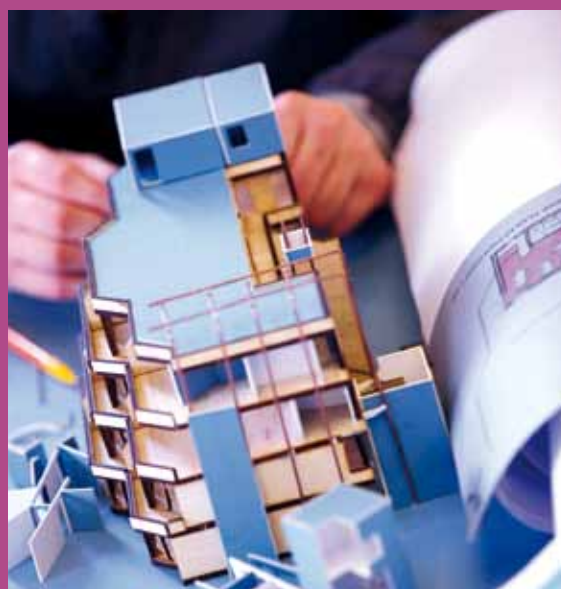


ANNUAL RESEARCH REVIEW 2009-2010

REAL ESTATE AND LAND POLICY
CONSTRUCTION AND PROJECT MANAGEMENT
(OISD-RELP and OISD-CPM)

DEPARTMENT OF REAL ESTATE AND CONSTRUCTION



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OXFORD BROOKES UNIVERSITY

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■ INTRODUCTION

During 2009-2010 the Oxford Institute for Sustainable Development was restructured to provide a better fit between research groups and research interests of individual members of staff. Accordingly the International Land Market Group was subdivided in to two separate but interlinked groups to coordinate the research activities of staff in the Department of Real estate and construction. We therefore welcome you to the annual review for the Real Estate and Land Policy (RELP) and Construction and Project Management Research Groups (CPM) for the period 1 August 2009 to 31 July 2010.

This report is being distributed to current students and past graduates of the Department of Real Estate and Construction (REC) and both professional and academic colleagues who support our work. The report contains a summary of activities and selected extracts of work published by staff active within the RELP and CPM research groups.

If you have any enquiries or would like additional copies please email the REC Research Coordinator Dr. Ramin Keivani at rkeivani@brookes.ac.uk.

■ STRATEGIC RESEARCH GOALS

Research and scholarly excellence are central to the working ethos and academic tradition at the Department of Real Estate and Construction and the RELP and CPM research groups. This is manifest in the following goals of our research strategy:

- To be international leaders in our fields of expertise
- To promote sustainable development in real estate and construction
- To deliver inputs (e.g., research funding successes) and outputs (e.g., publications) of international standing by the majority of research active staff
- To link student learning, teaching and research
- To link applied research and consultancy with international, national, regional and local agents and markets – and to provide information to the widest range of professionals and users in real estate and construction

In the year ending July 2010 RELP and CPM staff maintained an active research profile by developing new areas and consolidating their professional and academic publications and conference presentations. The value of our work in leading sustainability research in the built environment including real estate and construction has been recognised through invitations to our members of staff to join steering committees and advisory boards of preeminent research and development organisations at both national and international levels. These include Steering Groups of the UN-Habitat World Urban Campaign and Future of Cities Research programme at University of Oxford and Working Groups for CORENET Sustainability and UN-Habitat Private Sector Unit.

■ AN OVERVIEW OF RESEARCH ACTIVITY 2009-2010

OXFORD INSTITUTE FOR SUSTAINABLE DEVELOPMENT (OISD)

OISD is now a well recognised and highly regarded institution for sustainability research both at home and abroad. A HEFCE report into sustainable development in higher education in England suggests that OISD is one of the key players in sustainable development research. It is also a member of the UK Green Building Council (UKGBC), which consist of businesses from across the industry, all of whom believe the challenge of sustainability is an opportunity, not a threat. In addition to industry, UKGBC members include NGOs, academic institutions and government agencies. On joining UKGBC, Paul King, Chief Executive of UKGBC, said of OISD:

"I'm delighted OISD at Oxford Brookes has joined the UK Green Building Council's campaign for a sustainable built environment. Our members are increasingly drawn from right across the built environment - and the private, public and third sectors. OISD at Oxford Brookes has an enviable reputation as a key player in sustainable development research and we look forward to a very active involvement in our work to break down the barriers, whether in government policy or industry behaviour, to a more sustainable built environment."

During the past year the OISD has provided us with an important facility to develop cross-disciplinary research focusing on sustainability issues in real estate, construction and the broader built environment. These have included joint applications for research funding from prominent funding organisations leading to major successes particularly with EPSRC and University of Oxford Future of Cities programme. We have also produced a number of joint papers, held joint research seminars and continued our collaborative work on a number of major research projects. Major new interdisciplinary projects commenced during the review period include:

- Integrated Carbon, Waste and Cost Modelling for Design of Low Impact Buildings: The project is funded by the TSB/ EPSRC and is being undertaken in collaboration with 4 industry partners. The aim is to develop practical decision support tools that will enable practicing designers to systematically assess alternative low impact design options against carbon emissions, time, cost and waste performance measures simultaneously.
- UK-Brazil Urban Research Network funded by the Oxford Martin School, University of Oxford: Future of Cities programme. The aim of this project is to develop research capacity and facilitate transfer of knowledge on the interface between globalisation, climate change, urban development and urban governance in Brazil and UK and how this impacts on local economies, local livelihoods and access to resources.

For further information on OISD activities please refer to www.brookes.ac.uk/schools/be/oisd.

REAL ESTATE AND LAND POLICY, CONSTRUCTION AND PROJECT MANAGEMENT GROUPS

The OISD RELP and CPM groups have consolidated their research activities during the review period. RELP successfully launched the **UK-Brazil Urban Research Network** involving a number of prominent researchers in UK and Brazil please see:

www.brookes.ac.uk/schools/be/oisd/urbanpolicy/network/index.html

for more information and position papers on thematic topics of the network.

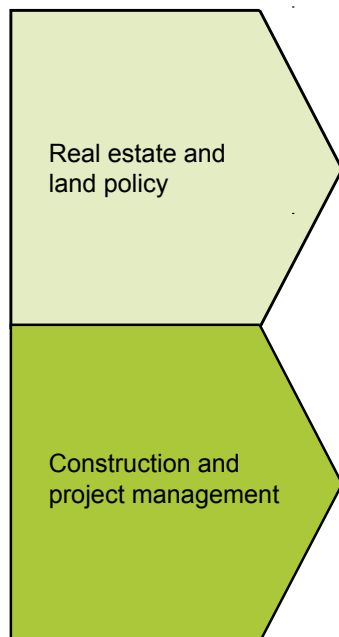
CPM, on the other hand, won funding from **TSBEPSC for a major project on Integrated Carbon, Waste and Cost Modelling for the Design of Low Impact Buildings** in collaboration with industry partners Best Foot Forward, Zedfactory, Design Builder Software Ltd and ItSoWorks.

Please see: <https://sites.google.com/site/lowimpactbuildingsproject/>

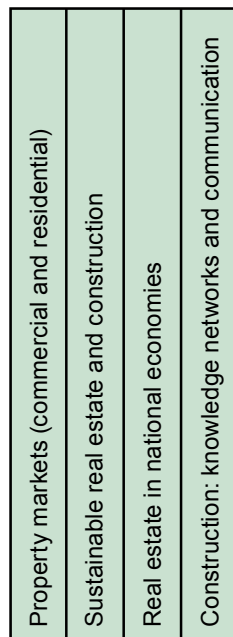
In addition we continued with our work through the Comerford Climate Change Research Fund on housing price change and wind farm development, with Osaka University in Japan on the regeneration of brownfield sites, our RICS 'Green Gauge' work, and with the European Investment Bank on measuring social sustainability in Europe. During this period we also completed a number of projects including a study on comparative research on housing supply with the Korean National Housing Corporation and Sogang University in Seoul, Korea. To this must be added a study for the Investment Property Forum (IPF) on the demand for sustainable commercial office buildings in the UK and follow up reports on attitudes to sustainability as part of the annual surveys commissioned by the RICS.

MAIN RESEARCH THEMES

Main research groups



Cross-cutting fields



Examples of research



RESEARCH AND CONSULTANCY PROJECTS

In the 2009-2010 period the following research was undertaken by members of staff at the Department of Real Estate and Construction:

PROJECTS COMPLETED DURING THE REVIEW PERIOD

PROJECT TITLE	Measuring social sustainability: best practice from urban renewal in the EU
RESEARCHER	Tim Dixon and Andrea Colantonio with Juliet Carpenter, Robin Ganser, John Glasson and David Shiers
SUMMARY	<p>This 3 year programme of research (one of only four awards made by EIB in 2006) will focus on the following issues within an EU context, examining a range of urban renewal projects and related infrastructure covering commercial and residential development:</p> <ul style="list-style-type: none"> • Definitions and measures of 'social sustainability': a review and critique. • Implementation - to what extent and in what ways is social sustainability incorporated within urban renewal projects within the EU? What is the optimum balance between commercial and residential development (or in residential projects, tenure and income mix) in order to provide the widest social benefits? • Best practice techniques - how can we learn from the way in which social sustainability has been incorporated in projects? How do lenders and investors approach social sustainability for urban renewal projects? • New tools - can improved tools be developed to assess social sustainability and also enhance its consideration in decision processes and project/programme outcomes? Can these tools also be used in projects based within transition (new member) states? How do the new tools fit the existing institutional and planning frameworks and what are the implications for investment lending? Working papers are now available at: www.brookes.ac.uk/schools/be/oisd/sustainable_communities/index.html • A new book based on the research is due to be published in January 2011 (see www.amazon.co.uk/Urban-Regeneration-Social-Sustainability-Practice/dp/1405194197)
FUNDING ORGANISATION	European Investment Bank

PROJECT TITLE	Government intervention in housing supply: an international comparative study
RESEARCHER	Youngha Cho
SUMMARY	This study seeks to 1) document the evolution of housing policy in four different countries with special reference to its intervention in housing supply, both in the private and the public sectors; 2) study the evolution of government policy in Korea, Singapore, U.K. and U.S., focusing on the major milestones of policy transformation and the drivers of such changes as well as their consequences in the performance of the housing sector; and 3) draw implications and lessons for Korea taking into consideration the differences in socio-economic environments.
FUNDING ORGANISATION	The Korean National Housing Corporation/Sogang University, Seoul, Korea

PROJECT TITLE	Research Into Global Healthcare Tools (RIGHT)
RESEARCHER	Joe Tah
SUMMARY	RIGHT is a multi-university feasibility study that is investigating ways in which modelling and simulation might be used to help healthcare providers improve their service. It aims to assess, through 'proof of concept' testing, the feasibility of applying some of the best practice modelling and simulation methods that are used to support decision-making in other sectors such as manufacturing, aerospace and the military to decision-making in healthcare. The intention is to develop a framework that connects users' needs, users' resources and any available modelling tools to assist NHS staff at all levels, from those who engage in delivery through to planners and policy-makers. The project involves Brookes, Brunel, Cambridge, Cranfield, Southampton and Ulster. Our role is to examine ways in which the built environment influences health care delivery.
FUNDING ORGANISATION	Engineering and Physical Sciences Research Council (EPSRC)

PROJECT TITLE	Structural Performance of Cold-formed Cladding Systems
RESEARCHER	Michael Hill, Rob Beale and Ray Ogden
SUMMARY	Light steel cladding systems are widely used in the construction industry where they are fitted to steel frames. In the last few years due to increased demands on thermal efficiency the depth of the cladding systems has increased from its original 80mm where significant research was undertaken by the Steel Construction Institute and others to current practice of up to 220mm and with a possibility of even larger sizes in future. The first part of the project was to investigate the literature and current code provisions. Michael has demonstrated that the current research and design assumptions may be invalid as they ignore the spacing between the inner and outer leaves of the cladding and only consider the cladding as a single layer. An experimental rig has been designed to test full size panels with the larger spacing between leaves to get an empirical understanding of the behaviour. Analytical models will then be developed and revised design provisions produced. The specimens will be provided by Corus and Fixing Point Ltd.
FUNDING ORGANISATION	School Staff development funding, Quality research money, Corus and Fixing-Point Ltd

PROJECT TITLE	Analysis and design of scaffold structures
RESEARCHER	Rob Beale and Mike Godley
SUMMARY	<p>Rob Beale and Mike Godley have been involved in developing methods of advanced structural analysis to determine the forces and deflections occurring within scaffold structures. The analyses have led to the development of new proprietary scaffold systems being marketed by Interserv UK Ltd and to improved procedures by the Health and Safety Executive (HSE) to check scaffold safety.</p> <p>As a result of research by Mike Godley the National Access Scaffold Confederation (NASC) published a Guide to scaffolding design using the new Eurocode EN12811. However, due to a lack of data assumptions made by Mike Godley in drawing up the guide led to a large reduction in design capacity which was received unfavourably by the industry. Further research was then commissioned by the NASC to obtain experimental data on putlog and right-angled connections. The full results of tests on joint performance were published in a report to the NASC and in a refereed journal article.</p> <p>During 2008 full scale tests were carried out on access scaffolds at BRE under the direction of Mike Godley. These tests produced results which were not in conformity with the standard theoretical models proposed in previous papers. Research is continuing on developing models to fully explain the test behaviour which will be published in a refereed journal article.</p>
FUNDING ORGANISATION	Interserv UK Ltd and National Access & Scaffolding Confederation.

