic and ecological sustainability.

Now, the European Commission champions the 'Short Cycles City'⁴ model, a further development of 'Decentralised Concentration' through the inclusion of ecological and environmental principles.



This city model is "associated with the environmental thrust of Local Agenda 21 and an emphasis of achieving local environmental sustainability through more efficient use of natural resources and recycling, greater local autonomy, and smaller ecological footprints" [read: reducing dependency on import of natural material, goods and food from a global market] (Lloyd-Jones. T. (ed.), 2004, p.19)⁵. For this purpose, the model aims specifically to increase the quantity, quality and accessibility of green spaces in cities, for instance through green networks and the landscaping of the public realm. These open spaces are said to give additional possibilities for recreation and leisure, the planting of forests and the production of local food in urban agricultural and farming areas as well as allotments that allow the city to become more self-sufficient. The open spaces are also having an intentional ecological impact on biodiversity (by increasing the number of species in the city's open spaces) and the microclimate of the city (by reducing the impact of pollution).

Contribution by Douglas Bodell, P/G Urban Design Course 2003/04, University of Strathclyde

During academic session 2003/04, the concept of open green spaces was taken up by two postgraduate students at Strathclyde who investigated the potential of the City of Glasgow to develop into a 'Short Cycles City' by joining up open green or disused spaces and brown field sites to generate green wedges for use of urban agriculture and forestry as well as smaller-scale community-based gardens and allotments. Their work, presented by Douglas Bodell of the p/g urban design course, made evident that such recycling of open space could have a substantial impact on the urban environment and would provide entrepreneurial opportunities for the production and supply of local food, timber and other goods within the agglomeration of Glasgow.

Their proposals for an strategic urban framework for greater Glasgow are based on an astonishing array of good practice examples from the UK and continental Europe, illustrating that making the open land work for city and for



Hildebrand Frey, John Hancock, Liz Mackinlay, Sara Watts, Michelle Lazenby and Judy Wilkinson

sustainability is not pie in the sky, but has clear social, economic, environmental and ecological benefits. The proposals also made it abundantly clear that in order to achieve viability and benefits it has to be recognised that vast parts of the countryside have become part of an urban-rural continuum and have to be planned as a part of an urban-rural entity rather than as different, independent parts of the environment which both the city and the country no longer are.

Contribution by Dr. Hester Parr, Department of Human Geography, University of Dundee

Dr. Parr's work concentrates on social geographies of mental health and disability. Using qualitative research methods (interviewing and ethnography), this work has primarily tried to explore the social worlds of people with mental health problems in both rural and urban environments. Founded by the Economic and Social Research Council (SERC), her current work is taken up with exploring how particular spaces – natural, artistic and technological – provide a setting for innovative pathways to

social inclusion for people traditionally marginalised by mainstream society.

The relationship between garden work and mental health has been traditionally associated with forms of occupational therapy in the context of statutory institutional geographies (asylums). Increasingly, and in light of a recent resurgence of interest in versions of therapeutic horticulture in the UK, voluntary organisations that help support people with mental health problems in community settings are using garden work as ways to facilitate social inclusion. In opposition to traditional images of the passive, but occupied patient, community garden workers engage with their work in multiple ways that contribute to their re-imagining as active citizens. The paper contributes to, and offered a critique of, this re-imagining by reporting on recent ethnographic research that evaluates urban-based voluntary sector gardening and allotment work by people with mental health problems. By briefly profiling the voices of staff and 'volunteers' from two city centre

garden schemes in England and Scotland, garden work as a therapeutic, social and progressive activity was discussed, and the association between nature, health and social inclusion underwent a constructive critique. Furthermore, the paper briefly speculated on the implications of urban gardening work for wider community understandings of mental health.

Contribution by Andrew W Reid, Scottish Allotments and Gardens Society

This contribution argued that today in Scotland allotments offer tremendous potential for Councils to develop integrated and sustainable approaches to the social and environmental well-being of their areas. By providing fresh food and regular exercise, allotments play a part in promoting health lifestyles to all age groups. In the traditional tenements of Scottish cities allotments provide green spaces that comply with local planning guidance. They are aesthetically pleasing and aid biodiversity. They also have a role to play in recycling and waste management strategies. Increasingly, women and minority communities are growing their own food. Additionally, through community centred projects such as the creation of a new pond at Hamilton Hill in Glasgow, allotments can be seen to have implications for a wide cross section of Council activities such as education, youth work, and urban renewal.

In England, many local authorities have already begun to promote allotments as a community resource. London women's groups grow coriander, okra, mange touts, spinach and cucumbers. In Bristol, GP's are able to prescribe allotments for patients suffering from cardiovascular diseases. In the St Anne's district of Nottingham, Council allotments have recently been given world heritage status in recognition of their importance to the local community and natural culture.

CBE would like to thank Mrs Judy Wilkinson (Scottish Allotment and Gardens Society), Mr John Hancock (Hillhead Children's Garden and the Orchard Project in Alloa), Ms Liz Mackinlay (New Victoria Gardens), Ms Sara Watts (Homelea Gardens) and Ms Michelle Lazenby (Scottish Community Action Research Fund) who participated in these events.

¹ WCED (World Commission on Environment and Development) (1987) *Our Common Future*. Oxford: Oxford University Press.

² Commission of the European Communities (1990) *Green Paper on the European Environment*, Brussels: European Commission.

³ One of the key promoters of these arguments is: Breheny, M.J. (1992) *Sustainable Development and Urban Form*, London: Pion.

⁴ Meaning: the city in which all output (usually classified as waste) resulting from the use of imported material and food is recycled in the city's hinterland, i.e. becomes, as in the natural world, input in a 'cyclic metabolism' rather than being thrown away.

⁵ Lloyd-Jones, T. (ed.) (2004) *Urban Design for Sustainability*. Final Report of the Working Group on Urban Design for Sustainability to the European Union Expert Group on the Urban Environment, January 2004.

