The Edinburgh Strategic Alliance (ESA)

Research Projects 2019

A joint research endeavour between The Edinburgh School of Architecture and Landscape Architecture, University of Edinburgh and The School of Energy, Geoscience, Infrastructure and Society, Heriot-Watt University.
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https://sites.eca.ed.ac.uk/ekep/

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The Edinburgh Strategic Alliance (ESA) is the joint research endeavour of the Edinburgh School of Architecture and Landscape Architecture (ESALA, University of Edinburgh) and the School of Energy, Geoscience, Infrastructure and Society (EGIS, Heriot-Watt University).

The ESA is built on interdisciplinarity and on maximising the benefits gained from working at a range of scales and approaches regarding the built environment and the urban. It enables complementary as well as collaborative research by incorporating under one umbrella a diversity of research approaches and fields that are vital for understanding and transforming our built and natural environment. We explore processes, places and spaces over the whole life cycle, from planning to design, construction and usage. Together, we investigate the social, economic and political forces and processes which shape our world and the impact that our built and natural environments have on our health, wellbeing and resilience, our ability to understand our past and to plan our sustainable futures.

For REF2014, ESA prepared a first joint submission, which is the point of departure for the forthcoming REF2021. The joint submission was second in the UK for research power. The ESA has a joint Alliance Research Committee to foster excellence in research and support a range of techniques and approaches to enquiry. In 2019, we have inaugurated a joint ‘research space’ in central Edinburgh, suitable for meetings, retreats and events. We have strategy-formulating away days and focused meetings for the early exchange of information on particular research themes. We are dedicated to developing the talent of postgraduate research students and early career researchers. Opportunities range from working on large, multi-institutional, Research Council-funded studies to taking a leading role on our Kick Start projects.

First announced in 2011, the Kick Start programme was developed to stimulate innovative cross-university and multidisciplinary research, and with each project involving both Edinburgh and Heriot-Watt researchers.

This book is the third iteration of a research annual, a compendium of current research carried out across the ESA. In its current state it is partial – it does not reflect in a comprehensive manner the entire breadth of research carried out in our two schools. It does not present our research centres and their activities nor does it include all relevant researchers or research projects. However, it does provide an overview and detailed sampling of much of the research at the ESA in 2019. Further information including a comprehensive list of research outputs can be found on the schools’ websites.
The engineering ‘filling box’ technique is appropriated as an architectural design tool, drawing on the science of thermodynamics to explore the atmospheric milieu of architecture.

Wind tunnels and water tables make airflow associated with pressure-induced natural ventilation, such as cross-ventilation, visible. While physical environmental simulation devices have largely been supplanted by digital simulation, this research suggests there is value in working materially with air and water flow as a means for understanding building environmental mediation. Four wind tunnel and four water table prototypes hone the use of environmental models as an architectural design methodology. Prototypes are designed, constructed and evaluated based on their ability to create a steady-state environment of legible airflow. It is through the act of constructing the instrumentation of the model and the materialisation of air that models reveal architectural insights about environmental mediation.

These insights are in some cases tectonic, revealing ways of thinking about joints, surfaces, and assembly logics. They are in other cases responses to working with forces associated with pressure of air or weight of water. Fundamentally, the prototyping process revealed air’s extreme sensitivity to both constructional anomalies and external disruption, revealing the complexity of creating steady-state environments.

Related publications:


Eight original wind tunnel and water table prototypes use digital and analogue architectural fabrication techniques to visualise airflow for use as a contemporary design tool.

This research uses a physical modeling technique from mechanical engineering, the filling box, as a speculative architectural design tool. In the filling box, dyed salt water is injected into acrylic models submerged within a tank of fresh water, simulating the introduction of cold air into a warm environment or, when mirrored, the introduction of warm air in cooler environments. The models make complex and beautiful convective thermodynamic processes visible, revealing insights about environmental processes taking place within and around buildings.

Physical model studies are paired with writing that draws on the science of thermodynamics to explore the atmospheric milieu of architecture.

Related publications:


Photo: Lisa Moffitt
This project tests the significance of ‘reading’ rural landscapes more deeply so that inherent cultural and environmental complexities are represented together in a form that carries meaning to wider audiences.

Landscape is thick and thickening, composed of, and in constant aggregation with, layer upon layer of natural and cultural history. All too often when ‘planning’ and ultimately ‘change’ is considered in a rural landscape its depth is not read and communicated and therefore not understood.

This work began through the creative agenda of the Valentine Project: a collaborative investigation between an artist and a landscape architect and the subsequent invention of a form of landscape representation, a form of graphic archaeology able to engage with past, present and future in a given terrain. The project and collaborative enquiry began in 2013 and continues.

The work seeks to discover complementary strategies to landscape planning in its current form whereby drawing (as a deliberately ambiguous act) and interdisciplinary collaborative practice is used to question protocol and convention by tracing the invisible and forgotten ‘readings’ of a landscape in order that the realities and possibilities of a ‘human’ interaction might be better perceived and better understood.

The consideration of how to represent the dynamic nature of landscape, so often overlooked within the conventions of landscape planning documentation, is a recurring fascination in the work.

The Valentine Project originated in a 2013-14 Creative Scotland/University of St. Andrews Year of Natural Scotland funding call, “Imagining Natural Scotland”, which invited participants to engage with the politics of the representation of land in Scotland.

Output:
- 2013 Imagining Natural Scotland – The Valentine Project. A video of the conference presentation given on 27 August 2013: https://vimeo.com/75010502
This work examines the co-authoring potential of drawing, three dimensional modelling and film-making with local people to support scientific procedures of hazard mapping towards disaster risk reduction.

Developing shared knowledge of a landscape between locals and experts can mediate ideas between people towards action. In 2017 this work was situated in the active volcanic landscapes of Guatemala with a specific focus on Volcán de Fuego.

The research searches for methodologies to capture and communicate local knowledge of ‘place’ in order to contribute meaningfully to scientific procedures of mapping hazard and risk. In her role within the project, Lisa seeks to comprehend the power of eidetic readings of place to represent the complexity of volcanic landscapes as localities of hazard, and also as places of dwelling and livelihood.

As a discipline, Landscape Architecture sits between the social and environmental sciences. Procedural enquiries in landscape architecture have the potential to negotiate between different, and frequently conflicting, research agendas. Landscape Architects seek to communicate the often invisible relationships that exist in a landscape, and can devise representational strategies that can communicate both social and environmental change in a landscape through time. The project searches for new ways to advance the agency of the hazard map, considering that its influence is limited, due to reliance upon the expertise of its reader.

The research aspires to investigate indeterminate methods of representing a landscape recording both human and nonhuman associations that can advance knowledge beyond static and reductive interpretations.

Outputs to date:
2017 Workshop, Antigua, Guatemala, Volcán de Fuego.
Developing a multidisciplinary science-media-community network.

Experimental algorithmic protostructures.

This project relates to my long-term research related to algorithmic design, advanced digital fabrication and manufacturing techniques for lightweight protostructures. In collaboration with two industrial partners, Dirce Medina Patatuchi, from London-based practice Heatherwick Studio and Carlos Bausa Martinez from Foster + Partners, we have won the competition for the international Festival of Architecture 2019 in Montpellier: a parametrically generated pavilion structure, designed through the use of advanced computational tools and to be constructed through the use of digital fabrication, at ECA.

The project creates a platform to share emerging research practices related to the use of advanced computation and digital fabrication between academia and industry, addressing a wide audience (ECA staff, student community, industrial partners, manufacturers and external public). The project promotes sustainable, intelligent and material & tool appropriate ways of integrating emerging digital practices into the creative practice, thus empowering and inspiring those who wish to work or further engage with advanced computational tools.

This research is a continuation of my research-led teaching on UG and PG level at ESALA, engaging with algorithmic form finding, parametric optimisation, low-cost materials and circular economy.

**BY:** Cristina Nan
*University of Edinburgh*

**WITH:**
Carlos Bausa Martinez
*Foster + Partners*
Dirce Medina Patatuchi
*Heatherwick Studio*

**FUNDING:** CAHSS Knowledge Exchange and Impact Grant 2019

**YEARS:** 2019 –

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**PAPILLON D’OR**

*Papillon D’Or, FAV 2019 Montpellier. Image: Cristina Nan.*
Living Architecture (LIAR) is a modular bioreactor-wall, based on the operational principles of microbial fuel cell technology and synthetic ‘consortia’ of microbes.

LIAR is a next-generation, selectively-programmable bioreactor based on the operational principles of microbial communities, and combines microbial fuel cells (MFCs), photobioreactors and synthetic consortia of microbes into units of construction (living bricks). These biological components are metabolically engineered to deliver specified biochemical and systematic functions. LIAR aims to become an integral component of human dwellings, capable of extracting valuable resources from waste – polishing wastewater, generating oxygen, and producing useable biomass, fertilizer, and electrical power.

It has the potential for far-reaching and transferable impacts on the performance of our living spaces and cities, implying a new understanding of sustainability that goes beyond resource conservation and incorporates the metabolic design of living spaces. Achieving this conceptual and technical breakthrough may endow our cities with robustness and resilience to the impacts of climate change while enabling inhabitants to live humanely and even profitably in the highly resource-constrained and competitive circumstances of the future.

Related publications:

Work exhibited at:
Global Design NYU – Collapse: Climate, Cities & Culture, New York City (June 2018).
Living with Adaptive Architecture, Nottingham (May-June 2018).
Living Bricks, Great North Museum, Newcastle-upon-Tyne (March-May 2018).

Work presented at:
V&A Future Series: Cities (July 2018).
5th Trondheim Biennale of Art and Technology (March 2018).
Uni-Arts Research Pavilion, Venice Biennale (September 2017).
Living Architecture Systems Group, Toronto (November 2016).

Website:
livingarchitecture-h2020.eu
LIQUID DRAWINGS

An interrogation of liquidity as a metaphor for architectural design.

Drawing – a form of pollution – remains strangely unfazed by the emergent liquidity and unpredictability of the anthropogenic trace, clinging to geometry and its presumed ability to order, cleanse, measure and name. Whereas current modes of architectural notation depend on the stability, reliability and abstractability of the point/line, what would projects predicated on the liquidity and situatedness of the drop entail? Through both chronophotographic protocell drawings and a fluid collage of textual fragments, the project attempts the first steps in a ‘liquid’ approach to design – one predicated not on decisions and control but on encounters.

Related publications:

TRANSFORMATIVE GROUND

Transformative Ground explores how new expressive forms and design sensibilities, based on distinct societal and environmental issues, have emerged in response to the context of post-industrial landscapes.

For several decades now, the increasing presence of post-industrial sites has opened up a new territorial ground for landscape architecture, disrupting conventional ideas and aesthetics of space making that have been deemed inadequate for dealing with the structural complexities, toxic histories, and cultural ambiguities of abandoned sites. There is a highly contested quality to many post-industrial sites, where abandonment and opportunity, decay and growth, history and erasure, create a compelling entanglement between seemingly contradictory conditions. These contextual realities are challenging, requiring new conceptualisations and spatial tactics to negotiate issues that are often complex, temporal, beyond perception and in extreme cases, irresolvable.

This project aims to capture a sense of how this period of radical rethinking has challenged long standing conventions, as new conceptualisations and shifts in aesthetic appreciation have progressively opened up in response to the emergent territory of the post-industrial landscape. The project has so far resulted in a book that provides critical purchase on the rich conceptualisation of landscape in the contemporary field, providing a sense of how post-industrial sites not only offer a transformative ground for society and nature, but act as a progressive field of concern for landscape architecture.

Related publication:
IMPROVING UNDERSTANDING OF FLOODING AND RESILIENCE IN THE TERAI, NEPAL

Rivers sourced from the Himalaya irrigate the Indo-Gangetic Plain via major river networks that support approximately 10% of the global population and their livelihoods. However, many of these rivers are also the source of devastating floods. The project, funded by the NERC, is a collaboration between an interdisciplinary team of geoscientists, engineers, social scientists and architects from the University of Edinburgh, alongside practitioners from the NGO Practical Action and the Nepal Department of Hydrology and Meteorology. The teams applied technologies and conducted research with communities, to better understand flood risk in the Karnali river basin, Terai, Western Nepal. ESALSA was involved specifically to consider and study indigenous local knowledge and traditional practices in building along the flood plains.

Such knowledge and practices are necessary in developing resilience to both recurring and extreme flood events exacerbated by climate change. Vernacular construction techniques are inherently specific to location, available material, and skill, having evolved through generations by custom and practice. Nepal has many examples of flood resilient construction. Nevertheless, they are often displaced by more modern techniques and materials, predominantly reinforced concrete, such as flood refuge platforms. The resilience of these buildings can be verified in engineering terms more easily than comparable vernacular designs. However, these systems require different skills, technical expertise, and much higher levels of finance. The research involved a short but intensive field-study of construction practice in the Karnali river plain. A range of settlements in the area were visited to observe and discuss construction methods and attitudes to developing practice, including flood refuge buildings, with local communities.

Appropriate vernacular construction can provide culturally appropriate resilience, but does require knowledge to be shared and transferred between communities; the poorest communities may not have access to either the vernacular knowledge or the materials. Further research is necessary to fully understand the economic and skills barriers to self-development among certain communities.
Cryptocurrencies, blockchain technology, and other aspects of the sharing economy offer benefits and challenges for architecture.

They also furnish metaphors about urban living. This research evaluates and investigates opportunities for the application of peer-to-peer technologies in the area of computer-aided design and building information modelling.

**Related publication:**

**ARCHITECTURAL CHALLENGES IN THE SHARING ECONOMY**

**NETWORK NATURE**

In my work, I bring the related themes of place and digital technologies into collision with recurrent topics of global concern. Since the 1990s I have addressed artificial intelligence, technoromanticism, e-commerce, sound, emotion and now nature.

