Welcome to the CSD Newsletter Issue 6

While writing this (towards the end of 2015), it is pleasing to recognise that CSD members have again made a significant impact on the sustainability agenda over the last calendar year, through a number of networking, publishing and other engagement mechanisms. These have included key academic journal publications, international conference events, book chapters, invited keynote addresses, knowledge transfer programmes, workshops, industry events, and more. It is particularly encouraging, to be able to report on two major research grants awarded to CSD members in this issue.

An important part of CSD’s remit is to share ‘best practice’. Our visits from prestige specialists therefore, continues to strengthen and broaden our horizons – from different positions and contexts. We have been particularly fortunate to host a number of eminent international people – from Siberia, through to Africa, Asia, India and the USA. For example, in March 2015, we proudly presented engagement and presentation events from two distinguished scholars: Professor John Tookey from Auckland University of Technology, New Zealand, and Professor Ashraf Salama of the University of Strathclyde, Glasgow. We look forward to an equally successful 2016 and an early initiative is a special joint master class, planned for the Spring. In the interim, we hope you enjoy reading our Newsletter!

Sustainability continues to inform the mainstream research agenda

Professor Jack Goulding, Director, CSD
CSD Research Illuminates three Centuries of Construction Business Innovation

Introduction
By the very nature of its raison-d’être, CSD constantly benefits from the innovative thinking and scholarly activities of its academic membership, in pursuance of its world-class research.

This is evidenced in those products of CSD endeavour, that frequently benefit its collaborating industrial partners and, that are reported consistently throughout academic literature.

But, how innovative is UK construction as an industrial sector in itself? Indeed, how innovative has it been over the last three-hundred years or so, and from what parts of the sector do its innovative commodities tend to emanate?

These kinds of issues have recently been researched by CSD’s Professor Holt who combined his academic expertise from within both the business and construction disciplines, to pursue an historical study of construction business evolution over the last three centuries[1].

The historical picture
The overall historical picture determined from Professor Holt’s study, is one of a fragmented and highly competitive sector throughout the period, characterised by businesses that have evolved predominantly in a ‘reactive’ fashion.

This ‘reactionary evolution’ as Holt refers to it, has been almost exclusively in response to ‘outside-in’ influences – such as unpredictable macroeconomic conditions, shifting market demands, growing regulatory controls, and the advance of capitalist speculation.

These, combined with socioeconomic transition from a mainly domestic, agricultural society; to that of an industrialised one, was influenced heavily of late by technological advancements and globalisation.

Consequently, albeit innovation is an oft-cited business ideal among contemporary construction companies, the historical construction environment has certainly not been conducive to widespread proactive innovation as a business strategy among contractor organisations.

This, Holt proffers, is why reactionary evolution has prevailed and why it is evidenced mainly, in those businesses at the vanguard of construction production.

That is, reactionary evolution is has been evident formerly among smaller firms – and since the (circa) 19th century – among more specialised contractors.

This contrasts with manufacturers, producers and suppliers further down the construction supply chain; who (maybe somewhat paradoxically), have been the greatest source of construction sector-specific business innovation exemplars.

An exemplar of construction supply chain innovation
The original equipment manufacturer (OEM) J.C. Bamford (JCB) provides a perfect example, of exemplar construction sector supply chain OEM innovation.

By attaching a front loading shovel and rear-mounted backhoe to a ‘standard’ Fordson Major agricultural tractor in 1952, the ubiquitous ‘JCB’ (as it is colloquially known) was born.

The rest is history, and it is this kind of innovation that turned Joseph Bamford’s one-man business building agricultural trailers from war surplus in 1946; into a multi-national organisation with 22 manufacturing plants located across four continents and in excess of 750 dealers around the world today[2].

In the present context, these innovative advances in mechanical plant not only drove exponential product sales for the company, but also brought significant change to the construction sector.

In the case of the ‘JCB’ – by replacing mass labour with mechanisation (and...
concomitant increased productivity, sustained levels of output and resulting economic savings).

