Institution: De Montfort University (DMU)

Unit of Assessment: 16 Architecture, Built Environment and Planning

a. Overview

Built environment research at DMU is carried out within two groups: the **Institute of Energy and Sustainable Development (IESD),** which is part of the Faculty of Technology; and the **Leicester School of Architecture (LSA)**, located within the Faculty of Art, Design and Humanities.

The IESD's work focuses on the clean, efficient use of energy in the built environment, occupant comfort and behaviour (particularly under climate change), smart grids, and renewable energy. Research in the LSA ranges from technical and empirical research to practice-based outputs. The overarching research themes are: architectural design; architectural history, theory, and criticism; and the built environment in the developing world.

Since RAE 2008, the two groups have published over 225 research outputs: 133 journal articles, 79 conference contributions, 3 books, 12 book chapters, 2 artefacts and 2 designs.

b. Research strategy

Institute of Energy and Sustainable Development (IESD): IESD has a strong research portfolio within energy, climate change and the built environment, with a particular emphasis on increasing the understanding of how technologies actually work in the real world. The scope of the Institute's work ranges from the modelling of building energy performance, through to behavioural change, smart monitoring and controls and how people and technologies interact in markets and communities. A strong thread of IESD's research is on the social dimensions of energy technology. The Institute interacts strongly with the research councils, the public sector and the European Union's (EU) energy programme through its interdisciplinary research, postgraduate teaching and public engagement work. Income is mainly from research grants, backed up by consultancy activities and postgraduate teaching. The Institute's work addresses the technical, non-technical, public engagement and communications aspects of the move towards a low carbon society. In a continuation of this policy, the IESD will focus its research for the next five years and beyond, in the following main areas:

- The development of low-energy heating, cooling and ventilation techniques, supported by computer simulation and full-scale performance monitoring. Technologies in this programme include ground source heat pumps, efficient cooling in hot climates and use of thermal mass.
- Further research on the Institute's state-of-the-art cybernetic model of a human being, which enables thermal comfort within or outwith enclosures to be analysed.
- Continuation of research focused on extending the functionality and usability of building thermal modelling programs. This work has been funded through Knowledge Transfer Partnerships (Technology Strategy Board) and HEIF, which have facilitated its dissemination to academia and industry.
- A growing area of work concerns the social, technical and psychological factors influencing energy consumption in dwellings, awareness of energy related issues and the need for energy conservation. Studies of the acceptability of, and barriers to, renewable energy technologies have also been undertaken. Recently, work has expanded into studies of the use and value of green spaces in urban areas.
- The combination of social and technical expertise in the Institute has permitted a large programme of building energy and environment monitoring. The Institute has acquired data from renewable energy installations, homes and non-domestic buildings in the UK and Europe. These data are being used to help define and explain energy use profiles.
- The application of computers as an aid to urban planning has led to the creation of GIS-based tools to: quantify the urban environment; predict the likely energy demands in dwellings and non-domestic buildings; predict the potential for renewable energy technologies to meet energy needs; and assess the likely impact of energy technologies on the electricity supply network.
- Urban energy management research develops policy tools for regional and local authorities, planners, and managers of large estates and energy consultancies, to help them understand mechanisms by which non-technical barriers to sustainable development might be overcome.
- Further development of our research in the area of complex adaptive systems, building on

the major EPSRC-funded, multi-disciplinary consortium project CASCADE and now continuing in the AMEN project. Research in this area seeks to build an agent-based modelling framework for smart grids in this rapidly expanding field, which will be of key interest to industry and policymakers, such as automated demand response in the domestic energy sector and the effects of large-scale penetration of intermittent renewable energy sources on the UK electricity market. This area is relevant to the recent UKERC drive to increase the international status and capacity of UK energy systems modelling.

The IESD will maintain its strong focus outlined in the 2008 RAE on building the evidence base on the effects of technologies and building designs on energy consumption and carbon emissions, together with in-depth analysis of the effectiveness of policies and practices. IESD will continue to encourage curiosity-driven research which has led to major collaborative projects and spin-off technologies. Momentum in all the five priority areas outlined in 2008 has been maintained or increased, with eight active projects under the LZCT (Low and Zero-carbon Technologies/Simulation Systems) category, eight under Intelligent Energy Management, four under People and Climate Change.