RADIO CHIPS WITH YOUR CONCRETE, SIR?

Radio Frequency Identification Devices (RFID) are increasingly being found in business and general society. Many items you have purchased recently will have had an RFID either embedded or on its packaging. Their uses are endless and yet we, providers of the built environment, are only now awakening to their potential applications.

What is it?

You may well ask what are RFID's – in essence they are silicon chips (the same as in your computer) with an onboard radio transceiver (a transponder).

In a typical RFID system, individual objects are equipped with a small, inexpensive tag which contains a transponder with a digital memory chip that is given a unique electronic product code. An interrogator unit emits a signal activating the RFID tag so it can read and write data to it. When an RFID tag passes through the electromagnetic zone (portal), it detects the reader's activation signal. The reader decodes the data encoded in the tag's integrated circuit (the silicon chip) and the data is passed to the host computer for processing.

RFID tags come in a wide variety of shapes and sizes: some tags being easy to spot, such as the hard plastic anti-theft tags attached to merchandise in stores. Others such as animal tracking tags are implanted beneath the skin of family pet.

The tag is no bigger than a small section of pencil lead. Even smaller tags have been developed to be embedded within the fibres of national currencies.

Low-frequency RFID systems (30 KHz to 500 KHz) have short transmission ranges (generally less than two metres). High-frequency RFID systems (850 MHz to 950 MHz and 2.4 GHz to 2.5 GHz) offer longer transmission ranges (more than 20 metres).



Above: A typical luggage tag with the RFID aerial seen as the copper coloured strip

The applications:

The potential really is unlimited. A recent example is where a US state department of transport incorporated RFID's into the concrete road pavement in order that they could determine the maturity of the poured concrete. The net effect of installing the tags and system is that they are able to move onto the concrete much earlier and progress the road building, saving around 1 day in each cycle. It is possible to take this further and include a range of sensors, on the tag, that provide us with information on pH, loading, etc.

Other areas where the technology can be applied is in locating buried assets e.g. water pipes, sewer lines, gas mains, locating materials and components, securing plant and equipment against theft. A further example is where a tag was inserted into stillages and tracked globally (this work undertaken as part of a Knowledge Transfer Partnership with an industrial partner in Huddersfield – pHEurope Ltd).

The Future

Prof. Sommerville, at the School of the Built and Natural Environment is working on incorporating RFID's within a range of hand-held tools for safety purposes, tracking resources on projects and also locating buried assets.

For further information contact:

Professor James Sommerville
Tel: 0141 331 3628
E mail: jso@gcal.ac.uk



KNOWLEDGE TRANSFER PARTNERSHIPS



An example of a KTP project: Mastclimbing working platform, by Mastclimbers Ltd, in use at Atalantic Quay.

Knowledge Transfer Partnerships involve a company, a knowledge base organisation and one or more graduates. The graduate (Associate) works in a company for one to three years on a project central to the needs of the company whilst drawing on the expertise from the Knowledge Base Partner. Knowledge Transfer Partnerships are designed for businesses to acquire new knowledge and expertise and for graduates to gain business-based experience while spending at least 10% of their time on personal and professional development.

The graduate is employed by a Knowledge Base Partner, usually a university department, and is jointly supervised by personnel from the company and the Knowledge Base Partner, which also provides its expertise to the Knowledge Transfer Partnership.

Knowledge Transfer Partnerships provides participating companies with: a graduate (1 or 2.1 Honours degree) to work on a project, mainly on the company's premises, and introduce new knowledge and technologies and new procedures into the business; technical support and facilitation including regular in-company support with an academic working on average half a day per week at the company; training and development budget to assist personal and professional development of the Associate; travel and subsistence for the Associate and Partnership participants; equipment to assist the project.

FLOOD DEFENCES

GEOTECHNICAL STABILITY OF FLOOD DEFENCE EMBANKMENTS UNDER EXTREME FLOOD CONDITIONS

**EPSRC/DEFRA/EA/UKWIR/Scottish Executive
FLOOD RISK MANAGEMENT RESEARCH CONSORTIUM (FRMC)**

As part of the EPSRC Flood Risk Management Research Consortium (FRMRC) the department of Civil Engineering at Strathclyde University have been awarded a 3 year research grant to investigate the geotechnical stability of flood defence embankments under extreme flood conditions. The research programme is being funded in collaboration with the DEFRA/EA Joint R&D programme on Flood and Coastal Defence, UKWIR, NERC, ESRC and the Scottish Executive.

At present up to £500m per annum is spent on the maintenance of over 35,000 km of coastal and flood linear defences in England and Wales alone. Approximately 70% of this expenditure is on the improvement, operation or maintenance of linear defences; and in particular, the maintenance of existing earth embankments. Yet there is very little information available about how the embankments are constructed or how they fail under flood conditions.

The research at Strathclyde will concentrate on effects of fine fissuring of clay fills on breach initiation for flood defence embankments. This is known to have been one of the dominant causes of embankment failure in the 1953 North Sea Floods, which inundated vast tracts of land in Essex and Kent with loss of life. Yet



Breach at Gowdall, North Yorkshire 2000 Floods

there is still little understood about a) how to predict the extent of fine fissuring, b) how to monitor and measure the extent in the field using simple tools and material indices, c) how to assess the consequential effects on the performance of an embankment due to a reduction in mass permeability with excessive seepage leading to instability of a landward slope.

The project will investigate the critical interface between geotechnical engineering and the hydraulic performance of flood defence embankments. In particular, it would study

how the desiccation and fissuring of clay embankments affects the long-term performance, which could then be expressed using probabilistic concepts in so-called fragility curves so that future investment can be made using a risk-based management of flood defences.

For further information contact:

*Professor Mark Dyer
E mail: mark.dyer@strath.ac.uk*



Knowledge Transfer Partnerships are a well-specified project of work with clearly defined outcomes some of which will increase company profitability. The cost of a Knowledge Transfer Partnership for a small or medium sized company (up to 250 employees) is around £1.3k per month - this supplying the full time use of the Associate and half a day per week of academic support. If the company is large the cost is around £2k per month and it is expected that more than one Associate will be required to strategically impact on the company's business development.