Nature is on the side of the independent, the hopeful, the free, the good and the healthy. Some digital device users think that technology gets in the way of direct access to nature. It is as if urban dwellers are burdened by relentless connectivity, work stress, boredom, and poor health. So, they look to nature to deliver the opposites of these detrimental conditions. It is easy to succumb to the view that nature is what is left in the crucible of human experience purged of bothersome technology and artifice. From this observation I launch into a discussion of the nature-artifice divide and situate it within the world of digital networks, with an emphasis on semiotics, the communicative structures within all things, according to the philosopher Charles Sanders Peirce and his followers.

Three books take us on a journey through the place of emotion, mood, attunement, biophilia, big data, bio- and geo-semiotics, bio-hacking, biomimetic design, nature games, zoo-space, refuge, numinous nature and myths of self-reliance. Signs are crucial in understanding the environment and the complex discourses it entails. Semiotics supports this challenge, a theme addressed critically in a text on C.S. Peirce in the Thinkers for Architects series.

**Related publications:**

**BY:** Richard Coyne  
University of Edinburgh  
**YEAR:** 2016 –

**BY:** Richard Coyne  
University of Edinburgh  
**WITH:** Tolulope Onabolu  
John Lee  
Frédéric Bosché  
Heriot Watt University  
**YEAR:** 2017 –
Cities are infiltrated by codes and encryption systems to support access, security and commerce. What are the implications of coded city architectures for public and private living?

This research builds on recent investigations into biosemiotics which impacts the relationship between nature, digital technologies and the built environment. A related book-length project examined the work of the pragmatic philosopher Charles Sanders Peirce (1839–1914) who founded the theory of semiotics on which such studies are based.

Scholars have examined cities through the lens of semiotics. Cities are permeated by overt and covert code systems. But there’s a new impetus to the coded city, brought about not least by developments in ubiquitous networked technologies, supposed smart city infrastructures and the entailments of high speed 5G networks. Cryptocurrencies, peer-to-peer monetary transactions and automated smart contracts require institutions and citizens to choose how they adopt, adapt, resist or counteract coded city innovations.

Encryption serves as leitmotif for this project, which of course references the architectural space of crypts and catacombs, hidden underground places. Leon Battista Alberti (1404–1472) the author of On the Art of Building invented a method for encrypting messages, introducing a design for the cipher wheel that would enable the passage of secret messages between the ruler and his generals.

A building is a system of locks and keys. So is a city – a matrix of locks, keys, vaults, hidden spaces, security doors, cameras, contactless sensors, keypads, and pass codes – fixed and mobile. Under the encryption metaphor, cities reveal themselves as hyper-encrypted and hashed. They are sites of control, surveillance, espionage and hacking. Data flows lubricate, intoxicate and contaminate the operations of the coded city.

This project is animated by PhD supervisions, funding applications and regular blog posts that will contribute to another book project.

Related publications:

Website: richardcoyne.com/tag/ciphercity/
Knowledge by Other Means is an epistemological exploration of data-driven drawing processes as carried out by a custom-built robotic apparatus, identifying non-computable elements of thought in the development of spatialized digital intelligence.

Half a decade past the consolidation of the first ‘Digital Turn’ in architecture, contemporary designers seem to have decidedly embraced the unprecedented power of machinic thinking, subsequently adopting its embedded logical processes. We may, however, pose a critical question in the context of this ‘second computational turn’: Are there any non-computable elements of thought in the development of spatialized digital intelligence?

In answering this question, the project unpacks a series of productive relationships intersecting drawing and the passing of time, operating at various scales and developed in the context of a data-driven design environment.

More specifically, this enquiry looks into the processes carried out by a custom-built robotic drawing machine, tracing dynamic vector data streams collated from a variety of spatial sources. This hybrid digital-analogue apparatus draws from a long historical lineage of vector-based machinic systems designed for architectural drafting. Situating themselves between the human hand and the surface of the paper, those machines acted as carriers of embodied spatial knowledge that could be selectively actualised into specific design processes and materialisations.

Deploying a range of intertwined digital and analogue media, this machinic environment is used to articulate a data-based drawing research practice and a subsequent ‘anexact’ drawing research methodology that further elaborates on the durational and multiplicitous aspects of the data-based drawings. This body of work is reflected on as a visual research methodology, which taps into Bernard Cache’s interest in architectural computation as a way to pursue philosophical knowledge ‘by other means’ and into Gilbert Simondon’s notion of the ‘technical ensemble’, emphasising the productive forms of indetermination emerging from its internal informational transfers.

Related publications:

Among contemporary fields of spatial practice, urban design and government have undergone particularly radical transformations thanks to the gradual incorporation of digital computation technologies. The most salient case of this resulting methodological shift is the Smart City paradigm, which exemplifies the conceptual framework championed by technocratic, data-driven approaches to the development of spatial intelligence in the urban field. However this framework is a problematic one: It operates under a decidedly top-down regime, and articulates mechanisms of representation that tackle the city as a singular ‘assembled whole’ where individual subjectivities are averaged and the drawing (and subsequent controlling) of ‘flow’ is foregrounded as an imperative of maximum optimisation.

Taking an interdisciplinary approach that draws from the fields of Anthropology, Design Informatics and Urban Studies, this project asks: Is it possible to articulate data-based counter-practices that operate within the same computational plateau as Smart Cities, albeit explicitly subverting their narratives of optimisation, efficiency, and top-down ‘smartness’?

As a tentative response, this ongoing body of work puts forward a series of collective interventions (developed as part of the author’s academic practice) that predate the technical overlay of the Smart City to leverage both individual and shared human subjectivities in the urban public domain through a DIY technological ethos.

These ‘practices of digital dissent’ tackle issues concerning friction and collectiveness, and formalise design narratives that explicitly re-situate the locus of urbanity in the domain of the commons, re-establishing the ‘Smart Citizenship’ of granular human subjectivities as the main operator within the urban milieu.

Related publication:
CO-DESIGN AS DATA

Co-design is a complex process. It may be supported by shared representations through which diverse understandings can be brought together into a common framework.

We seek to interpret this process as realised through “Collective Imagery” workshops in which people collaborate on constructing a “collective imagery weave” installation as a representation of their emerging views on a social problem, such as village regeneration or how to improve transport for the elderly. The weave installation can be seen as the collection and transformation of data about the problem, where the processes involved can be conceptualised as connective and transformative learning among the participants. We seek to capture the data in ways that make it computationally available without destroying its implicit nature. In this way, we hope to be able to make small-scale, local workshop events more directly relevant to developments on a larger scale, offering an enhanced opportunity to drive social innovation.

A particular challenge of this perspective is to see how to formalise the data involved in the weave – technically, to develop an ontology for the information – without distorting or impoverishing the data, and while respecting the need to accommodate flexibility and change. We base this on the notion of an ontology as being a focus for finding and revising inconsistencies and disagreements, rather than a way to capture a more objective structure.

Publications:

TURBINEHR

Advanced immersive VR Hub for training wind turbine maintenance apprentices.

This project develops an innovative VR technology called immersive Hybrid Reality. This system effectively blends the local real world within the virtual environment experienced by the user. This particularly enables users to see themselves (hands, legs) but also their tools, etc. This system uniquely responds to the need to develop VR technology that is compatible with the demands of trade training, mainly physical contact and manipulation, while providing the means to safely locate trainees in challenging environments.

The system is deployed in three colleges, including Fife College and Newcastle College for the training of wind turbine maintenance apprentices. The project received numerous awards, and nearly ten mobile versions of the system have been deployed and additionally sold to our partners for use in public engagement events, e.g. to engage young people on careers in STEM subjects.

Related outputs:
Website: http://cyberbuild.hw.ac.uk/projects-ice-ihr.html
URBANPLANAR

Digital visualisation solution for in-field visualisation of Building Information Models from any location, in real-time.

The solution is a disruptive technology providing a 21st century alternative to desktop-based or VR assessment without outsourcing, remodelling or expensive proprietary systems. UrbanPlanAR solves problems of:

- Accurate urban location positioning – without the reliance on GNSS and only using affordable off-the-shelf consumer tablets.
- Disenfranchised stakeholders – by creating visualisations (impact assessments) personalised to their location in real-time.
- Late stage visualisation after design completion – by enabling integration and viewpoints throughout a project lifecycle at no additional cost.
- Remove expensive duplication in modelling – by providing a data pipeline integrated with existing tools and flowlines from major vendors.

In order to:
- Maximise reuse through existing investment in BIM and digital design.
- Provide accessible understanding of impact from within local communities.
- Deliver and share data for immediacy and relevance.
- Create trustworthy visualisations to enable better decision making.

Our software aligns with the beliefs and vision of leading organisations such as Architecture and Design Scotland (ADS) whose objectives are to:
- Help create better buildings, streets and sustainable places.
- Encourage more people to get involved in making sustainable places.
- Increase the understanding of architecture and design within the planning system.
- Promote architecture and design nationally and internationally.
- Provide leadership for our sector.
- Deliver high-quality services which are continually improving.

Our software uses localisation, augmented reality, BIM and 3D mobile technology to create software that delivers contextual information at the point of need.

Related outputs:

Websites:
Bosché projects are at:
https://web.sbe.hw.ac.uk/fbosche/index.html
http://cyberbuild.hw.ac.uk/projects-urbanplanar.html
This research explores the emerging future field of fabric form work for concrete structures in combination with silicone 3D printing.

The showcased material experimentations represent studies which focus on the simultaneous use of fabric formwork and textile elements. Textiles in combination with 3D printed patterning are seen in this context as tools for form generation and to a certain extent also for form control.

This practice-based research offers a new alternative to predominant fabrication methods for complex geometries, showcasing the benefits of hybrid digital crafting techniques. The developed manufacturing strategy will be explained through a series of material experimentations and resulting prototypes. The following studies investigate fabrication processes and surface texturing methods for the manufacturing of small and large-scale prototypes such as tiles or concrete columns.

Related publications:
Tectonics of the Immaterial: The Material Footprint of the Cloud and Its Digital Infrastructures

The technological shift towards smart entities – driven by automation, machine learning and IoT – mostly perceived as an immaterial phenomena, decoupled from a physical dimension, resides on a vast material footprint, which exists almost unnoticed in the suburbs of our perception.

Tectonics of the Immaterial, a research-led design studio, engages with the notion of data as an immaterial entity which revolutionises the 21st century, initiating irreversible global dynamics, but at the same time relies upon a physical footprint, comprised of infrastructure and buildings.

Data, upon which the ‘smart’ depends and feeds, presents itself as a new currency for architecture. The foundation for its existence are data centres. They epitomise in architectural terms the reinvention of the black box, as known in the aircraft industry, secluded form the system and continuously recording. My research increases its resolution of inquiry, leading to another facilitator of the ‘smart’ – rare metals and minerals.

Most smart-devices, connected to the global network of data centres, terrestrial or submarine cables and satellites, rely upon lithium-ion batteries. The extraction of lithium is correlated to large scale territorial transformations impacting on landscape, infrastructure and the urban.

This research addresses the material footprint of data and subsequently the ‘smart’ on different levels of inquiry: from territorial to landscape, from urban to the built. What are the territorial and urban implications of this current technological shift? How smart is smart, when it depends on a vast material footprint, often messy and dirty? How can architects and designers use their expertise to inform or develop digital strategies on these different levels?

Scopic Practice

Scopic Practice is a project that explores forms of media based practice concerned with revealing qualities of the living world.

Scopic Practices can be defined as creative processes that bring a phenomenon beyond immediate perceptible grasp into scope, involving the selective and methodological use of media based instrumentation to experimentally simulate and reveal the transient and ephemeral qualities of a range of natural phenomena. At a time of significant environmental concern, the project aims are to consider how advances in technology and aesthetic theory have informed how the environment is experienced and imagined, to develop understanding of how process-oriented and time based practices can interpret and reveal a telescopic range of scales; from the cosmic, atmospheric, seismic, sonic, biomorphic, to the microscopic.

The project has both theoretical and practical aims; to synthesise knowledge derived from precedents in contemporary practice, including art, architecture and allied disciplinary fields, which in turn underpins practice-led experimentation. Outputs have so far involved a series of academic papers, with the prospect of working towards a major publication that outlines shifts in aesthetic theory cross-related with precedents from an expanded field of contemporary practice.

Practical exploration has involved a series of experimental works that were captured in a BAFTA Scotland nominated documentary short, Plastic Man, directed by artist Yulia Kovanova. Through this collaboration the intention is to produce a feature length film that more fully expresses ideas derived from the research.
IWUN studies the interaction within Sheffield between people, their local natural environment and their health and wellbeing.

IWUN consists of four work packages ranging from determining relationships between place based geographic, biodiversity, and health data; examining nature values; the power of apps to enhance noticing nature, and developing a new green paradigm to improve planning and health and social care.

Dr Sarah Payne at Heriot-Watt University contributes on work package two, which explores cultures and values of nature and health and wellbeing with a specific aim of reflecting upon a diverse society and subsequent range of values towards all forms of nature.
Designing and engineering soundscapes to enable restorative environments for sustainable societies.

Project DeStress is an exciting research and public engagement project exploring the connections between the sounds we hear in places (soundscapes), our ability to relax and recover (cognitive restoration) and the design of the built environment. The intention is for Designing and Engineering Soundscapes to enable Restorative Environments for Sustainable Societies.

The project will combine knowledge on the health and wellbeing outcomes from experiencing sound in quiet and calm places, and how this varies depending on the design of the surrounding buildings and infrastructure. It will first ask the public in Edinburgh, Sheffield, and Brighton and Hove to map their quiet, calm and tranquil urban outdoor areas. This will help identify the physical and social characteristics that make these places be perceived as quiet, calm, or tranquil.