**What of the future?**

The construction sector has witnessed significant changes over the last three-hundred years; but its present-day characteristics remain similar to its history: a business environment recognised for turbulence, unpredictability (in numerous senses) and hyper-competition[3].

So what does this mean for the sector and to what extent can history inform that question?

Some believe history cannot assist our assessment of the future, but the alternative view reminds us that many still draw upon history when attempting to make predictions[4].

The conclusion of this study therefore, is that history can indeed help inform construction's future. After all, much of what is considered new in the industry has historical antecedents[5] ...

... and so, as others have pointed out, very often what is new, is not new at all[6].

Professor Holt suggests that at macro-level, most construction businesses will continue to navigate under the influence of their operating environment – in 'reaction' to the kinds of exogenous factors mentioned above.

Innovation as a **distinct business strategy** meanwhile will remain an impracticable aspiration for the majority; who are otherwise preoccupied with reactionary operational demands prerequisite to their business survival.

**Innovation as an intentional strategic concept therefore, will be distinctively associated with larger and more profitable construction organisations.**

In addition to the kinds of historical business challenges mentioned, contemporary construction strategic planning has also to increasingly consider its business continuity management.

Increasing threats of terrorism, medical pandemics and adverse acts of nature for instance, are seemingly ever near to home and increasing in frequency.

On the 'upside' however, these challenges also provide future opportunities for innovative solutions; but, unfortunately for construction organisations at the vanguard of construction production, it is suggested that the downstream supply chain will continue to seize upon these opportunities, while the majority of contractors remain constrained and pseudo 'innovative'.

That is, construction businesses' reactionary response to exogenous influences will continue to endure and at sector level, take precedence over endogenous innovative business strategies **per-se**.

**References**


**Further reading**


Post REF-2014 Update: CSD Professors Publish First Empirical Academics’ Views on Impact

Introduction
The Research Excellence Framework (REF) 2014 changed significantly from its former RAE-2008 assessment methodology, particularly, by including ‘research impact’ as a formal assessment criterion.

Impact may include things like induced change or benefit as a result of academic research; to opportunity, performance, policy, practice or process – either of a community, constituency, organisation or individuals – in any geographic location.

Of note however, impact does not intrinsically include any effect(s) upon Higher Education Institution activities, unless its reach goes significantly beyond that of the (REF) submitting institution.

For REF-2014, evidence of impact was presented via practical case studies – that had to clearly offer tangible evidence to support any such claims. (This proved a particularly difficult thing to achieve based on anecdotal evidence).

The corollary of this is that academics now have to rethink – at least, regarding some of their research activity – so that they can demonstrate impact in their work for future REF returns.

Claims of research impact
All claims of impact must transcend the boundaries of ‘pure’, or ‘basic’ research, so this may be something that we as research-active academics should be noting over the next few years if we want to be included in our university’s REF-2020 submission?

Academic disposition towards impact shows an apparent dichotomy among the literature at the moment. Some feel that impact is necessary in order for government to achieve value-for-money in ‘return’ for its investment in academic research; and that impact is the only way that research can make real change.

Others however, suggest that growing emphasis on impact is brings detrimental effects to the table: for instance, on pure or basic research endeavour; on ‘blue-skies’ research; and even, on academic freedom.

Results
So what are the effects of all this on university research and research-active academics? And how might this affect our academic research in the future?

In order to help answer such questions, CSD Professors Holt, Goulding and Akintoye have recently undertaken research into these issues.

One of their publications on this subject identifies an element of ambivalence among construction management academics; but, they propose, this might be due to a level of ‘uncertainty’ surrounding impact and the REF (as their empirical work was undertaken early 2014).

Findings to date suggest that post REF-2014, academics are beginning to learn much more about impact; about what it means to the REF; and about how it might affect them and their work more directly. More importantly perhaps, given impact’s increasing prominence among ‘assessment’ of research validity, they suggest this will:

…”focus minds and resultantly, we expect perceptions of impact to become more clearly delineated among the ‘for’ and ‘against’ camps”.