The research agenda and individual grant proposals are developed collaboratively, maintaining a focus on the Institute's mission, its areas of strength and national and local government policy. This team approach often leads to projects with multiple IESD investigators across different disciplines. Project consortia have specifically convened Advisory Panels with representation including: central government; national organisations; local and regional government; utilities; industry; environmental charities; and industry representative bodies. Stakeholder involvement is assisted by a Faculty Industrial Liaison Committee, which has representation from academia, industry and organisations to which the IESD relates strongly.

Draft research proposals are reviewed by experienced staff, especially those on the EPSRC Peer Review College (**Bhattacharyya, Fleming, Hanby** and **Taki**). Thus, experience is passed on to ECRs and the quality of research is maintained. All experienced staff members are Investigators on RCUK, EU or TSB grants, and all have submitted proposals as Principal Investigator (PI).
A core management team (including **Greenough, Mallaburn, Bull, Lemon** and **Wright**) oversees the day-to-day running of the Institute. The team monitors progress and disseminates information on research initiatives and funding calls. At each meeting of the management team, the existing and planned portfolio of funded projects is reviewed. This facilitates tracking of successful proposals against targets and enables staff expertise to be drawn on as appropriate support.

Leicester School of Architecture (LSA): A strategic decision was taken at the time of RAE 2008 to re-establish and rebuild the research culture in the LSA, with the School re-examining its research strategy to ensure a coherent, intelligent and intellectual underpinning of design. Since 2008, the School has worked hard to ensure that research and scholarship are at the heart of architecture teaching and to build links with design research to reinforce the link between research and practice. Therefore, the key features of the research strategy in the School since 2008 are: (i) to develop a research focus on design, design processes, and architectural history, theory and criticism, whilst retaining existing research excellence in the built environment in the developing world; and (ii) to enhance the research specialisation in each of these areas.

Since 2008, there have been significant changes for the LSA in terms of leadership and staffing. A programme of new appointments has been initiated to attract researchers who have the potential to contribute world leading ideas to a research culture broadly focused upon Architecture Design, as described above. These appointments, spread over the census period, have had a positive impact upon this strategy and we have recently introduced the concept of 'Research Units'. Each unit is led by a leading researcher and practitioner within the School of Architecture, who offers specialist guidance and support for more junior researchers when developing their individual research questions and identities. These growing cohorts are rapidly establishing themselves as homes to world leading researchers across the following spectrum of architectural disciplines: *Architectural Design*: **Causer, Cowd, Dening**, and **Jones** are all practising architects, or have recent practice experience. Their research is focused on competitions, artefacts, exhibitions and publications relating to architectural design. From this group a 'Design Lab' or 'Project Office' will emerge that will eventually become the focus of architectural design research. *Architectural*

History, Theory, and Criticism: **Cawthorne**, **Ireland**, **Manoochehri, Martin** and **Periton** form a cluster dealing with the history, philosophy and debate surrounding architectural design. *Developing World Built Environment*: **Ebohon** and **Taki** form a research group focusing on design strategies to encourage and promote sustainability analytical approach. This group has an established close working relationship with researchers from IESD. Over this census period, these researchers have thus begun to emerge as organic but coherent cohorts in each of these three key areas and have begun to develop collaborative research with colleagues in other disciplines, especially design (the success of this aspect of the strategy is illustrated through the work of **Cawthorne** and **Martin,** who are based in the School but who have been returned to UoA 34 (Art and Design) in recognition of their current research interests).

Over the next five years, the School intends to consolidate, build upon and further evolve the strategy established in 2008 in order to further underpin ongoing research in the School. A secondary aim is to undertake a greater volume of high quality research of a multidisciplinary and applied nature, across a good spread of architectural themes, with particular emphasis on a) how the three pillars of sustainability and relevant cultural and historical theories underpin and inform architectural design processes, and b) to critique current planning approaches to the city in a constructive and holistic way, so as to engage with the making of planning policy. In addition, emphasis will be placed upon working with academic and non-academic communities to identify opportunities to engage with local, national and international stakeholders, providing new vehicles to disseminate our research findings.

c. People, including:

i. Staffing strategy and staff development

IESD staffing (at time of census) was three full-time and three part-time Professors, three Readers, two Principal Lecturers, 12 Research and Senior Research Fellows, and over 50 PhD students (several overseas). Staff are drawn from a range of academic disciplines, including physics, mathematics, social science, engineering and economics.