A few case study sites will then be modelled to create a virtual environment where the physical infrastructure and sound sources present can be manipulated. The viewer/listener will then be able to hear the differences these changes make in the soundscape, and tell us how these differences makes them feel, before learning about how this may affect their health and wellbeing.

We want to engage with the public, planners, designers, acousticians, and decision makers to understand more about how the sounds around us (soundscapes) impact on our cognitive and emotional experiences of outdoor public city places.

Learning about the effect of the physical design of our buildings, roads, parks, and city spaces on what we hear and do in places, will help us plan and manage our city environments to be beneficial for people’s health and wellbeing and quality of life. Changes in our built environment can encourage people to stay in a place or quickly walk through it, thus we are interested in preserving those special urban places that do provide some quiet, calm, and tranquility in our vibrant, buzzing cities.

Website: www.destress.hw.ac.uk

@DeStressRestore

This project explores how sharp depopulation might affect the future development of urban fabrics by means of changing the needs of individual residents towards their dwelling environments.

A conjoint analysis study has been developed to better understand if depopulation can be a factor of change in residents’ choice-making with respect to neighbourhood scenarios.

This study stems from a PhD project completed in 2016, based at the University of Edinburgh, supervised by Professor Catharine Ward Thompson, Dr. Simon Bell and Professor Peter Aspinall, and funded by the Portuguese national funding agency for science, research and technology (FCT).

Two case studies have been developed within the doctoral project’s frame, namely Lisbon and Genoa, and a third one is being developed in Glasgow.

Project DeStress on Maptionnaire software.
MAKING CONNECTIONS

Working with disabled people to improve Scotland’s travel connections.

Many journeys rely on us changing from one mode of transport to another, navigating the spaces between services, where one ‘stops’ and another ‘starts’. While transport operators rely on passengers successfully navigating the spaces in between to reach their service, they are unlikely to have a full picture of the potential barriers that these connecting spaces might pose. Even relatively short transfers can present potential barriers – such as crossing a busy street, poor wayfinding or an unsuitable route or environment – and the responsibility for improving this space might lie beyond the service providers.

Who, then, is responsible for improving the connection and what’s the forum for everyone concerned to work together to determine the most enabling connection?

We focus on a specific and important connection in Scotland – between rail and ferry services. This will not only address transport links with lifeline ferry services but will also explore a Priority Issue identified in the Accessible Travel Framework.

Through a series of shared journey experiences, ‘Making Connections’ has assessed how easy it is for people with disabilities and Deaf people to transfer from one transport mode to another and propose solutions to enable better connections.

The project also includes a design workshop, where disabled people, transport operator staff and other professionals will work together to develop ideas for tackling some of the challenges.

OPENspace has been leading on the evaluation for the project, as well as developing the research methods used for capturing the experience of the shared journeys.

Preparing a scaled-up research proposal to investigate the Woods In and Around Towns programme across Scotland.

Our study proposal considers whether low-cost but widespread environmental interventions make a difference to the health of communities and, if so, how close to such interventions is the effect discernible? Can any effect be evidenced across the wider population of the country as a whole? There is a new opportunity to link existing datasets on health and wellbeing of the population to existing data on a national programme of environmental and community engagement interventions – Forestry Commission Scotland’s Woods In and Around Towns (WIAT) – that has been running between 2005 and 2018, targeted particularly at deprived urban communities across Scotland.

This will allow us to analyse links between environmental interventions and health, particularly longitudinal change over time, to address these questions. Already-prepared data on these interventions can now be linked to data from the Scottish Longitudinal Study (SLS) and administrative health records for individuals for the first time, to understand the effectiveness of interventions such as WIAT at a national level, using both self-report and objective measures of health and wellbeing. The proposal is timely in that it is relevant to Public Health Scotland, due to be established in 2019 as part of public health reform, and to Scottish Forestry, also to be established as a new body in 2019 as part of forestry and land management reform.

Related publications: This builds on the previous research project and outputs: ‘Woods In and Around Towns (WIAT): Influences on Psychological Wellbeing in Deprived Urban Areas’.

Photo: Sara Tilley

By: Sara Tilley
University of Edinburgh
With: Catharine Ward Thompson
Agnès Patuano
Go Upstream
StudioLR
Alan Ainsley
ScotRail
CalMac
NorthLink
PAMIS
The British Deaf Association
Paths for All
Funded by: £122,150 Transport Scotland
(£24,900 funds the evaluation by OPENspace)
Years: 2018 – July 2019

By: Catharine Ward Thompson
University of Edinburgh
With: Co-I’s Rich Mitchell
Jamie Pearce
Tom Clemens
CRESH (Centre for Research on Environment, Society and Health, Universities of Edinburgh and Glasgow)
Dr Jennifer Noall
NHS Health Scotland
Kevin Lafferty
Forestry Commission Scotland
Woodland Trust
Central Scotland Green Network
Funded by: Forestry Commission Scotland (part)
(£13,500 to OPENspace)
Years: February 2018 – June 2019
Woods In and Around Towns (WIAT): Influences on Psychological Wellbeing in Deprived Urban Areas

Do physical interventions to improve the appearance and usability of local woodlands, accompanied by community activities in the woodlands, reduce stress levels and increase physical activity and connectedness to nature in deprived urban communities?

Woods In and Around Towns (WIAT) is a Forestry Commission Scotland initiative to improve quality of life in Scotland’s urban and post-industrial areas through community access to new or regenerated woodland. In ten years, WIAT has brought 11,000 hectares of neglected woodland back into active management, created 1,400 hectares of new urban woodland and created or upgraded over 300 miles of footpaths.

Building on evidence that green spaces may positively influence mental health, our study has looked specifically at WIAT’s impact on the psychological wellbeing and stress levels of people living in deprived communities. It was designed to take advantage of WIAT as a natural experiment along Scotland’s ‘central belt’.

The controlled study has involved a repeat cross-sectional survey of residents living within 1.5km of six Scottish sites: three where local woods have been changed, through new paths and signage, for example, and social programmes to encourage woodland use; and three where no changes have been made. Data has been collected in three waves: before any changes were made (2013); after physical changes were made (2014); and again after further social interventions had taken place (2015).

The subsequent Impact project funded by the Impact Acceleration Award from the Economic and Social Research Council (ESRC), Public Landscapes for Public Health, increases our capacity for sharing findings with relevant stakeholders, from Government departments, to public agencies, local authorities and private landowners.

The project has been supported by a Study Steering Group of five external advisors. Impact Acceleration Award partners include Forestry Commission Scotland, Scottish Natural Heritage, and Scottish Government.

The views and opinions expressed therein are those of the authors and do not necessarily reflect those of the Public Health Research Programme, NIHR, NHS or the Department of Health.

Related outputs:


Website: See our video summarising and contextualising the research at: https://vimeo.com/297952996
Preparing a scaled-up research proposal to investigate the Woods In and Around Towns programme across Scotland.

Our study proposal considers whether low-cost but widespread environmental interventions make a difference to the health of communities and, if so, how close to such interventions is the effect discernible? Can any effect be evidenced across the wider population of the country as a whole? There is a new opportunity to link existing datasets on health and wellbeing of the population to existing data on a national programme of environmental and community engagement interventions – Forestry Commission Scotland’s Woods In and Around Towns (WIAT) – that has been running between 2005 and 2018, targeted particularly at deprived urban communities across Scotland.

This will allow us to analyse links between environmental interventions and health, particularly longitudinal change over time, to address these questions. Already-prepared data on these interventions can now be linked to data from the Scottish Longitudinal Study (SLS) and administrative health records for individuals for the first time, to understand the effectiveness of interventions such as WIAT at a national level, using both self-report and objective measures of health and wellbeing. The proposal is timely in that it is relevant to Public Health Scotland, due to be established in 2019 as part of public health reform, and to Scottish Forestry, also to be established as a new body in 2019 as part of forestry and land management reform.

Related publications:
This builds on the previous research project and outputs: ‘Woods In and Around Towns (WIAT): Influences on Psychological Wellbeing in Deprived Urban Areas’.

Trust Me, I’m a Doctor study on the effect of visiting outdoor green spaces on mental wellbeing and stress in office workers.

Our study considered the following question. What is the effect of an additional 60 minutes of outdoor green space exposure per week, at lunchtime, on stress and mental wellbeing for office workers with varying levels of contact with nature at other times? We collaborated with the University of Exeter and with colleagues in the Centre for Cardiovascular Science in Edinburgh to develop a study protocol that included both self-report measures of wellbeing, before and after the intervention, and biomedical measures – salivary cortisol patterns and heart rate variability monitoring. We recruited people whose normal working environment is an office and invited them to increase the time spent in natural environments, such as green space, during the normal working week, to add a total of 60 minutes extra time in nature. They undertook to do this for three weeks.

The results, which were filmed by the BBC and are likely to appear as part of the BBC2 Trust me, I’m a Doctor series in autumn 2019, found a significant beneficial effect for wellbeing of participants after the extra time spent in nature. The benefit for stress reduction was significant only if participants’ total time per week in nature was at least 120 minutes, suggesting a possible threshold for maximum benefit. Although the sample was small and constrained by limited time for recruitment, the study builds on earlier research findings by the investigators and offers knowledge exchange with a wide public audience.

Related publications:
This builds on previous research project and publications.
Working towards developing age-friendly cities and communities that support older adults right to age in place.

Given the rapid growth of ageing populations in many cities, the importance of developing appropriate design interventions to enable active and healthy lifestyles for older residents is more urgent than ever. Place-Making with Older Adults: Towards Age-Friendly Communities, through a comparative study of cities in Brazil and the UK, explores the role of sense of place in promoting age friendly urban spaces. Drawing on a total of 18 neighbourhoods in 6 different Brazilian (Brasilia, Pelotas and Porto Alegre) and British cities (Edinburgh, Glasgow and Manchester), the project will undertake surveys, interviews and a range of experimental methods such as ‘go along’ walks, video diaries and community mapping. The findings will help provide a clearer picture of how sense of place is experienced by older residents and how this can be incorporated into improved design and service delivery.

The results will also be integrated into a variety of tools and resources to support communities, policy makers and practitioners in the development of age friendly cities. Related outputs:


Website: www.placeage.org/en/about

Twitter: @placeage

Funding: £384,745 for UK component
ESRC Urban Transformations in Brazil (Newton)

Year: 2016 – 2019

BY: Ryan Woolrych
Heriot-Watt University

With: Harry Smith
Soledad García-Ferrari
Judith Sissmith
Michael Murray
Jenny Fisher
Rebecca Lawthom
Meiko Makita

Place-Making with Older Adults: Towards Age-Friendly Communities
Ryan Woolrych, participatory mapping, image courtesy of the author.
Expanding transnational understandings of ageing in urban environments to three case study cities in India

Population ageing and increasing urbanisation are two dominant societal trends of the 21st Century. By 2050 two-thirds of the global population will be living in cities and at least a quarter of those urban populations will be aged over 60. Developing urban environments that support healthy living for older people has become a key driver of urban policy and interventions at a local and national level, resulting in planning design concepts and guidelines to support an ageing population.

However, current urban planning and development models have overlooked how environments can support a sense of place, articulated through supports for active living, social participation and making a positive contribution to the community. Ageing successfully at home and in the community requires people are able to access ‘assets and resources’ to support healthy ageing, e.g. transport, adequate housing, healthcare services, and leisure opportunities alongside social networks and opportunities for lifelong learning.

Responding to these challenges, this research intends to answer the following research questions:

How do older adults experience ageing and sense of place across different urban, social and cultural contexts? In what ways can urban environments support the rights of older people to age in place? What would age-friendly cities and communities look like if they are to support the sense of place needs of older adults living across different urban and cultural contexts?

In answering these questions, this research builds upon an existing ESRC Urban Transformations grant (ES/N013220/1) being undertaken exploring how sense of place is experienced by older adults living in 18 neighbourhoods (of varying densities and income levels) across six case study cities in the UK (Edinburgh, Manchester and Glasgow) and Brazil (Pelotas, Porto Alegre, and Brasilia).

The aim of the proposed research is to expand transnational understandings of ageing in urban environments to three case study cities in India (Delhi, Calcutta, Hyderabad). This will offer a unique insight into how older adults experience ageing and place across diverse and transformative urban environments in India, providing opportunities for knowledge exchange, allowing for comparative analysis within and across case study cities in India, UK and Brazil, and identifying clear routes to policy and practice.

We will use a range of methods to achieve the project aims including sense of place surveys and semi-structured interviews alongside experiential methods including ‘go along’ walks, photo diaries and community mapping exercises to capture the place-based needs of older adults.

A community-based participatory approach will be adopted to the research, bringing together all stakeholders in a process of collaborative dialogue and co-design to challenge the hierarchical power relationships that exist when planning ‘for’ and not ‘with’ older people. The results will be used to co-create place-making tools and resources which are essential for designing age friendly environments for older adults in India that work across different cultural, social and welfare contexts. Findings will be disseminated to community, policymaker, practitioner and academic audiences through ongoing and end of project knowledge translation activities.

Opportunities are built into the project design to allow for researchers from India, UK and Brasil to come together to exchange findings, share methodological insights and shape the research process.
Order and Disorder is a joint-author research and publication project which will result in a significant monograph (80,000 words) to be published in 2019 by Routledge.

This book critically reviews the development of the concept of spatial order in modern urban form from the European Enlightenment, how this has been translated into precepts of urban design, how in turn these have been translated to very different political, economic, social and cultural contexts and how these are now significantly challenged in the emerging cities of today.

It argues that social order has more fundamental importance than ordered urban form in creating places in cities, and that urban designers, planners, architects and engineers and other built environment professionals need to base their approach to the moulding of urban space and new urban forms into urban places on deeper inter-disciplinary understanding of underlying social order.