PROJECT TITLE	Pallet Rack Structures
RESEARCHER	Rob Beale, Mike Godley, Sambasiva Rao Sajja and Kenneth Kwarteng
SUMMARY	<p>Research is being conducted into the dynamic and seismic behaviour of storage racking structures. Investigations have been made into an understanding of shear behaviour of racks in the cross-aisle direction. This research has led to three conference publications and for two journal articles. The results from the articles are being used to propose changes to the new Eurocode on racking structures, as a basis for some provisions to the Australian code for rack structures and are under consideration by the US Rack Manufacturers Association for alterations to their code which currently derives a shear stiffness which can be twenty times in excess the experimental stiffness!</p> <p>Investigations are also being undertaken into modelling the performance of pallet rack connections under seismic conditions</p>
FUNDING ORGANISATION	Quality Research Fund and Hi-Lo/Planned Storage Systems Ltd

PROJECTS CONTINUED FROM PREVIOUS YEAR

PROJECT TITLE	Regenerating Hardcore Brownfield Sites in England and Japan: A Comparative Study of Manchester and Osaka
RESEARCHER	Tim Dixon with Noriko Otsuka and Osaka University
SUMMARY	This research is designed to compare the English and Japanese experience in regenerating 'hardcore' brownfield sites. Hardcore sites are long-term derelict sites where contamination is a particular issue and where the site may be located in a marginal location, sometimes with fragmented ownership. Japan's experience of brownfield sites is relatively new in terms of its legislative programme and its planning regime, in contrast to England, lacks the power to impose checks and balances on the redevelopment of contaminated sites. Japan faces similar problems to England in coming to terms with sites which require clean-up, but which may be viewed as 'stigmatised' either before or after remediation. The research focuses on cases study sites in Greater Manchester and Osaka.
FUNDING ORGANISATION	Kajima Foundation through Osaka University, Japan

PROJECT TITLE	RICS 'Green Gauge' Research: RICS Members and the Sustainability Agenda (2009-2011)
RESEARCHER	Tim Dixon
SUMMARY	This research builds on the RICS Green Profession research (completed by Oxford Brookes in 2007) by carrying out an annual survey in October each year from 2009 to 2011, which benchmarks and tracks progress within the RICS towards 'mainstreaming' sustainability in members' work, and the extent to which the profession is engaging with sustainability. The annual survey will also include a review of the year within each of the three main global regions identified in the first survey: EU and Europe; Americas; Rest of the World.
FUNDING ORGANISATION	RICS

PROJECT TITLE	Leadership of the Construction and the Built Environment Sector for the Progress South Central Lifelong Learning Network
RESEARCHER	Karen Gaston and Brian Wood
SUMMARY	<p>Progress South Central has contracted Oxford Brookes University (School of Built Environment) to be the lead institution for the Construction Industries Sector.</p> <p>Outcomes of the project include:</p> <ul style="list-style-type: none"> • Mapping Level 1 to 7 course provision across the Progress South Central Lifelong Learning Network region (Berkshire, Buckinghamshire, Oxfordshire and Surrey). • A review and evaluation of the student and academic staff experience of the 14-19 Diploma in Construction and Built Environment (in collaboration with Reading College). • An investigation into the development of progression into HE for Advanced Apprentices in the Progress South Central partnership region. • A review and evaluation of the Oxford Brookes University part-time and vocational Foundation Degree in Construction Management. • A collaborative venture for the provision of Masters level modules and degree programme between the University of Reading and Oxford Brookes University. • The establishment of regular Forum meetings, held at venues across the Progress South Central Lifelong Learning Network region.
FUNDING ORGANISATION	Progress South Central Lifelong Learning Network

NEW PROJECTS COMMENCED DURING THE REVIEW PERIOD

PROJECT TITLE	2050 Vision: UK-Brazil Urban Research Network
RESEARCHER	Ramin Keivani, Sue Brownill and Tim Dixon
SUMMARY	<p>The main aim of this network is to develop research capacity and facilitate transfer of knowledge on the interface between globalisation, climate change, urban development and urban governance in Brazil and UK and how this impacts on local economies, local livelihoods and access to resources. This is achieved by addressing the following research themes around a central question of how urban governance is responding to the challenges of globalisation and climate change and whether more flexible forms of governance capable of meeting such challenges are emerging/possible:</p> <ul style="list-style-type: none"> • Globalisation, urban economic restructuring and urban competitiveness. • Urban governance including administrative hierarchies, legal and regulatory frameworks, policy and decision making forums, roles and functions of key actors and resultant power networks, partnerships and interactions. • Climate change, environmental planning/governance and their implications for social and economic development of cities. • Emerging patterns of agglomeration and local economies including asset protection and livelihoods of local inhabitants and small firms. • The interface of globalisation and urban governance and understanding whether and how more flexible and multilayered governance structures are emerging in response to globalisation particularly in terms of; mediating conflicting demands of global and local circuits of development, supporting more environmentally sustainable local development patterns in response to climate change, managing access to land, infrastructure and urban services and determining, mediating between and implementing alternative scenarios for urban futures. <p>Please see: www.brookes.ac.uk/schools/be/oisd/urbanpolicy/network/index.html</p>
FUNDING ORGANISATION	University of Oxford –Future of Cities Programme



PROJECT TITLE	Integrated Carbon, Waste and Cost Modelling for Design of Low Impact Buildings
RESEARCHER	Joe Tah, Franco Cheung, Esra Kurul, Jonathan Rihan, Henry Abanda,
SUMMARY	<p>This is an industry-led collaborative project involving the School of Technology and 4 industry partners namely: Best Foot Forward Ltd. (lead partner); ZEDfactory Ltd.; DesignBuilder Software Ltd.; and ItSoWorks. The project aims to develop practical decision support tools that will enable practicing designers to systematically assess alternative low impact design options against carbon emissions, time, cost and waste performance measures simultaneously. The design of low impact buildings currently presents significant challenges to designers as it involves the consideration of multiple performance measures including energy consumption, carbon emissions, wastes and costs. The current proliferation of software tools have significant shortcomings in that they address the problem in a piecemeal fashion, do not interoperate, most are not easy to use and do not allow a holistic assessment to be made. Furthermore, they do not adequately address the early stages of the design process which presents the greatest opportunity to influence the building performance and reduce whole-life costs. The project addresses the early stages of the design process and the focuses on:</p> <ul style="list-style-type: none"> • establishing methods, protocols, and rules for measuring embodied carbon emissions and waste from construction materials, components, and activities; • establishing cost and waste drivers and methods of estimating project time and costs of designs that incorporate innovations in sustainable building technologies and methods at the early stages of the design process; • developing integrated models for estimating embodied and operational carbon emissions, waste, time and costs simultaneously; • leveraging emerging Building Information Modelling (BIM) technology to develop easy to use interoperable decision support software components that implement the methods and models developed; • testing and validating the methods and software tools on selected case studies; and • establishing mechanisms for exploitation and wider dissemination of the results. <p>Please see: https://sites.google.com/site/lowimpactbuildingsproject/</p>
FUNDING ORGANISATION	Jointly funded by the Technology Strategy Board (TSB) and the Engineering and Physical Sciences Research Council (EPSRC).



■ RESEARCH ACTIVE STAFF

In the 2009-2010 review period twenty core and two associated members of staff contributed to our research activities. These are:

CORE STAFF



Dr. J Albert Cao is a senior lecturer specialising in real estate valuation and investment. He has special research interests in China's urban land market, housing and commercial real estate. Other areas of his research interest include the UK real estate investment market, housing market and real estate markets in transition economies.

Dr. Cao was one of the guest editor of *Journal of Property Investment and Finance's* special issue on China, which was published in 2009. He is recently appointed External Examiner by the Department of Land Economy at Cambridge University for its PhD candidate.

Dr. Cao is currently working on a number of research initiatives, including publication of a specialist book on China's property market and urban development, and research proposal on China's real estate market development and urban sustainability.



Dr. Franco Cheung is a senior lecturer and a quantity surveyor by professional discipline. His research expertises are construction cost modelling and forecasting techniques. His works produced in the past have been published in the leading refereed journals such as the *Construction Management and Economics* and the *Building and Environment* and disseminated in the conferences around the world. Recently, he is extending his study to the areas of choice making and judgemental bias.

Franco is an editorial member of the *Surveying and Built Environment Journal* and was the editor of its June 2006 issue.



Dr. Youngha Cho is a senior lecturer in the department of Real Estate and Construction. Her research interests include micro analysis of housing market and house building industry, affordability issues in housing market, intermediate housing tenure and residential mobility. She has published several research papers in leading academic journals including *Journal of Housing Economics* and *Construction Management and Economics*. As an associate of the University of Cambridge, she has been involved in several research projects, such as 'The Costs and Benefits of the Low Cost Home Ownership' and 'Modelling Future Take-up of the Low Cost Home Ownership Products'. She has also completed a Quality Research Project on the UK Housebuilding Industry, focusing on housebuilding companies' strategic responses after the Barker Review. She continues to extend

her expertise into other countries such as US and Singapore since she has carried out an international research funded by the Korea National Housing Corporation. She has been networking with several institutions in South Korea and Asian countries as a visiting fellow in the Research Institute for Human Settlement (KRIHS) since 2005. She is member of a variety of academic research bodies, such as ENHR, APNHR, ERES, AsREA, AREUEA and she has been recently appointed as an editorial board of *Housing Studies Review*, a leading housing journal in Korea.



Peter Dent is currently principal lecturer and Comerford Fellow. He is a fellow of the Royal Institution of Chartered Surveyors. His research interests include real estate valuation methodologies for both market and non-market property assets, behavioural studies, commercial office occupier needs and corporate real estate strategies. Funded by the RICS, he has worked with Dr Sally Sims on developing methodologies to evaluate the impact of wind farms on property values. He is also working on a sponsored project examining the integration of climate change and the built environment into real estate programmes in the UK.

In addition to leading and teaching on modules in the Department and has been invited speaker on programmes run at the University of Reading and The Wilson Centre, Cambridge University where he contributed to the corporate real estate module on their postgraduate programme. He is an assessor of the RICS's Education Trust and a reviewer for several international academic property journals.

He has helped to set up and run real estate programmes in China, Bulgaria, Singapore and Hong Kong. He has also been involved in research projects internationally. He was the UK delegate for Commission 7 of the International Federation of Surveyors, where he has been involved in international work on land markets. He has worked on a project sponsored jointly by the RICS and the Polish government on mass appraisal of real estate for taxation purposes. He has also been involved in sponsored work for RICS, Berkeley Homes, AMEC Developments, the National Audit Office, the Guy Bigwood Trust and several major surveying firms.



Prof. Tim Dixon is the Director of Oxford Institute for Sustainable Development and Professor of Real Estate.

With more than 25 years' experience of research, education and professional practice in the built environment he is a qualified fellow of the RICS and a fellow of the Higher Education Academy, as well as on the editorial boards of five leading international real estate journals. He is also a member of the CORENET Sustainability Working Group. In 2009 he was awarded Honorary Fellow status of the Institute of Green Professionals, and is also a member of the Steering Group for the 'Future of Cities' Programme based at Said Business School and James Martin 21st Century School, Oxford University.

His personal research interests revolve around the interface between the sustainability agenda and its impact on property development, investment and occupation. The research is based on a strong interdisciplinary approach which incorporates policy and practice impacts and futures thinking. More specifically this research includes:

- Climate change and real estate
- Sustainable real estate: investment, development and occupation issues
- Sustainable urban regeneration and brownfield issues
- The valuation/appraisal of contaminated land
- The role of private sector investment and development in urban regeneration
- Futures studies: the impact of ICT on commercial property and real estate markets

In connection with this research agenda, he has carried out funded research for a variety of organisations, including EPSRC, Office of Deputy Prime Minister (and DTLR); Joseph Rowntree Foundation; British Property Federation; RICS; Foundation for Built Environment; British Council of Shopping Centres, British Council for Offices, as well as the private sector. More recently he has been working with the DIUS Foresight Land Use

Futures programme. He is currently working on a range of funded sustainability-based research programmes, including European Investment Bank EIBURS (social sustainability and urban renewal), RICS (sustainability indicators - 'Green Gauge' project), and RICS Education Trust/Kajima Foundation ('A Comparative Study of UK-Japan Brownfields').



Prof. Nick French joined the Department of Real Estate & Construction as Professor of Real Estate in September 2006. He is the Programme Director of the MSc Real Estate Management and MSc International Real Estate. Nick is the DTZ Fellow in Commercial Property. In his role, Nick works closely with his colleagues at DTZ in writing papers, presenting conference papers and developing a research agenda for the property profession.

He is also Editor of the award winning Journal of Property Investment & Finance and is an editorial board member for the Journal of European Real Estate Research, the Journal of Corporate Real Estate, the Journal of Property Research and the Journal of Real Estate Literature. In 2008 he was also the Interim Editor of the Journal of European Real Estate Research.

He is a member of the CoreNet and ERES in the UK/Europe and AREUEA and ARES in the USA. Nick is a member of the Royal Institution of Chartered Surveyors (RICS) and serves on the Securitisation and Secured Lending group which is a subcommittee of the Appraisal and Valuation Standards Board (AVSB). In 2008, he was asked to take on the role as principal author for the RICS Information Papers on Valuation and Calculation of Worth.

