

ARCOM

ASSOCIATION OF RESEARCHERS IN **CONSTRUCTION MANAGEMENT**

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Welcome from the Chair

33rd ARCOM Annual Conference

General Theme: Brutally Innovative Construction?



"ARCOM continues to attract an international audience, and we have delegates joining us this year from inter alia Europe, the United States of America, South Africa, Sri Lanka, India, China, Malaysia, Australia and New Zealand."

It has been twenty years since the ARCOM Conference took place in Cambridge, at King's College in 1997. We return in September 2017 with the theme, Brutally Innovative Construction, inspired in part by the venue Fitzwilliam College. Fitzwilliam began in 1869 as a non-collegiate institution, providing Cambridge education to undergraduates unable to afford membership of a college. Fitzwilliam College received its Royal Charter in 1966, 3 years after moving into its new premises on its present Huntingdon Road site. The College has been decorated with several architectural awards, including the two buildings used for the ARCOM 2017 Conference – Fitzwilliam Hall and Central Building (designed by British Brutalist Architect, Sir Denys Lasdun, and built 1960-1963) and the auditorium (built in 2004).

This year's conference attracted 345 submissions in January 2017. Following three rounds of double-blind peer-review, a total of 113 papers were eventually accepted for presentation at the conference. In a field that is now saturated with so many international conferences, this success rate demonstrates the rigour applied to the ARCOM peer-review process. Of course, this cannot be achieved without the support of 110 reviewers drawn from across the world, including 21 ARCOM Committee members and 89 members of the extended Scientific Committee. Thank you to all involved in the peer-review process.

This is the second year in which the ARCOM Conference is themed. There were also 10 thematic tracks proposed for the conference, covering a range of issues from service innovation to novel research methods for studying innovation in construction. There were also a number of tracks relating to the social aspects of innovation, including corporate social responsibility and social procurement in construction. These thematic tracks now

form an important part of shaping the papers received and accepted and, we hope, of steering the conversations at the conference. As expected in a conference on innovation, we received a number of papers on the development and use of technology. Digitisation of the construction industry continues to be a significant theme, with several authors examining how information modelling is transforming the people, professions and practices in construction. Another significant area in this year's conference is the focus on environmental sustainability, with authors addressing questions around low energy and low carbon construction.

It is also encouraging to see authors becoming more explicit about and experimental with the theories informing their studies of innovation in construction. Social network theory, actor-network-theory, institutional logics and institutional work, and even critical discourse analysis inspired by a smattering of Marxist thinking are some of the lenses used by authors to study the innovations that are radically transforming and disrupting the construction industry. Construction management researchers can be seen to mature from a relatively a theoretical field to one that is actively trying to put theory to work. It is therefore appropriate that the first keynote speaker is by Professor Chris Ivory from the Lord Ashcroft International Business School in Anglia Ruskin University, Cambridge; Chris will be provoking us to think about the role of theory in innovation in construction.

There is also a mixture of different epistemological positions found in the papers accepted for this year's conference. A number of authors are also researcher-practitioners, and it is good to see such engaged forms of scholarship as action research featured in some of the papers. Innovation is also a collaborative endeavour, often involving actors across the value chain from supply networks to clients and end-users. It was not so long

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Continued – Welcome...

ago that collaboration was seen in the construction industry as an innovation itself, and while there is still much room for improvement, it is also interesting to see so many papers refer to collaboration as a source of innovation. To this end, we have scheduled four early-career researchers (incidentally, all women) to be featured in the Langford Spotlight. This spotlight scheduled for the morning of Wednesday 6 September seeks to showcase research on collaboration through different theoretical lenses.

In such an applied field as construction management, collaboration between academic researchers and industry practitioners seems appropriate. We are delighted therefore to have a second keynote led by the programme team, including Nicolas Caille, David Coulet and Simon Evans, who are delivering 'brutal' innovation within the New Safe Confinement Project at Chernobyl. This is a 36,000-tonne structure that is due to complete by the end of 2017 to cover the accident site in Chernobyl. For more information about this project, please see <http://www.ebrd.com/what-we-do/sectors/nuclear-safety/chernobyl-new-safe-confinement.html>. This second keynote will also be followed by an Industry Panel Discussion on Disruptive Innovation in construction.

ARCOM continues to attract an international audience, and we have delegates joining us this year from inter alia Europe (with colleagues from the Netherlands and across Scandinavia), the United States of America, South Africa, Sri Lanka, India, China, Malaysia, Australia and New Zealand. It is good to welcome colleagues from both developed and emerging economies alike. In times of rising nationalism, there is a need to ensure that knowledge benefits many and not just a few elites. For the first time, we will organise a Knowledge Café to discuss how construction management and built environment researchers can contribute to the production of knowledge around the pursuit of the Sustainable Development Goals. This

Knowledge Café will be convened on Tuesday afternoon, 5 September, by Alex Opoku from UCL and Christian Thuesen from the Technical University in Denmark.

Following the successful 'Meet the Editors' session in ARCOM 2016, we will run this session again at the ARCOM 2017 Conference. Editors from the ASCE Journal of Management in Engineering, Building Research and Information, Construction Management and Economics, and the International Journal of Building Pathology and Adaptation will discuss what constitutes novelty in the field of construction management research. In a world dominated by performance metrics, it is hoped that the editors will discuss how various publication metrics are helping (or hindering) progress made in finding the novel in the field.

Whether loved or loathed, the use of publication metrics is likely to intensify. Nevertheless, this should not distract researchers from doing high-quality studies. ARCOM has always been intended as a forum for supporting and developing researchers. Thus, we introduced two types of papers for the ARCOM 2017 Conference: the working paper and the published paper. Although working papers and published papers go through the same rigorous peer-review process, working papers are not indexed in the ARCOM and Scopus databases. This allows authors of working papers to extend their paper into a journal publication without diluting their publication metrics.