The Enlightenment was the basis for a new attitude to the production of the built environment, stressing the role of the individual in design/planning, within the social control of professional and stylistic peer-groups. From this historical point perceptions of the relationship between space and society became increasingly institutionalised, albeit the actual development of space has continued to elude this conceptual ordering. This is no more obvious than in the rapidly urbanising Global South, where contemporary perceptions of space and form emphasise disorder, although what produces urban space and form is collective social order beyond the above institutionalisation processes. Despite this, perceptions of city space worldwide continue to be focused on attempts at institutional ordering based on concepts of ordered form.

The book argues that these attempts to institutionally order space and form are actually negative in most rapidly urbanising contexts despite their overlay of social betterment, and are often the basis for political and economic exploitation.

A different approach to emerging urban space and form therefore needs to start from an understanding of the cultural imaginaries and social constructs that underpin the production of most city fabric and engage with these concepts and organisational forms to improve urban life for the majority.
This project, funded twice (2018, 2019) by the ECA Research & Knowledge Exchange fund, looks at a network of cultural producers and grassroots art spaces in Medellín, Colombia, focusing on their creation of cultural values in the city.

Due to the still complex, post-conflict era in Medellín, heritage and cultural values are linked to historic artefacts that represent grand narratives of national (post-colonial) history whereas local grassroots art practices have been overlooked. The latter makes art collectives and cultural producers, as the ones that this study focuses on, to work almost in the periphery of cultural production in Medellín, something that indeed creates barriers to constructive dialogue and/or synergy with public art institutions in the city. The project stems out from the project Medellin Urban Innovation: Harnessing Innovation in City Development for Social Equity and Wellbeing (2015-17) funded by the Newton Institutional Links Grant from the British Council and led by University of Edinburgh in partnership with Heriot-Watt University, UK.

In June 2019, we are organising a two-day symposium with public art institutions and academics to discuss further emerging intangible cultural heritage in Medellín. The key research question that this stage of the ethnographic fieldwork focuses upon is as follows:

How do we translate our practices of creating cultural values in a common language understood by public art institutions, local authorities and the academic scholarship?

The two main objectives of the above research question are:

a) to unpack the discussion on the making of intangible cultural heritage in Medellín by sharing best practice as produced within emerging art collectives and local communities;

b) to transform cultural heritage institutions by decolonising the processes of cultural production, curation and archiving.

Related outputs:

luc-athens.org/cultural-commons-how-do-we-put-it-into-practice-in-medellin/

Media coverage:
blog.p2pfoundation.net/cultural-commons-how-do-we-put-it-into-practice-in-medellin/2018/09/11
An interdisciplinary knowledge exchange programme aimed at sharing experiences and gaining further understanding around how places can build resilience and recover from disasters.

The overall aim of this activity is to engage academics, students, industry, civil society and policy makers in Mexico through an intensive 3-day interdisciplinary and international workshop, led by a collaboration between UNAM, IPT, Universidad Iberoamericana Puebla and TEC Monterrey (Mexico) with University of Edinburgh (UK) and aimed to share experiences in relation to disaster recovery. This knowledge exchange will provide the basis for understanding how places can build resilience and recover from disasters, such as the recent earthquake that affected the area in September 2017. In the next 30 years, 90% of urban population growth will take place in small, medium and large cities, where there are a range of weaknesses for disaster recovery across governance and access to resources.

Approaches to dealing with these weaknesses should be rooted in seeking avenues for empowering governments and communities, breaking disciplinary boundaries and create innovative partnerships. This proposal emerged from the initial response and recovery from the 2017 earthquake specifically related to education experienced by TEC Monterrey, which in 2012, re-defined the institution’s strategy for education. This is rooted in a model able to integrate emerging world-wide challenges, such as economic instability, international competitiveness, global inequalities as well as emerging environmental and health challenges. Educativo TEC21 is based on an integral, interdisciplinary approach to education aimed to develop leadership skills, to enable capacity to confront forthcoming challenges and opportunities.

The learning path does not only include competencies related with the specific disciplinary backgrounds, but also includes the development of ‘transversal’ skills throughout the learning process (TEC21, 2016). At the same time, IPT, Universidad Iberoamericana Puebla and UNAM have developed knowledge and expertise in relation to disaster recovery, that ranges from the analysis of geodynamic movement to community engagement and networks that emerge as a response to the emergency.

The the proposed activity has the objective of providing an opportunity for addressing emerging global challenges in relation to resilience and disaster recovery through sharing experiences.

This knowledge exchange is expected to provide the framework to formulate clear research questions and lines of investigation reflecting the expertise and interests of all participants. This will enable the development of a multi-disciplinary global research network which should continue creating knowledge, capacity and evidence to recover from disasters.

As a result of this activity we have the following expectations:

- The development of an interdisciplinary research group aimed to continue collaboration for research and capacity building.
- The identification of potential research agendas, including questions and programmes which could be made available to the related postgraduate student community as well as staff with an interest on this area, and should be the starting point for the above long-term collaboration.
- The identification of potential drivers as well as challenges in the development of a long term collaborative teaching or research programme. This may include academic, financial and administrative issues.

Both the Centre for Contemporary Latin American Studies and the Office of the Americas within the University of Edinburgh are committed to supporting and promoting this activity.
A fellowships programme aimed at developing interdisciplinary research and partnership with two key institutions in Latin America (UNAL and UNAM), focused on understanding the relationship and interlinks between hazards and risk, conflict and informality.

This is a small scale fellowships programme integrating academic colleagues from Mexico (Universidad Nacional Autónoma de México, UNAM) and Colombia (Universidad Nacional de Colombia, UNAL). The programme furthers collaboration with existing partners in both countries, building on shared research agendas and maximising opportunities for future research collaboration. The fellowships will offer pathways to continue and develop collaboration with these institutions, not only through providing a platform for undertaking research in the identified areas, but also providing an ambassadorial role between the universities in key disciplines.

A key longer-term aim is to further develop this network to address major issues of importance across Latin America, acting as an exemplar of what can be achieved by collaborations between outstanding universities across continents. The focus of the programme is on three, interdisciplinary and interconnected research themes, as initial knowledge clusters for future research:

**Hazards:** a key challenge identified was the exposure to environmental hazards, a topic on which UoE leads substantial interdisciplinary research. GeoHazards, a research group based in the UoE School of Geoscience but with cross-disciplinary activities across the institution, is learning from a range of hazards across the world and is facilitating community engagement.

Although some research has been undertaken in Colombia by Edinburgh academics, less so far has been undertaken in Mexico. The collaboration will enable a deeper understanding of challenges facing the region, opening new research horizons for UoE leaders and research students.

**Conflict:** a key area for mutual research with a focus on understanding crises, displacement, peace-building and global health, with a particular view into conflict and violence. UoE has undertaken world-leading research on peace agreements and has a number of GCRF awards relating to displacement. Little of this research has focussed on Mexico or Colombia.

It underpins aspects of the research to be undertaken in the other themes. This innovative approach offers an exciting and novel opportunity for us to build shared, coherent research capacity in an entirely new interdisciplinary area. This collaborative research will further our understanding of the impact of conflict and violence in Latin America, and contribute to addressing the challenges facing the region.

**Informality:** considering the role of unofficial influences and actions on a population, including vulnerable communities, informal economies, informal settlements infrastructures and governance. Ongoing research in Edinburgh has focussed on Mexico or Colombia.

Collaborating with UNAM and UNAL will greatly extend the opportunities for developing Edinburgh’s research in this important area. An example of recent ongoing collaboration is the GCRF funded project led by our Law School around drug war-torn communities on the Mexican-US border.

We expect that all research undertaken by the fellows will contribute to furthering engagement with wider Mexican and Colombian contexts, shaping future research by local and regional priorities and generating impact with local communities, NGOs, policy makers and business as appropriate.
CO-PRODUCTION OF LANDSLIDE RISK MANAGEMENT STRATEGIES THROUGH DEVELOPMENT OF COMMUNITY-BASED INFRASTRUCTURE IN LATIN AMERICAN CITIES

Testing the upscaling and international transfer of co-produced landslide risk-mitigation socio-technical arrangements.

Building on the previous ‘Resilience or Resistance’ research, this project aims to substantially develop our understanding of the scope for co-produced landslide risk-mitigation socio-technical arrangements through upscaling and internationalising this experience and meeting the following objectives:

Objective 1: Test the roll-out of community-based landslide risk management to two further communities in Medellin’s low-income NW sector.

Objective 2: Test transnational transfer of community-based landslide risk management between Colombia and Brazil, including through implementation of participatory monitoring and mitigation of landslide risk in one informal settlement in São Paulo.

Objective 3: Draw lessons on community-based landslide risk management from the Colombian and Brazilian experiences transferable to other Global South cities.

For the third objective, an international discussion/dissemination event will be held in UK, with Colombian and Brazilian research teams and community representatives, to reflect on the findings gathered in previous meetings, and produce a set of recommendations for socio-technical arrangements for co-production of landslide risk-mitigation strategies.
ARE ‘SMART CITY’ APPROACHES APPROPRIATE TO THE CHALLENGES OF URBAN RESILIENCE AND LIVEABILITY? LESSONS FROM PILOT EXPERIENCES IN MEDELLÍN, COLOMBIA

Exploring the limits of ‘smart city’ initiatives from the perspective of poor and vulnerable communities and the scope for combined use of top-down and bottom-up data-generation and management, as a basis for joint decision-making in urban management.

This project addresses the following challenges: (1) to assess the wider technological and societal impacts of smart city initiatives, including assessment of the effectiveness of adopted technologies as well as inequalities and social inclusion/participation; and (2) to redefine smart city approaches in a way that responds to the needs of the population, improving urban resilience and liveability.

Addressing challenge 1 requires an evaluation of the purposes and impacts of smart city initiatives in relation to poor, peripheral and vulnerable communities.

This proposal contends that addressing challenge 2 requires enabling and supporting community-led data collection and management on the one hand, and the development of processes whereby top-down and bottom-up data generation and management can be used in complementary ways and provide a basis for joint decision-making on the other hand.

Essentially, the method consists of comparing top-down and large scale application of technology and data use with community-centric and -led initiatives to improve sustainability and liveability in cities. Community, third sector and local government stakeholders in Medellín and other cities will be involved in specific stages of this comparison, in order to maximise impact. Key methods being used are:

- Desktop review of literature on smart city and community-based approaches to urban management.
- Fieldwork, data collection and interviews with relevant government agencies, community organisations and NGOs in Medellín.
- International workshop in Medellín (May 2019) involving local stakeholders in Medellín and representatives from local government, communities and smart urbanism technology & services providers from other relevant locations analysed in the literature review, including site visits to locations related to Medellín’s smart city initiative and to the low-income neighbourhoods where the current HWU-led research on community-based approaches is being undertaken.

Related outputs:
- Website: http://archive.northsearegion.eu/tid/1946/theme-6

WATERFRONT REGENERATION IN SCOTLAND

Exploring the potential for successful place-making in Scotland’s major waterfront regeneration projects.

The 2008 financial crisis and the subsequent recession have had a great impact on the economic development of Scotland, as well as of other parts of the UK and Europe, causing a dramatic slow-down in urban regeneration and urban development activities. Urban policy-making during this period has not stalled however, with new strategies, policies and guidance being formulated at both national level (e.g. the Scottish Planning Policy; National Planning Framework 3, etc.) and local level (e.g. City of Edinburgh Council’s Proposed Local Development Plan and the Edinburgh Design Guidance). With the expected upturn in the economy there is a need to understand how these policy and guidance frameworks can be best implemented to unlock the social, economic and environmental potential of urban regeneration in Scotland.

With the current major waterfront regeneration projects across the three Central Belt cities of Glasgow, Dundee and Edinburgh accounting for a large proportion of overall urban regeneration in Scotland, these provide a key opportunity to test the aspirations and strategies proposed in policy and guidance against the practical drivers and barriers of institutional arrangements and socio-economic conditions. Lessons can be drawn from past experience in waterfront regeneration in Scotland, as well as internationally. In addition, such lessons may be applicable to new and future waterfront regeneration initiatives elsewhere in Scotland, including in less urbanised areas such as in the Highlands and Islands.

This project builds on earlier action-research on waterfront regeneration around the North Sea funded by the European Regional Development Fund Interreg IB North Sea Programme 2003–2007.
Enhancing performance and objectivity of historic building surveying using modern reality capture technology, machine learning and BIM.

This ongoing project is developing new solutions to enhance the performance (time) and robustness of defect detection, classification and recording when surveying a historic building. Focus to date has been stone masonry. The project particularly investigates laser scanning and photogrammetry as modern reality capture technology, innovative algorithms for stone segmentation, machine learning as a robust and objective way to classify defect, and integration with BIM technologies and processes.

Related outputs:
BUILDING GREATER BRITAIN: ARCHITECTURE, IMPERIALISM, AND THE ENGLISH BAROQUE REVIVAL, C.1885–1920

Focusing on late Victorian and Edwardian civic architecture, this project re-evaluates the relationship between architecture, imperialism, and national identity in Britain and the wider British world (i.e., ‘Greater Britain’) through an examination of the English Baroque Revival in architectural design.

Often referred to as ‘Edwardian Baroque’, this important if obscure phase in the history of British architecture occurred during the late nineteenth and early twentieth centuries, but which to date has received little scholarly attention. Emerging from and thus symbolising the renewed engagement with empire following Benjamin Disraeli’s ‘new imperial’ politics of the 1870s, the Edwardian Baroque can be understood as a prominent material culture expression of this particular episode in the political and cultural history of Britain. By situating this architecture in its proper cultural context, one of the principal aims of the study will be to connect it to broader currents in British history, politics, and empire.