The role of the West of Scotland KTP Centre is to help establish Knowledge Transfer Partnerships. Staff will offer support and guidance on the process for establishing a Partnership and, during the life of a Partnership, will be available to offer further support as required.

Target businesses: Small, medium-sized and large organisations

Project focus: All sectors, all subjects

Project duration: 1 to 3 years

No. of projects per year: Approx. 500

Company contribution: Typically £16k per year.

Knowledge Transfer Partnerships are funded by: DTI, BBSRC, DEFRA, DH, EPSRC, ESRC, Invest NI, NERC, PPARC, SE and WAG

Date product started and ends: Started 1975 as TCS and is ongoing as Knowledge Transfer Partnerships.

Staff at the KTP Centre are available to chat with you if you want to pursue the opportunity of undertaking a Knowledge Transfer Partnership.

**T. 0141 548 3733
F. 0141 548 4774**

**ktp.centre@strath.ac.uk
www.ktp.strath.ac.uk**

THE CALEDONIAN SHANKS CENTRE:

HELPING TO FIND NEW MARKETS FOR RECYCLED GLASS

The Caledonian Shanks Centre for Waste Management is the leading academic research establishment for Waste Management in Scotland and is part of Glasgow Caledonian University's School of the Built and Natural Environment. It receives funding from the Scottish Executive, local authorities and money raised through private consultancy. The Caledonian Shanks Centre operates as a not for profit organisation.

The Centre has 3 main initiatives:

Remade Scotland: focusing on finding markets for recyclable materials and developing the infrastructure to source and recover recyclables.

Local authority work: The Centre's team of experts work with local authorities to develop major recycling initiatives.

Bright New Scotland: This project provides practical support for primary, secondary and specialist schools working towards the Eco-schools green flag award. The Centre's education specialists work with councils and schools to educate children about environmental issues.

Recent Centre Activities

The Remade Scotland programme has recently been involved in developing recycled glass as a filtration medium and for shot blasting purposes. These are only two of the many activities carried out by the programme.

Dryden Aqua

Through the Remade Scotland programme the Caledonian Shanks Centre has supported Dryden Aqua with the development of an

environmentally benign filtration media called 'Advanced Filtration Media'. The raw feedstock for AFM is finely processed recycled container glass which is superior to high quality filter grade sand which is traditionally used as a filtration method. Centre experts working on the programme have supported research on the subject and have helped Dryden Aqua to source material, develop proposals and promote the product.

The Centre's interest in the product lies in the fact that there are many benefits to using AFM regarding the environment, performance and business. The fact that it is recycled not only saves valuable landfill space but also removes from the waste stream one of the heaviest materials, greatly contributing to local authority recycling targets. The use of AFM improves water quality and clarity and is safer than sand as it does not contain free silica. In addition to this, in most cases the pay back period using AFM as opposed to sand is under 12 months and in many installations AFM can make major savings and display performance benefits superior to sand.

Shot Blasting

Remade staff at the Caledonian Shanks Centre have also been running trials and seminars with Kvaerner Ship yard to explore the issue of using sand made out of recycled glass for shotblasting steel and metal. Having proved that the technique works, the Centre is now working with Network Rail and The Scottish Executive to develop more high profile trials. Colin Murchison from Remade Scotland says of the trials:



Advanced Filtration Media

'The aim of these high profile trials is to demonstrate not just that glass performs at least as well, if not better, than other shot blast media, but that there are additional economic and environmental benefits as well'

Caledonian Shanks have expressed an interest in this issue, due to the fact the environmentally friendly glass grit is made out of recycled glass, and replaces copper slag which can cause pollution.

For a more detailed picture of the work the Centre does and how staff at CSC could help you, visit the website at: www.csc.gcal.ac.uk

Or use the following links to find out information on specific programmes:

www.remade.org.uk

www.brightnewscotland.or.uk

For further information contact:

Katie Ward

Tel: 0141 582 0450

E mail: Katie.Ward@gcal.ac.uk



KERBSIDE RECYCLING

A CALEDONIAN SHANKS CENTRE INITIATIVE

The Centre is also busy helping local authorities to develop Kerbside Recycling services. At present teams are monitoring the rollout of a new kerbside recycling service in several councils. The scheme gives households a brown bin for green garden waste, a blue bin for mixed dry recyclates and a black box for glass. The team are gathering valuable data on participation levels, contamination rates and capture of particular materials as well as providing a public interface for the service.

Another team of two experts are working with West Lothian Council assisting with their recycling programme and providing advice to the public through telephone helplines and home visits.

Kerbside schemes play a vital role in the development of community recycling and therefore the reduction of landfill and increase in sustainable practices.



SUPPLY CHAIN MANAGEMENT

DEVELOPING AND MANAGING SUPPLY CHAINS IN SCOTLAND

CBE seminar in association with Scottish Construction Clients Forum and CIRIA's Construction Productivity Network

Date: 20th January 2005

Venue: The Lighthouse
Conference Suite
3rd Floor
11 Mitchell Lane,
Glasgow G1 3LX

Programme:

13:30	Registration and refreshments
14:00	Chairman's introduction Hugh McCusker
14:10	Developing the issues: highlighting education and training Professor Akin Akintoye Glasgow Caledonian University
14:35	The client's view Martin Dorby South Lanarkshire Council
15:00	Networking break with refreshments
15:20	How the subcontractor views the supply chain; <i>Can 'the tail wag the dog'?</i> Charles Stirling Weatherproofing Advisors Ltd
15:45	Facilitated discussion
16:40	Chairman's summing up
16.45	Close

THE ISSUES

Following the reports 'Constructing the Team' (Latham 1994) and 'Rethinking Construction' (Egan 1998) modern procurement methods are moving to the appointment of integrated supply chains where the parties in the supply chain have a long-term objective to work together to deliver added value to the client. These long-term relationships enable the power of supply chain management to be fully realised.