KEEP UP-TO-DATE WITH THE LATEST CSD NEWS: @CSDUCLAN
Alternatively, why not email us your story and make the news?
GDholt@uclan.co.uk  JSGoulding@uclan.ac.uk
Other outcomes of the research include a high self-reported awareness among academics of theory and impact as separate entities; but a much greater variance in the perceptions of how these concepts interrelated with each other.

The professors found ‘broad’ acceptance of the role of impact relating to the assessment of government funded research grants, but much less acceptance of impact in relation to the REF.

In addition, those academics surveyed for the research were undecided as to whether increasing emphasis on impact in the future will be a good thing for theory generation; although there was slightly better agreement that impact was beneficial for the construction management discipline.

Follow-up findings just published

While the former part of this study utilised a principally ‘statistical’ approach, more recent analysis of qualitative data from the empirical research has been undertaken, to broaden the findings further.

This secondary aspect has found principal impact enablers to be ‘Facilitation’ (mainly industry engagement and time).

Principal constraints include ‘Internal Factors’ (the academic’s disposition to impact and that of the university), along with ‘External Factors’ such as collaboration and funding.

In contrast to impact-oriented research, analysis seems to suggest that academics view ‘Resources’ (competence, time, funding) as the principal enablers of theory-driven research.

Corresponding challenges include ‘External Factors’ – mainly market forces and compliance with evolving research ‘protocol’.

Some useful ‘bytes’ of impact:

- REF-2014 searchable database of case studies submitted in 2013:
  - [http://impact.ref.ac.uk/CaseStudies/] (Dec. 2015).

- The nature, scale and beneficiaries of research impact: An initial analysis of Research Excellence Framework (REF) 2014 impact case studies. Produced by HEFCE:
  - [http://www.hefce.ac.uk/pubs/reports/Year/2015/analysisREFimpact/] (Dec. 2015).

- Good advice on keeping a record of your research impact evidence
  - related to the latter ([http://goo.gl/sEZq62]) and
  - the importance of keeping your CLoK entries up to date ([https://clok.uclan.ac.uk/]) (Dec. 2015).

- Impact and research case studies at UCLan:
  - [http://www.uclan.ac.uk/research/] (Dec. 2015)

Bibliography


What does this all mean?

This research places CSD at the vanguard of empirical research impact study – an area of our academic roles that is gaining increasing prominence between now and REF2020. It is also an issue that will affect us all in one way or another, henceforth.
Events and Public Profile

UCLan Distinguished Visitor Programme
The Distinguished Visitor Programme (DVP) is a mechanism that provides funds to enable high profile visitors to make a short, targeted visit to UCLan.

What is the VDP?
The aim of the initiative is to promote (both new and existing) world-leading collaborations that span research and innovation; to help raise the profile of the excellent research and innovation activities that UCLan currently undertakes.

CSD has been very successful in securing DVP funding. As a result, prominent and internationally renowned academics are continuing to work with, strengthen and support CSD.

This success is especially valuable to both the Centre and the university at large; given that outreach, engagement and impact are important aspects of sharing the sustainability theme.

The Centre continues to engage with the DVP and looks forward to hosting similar high profile visitors in the near future.

Recent DVP visitors
Here are two of our special visitors.

Professor John Tookey
In early 2015 we proudly played host Professor John Tookey who is the Head of the Built Environment Engineering Department, in the School of Engineering at Auckland University of Technology (AUT), New Zealand.

Professor Tookey graduated from the University of Bradford (UK) in 1993 with a Bachelor’s Degree in Technology and Management Science. He subsequently returned to university to study for a PhD, which was awarded in 1998 for his thesis entitled “Concurrent Engineering in the Aerospace Industry: A comparative study of the US and UK”.