Nick is founder member of the European Real Estate Society and held the post of Executive Director until 1997. He is currently on the main committee with special responsibility for coordinating prizes.

His research interests include:

- Valuation and Uncertainty
- Development Appraisals and Feasibility Analysis
- Corporate Real Estate Management



Dr. Karen Gaston joined the School of Built Environment (Department of Real Estate and Construction) and Progress South Central Lifelong Learning Network (based at the University of Reading) in November 2009.

Karen is an educational researcher with several years experience of reviewing and evaluating the learning experiences of students studying in higher education. Karen holds a PhD in Higher Education entitled 'A study of student progression and retention in Higher Education: A search for an eclectic theoretical framework' from the University of Glamorgan – a study focusing on the student experience of studying on a building, technology and management degree programme.

The project undertaken on behalf of Progress South Central Lifelong Learning Network at Oxford Brookes University involves an investigation into progression routes for individuals wishing to embark upon a career in Construction and Built Environment. The focus of the work looks at the student experience of those coming to higher education via the non-traditional vocational route. Naturally this involves a review and evaluation of the student experience of the new 14-19 Diploma – a new vocational qualification at Level 3 and the Advanced Apprenticeship as alternative routes into higher education. More recently work has focused on a review and

evaluation of the Level 4 and 5 Foundation Degree in Construction Management currently run by Oxford Brookes University.

Karen also represents Oxford Brookes University and the Higher Education sector on the South East Region Construction Skills Forum.

Richard Grover is a Chartered Surveyor and economist. Between 1999 and 2007 he was Assistant Dean (Finance & Resources) in the School of Built Environment at Oxford Brookes University before resuming his duties as a lecturer in property economics and property valuations. He has undertaken a number of projects on the newly emerging private land markets in Eastern Europe, particularly in Bulgaria, Romania, and Russia. These have been undertaken for a variety of clients including the World Bank, and the governments of the United Kingdom, Romania, and the Russian Federation. Recently he has been involved in several projects for the Food and Agriculture Organization of the United Nations on the expansion of the European Union, good governance in land administration and land tenure, and the management of state and public lands.



Dr. Ramin Keivani is currently reader in international land policy and urban development. He is also co-director of RELP research group and research coordinator for the Department of Real Estate and construction. He has a wide range of interests in comparative urban research particularly impact of globalisation on land markets and urban development in developing and transition economies. Other areas of his interest include urban competitiveness, urban regeneration, international land and housing policy and construction in developing countries. He is currently Director of Studies for 4 PhD scholars.

Dr. Keivani has managed several research projects including ESRC and RICS funded work and provided research and consultancy services in a number of countries including Iran, United Arab Emirates, Singapore, Brazil, Hungary, the Czech Republic and Poland.

He is co-author of two books on housing policy and role of corporate social responsibility in urban development in developing countries. He has published a number of book chapters and papers on globalisation and urban development as well as land markets and housing policy in leading international journals including Urban Studies, Environment and Planning, Progress in Planning, Journal of Property Research, CITIES, Urban Technology, Habitat International and others. Ramin Keivani is editor of International Journal of Urban Sustainable Development being launched by Taylor and Francis and is a member of the UN-Habitat working groups on Bottom of Pyramid approaches to urban development.



Dr. Esra Kurul trained as an architect in Turkey and briefly practiced there before she came to the UK in 1996. Since then, her work has been predominantly in a research environment with short spells in conservation practice.

Esra's research is inter-disciplinary and wherever appropriate it is undertaken in collaboration with the industry. Her current research interests include sustainability in the built environment, adaptation of businesses to Climate Change, and the relationship between social capital and the effective management of knowledge in project environments. She has research expertise in social networks in project environments, managing complex projects, adaptive re-use of existing buildings and conservation of the built environment.

Esra's work continued to focus on further development and leadership of MSc in Project Management in the Built Environment in the last year. She has lead the teaching team in developing and implementing novel ideas

to teach international students at MSc level. She has also further developed her ideas on deploying concepts such as absorptive capacity and social capital, and analytical techniques such as Social Network Analysis (SNA) to evaluate knowledge creation capacity of project teams delivering low or zero-carbon buildings. This work formed the basis Miss Veronika Schroeffer's PhD research.

Esra expanded her ideas on capacity to evaluate the UK Built Environment Sector's capacity to deliver sustainable developments. The initial discussion paper based on these ideas won Earthscan's Best Paper Award for Innovations in Sustainability at the 6th International Conference on Innovation in Architecture, Engineering & Construction at Penn State University in the USA. In 2011, Esra will work towards implementing her plans to explore the agenda-setting opportunities that this particular idea offers.

Esra continues to seek opportunities for collaborative research with the industry both nationally and internationally. One of these opportunities recently came to fruition when the Technology Strategy Board funded the "Integrated Carbon, Waste and Cost Modelling for Design of Low Impact Buildings" to be conducted in collaboration with Best Foot Forward Ltd (Lead), Bill Dunster Architects ZEDfactory Ltd, DesignBuilders Software Ltd, and ItSoWorks Ltd. This success is specially important as it is partly based on the strength of a collaboration that was seeded by the founding of the Department's Construction/Project Management Professional Liaison Group where Esra played a key role.

Esra's membership of the Association for Project Management (APM) Education Network's Advisory Panel continues. She is also a member of the Institute for Historic Building Conservation (IHBC), a Visiting Fellow at Istanbul Technical University, Turkey and a consultant to the Turkish Ministry of Culture.



Dr Claire Roberts is a Senior Lecturer in Property Investment and Valuation Research Associate, Her teaching interests include Sustainability, economics and property investment in the built environment. Claire's research interests and consultancy expertise include sustainability and property investment in the built environment and she has published widely in academic literature on these topics, most recently Guest Editing a Special Issue of the Journal of Property Investment and Finance on the topic of Sustainable and Socially Responsible Property Investment. Examples of two research projects include;

- Lead Researcher: Investment Property Forum Research Project – Exploring occupier demand for sustainable buildings in the UK commercial property market
- Senior researcher: Investment Property Forum Research Project – Exploring the potential implications of energy performance certificates on the UK property investment market



David Shiers is a Chartered Architect by profession and Reader in Sustainable Property in the Department of Real Estate and Construction. He is co-author of the *Green Guide to Specification* - an environmental profiling methodology for construction materials based on quantitative embodied environmental impact data which is part of both the *BREEAM* (the UK 'green' standard for all non-domestic buildings) and *Code for Sustainable Homes* programmes. Both these systems help designers reduce the environmental impacts of their buildings and compliance with *Green Guide* will be a legal requirement for all new homes from 2013. To date there have been over 230,000 construction projects built using *Green Guide* as part of *BREEAM* and the *Code* with a further 1.07 million projects registered awaiting *BREEAM/Code* certification.

Utilising Life Cycle Assessment data for over 1200 construction materials and components, *Green Guide* is co-authored with the Building Research Establishment and is now firmly established as the UK property industry standard and is cited in the UK Government's 2009 '*Strategy for Sustainable Construction*' (a joint DEFRA, BIS and CLG publication) as the key source on the environmental impact of construction materials. The *Green Guide* is currently being used as one of the key references to deliver green design standards for the Olympic sites in east London by the Olympic Delivery Authority & BRE. Following publication in January 2009, the *Green Guide* was the subject of a full page review in the prestigious academic journal; *Construction Management and Economics*.

This year, David's 2009 study for DEFRA and MIRO (Minerals Industry Research Organisation) on the factors affecting the decision to develop or refurbish buildings is being taken forward as policy informing research by the DEFRA and BIS government departments.

He was also appointed as a judge on the *Construction News* panel for the national UK Building Quality Awards, 2010; was commissioned by Wiley-Blackwell publishers to write a book chapter on sustainable business practice and, in February 2010, by Artech books to edit a new book; *Sustainable Engineering* (to be written with Arup Associates, London). In 2009, he was commissioned by DEFRA/WRAP to carry out a national evaluation of the recent Site Waste Management Plan legislation. The results now appear in the report: *Local Authority Implementation of SWMP Legislation*; published by WRAP, 2010. His paper, Socially Responsible Property Investment (SRPI) in the Journal of Property Investment & Finance (2007), was cited in United Nations Environment Programme (UNEP) Finance Initiative report *Building Responsible Property Portfolios*.



Dr. Sally Sims is a lecturer in Real Estate and Construction. Her research has principally focused on modelling the impact of HVOTLs and wind farms on residential house values in the UK using a multi-method approach towards research. Sally's' area of expertise is in the use of hedonic modelling and survey based techniques to establish the impact of environmental features on property and land values.

Recently completed projects include an RICS funded project into wind-farms, client based research on rural exception sites, IPF funded research on occupier demand for sustainable offices with Tim Dixon, Claire Roberts and Gina Dalton. Further studies have focused on an analysis of the real versus perceived impact on house values from the presence of overhead electricity lines, developers views on residential microgeneration and the economic gains from refurbishing Polish housing stock with Mirosław Belej. Her research continues to focus on quantifying the impact of detrimental environmental conditions on property values with particular interest in wind turbines. In 2007 she won the Appraisal Journal Prize with Peter Dent. She is a member of the Stakeholders Advisory Group on EMF (SAGE) who is looking at the possibility of introducing the precautionary principle with regard to building homes near high voltage overhead power lines. Sally is currently updating the research on HVOTL's and wind farms and is writing on a book on this topic with Peter Dent and Sandy Bond from New Zealand.

Published works include journal articles in *Urban Studies*, the *Journal of Property Management*, and *The Australian Property Journal*.



Vivienne Spurge joined Oxford Brookes University in November 1999, having worked in commercial private practice for 20 years, in both London and Oxford. She is a part time Senior Lecturer in the Department of Real Estate & Construction, specialising in the fields of property management and professional practice.

Her current areas of research interest are focussed around the implications of broadband technology upon the commercial property market. She has published articles relating to various aspects of broadband technology in Property Management and the Pacific Rim Real Estate Journal. She was awarded the RICS 'Blue Skies' prize for her paper presented to the Pacific Rim Real Estate Society Conference in 2001.

She is an RICS APC auditor and chairman/assessor. She is also a member of the Royal Agricultural College Advisory Board.



Dr. Mike Stubbs' research area has principally developed around the development control dimension of land use planning, including conservation area legislation, planning appeal methods, planning obligations and judicial fairness in decision making. His PhD work involved an examination of Alternative Dispute Resolution in the planning sphere and in particular the application of mediation. Subsequent publications have featured in Town Planning Review, Journal of Planning & Environment Law, Journal of Environmental Planning & Management, International Planning Studies and Planning Practise and Research. More recently he has pursued work on the consequences of car free urban development on urban design (published in Journal of Urban Design) and on the development of an appraisal system for sustainability in the historic environment (published in Planning Practise and Research).

Dr. Stubbs has supervised one PhD to completion and examined two (at Brookes and University of Cambridge). Currently he is pursuing work on the value of open space in urban growth strategies. This work is being produced jointly with The National Trust. Since 2003 he has worked part time for the National Trust as a Land Use Adviser. Dr. Stubbs is a co-opted member of the Chilterns Area of Outstanding Natural Beauty (AONB) Planning Committee, a member of the London Historic Environment Forum (chaired by English Heritage) and research member of Heritage Link (a forum of environmental NGOs).



Prof. Joe Tah is Professor in Project Management and Head of Department of Real Estate and Construction. Prior to joining Brookes in 2007, he was Professor of Construction Information Technology and Associate Head of School of the Built Environment at Salford University. His research interests are in the general areas of construction management and advanced information technology. He has extensive experience in the application of artificial intelligence and distributed computing techniques to systems for managing large-scale projects and extended enterprises in the construction and related industries. He has been a principal and co-investigator on many projects funded by the Engineering and Physical Sciences Research Council (EPSRC), the European Commission (EC), the Department for Trade and Industry (DTI), and the British Council. He has published over 100

refereed articles and co-authored a textbook on "strategic management applied to international construction" published by Thomas Telford. He is currently serving on the editorial boards of the International Journal of Architectural Engineering and Design Management and The Built and Human Environment Review. He is a long standing member of the peer review college of the Engineering and Physical Sciences Research Council (EPSRC) and is an expert evaluator and reviewer for the European Commission. He is a member of the Chartered Institute of Building (CIOB) and is on its Innovation and Research Committee.

He has undertaken several funded knowledge transfer initiatives involving the re-engineering of business processes and the development and implementation of innovations in ICT in various construction companies. He has provided consultancy and advisory services to UK companies, the European Commission, the UK Government, and Governments in developing countries. His current research interests include:

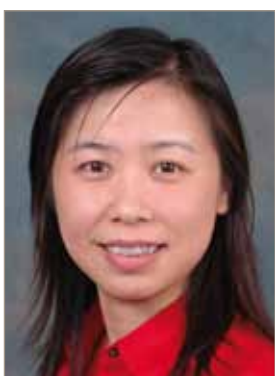
- Collaborative supply networks for sustainable procurement and delivery of projects;
- Risk analysis and management (project, enterprise, and sustainability risks);
- Building Information Modelling (BIM) and virtual prototyping of low carbon developments and sustainable urban environments; and
- Application of artificial intelligence and semantic web technologies.



Brian Wood is a Chartered Architect, Construction Manager, a Surveyor and a Fellow of the Chartered Institute of Building; he is also a member of the British Institute of Facilities Management. His interests are wide and include the whole life of buildings from inception and design through to use and reuse, with specialist interests in defects and maintenance and how these impact on sustainability.