Much of the success of supply chains rests on personal relations (similar to partnering). Key personal actions are to be pro-active, less adversarial and to learn from others. Neither partnering nor supply chain management are easy. The parties do not need to be good friends, however. Relationships need to be fair but firm, based on a team approach that involves regular contact and mutual respect. Learning to work in this way is new for most construction professionals.

Developing successful supply chains will therefore be difficult and take time but the rewards will be worthwhile.

This workshop will start by examining some of these issues, presenting the views of contractors and also the barriers to successful application of supply chain management in construction. The role of education and training at all levels in the industry to overcome these barriers will be emphasised. A major local authority client will then present its views of how supply chain management can work in the public sector, providing examples of how it is embarking on leading the development of good supply chains to meet its business needs. Finally we will hear from a representative of a well-known Scottish subcontractor to provide an understanding of the difficulties that those further down the chain experience.

WORKSHOP OBJECTIVES

- To raise awareness of supply chain management.
- To demonstrate the issues that might be encountered and provide some practical ideas on how to deal with them.
- To share experience and learn from others.

Booking:

To book a place, please phone CBE on **0141 249 9888**, or send a fax to **0141 249 9906**. When booking, please provide contact details (e.g. title, name, surname, organisation, address, town/city, postcode, telephone, fax, email). You can also book online at www.cbe.org.uk.

·Because the event is supported by Scottish Construction Clients Forum (SCCF) and CIRIA's Construction Productivity Network (CPN), delegates employed in the companies that are members of SCCF and CPN do not have to pay the seminar fee.

·To delegates employed in the companies that are not members of SCCF and CPN, CBE will send an invoice for £30 + VAT (£35.25) per delegate on receipt of a booking.

·In event of cancellation by CBE, a full refund will be made available.

·In event of delegate cancellation, an administrative fee of £15 will be charged for up to a week before the event - there will be no refund after this point.

EXPERTISE AND RECENT RESEARCH

AT THE MACKINTOSH SCHOOL OF ARCHITECTURE, UNIVERSITY OF GLASGOW

EXPERTISE	RESEARCH PROJECTS
<ul style="list-style-type: none">◦ User participation in design	<ul style="list-style-type: none">◦ <i>An evaluation of Computer Aided Design as a method for enabling user participation in housing design - a summary of findings.</i>
<ul style="list-style-type: none">◦ Ageing environments, Designing for Dementia	<ul style="list-style-type: none">◦ <i>The Challenge of Age. Just another Disability.</i>
<ul style="list-style-type: none">◦ Traditional settlements and squatter housing	<ul style="list-style-type: none">◦ <i>United Nations Development Programme Mission for the Application of Technology to Urban Renewal.</i>
<ul style="list-style-type: none">◦ Building integrated wind turbines	<ul style="list-style-type: none">◦ <i>Wind turbines on multi-storey buildings: a pilot project. CROSSFLEX.</i> In collaboration with Provan Engineering & SU CASM.
<ul style="list-style-type: none">◦ Low Energy Design	<ul style="list-style-type: none">◦ Priesthill – new low energy housing project for Glasgow City Council. Linthouse - Development Options Appraisal.◦ <i>Photovoltaic-powered dynamically insulated breathing wall.</i> In collaboration with Building Research Establishment (BRE) at East Kilbride. Innovative solar research and development on PASSYS test cells, including parametric ESPr modelling of small PV (solar photo voltaic) arrays associated with the later stages of the project◦ <i>Integrated solar air collector for enhanced trickle ventilation</i> (collaboration with BRE, East Kilbride and commercial sponsorship;◦ <i>Glazed roof preheat spaces –</i> A design, monitoring and evaluation project to evaluate the use of glazed roofs as pre-heat spaces in domestic construction. New build project by Dumbrilton Housing Association.◦ <i>Solar Towers in Glasgow (STinG);</i> demonstration project commissioned as Thermie proposal to European Commission, DG VII, by Glasgow City Council in collaboration with the BRE Scottish Laboratory, and Napier University, Edinburgh

EXPERTISE	RESEARCH PROJECTS
<ul style="list-style-type: none"> Monitoring and evaluation of energy efficient and environmental design 	<ul style="list-style-type: none"> <i>BTS Phase 1: Low level monitoring programme of community heating system in rehabilitated tenement building for Govan Housing Association.</i> <i>Building Integrated Photovoltaics with Particular Reference to Double-skin Facades' Ph.D. Thesis. This work used part of the Strathclyde University campus as a problem-led case study, and focusing on the dynamic thermal performance and natural lighting performance of a twin-skin glazed south façade.</i>
<ul style="list-style-type: none"> Urban visualisation 	<ul style="list-style-type: none"> <i>West Dumbarton Multimedia Development.</i>
<ul style="list-style-type: none"> Use of CAD for large scale user participation 	<ul style="list-style-type: none"> <i>Visual Cities.</i>

CBE BESPOKE CONSULTANCY AND RESEARCH SERVICES



CONTINUING PROFESSIONAL DEVELOPMENT

There are many areas where specialist advice or research from our academic staff can be offered and CBE acts as a channel to allow businesses to access this, for example:

Specific projects - are you working on a project which requires you to outsource advice from a specialist?

Are you **bidding for a project** and need specialist advice for input to the bid or **pre qualification questionnaire**?

Would you like to discuss having **specific research** carried out which would give you a **competitive advantage** or **increase your reputation** as a specialist in a particular market?