Since 2008 there have been a number of staffing changes within IESD over the census period. A number of key staff have moved to new institutions, specifically: **Sarshar** (Nottingham Trent); **Lomas**, **Mardaljevic, Taylor, Firth** and **Cook** (Loughborough); **Shao** (Reading); and **Zhao** (Hull). This has however presented an opportunity to develop academic leadership in younger staff and expand into new areas such as smart grids. To date the Institute has recruited two staff at Professorial level: **Bhattacharyya** (Dundee), and **Levermore** (Manchester), together with senior appointments of **Greenough** (Cranfield; UoA 15), **Lemon** (Cranfield) and **Mallaburn** - recruited from the private sector (Policy to Practice) to the new post as Reader/Director of Policy. **Rees** has also been promoted to Reader. **Bull** (Birmingham) was appointed as an ECR early in the census period, alongside **Gammon** (UoA 15) later in the period. Continuation of the IESD's policy of developing research students (RS) into ECRs has resulted in posts for **Coleman, Stuart**, **Porritt** and **Wilson**. This process has been facilitated by the unfettered benefaction from the Marmont endowment, which is also used to bridge RAs from one project to the next, assist RSs who are experiencing hardship, pump-prime new initiatives and support speculative overseas and UK exchanges.

ECRs are encouraged and supported to attend career development courses, which have included the UKERC summer school and the ESRC methods festival. A staffing priority stated in the 2008 submission was the recruitment of social scientists to broaden and underpin our activities in the discipline. Four staff have been appointed in the social sciences since 2008 (**Wilson, Irvine, Bull** and **Lemon**). DMU has been awarded membership of the Athena Swan Charter. The **LSA** has recruited staff with the potential to achieve excellence in their research activity. Since 2008 appointments have included **Causer, Cowd, Dening, Jones C**, **Jones L**, **Ireland** and **Periton**. The LSA has actively recruited dynamic researchers with great potential who, whilst not necessarily selected for inclusion in the REF this time, it is anticipated will become leading researchers over the next five years.

Across the University, individual research plans ensure that research activity plays a central role in the career development aspirations of individual academics.

The University and Faculties ensure that all members of staff have the opportunity to bid for

teaching relief and sabbaticals to complete important research projects and produce high quality publications. A number of staff have received funding from these sources over the census period. DMU also operates formal procedures relating to equality and diversity in recruitment processes ethics and authorship, and the institution is an active signatory to the concordat to support the career development of researchers and staffing policies across the unit reflect this.

The university has invested in several significant initiatives to promote excellence in the research environment, for example, the VC's Future Research Leaders scheme (intensive mentoring for a team of ca. 12 young researchers) and the award of two tenure-track Early Career Research Fellowships per year (from 2013). The Institution's excellence in research has been recognised by international awards, such as the EU Vitae HR Excellence in Research Award.

ii. Research students

IESD: The Institute has a vibrant community of research students (RS), both attending and through distance learning routes. Of the latter, several are based at technical universities in Germany (Stuttgart and Ingolstadt) and work mainly on renewable energy systems, and we now have several students in Africa. All mid-career and senior staff have supervised PhD students to completion and all currently supervise. It is IESD's policy to encourage ECRs to gain experience as second supervisors and they also participate in the viva process in a probationary capacity. Where practicable, PhD research is structured to link to externally funded projects. This gives RSs experience of external collaborative working, an added appreciation of how their work fits into a wider research dimension and provides additional scope for publishing. Nearly all the RSs completing in this REF period published prior to completing their degrees. RSs are encouraged to participate in external events such as summer schools and have been consistently successful in the East Midlands Universities poster competitions. A regular seminar programme is an important feature of our PhD programmes, enabling the RSs to expose their work to a small, known and supportive audience as a precursor to 'public' presentations. An occasional open lunch-time lecture series is operated. This aims to set the IESD's work in a broader context and stimulate new ideas and collaborations. The lectures have included speakers from a wide range of disciplines (both industry and academia).

LSA: A significant increase in University support for postgraduate study has helped the introduction of a new Master's programme in the area of Architectural Design and Sustainability, which has become a major pathway to PhD level study in the School. DMU's annual scholarship competitions aim to recruit high quality research students and to encourage newly appointed staff to take part in PhD supervision, helping to boost the numbers of research students in the area of architecture and sustainability. The Faculty organises an annual Postgraduate Conference at which students present their work, enabling them to gain practice and confidence in the presentation of their research findings.