We look forward to welcoming our delegates to what is going to be an exciting line up of paper presentations, keynotes and sub-plenary sessions at the ARCOM 2017 Conference in Cambridge. Enjoy!

Paul W Chan
Conference Chair, ARCOM 2017

Editor letter....

Welcome to this issue of ARCOM Newsletter!

This issue commences with a welcome piece from the Conference Chair, Dr Paul Chan, giving an introduction to the conference. It then features a summary of three doctoral workshops and seminar, namely demystifying EPSRC & ESRC ECRs grant, theorising expertise in construction practice, and building asset management. They are followed by PhD abstracts, provided by Dr Philippa Boyd and Dr Whitney Bevan, and a 'postcard' from Dr Fred Sherratt. ARCOM membership update, track summaries and call for participation in the ARCOM 2018 conclude the issue. Thank you for the contributors to this issue.

I would welcome any comments, and wish to invite your contributions to the newsletter. Please get in touch, by sending e-mail to R.Soetanto@lboro.ac.uk.

Robby Soetanto
Loughborough University

Demystifying EPSRC & ESRC ECRs Grant

CHOBE/ARCOM Built Environment Early Career Researchers Workshop

University of the West of England, 20th June 2017

Research funding streams for built environment (BE) research, particularly in UK, remain scant and very competitive. BE researchers, including early career researchers (ECRs), compete fiercely with researchers from other disciplines for limited funding from the UK research councils including the Engineering and Physical Sciences and the Economic and Social Research Councils (EPSRC and ESRC). For instance, the outlook of research funding from EPSRC for construction management research (as of April 2017) obtained from EPSRC's Grant on the Web (<http://gow.epsrc.ac.uk/NGBOListTopics.aspx>) is disquieting as there were only 12 construction management related live EPSRC funded projects amongst which was only one early career research grant project under the First Grant Scheme. Whilst EPSRC and ESRC ECRs grants are competitive, the EPSRC New Investigator Award (formerly the First Grant Scheme) and the ESRC New Investigator Grant (formerly Future Research Leaders Award) provide a good opportunity for BE ECRs to maintain a good research trajectory.

In view of the above, the above workshop was organised with the support of the Council of Heads of Built Environment (CHOBE) and ARCOM. The workshop, hosted by the Centre for Architecture and Built Environment Research at the University of the West of England (UWE) had the following aims:

- to raise awareness of the EPSRC First Grant (which was replaced by the New Investigator Award in July 2017) and ESRC New Investigator Grant (formerly Future Research Leaders Award) amongst BE ECRs; and
- most importantly for the ECRs, to gain rich insights about the grant application and review processes in order for them to be able to prepare high quality research proposals for these schemes.

To achieve the above aims, the workshop brought together BE portfolio managers from EPSRC and ESRC, recipients of EPSRC First Grant and ESRC Future Research Leaders Grant, and BE academics from EPSRC and ESRC Peer Review College to share experiences and lessons that reflect the entire grant application process. At the workshop participants were also given a pack containing: key requirements of the EPSRC First Grant and ESRC New Investigator Grant; and excerpts from a successful EPSRC First Grant proposal. This was to enable participants relate better to the contents of the various sessions at the workshop.

It is worth noting that from 25th July 2017, the EPSRC First Grant was replaced by the New Investigator Award. Whilst the insights from the workshop are



A section of the attendees

relevant to the new scheme, it is important for applicants to familiarise themselves with the specific requirements of the new scheme.

The workshop attracted 87 registrants (including speakers and facilitators) and 51 attendees. The workshop commenced with an Introduction Session in which Professor Paul Olomolaiye (Pro-Vice-Chancellor & Executive Dean, UWE) gave a welcome address. Professor Olomolaiye welcomed attendees to Bristol and to UWE. He recounted the difficulty in attracting funding for construction management research, but also encouraged the ECRs to use the workshop to build their networks and to learn the ins and outs of EPSRC and ESRC grant application. The welcome address was followed by brief introductions to ARCOM & CHOBE delivered by Dr Paul Chan (ARCOM Chair, University of Manchester), and to The Adaptation and Resilience in the Context of Change (ARCC) Network delivered by Roger Street (ARCC Project Manager). Amongst other things Paul and Roger highlighted ECR events organised by ARCOM and ARCC Network. Paul also highlighted the cordial relationship between ARCOM and CHOBE.

Following the above Introduction Session, the four core sessions of the workshop commenced. These are:

Session A: About EPSRC & ESRC ECRs Grant Schemes

In this session (Chaired by Dr Colin Booth, UWE) Dr Jakob Sprickerhof (EPSRC Portfolio Manager) & Ms. Charlotte Dormer (ESRC Portfolio Manager) delivered presentations about their respective research council's remit, research areas, priorities, major recent developments in the research funding landscape (e.g. consolidation of the UK research councils into one – UK Research and Innovation) and various ECR awards scheme. They also expounded the requirements of the EPSRC First Grant and ESRC New Investigator Grant.

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Continued – Demystifying EPSRC & ESRC...

The session ended with a Q&A slot.

Session B - Making the Grant Application

In this session (chaired by Dr Chika Udeaja, ARCOM Workshop Convenor, University of Salford), Dr Ashish Shukla (Coventry University) and Dr Patrick Manu (UWE) (EPSRC First Grant recipients), and Dr Ian Ewart (University of Reading) and Dr Vedran Zerjav (University College London) (ESRC Future Research Leaders Grant recipients) took turns to briefly talk about their funded project and then focussed on sharing their experiences of the grant application and offering tips for preparing various parts of the grant application including the case for support, pathways to impact, justification of resources, work plan, and project partners letters of support. The session ended with a Q&A slot. Amongst the take-home messages of this session are: the importance of internal university peer review; building a strong research profile prior to applying; testing ideas with industry professionals; and involving relevant industry partners.