Brian has won and managed many large consultancy projects both before joining Brookes and since. These have included the production and implementation of 5 and 10 year programmes of planned maintenance and improvement of building stocks for substantial public sector clients across the UK. He has also undertaken research work in relation to construction skills development regionally and nationally; he represents Higher Education on the South East Construction Skills Forum, is a member of Construction Skills Observatory, and is Chair of the Southern Construction Careers Group.

He is author of the book 'Building Care' which challenges the prevailing 'Planned Preventive Maintenance' paradigm, and has published papers on innovative approaches to maintenance and to construction education. He has delivered papers, including invited contributions, at a number of international conferences and symposia, in countries as diverse as Australia, Bulgaria, Canada, Finland, Hungary, Italy, New Zealand, Singapore and South Africa.



Dr. Xu Ye is a Chartered Valuation Surveyor of the Royal Institution of Chartered Surveyors. With approximately ten years' research and advisory experience in the property industry as well as the academic field, Ye has had a wide range of knowledge in quantitative modelling and property market research. She examined investment decision-making among property professionals in her PhD study, and applied behavioural finance theories to the property market. Ye is also interested in studying the linkages between different property investment vehicles and financial markets. She specialises in the areas of risk management, behavioural finance, decision making theory, as well as emerging property market research. Ye is also the book review editor for Journal of Property Investment and Finance.

RESEARCH ASSISTANTS



Fonbeyin Henry Abanda has a BSc (Hons) and Dipl.-Ing. in Mathematics/Physics and Civil Engineering respectively. He joined us as a research assistant in May 2008. After obtaining his degree in Civil Engineering in 2003, he worked as a Project Engineer on projects funded by the governments of Cameroon and Japan. In 2006, Henry enrolled for a PhD on the elicitation of knowledge on Sustainable Building Technologies in the School of Construction and Property Management, University of Salford before transferring to Oxford Brookes University in 2007. Besides pursuing his PhD, Henry is also working as a Research Assistant in the Department of Real Estate & Construction, Oxford Brookes University. He has contributed to writing some research proposals for securing research grants/funding for a number of research councils and organisations including the Engineering & Physical Sciences Research Council, the International Labour Organisation, Oxford Brookes

Reinvention Centre, and Persimmon Homes-UK. He is also a reviewer for the International Journal of Construction Education and Research.



Austine Ng'ombe joined us in May 2008. He is at the same time continuing his PhD studies in our Department on privatisation of land rights in Zambia. He completed his MSc in Geoinformation Science & Earth Observation at the International Institute for Geoinformation Science & Earth Observation (ITC) in the Netherlands. His specialisation at MSc level was urban land administration. Before undertaking the MSc programme, Austine worked for the civil service in Zambia, serving as a Provincial Lands Officer in one of the nine provinces of that country (North Western Province). He joined the civil service in 2000 after he had successfully completed his BSc in Land Economics at the Copperbelt University. He has contributed to a number of publications including a book on corporate social responsibility in urban development in developing countries, another book on socially sustainable urban

regeneration in Europe, as well as completion of several projects and research proposals.

ASSOCIATED STAFF



Dr. Robert Beale is an associate member of the CPM group and based at the School of Technology. He has conducted research into pallet-rack and scaffold structures and published over 80 papers in refereed journals and conferences. He has published over 40 departmental and other reports with reference to consultancy undertaken in scaffolding and racking structures as well as Engineering Mathematics. He has supervised 10 PhD students to completion and is currently supervising an additional 7 students, of whom three are awaiting their PhD examinations. In 2009-10 he externally examined three PhD theses including one in India and one in Australia.

In 1983-4 Dr. Beale undertook a sabbatical year becoming a visiting associate professor in the department of Computer Science and Statistics at California Polytechnic State University. In 2002, due to the closure of Civil Engineering within the University he transferred into the School of Technology where he is now a Principal Lecturer with responsibility of overseeing all the School's franchised courses. Dr. Beale is an associate researcher and assistant post graduate tutor with the Department of Real Estate and Construction.

He has also been involved nationally with the development of syllabuses for Engineering Mathematics under the umbrella of the Institution of Civil Engineers.



Dr. Mike Godley is an associate member of the CPM group and based at the Department of Architecture. Dr. Godley retired from full-time employment as Acting Head of the School of Construction and Earth Sciences in 1998 having taught for 20 years in the Department of Civil Engineering. During all this period he maintained close contact with industry generating funds to support research by providing consultancy services for Industry, mainly in the field of specialist structural testing.

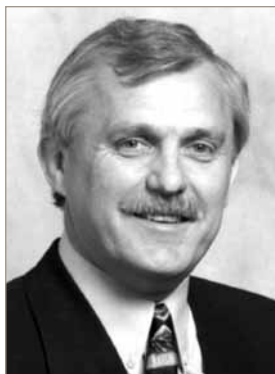
His field of interest is the design and analysis of structures which are especially susceptible to structural instability, most notably scaffolding structures, both proprietary systems and tube and fitting scaffolds, and storage structures for warehouses fabricated from cold formed steel sections.

Since retirement he has run his own successful consultancy, Slender Structures Ltd. and maintains his involvement in research through the supervision, with Rob Beale, of three research students.

He is the joint author of a Code of Practice for the Design of Steel Storage Structures for Europe published by the Federation Europeenne de la Manutention (FEM) which was the basis of EN15512 (2009) and is the author of the Guide to good practice for scaffolding with Tubes and Fittings published by the National Access and Scaffolding Confederation (NASC) in the UK.

VISITING PROFESSORS

REPL-CPM research and the Department of Real Estate and construction have continued to benefit from contributions by eminent visiting professionals and academics in variety of ways. These include joint research initiatives, publications, PhD supervision and strategic guidance.



Prof. Anthony Lavers read law at University College, London, where he won the Joseph Hellyer Prize. After a MPhil in planning law at the University of Southampton, he taught at Portsmouth Polytechnic and for three years at the National University of Singapore, where he obtained his PhD.

Following a year's advanced research as Visiting Scholar at Wolfson College, Cambridge, Anthony Lavers taught at Oxford Brookes (Reader in Law 1990, Professor of Law 1995) until 2001. In that year, he joined the London office of US law firm White & Case LLP, where he is Counsel to the Construction & Engineering Practice Group. A barrister (Lincoln's Inn), he also holds a part-time appointment as Director of Research at Keating Chambers. He has held a Visiting Chair in Law at Oxford Brookes since 2001.

Anthony Lavers was Co-ordinator of the Commission on Post-Construction Liability of the International Council for Building Research and edited the Commission's 19-country comparative study (E & FN Spon, London 1999), which received a Commendation in the Chartered Institute of Building Literary Awards. He has also co-authored Construction Law in Singapore and Malaysia (Butterworths, Asia), a Legal Guide to the Professional Liability of Architects and the Expert Witness title in the RICS Books Case in Point Series. He recently co-authored FIDIC Contracts: Law and Practice (Informa, 2009) and has published over 120 articles in legal, construction and property journals.

Professor Lavers has delivered conference papers, seminars and lectures in 25 countries worldwide. External examiner at the University of Reading and for Master's degrees at Portsmouth, Birmingham City and King's College, London, Anthony Lavers has recently been appointed as external for the MSc in Construction Law at the British University in Dubai. He has examined nine doctorates (at Reading, Manchester, King's College, London, Loughborough, SOAS, Oxford Brookes and Birmingham City) and supervised four completed PhDs. Professor Lavers was elected Chairman of the Society of Construction Law 2004-2006 and has been a Member of Council for over 15 years. He was awarded a D.Litt in 2006 by the University of Portsmouth "for published work of high distinction" and a Visiting Chair at Portsmouth in 2008. In July 2008, he was elected as a Fellow of the Royal Institution of Chartered Surveyors.



Prof. Angus McIntosh joined King Sturge as Head of Research in 2000 having worked for several international property consultants, as well for the public sector and a private sector investment house.

As a specialist Land Economist and a Chartered Surveyor, Prof. McIntosh has been involved with a wide range of international consultancy assignments over the last 30 years and has produced a number of forward looking research publications.

Across Europe Angus McIntosh wrote the first definitive market reports for the RICS on Prague, Budapest and Warsaw in the early 1990s, was involved in the first in-depth analysis of the investment performance of French Shopping Centres in the 1980s, and wrote feasibility reports for projects in Spain, Portugal and Germany. In 2007 he was again appointed by the RICS to write a report on the Indian economy & its property market.

In recent years, he has produced reports such as Global AND European Real Estate Scenarios, the European Industrial Property Report and Global Trends in Industrial Parks using Case Studies from around the world, including Asia-Pacific - the most in-depth reports ever produced on this market. He has also produced a number of reports on the European Airports market.

Prof. McIntosh was appointed in 2004 to the Lyons Implementation Board of the Office of Government Commerce within H M Treasury and has since worked on a number of Government contracts including The National Audit Office and the creation of both the Equality & Human Rights Commission and the Care Quality Commission.

His latest book, joint author with Dr. Sarah Sayce and Prof. Anthony Walker, is entitled "Building Sustainability in the Balance" published by Estates Gazette. His recent King Sturge reports include "European Property Sustainability Matters" (annual) and in 2010 "Built Environment Foresight 2030: the sustainable development imperative" a report with The Futures Academy & RICS Foundation.

In 2010 he produced (with Oxford Economics & Real Estate Forecasting) a report for the Investment Property Forum entitled "Property and Inflation" which dispelled a number of myths regarding property as a hedge against inflation.

He is a regular speaker at international conferences addressing issues relating to the economy, property markets and sustainability.



Prof. Paul McNamara has a first class honours degree from the University of St Andrews and a PhD from the University of Edinburgh – both in Geography. In 1992, he became an Associate of the (UK) Institute of Investment Management and Research – now incorporated in UK SIP.

Prof. McNamara is currently Director, Head of Property Research, PruPIM Ltd. He is also a Board Director and member of the Executive Management Team of PruPIM.

He is responsible for the overall direction of property research in PruPIM. This includes assessing the prospective returns to the constituent elements of UK and overseas property markets in which PruPIM invests, and advising on investment strategy for client property investment funds.

In recent years, Prof. McNamara was centrally involved in the development of an index-based property derivatives market in the UK but more recently is recognised as a leading thinker on Responsible Property Investment.

Prof. McNamara is a past chairman of the Investment Property Forum (IPF) and a Fellow and past Honorary President of the UK Society of Property Researchers (SPR). He is a non-executive director of Investment Property Databank Holdings Ltd.

Between 2006 and 2010, Prof McNamara was co-chair of the United Nations Environmental Programme Finance Initiative Property Working Group (UNEP FI PWG) and is the current Chairman of the Institutional Investors Group on Climate Change (IIGCC) – Property Workstream.

Finally, Paul McNamara was awarded the OBE for 'services to the property industry' in Summer 2003.



Prof. Mikhael Soloviev graduated from the Moscow Aviation Institute in 1963 as engineer in automatic control. From the start of his career he has worked closely with the Russian Academy of Sciences Institutes in the areas of automatic control and management information systems. During 1960-70s he was credited with 13 registered inventions for control systems of nuclear power plants. He gained his PhD (1971) in automatic control in the Russian Academy of Sciences Institute for Control Sciences (RASICS). After 1972 he concentrated on the management of energy and building branches of the Soviet economy in institutes of the Ministry of Energy, USSR GosPlan, and International Institute for Management Sciences. He was awarded the Dr (Technology) Sciences degree in management information systems in the RASICS (1988).

Since the early 1990s he has collaborated with UK universities in areas of corporate and real estate management. During the last decade he was coordinator of a number of British-Russian projects in property valuation and investments, granted by RICS and UK Government bodies. The collaboration stimulated his academic activity. Between 1993-1996 he was a professor of the State Jewish Maimonid University and organized the first real estate graduates in Russia. Since 1997 he has been a professor of the Higher School of Economics and Privatisation & Business Academy (Moscow). He is an author of more than hundred articles, monographs and reports, including the first Russian textbook for real estate management (2001, co-author - Richard Grover). Since 1996 he has been a visiting professor at Oxford Brookes University (Department of Real Estate Management) and takes part in joint researches and lecturing for the MSc Real Estate Management and Real Estate International.



Prof. Bob White is a co-founder and chairman of Constructing Futures Ltd. A leader at the cutting-edge of built environment activity with a track record of delivering iconic projects in the public eye. Acknowledged as a force in the sector change programme, Bob has played a major role in industry reform over the past decade.

He was a founder, director, chief executive and chairman of MACE Limited where he championed the role of management in construction projects. He orchestrated the growth of the company to an international organisation, employing in excess of 3,000 staff and a turnover of £750 million plus.

He is well known more recently for championing best practice and industry performance through the vehicle of a succession of government-funded reform agencies. This has included the chairmanship of the Movement for Innovation (M4I), and more recently, of Constructing Excellence and the National Platform, the latter of which is specifically an industry sponsored agency for promoting strategic research agendas in the sector, both in the UK and Europe. In 2009 extension of this activity Bob is Deputy Chair of a National Improvement and Efficiency Partnership (NIEP), a local government focused body created to maximise the benefit extracted from the construction industry for major public sector programmes.

An architect by training, he is better known in the UK industry for developing MACE into a leading programme and project management business involved in major complex development projects both in UK and internationally. These projects are both mixed-use developments and single sector major projects such as residential, commercial, transport, education and retail. Very visible projects which MACE have completed include British Airways London Eye and Heathrow Terminal 5. Many of their larger projects are overseas in the Middle East, Eastern Europe and the Far East.

