

## Impact template (REF3a)

<b>Institution:</b> University of Liverpool
<b>Unit of Assessment:</b> 16 - Architecture, Built Environment and Planning
<b>a. Context</b> <p>Core to the research of the Liverpool School of Architecture is its impact on the professional disciplines that it serves and associated industries (including the cultural and creative industries); also building users, communities of residents, consumers and visitors to cities. Architecture is both a technical and cultural activity and our research is concentrated in two corresponding themes.</p> <p><b>Technology and Process</b> has 10 research-active staff across three groups: Acoustics (in the Acoustics Research Unit) and Lighting; Computer-Mediated Design; Sustainability, Complexity and Uncertainty in Building Assessment (SCUBA). <i>Technology and Process</i> provides direct evidence of impact and the beneficiaries include: research and development teams in white goods and building services manufacturing; in building design and construction; international Standards committees, composed of researchers, practitioners and manufacturers, ensuring research feeds into practice.</p> <p><b>History and Theory</b> has 13 research-active staff across three groups: The Centre for Architecture and the Visual Arts (CAVA); Architectural and Urban History; New Architectures. <i>History and Theory</i> provides more diverse supporting evidence of impact and the beneficiaries include: local housing communities, the history of which, when highlighted, increases social identity; managers and administrators in museums and art galleries, where the research is contributing to improvements in management and governance; the public, where the establishment of film and digital repositories is providing people with these forms of local and national heritage.</p> <p>Our impact is either strategic or reactive. The first involves research which from the start has the promise or remit of long-term impact. This is sustained through resourcing and critical massing of staff. The second is often serendipitous and can be by one colleague, supported by rapid allocation of funding. The three submitted case studies were selected from eight actively considered (six strategic and two reactive), representing the spectrum of research activity in the department.</p> <p>Two of the selected cases, on the influence of research in acoustics and in lighting on the development of national and international Standards and test protocols, stem from research supported by Research Council and industrial funding, where our researchers interacted with manufacturers and Standards committees when framing the projects. Acoustics also offered a second case for consideration, on interactive performance for musicians with a hearing impairment, which stemmed from a need highlighted by Dame Evelyn Glennie. It received AHRC funded research (2010-13) and promises significant impact on the hearing-impaired community, which will be evident in the next REF. CAVA, which was established in 2006, provided two cases for consideration. The selected case, based on research on the role of the moving image in the culture and identity of cities, has involved three postdoctoral researchers supported by two AHRC awards. The other case, on new governance and community perception of cultural centres, stems from CAVA's collaboration with staff at Tate Liverpool and the Foundation for Art and Creative Technology (FACT) and was supported by the AHRC Block Grant Award of four PhD Studentships dedicated to researching and interacting with these cultural centres. Again, this promises a future REF case study. The sixth case study considered, on the social benefits and sustainability of portable and flexible architecture, is based on Kronenburg's research since 1995. It stems from his contacts with architectural practices and the music events industry and has been funded by the Building Centre Trust and recently a British Academy/Leverhulme Research Fellowship.</p> <p>An example of reactive impact is our financial support for Swenarton to organise a series of events with the local Camden community (2011-12) on the historical and contemporary significance of the 1960s-70s Camden housing programme. The impact reached residents through a series of exhibitions as well as the residents' association website and fed into the successful bid for £1.5M from the HLF Lottery Fund (announced July 2013) for the restoration of the park on the estate. Likewise, Malathouni has been supported in her leading role, through English Heritage, in the</p>

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campaign for the listing of Preston Central Bus Station, which was successful (listed grade II, July 2013) and is now leading to a major refurbishment of the building. This also promises a future REF case study.

**b. Approach to impact**

We have three main methods of promoting and fostering impact:

**Sharing good practice and experience:** When framing a research project, colleagues are encouraged to engage early with external agencies and beneficiaries. Mentoring, particularly of early career researchers (ECRs), involves exploring potential links with existing research in the department, which already has proven impact. In addition, staff appointments from outside the HE sector also bring relevant experience. Malathouni (ECR appointed 2012) is an example of both of these processes. Her previous appointment was Conservation Advisor, within the 20<sup>th</sup> Century Society, funded by English Heritage. She has brought knowledge of the evaluation of heritage assets, to complement the work of Swenarton on 20<sup>th</sup> Century heritage, and the work of Neil Jackson on technical aspects of conservation. In turn, she received departmental support and guidance in her role in the successful Grade II listing of Preston Bus station (see above).