EUROPEAN WRITING ON THE ART OF THE UNITED STATES 1945–1990

The focus of the book is the reception of US visual art in the writings of non-Anglophone art historians, artists and critics in Europe between 1945–90.

This timespan opens up exciting opportunities to re-think and explore the ideological, social, economic, aesthetic, and didactic positions on which European responses to American art were grounded. The starting point of 1945 marks the division between what has been called ‘Historical American Art’ and ‘Contemporary American Art’ (see Barbara Groseclose and Jochen Wierich, eds., Internationalizing the History of Art, 2009). As the latter was more internationalist in outlook, it naturally stimulated a more vigorous response across the globe in non-English-speaking cultures. Americans themselves not only defined the moment when American art became synonymous with contemporary art but also exported it through the idea that American painting had ‘triumphed’ on a world stage (Irving Sandler, Triumph of American Painting: A History of Abstract Expressionism, 1970).

While the notion of ‘triumph’ is controversial, the consensus is that the American postwar movements – abstract painting (abstract expressionism, post-painterly abstraction, hard-edge abstraction, colour-field painting, etc.), pop art, minimalism, conceptual art, land art, body/performance art; followed in the 1980s by postmodern tendencies such as appropriation art and abject art – experienced an unprecedented international success. The anthology’s end date of 1990 marks Perestroika in the Soviet Union, the fall of the Berlin Wall in 1989, and the unravelling of the Cold War.

Related publications:
Publication is scheduled for February 2020, to coincide with the annual conference of the US College Art Association.
‘LOUDOUN’: A DOCUMENTARY FILM

‘Loudoun’ explores landscape design and architecture in Scotland c.1700. It uses various film techniques – animation, archival photography, dramatisation, still photography – to communicate inaccessible fragile archives and complex history with greater immediacy to non-expert audiences.

The film addresses the question: is it possible to communicate the complexity of the scholarly historical discipline through the film without compromising its intrinsic value? Additionally it shows inaccessible fragile drawings to a wider public and utilises the disciplines of music, costume design, art history and interiors to set it in context. Over 90% of the film uses primary sources for its thematic and physical content. There is no voice-over or presenter distancing the viewer from the film without compromising its historical discipline through the film without compromising its intrinsic value.

How can they commemorate their lost parents and do their duty? They read 17th-century metaphysical and Latin texts, play games of cards and dice – sadness and hope inspire them to design a garden commemorating their dead parents? Later, Mar became the principal designer of this formal landscape style in Scotland.

The scripted live-action sequences and animations were completed earlier this year and we are now in post-production and anticipating release in October/November 2018.

Mass Housing will provide a comprehensive global history of the interaction of modern architecture and state power round the cause of ‘homes for the people’.

Mass Housing is a single-author research and publication project which will result in a major (500 pages+) monograph to be published in 2020 by Bloomsbury Academic Press. Its focal subject is the vast drive after 1945 to provide “homes for the people”, which was one of the world’s most ubiquitous modern architectural programmes, and a central legitimizing pillar of nation-states worldwide; yet it also reflected the strong transnational cultural theme of egalitarian Modernist transformation. Recently, in most European and Western countries, this national/international legacy has undergone waves of disillusionment and attempted revitalization.

But its sheer scale and controversial character have seemed too overwhelming to allow any effective global historical overview. There is growing interest in the story of mass housing, but historical accounts are so far restricted to a national/regional/local level.

This book will, for the first time, tie these fragmented sub-themes into an authoritative narrative of the global movement of Modernist mass-housing production, from its European roots around 1900 to its recent dramatic resurgence in Eastern Asia, acknowledging both its linking themes and its diversity. It traces a century of furious campaigning, focusing on intense high-production “hotspots” in the post-1945 years, but contextualising these with backdrop phases.

Its overarching theme is the interaction of Modernist ideology and expansive state power in the ‘housing-drives’ of the ‘long 20th century’. Reflecting mass housing’s regional diversity, the book’s overriding narrative incorporates a geographically-arranged secondary structure. Framed by chronological introductory and concluding sections (Parts I, III), the central section (Part II), covering the focal 1945–1989 era, outlines the world’s key mass-housing ‘campaigns’, spanning all continents and all major countries.

The book firmly integrates the architectural and city-planning practices of Modernism with the key contextual factors shaping housing production, such as politico-cultural ideology, socio-economic influences and building construction/organisation. This, in turn, will allow exploration of broader meta-narratives, such as the relationship of architecture as a whole to state-building and cultural/political ideology. This represents a ‘globalised’ expansion of the chronological/geographical/thematic formula of my 1994 book on UK housing (with Stefan Muthesius), Tower Block. Compiling this story involves literature-surveys and extensive fieldwork in all continents of the world.


Tower Block: www.fields.eca.ac.uk/gis/TowerBlock.pdf
A History of Public Housing in Hong Kong will provide an in-depth history of the political, organisational and architectural aspects of the world’s most daring public housing programme.

How did this astonishingly bold building campaign come about – so different from anything before it in the century-long global saga of public housing? While some existing books deal with fragments of this subject, this is the first to address it in its entirety. This is a subject of high intrinsic historical interest: one of the most dramatic episodes in the history of the building of the modern, post-1945 world, and one which, remarkably, still continues today.

Here, the book establishes what was built and why, based on methodical historical explanation of archive sources and recollections of key participants as well as field-based inventorisation of the built patterns. And it contextualises the programme within the wider global narratives of mass housing and of late British colonialism, especially through comparisons with the parallel housing drive in decolonising Singapore.

In the process, the book counterbalances the portrayal, in most Western countries, of public housing’s story as a pre-ordained ‘failure’.

During those years, Scottish nationalism was assertedly maintained, in a form very different from today, focused on parity of esteem within Union and Empire – and the monumental forms of architecture played a central role within that discourse. Our book encompasses all the principal public architectural works of 16th–19th century secular ‘castellated’ Scottish architecture, from the palaces left behind by the ‘lost’ monarchy to the story’s climax – the proud ‘Scotch Baronial’ country mansions and town halls of the Victorian age.

The book will ‘introduce’ to an international audience the world’s first self-consciously ‘nationalist’ architecture, and we do so from a strongly document-based research angle, referencing both manuscript and contemporary publications.

Scotch Baronial (co-authored with Aonghus MacKechnie) fills the longstanding gap between architectural and politico-cultural analyses of Scottish ‘national identity’ through a politically-framed examination of Scotland’s ‘castellated’ architecture, especially during the ‘unionist centuries’ from 1603 onwards.

Scotland’s politics have always been expressed in its architecture, but nobody has narrated that connection. Architectural and documentary historians have avoided each other’s ‘territory’. Our book begins with the wider context of early-modern European politics, moving on to address the growth of Romanticism and nationalism at an international level, explaining the pioneering architectural role played by ‘Imperial’ Scotland. We finish with the shock of World War I, and a new and paradoxical age in which an independence-orientated political Scottish nationalism emerged while the ‘Castle Age’ finally expired.
ARTS BUILDINGS IN BRITAIN, 1945–95

Looking at Arts buildings in Britain between 1945 and 1995, in order to shed significant light on the period’s architectural, social, and urban histories.

Between the 1950s and the early 1990s, a wave of building led to the construction of often substantial new theatres and concert halls across the length and breadth of England, Scotland, and Wales. The vast majority were – unlike pre-1939 theatres – supported by public subsidies, both in terms of their construction and operation. In this respect, the introduction of a system of public subsidy in the late 1940s had re-cast culture as an arm of the nascent Welfare State, in which access to the arts was understood as a basic right and a way to counterbalance the potential materialism of an increasingly affluent society.

Local authorities were often keen to promote theatre building as an expression of their ambitions and to stimulate civic pride: many theatres were included in larger ‘civic’ developments and comprehensive redevelopment schemes. Architects, meanwhile, embraced the possibilities of what Peter Moro – one of several designers who specialised in the type – dubbed the ultimate building for its balance of public and private functions, its symbolic potential, and its technical complexity.

This project has led to journal articles, magazine contributions, conference presentations, and a Knowledge Exchange project with The Theatres Trust. The principal output is a book of 120,000 words (Oxford University Press, 2018), which, by setting these buildings in a wider context, also sheds new light on the architectural and social histories of post-war Britain.

Current work is looking at the context in which Arts buildings were conceived and realised in the 1980s, in order to contribute to the emerging architectural history of Britain in that contentious decade.

Related outputs:
Peter Moro was a German-born architect who, after studying in Germany and Switzerland, came to Britain in the mid-1930s.

He worked initially with Berthold Lubetkin’s famous practice, Tecton, before collaborating with Richard Llewelyn-Davies at the end of the 1930s on the design of an acclaimed house in Sussex. Following internment at the start of the Second World War, he developed a career as a respected educator and designer of exhibitions, before in 1948 joining the team designing the Royal Festival Hall. Here, working alongside Robert Matthew, Leslie Martin, and the architects of the London County Council, Moro played a key role designing the interiors of the hall.

Moro set up his own practice in 1952. His experience with the Festival Hall meant that he was regarded as a specialist in the design of Arts buildings, and several theatres followed, notably Nottingham Playhouse (1963) and Plymouth Theatre Royal (1982). However, his practice was also responsible for schools and housing, as well as a small number of commercial projects.

These projects have remained almost entirely unstudied. Moro’s practice comprised a small, close-knit team, and its work was highly regarded for its architectural integrity and ingenuous planning. Like Lubetkin, Moro was convinced that architecture should be a contemporary art, not merely a matter of function; at the same time, he was a committed Modernist, and remained so even as some of his contemporaries started to doubt the Modernist project during the 1970s and 1980s.

Moro’s work sheds useful light on British architecture in the years between the 1930s and the 1980s, challenging the idea of a break caused by the Second World War and showing how a commitment to good design and the ideals of an evolving Welfare State could generate architecture of real quality. The key output from this project will be a book for Liverpool University Press, due to be published in 2021 to mark the seventieth anniversary of the completion of the Festival Hall.

A ‘contemporary history’ of recent British theatre architecture.

Despite austerity and sharp cuts in public expenditure, the last decade has seen something of a boom in building and creating space for theatre in Britain. Major new theatre buildings, such as Aylesbury’s Waterside Theatre and Doncaster’s CAST, have been accompanied by innovative projects such as Storyhouse, Chester, which transformed a redundant 1930s Odeon cinema into a library, theatre, and small cinema, cleverly mixing functions to well-received effect. Liverpool’s Everyman Theatre was reconstructed to popular and professional acclaim, winning the Stirling Prize in 2014. There has been significant investment in the existing stock of theatres, with older theatres being transformed: a particular focus has been the refurbishment and reworking of theatres built during the 1960s/70s boom, including Chichester Festival Theatre, Sheffield’s Crucible Theatre, and the National Theatre in London.

This project has led to a book of 65,000 words for Lund Humphries, which examines theatre architecture in Britain during the last ten years. Published in autumn 2019, the book – essentially a ‘contemporary history’ – is structured as a series of case studies plus an extended introduction. Part of Lund Humphries’ ‘professional’ series, the book is intended for theatre design teams and clients as well as those with an interest in the subject. As a result, it aims to uncover and analyse the ‘processes’ by means of which theatre projects are delivered, and the pitfalls experienced along the way.

A major new study of naturalism in European and Latin American architecture, 1400–1800, which sheds light on how architecture was used to define both nature and representation at the beginning of the modern era.

Since the nineteenth century, architecture has been defined by what it is not – as a field whose imitative functions little resemble those of so-called “figural” arts like painting and sculpture. And yet few would deny that architecture joins the figural arts in imitating other entities, especially natural forms. Nature and Imitation in Early Modern Architecture will excavate the history of this paradox. Throughout the ancient and medieval periods, European architects variously promoted and transgressed the classical dictum that art – and, by extension, architecture – should imitate nature. However, it was first with the circulation of Vitruvian literature during the fifteenth century that the continent developed a coherent discourse on architectural figuration.

Research on the imitation of nature in early modern architecture has mainly addressed the emulation of the human body and plant life, as well as Urarchitektur such as Adam’s house in paradise. With a few key exceptions, most scholars have regarded these as parallel forms of architectural imitation, focusing on the natural objects represented rather than the ways in which the task of architectural figuration was variously conceived at distinct historical junctures and across different cultural contexts. Nevertheless, early modern thinkers increasingly distinguished among building that imitates raw nature, architectural embodiments of manipulated nature, and architectural representations of structures comprised of naturalistic forms. Meditations on architectural naturalism in both text and building likewise engaged a complex rhetoric of artifice and artificiality.

Until we grasp how architecture variously embodied nature from the Renaissance to the Enlightenment, we cannot understand the origins of modern ideas about architectural figuration, representation, or meaning, nor architecture’s present relationship to the figural arts.

The history of architectural naturalism can only be recovered though a diachronic and geographically broad array of case studies. The project will argue that the Enlightenment’s rejection of the imitation of nature as a goal of architecture precipitated the medium’s ultimate alienation from the figural arts and the modern notion of architecture as an autonomous language of representation. Nature and Imitation will thereby challenge the widespread assumption that architectural figuration has always differed from imitation in the figural arts.

The first monograph on the central architectural theorist of northern Europe between the ages of Albrecht Dürer and Peter Paul Rubens, which explores how artistic techniques came to anchor architectural practice at the advent of modernity.

Clashes over the mediation of architecture – a discipline that mixes manifold arts and sciences – have long wrought competing ways of conceiving knowledge. From the tumultuous, sixteenth-century rise of print to current digital disruptions, architecture’s incursions into new media have upended conventions of technical know-how.

The Edifice Undone asks how the changing media of architecture have shaped concepts of practical knowledge. Its main character is the canonical but little-understood Architectura of Strasbourg artist Wendel Dietterlin the Elder (c. 1550-1599), a treatise that negotiated architecture’s fluid epistemic boundaries as few other Renaissance books.