We would be delighted to discuss your company's requirements and can assist in the following ways:

- **Developing bespoke training sessions** on the topics you require and delivering them to your staff **in house.**
- Delivering our own **CPD series** of seminars to your staff in house. The topics have been identified from feedback from our ongoing **client survey.**

We welcome suggestions for topics for our **regular weekly seminar series.**

(please refer to page 7 for the 2005 series)

If you are interested in finding out more about any of the above, please contact Anne Blacklock, CBE Business Development Manager by phone on 0141 249 9888 or email anneb@cbe.org.uk

For a complete listing of all the expertise available and recent research at each of the universities please refer to our website www.cbe.org.uk

SAP SURVEY FOR COMMUNITIES SCOTLAND

MACKINTOSH ENVIRONMENTAL ARCHITECTURE RESEARCH UNIT

The Mackintosh Environmental Architecture Research Unit (MEARU) is based at the Mackintosh School of Architecture, in Glasgow, and has been in operation for over 10 years. It has an established record of high quality research in two main environmental domains, passive solar energy design and participatory design and it operates at a unique interface between architectural design, science based research and human factors. This article presents the main findings of recent research commissioned by the Communities Scotland.

Introduction

The aim of the research project was to compare theoretical Standard Assessment Procedure (SAP) calculations with actual energy performance from monitoring houses in three areas in Glasgow: Castlemilk, Cathcart, and Partick. The selected houses represent a mixture of refurbished old tenements and recently built flats and houses. The SAP energy ratings were calculated for all houses, the consumption of gas and electricity was monitored, the occupants completed questionnaires focusing on occupancy pattern, the use of appliances, typical natural ventilation control, space heating use and room temperature settings. Finally, the critical variables, which drive the theoretical energy rating from the SAP calculations were compared to those given by the monitoring results.

Main Findings

Research Area: Castlemilk

A large gap was found between the theoretical SAP predictions and the measured performance, both in winter and late spring to early summer. The SAP underestimates the rates of ventilation due to intervention by the occupants. The occupants' behaviour, in particular setting thermostats at the maximum setting, keeping heat on well into the summer and using windows to regulate

environmental comfort whilst heating is on, does represent a problem in terms of energy efficiency. The former aspect of poor energy efficiency is exacerbated due to the prevalent use of timber frame construction, which now dominates the housing sector in Scotland. Primary thermal mass is limited to plasterboard wall and ceiling linings and flooring. Had heavier construction been used, intermittent opening of windows would have been less critical.

Research Area: Cathcart



*Above and below:
Views of Cathcart House*



The SAP results of predicted energy rating in the Cathcart flats were lower than energy rating in Castlemilk houses, reflecting the thermal properties of old tenement flats and the less efficient gas boiler system. Also, the calculated ventilations rates were below those in Castlemilk. The space heating value for a November to April heating season is approximately 45kWh/m². However, it is probably an overly optimistic one, given that the monitoring showed that space heating was still used in late

May and early June. What is evident is that for a number of the dwellings, despite rather liberal opening of windows in winter and despite the low level of thermal storage, the overall efficiency during the winter period is reasonable. The remaining problem occurs during the transition from winter through spring into summer, where the habit of users tends to artificially prolong the heating season.

Research Area: Partick

The SAP results of predicted energy rating in the Partick flats were lower than those for the houses in Castlemilk and roughly comparable with those found in Cathcart. Also, the calculated ventilation rate in Partick was higher than the SAP estimated ventilation rate.

Conclusions

The broad conclusion to be drawn from the comparison of theoretical Standard Assessment Procedure (SAP) calculations with actual energy performance from monitoring houses is that it is the occupants' habit of achieving thermal comfort during May to June by a combination of heat and fresh air that is tipping the balance from fairly reasonable performance in terms of energy consumption towards excessive. During winter, although the trend in some houses was still to ventilate more liberally than estimated by SAP, in others the rates appeared to be much the same or even lower. On the other hand in late spring, the rates tended to be well above the level predicted by SAP, providing clear evidence that energy efficiency was being compromised during this period.

For further information contact:

*Dr Irena Konratenko
Tel: 0141 353 4578
E mail: I.Konratenko@gsa.ac.uk*

MACKINTOSH SCHOOL
OF ARCHITECTURE
THE GURDOON
SCHOOL TERRACE

EUROPEAN WEEK FOR SAFETY & HEALTH

BUILDING IN SAFETY



Dr Iain Cameron of Glasgow Caledonian University gives keynote address.

The European Agency for Safety and Health's 'European Week for Safety and Health: Building In Safety' - Work at Height Exhibition at BBC Project in Glasgow – GCU gives keynote Knowledge Transfer address to open event.

This year The European Agency for Safety and Health at Work (<http://agency.osha.eu.int>) focused their annual 'European Week for Safety and Health' (Monday 18 October to Friday 22 October) on construction with the theme being "Building In Safety".

A major event was held in Glasgow at the construction site of the new BBC Scotland HQ at Pacific Quay to mark the event on Wednesday the 20th and Thursday the 21st of October. The event was initiated by Land Securities Trillium and jointly organised by a consortium of the

British Broadcasting Corporation as Client; Land Securities Trillium as Client Agent and Project Managers, and Bovis Lend Lease as the Principal Contractor.

The event comprised four half-day exhibitions on the same topic. Dr Iain Cameron of Glasgow Caledonian University, School of the Built and Natural Environment, was given the honour of opening each session with his keynote address concentrating on the impending 'Work at Height Regulations 2005 and Safe Working at Height'.

The 40 minute presentation outlined the main findings of Dr Cameron's HSE funded £111 000 twenty-two month project on fall prevention and protection when working at heights (recently published on HSE's web site, www.hse.gov.uk). Iain's presentation was then followed by an exhibition where delegates were treated to various practical demonstrations including the construction and use of scaffold, elevating work platforms, safety nets, harness fall recovery and rescue, and an open surgery from inspectors from the Health and Safety Executive (HSE).