For the period 1998 to 2006, Professor Tookey was employed at Glasgow Caledonian University, first as a researcher and subsequently as a lecturer. In 2006 he moved to the University of Auckland and then to AUT in 2009. During his time with each of these institutions, he developed new programmes at both undergraduate and postgraduate levels. To date, he has managed a total of five master’s degree programmes, and established a total of three postgraduate and two undergraduate programmes.

Professor Tookey has an extensive record of publication and research in the construction industry, as well as engagement with industry.

He has published close to 100 works, as well as having graduated over 10 PhD students. His research is primarily industry centric with extensive focus on housing and construction costs; as well as waste reduction, waste minimisation, and supply chain/logistics management.

In addition to a wide range of publications Professor Tookey has regularly developed and presented training and professional development courses for a number of construction organisations in both the UK and New Zealand as well as for the New Zealand Institute of Management (NZIM), Fonterra, and IPENZ.

Professor Ashraf Salama

Last year we were also pleased to host Professor Ashraf M. Salama who is...
Professor of Architecture and Head of the Department of Architecture at the University of Strathclyde, Glasgow.

He was the founding chair of the Department of Architecture and Urban Planning. Earlier and was a Reader in architecture at Queen’s University Belfast.

Professor Salama’s areas of expertise include architectural and urban education, social and cultural factors in arch-urban design, evaluation of designed environments, design briefing and strategic facility planning.

His current research focuses on urban transformations in the cities on the Arabian Peninsula.

Professor Salama has published extensively with over 150 research outputs and publications. He has also authored and co-edited nine textbooks, and is a board member of several international journal and learned organisations.

He is a fellow of the UK’s Higher Education Academy (FHEA) and the Royal Society of the Arts (FRSA).

During their visit, the Professors delivered a joint Public Lecture.

**CSD Joint Public Lecture**

Professor Tookey’s presentation was titled: ‘BIM: The Agony and the Ecstasy of a Panacea’.

Professor Salama’s presentation was titled: ‘Researching the Global South: Contemporary Research Trends in Architecture and Urbanism’.

---

**Visit from Down Under...**

We were honoured to host Bo Xiong (pictured with Professor Jack Goulding and Professor Akin Akintoye) from Queensland University of Technology, Australia.

Bo Xiong has been a PhD student enrolled at Queensland University of Technology in Australia since he achieved his Bachelor Degree and Master of Research at Chongqing University (China). Bo has been working on a research project related to cost modelling of education buildings funded by the Department of Education in Australia and his research interests also covers organizational management strategies and sustainability considerations in achieving better modelling results.

One purpose of Bo's visit was to investigate the decision-making process on sustainable requirements when clients develop buildings intended for educational purposes. Additionally, he was interested to test whether higher sustainable requirements significantly lead to higher capital cost and whether any such increase can be offset against energy saved and other potential benefits during a building’s lifetime.
New CSD members

We are pleased to showcase two new members of CSD: Dr. Ehab Kamel and Dr. Andrew Fsadni, who kindly gave an inaugural presentation at CSD’s Research Seminar series to celebrate their success.

The following section provides a brief biography of our two new members.

Dr. Ehab Kamel

Dr. Ehab Kamel, is a lecturer and researcher in Architecture and subject leader of Building Technology, with over 15 years of experience in both academia and practice.

After achieving his PhD from The University of Nottingham, UK in 2011, Ehab moved to China, where he spent three years to establish the University of Nottingham’s Architecture programme at its overseas campus in Ningbo, China. He joined UCLAN UK, in June 2014.

Ehab is a registered architect in Egypt and urban designer. Since 1998, he has worked on many urban and architectural design projects in the Middle East, North Africa, Asia, and Europe, leading design teams through several projects and winning architectural and urban design competitions along the way.

Ehab’s research concerns interpretation management for architectural engagement with, and sustainable development of, cultural heritage sites. His writings have investigated Liverpool World Heritage Site (UK), Historic Cairo (Egypt), and The Imperial Street in Hangzhou (China), as well as criticising ICOMOS charters and UNESCO’s criteria for World Heritage Sites’ listing of cultural sites.