In particular Bob has always championed the use of modern methods of construction even since his early days as an architect. More particularly he is an advocate of off-site manufacture and has a very particular knowledge of the type of systems available in the market place, both in the UK and internationally as well as the benefits of the approach to the broader sustainability agenda. Through Constructing Futures Bob is currently exploring modern methods of construction applied to medium sized developments in China as a component of the China/UK Sustainable Cities Agreement.

Alongside his mainstream activities, Bob is a trustee of the ACT Foundation, a charity based on using successful building developments to create the revenue for charitable donations, is a design champion on behalf of Manchester City Council, has established a Masters course for interdisciplinary project management at University College, London and is a Visiting Professor at Oxford Brookes University. An extension to his activity in China is the integration of research activity between Chinese and UK universities of issue pertaining to climate change and sustainability.



Prof. Paul Winter is Chief Executive of Corpra, the multi award winning change management and strategy consultants. Paul is also Vice president of the management consultancies association whose members conduct 80% of all management consultancy in the UK. Under the Corpra consulting group is Carbon Profit that uses the carbon agenda as a change medium. Corpra also covers You and the real art of leading. This is a unique leadership development program for professionals in leadership roles.

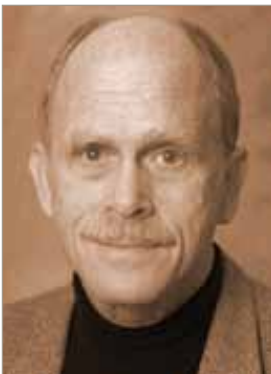
Paul originally trained and practiced as a chartered surveyor and migrated into organisational management and then developed the business model for using real estate as an engine for change. This has developed further over the last 15 years with numerous successes and business turnarounds.

Paul developed his research interest after studying at Cranfield University advanced management research centre. This includes the role of real estate in helping create corporate competitive advantage which produced the analysis mode: the five dimensions of real estate. He led several other research projects with Cranfield on behalf of the RICS to help develop a management consultancy faculty and a new higher level qualification of chartered management consultancy surveyor. The first was Changing times: strategic consulting for professional effectiveness with Professor David Tranfield, Dr Palminder Smart and Dr Stuart Smith. The next looked at the conflicts of commercial interest in the profession with Professor David Tranfield, Dr Palminder Smart and Prof. Virginia Gibson. In collaboration with Salford University, Corpra was commissioned to help research and manage one of the largest research project of its type: The Intelligent Cities report. This looked at the importance of London in particular and capital cities in general and collaborated with 15 countries and funded by the EU.

He recently researched and wrote for the RICS a report on Agile working which begins to define term and provides guidance on its use and value in organisational change. Paul has also just completed a major study for the British council for offices titled Towards a Zero carbon office.

Paul is also a regular writer on strategic business issues for the Sunday Times, the Financial Times and a frequent contributor to BBC Radio 4 business programmes.

VISITING FELLOWS



Michael Mattingly has been engaged since 1977 in teaching, research and consultancy on urban land, urban planning, and urban management at the Development Planning Unit, University College London. This included capacity building assignments or research in more than a dozen countries of Africa, plus others in Asia, the Middle East, Latin America and Eastern Europe. For 13 years prior to taking up teaching and research, he practiced urban planning with governments and consultants in the USA, Uganda, Kenya, and the UK. Studies of rural-urban links and the peri-urban interface have been prominent in his recent activities, both as a researcher and as advisor to a DFID research fund. These have dealt with the potential of neo-customary urban land delivery systems to benefit low income households, as well as peri-urban production, livelihoods and poverty.

■ PUBLICATIONS

In the review period RELP-CPM staff, visiting professors and visiting fellows have continued their prolific work in published output. This has included 48 refereed journal papers, books, chapters and reports that have already been published or accepted for publication during the review period as well as 21 conference papers and 5 bespoke CPD presentations. These are outlined in appendices A, B and C.

■ RELP-CPM WORKING PAPERS

During the course of their work, RELP-CPM staff also produce working papers, research reports, conference papers and articles in the property and construction press. These are available on line at: www.brookes.ac.uk/schools/be/oisd/landpolicy/workingpapers/

The copyright of each working paper remains with the author. If you wish to quote from or cite any paper please contact the appropriate author for permission unless otherwise stated. In some cases the working papers are pre-publication versions of papers already submitted to journals and book chapters. A more recent version of the paper, therefore, may have been published elsewhere. In such cases reference should be made to the published version.

■ AWARDS AND PEER RECOGNITION

The Department of Real estate and Construction at Brookes is home to two international journals contributing to broader knowledge creation and dissemination. Professor Nick French is the editor of the long established Journal of Property Finance and Investment and Dr Ramin Keivani is the editor of the newly launched International Journal of Urban Sustainable Development which is now in its second year of publication. For more details please see:

JPIF web site: www.emeraldinsight.com/products/journals/journals.htm?id=jpif

IJUSD web site: www.tandf.co.uk/journals/IJUSD

In addition our staff have continued to distinguish themselves during the 2009-2010 review period through receiving a number of prizes, invitations for joining influential research and policy groups and other peer recognitions. Here we can note:

- Ramin Keivani (2009) invited to join steering group of UN-Habitat World Urban Campaign.
- Ramin Keivani (2010) contributing to the report of private sector working groups for the UN-Habitat Business Round Table at the World Urban Forum 5.
- Esra Kurul, Joe Tah and Franco Cheaung (2010) won Earthscan's *Best Paper Award for Innovations in Sustainability*, for their paper entitled "Does the UK Built Environment Sector have the Capacity to Deliver Sustainability?" at the 6th International Conference on Innovation in Architecture, Engineering & Construction at Penn State University in the USA.
- David Shiers (2010) appointed as judge for the Construction News Building Quality Awards.
- David Shiers (2009) invited to join the advisory panel to the Greater London Authority on Planning Guidance programme on Sustainable Design.

■ LINKING RESEARCH, LEARNING AND TEACHING

Linking research, learning and teaching has been a traditional strength of REC since the very beginning. The Department prides itself in its ability to maintain this tradition. This link is enhanced through the consolidation of its research activities under the RELP and CPM brands and the synergetic opportunities that they offer. This is again reflected in the teaching and practical relevance of much of our research efforts particularly in international market studies, sustainability and valuation related topics that continue to inform and update our teaching in both Bachelor and Masters programmes.

In this context we can highlight the work carried out through the Comerford Research Fund which was specifically targeted at raising awareness among

real estate students and professionals on the impact of climate change in the industry. Projects supported by this fund include research (building on John Comerford's work), first, measuring and then, addressing student awareness in their studies of climate change and sustainability in the built environment. The Fund has also funded the Department's participation in an international group of researchers in a project to move forward the agenda on sustainability and property value which will feed directly into teaching. In addition we have been working with the Centre for Excellence in Teaching and Learning (CETL) in "Research as Learning: The Reinvention Centre for Undergraduate Research" which was launched in the School in September 2005. This included a project by Dr Esra Kurul to encourage students to get involved in undergraduate research by providing an opportunity to conduct a small scale research project which will have immediate practical application. An undergraduate student was also sponsored by the Centre for Excellence in Teaching and Learning (CETL) for their undergraduate dissertation relating to sustainability in commercial property.

■ JOHN COMERFORD RESEARCH FUND

Climate Change Awareness Programme 2008 -2011

This programme was set up in May 2008. Peter Dent heads the programme with the aim of engaging real estate and construction students in the climate change agenda.

An understanding of our impact on our climate will enable us to 'predict and plan for mitigation and adaptation'. A Climate Change Perception Survey was completed by John Comerford in May 2007. This has identified that there is student and practitioner need for some precautionary action. This programme is therefore intended to address this through a three year plan of action starting in September 2008. Funding for this has been made available from a variety of sources but principally The Berkeley Group plc.

The funds allocated to this programme have been used in the following ways during the review period:

1. Contribution to the International Greening Education Event in Karlsruhe, Germany from 30th September to 2nd October which helped to develop ideas on how to integrate issues into syllabi. Useful contacts with those active in the area including some EU organisations were made.
2. Various book contributions are underway including on Valuation and Sustainability, Value Impacts of Alternative Energy Technologies and Investment, Behaviour and Sustainability.
3. A paper submitted to the International Journal for Sustainability in Higher Education on 'Climate Change and the Surveying Profession' was published in June.
4. Work is continuing on the development of an interprofessional module for a proposed newly validated masters programme on Climate Change and the Built Environment. This is scheduled for first delivery in 2011.
5. Research work continues into value impacts of wind farms and behavioural aspects to these types of development along with ideas on economics and sustainability.

■ FOSTERING RESEARCH LINKS WITH THE PROFESSIONAL STAKEHOLDERS

Both research streams in the Department of Real Estate Construction are closely linked to the industry professions, public bodies and major international organisations such as the UN-Habitat, UN-FAO, ILO, EIB, CORENET and World Bank. The new CPM project which is led by Prof. Joe Tah on integrated carbon, waste and cost modelling is a case in point collaborating with four major industry partners. Other examples include:

- Working with UN-Habitat to develop the Private Sector Unit activities and the World Urban Campaign.
- Work carried out under the Climate Change Awareness Programme 2008 -2011
- Funded research for the Investment Property Forum

- Research funded by the Royal Institution of Chartered surveyors
- Research funded by EIB EIBURS programme
- Joint work carried out with BRE and other partners on updating the Green Specifications

These activities put us in a strong position for consolidating our links with both national and international firms and professional institutions in the coming year.

During the review period 2009 – 2010, the Real Estate and Land Policy group has also successfully run a be-spoke training programme for property professionals in Shanghai, China. This programme has been developed together with the Royal Institution of Chartered Surveyors, and offers potential future leaders to further improve their leadership and management skills. At the moment, over 85% of the delegates have qualified as chartered surveyors through the programme.

■ APPLIED RESEARCH WITH REAL WORLD SIGNIFICANCE

Our work has direct impact on public policy and private practice both at national and international levels. This is perhaps best captured in the comments on our recent projects for the RICS. In respect of our report on “the role of property markets in supporting economic and social development in China” Mr. See Lian Ong (Chairman of RICS Asia Pacific) writes:

“This report by Oxford Brookes University provides a clear analysis of the processes driving property markets in China to date and puts forward a clear set of recommendations as to how this can be sustained, supporting the harmonious economic and social development of China. I welcome and commend this report and I am sure that the recommendations that it puts forward can be of great value in supporting the future development of the Chinese economy and society.”

Commenting on “a green profession: RICS members and the sustainability agenda” Stephen Brown Head of Research at RICS says:

“With issues of sustainability and sustainable development becoming an increasingly important

factor in the global political and business agendas, this report is an invaluable document for the industry and will contribute towards our aspirations of creating a sustainable future. Committed RICS faculties in the area of planning and development, facilities management, environment, minerals and waste management and rural and project management around the world can become key leaders and essential players in the battle against climate change within the built environment worldwide.”

Commenting on the completion of the joint research with Osaka University (funded by the Kajima Foundation and RICS Education Trust) Professor Paul Syms of University of Manchester commented:

“The findings from both Manchester and Osaka have an invaluable role to play in formulating site assessment criteria for evaluating the future roles of hardcore brownfield sites. The research team are to be congratulated upon the outcome of their work. As both Britain and Japan move out of recession, a key challenge, as the research points out, will be to stimulate brownfield regeneration using new and innovative financial vehicles. This will be vital if cities such as Manchester and Osaka are to regain momentum in urban regeneration”.

Commenting on the same report, Masato Ito, Deputy General Manager, Sustainable Property Promotion, Real Estate Business Development Department, The Sumitomo Trust & Banking Co., Ltd. said:

“This report will definitely be helpful for both the public and private sectors. The conclusion outlines several suggestions for “policy implications”. Even if central and local governments face financial difficulties, there might be alternatives without spending money, such as government guarantees. The private sector will also be able to learn a lot from the “critical success factors” section, because sustainable development will also make their business sustainable”.

Commenting on the completion of the EIB EIBURS project on social sustainability and urban regeneration, Simon Brooks, European Investment Bank Vice-President responsible for the United Kingdom, said:

“This study is an important contribution to improved understanding of social sustainability amongst policy makers and reflects the EIB’s involvement in

supporting enhanced technical and economic understanding of urban renewal and development. The report will contribute to better urban regeneration project design and socially sustainable investment across Europe”.

In addition we can also note the continuing significance of the Green Guide to Specifications where it is cited as a key reference on the environmental impact of construction materials in the UK Government’s *Strategy for Sustainable Construction* (June 2008) and also in the Greater London Authority (GLA) *Mayors Guide* (2009) *Materials in Building; the GLA preferred standards*. The Green Guide also forms part of both the UK national green design standards; *BREEAM* and *Code for Sustainable Homes* (adoption of which is due to become law in 2016) programmes

■ CPD ACTIVITIES

Staff in the Department of Real Estate and Construction are actively involved in providing Continued Professional Development (CPD) services to the professional community. These activities are directly linked to, and draw on, our research expertise in sustainable property and urban development, valuation, international real estate and knowledge management in construction. They involve bespoke training programmes and presentations at both external venues and special occasional events held at Brookes. Our staff also undertake Assessment of Professional Competence (APC) for the RICS and RTPI. For more detail please see section on fostering links with industry and appendices B and C on conference presentations and bespoke CPD programmes.