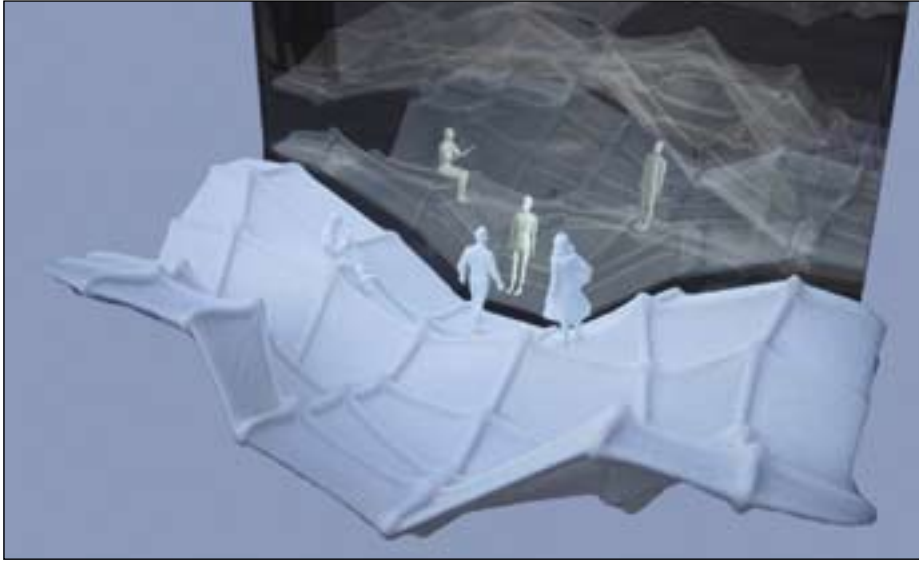
Having said this, the event was far from the usual routine. The main arena was a rather unusual one. A large marquee was constructed on the site to house the keynote address delivered by Iain.

A howling gail and heavy rain lashed against the side of the marquee. On day two, extra ballast had to be employed to ensure that the tent did not take off! In the end, a Safe System of Work (SSOW) prevailed. After all, like golf courses, it never rains on a construction site.

In total, 206 delegates attended the event and received the key note address over the 4 sessions. These 206 industry professionals were also accompanied by 20 undergraduate and 5 post graduate students from BNE's Construction Management programmes as part their student enhancement experience. It was a key aim of the programme team to expose these students to this event as part of their ongoing preparation for employment in the construction professions.

ARCHITECTURAL COMPUTING STUDIES

AT THE UNIVERSITY OF STRATHCLYDE



The 5th year architectural computing curriculum at the University of Strathclyde has recently undergone a restructuring. In addition to a computing stream in the newly integrated Part II MArch course, a non Part II postgraduate course in Architectural Computing Studies is now offered.

Architectural Computing Studies offers an advanced, specialised graduate degree in the context of architecture. Candidates from a range of disciplinary backgrounds who seek education in research and applications of design computing are encouraged to apply. Students in the course pursue studies that include design computation, design methodology, design collaboration, human-computer interaction, and related areas.

In addition to 'traditional' design fields such as architecture and engineering, graduates of the course will be equipped to work in areas such as web site development, software development, multimedia authoring, visualisation consulting, 3D modelling and animation, and online production.

Degrees offered include the PgCert, PgDip, and MSc. Candidates for the MSc complete an individual project dissertation as part of the course requirements. Part time enrollment is possible.

Curriculum

The curriculum comprises a mix of taught classes and studio projects, with a flexible course of study. The studio curriculum is underpinned by a selection of subjects combining theory and practice. Students may also enroll in classes outwith the department. Recommended options include subjects in Computer Aided Engineering Design and Computer Science.

The curriculum covers three broad areas:

Media & Communication: representations of design information from the perspective of computer modelling and manipulation, and their relation to non-digital media and communication methods;

Design Computation: theoretical and practical aspects of a variety of computational models of design knowledge and processes;

Design: interaction with others in a studio environment to produce designs based on a set of criteria, offering experience and an understanding of the practical application of digital methods to the design process.

Taught classes comprise a variety of subjects, including:

- Generative Design
- Design Data Management
- Building Information Modelling
- Virtual Reality
- Rapid Prototyping
- Computer Programming
- Digital Media
- Internet Technologies

Design Studios

Within the context of the design studio, students acquire a well-rounded introduction to the use of digital media in design, developing skills in modelling, visualisation and communication. Projects entail the application of knowledge and skills acquired in subject classes, and may include design work beyond that of the built environment, with both individual and group work.

Entry Requirements

An Honours degree in a design oriented field (e.g. architecture, urban design, landscape architecture, interior design, industrial design, engineering design). Some experience with computing or computer aided design is recommended. Candidates with alternative professional experience or a strong background in computing may also be considered.

Those wishing to follow an RIBA validated course of study should apply for the Diploma in General Architectural Studies or the Master of Architecture (MArch).

For further information contact:

Dr Scott Chase
Department of Architecture
University of Strathclyde

Tel: 0141 548 3007
E mail: s.c.chase@strath.ac.uk

<http://www.strath.ac.uk/architecture>



PULLING TOGETHER SCOTLAND'S CONSTRUCTION INDUSTRY



www.pullingtogether.co.uk is a website that was developed in Oct 2001 specifically for the Scottish Construction industry to demonstrate the potential and the benefits of having an industry portal that co-ordinates Scottish construction activities, particularly training and events, relating to the Egan report "*Rethinking Construction*". Pulling Together takes up the RETHINKING CONSTRUCTION challenge in Scotland. The aim of the initiative is to "Pull Together" the existing networks, trade associations and professional organisations to facilitate learning and encourage a sharing of information within the construction environment.

The web site, which is currently funded by Scottish Enterprise Glasgow on behalf of the industry, is heavily supported by the Scottish Construction Forum (SCF) acting in a steering capacity. This Forum was established in Feb 2004 in response to one of the key recommendations in the Modernising Construction Strategic Group's report "*Achieving Construction Innovation and Excellence in Scotland*". Endorsed by Scottish Ministers in August 2003, this report is available for download from www.pullingtogether.co.uk together with other Modernising Construction documentation.