**Professional engagement:** Of the 23 members of staff returned as research active, 19 are trained architects or chartered engineers. In their professional capacity, they selectively undertake consultancies, which establish contacts and working relationships between researchers and potential beneficiaries. The external partners, in turn, provide support and steers to new research directions with impact. In addition, fees obtained from consultancies support research and other outreach initiatives. As an example of this approach, the Acoustics Research Unit was approached in 2008 by the Baxi Group, the largest European manufacturer of domestic combined heating and power systems. The research group provided reports on the low-frequency noise and vibration from this 'engine in the home'. The company reciprocated by providing facilities and actively participated in obtaining an EPSRC award. Further examples include Agkathidis (ECR appointed 2012) who, from his background of practising architect, advised on the design and fabrication of complex steel canopy structures and on sustainable retrofits in Frankfurt. This links to his research on the use of digital tools for the design process that facilitate fabrication. Kronenburg's professional activities relate to his research on temporary and portable buildings. In 2008, he advised on adaptable building as part of the planning strategy of Vancouver City Planning Commission. In 2011, he headed the competition programme to improve urban spaces in Bucharest by the use of temporary structures. Crompton has influenced the design of multi-denominational buildings, advising on good practice to St Edmund's College Cambridge, Harvard Divinity School, the National Church of Denmark and Liverpool Quakers (2010-12). This engagement is informing his research on multi-faith spaces.

**Support of outreach events and networking initiatives:** Staff are supported and resourced to develop existing links and form new links with the non-academic sector. An example of the success of this approach is the now established collaboration between CAVA and Tate Liverpool, National Museums Liverpool and the Foundation for Art and Creative Technology (FACT). Earlier initiatives, funded by the department, led to the AHRC funded rolling collaborative programme of appointments of PGRs, described above. There have been three PhD thesis completions to date by students who spend time in the working environments of these places as an integral part of their research into the history, management and changing local and national perception of these national institutions.

**c. Strategy and plans**

Our strategic objective is to ensure that we maintain and enhance our high level of engagement with relevant professional disciplines and the wider community, ensuring that our research influences and drives professional, cultural, creative and social practices relevant to architecture and building engineering. Central to the strategy will be to increase the role of the non-academic sector in giving steers to our research directions and in confirming research relevance.

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The strategy will build on the success of our present approach by widening and systematising our contacts and processes.

**Shared good practice** will take place at all levels of research activity. Impact is already a key consideration in personal development review meetings with staff. It will increasingly inform the assessment of the progress of post doctoral and post graduate researchers. Research centres, units and networks will provide further opportunities for experienced staff to mentor early career researchers, contract researchers and postgraduates. The Department of Architecture is now in the School of the Arts, with a research and knowledge exchange committee, in which experiences and practices are being shared with colleagues in the creative disciplines: Music, English and Communications Studies. Support services and expertise, provided by the university, on research and business collaboration, intellectual property, consultancy and knowledge transfer partnerships, will extend our capacity to ensure that the potential impact of our research is fully exploited.

**Professional engagement** will present staff and groups with the opportunity for new research directions with impact. As an example, recent government, industrial and international engagements are allowing the Acoustics Research Unit to expand the range of its activities. Her Majesty's Government Communications Centre (HMGCC) has re-engaged the group for further confidential research into speech privacy. The completed first phase of the collaborative project with Boeing (2013), on the development of test methods for noisy aircraft components, is to be funded for a further year, with the aim ultimately of developing an International Standard. Links with the specialist manufacturer of acoustic cleaners, Primasonics International Limited, has been supported by the University through a Knowledge Exchange voucher of £5,000 and has led to the application for a patent and a knowledge transfer partnership (outcome awaited).

**Support of outreach events and networking initiatives** will be through the Departmental research committee and the research and knowledge exchange committee of the School of the Arts. This will provide competitive funding which might, for example, meet reactive needs when opportunities to generate impact from existing research arise, or support the development of new networks and links.

**d. Relationship to case studies**

The three case studies are all examples of our strategic approach to impact.

*Acoustics: Contribution to European and International Standardization.* This case study exemplifies our approach of sharing good practice and experience, and of using support funding from professional engagement. The Acoustics Research Unit drew on the experience of Hopkins (appointed senior lecturer 2007 and Head of Unit) from his previous role as Principal Consultant in the Building Research Establishment, where he was UK representative on EU Standards Committees. Gibbs has been able to contribute actively to EU working groups, using funds obtained from consultancies and EPSRC grants.

*Lighting: The impact of lighting research into provision of user control and alternative daylight sources.* This resulted from Carter's relationship, developed over many years, with the UK and international lighting industry, funded from industrial collaborations, and his leading role in framing national and international design guidance and test protocols for optimum visual conditions in energy efficient buildings.

*Architecture and the Moving Image.* This arose through the department funding CAVA's initial outreach activities: organising exhibitions, public events and forums, for Tate Liverpool, the Museum of Liverpool and for the public. The impact was initially on Liverpool's European Capital of Culture programme (2008). Subsequent research on the mapping/geo-referencing of archival film arose through interactions with planning offices, architectural practices and museums, and is providing film and digital records of urban history and heritage.