The brief text and over two hundred etchings that Dietterlin crafted for his Architectura – released in German and Latin/French translations across three installments in 1593, 1594, and 1598 – portrayed innovative syntheses of architecture, painting, and sculpture.

The Architectura also radically presented the five canonical Orders of architecture as manners of ornament for all artistic media. The result was a new and striking vision of architectural practice as a set of procedures contiguous with all other visual arts, and a treatise instrumental to the birth of the modern architect as a designer of spaces, objects, and even experiences. We have long seen the Renaissance debut of the modern, multimedia architect as a conceptual turn, in which architecture became an art of cognition and drawing rather than construction. Yet Dietterlin’s Architectura, the first architectural treatise pitched at non-architects, shows that Renaissance architecture’s conceptual turn also made questions about the medium’s concrete practices more pressing than ever before. The Edifice Undone recasts the birth of the modern architectural profession by attending not only to the material and textual dimensions architecture’s first media revolution, but the strategies and methods of that coup as well.

I contend that Dietterlin used architecture’s waxing cosmos of techniques to dismantle and expand concepts of experiential knowledge at the dawn of modern empirical thought.

Related publications:
This project presents evidence for a new narrative in British planning history, one that embeds the digital computer in one of the most critical and high-stakes debates of the late postwar period: how to achieve efficient and equitable town and country planning amidst rapid industrialization and urbanization.

This happened because civil servants began to exploit the general characteristics of mainframe computers (speed, accuracy, replicability, and economy) to define new ways of representing and measuring visual phenomena, and of comparing alternative visions of the countryside, using quantitative “facts” rather than visual images. The result was an early form of computer vision that measured and quantified rather than depicted landscape, a technology used to profoundly transform not only visualization, representation and management practices, but that also helped to justify continued industrial expansion.

Related publications:
BUILDING A REGIONAL MODERNISM: ART NOUVEAU ARCHITECTURE IN NANCY, 1895–1914

A major study of the Art Nouveau architecture of Nancy, and the first in English, which demonstrates how architects in Nancy used the style to create an enduring ‘regional modernism’ that served as an emblem of the resurgent vitality of eastern France in the decades following the disastrous Franco-Prussian War.

Over the last two decades of the belle époque, the city of Nancy in eastern France experienced an unprecedented era of economic growth, urban expansion, and building activity. A bevy of progressive and talented artists, architects and industrialists seized on the opportunity to effect a renaissance in the decorative arts, architecture and design, using the style of Art Nouveau as a regional emblem. They attempted to direct attention in the rest of France to a decidedly regionalist agenda, opposed to the Parisian requisitioning of human and material resources from the provinces for its own benefit and especially the recapture of the of Alsace-Lorraine, annexed by Germany following the disastrous Franco-Prussian War.

Nancy’s architects of this generation were the first to be trained professionally en masse at the École des Beaux-Arts in Paris, and they used their skills and talents to reshape the cityscape; constructing new residential, commercial, industrial, and institutional structures for the city’s growing number of leaders in business and industry, many of whom had arrived from the ‘lost provinces’ in the aftermath of the Franco-Prussian War. They were assisted by the city’s cadre of decorative artists in the regional association of artists, designers, and industrialists founded by Emile Gallé in 1901 called the École de Nancy, turning their Art Nouveau structures into total works of art that showcased the wealth and high level of industrialized craftsmanship that helped in many ways distinguish their strand of Art Nouveau from that of Paris. Their commitment to an artistic modernism that resonated with an enthusiastic regional audience allowed Art Nouveau to survive in Nancy for an astonishing two full decades, longer than almost anywhere else in Europe.

The project has produced numerous conference papers and journal articles. The principal output is a monograph of approximately 120,000 words, due to be submitted to Yale University Press in 2019.

Related publications:
LE CORBUSIER, MODERNISM AND RECONSTRUCTION IN FRANCE, 1944–52

A study of Le Corbusier’s early post-World War II career, focusing on his involvement with the French Reconstruction and last attempts to implement his full urban visions as developed during the 1920s–40s, situating him in the context of larger French discussions of the future of modern architecture in the wake of the demise of Vichy and the attempts to fashion a new republican postwar society.

Having been spurned by Philippe Pétain’s Vichy regime after offering his services to it in 1940, in 1945 Le Corbusier sought to obtain three commissions from the French Ministry of Reconstruction for new building projects after the war: the now-famous Unité d’Habitation in Marseille, the reconstruction of the cities of La Rochelle-La Pallice on the Atlantic coast, and a reconstruction plan for the devastated city of Saint-Dié-des-Vosges in eastern France. This project analyses the history of these three projects in greater detail, arguing for their importance as the fullest practical expression of Le Corbusier’s urbanism as developed over the previous quarter-century. Ultimately, the only project of the three that Le Corbusier would realize was the Unité d’Habitation, which was itself an incomplete portion of a much larger urban vision that would have been fully expressed at either La Rochelle or Saint-Dié had he been able to implement either plan. The project traces the history of Le Corbusier’s involvement in each of these three sites; eventually he was forced to resign as architect-in-chief at La Rochelle after his plans for a high modernist housing scheme met with massive public outcry, while similar public dissent derailed his attempts to hijack the project at Saint-Dié from the official reconstruction architects there.

In a broader sense, this study considers the uneasiness with which modern architecture was greeted in France after the Second World War in general, focusing on the reasons for opposition to Le Corbusier’s plans, including a nostalgic conservatism, entrenched cultural regionalism, and a strong national desire for consensus-building that did not appear too extreme, all of which can be linked to the appeal of the Pétain’s Vichy regime and which demonstrates the legacy of such entrenched traditions in an era of architectural history often cited for its ruptures from the past and embrace of modernism.

The principal output of this project is slated to be a monograph of ca. 100,000 words, but numerous conference papers and two journal articles have already appeared. It has also spurred numerous focused explorations into tangential areas of interest, such as the development of French regionalism during the first half of the twentieth century.

Related publications:
We seek to broaden the way time is approached within design and to develop and experiment with design principles that enable the excavation of time as multiple, unequal and contested.

From critiques of acceleration, to efforts to frame present actions within more extended futures, designers have been increasingly concerned with how perceptions of time influence practices and how these perceptions can be influenced by design. In this project, we argue that perspectives of time in design are highly influenced by dominant narratives that describe time as uniform, external to practices, and in a state of continuous acceleration. We propose Temporal Design as a shift from pace, direction, and subjective experience towards looking at time as emerging out of relations between cultural, social, economic and political forces. We argue that this pluralist perspective helps to demystify problematic experiences, potentially enabling more inclusive ways of understanding time.

The project includes designed objects, critiques of dominant philosophical approaches to clocks, cataloguing art and design projects that challenge the standard clock, and a series of Temporal Design workshops.

Key outputs:


This research represents a new kind of critical investigation of the renowned Fun Palace as an emancipatory educational and civic cultural programme developed in London between 1961 and 1975.

Crafted through the interdisciplinary collaboration between the radical theatre entrepreneur Joan Littlewood, architect Cedric Price, cyberneticist Gordon Pask amongst others, it aimed to construct situations in which self-directed and playful exchange could activate audiences. By 1964 the Fun Palace had gained momentum, and a giant cybernetic infrastructure was depicted within the Civic Trust’s plans for Lea Valley. However, by the end of the decade, its social ambitions were conveyed in a series of community-led temporary and local playgrounds emergent in Stratford East.

Constantly struggling for a site in the institutional map of London, the Fun Palace would be realised as a media event, through the different representations designed to promote the ambitious idea during the 1960s and 70s.

Related publications:

South East Asia, and Bangkok in particular, is justifiably renowned for its vibrant street food, and books such as David Thompson’s epic Thai Street Food (2009) have catalogued individual recipes but the means by which street food is delivered seems to have been largely overlooked. This project focuses on the mobile architecture of the vendors’ trollies, carts and wagons. Each stall holder’s wagon is highly personalized and bespoke to the particular food/snack for sale. Each stall is a small-scale (temporary) intervention in the public realm which connects to a wider network.

Related output:

Drawing is central to architecture and allows us to discern/discover the essentials of design. This project examines the informal architecture of mobile street food vendors (in SE Asia) and celebrates the aesthetic and societal value of a myriad of nomadic stalls as the antithesis of the sanitized food court.
THE SKETCHBOOK AS A CULTURAL TECHNOLOGY

Studying the conditions of emergence of the sketchbook as a material object, a disciplinary tool, and an instrument of self-fashioning; its historical transformations; and its relation to changing technological, material and ideological networks.

Artists’ and architects’ sketchbooks have usually been considered in relation to particular bodies of work as evidence of specific experiences and artistic processes. This study moves away from what have to date primarily been biographical and evidential readings of the sketchbook in order to address it in its own right as a historical, physical, and even technological form. It is interested in questions of: the conditions of emergence of the sketchbook as a material object, a disciplinary tool, and an instrument of self-fashioning; its historical transformations; and its relation to changing technological, material and ideological networks (involving, for example, paper manufacture, drawing instrumentation, technologies of travel – but also aesthetic ideologies, concepts of self-edification, markers of cultural authority, etc.)

The research, which will develop through close analyses of selected sketchbooks held in the British Museum and other archives, takes a broad cultural-historical approach to its material informed by recent critical work on historical forms of media and representation.

The study is orientated by clusters of thematically interlinked questions – How do we define the sketchbook and is the definition stable across time? When does the sketchbook emerge and how does it transform? In what specific ways has it been mobilised in the construction of the cultural authority of artists and architects? How do the specific formal and material properties of the sketchbook animate and anticipate developments in representational technique?

And how is its development shaped by the increasing historical separation and proliferation of specific disciplinary domains of inquiry?

DESKTOP THE DEEP FUTURE: CATASTROPHE, CONTAINMENT AND THE CULTURAL IMAGINATION

An archaeology of the ways in which late-modern technoscientific culture has addressed itself to – and has imagined projecting itself into – the deep future.

This book aims to develop an archaeology of the ways in which late-modern technoscientific culture has addressed itself to – and has imagined projecting itself into – the deep future.

Developing out of a background within which theories of the earth, natural history, speculative fiction and military-industrial advancement are closely entwined, far-futures thinking developed through the Cold War era as a complex arena in which geopolitical antagonism, competing ideologies, and technological progress met with military strategy; emergent discourses of risk, and assorted visions of the society-to-come. Importantly, the deep future is a condition that extends beyond any catastrophic occurrence that marks the threshold of knowability. Deep futures never sit within narratives of continuity with present conditions, but it is exactly this that makes them such peculiarly symptomatic sites for understanding the latter (how the present assembles or ‘designs’ itself for the future; what it selects for salvage; its criteria of inclusion or exclusion; its imagined ethical responsibilities toward those to come; etc.)

This is to say that the postcatastrophic deep future is where the present, any present, meets its limit conditions – where not only material endurance but also the possibility of any communication comes into question. We see this, for example, in contemporary dilemmas over the marking of radioactive waste sites, which will remain toxic for so long that even the species-condition of the future addressees of the signs is uncertain. In this way thinking about the deep future critically folds back into, and poses questions to, the constitutive limits of contemporary cultural practices and artifacts, even as they are assembled and organised to make claims upon – and even to colonise – that future. The container, as the vessel through which the present conveys or transmits something to the future, is the characteristic technocultural artifact of this story and the book will build up through a series of case-studies that examine and expand upon specific, although interlinked, cultural histories of such projects of containment.

ARCHITECTURAL LINEAMENTS: DRAWING AND NARRATIVE IN THE WORK OF PETER WILSON

A sustained scholarly consideration of the work of this important contemporary architect.

Emerging from the Architectural Association in the 1970s, Peter Wilson’s work has displayed a very particular and finely-tuned graphic sensibility, involving a heightened condition of architectural figuration. Yet despite his significance, the range of his production and his publications, there has been no sustained scholarly consideration of his work.

The project addresses this through a two-day symposium and related publication. The symposium was held at ESALA on 9 and 10 April 2018 and involved reflections upon Peter Wilson’s work by an international group of scholars and practitioners including Kurt Forster, Isabelle Doucet, Nigel Coates, Nicholas Boyarsky, Adrian Hawker, Michael Gold, Mark Dorrian, Izabela Wieczorek, and Elisabetta Terragni.

The event was held with the collaboration and support of the Drawing Matter Trust and included a lecture and open discussion with Peter Wilson himself. A special issue of the Journal of Architecture, based on the proceedings, is currently in preparation.

THE PLACE OF SILENCE: ARCHITECTURE / MEDIA / PHILOSOPHY

An exploration of the poetics and politics of silence in architecture and related media.

This edited collection – which incorporates contributions by internationally recognised scholars in architecture and the humanities, including Gernot Böhme, Paul Carter, and Alberto Pérez-Gómez – explores the poetics and politics of silence in architecture and related media through a series of thematically interlinked chapters. What counts as silence in specific situations is highly relative, and the term itself – which is often linked to some condition of cessation or interval – carries complex and varied significations that make it a revealing field of study. Thus while, on one hand, the often-remarked upon contemporary ‘loss of silence’ has been frequently linked to a disappearance of reflection or inwardness, silence has also, on the other, been understood as a condition of intensified outwardness – of heightened attention, anticipation, suspense or expanded listening.

At an extreme, silence is often the sign of a limit condition – the silence that falls at the point of exhaustion, catastrophe or technological breakdown – or else is taken to mark the traumatic limits of experience, as that which testifies to an event beyond any possibility of adequate expression or symbolization. And yet at the same time, silence inheres in the everyday, appearing as the very precondition of communication, as the gap or delay that acts as the support of speech, or the spacing that forms the condition of legibility of written text. Divided into four thematic sections – Mediating Silence, Material Silences, Practicing Silence, and Silence and the Senses – the chapters of the book unfold a rich and complementary array of perspectives on architecture and silence. Together, these build into a volume that will form the key scholarly resource on this topic.
This project investigates the roles played by colour in architecture.