Graeme Millar, chair of the Scottish Consumer Council among other roles, is the chairperson of the Forum. Membership is made up of senior representatives from across the industry, clients, government and enterprise agencies. These include the Scottish Construction Industry Group, the Scottish Construction Clients Forum, Scottish Enterprise, Scottish Executive, Scottish Building, Jacobs Babbie, CITB-Construction Skills, Further and Higher Education sectors, Construction Excellence, Health & Safety Executive, Keppie Design, CoSLA, Highlands & Islands Enterprise, Argyll & Bute Construction Excellence, Scottish Decorators Federation and Communities Scotland.

By providing strategic advice to the industry, the Scottish Executive and the Scottish Parliament, the Forum will work to boost productivity and improve standards within the sector. Specific areas of the industry for focus by the Forum are:

- Procurement;
- Image & Awareness;
- Workforce Development; and
- Best Practice.

Sub-groups have been established to take forward these themes and the Forum will be publishing reports on the outcomes and recommendations.

On a wider scale, the Modernising Construction report also recommended that a Scottish Construction Innovation & Excellence centre be set-up, which will be used to drive forward improvements in Scotland's construction sector. Work on creating this Centre is currently ongoing. Further announcements regarding this matter will be made in the New Year.

The Pulling Together initiative has over 400 members, although many other users visit the site on a regular basis. By regularly logging on to Pulling Together you can access the latest construction news provided from a range of sources and also keep abreast of the wide range of activities and services on offer in Scotland. All members can contribute to the success of Pulling Together. Other information that can be accessed and contributed towards is:

News: The latest happenings within the Scottish construction sector provided from a range of sources including Scottish Construction News.

Links: live links to a host of consultants, academic bodies, best practice initiatives and industry bodies are all hosted within this section. Links to construction organisations and initiatives can be added here.

Events: Information on seminars, conferences, CPD events and lectures can all be posted to the site. Regular providers of event information include the Centre for the Built Environment (CBE), the Borders Industry Construction Forum (BCIF), academic establishments and construction consultants.

The Scottish Construction Forum (SCF): This part of the website allows you to discuss and routinely ask questions about what is happening within the Scottish Construction sector. The minutes of the meetings from the SCF can also be viewed here.



The website is continuing to grow with information that has been posted by members and by the administrator of the website. Beginning in late November, a newsletter sent by e-mail will be introduced and this will highlight events, news, topics and links that have been added to the website over the previous month. Also taking place is an evaluation of the current website and this will form part of the strategy for the setting up of the Centre of Excellence website. This evaluation will help inform the future direction of the Pulling Together initiative.

The administrator of the website would be glad to hear the views of all members with regards to content, layout, navigation, and structure. An e-mail and web-based questionnaire regarding the future of the website is currently being formatted and all members and, indeed, non-members of the Pulling Together initiative will be encouraged to give their views and opinions in confidence.

In the meantime, please visit the site and register your details to be able to post contributions. Make this your site by contributing links, news and event information that you want to share with the rest of the industry. If you have any queries regarding the Pulling Together initiative, please do not hesitate to contact the administrator at the details below.

If you would like to receive a copy of the Pulling Together e-newsletter, please register your details with the website and a copy of the newsletter will be forwarded automatically.

For further information contact:



Nigel Craig MSc BSc (Hons)
Glasgow Caledonian University

E mail: ncr@gcal.ac.uk

<http://www.pullingtogether.co.uk>

INTERNATIONAL COLLABORATION

AT GLASGOW CALEDONIAN UNIVERSITY



Mr P.R. Swarup, Director General of the Construction Industry Development Council of India.

The School of the Built and Natural Environment, GCU have entered into a collaborative partnership with the Construction Industry Development Council (CIDC) of India under a preliminary memorandum of understanding signed between GCU and CIDC in July. Professor Bimal Kumar of BNE facilitated the signing of the preliminary MoU between the university and the CIDC of India in New Delhi. CIDC was represented by their Director-General, Mr. P R Swarup. Under the terms of the agreement, both parties will encourage the following activities, in particular, to promote international academic cooperation:

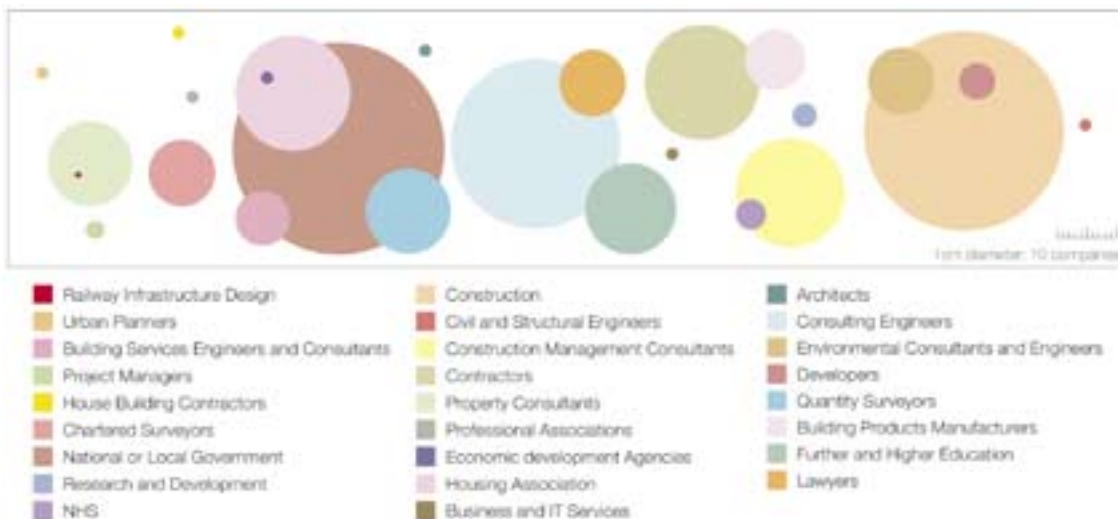
- Exchange of materials in education and research, publications, and academic information;
- Exchange of faculty and research scholars;
- Exchange of students;
- Joint research, and conductance of Workshops, Seminars, Conferences focussed at construction education and research.