Session C - Evaluation of the Grant Application

The session was chaired by Dr Jessica Lamond (UWE) who invited four established BE academics from the EPSRC and ESRC Peer Review Colleges to speak. The four academics are Professor Lamine Mahdjoubi (UWE), Professor Andrew Dainty (Loughborough University), Professor Runming Yao (University of Reading), and Dr Libby Schweber (University of Reading). Drawing from their rich experiences as reviewers of EPSRC and ESRC proposals, they offered insights into the peer review process including the proposal review and the prioritisation panel meeting. Similar to the two previous sessions, this session concluded with a Q&A slot. A central message from the session is the significance of quality as a key criterion for successful proposals. Additionally the speakers underscored the importance of providing robust and objective responses (devoid of emotions) to reviewer comments.

Session D - Plan My Proposal

Dr Paul Chan chaired this last session. In this session,



A one-to-one session with EPSRC & ESRC Portfolio Managers

the ECRs individually reflected on the contents of the three previous sessions and then started to map out what they would do next regarding applying for the EPSRC and ESRC ECR grants. Following the individual reflection, the ECRs discussed their intended steps in small groups. A member from each group subsequently feedback to the audience the key things they would do after the workshop.

Parallel One-to-One Meetings with EPSRC & ESRC Portfolio Managers

Alongside the four main sessions above, there were 12 one-to-one sessions between ECRs and the EPSRC and ESRC Portfolio Managers. These sessions were allocated on a first come, first served basis to 12 ECRs who registered interest in having a one-to-one discussion with the portfolio managers about their research ideas.

Concluding Remarks

Early career researchers (ECRs) constitute a vital part of the built environment (BE) academic community and their development in the art of bidding is important for their career growth and the health of BE disciplines. Problems in the BE are not purely technical; they are often social too. Therefore, it was helpful that both funding agencies – the EPSRC and ESRC – engaged so openly with the workshop. It was the intention of the organisers that this engagement would stimulate more interest to increase the number of successful grant applications in BE.

A few key points can be learnt from this workshop. Research quality is key; develop and sell your transformative proposal and pay attention to coherence and clarity of your research questions and methods. Although research quality is key, there are other important aspects too. The track record and potential of the individual proposer is critical, so make a convincing case that you have the right expertise and experience for the research. Delivering impacts of research is also increasingly important, and this goes beyond dissemination in academic journals and conferences. It is vital that you align the proposal to the funders' priorities, nationally and even internationally.

The workshop was largely well-attended and the feedback received suggests that the participants found it useful and would be interested in attending other ECRs events. We therefore look forward to other BE ECRs capacity building events, and more importantly greater successes amongst BE ECRs in their EPSRC and ESRC grant applications. To facilitate wide dissemination of the workshop, videos of the presentation will be made available via ARCOM's website.

*Patrick Manu, University of the West of England
Chika Udeaja, ARCOM/University of Salford
Paul Chan, ARCOM/University of Manchester*

Theorising Expertise in Construction Practice Seminar

The ARCOM research seminar Theorising Expertise in Construction Practice took place at St Mary's University Twickenham on 24 March 2017. Participants from the Netherlands, Republic of Ireland and United Kingdom from anthropology, construction management, geography, philosophy and sociology created a rich international and disciplinary environment. Presentations were given by Dr Machiel Keestra, Professor Lloyd Scott, Professor Mark Addis and Dr Karen Mogendoff. Although the seminar was organised formally with a respondent commenting on a previously seen paper, the discussions that followed were creative and evolutionary explorations of connections between human development, philosophy and practice.

The first presentation Challenges for Expertise in an Interdisciplinary Team Context: Metacognizing and its role in Distributed Cognition was from Machiel Keestra (Institute of Interdisciplinary Studies at the University of Amsterdam). He considered how people think collectively particularly when they have different disciplinary backgrounds and expertise with the idea that experts 'sculpt the space of actions' thus bringing to situations options which are pre-aligned to productive courses of action. Team metacognition requires individual awareness of the cognition of other team members and some appropriate regulation of cognition. This contributes to the explanation of how it is possible for there to be distributed cognition across individuals and timeframes. A practical implication of this is that team integration tools should not solely focus on enabling communication but also facilitate ways of thinking about theories, models or even products. However, invoking team metacognition does not resolve the problems of maintaining long term coherent goals and dealing with unpredictable change in individual mental models. The respondent suggested that Machiel's approach was moving away from philosophical models of action which emphasize

cause and effect and towards a more Aristotelian teleological perspective on motivations for action which allowed an important role for intersubjective agreement. The discussion then moved on questions about cognitive factors underpin effective project work and it considered the difficulties of habitual knowledge, what particularly interpersonal dynamics are at work when an individual's specialist knowledge is recognised, whether the particular types of metacognition which teams require to effectively operate in particular environments can be taught, and what happens to metacognition where knowledge is erroneous or contested.