■ DOCTORAL RESEARCH PROGRAMME

In the review period the RELP and CPM groups expanded their Doctoral programme with addition of two new research students including a part EPSRC sponsored work on knowledge networks in project management and another scholar working on sustainable provision of housing in Cameroon. In the review period we had 12 core and associated MPhil/PhD students and two new PhD scholars starting in October 2010.

Furthermore during 2009, the ‘Urban Futures’ Doctoral Training Programme, based within the

School of the Built Environment at Oxford Brookes University with the School of Life Sciences as co-partner, formed part of Oxford Brookes’ ambition to develop a site of excellence for doctoral training provision. The programme includes a substantial training element in research methods and futures methodologies, a seminar series bringing together students and key researchers in sustainable futures, and provides students with the opportunity to develop their area of interest in a focused and interdisciplinary environment.

The Urban Futures programme has a truly interdisciplinary focus and is designed to address the key challenges of global urban growth, and the implications not only for the built and natural environments, but also the creation of sustainable urban futures. The programme places particular emphasis on understanding environmental and technical challenges; behavioural and policy context; futures thinking; and societal impact. There is therefore a strong urban policy and practice component. The programme invites applications for fully funded PhD studentships in the following research areas:

- ‘Sustainable urban form’: helping create urban futures which are truly sustainable.
- ‘Urban utopias and dystopias’: the way in which studies of the past can inform not only the present, but also future change in urban areas.
- ‘Climate change: human adaptation and mitigation’: how society (in its broadest sense, including the social constructs of policy measures) and climate change interact to produce impacts and consequences for urban futures.

Here we renew our call to alumni and other interested parties to support our mission for fostering research through our PhD programme. The Department has been running an occasional Research Studentship since 1999. The studentship is for £12,000 per annum and covers the fees for the three-year PhD study period. Funding constraints, however, has limited our support to only one student per three-year study duration. Please contact Joe Tah (jtah@brookes.ac.uk) or Ramin Keivani (rkeivani@brookes.ac.uk) to discuss your possible contribution and suggestions.

■ CURRENT PHD/MPHIL RESEARCH

FONBEYIN HENRY ABANDA

Supervisors: Prof. Joe Tah, Dr. Esra Kurul

Research title: Knowledge modelling of emerging technologies for sustainable housing development

The global quest for sustainability in the exploitation of resources and the need for carbon foot-print reduction are generating a huge amount of innovations and knowledge on sustainable building technologies. Unfortunately, these innovations and knowledge are not often available to users in accessible forms. Interestingly Semantic Web technologies, the next generation of the Web technologies can allow information to be represented on the Web in a format that can be read and used by software agents to make intelligent reasoning and deductions.

This study aims to investigate the extent to which an easily accessible knowledge-base can be developed in the form of a Semantic Web portal for emerging sustainable building technologies. This should allow practitioners and the general public to develop a better understanding of the wide range of emerging technologies and to be able to query and make the right choices for use on projects.

The main objectives of this research are to: establish the state-of-the-art of emerging innovations in sustainable building technologies and ontology-driven semantic web development; use the above to develop an ontology-driven knowledge base; and use the knowledge-base to develop and validate a sustainable building Semantic Web portal. A widely accepted knowledge engineering methodology will be used to develop the knowledge-base and the semantic web portal. The ontology-driven knowledge base would empower professionals in the construction field and enhance their ability to adopt emerging sustainable building technologies and best practices in housing development.

SITI NURHUDA ABD-WAHID

Supervisor: Prof. Joe Tah, Dr. Esra Kurul

Research title: A sustainable construction procurement framework for developing countries: the case of Malaysia

This research intends to explore the potentials and challenges of managing sustainable development practices through construction procurement strategies in the context of Malaysia. By looking into current best practice from selected countries and also identifying the local requirements and capabilities, a strategic framework will be formulated as an early step in achieving sustainable development in a more practical manner based on Malaysia's experience in construction and development projects.

With the growing concern of environmental and social well-being, developing countries are encouraged to adopt sustainable practices in their economic activities. Government as the highest authority in most developing countries has to be more pro-active and intense in incorporating sustainability, especially in development projects which intend to provide long-term benefit to the people today and the future generations. The challenge is to create a more localised perception towards sustainable development theory in order to fit into the local economy, social and environmental needs rather than blindly imitating the current practices of developed countries.

Since 1996, Malaysia has stated its commitment towards sustainable development in its Seventh Malaysia Plan by promoting the establishment of criteria and indicators for national sustainable development strategies. However, due to lack of understanding and the absence of proper monitoring, the criteria and indicators formulated are nothing more than just a list of theoretical concepts which still need to be transformed into forms of action that are more easily perceived for actual execution.

MOUAIAD AL-OMARI

Supervisors: Mr. Peter Dent, Mr. Richard Grover

Research title: Land administration and land management in the Middle East Region: reliable and unreliable land valuation systems and their effects – the case of Jordan

The role of formal real estate markets in the process of economic development in developing countries not exactly understood. The researcher thinks that the lack of understanding is main result of the absence of reliable information on real estate values.

This research aims to investigate the advantages and disadvantages of implementing land valuation system (LVS) in situations in which values can be unreliable, and how they affect land administration and land management in developing countries especially in Jordan.

The main objectives of this research:

1. To find out the opportunities and constraints of reliable and unreliable land valuation systems in relation to land administration and land management.
2. To review the theoretical basis of the existing land valuation concepts.
3. To ascertain to what extent land valuers and decision makers in Jordan are aware of the supposed advantages of implementing reliable land valuation system.
4. To find out if there are significant similarities LVS in developed countries and Jordan.
5. To develop a basis framework for understanding the relationship between reliable LVS and economic development.

This research is intended to develop a coherent framework for analysis that may be applied to similar studies in other developing countries, particularly in the Middle East region. In addition to the hypothesised advantages of implementing a reliable land valuation system, this study will be of benefit to Jordanian policy makers in respect of understanding the importance of land administration and land management education and facilitating having real estate academic education as one of the main studies in the technical universities curriculum.

In Jordan, no one has raised the question of economic development studies with special reference to reliable land valuation systems. This study will fill a gap and open the door for new research ideas in the area of land administration and land management.

MARTIN BLACKWELL

Supervisor: Peter Dent, Prof. Anthony Lavers

Research title: Geographic indicators and commercial real estate valuation

The research is centred on Geographical Indicators and their place in the world of commercial real estate valuation and management. The work seeks to clarify the importance of GIs and to determine how they are treated in a number of different territories. There is no apparent guidance to Valuers on how to treat GIs and there is the prospect that something which owes its origin to a physical location remains unappreciated in accounting terms, the GI being considered a form of intellectual and not real property. The importance and emergence of GIs may blur the traditional distinction between 'real' and intellectual property or at least require an amended taxonomy. The work seeks to research these related areas using case studies and other means.

HASSAN IRTAZA

Supervisors: Dr. Rob Beale, Dr. Mike Godley

Research title: Experimental and computational determination of wind loads on access scaffold.

Tubular steel scaffolding has been widely used in the building construction in UK. Scaffold structures are often slender and constructed of elements with semi-rigid connections. Many researches have been carried out to study the performance of scaffolds such as linear analysis, buckling analysis etc. However, scaffold failures regularly occur, often being attributed to wind action. The present study on the 'Experimental and Computational Determination Wind Loads on Access Scaffold' is being undertaken to quantify the effects of wind on scaffolds. It will require model scaffolds to be analysed computationally using CFD (computational fluid dynamics) followed by testing models in wind tunnels. The study will determine the pressure loads due to wind that real scaffolds are subjected to taking into account the influence of the building to which the scaffold is attached and the effects of different opening conditions. Limited research into wind loads on scaffolds has been done in the past which lead to current codes being based upon the effects of wind loads on permanent structures. The objective of this research is to obtain revised wind load pressures for scaffolds for inclusion in new/revised design codes and to obtain an understanding of the influence of the attached structure on wind loads. Mr Irtaza is currently awaiting his PhD examination. The work is being extended by a Post-Doctoral research fellow, Dr Cesar Cortes Quiroz, in the School of Technology

AUSTIN NGOMBE

Supervisors: Dr. Ramin Keivani, Dr. Mike Stubbs

Research title: Modernisation of land tenure in Zambia: Focus on privatisation of customary land rights.

Land reform is a subject that has increasingly earned wide global debate. Modernisation of customary land rights, particularly in Africa, is of great interest from the international community. The debates on the modernisation agenda are based mainly on the widespread argument that Africa can only develop if the traditional/communal tenure, accounting for over 80% of African land resources, is integrated into the leasehold tenure system which is founded on the principles of individualisation. Rural poverty alleviation has been at the heart of the reform programmes. However, these proposals are constantly met with rejection from chiefs. The traditional rulers fear that such tenure reforms would, inter alia, undermine their traditional political authority. Balancing between the utopian global rhetoric and the resilient local reality remains a huge challenge faced by those advocating for reform. This perfectly describes the situation in Zambia where, following the enactment of the 1995 Lands Act, legislation towards conversion of customary into leasehold tenure has received chronic, mass resistance from the traditional citizenry. Informed by the application of complexity theory, this research aims to examine land policy reform process insofar as it relates to stakeholders' participation and privatisation of customary land, and its implications on the dynamics of land tenure patterns in rural and peri-urban locations. This is achieved by pursuing four key objectives - to ascertain the position of traditional rulers and the rural and peri-urban communities towards private and customary land rights; to understand interactions of agents in policy processes; to examine the level of stakeholder participation in land policy processes; and to understand how all the above impact on tenure dynamics and people's access to land.

DRUSILLA TAYLOR-LEWIS

Supervisors: Prof. Joe Tah, Dr. Esra Kurul

Research title: The socio-economic survival of the minority groups within the construction industry in the UK.

It is widely recognised that small and medium-sized enterprises (SMEs - having less than 50 staff) are an important group within the construction industry as they make up 99.8% of the United Kingdom's construction firms and deliver some 59% of total output. A considerable amount of research has been carried out on SMEs over the last decade. This indicates that they face many challenges ranging from lack of competitiveness to lack of appropriate skills and various solutions have been suggested to address these challenges. None of these studies have highlighted or investigated the extent to which their recommendations would be beneficial or appropriate to the sub-groups of Black, Asian and Minority Enterprises, (BAMEs), women and the disabled that form part of the SMEs. Furthermore, the lack of comprehensive databases of these sub-groups on the registers of professional organisations excludes such groups from effective participation in the industry and stifles their economic growth.

The lack of documented information about more than one sub-group is quite alarming, as within these groups could be identified a very highly specialised sub-group which plays a significant role in supporting the economy, especially as it has been documented that ethnic minority groups form nine-percent of all graduates in the United Kingdom. The need for these sub-groups to be identified and studied is important to the UK economy. This research focuses on minority-led Micro Enterprises, those that have less than ten employees, and have a turnover of less than two million Euros within the United Kingdom.

The aim of this research is to identify the factors that affect the growth of BAME Micro Enterprises and to make recommendations to facilitate the effective participation of these sub-groups in the construction industry. The objectives of this research are to: establish the extent to which the differences between the BAME-led Micro Enterprises and other sub-groups impact on their survival and growth within the construction industry; establish the factors that act as enablers and barriers in the operational environment of these sub-groups; and make recommendations on specific measures that can improve the growth of these sub-groups and establish a best practice guide to be used as a reference for the construction industry.

XU YUNQING

Supervisors: Dr. Ramin Keivani, Dr. Albert Cao

Research title: The property-led urban development in China's transition to market economy

This research aims to study the current property-led urban development model in China in terms of sustainable growth objectives. It aims to propose appropriate reforms within the property industry for generating integral urban development based on efficiency, equity and sustainability. Urban (re)development has become an eye-catching issue in China and is shifting from being government-backed into privately funded and driven by property development fuelled by a prosperous property market since the mid 1990s. Moreover, under pressures of globalization and urban competition, the property-led urban development in Chinese cities has been increasingly extended to place promotion, image enhancement and function transformation through market-friendly policies in recent years. Property development could often alter the urban master plan and in some situations in fact precede urban plans. Resulting changes in urban governance, partnerships and urban development at such an unprecedented scale and speed are by all means profound but their impact has been scarcely explored. With rapid transformation of urban landscape and economic growth, problems in cities such as large scale loss of peripheral agricultural land, over building and chaotic development, negative impact on building conservation and environmental protection as well as social inequality and polarization has become increasingly severe and urgent.

The research goal is to be achieved through five objectives:

- To review academic literature on urban development and growth of real estate industry (property-led development model in particular) in UK and other countries
- To review Chinese urban growth and development of real estate industry under the mixed effects of legal, economic and social reform
- To discuss the recent problematic factors concerning the property-led urban development in Chinese cities and towns
- To illustrate these issues through case studies of 4 major cities
- To propose new models in the operation of the property industry and urban development, drawing from existing good practice inside and outside China

This study is expected to lead to a more sustainable development model for Chinese cities and a theoretical framework to evaluate development schemes and guide governmental policy-making at central and local levels.

LEYON NANAYAKKARA

Supervisors: Dr. Ramin Keivani, Dr. Esra Kurul, Mr. Brian Wood

Research title: Impact of site plans on productivity in public sector construction projects in Sri Lanka

The research aims to investigate how productivity could be improved in the Sri Lankan public sector construction industry by using effective and efficient site plans.