All research students at DMU are subject to a rigorous procedure of internal scrutiny and monitoring. Staff involved in postgraduate supervision are required to obtain DMU's Certificate in Research Supervision and to attend 'refresher' courses at regular intervals to keep up with regulation and procedure changes. Registration requires the presentation of a formal programme of study, agreed with the candidate's supervision team. Transfer from MPhil to PhD is achieved through the submission of a substantial transfer report, outlining progress made since registration and setting out a clear and achievable timetable for completion, which is scrutinised by an independent assessor nominated by the Faculty. This is followed by annual reviews, again overseen by an independent assessor. Supervision meetings are held on a monthly basis and recorded electronically on a university-wide system. All research students are required to undertake training courses in a number of key areas; this requirement is only waived if the student in question can demonstrate competence in the area in question. Students are also offered the opportunity to undertake additional training in a number of areas that may be of benefit to their research and future employability. All PGR positions are advertised nationally, and recruitment is in line with DMU's standard policies.

d. Income, infrastructure and facilities

Income: IESD: The IESD has an annual turnover in excess of £2m and a portfolio of UK, EU and industry funded research with a total value of around £5m. A number of key projects have been

secured in the REF period, including:

The CREW project (Community Resilience to Extreme Weather: EP/F036442/1, PI **Shao**, researcher **Porritt**, £105k, 2008–2011) was funded by the EPSRC and was a collaborative, multi-disciplinary project involving 14 universities, coordinated by Cranfield. IESD's contribution focused on adaptations to dwellings to reduce overheating during heat wave periods.

Complex Adaptive Systems, Cognitive Agents and Distributed Energy (CASCADE EP/G059969 PI Rylatt, £1.042m, 2009–2012) led by **Rylatt** was a major EPSRC–funded multi-disciplinary consortium project, which was ranked first by the Energy and Complexity Science funding panel in competition with leading UK universities. CASCADE was a key component in the recent UKERC drive to increase the international status and capacity of UK energy systems modelling.

The PROCLIMATION project (EP/F038151, PI **Hanby**, value £262k, 2008–2010) was funded under the EPSRC Probabilistic Scenarios call, one of four in the area of building energy simulation.

Agent-based Modelling of Electricity Networks (AMEN EP/K033492 PI **Rylatt**, £562k, 2013–2016) is funded by the EPSRC. The co-investigators are **Boait**, **Mallaburn** and **Bhattacharyya**. The project follows on from CASCADE and seeks to make a significant and original contribution to efforts being marshalled by the UK Research Councils to improve the international profile and national strategic impact of energy modelling in the UK.

LSA: Since RAE 2008 the focus has been on rebuilding and re-establishing the research culture, and developing competency in bidding for funding through partnerships with other researchers. The School will continue to draw on expertise to further facilitate this process at the beginning of the next census period – for example, the Digital Building Heritage Group (DBHG) (which includes researchers from the LSA and the School of Design and are thus represented in DMU's REF submission to UoA 34) were one of the first groups to form from researchers in the LSA and other disciplines. The DBHG have secured three awards under the AHRC Connected Communities/Heritage Lottery Fund "Research for Community Heritage" awards since their inception in Feb 2012. Early in the census period, the LSA was granted ca £100k from the East Midlands Development Agency to support the work of OPUN (East Midlands Architecture Centre) and establish the network OPUN CONNECT, exploring opportunities for design review in the region.

Research Infrastructure and Facilities: **IESD** has excellent self-contained premises in the iconic Queens Building on the main City Campus. This environment engenders a clear sense of identity, common purpose and a strong community spirit.

The IESD and LSA are both supported by the central RBI (Research, Business and Innovation Directorate), which was created in 2009. It brings together research support in the form of specialist help with grant applications from expert advisers for research council, EU and knowledge transfer funding opportunities, and post-bid support with grant management. The RBI also has a major role in monitoring the institution's research activity and helping research groups promote themselves externally, e.g. through web pages and events. A Research and Innovation Office within each Faculty supplements this university provision. A team of research administrators work closely with the Head of Research and have a major role in developing industry contacts into opportunities for research and commercial income, the preparation of costing for research bids, the organisation of research events and other administrative tasks. The RBI administers research support funds from which the Unit's researchers have benefited, such as Higher Education Innovation Funding (HEIF) to support and develop a broad range of knowledge exchange activities between universities and the wider world, the Research Investment Fund (RIF) and the central University Research Leave scheme. The De Montfort Open Research Archive (DORA, www.dora.dmu.ac.uk) is used to record research outputs for the Unit.