The next presentation Investigating Pragmatism as an Approach to the Theorizing of Construction Practice for the Future was from ARCOM committee member Lloyd Scott (Dublin Institute of Technology and Oklahoma University). He engagingly explored the role of experience in developing expertise through personal biographical reflection and then theoretical analysis. A novice carpenter's gradual understanding of the medium of wood is symbolic of both expertise and social development. In thinking about social development the notion of the 'well intentioned educator' was introduced and used to challenge where intentions come from and whether they might be unduly constricting. On this view the conception of expertise in practice is about finding effective solutions in particular situations and thus it demands a pragmatic approach. Pragmatism is fundamentally interdisciplinary in orientation and invoking it provides view of construction as a history of working with problems posed by building. One issue this raises is how action should be theoretically classified especially how useful 'isms' of various kinds are for working with problems and how best we can navigate productively through them. To conclude Lloyd explored how this pragmatist perspective might be combined with scenario forecasting to produce a practical way of handling potential future developments which offsets the emphasis on current situations that is prevalent in much pragmatist thinking. The respondent emphasised that one way of taking pragmatism could be as an excuse not to theorise but equally theorisation does not always reveal the mundane realities of practice an illuminating way. The discussion then moved the fact that the lack of public understanding of the construction industry and the perception that it was in crisis was effectively a criticism of the pragmatic nature of construction, and that one way of responding to this was to stress the



Dr Machiel Keestra presenting

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intellectual acceptability of a pragmatist perspective. The third presentation Tacit, Explicit and Situated Knowledge in Construction Management was from Mark Addis (St Mary's University and the London School of Economics and Political Science). He considered the difference between tacit and explicit knowledge employing the work of Ryle and used it to examine the limitations of the dominance of objectivist knowledge management within construction. It is difficult to extract transferable codified knowledge and this is not just a problem of methodology but one of the very nature of knowledge itself. Knowledge that and knowledge how are different as Ryle's regress argument demonstrates but objectivist knowledge management elides the difference between the two. For objectivist knowledge management what is not explicit knowledge is tacit knowledge and the latter is given a unitary character. However, tacit knowledge is a complex family resemblance concept which requires nuanced characterisation and much of the construction knowledge management literature would benefit from a greater appreciation of this. Know how was introduced as situated knowledge and part of sensemaking in situations. The respondent introduced the idea that construction professionals are aware of the limitations of objectivist knowledge management so what is being described is a failure of theory rather than practice. Tacit knowledge is framed by institutional artefacts so it may be preferable to use critical practice instead of sensemaking where there are individual roles within a negotiated space. In the discussion the possibility of being too comfortable and insufficiently reflective about the construction process was considered and an emphasis on models as representational tools for shaping activity was helpful in maintaining an appropriately critical perspective on their use.

The final presentation Different Ways of Understanding and Deploying Users' Experiential Expertise was from Karen Mogendoff (Delft University). She highlighted how experiential expertise is cognitive, socio-emotional, sociocultural, embodied in nature, and can be used to manage competing interests in conflicts in a way which can modify power imbalances between groups. Methods of capturing this expertise were explored with this investigation indicating that experiential expertise can only arise from contributory experience with verbalisation, role play or participative engagement alone being insufficient to achieve this. For example, disabled people may experience the world differently from the general population but there are well known difficulties in effectively communicating this experience in accessibility projects due to the lack of contributory experience. The respondent welcomed the challenge of engaging with experiential expertise



Dr Karen Mogendoff presenting

and reflected on the problem the absoluteness and relativity of experiential knowledge. The difficulty with pure experiential knowledge is that in Popperian terms it cannot be falsified which has the consequence that it falls into the category of pseudo-science and this in turn means that it is open to charges of potential inherent bias. Despite this problem with experiential knowledge understanding of how we develop and use it is vital since it is the core of all theories of practice. The discussion then progressed to considering how experiential expertise might form a bridge between theory and practice based on an appreciation of the norm based nature of individual experience and how such norms relate to individual experiential differences.

The final group discussion built on the preceding seminar sessions and the Construction Management and Economics special issue "Theorising Expertise in Construction" (2016, Vol. 34, No.7-8) by considered what form the structure of an edited book on theorising expertise might take. The agreed theme for the book was interactions between the nature of knowledge and practice of expertise at both individual and collective levels within construction management and some other built environment disciplines so that the ideas were broad enough to attract authors from a variety of disciplinary backgrounds and yet sufficiently specific to explore the problematic nature of construction management. Possible sections in the book might cover different types of knowledge and expertise, the development of group and organisational processes, and how disciplinary identity is created and sustained. It is hoped that a call for chapters and a timescale for the project will be published soon.

If you are interested in hearing more about the seminar, learning about our future plans and activity around theorising expertise please get in touch!

*Mark Addis, St Mary's University Twickenham
David Boyd, Birmingham City University
Ani Raiden, Nottingham Trent University*

ARCOM/ BEAM Centre Research Workshop in Building Asset Management

On Friday 20th January 2017, the Built Environment and Asset Management (BEAM) Centre at Glasgow Caledonian University (GCU) jointly hosted a full day workshop with ARCOM in the field of Building Asset Management. Aimed at doctoral students and early career researchers the workshop sought to provide an environment where they can present a paper, exchange ideas and engage in critical discussions surrounding contemporary research within the context of Building Asset Management.

The workshop was convened by Dr Craig Thomson (GCU) with 26 participants attending from as far field as Sweden, with attendees from Universities of Loughborough, Bolton, Salford, Manchester, Abertay Dundee, Strathclyde, West of Scotland, GCU and a number of experienced practitioners.

Following a welcome from Professor Rohinton Emmanuel (Director of the BEAM Research Centre) and Dr Paul Chan, 7 papers were presented by researchers reflecting research at different stages of maturity and from presenters at different career stages. Each of the papers were peer reviewed and authors invited to modify them based on the feedback with the final papers being presented in a Working Papers Proceedings which will be available through the ARCOM Website.