The main objectives are:

- To review the theoretical basis of existing concepts relating to construction site productivity
- To ascertain, to what extent employers in the construction industry (CI) in Sri Lanka are aware of the supposed advantages of effective site plan (SP)
- To identify the perceived productivity benefits realised through the implementation of the above SP practices
- To ascertain if there are significant differences between site plans amongst developed countries and Sri Lanka
- To develop an empirically grounded framework for understanding the perceived relationship between site plan and site productivity of the Sri Lankan CI

This research contributes to a greater understanding of productivity, particularly in respect of SP, in the Sri Lankan CI. It develops a coherent framework for analysis that may be applied to similar studies in other developing countries, particularly in the Asian sub-region. In addition to the empirical evidence generated, this study will be of benefit to Sri Lankan policy makers in respect of facilitating a more effective and efficient CI, contractors and clients. Most previous studies looked at productivity by referring to factors such as employees' motivation. However, in Sri Lanka no one has conducted productivity studies with special reference to effective SP within the CI. This study will thus fill a gap and also develop new research ideas in the area of construction management.

To achieve the above objectives the research propositions are as follows:

- The employers in Sri Lanka are aware of the supposed advantages of efficient SP in CI
- Construction SP in Sri Lanka is different to SP in developed countries
- Effective and efficient SP in Sri Lankan CI would contribute to improve their productivity

VERONIKA SCHRÖPFER

Supervisors: Prof. Joe Tah, Dr. Esra Kurul

Research title: Knowledge networks in project management regarding the implementation of green building certificates: a comparison between Germany and the UK

The concepts of sustainability are influencing the building industry worldwide. Several countries have developed green building rating systems for evaluating the sustainability of buildings according to a wide-range of criteria and awarding certificates such as BREEAM in the UK, LEED mainly in the USA, and DGNB in Germany. Although there is considerable research on the certificates themselves, the technological solutions which help achieve the required performance levels, research on the role of knowledge networks in delivering to these standards is still lacking.

Within this context, creating and sharing new knowledge regarding ways to build sustainably through a knowledge network is essential if sustainability targets put forward by regulatory pressures are to be met. However, there is also a lack of understanding on how such knowledge is being shared within project teams in order to influence the wider adoption of emerging innovations in sustainability.

Much research has been done in the area of the development, the structure and the function of networks in general. There is particular emphasis on theoretical models for social network analysis in order to analyse mega networks of the society. The application of these models to study organisational networks is mainly limited to the manufacturing industry and the economic sector. As such, research on networks within the built environment sector is lacking, even if the main delivery mechanism of the industry is project networks that are formed of a wide-variety of professionals affiliated with a range of companies. The very diverse range of professions within the sector, from the brick-layer to the investment consultant, all carry a different kinds of knowledge that contribute to the delivery of a project. The sharing of this diverse knowledge and experience through project networks is instrumental in creating new knowledge in order to address current challenges such as achieving green building certificate standards. Therefore it is necessary to apply general knowledge network theories to this particular industry to understand how knowledge networks are currently utilised and to suggest way of enhancing their effectiveness.

The main focus of this research project will be the application of general knowledge network theories to the built environment sector to develop a better understanding of how new knowledge is shared within project teams delivering to green building standards. A number of case studies will be used comparing current construction projects of commercial buildings in the UK and Germany which are trying to achieve the best score in a green building rating system.

ASAH JACOB FOTO

Supervisors: Prof. Joe Tah and Dr. Ramin Keivani

Research title: Sustainable construction in the delivery of affordable housing in Cameroon

Sustainable construction is relatively new in Cameroon and its principles and practices are not yet imbedded in the practice of the construction industry (Tasong, 2006). The industry is struggling to cope with the existing disintegration and lack of skilled workers to keep it floating. In addition, the country also suffers from major barriers to the delivery of affordable housing stemming from both institutional context of housing provision and the structure and practices in the construction industry. Literature indicates that the high cost of imported building materials contributes toward the prevention of the delivery of low income housing. This is despite the fact that developing countries are advised by international organizations such as UN Habitat and World Bank to reduce their reliance on Imported Building Materials (IBM) and to develop and use Local Building Materials (LBM) which will stimulate its production and use to enable the delivery of affordable/low-income housing. The use of local materials can also make major contributions to the national economy by saving on scarce foreign

exchange, local economic development by supporting local firms and providing local employment and can contribute to environmental protection by reducing inbuilt and transport related GHG emissions. South Africa is the only country in sub-Saharan Africa with relatively advanced institutions and policies in place for adopting sustainable construction principles and policies that could contribute to the delivery of affordable/low-income housing. It is against this backdrop that this research will review these principles and practices in other regions that are transferable and apply as appropriate in the case of Cameroon. The research aim, therefore, is to develop a framework that facilitates the sustainable delivery of low income housing in Cameroon.

Research objectives are:

1. To establish the state-of-the-art in sustainable construction for the delivery of affordable housing
2. To understand the structure and working practices of both the formal and informal building sectors in Cameroon
3. To identify the factors that influence the delivery of low income housing in Cameroon
4. To examine the potential and recommend a framework for the adoption of sustainable construction for the delivery of low income housing in Cameroon.

ADELINE NG LING YING

Supervisors: Dr. Rob Beale, Dr. Mike Godley

Research title: Restraining progressive collapse of steel rack structures

Steel racking has been widely used in the warehouse industry for storing goods. Unlike other conventional steel framing, this type of structure uses mainly cold-formed steel members which are attached to one another by hooked joints. The members are very slender and are semi-rigidly connected. The erection of steel racks is very straight forward and easy. Thus, the main cost involved lies in the cost of the material itself.

This project looked into the mechanisms involved in the collapse of steel racking. Attention was paid to the collapses initiated by the collision of forklift trucks. This usually happens at the bottom region of uprights ranging from around 0.4m to 1.0m from the ground. A model rack was built using the LUSAS software. The model was used to study collapse mechanisms.

From the results of the analyses undertaken, both static and dynamic, it was found that a cost effective way of restraining collapse was to place plan bracing in a cross-braced pattern just below the lowest loaded level of a rack structure and to bolt the rack to ground symmetrically with respect to the centroidal axis of the pallet rack uprights.

■ PHD SCHOLARS STARTING OCTOBER 2010

AHMAD ZAHARADDEEN ALKHALEEL

Supervisor: Prof. Joe Tah, Dr. Franco Cheung

Research title: The use of off-site construction methods in developing countries: The case of Nigeria

Major clients and Governments have been advocating increased utilisation and application of standardisation and modularisation of building components and off-site manufacturing techniques. This requires adopting emerging innovations and changing the traditional construction process to become more of a manufacturing process and eventually getting away from wet trades as a significant “step change” to improving the productivity, quality of build, and the sustainability performance of the construction industry. In the UK, a combination of growing demand for affordable buildings, coupled with poor quality and a reducing skills base, has created a dilemma that can only be resolved through the use of offsite techniques. Such circumstances prevail in developing countries to a much higher degree, yet offsite construction techniques are not being adopted. The aim of this research is to investigate the extent to which offsite construction techniques can be used in the Nigerian construction industry.

JOSEPH ADIGUN

Supervisor: Prof. Joe Tah, Dr. Franco Cheung

Research title: The design and analysis of construction value networks.

There has been a lot of research on improving the delivery of construction projects by simulating sequences of the project programme to identify potential bottlenecks in advance of onsite construction. However, little work has been done on understanding the potential performance of the value networks involved in the procurement and delivery of construction projects ahead of onsite construction. The literature on project procurement is full of rhetoric and anecdotal evidence on the virtues of various procurement methods. Integrated project delivery through collaborative working with integrated supply chains is being recommended as the best way to procure projects. Despite a lot of research in this area, evidence in support of such approaches is descriptive, anecdotal and there is a lack of underpinning theories and theoretical frameworks that can be used to explain observed outcomes or evaluate alternative procurement and delivery methods prior to adoption. The main aim of this work is to develop the theoretical underpinning and a modelling and simulation tool which can be used to inform the selection of construction project procurement and delivery methods. The objectives of the work are to:

- i. Identify suitable theories that can underpin the characterisation and analysis of construction value networks;
- ii. Establish a theoretical framework for the design and analysis of construction value networks based on theories identified in (i);
- iii. Develop and test a construction value network modelling and simulation tool based on the theoretical framework developed in (ii).

It is hoped that the tool can be used to determine the functional constitution and operational performance of alternative configurations of construction value networks under different contexts, allowing different project procurement methods to be investigated so that the best option can be identified prior to use.

■ RECENTLY COMPLETED PHDS

LEI ZHOU

Supervisors: Dr. Ramin Keivani, Dr. Esra Kurul,

Research title: Achieving sustainable development through the private finance initiative procurement process

This research investigated the potential of Private Finance Initiative for achieving sustainable development objectives in the UK. PFI is a procurement mechanism by which the public sector contracts to purchase quality services on a long term basis so as to take advantage of private sector management skills incentives by having private finance at risk. PFI is now an essential item of the government's Public Private Partnership toolkit. At the UK level, 570 projects were signed from 1997 to 2003, at a capital cost of £52 billion and expected to be worth about £25.5 billion within the next three years. In theory, PFI could offer a number of opportunities to deliver sustainability, for example, whole life costing as the core of Value for Money. The nature of long term contract provides clients a chance to set up the sustainable goals. Unitary payment mechanism and output performance stimulate contractors to innovate in more efficient design and management in the public estate. However, in practice, there is a lack of systematic framework to indicate the implementation of sustainability issues into PFI projects. Lack of awareness of the sustainability benefits and lack of decision making tools often lead to omission of sustainability measures in the early stages of PFI projects.

This research developed a sustainability framework for PFI procurement system and its practices and addressed the following objectives:

- To qualify the current sustainable performance level in PFI projects in the UK
- To identify the principles and issues in the sustainable PFI framework and evaluate its benefits and risks
- To design a sustainable PFI framework in order to assist the key stakeholders making decision in sustainability

The main research approaches employed questionnaire survey and case studies. Personal interviews and focus groups were used as extra data collecting methods for this research.

USHA PRABHAKARAN

Supervisors: Dr. Rob Beale, Dr. Mike Godley

Research title: Nonlinear Analysis of Scaffolds with Semirigid Connections

Tube and fitting scaffolds and proprietary scaffolds are slender structures and tend to fail by elastic instability. One of the major factors influencing their behaviour is the stiffness of connections which has three characteristic features: a nonlinear moment rotation ($M-\Theta$) behaviour with an unloading curve which is often not parallel to the loading curve; rotational looseness in the connections and different $M-\Theta$ curves for clockwise and anticlockwise rotations especially in proprietary scaffolds. A literature review indicated that several analytical studies have been undertaken to study the behaviour of scaffold frames. However, these studies concentrated on modelling the joints as either rigid elements or as an elastic semi-rigid connection assuming linear elastic behaviour. Very little work has been reported on the effects of nonlinear loading and unloading behaviour of the moment curvature relationship of these joints and the rotational looseness has been ignored. Therefore, the aims of current research were: to develop a nonlinear analysis program that could handle the full $M-\Theta$ curve of the connections; use the program to investigate the effects of approximate modelling of the $M-\Theta$ curve on the behaviour of scaffold frames; based on the results, propose a simplified method to account for the nonlinear moment rotation behaviour including rotational looseness in the connections.

A nonlinear analysis procedure was developed using stability functions with connection flexibility taken into account using zero length rotational springs. A new algorithm was developed based on a Modified Newton-Raphson iteration to include the full $M-\theta$ curve including rotational looseness during loading and unloading of the joints and with initial rotational looseness in the joints. In the absence of limited test data, the program was validated using theoretical models.

The effects of bowing on slender frames were investigated with the conclusion that bowing can normally be neglected for both sway and braced frames because the first order effects due to sway are significantly higher than the second order effects due to bending.

Approximate methods to model $M-\theta$ curve were considered. These included a polynomial curve obtained from a regression analysis of experimental data and connection models derived using the Eurocode approach, the FEM code approach, the SEMA code approach and an initial stiffness method. Nonlinear analyses were carried out on a single bay, single storey sway frames and realistic scaffold frames comprising five bay and five storey. The behaviour of frames was found to be sensitive to the $M-\theta$ curve approximations. Both the Eurocode and the FEM code models gave reasonably good prediction of maximum load carrying capacity. A bilinear connection model based on SEMA code was found to significantly underestimate the load carrying capacity and overestimate the joint displacements whilst an initial stiffness model was found to significantly overestimate the load carrying capacity and underestimate the joint displacements. The inclusion of the unloading curve and rotational looseness during unloading of the joints was found to reduce the load carrying capacity and increase the joint displacement for a single bay, single storey sway frame. However, it had negligible effect on large frames. Initial looseness in the connections was found to significantly reduce the load carrying capacity. Various methods to include initial connection looseness in the analysis were investigated. Based on the study a simplified method to handle nonlinear moment rotation behaviour of the connections is recommended.

SALLY SIMS

Supervisors: Mr. Peter Dent, Dr. Mike Stubbs, Prof. Anthony Lavers

Research title: The impact of high voltage overhead transmission lines (HVOTLs) on the value of residential property in the UK

This thesis investigates the impact of electricity distribution equipment on the value of residential units in the UK and adopts a multimethod approach towards data gathering, using both qualitative and quantitative research paradigms. Buyers' and valuers' perceptions of the impact of a HVOTL on value are obtained using postal surveys and interviews. Additional information is gathered from the electricity utilities, residential developers and government planning departments.

Using a case study a hedonic pricing methodology (to enable the relationship between a HVOTL and house price to be explored), selling price data and asking price data from three locations were gathered and analysed. Regression analysis established that a HVOTL near a residential unit does have an impact on house price, although this impact is not always negative.