Various joint activities are being planned by BNE and CIDC. In 2006, a major international conference, ITCSSED/INCITE 2006, World Conference on IT in Design and Construction is being organised under Professor Kumar's Chairmanship in New Delhi with CIDC's support.

A team of four members of the CIDC recently visited GCU. A public lecture by Mr. Swarup was organised by CBE on Friday, 19th November which was attended by a number of practitioners and researchers actively working in the construction industry. Various discussions were held during the visit on potential forms of collaboration.

MONITORING CBE

ATTENDED EVENTS



ARCHITECT'S HANDBOOK OF CONSTRUCTION PROJECT MANAGEMENT

EDITED BY MICHAEL MURRAY AND DAVID LANGFORD



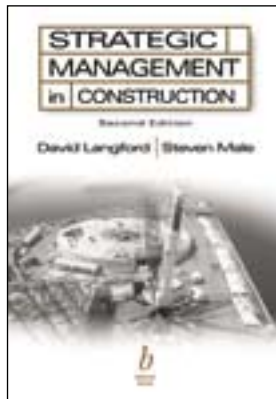
Price: £45.00
Binding: Paperback
ISBN: 1 85946 123 9

The practice of architecture today has evolved into a multi-disciplinary profession under pressure to produce better buildings more quickly and for less money. Procurement routes have multiplied to include partnership agreements, where knowing how all members of the construction team operate is central to the smooth running of the contract.

'Architect's Handbook of Construction Project Management' explains contemporary management processes and strategies employed by practising professionals during the running of construction projects. Aimed at architects and students of architecture or construction and written by acknowledged experts in their fields, the book looks at the huge variety of distinct management tools and issues in the context of real projects. Full of solid advice and wise insights, the topics range from briefing and knowledge management to performance and safety management.

STRATEGIC MANAGEMENT IN CONSTRUCTION - SECOND EDITION

DAVID LANGFORD AND STEVEN MALE



Price: £35.00
Binding: Paperback
ISBN: 0-632-04999-5

This book reviews the general theory of strategy, relates it to the particular circumstances of the construction industry, and shows how it can be applied in practice. It brings together ideas from economics, marketing, management, business and politics to develop strategic management for both contractors' firms and the associated professions.

Substantial changes have occurred in the industry since the book was first published in 1991. This Second Edition reflects the major developments that have followed the Latham and Egan reports, and includes new chapters on international strategy and marketing, showing how they can contribute to the strategic planning of construction organizations.

The book will provide a valuable tool for the strategic development of construction firms.

"Ten years separate the editions during which period a significant number of British, (and other), construction firms which had survived generations of proprietors merged, changed beyond recognition or ceased trading. One can not but wonder if publication of a work on strategic planning some twenty year earlier might have saved some of them."

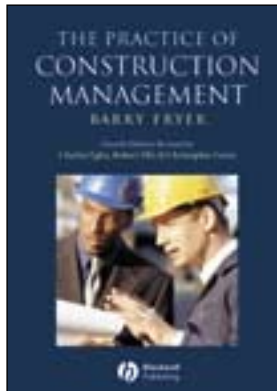
- Construction Manager

"The book presents the essential elements for managing at this higher level and should be a must for any construction professional who aspires to an executive position in industry as well as any student for construction management, project management and organizational management in construction. It comes highly recommended"

- Engineering, Construction and Architectural Management

THE PRACTICE OF CONSTRUCTION MANAGEMENT

BARRY FRYER, CHARLES EGBU, ROBERT ELLIS, CHRISTOPHER GORSE



 Blackwell
Publishing

Price: £26.50
Binding: Paperback
ISBN: 1-401-111-0

This book offers construction managers and students a readable account of management ideas and practices, concentrating particularly on the human side of construction management. It pulls together what has been learned both from management practice and research, and summarises the main themes and trends. Since the last edition in 1997, many new initiatives and government sponsored reports are beginning to impact on organisational strategy and culture, and the industry in general. This new edition has been substantially revised to reflect the latest management thinking and to include new sections on communication, conflict management and managing innovation. It also features for the first time tutor-led debate topics, discussion items or questions at the end of each chapter.

It will provide a readable textbook for final year undergraduates and postgraduates of construction management, and for construction managers faced with the tasks of promoting a culture of collaborative working and balancing relationships with commercial issues.

Reviews of previous editions:

"It makes a unique contribution to the understanding of human relations issues in construction"

– Building Management Abstracts

"All round a comprehensive and very readable book"

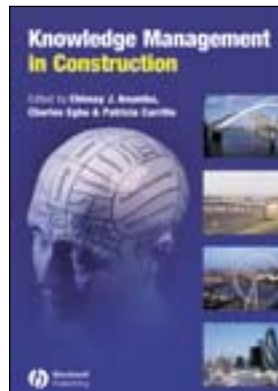
– The Royal Engineers Journal

"One of the easiest reads in construction management literature"

– Campus Construction

KNOWLEDGE MANAGEMENT IN CONSTRUCTION

CHIMAY J ANUMBA, CHARLES EGBU, PATRICIA CARRILLO



 Blackwell
Publishing

Price: £49.95
Binding: Illustrated Hardback
ISBN: 1405129727

A key problem facing the construction industry is that all work is done by transient project teams, and in the past there has been no structured approach to learning from projects once they are completed. Now, though, the industry is adapting concepts of knowledge management to improve the situation.

This book brings together 13 contributors from research and industry to show how managing construction knowledge can bring real benefits to organisations and projects. It covers a wide range of issues, from basic definitions and fundamental concepts, to the role of information technology, and engendering a knowledge sharing culture. Practical examples from construction and other industry sectors are used throughout to illustrate the various dimensions of knowledge management. The challenges of implementing knowledge management are outlined and the ensuing benefits highlighted.

"This book provides practical guidance and I consider it essential reading for all participants in the construction process."

– Sir Michael Latham