Currently, Ehab is researching the relationships between building skins, city cultures, and users’ wellbeing, which investigates how design for culturally rich sites learn from the past, to create sustainable environments.

As part of his responsibilities at UCLan, Andrew leads and delivers a number of modules at undergraduate and postgraduate levels, with core specialisations in Building Services and Sustainable Engineering.

Dr. Andrew Fsadni

Dr. Andrew Fsadni is a lecturer and researcher in Building Services. Andrew joined the University of Central Lancashire in 2012 after completing his research work at Brunel University.

At Brunel he worked on an EPSRC Industrial CASE project which was developed in collaboration with Spirotech bv, of the Netherlands. He successfully defended his PhD in 2012.

As part of this project Andrew developed a number of mathematical models to predict the characteristics of two-phase flow in wet sealed heating systems. This work was instrumental in ensuring the optimisation of heating system efficiencies.

Andrew’s principal research interest is in Thermo-fluids engineering, more specifically the investigation of multiphase flows, associated heat transfer coefficients and the use of nanofluids for enhanced heat transfer.

His research interests also include the investigation of indoor air quality, ventilation and zero energy buildings. Andrew is currently developing a number of research grant proposals based on these areas of study.

We look forward to working closely with Ehab and Andrew on future CSD research initiatives.
Recent CSD research activities

Heritage lottery fund (HLF) partnerships
CSD has become an educational partner on two new Heritage Lottery Funded (HLF) projects: this follows the trend of recent years and adds to the impressive list of schemes with which the Centre is involved.

The first of these is in partnership with the Clitheroe Civic Society who are spearheading an urgent project to see the historic Palace of Westminster pinnacle repaired and, on completion, to provide a full interpretation of this iconic monument sited in the grounds of the Borough’s War Memorial Gardens at Clitheroe Castle. UCLan’s involvement in the scheme has included student interpretation of the site’s significance and a 3D laser survey of the monument.

In contrast, the Bacup Townscape Heritage Initiative (THI) involves the regeneration of Bacup’s Conservation Area, which is situated in the commercial heart of the town. HLF funding has been granted to target vacant and neglected heritage buildings, the aim being that the rejuvenation of these sites will help boost investment in the Centre of Bacup.

The project manager, Gareth Fort, was a student on the MSc Building Conservation and Regeneration course and has arranged a series of activities with the course leader, Chris O’Flaherty. These included a full day workshop event where students investigated the potential re-use of a grade II listed industrial building.

Speaking about the project, Chris O’Flaherty emphasised the role real-life schemes play in the delivery of the course:

“This is a fantastic opportunity for our students to get to grips with a HLF project and investigate the problems associated with finding sustainable new uses for redundant heritage buildings”.

South Gloucestershire project
Dr. Andrew Smith and Dr. Andrew Fsadni are collaborating on a research project in partnership with South Gloucestershire Council in their offices at Yate, near Bristol.

The focus of the project is to test the benefits on indoor air quality from introducing living indoor plants to their offices.

Plants have been provided by Urban Planters for an experimental area and are being compared against non-planted control areas of similar scale, design and function.

The council have a requirement to increase the indoor relative humidity (% RH) within their offices, which has so far proved to be difficulty by mechanical means.

Previous indoor air quality sampling has given results outside the human comfort range of 40-60% RH as recommended by the Chartered Institute of Building Services Engineers (CIBSE).

Through the introduction and maintenance of plants into the trial area, the research is helping inform whether there is a measurable % RH increase that can be maintained conducive to the human comfort zone. Previous research has suggested that this is indeed possible and practical – this project is helping to validate this proposition.

Horizon 2020 Funding Success
Dr. Champika Liyanage (School of Engineering) and Professor Akintola Akintoye (Director of Research and Innovation, College of Science and Technology) have been triumphant in achieving funding for a Horizon 2020 project.