Saturated Space: Architecture of Colour

By: Fiona McLachlan
University of Edinburgh

With: Antonio Malinowski
Adam Nathaniel Furman
Ivana Wingham

Year: 2011

This research builds on a long-standing interest in colour and a significant body of practice experience, including work for the University of Edinburgh. Several publications have been produced, including Architectural Colour in the Professional Palette (2012) and the co-authored book Colour Strategies in Architecture (2015).

The current research is projected to lead to outputs including a co-edited book which will present personal reflections from neuroesthetics, chemistry, earth science, mathematics, physics, chemical biology and nanoscience; specific works from practitioners in art and architecture and insights from commentators, theoreticians and critics in art and literature – each in their own field, a ‘saturated space practitioner’. Together they demonstrate a search for this unique and optically chiasmic space of saturation, one that is contingent to the practice of colour and architecture at urban, interior, object and molecular level.

These observations will offer the reader a narrative journey of poetry and precision focused on the sublime experience of colour as a sensuous spatial modifier. Saturated Space: Architecture of Colour represents an, as yet, unseen engagement with a world of numerous thresholds in which colour and architecture interact.

Relevant outputs:
www.saturatedspace.org
www.issuu.com/saturatedspace

Saturated Space Symposium
London, November 2016:
www.youtube.com/watch?v=BjONZ7x5NSg&t=938s

Standard Side Effects: The Accidental Architectures of Fire-Safety Regulation

By: Liam Ross
University of Edinburgh

Year: 2012 – 2018

Drawing-out the unintended consequences of building standardisation.

This PhD explores the messy interaction of political and architectural questions within processes of building standardization. It studies the governmental intent of such processes; the problems they respond to, the rationales they employ, their particular ways of seeing, and the roles and responsibilities they define. It also studies the practical effects, and the unintended side-effects, of such processes; the ways in which those caught up in legislative frameworks re-direct them to their own purposes.

The research employs concepts and methods drawn from Infrastructure Studies. It understands such codes, standards and regulations as both discursive and material formations; processes through which governmental ways of thinking are constituted and mediated through practical application.

The methodology followed is one of an ‘Infrastructural Inversion’; the research aims to uncover the assumptions and sidings embedded within our built environment by focussing on its embedded standards and codes, making them visible through both historical and by-design analysis. The research topic is framed through a focus on fire-safety regulation, and operates through comparative case-studies. These studies analyse a number of cities; Edinburgh, Lagos, Tokyo and London. In each case, they study the formative effect of a single specific regulatory requirement; travel distance, set-back, fire-walls, egress time.

Looking for discrepancies between the stated intention of the regulations and their consequences on the ground, the thesis argues that as mode of ‘reflexive modernization’, the collateral consequences of regulatory processes are in fact central to their governmental effect. On this basis it suggests architects realise the capacity for building design to engage with and re-shape governmentality.

Related outputs:

A monograph presenting three different takes on the contemporary discourses of New Materialism, deployed through the perspective of architectural design and aimed at an architectural readership.

Related publications:

Work exhibited at the 16th Venice Biennale, Spanish Pavilion (May–Nov 2018).


Website: www.miguelparedes.org
ECOLOGIES OF INCEPTION: DESIGN AS EXAPTIVE TUNING

A theoretical and methodological reappraisal of potentiality – understood broadly as the ability of materials to change – in architecture and design.

The project re-thinks the still-prevailing modern paradigm of design practice: the technical tabula rasa, a tendency to begin from scratch and use raw, amorphous and compliant materials that can be easily and effectively manipulated, facilitating a seamless and faithful embodiment of intentions.

This predominant modus operandi is grounded in the hylomorphic philosophy of Aristotle, which associates matter with potentiality and form with actuality, thus foreclosing the ability of formed/individuated objects to change. A theoretical framework is developed to neutralise such a view and, more generally, understand how design and manufacturing processes generate and maintain potentials in space and time.

While the central resulting concept – ‘ecology of inception (EcI)’ – accounts for the equipmetal enclosures within which networks of tools are inscribed and called to perform specific tasks, it is also responsible for setting the criteria whereby objects will become obsolete. Here, through the notion of ‘ecology of suspension (EcS)’ and the philosophies of Giorgio Agamben and Graham Harman, the text proposes an alternative mode of ‘deep’ material valorisation that is affirmed in excess of use values, functional scripts, relationality and molecular obedience, and in defiance of established quantification and justification protocols.

The project introduces an exaptive paradigm for design that, inspired by (and building upon) evolutionary biology, hacking, adaptive reuse, and improvisational practices such as collage, adhocism, bricolage, kit-bashing and jazz, refuses to reduce pre-existing material substrates to abstract lists of properties or featureless lumps, encountering them on their own terms— as situated individuals and co-authors.

Key related publications:

Exhibitions:
- Sparks of Life: Frankenstein and regeneration at Carlil House, Newcastle-upon-Tyne, Being Human Festival: Lost and Found (November 2017)
- Self-Built Utopias, Northern Stage, Newcastle-upon-Tyne, Great Exhibition of the North (June-September 2018)
CA COST ACTION CA16121: FROM SHARING TO CARING: EXAMINING SOCIO-TECHNICAL ASPECTS OF THE COLLABORATIVE ECONOMY

A new cross-European research network on the study of the collaborative economy.

The main objective of this action is to develop a European network of actors (including scholars, practitioners, communities and policy makers) focusing on the development of collaborative economy models and platforms and on social and technological implications of the collaborative economy through a practice-focused approach.

The specific aims of the proposal are:

(i) To develop a deeper understanding of the collaborative economy phenomenon in all its aspects, by studying in-depth the sociotechnical systems and human practices involved, comparing and reflecting upon local, regional, national and international initiatives;

(ii) To discuss and critique elements of the current discourse on the collaborative economy, and proposing a richer definition and characterisation of the phenomenon;

(iii) To formulate a European research agenda for the socio-technical aspects of the collaborative economy, including specifically the design of future technological platforms, the technical infrastructure, their legal, ethical and financial implications;

(iv) To articulate a European research perspective on the collaborative economy, based on EU values of social innovation, and in line with the Europe 2020 strategy objective to become a smart, sustainable and inclusive economy by 2020.

The Action will produce online resources including publications offering a comprehensive view of the current European collaborative economy and socio-technical and policy recommendations for the future.

Related publications:
Website: http://sharingandcaring.eu/

FUNDING: COST - EU Framework Programme Horizon 2020
YEAR: 2017 – 2021

VISUAL RESEARCH METHODOLOGIES IN ARCHITECTURE

This co-edited book sets out visual methodologies for architectural research.

Twenty-four contributors use visual texts including drawings, diagrams, paintings, photographs, films and hybrid forms of visualisations through which to research architecture, landscape design and interior architecture. The visual methods intersect those used in ethnography, anthropology, visual culture and media studies. This book offers a distinctive approach to the use of visual methodologies for qualitative architectural research. It presents a diverse, but not comprehensive, selection of ways for the architect or architectural researcher to use their gaze as part of their research practice for the purpose of visual literacy. Its contributors explore and use, what we term, ‘Critical Visualisations’ which employ observation and socio-cultural critique through the creation of visual texts, drawings, diagrams, paintings, visual devices, photography, film and their hybrid forms. The book positions these in relation to visual methods practiced in ethnography, anthropology, visual culture and media studies.

The emergence of studies in visual culture has changed the research methodologies practiced by many humanities disciplines, and we expose critical positions on these (Krauss in Art History, Pink in Ethnography, and Rose in Cultural Geography etc.), and reflect on how architecture might use ‘visuality’ as a research method so as to increase the architectural researcher’s visual literacy. It aims to present a range of inter-disciplinary approaches which open up territory for new forms of visual architectural scholarship.

The research for this book has been developed from a symposium chaired by Troiani and Ewing at the AHRA Postgraduate symposium (Sheffield, 2016) and is also informed by their ongoing collaborative work on publication of interdisciplinary research and criticism as co-editors of peer-reviewed journal, Architecture and Culture.

Related publications:

BY: Penny Travlou
University of Edinburgh
WITH: Dr Gabriela Avram
University of Limerick
Prof Myriam Lewkowicz
Univrsité de Technologie de Troyes
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FUNDING: COST – EU Framework Programme Horizon 2020
YEAR: 2017 – 2021

BT: Suzanne Ewing
University of Edinburgh
WITH: Igea Troiani
YEAR: 2015 – 2020
‘Voices of Experience’ is a collaborative project which choreographs site-based conversations between architects at different stages of their career.

The project formed part of the Glasgow Women’s Library’s 25th Anniversary and Spring Programme (2016–17) and is developing an oral and material archive in partnership with GWL, Architecture Fringe 2017, Collective Architecture, ESALA and Panel. The project asks how role models and built environment histories might be rethought and accessed in new ways through listening to experienced architects, planners, designers, engineers who have not been written into professional myths, mainstream history and public consciousness.

Motivated by the lack of experiential (hi)stories of architectural practice and projects, and with ambition to steward new practice-based disciplinary stories, the project constructs a series of conversations between a highly experienced architect and an architect at the outset of their career who have a project site or thematic concern in common.

The contextual focus is late twentieth century Scotland, at a time when building Scotland again offers a foregrounded clarity to the social and public purpose of architecture (Building Scotland, Alan Reid and Robert Hurd, 1958; Rebuilding Scotland, The Postwar vision 1945–1975, Miles Glendinning, 1997). Contributors to the project have included architect Margaret Richards (formerly of RMJM), conservation architect Fiona Sinclair, architect/historian Dorothy Bell, teacher/architect Anne Duff, architect/planner Kirsteen Borland, architect Denise Bennefer and conservation architect, Joelynn Cunliffe. They have been joined by Mairi Laverty, architect, Jocelyn Cunliffe. They have shared their experience of architectural education decades apart; and the making and remaking of homes and work at different stages of life and outlook.

During events which have continued into 2019, they discussed their work and shared their experience of working within Cumbernauld New Town, the Clyde Valley, Glasgow Necropolis, Linlithgow, and Edinburgh’s historic centre and University quarter. Insights include how architects discover their preoccupations, strengths, range and niche through different working relationships and formats; resonating experiences of women entering into architectural education decades apart; and the making and remaking of homes and work at different stages of life and outlook.

Related outputs:


Using the vehicles of design studios, seminars, workshops, publications, this ongoing research has been exploring different ways of drawing the urban landscape, most recently, from the perspective of water.

“Ocean of Wetness, is a transdisciplinary platform, a critical design practice, and a pedagogical initiative that asks if we have been so consumed by the vocabulary of land and water that (a) we miss or fail to understand peoples who devise other ways to inhabit ubiquitous wetness; (b) we deny the possibilities of a new imagination capable of solving today’s problems without perpetuating the ground that created them.”

Dilip da Cunha

Related outputs:

Recent research-by-design experiments have been undertaken in India (Bombay and Calcutta) and Scotland (Selkirk). They open up different understandings of important existing urban/landscape contexts and have four main objectives:

1. To visualise these contexts in ways that conventional models of urban planning tend to obscure;

2. To supplement existing urban planning methods with new visual agencies;

3. To bring ecological and human relations into systems of urban analysis and design; and,

4. To speculate in existing conditions to frame new possible infrastructures between ecologies.
Drawing On is a peer-reviewed International e-journal. It provides a platform for developing topics associated with or addressed through design-led research into architecture.

The ambition of the journal is to promote a closer, more direct engagement between the author, their research material and the reader, all of whom play a role in creating an interestingly rich plentitude in architectural thinking and imagining. The simple premise guiding Drawing On is that design-led research involves, and indeed relies upon, multiple modes and means to fully elaborate its thinking.

Drawing On thus presents multiple media, for example, including text, images and notes, video, audio, animation, photography, paintings, drawings, documentation of models, and designed texts. The reading of the work involves reading across these multiple modes, and allows for various formats to take the lead in communicating the means, outputs and methods of design-led research.

To this end the journal adds to the conventional format of a peer-reviewed journal, an additional space of presentation intended to show design-research material in different lights. Drawing On is a biennial publication. Each issue draws on a specific subject, situation, theme or idea. This may include issues linked to particular events, exhibitions or conferences. Currently there is a pool of no less than 21 International Scholars acting as reviewers. This will grow. Thus far, two issues have been published: Drawing On Presents and Drawing On Surface and Installation. A third call will be issued soon. However, a major new collaboration with the Australian schools of Architecture has also just been agreed. Drawing On will publish select papers from a significant Architectural Design Research International Conference to be held in the University of Sydney in September 2018, which will attempt to pool the Research-By-Design currently being undertaken in the Australasian continent. This issue will be published prior to their second ADR conference scheduled for Monash University, Australia, in 2019.

Related outputs:
KNOWLEDGE BY OTHER MEANS: DATA-DRIVEN MACHINIC EPISTEMOLOGIES

Knowledge by Other Means is an epistemological exploration of data-driven drawing processes as carried out by a custom-built robotic apparatus, identifying non-computable elements of thought in the development of spatialized digital intelligence.

Half a decade past the consolidation of the first ‘Digital Turn’ in architecture, contemporary designers seem to have decidedly embraced the unprecedented power of machinic thinking, subsequently adopting its embedded logical processes. We may, however, pose a critical question in the context of this ‘second computational turn’: Are there any non-computable elements of thought in the development of spatialized digital intelligence?

In answering this question, the project unpacks a series of productive relationships intersecting drawing and the passing of time, operating at various scales and developed in the context of a data-driven design environment.