IESD received £744k funding from DMU under SRIF3 to acquire laboratory equipment to underpin research projects, mainly for the acquisition of data from buildings and associated energy systems. This equipment is used in both ongoing projects and to support proposals in the relevant subject areas. Allocation of this equipment was a factor in securing EPSRC funding (EP/E027148, £183k) for a First Grant for ECR **Painter**. It underpinned the research in KTPs with Leicester City Council on energy-efficient schools (**Fleming**) and with Scarborough and North East Yorkshire Healthcare

NHS Trust on energy-efficient hospital buildings (**Wright**).

IESD has installed a High Performance Computing facility with the aid of SRIF funding. The facility has been developed in partnership with Silicon Graphics Inc and consists of a 32-node XE Linux Cluster. This has underpinned our research in numerically intensive modelling, such as CFD and design optimisation.

LSA: DMU is investing £55 million over the next census period to develop the new Fletcher Complex to house the Faculty of Art, Design and Humanities, including the LSA. The new buildings will be completed in 2016. Existing workshop facilities continue to be upgraded to provide excellent and up-to-date equipment, from that used for traditional woodworking to that used for printed models. The workshops are equipped with advanced and precise laser cutters, 3D scanning/3D printing, milling and rapid prototyping machines. The School also has facilities for model making, photography and for small scale video production, and a high performance computing facility with a range of software and analysis tools that can be used for teaching and research purposes. This includes AutoCAD, Revit, 3ds max, Adobe Creative Suite, SketchUp, Rhino/Grasshopper, V-Ray, Ecotect, DesignBuilder and NHER.

e. Collaboration and contribution to the discipline or research base

IESD – *National and international collaborations*
CASCADE: In partnership with Cranfield University, CSIRO, Digital Living Ltd, E.ON, National Energy Foundation and the Wolfenbuttel University of Applied Science, this EPSRC project built an agent-based modelling framework for smart grids and addressed important research questions in this expanding field, such as automated demand response in the domestic energy sector and the effects of wide penetration of intermittent renewable energy sources on the UK electricity system.

The CREW project, funded by the EPSRC, was a collaborative, multi-disciplinary project involving 14 universities (Cranfield, DMU, Newcastle, Greenwich, Glasgow, Coventry, Exeter, UCL, Loughborough, Birmingham, UEA, Wolverhampton, Manchester, Salford). DMU investigated adaptations to dwellings to reduce overheating during heat wave periods and produced 3 journal articles, 3 international conference papers and 2 briefing papers. This was disseminated as part of the Adaptation and Resilience in a Changing Climate (ARCC) network.

The PROCLIMATION EPSRC project was carried out in partnership with the Climatic Research Unit, UEA (Jones, Goodess and Harpham) and Arup (Hacker). Wider collaboration and dissemination was achieved by participation in the coordinating ARCC network. The work led to **Hanby** being invited to rewrite the climate change section of CIBSE Guide A2 (Weather Data).

CITYNET was a collaborative PGR programme funded under the EU Marie Curie initiative. A total of eight universities across Europe participated with each member contributing specialised training to the PGRs. A total of ten PhDs were awarded under this project, which ended in Dec 2010.

THERM was a collaborative Technology Strategy Board project transferring thermal building modelling concepts into modelling energy flows in factories, with Cranfield University, Toyota UK, Airbus and software developers IES Ltd.

IESD has an ongoing collaborative relationship with the Centre of Excellence in Solar Engineering at the Technical University, Ingolstadt. This has given IESD researchers access to high quality laboratory equipment and on-site monitoring, much of it funded by the German renewable energy industry. Six Ingolstadt students have been awarded DMU PhDs since 2008.

Staff members are encouraged to become engaged in the wider academic and professional community. For example: **Rees**: Board member of IBPSA-England and the EU Renewable Heating and Cooling Technology Panel. **Fleming**: member of the UKERC Research Committee; chaired the Peer Review Panel of the DECC Energy Analysis Research Programme; Special Advisor on Low-carbon Cities to the Mayor of Leicester. **Levermore**: Chair of the CIBSE Guide A2 External Weather Design Panel; member of ASHRAE TC4.2 (Weather information); coordinator for the CIB W108 Climate Change and Weather Data group. **Boait**: a member of the working group advising DECC on the application of the Renewable Heat Incentive to domestic heat pumps and smart controls; advisor to OFGEM on the regulatory regime for energy networks. **Wright**: member of the CIBSE A5 Environmental Design Guide Panel and School Design Group.