The results from three case studies, the opinion surveys and the interviews are compared, indicating that opinion surveys may result in an underestimation of the impact of a HVOTL on selling price and, by contrast, appraisers may overestimate the negative impact of HVOTLs on asking price when marketing a house. The results suggest reliance on one method may prove misleading and therefore the use of a multimethod approach towards data collection may improve the reliability of findings.

Supervisors: Mr. Peter Dent, Prof. Paul McNamara, Prof. Anthony Lavers

Research title: The factors determining office investment markets in South-East Asian cities: with reference to Hong Kong, Singapore, Taipei, Bangkok and Kuala Lumpur

This thesis is the result of four years' intensive study of office investment markets in South-East Asia. The research topic stemmed from the rapid progress in office markets in the region during the early 1990s, and the upheaval resulting from the institutional problems of 1997. Most of the past research on the determinants of office investment markets has concentrated on European and North America cities. South-East Asia and its cities have largely been ignored. The few studies that have been conducted rely mainly on econometric modelling. However, opportunities in the user and investor office markets are influenced by non-econometric factors such as the nature and evolution of the markets and their institutional environment, but these have largely been ignored in previous studies. This research examines office markets by combining a demand and supply econometric framework and institutional analysis.

The thesis begins with a presentation of the relevant literature and a critical examination of this branch of knowledge: including a review of forecasting and institutional studies. Subsequently the drivers of office investment markets are investigated using both quantitative and qualitative methods. Five South-East Asian prime office markets are used as case studies: Singapore, Hong Kong, Taipei, Kuala Lumpur and Bangkok. This research initially assesses the maturity of office markets in each city. A time-series multiple regression analysis is then carried out, using office rental data and macroeconomic data to identify the relationship between office rental values and macroeconomic variables in the five cities. The results of a questionnaire survey and face-to-face interviews are then presented, which were conducted with property researchers in the region, and from these, the institutional factors which have an impact on office investment market performance are identified.

The study concludes that the performance of office investment markets (office rental values) can be modelled using macroeconomic factors in the cases of mature cities, such as Singapore and Hong Kong. However, office investment market performance can only partly be explained by macroeconomic factors in emergent markets (Kuala Lumpur, Taipei and Bangkok).

The results of the econometric analysis show that demand side variables are the main drivers for office investment market performance in South-East Asian cities. Institutional factors also have an impact on office investment market performance. This research shows that legal and economic institutional factors and political stability are considered to have the most influence on office investment market performance in South-East Asian cities, especially in Kuala Lumpur, Taipei, and Bangkok (emergent markets), though the effects cannot be quantified in modelling studies. As regards Singapore and Hong Kong (both mature markets), econometric modelling results perform reasonably well, and institutional factors have little influence on office investment market performance in those cities.

Wei received the 2004 ARES prize for International Real Estate Investment/Portfolio Management for his PhD based paper "The Determinants of the Office Investment Market in Southeast Asian Cities: The cases of Hong Kong, Singapore, Taipei, Kuala Lumpur and Bangkok."

Supervisors: Mr. Peter Dent, Prof. John Raftery, Prof. Paul McNamara

Research title: Risk attitudes of foreign investors in emerging property markets: a case study of Shanghai 1990 - 2005

Over the past decades, property has been widely accepted as an investment asset together with bond and shares. Investors have also noticed the diversification benefit of including property in their portfolios. Since risk lies at the very heart of capital investment decisions, there is a growing trend to measure the uncertainty of expected returns. Based on the portfolio theory introduced by Markowitz in the 1950s, researchers have developed several models, like CAPM and APT, to quantify risks related to investment in capital markets. These models are now treated as the cornerstones of modern finance and form the foundation for capital market theory.

Property markets have been influenced by the growth in the use of quantitative techniques in capital markets. Whilst the research in this area is still lagging behind work done in capital markets, even fewer studies have been carried out in emerging property markets. Therefore, this work examined how capital market theory performs in emerging property markets such as Shanghai. This involved an examination to identify to what extent it is relevant in such a market. The reasons for choosing Shanghai for investigation are not only because of the current rapid economy growth in the city, but also because a large amount of new capital is invested in the property sector every year. The study provided a critical review of the development of capital market theory and its application to the Shanghai property market.

■ CONCLUDING REMARKS

The RELP and CPM research groups at the Department of Real Estate and Construction have maintained their momentum through a range of research and consultancy activities during a difficult year due to effects of the financial crisis. During the review period we have had major successes including blue major research council funding from STB-EPSCRC programme. We have also expanded our national and international linkages through the UK-Brazil urban research network involving a number of premier universities in both countries. In addition we have consolidated our existing links with the University of Oxford through active participation in the Future of Cities Research programme as well as our international collaborations with Japan, Korea and UN-Habitat. We continue to benefit from long term funding from RICS and John Comerford research fund to advance research on sustainable real estate and construction.

During the review period we produced a number of important academic papers and reference documents with direct relevance for the industry exemplified in the new edition of the Green Guide to Specification and contribution to the Urban Buzz report. We have consolidated our position as leaders in knowledge creation and transfer through our research and as the home of important journals such as JPIF and IJUSD that provide forums for disseminating results of cutting edge research and rigorous debate of complex issues impacting on the real estate profession and sustainability challenges facing urban areas in both developed and developing economies.

We owe our continued success to the expertise and dedication of our staff for producing high quality outputs and developing new research horizons that contribute to their field and enhance their teaching. We therefore face the future with confidence and look to grow from strength to strength even in the more uncertain economic and financial environment that lay ahead.

■ APPENDICES

A. REVIEW PERIOD NEW PUBLICATIONS

Books

Anderson, J., Shiers, D., and Steele, K. (2009) *The Green Guide to Specification, 4th Edition*, Blackwell-Wiley & IHS, (226pp) (peer reviewed by international expert panel) Green Guide is part of the BREEAM and Code for Sustainable Homes programmes.

Baker, E., Mellors, B., Chalmers, S., and Lavers, A. (2009) *FIDIC Contracts: Law and Practice*, London, Informa (583 pages). ISBN 978-1-84311-628-8.

Cho, Y. (2010), *Who takes up intermediate housing?*, in Whitehead, C.M.E. and Monk, S (Ed) *Between housing demand and need: new alternatives to traditional tenures*, Blackwell publishing & RICS foundation.

Colantonio, A., and Dixon, T. (2010) *Urban regeneration and social sustainability: best practice from European cities*, Blackwells, Oxford.

Dixon, T. (2009) Sustainable Commercial Property in Calvello, A. (ed) *Environmental Alpha: Institutional Investors and Climate Change*, John Wiley & Sons (USA)

Dixon, T., and Ng'ombe, A. (2010) The future regeneration of Roath Basin, Cardiff Bay" in A. Colantonio and T. Dixon: *Urban regeneration and social sustainability: best practice from European cities*, Blackwells, Oxford.

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Abdel-Jaber, M S., Beale, R G., Godley, M H R., and Abdel-Jaber, M. (2009) Rotational strength and stiffness of tubular scaffold connectors, *Proc. Inst.Civ.Eng, Structures and Buildings*, 168(SB6), pp. 391-403.

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French, N., and Salisbury Jones, L. (2010) Implications of the change in user preferences in the economic downturn on investment strategies, *Journal of Property Investment and Finance*, 28(6), pp. 466 – 474.

Grover, R., and Keivani, R. (2010) Developing sustainable municipal finance, *Quarterly Journal of City Economy*, 1(4), pp. 56-75. [Persian text]

Keivani, R. (2009) A review of main challenges to urban sustainability, *International Journal of Urban Sustainable Development*, 1(1), pp. 5-16.

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Lavers, A. (2009) The impact of environmental factors upon construction procurement and risk exposure in UK projects Paper in *Construction and the Protection of the Environment* Athens, Hellenic Society of Construction Law pp. 93-103.

Ng, A L Y., Beale, R G., and Godley, M H R. (2009) "Methods of restraining progressive collapse in rack structures", *Engineering Structures*, 31(7), pp. 1460-1468.

Pettang, C., Manjia, M B., Abanda, H., and Louzolo-Kimbembe, P. (2010 – accepted) Labour Cost Modelling in Urban Self-Building: The Case of Cameroon. *International Journal of Construction Education and Research*.

Ren, Z., Anumba, C J., and Tah, J. (2010 – accepted) RFID Facilitated Construction Materials Management (RFID-CMM) - A Case Study of a Water Supply Project. *Advanced Engineering Informatics*.

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Deller, L., Harris, A., and Shiers, D. (2010) Local Authority Implementation of Site Waste Management Plan Legislation. Study prepared for DEFRA/WRAP & the Construction Resources Waste Platform (CRWP) pp.31, published by CRWP and available on www.crwplatform.co.uk.

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Colantonio, A., and Dixon, T. (2009) Measuring Socially Sustainable Urban Regeneration in Europe; Final Report for EIB, EIBURS.

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French, N. (2010) Regulation and valuation, *Journal of Property Investment and Finance*, 28(6), pp. 396 – 397.

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Roberts, C. (2009) Guest Editor of Special Issue: Sustainable and Socially Responsible Property Investment, *Journal of Property Investment and Finance*, 27 (5).

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Patrick, M. (2010) Review of N. Enever, D. Isaac and M. Daley (2009) *The Valuation of Property Investment*, new York: Elsevier, *Journal of Property Investment and Finance*, 28(3) pp. 243-244.

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Xu, Y. (2009) Review of Colin Lizieri *Towers of Capital – Office Markets and International Financial Services*, Oxford: Wiley-Blackwell Publication, *Journal of Property Investment and Finance*, 28(1) pp. 67-68.

Xu, Y. (2009) Review of Andrew Baum *Commercial Real Estate Investment – A Strategic Approach* (2nd Edition), London: EG Books, *Journal of Property Investment and Finance*, 28(2) pp. 155-156.

Xu, Y. (2010) Review of Justin Fox *The Myth of The Rational Market – A History of Risk, Reward, and Delusion on Wall Street*, Petersfield: Harriman House, *Journal of Property Investment and Finance*, 28(5) pp. 391-392.

B. REVIEW PERIOD CONFERENCE PRESENTATIONS

Abanda, H., Tah, J H M., Cheung, F., and Zhou, W. (2010) Measuring the embodied energy, waste, CO2 emissions, time and cost for building design and construction. In *Computing in Civil and Building Engineering, Proceedings of the International Conference*, W. TIZANI (Editor), 30 June - 2 July, Nottingham, UK, Nottingham University Press, Paper 181, p. 361, ISBN 978-1-907284-60-1.

Abanda, H., Tah, J H M., Manjia, M., Pettang, C., and Sambo, K. (2010) An ontology-driven approach to labour cost estimation: The case of house-building projects in Cameroon. In *Computing in Civil and Building Engineering, Proceedings of the International Conference*, W. TIZANI (Editor), 30 June - 2 July, Nottingham, UK, Nottingham University Press, Paper 113, p. 225, ISBN 978-1-907284-60-1.

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Cho, Y. (2010) An analysis of UK housebuilding sector's responses to the policy changes: strategic or opportunistic?, *ENHR Conference Istanbul*, July.

Cho, Y., Whitehead, C. (2010) The immobility of social tenants: does it matter? *Cambridge CCHPR conference on Housing: The Next 20 Years*, King's College, Cambridge, September.

Dixon, T. (2010) Sustainability in the Built Environment (invited), *Inside Government*, London, March 25.

Dixon, T. (2010) 'From Green to Gold: What Does the Research Tell Us?' (invited) *RICS Sustainability Conference*, London, February.

Dixon, T. (2009) *Thomson Reuters Global Property Conference*, December, London (Long Term View-Invited Panel Member (invited)).

French, N. (2010) Valuation and Uncertainty. Keynote address presented at the *Academic Conference in Property Management, Valuation, Development*, Athens, 25th - 26th January.

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Grover, R. (2010) Governance of tenure and the private sector, Food and Agriculture Organization of the United Nations, Private Sector Consultation Meeting on "FAO Voluntary Guidelines on responsible governance of tenure of land and other natural resources", RICS, London, 25-26 January.

Grover, R., and Christine (2010) The Origins of the British Fiscal Cadastre, FIG Congress 2010 Facing the Challenges – Building the Capacity, Sydney, Australia, 11-16 April 2010

Grover, R. (2010) Corporate social responsibility and risk reduction in real estate investment, The Cutting Edge 13 May, Royal Institution of Chartered Surveyors/Society of Property Researchers.

Irtaza, H., Beale, R G., and Godley, M H R. (2009) Experimental and Numerical Evaluation of Computational Fluid Dynamics of Wind Loads on Sheeted Scaffolds. In: *Proc. 12th Int. Conf. On Civil, Structural and Environmental Engineering Computing*, Funchal, Paper 261, 19p.

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Lavers, A. (2009) Nowt for being second? Not necessarily. *Society of Construction Law*, Bristol, September, Cardiff, December.

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C. REVIEW PERIOD BESPOKE CPD PROGRAMMES

French, N. (2010) Valuation Update, Valuation Standards and Registration, Professional Conferences, London, Liverpool, Durham, Birmingham, Milton Keynes, Crawley, September – December..

French, N. (2010) Valuation Update, OBREMS/NB Real Estate, London, April and Sept.

French, N. (2010) Investment Analysis & Appraisal, Henry Stewart Training Courses, London, July and September.

French, N. (2010) Property Valuation, Henry Stewart Training Courses, London, July and September.

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