Web links for both HLF projects …

http://www.bacupthi.org.uk/
http://clitheroecivicsociety.webs.com/thepinnacleproject.htm
This looks at ‘Business models for enhancing funding and enabling financing for infrastructure in transport – BENEFIT’ and is a follow-up project from their four-year EU COST project that researched ‘Public-Private Partnerships in Transport – Trends and Theory’.

**This major project brings together 14 partners from across Europe; and is worth €1.6 Million. Project duration is 21 months.**

BENEFIT is led by University of Aegean, Greece. CSD is the task leader for investigating limitations in funding and financial regimes for public-private partnership transport infrastructure. This aspect is examining solutions to mitigate the limitations and identifying best practice, for funding and financing infrastructure in transport.

The first consortium meeting of the BENEFIT project was held in University of Aegean, Chios during February 2015. Members of the consultation group of the project also became involved during this meeting via a live streaming session: [https://plus.google.com/u/0/events/cegudar2tof37e8rid3e8tk5o9g](https://plus.google.com/u/0/events/cegudar2tof37e8rid3e8tk5o9g).

For more information ...  

---

**CSD Members Secure Major International Research Grant Funding**

Professor Karim Hadjri and Professor Akintola Akintoye will lead an international project to find new ways of helping older people remain in their own homes using smart technology to aid independence, care delivery, and better connect them to their communities.

**The three-year £1. million ESRC funded venture will work with people who are over the traditional retirement age of 65, with a particular focus on the over 80s. It seeks to find new and innovative ways of adapting a person’s home so that they can live independently for longer and avoid going into residential care – as well as making it easier for them to access public services such as health and social services.**

The project will explore the relationships between a person’s living environment and the design of care delivery. This will involve working with older volunteers to, for example, explore smart technology such as sophisticated alarm systems that can monitor the opening and closing of doors, fall sensors, specialist lighting and talking devices to aid visual impairment, gadgets that monitor health information and even direct video links to a resident’s GP.

This aspect of the study will be supported by an assessment of the value and potential of relevant social support and relationship networks to older people, such as family and friends and informal social groups that bring people together. For this, the study will look at a number of local settings within each country and taking account of cultural values, consider the part that these networks can play in the design of care and accommodation delivery.

**ODESSA (Optimising care delivery models to support ageing-in-place: towards autonomy, affordability and financial sustainability) is a collaborative venture between UCLan, Tsinghua University in Beijing, China, Université Paris Dauphine and Université Centre National de la Recherche Scientifique /Paris I-Panthéon Sorbonne from Paris, France.**

A key focus is how China, which traditionally cares for its older population through extended family support, and the existing European care system can learn from each other while also acknowledging that both systems need to prepare for the challenges of an ageing population. By 2035 it is projected that those aged 65 and over in China, the UK and France will account for 20%, 23% and 24% of the total populations respectively, and the number of people aged 85 and over in the UK will be 1.6 times larger than in 2010, accounting for 3.6% of the total UK population.
Selection of CSD Publications (2014-Date)


The Centre for Sustainable Development (CSD)

School of Engineering
University of Central Lancashire
Preston, PR1 2HE
UK

Follow CSD on Twitter: @CSDUCLAN

CSD NEWSLETTER EDITORIAL OFFICE

The CSD Newsletter is a forum for championing the activities of CSD and its members. It is also a conduit for communication of broader School research activities in the fields of construction and civil engineering and all of its allied disciplines. We welcome contributions for possible inclusion in future issues including: news items; events; announcements; comments; bidding success etc. (or anything else of potential interest to our readership).

Please address all expressions of interest, draft articles or any other queries in the first instance to the Editorial Office:

GDHolt@uclan.ac.uk or JSGoulding@uclan.ac.uk

Phone: +44 (o) 1772 89 4213 Fax: +44 (o) 1772 89 2916

http://www.uclan.ac.uk/research/explore/groups/centre_sustainable_development.php

Copyright: CSD, 2015, ALL RIGHTS RESERVED