Staff have acted as external examiners for PhD theses, specifically**: Bhattacharyya** (London, Heriot-Watt, IFP Energies Nouvelles Paris, National University of Singapore, Aberdeen, National Institute of Technology India, Bordeaux, Lapeenranta Finland, Surrey, Manchester); **Brown** (Heriot-Watt); **Fleming** (Reading, Oxford Brookes); **Hanby** (Loughborough, Oxford); **Irvine** (Cranfield, Cardiff); **Lemon** (Cranfield, Coventry); **Rees** (Manchester, Chalmers Sweden); **Rylatt** (New South Wales, Australia); **Wright** (Manchester, Bath, Birmingham, Loughborough, Sheffield).

Conference and Journal editorial activities:
Examples: **Bhattacharyya**: founding editor of the International Journal of Energy Sector Management; Associate Editor of Energy for Sustainable Development. **Rees** and **Levermore** are on the Editorial Board for BSER&T; **Fleming** on editorial board for the International Journal of Sustainable Energy; **Hanby** on the editorial board for the Journal of the Energy Institute. **Levermore** is a reviewer for the IPCC WG2 adaptation chapters of the 2013 5th Assessment Report. **Hanby** and **Rees** were members of the Scientific Committee for IBPSA 09, 11 and 13. IESD hosted the CIBSE Technical Symposium 2011. Wider communication is seen as increasingly important; School pupils and community groups have been targeted through several EPSRC PPA/PPE awards for public awareness of energy and climate change research.

LSA – *Links with Professional Organisations and Collaborations:*
The Architects Registration Board (ARB) and the Royal Institute of British Architects (RIBA) have both visited the LSA during the census period, and ongoing dialogue is maintained. The School continues to hold meetings with the Education Committee of Leicestershire and Rutland Society of Architects, and is discussing greater integration with practice, which includes a mentoring arrangement for graduating cohorts. Several staff serve on advisory bodies and act as reviewers for submissions to scholarly journals and have given invited talks at conferences etc. For example: **Periton**: member of AHRC peer review college; a founding co-editor for Architecture and Culture (journal of the Architectural Humanities Research Association (AHRA)); part of the judging panel for the annual Banister Fletcher Prize awarded for an architectural publication; one of the judges for the annual RIBA President's Medals; on the steering group of AHRA, which helps to organize two annual conferences on themes of architecture and its relationship to a broader culture; a trustee/non-executive director of the Architectural Association; and has engaged in discussions with other academic writers concerning architecture's role. **Manoochehri**: registered architect designing projects in practices including renowned and prize-winning firms such as Short & Associate and CGHP Architects; an External Examiner for RIBA Part III at Oxford Brookes University; member of the Visiting Board of the RIBA validating architecture courses nationally and internationally; has published a book on the Politics of Social Housing in Britain. **Cowd**: co-founding partner of Saraben-Studio, London; awarded the 'Grand Award for Architecture' by the Royal Academy of Art for his work 'Solar Topography in Rome' (2012); International exhibitions include the Royal Academy of Art, The Venice Biennale, the Museum of Art and Design in New York, and the Mathaf: Arab Museum of Modern Art, Qatar; Keynote speaker at the international conference 'Conversations on Architecture' Cape Town, South Africa; was interviewed in the film 'How much does your building weigh, Mr Foster?', released at the Berlin Film Festival 2010. **Causer**: Founded architecture practice Studio Sam Causer in 2005; Member of CABE Design Review Panel for the East Midlands region; Vice-Chair of Margate Conservation Area Advisory Group; Visiting critic for the AA, Bartlett, Cambridge, UCA, UEL, Kent, Sheffield and Universidad Javeriana, Bogotá; Recent clients and collaborators include: Vivienne Westwood, Crate Studio and Project Space, Limbo Arts Ltd, Casco Centre for Art, Design and Theory in Utrecht, the Architecture Foundation, the Hayward Gallery, PIN-UP Magazine in New York, Artists Carlos Maria, Tim Davies and Simon Fujiwara, Curators Sepake Angiama and Eilas Redstone. **Ebohon**: executive editor of the Journal of Architectural Engineering and Technology; board member of the Journal of Sustainable Development in Africa; commissioned by the United Nations Habitat to contribute a chapter to the 2012/2013 Global Cities Report (Ch 5 – Environmental Sustainability and Prosperity of Cities produced). **Taki**: Member of the EPSRC Peer Review College; invited author to revise Chapter 3, Heat Transfer, of the widely used CIBSE Guide C.