We are delighted to welcome some guests to the workshop shared their experience as guest speakers, discussants and members of the audience. Dr Paul Chan led a discussion at the end of the morning session drawing out key research questions emerging. Professor Milan Radosavljevic (University of West of Scotland) provided a key note lecture sharing his innovative thinking in the areas of BIM and digital



Discussion involving some presenters chaired by Dr Paul Chan



Discussion with Prof Radosavljevic, Dr Talbot, Dr Reid

construction which including an overview of his recent Innovate UK funded project Bali. This provided the platform for him to be joined by two other guests Dr Alex Reid (Apsis Solutions) and Dr Roger Talbot (formerly University of Edinburgh and now practicing consultant) to explore the key opportunities for academic research to better inform and respond to the challenges faced in Asset Management. Both Drs Reid and Talbot are members of the BEAM Centre's steering committee.

A short summary is provided for the 7 papers presented at the workshop.

Dr Zhen Chen (University of Strathclyde) presented his work in establishing the principles of facilities management around which he is seeking to establish a framework around which a Facilities Management Body of Knowledge can be developed.

Ingrid Svensson (Chalmers University, Sweden) presented a paper which explored sustainable property management through the lens of multiple changes, and this was considered from the perspective of a public construction client in Sweden.

Mary Lundberg (Lulea University of Technology, Sweden) presented her research through a systematic literature review of the methods which are used for knowledge management and organisational learning in the practice of construction projects. Both these papers provided a strong international dimension to the workshop but through discussions with the audience it was clear that a common recognition of the same issues could be found equally in the UK.

Saikat Maiti (University of Strathclyde) presented the very early stages of his PhD research where he was

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Continued – ARCOM/BEAM Centre...

seeking to explore evidence-based safety management in the context of building refurbishment. His work sparked an engaging discussion amongst the participants and he was able to take away good advice from researchers engaged in safety but also others involved in refurbishment research.

Eloise Grove (Amey and Loughborough University) was engaged in the final stages of her EngD and presented her work focused on building relationships in the face of adversity. She drew on her experiences whilst embedded within Amey and considered this in the context of collaboration within complex term-maintenance contracts. The discussion which followed explored the implications of her position within the organisation and the influence this has on her research, raising some really interesting methodological questions.

The final two presentations were from Laura Lodriguez-Labajos and Sharma Samriti who are both PhD research students with the BEAM Centre, both working in collaboration with Health Facilities Scotland (HFS). Laura is working as a Research

Assistant based at HFS and presented her current research which looks at the perspectives of senior stakeholders on the role of strategy performance measurement for health care estates. Sharma presented the final paper, which explored the challenge which exists in effectively utilising clinical and estates data to help inform strategic decision making in the healthcare arena. The final three papers helped the audience reflect on the challenges facing researchers when responding to clear practice based problems, and the need to help provide solutions whilst retaining a theoretical lens.

Overall, the workshop provided an excellent platform for the presenters to share their latest work and in keeping with the spirit of ARCOM, they were supported by an audience who were actively engaged in discussion, a bit of fun and importantly created a positive environment to support the development of the research.

*Craig Thomson
Glasgow Caledonian University*

Call for Papers and Participation for the ARCOM Workshop Series on 'The Meaning of Numbers' Part 1

The University of Manchester, 11-12 December 2017

This is a two-part workshop series on the 'Meaning of Numbers', which originated from discussions on the quality of quantitative studies in the field of construction management research. There was acknowledgement of the need to improve statistical literacy and a need to strengthen the design and execution of quantitative research in the field. Second, there was also discussion around the creation and use of numbers, raising questions around how numbers are produced and consumed and with what intended and unintended consequences.

In the first part, a two-day workshop will take place on Monday 11 December 2017 and Tuesday 12 December 2017. This workshop is targeted mainly at doctoral students in the second and third year of their studies. The purpose of the workshop is to provide a space to share experiences of the difficulties of designing quantitative research, and to improve the technical competency of researchers in reading/reviewing, interpreting and presenting quantitative analysis.

We are now inviting short paper contributions from prospective participants who wish to participate in this workshop. Requirements for the short papers are as follows:

- Short papers must be around 1,500 to 2,000 words in

length, excluding the list of references.

- The short paper must clearly contain (i) the research question and the rationale for this question; (ii) description and justification of the quantitative data collection approach, and (iii) explanation of the quantitative data analysis and a main (indicative) finding.
- Short papers must be sent to paul.chan@manchester.ac.uk before 2359hrs GMT on Monday 30 October 2017. Please state 'Meaning of Numbers' in the email subject heading when sending your short paper.

The short papers will be reviewed and participants selected to present their work as the basis for the two-day workshop will be notified by Friday 17 November 2017. Travel and accommodation will be paid for these selected participants.

The two-day workshop will have two main foci. On the first day, the focus will be on crafting research questions, and methods of quantitative data collection and analysis. Day 2 will focus on reading, interpreting and writing up quantitative research. There will be ample opportunity for individual reflection, facilitated group discussions and sharing of experiences on doing and interpreting quantitative research in the field.

PhD Abstract: "From bicycles to buildings: a SCOT analysis of project level adoption of BIPV" by Philippa Boyd, University of Reading



Building is consistently identified as one of the key sectors for sustainable development in general and for energy savings in particular (IPCC, 2007). The use of energy in buildings has been shown to account for around 40% of UK energy usage and improvements in building energy use and efficiency

have become a significant focus of attention. This has resulted in the incorporation of innovative energy saving and renewable technologies into buildings. Worryingly, technological innovations for buildings consistently fail to deliver on their promises of improved efficiency and energy savings. There is a widespread assumption that the adoption of an innovative technology is mainly to do with the conditions of the market and technical effectiveness of the innovation. Given the complex nature of construction projects this assumption about adoption appears simplistic - many innovative technologies have to be accommodated within the fabric of the building and many project actors are involved in its incorporation. This research explores the process of building level adoption and asks what happens when an innovative integrated technology (BIPV) is incorporated into a building and in what ways this might explain the failure of the technology to deliver its potential. The research thus contributes to an understanding of the implications of the adoption of BIPV and other sustainable technologies in buildings. The Social Construction of

Technology approach (SCOT) is used to study three UK commercial construction projects which include BIPV. Issues examined include: the changing interests of the actors; the network of problems and possible solutions; and the knock-on effects of the chosen solution on the rest of the project. The SCOT analysis of actors' interests and their changing relationship with the artefacts provides a way to explore the co-development of the technology and the building, and the adoption process. Interests of actors include: generation maximisation, aesthetic concerns, design optimisation and green guardianship. The SCOT approach is used to focus on design decisions taken over the course of the building project and the influence of different actor interests on these. The research draws out different types of co-development and technology related decision making which occurred during the projects and follows the effect these had on adoption. Rather than using formal roles (architect, designer, project manager etc.) and project stages (initial design, tender, detail design etc.) to explain adoption, the research found that the interests of the groups shifted and changed: sometimes they followed the standard project stages, but sometimes followed different logics. Decision-making was found to be affected by the alignment of technological frames being mobilised by actors and could be dominated by a particular frame at different times. It was not always the seemingly obvious groups which dominated decision-making and shaped the technology. The effect of social artefacts in decision-making was explored. This research develops an understanding of the dynamic process of adoption and concludes with practical implications for standard construction project procurement processes in the adoption of complex innovation.

A Postcard from Colorado

Dear ARCOM,

I was fortunate enough to get the opportunity to spend several months earlier this year in the USA through my institution's (Anglia Ruskin University) sabbatical scheme and at the kind invitation of Prof Matt Hallowell, based at the University of Colorado in Boulder. I was visiting Colorado specifically to explore the impacts of the legalisation of marijuana for recreational use on construction site safety. By travelling to the USA, and specifically Colorado, I could research this phenomenon without the ethical issues that would arise in the UK, where marijuana remains illegal, but the findings are relevant on a global stage as the trend towards legalisation is growing worldwide with countries as far apart as Canada and South Africa considering taking this step



At Boulder site

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PhD Abstract: "An investigation of the required skills for the delivery of low and zero carbon buildings within a region" by Whitney Bevan , University of Reading



The UK is committed to a raft of requirements to create a low carbon economy. As buildings consume approximately 40% of UK energy demand, any improvement on the energy performance of buildings can contribute to the delivery of a low carbon economy. The challenge for the construction sector and its clients is how to meet the policy requirements, coupled with the need for 'new' skills and 'green' skills for the delivery of low and zero carbon (LZC) buildings. The aim of this research was to identify, and better understand, the skills required for the delivery of LZC buildings within a region. The investigation adopted a regional innovation systems (RIS) approach as theoretical framing and a socio-technical network analysis (STNA) as methodology. A single case study approach of a local authority was chosen, where data collection consisted of a review of relevant documentation, observations and semi-structured interviews with five school retrofit building projects within a region. The research results revealed the complexity of the networks surrounding the retrofit projects. Key findings identified communication skills, energy management skills and project management skills were required by the local authority; communication skills and technical skills required by the energy contractors; and communication skills and project management skills required by the end-users of the school building. There was little evidence for the required skills being 'green' skills, however, due to the presence of training for the construction sector and its clients, the need for 'new' skills for the delivery of LZC buildings was supported. Implications may be associated with the initial identification of the skills required for the delivery of LZC buildings, and following, the ability and resource availability for the construction sector and its clients to achieve skill development.

Continued – A Postcard...

due to the benefits it can bring. In fact, whilst I was on site gathering my primary data with Katie Welfare from the University (see photos!), I found that not only is the construction industry itself booming in Colorado due to the increase in population looking to take advantage of the change in law and who now require new homes, schools, infrastructure and so on, but the increased revenue from taxation has also been able to increase funding for public services. In terms of construction site safety, it is of course much more complicated than this, and I'll be presenting my key findings in the working paper 'Getting High on the Scaffolding? Construction Safety, Legalised Marijuana and Worker Impairment' at the ARCOM 2017 conference in Cambridge. I hope to see you there!

*Fred Sherratt
ARCOM Secretary*



At Denver site

ARCOM Membership 2017



Membership Secretary Dr Shu-Ling Lu provides an update:

ARCOM has 530 individual members and 19 institutional members! The number of individual members and institutional members remains very healthy. Figure 1 shows that the number of individual members increased significantly from 88 in 2010 to 530 this year. Similarly, Figure 2 shows that the number of institutional members has increased from 14 in 2011 to 19 this year.

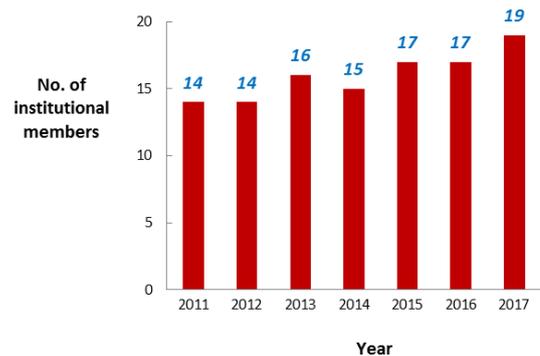
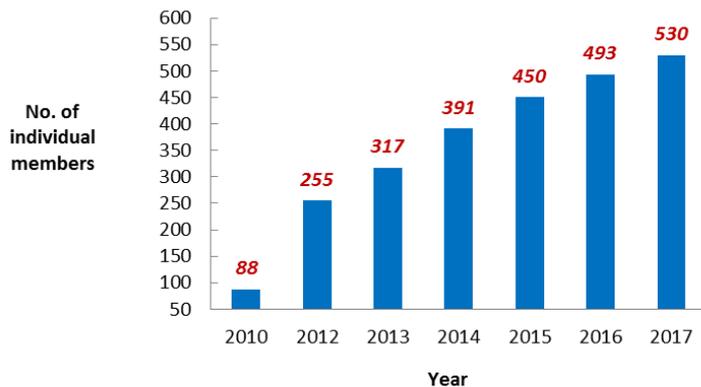


Figure 1 Number of individual members between 2010 and 2017

Figure 2 Number of institutional members between 2011 and 2017

The geographic breakdown of the individual membership from 2012 to 2017 is shown in Figure 3.

- In 2017, 90% of the members originate from the Europe (36%), Sub-Saharan Africa (30%) and Asia Pacific (24%).
- There is a 6% decrease in Europe in 2017 compared to 2016 level (36% in 2017 compared to 42% in 2016). In contrast, there is a 6% increase in Sub-Saharan Africa region in 2017 compared to 2016 level (30% in 2017 compared to 24% in 2016).
- There is a slight increase of Asia Pacific region in 2017 compared to 2016 (24% in 2017 compared to 23% in 2016).
- In Europe the majority of the members come from the UK (74%), followed by Ireland (9%) in 2017.
 - UK: 75% in 2016, 74% in 2015, 73% in 2014, 71% in 2013 and 76% in 2012.
 - Ireland: 8% in 2016, 10% from 2012 to 2015.
- In Sub-Saharan Africa region, the majority of the members originate from Nigeria (64%), followed by Ghana (20%) in 2017.
 - Nigeria: 66% in 2016, 65% in 2015, 65% in 2014, 63% in 2013 and 62% in 2012.
 - Ghana: 20% in 2016, 15% in 2015, 23% in 2013 and 16% in 2012.
- In the Asia Pacific region the membership is more equally distributed between five countries: India (24%), Malaysia (20%), China (13%), Sir Lanka (11%) and Australia (9%) in 2017.
 - India: 19% in 2016, 23% in 2015, 28% in 2014, 26% in 2013 and 23% in 2012.
 - Malaysia: 17% in 2016, 19% from 2013 to 2015, and 14% in 2012.
 - China: 16% in 2016, 11% in 2015, 5% in 2014; 9% in 2013 and 7% in 2012.
 - Sir Lanka: 10% in 2016, 13% in 2015, 14% in 2014, 13% in 2013 and 19% in 2012.
 - Australia: 15% in 2016, 8% in 2015, 9% in 2014, 9% in 2013 and 12% in 2012.

ARCOM currently has 19 institutional members:

- 16 institutions from the UK - Birmingham City University, Glasgow Caledonian University, Leeds Beckett University, Liverpool John Moores University, Loughborough University, Northumbria University, University of Brighton, University College London, University of Manchester, University of Reading, University of Salford, University of Wolverhampton, University of the West of England, University of Central Lancashire, London South Bank University and the University of Huddersfield.
- 2 institutions from Sweden - Chalmers University of Technology and Luleå University of Technology.
- 1 institution from Ireland - Dublin Institute of Technology.

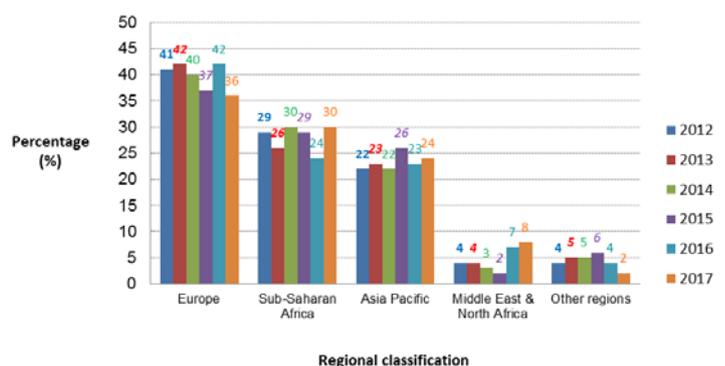


Fig. 3 Geographic breakdown of the individual membership (2012 to 2017)

ARCOM 2018 Track Summaries

Since 2016, the ARCOM Conference has introduced thematic tracks to better steer more focussed conversations around the general theme of the conference. To build a productive relationship within and between academia and industry, and in finding a balance between fragmentation and integration, we invite authors to consider and respond to the following themes and tracks when developing the full papers.

Emerging themes include, though not restricted to:

- **Construction and the digital divide (unequal distribution of who has access, skills and competence):** Practices in the construction industry have recently been transformed with the use of more digital technologies. This is arguably pursued at the relative neglect (and expense) of the analogue world. There are questions raised around the unequal distribution of who has access, skills and competence to digitalise construction. Moreover, how policy-makers, practitioners and researchers value the non-digital in order to build a stronger, more productive construction industry?
- **Who counts as a stakeholder and how are they engaged:** Who and what counts as a stakeholder and how do they count? Stakeholder engagement has been a longstanding matter of concern in managing construction. The call to balance integration and fragmentation has also, in recent times, been manifested in the tensions found between democratisation and privatisation of the built environment. Current scholarship on stakeholder engagement has also broadened to consider the influences of humans and non-humans alike. What do these developments mean for changing the ways in thinking about which stakeholders count and how stakeholder engagement is done?
- **Construction Management Research:** Construction management as a research field has developed over the past few years to engage with scholarship in the wider management and organisational studies, as well as theories from the social sciences. While this engagement has resulted in more rigorous, theoretically-informed studies in construction management, there is also a need to maintain the distinctiveness of the field. In our attempts to mainstream construction management, how can we engage more fruitfully with the other disciplines and fields such that we maintain a strong sector-based identity while contributing to the mainstream?

Track 1: Failure and Learning from Failure: What is failure? Can we quantify and measure it? What are its impacts? And how can we face up to failure, acknowledge it and learn from it? These and other perceptions on the role of failure in the built environment are to be explored through theoretical and/or empirical papers in this track.

Track 2: Theoretically-informed Research on Digitalization in Construction: In this track we encourage submissions that take on theoretically informed perspectives in order to further theoretical development of the field of construction information systems management, and thus the understanding of the deployment and use of digital technologies in construction. All kinds of papers are welcome – case studies, conceptual, theoretical, and surveys – but authors provide critical reflections on the theoretical stance taken.

Track 3: Reconceiving Multidisciplinary Collaboration for Managing Design in Construction: Current framing of construction design management relies on the ‘fragmentation-integration’ dichotomy which has led to an inappropriate language and an

unproductive focus on the problems of differences between various disciplines. Novel empirical, theoretical and methodological papers are invited to reconceptualise design beyond such dichotomy to consider its highly-interactive and path-dependent nature.

Track 4: Integration and Collaboration for a Sustainable Built Environment: This track focusses on the critical evaluation of the impacts of inter-disciplinary working and integration on project and business performance. Authors are invited to challenge the perceived wisdom that inter-disciplinary collaboration and integration is desirable in every project and every business, and to propose approaches to determining whether collaboration is necessary in specific contexts.

Track 5: Keeping Up with the Digital Age: This track focuses on exploring the role of digital communication tools in management processes by construction companies, focusing especially on building up new management processes for integration with stakeholders and better performance. Digital communication tools especially social media is still a

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Continued – Track Summary...*Titanic Belfast atrium*

new technology that needs to be better understood in terms of its benefits, risks, barriers and strategic use.

Track 6: Mental Health, Stress and Wellbeing in the Construction Industry: While it is commonly recognised that mental health problems can be quite severe in the construction industry, the underlying causes and its long-term impacts remain largely unknown. In this track, we welcome theoretical, methodological and empirical contributions, particularly with experts from the medical field, to advance understanding on problems with mental health, stress and wellbeing in construction.

Track 7: Institutionalising Construction Management Research: Institutional theory has often been used to frame our study of industry practices as the object of

inquiry, rather than to subject our field to critical analysis of how knowledge in and about the field of construction management is produced, and with what consequences. In this track, we seek interesting papers that contribute to a better understanding of the institutional dynamics and effects of the production of construction management knowledge.

Track 8: Infrastructure Investment through Public-Private Partnerships: This track seeks to explore the stakeholder barriers to PPP and the innovations in PPP models that seek to enhance and nurture stakeholder relationship. In doing so, we aim to gain better understanding of the dynamics of long term stakeholder relationship in infrastructure investment.

*Great Hall**Riddell Hall*

ARCOM 2018

“A Productive Relationship: Balancing Fragmentation and Integration”

ARCOM 2018 returns to Belfast, drawing on the hospitality of Queen’s University in partnership with the Dublin Institute for Technology. Our research communities are coming together to achieve more than political rhetoric.

At a time when the modern world grapples with the challenges of divided nations, the need for greater collaboration to build communities of practice for resilience and sustainability seems paramount. Northern and Southern Ireland, not without their political challenges, are rich in communities and enterprise that surpass much of the divide. Important to this conference are the feats of great engineering borne from cultures that embrace technology and a willingness to explore. The progressive mobile have and continue to shape our built environment. Without such transient and powerful workforces, holding on passionately to their culture, would we achieve so much?

We invite paper submissions that address the central theme, ‘Balancing fragmentation and integration’. Fragmentation of the construction industry has often been highlighted as a problem, and as a reason to integrate. Yet, there is a need to deepen our understanding of fragmentation and to understand whether it is not only problematic, but also a productive force for good. Questions are raised around whether fragmentation is necessarily a bad thing, and whether integration is always the solution. Should we be striving for a balance between fragmentation and integration? What does this balance look like, and what implications will balancing fragmentation and integration have on policy, practice and research in construction?

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ARCOM 2018: A Productive Relationship: Balancing Fragmentation and Integration

Key dates

Submission of abstracts: 2359hrs GMT, Friday 12 January 2018

Notification of acceptance of abstracts: Monday 19 February 2018

Submission of full papers: 2359hrs GMT, Friday 6 April 2018

Editorial decision on full papers: Friday 18 May 2018

Submission of final papers: 2359hrs GMT Friday 29 June 2018

ARCOM 2018 Conference: 3 – 5 September 2018

Continued from overleaf

The ARCOM Conference is an inclusive conference that covers a wide range of topics pertinent to construction work. We therefore invite authors to reflect on the aforementioned theme when developing papers that may also address:

Building information modelling

Equality and diversity

Human resources management

Information management

Infrastructure development

Offsite construction

Planning, productivity and quality

Research and education

Sustainability in the built environment

Construction design & technology

Disaster management

Health, safety and well-being

Law and contracts

Other related themes considered

In the first instance, we invite the submission of 300-word abstracts, which should be uploaded via the MyARCOM portal on www.arcom.ac.uk before 2359hrs GMT on Friday 12 January 2018. Abstracts should be informative and contain a clear purpose statement and research question, and information about the methods and key findings. Abstracts that successful pass through the double-blind peer-reviewed process will be invited for full paper development.



Titanic Belfast from the Titanic Slipways



Titanic staircase