More specifically, this enquiry looks into the processes carried out by a custom-built robotic drawing machine, tracing dynamic vector data streams collated from a variety of spatial sources. This hybrid digital-analogue apparatus draws from a long historical lineage of vector-based machinic systems designed for architectural drafting. Situating themselves between the human hand and the surface of the paper, those machines acted as carriers of embodied spatial knowledge that could be selectively actualised into specific design processes and materialisations.

Deploying a range of intertwined digital and analogue media, this machinic environment is used to articulate a data-based drawing research practice and a subsequent ‘anexact’ drawing research methodology that further elaborates on the durational and multiplicitous aspects of the data-based drawings. This body of work is reflected on as a visual research methodology, which taps into Bernard Cache’s interest in architectural computation as a way to pursue philosophical knowledge ‘by other means’ and into Gilbert Simondon’s notion of the ‘technical ensemble’—emphasising the productive forms of indetermination emerging from its internal informational transfers.

Related publications:

LANDSCAPES OF ABANDONMENT AND INHABITATION: SPACES OF FEAR, PLEASURE, CONQUEST, RETREAT AND EVERYDAY LIFE

Faraway and everyday landscape typologies shape human inhabitation, as well as cosmogenies, cosmologies, myths and folklore of different human cultures.

These spaces are sometimes the place of conquest, other times the place of retreat; sometimes regarded with fear, other times with fascination. The same landscape typologies can be the archetypical image of inhabitation, and the archetypical image of abandonment.

This project aims to unfold some of the meanings of landscape through the lenses of abandonment and inhabitation, shedding light over the pertinence of some concepts in particular historical periods, and the cause of their oblivion in others, for example, concepts of nature and environment; wilderness and sublime.

Both a teaching and a research project, it is being developed in the form of an elective course in the University of Edinburgh and simultaneously a book proposal.
TERRITORIES OF ENTANGLEMENTS

A research project exploring the coastal landscapes of the north west highlands in the context of contemporary socio-ecological transitions.

By: Elinor Scarth
University of Edinburgh

With: Anaïs Chanon
Lisa Mackenzie

GRAFT

Years: 2017 – ongoing

The widely accepted picturesque beauty of the northern Highlands dissimulates contemporary realities and complex social, ecological and political histories. The paradoxes, problematics and potentials present in the landscapes of the north of Scotland have recently been pulled into focus by the designation, in 2014, of the North Coast 500 tourist route. Indeed, the marketing of the NC500 initiative appears to be based upon two premises. Firstly, the focus on the experience from the route advocates the landscape as an exclusively visual experience. Secondly, the road trip mindset suggests an individual automobile experience, a journey into an apparent “wilderness” in truth partly forced upon these landscapes through one of the most violent episodes of Scotland’s recent past: The Highland Clearances. This landscape architecture design-led research project seeks to develop the following questions: In light of declining fossil fuel resources, is it appropriate to promote this form of travel and tourism in Scotland and in other northern territories where similar approaches have been deployed? Is it acceptable, today, to advertise a tourist experience grounded in picturesque constructions without acknowledging the social and ecological nuances of these landscapes? How does this designation sit alongside Scotland’s 2050 Climate Vision and, more broadly, alongside a future socio-ecological transition? Since growth in tourism and natural capital enhancement hinge upon sustainable stewardship of the landscape, how might initiatives such as the NC500 be developed through a more inclusive landscape led approach?

Publication: Public exhibition planned for 2020.

TO WHERE IT MAY CONCERN

Performance, spoken word and design led investigation exploring the conceptualisation of landscapes and the transposition of narratives in the context of colonialism and globalisation.

By: Elinor Scarth
University of Edinburgh

With: Leonie Mhari

Years: January 2019 –

To where it may concern

Performance, spoken word and design led investigation exploring the conceptualisation of landscapes and the transposition of narratives in the context of colonialism and globalisation.

A Scottish landscape, collected in Armadale, Skye and Armadale, West Lothian has been delivered to Armidale, New South Wales. Transported in a wardrobe trunk, it contains new geologies, old geologies, sketches, reels, Rams, light, so much light, lino prints, cyanotypes. The contents of the trunk are an overlapping narrative performance which highlights collective aspects of weathering in the actants of the combined notion of the ‘Scottish landscape’ as it travels around the world. (Weathering is considered as proposed in Neimanis, A. & Hamilton, J.M., 2018. ‘Weathering’, Feminist Review, 118, pp. 80–84.) Since its original conception this conceptual landscape has been transposed from New South Wales to South Wales. This project investigates the ways in which people project their own understanding of ‘landscape’ on to environments that they come into contact with.

The work explores how perceptions and projections of landscape influence how people experience an environment as a place situated with stories. Each time the conceptual landscape is performed, it is unfolded through a 15 minute spoken word performance. Whilst collecting and transposing narratives, the work seeks to engage with scales of time. For example, the Torbanite geologies of New South Wales, named after Torbane Hill, West Lothian, slag heaps, demonstrate new geologies of displacement. The performance explores manifest pressures of colonization, capitalism and climate change. The project engages with divergent perceptions of the environment, while interrogating the conflicting and combined narratives that create landscapes that are more than a physical manifestation.


Publication: A film documenting the performance in progress to be released 2019.

To where it may concern
MANHATTAN GEOLIC(S): REPRESENTABILITY OF AN ISLAND-CITY

With a focus on the geologic conditions of scale, frame, and ground in Manhattan, this research by design project unsettles issues and questions limits involved in the geo-representability of the island-city.

The dominant logics of the two-dimensional grid that extruded into what Manhattan is today have postulated a clear cut from the island’s own territorial past to generate a synthetic surface from which robust forms of capitalism, power, labour, real-estate, and retailing accumulate in vertical densities, and nature is but a reinvention of cultural phenomena. These logics conceal heterotopic geopolitical ground conditions of the island, frame events within and out with the grid’s geometries and orientations, and scale the city with the crystallised chaotic laboratory of the skyscraper mineralogy.

When contextualised in the emerging Anthropocene debate, which proposes an expansion of material and temporal frames and a collapse of human and earth geo-conditions, whilst problematising supposed divisions between nature and culture, Manhattan begins to reveal thicker complexities following other types of logic, which complicate and enmesh its own contemporary situation.

In this project, three influential architectural manifestos from the last three decades of the twentieth century – ‘Delirious New York’ (Rem Koolhaas, 1978), ‘Manhattan Transcripts’ (Bernard Tschumi, 1981), and ‘Lower Manhattan’ (Lebbeus Woods, 1998) – are analysed as means to develop a contextualization of Manhattan supported by an Anthropocenic thought and representational sensibility. From the analysis of these three archival sources as meaningful exercises of speculative fiction – they are narrated imagined realities – in relationship to geo-conditions of scale, frame and ground, the experimentation through text and design-led investigations gestures towards critical reflection on the agency of representation and on the ability to represent (or representability of) the geologic(s) of the island-city.

Related publications:


A key trans-disciplinary project in the emergent field of geohumanities, which looks at how the epistemic shifts implied by the Anthropocene debate may transform the way we think about representation and, more specifically, its geopolitics.

Originating as a hypothesis in earth sciences, the term ‘Anthropocene’ designates a new geological epoch in which humans are defined as a dominant geomorphic force, acting upon the Earth’s planetary system. Since its emergence, however, the Anthropocene has moved beyond being a concept limited to geology and has provoked an ever-expanding debate that traverses disciplinary boundaries. It unsettles conventional conceptions of the human, nonhuman and inhuman, and it problematises supposed divisions between nature and culture. It has come to underpin a strong narrative of human resource exploitation, planetary thresholds and environmental urgency and has gained prominence as a key concept for thinking about what the present means and the possibilities it holds for the future.

This collective project encourages explorations of the Anthropocene thought and artistic sensibility through the motif of postcards. We conceptualise postcards as documentary space-time snapshots, which convey complex assemblages of dynamic, non-linear, unpredictable, ad-hoc networks between interdependent and transcalar actors. The assembled postcards raise questions about the ethical and political challenges of the dominant modes of technoscientific knowledge production, modes that are constituted through existing power relationships, subject positions, and differences, and that perpetuate current inequalities. They aim to indicate new streams of speculative and creative geopolitical imaginaries and forms of collective subjectivity that recalibrate existing value systems and open up alternatives.

Drawing on the wide-ranging contributions to the recent international symposium and parallel exhibition ‘The Other Side’ (June 2017), an edited book is currently being prepared with curated submissions from important scholars and practitioners across multiple disciplines in the arts and humanities.

Related publications:

Website:
www.postcardsfromtheanthropocene.com
Extended everyday discourse is either cause or symptom of Amartya Sen’s The Argumentative Indian; he says, “Prolixity is not alien to us in India. We are able to talk at some length... We do like to speak.”

Sen sees this tendency towards loquacity as the basis of “democracy as public reasoning.” This is the same “heterodox” communicative principle that we suggest lies at the heart of what can be called Indian modernity, a humanism that is environmental and intersubjective in character rather than anthropocentric and objective. Modernity, as the OED tells us, is “an intellectual tendency or social perspective characterized by departure from or repudiation of traditional ideas, doctrines, and cultural values in favour of contemporary or radical values and beliefs.” Our research tells us this is only partly right. We suggest that Indian Modernity gives us a different impetus altogether. Indian modernity proposes being in the moment over either glorification or repudiation of a past.

It sees history as a continuity, neither in progress nor decline. It pursues a critical optimism of what it is like to be in India, living for the moment, looking to futurity but not ignorant of the past. Modernity, thus, is evident in many periods. India’s heritage cares about who inherits what from whom and that it is invested wisely, economically and culturally. Our research suggests that these tendencies can be framed cosmopolitically, cosmosophically. Therefore, the most important moment of modernity is the relevance of the futurity of a then as it intersects with a newly relevant now, and for us as architects, in a predictive adequation of futurity. Our methods are therefore as speculative as analytical, as predictive as theoretical, but always invested in an optimism and wisdom found both cosmo-logically and cosmo-politically in India.

Key related publications:

2  Ibid, pp7-10.
Reima Pietilä was considered “Modern Architecture Challenger” in his native Finland. His theories and methods were progressive and often considered controversial particularly as they offered a different trajectory to Finnishness and Internationalism attributed to the work and legacies of Alvar Aalto.

This research project considers Reima Pietilä’s oeuvre as a long-term Research By Design methodology. Its outputs are varied, in multiple places and platforms but hope to culminate in a collective exhibition, conference and book publication.

The following essay by Wiszniewski, published in the Nordic Journal of Architectural Research, offers an example of the type of essay the research group is undertaking and what the book will contain.

This paper discusses Reima Pietilä’s Finnish Embassy (Suomen suurlähetystö) in New Delhi, India, in relation to the interplay of gesture and gesturality in the architect’s design process.

It takes theoretical impetus primarily from Giorgio Agamben and Vilém Flusser, who both write extensively and insightfully on gesture and each promote philosophical trajectories from ontology-as-being towards ontology-as-becoming.

The research-by-design inflection of this paper directs the ontology of gesture through a small selection of drawings from the Pietilä Archive, from the first and second phases of the building’s production, and photographs taken on site by the author in 2014.

The paper offers a view not only of how gesture and gesturing lie at the heart of Reima Pietilä’s design process, but also how the communicative dynamic of the gestural feeds speculation into and pursuit of understanding through architecture. Therefore, beyond framing a number of Reima Pietilä’s design methods and ways of thinking, the paper also addresses how gesture constitutes a core communicative principle in Reima Pietilä’s research-by-design methodology, ultimately suggesting that this methodology holds relevance for contemporary architectural design and research.

Related publications:

In 2017 1.5 million people in the UK were pushed into destitution, going without the bare essentials and locked out of the chance of building a decent and secure life.

Related outputs:

Website:
www.jrf.org.uk/report/destitution-uk-2018
www.i-sphere.hw.ac.uk
HARD EDGES SCOTLAND: DEVELOPING A PROFILE OF SEVERE AND MULTIPLE DISADVANTAGE IN SCOTLAND

The report in main and summary form was published by Lankelly Chase in June 2019 under the title Hard Edges Scotland: new conversations about severe and multiple disadvantage.

This report attracted wide media attention including five broadcast articles, seven print articles, and 188 online articles, and has attracted strong policy interest across range of policy divisions within the Scottish Government.

As a direct result the 2019 Programme for Government published on 3 September 2019 includes a commitment to develop a national vision for severe, multiple disadvantage and establish an “Inclusive Scotland Fund” of £10m over two years to contribute towards the delivery of the vision, with four other specific commitments also directly linked to the report.

See: https://lankellychase.org.uk/resources/publications/hard-edges-scotland/

HARD EDGES 2: AN ADDITIONAL PROFILE OF SEVERE AND MULTIPLE DISADVANTAGE IN ENGLAND

The project is a follow-up to the ‘Hard Edges’ study conducted by I-SPHERE in 2012–2015.

The project will provide a gender-sensitive statistical picture of people who experience severe and multiple disadvantage (SMD), defined as a combination of at least three of the following problems: homelessness, substance misuse, poor mental health and being a victim of abuse or violence. It will look at the most suitable data sources currently available, including four general household surveys and four service/administrative datasets.

Similarly to the predecessor study, this study’s findings will be used by the Funder to lobby policy-makers for changing the way in which services for people with SMD are organised and funded. The study’s Funder has been a strong promoter of a holistic response to SMD (in terms of the coordination of support services), but its efforts have been hindered by the lack of quantitative evidence showing that the SMD group is substantial in numbers. The original ‘Hard Edges’ project has been a major contributor to changing this situation.

See: https://lankellychase.org.uk/resources/publications/hard-edges
Gathering evidence on what is driving hunger in the UK and who it affects, in order to create policy recommendations to end hunger in the UK.

This change in the profile of food aid organisations has been accompanied by an equally marked change in the profile of people in need of food aid: the majority of foodbank clients can be described as ‘housed, financially struggling, without complex needs’, as opposed to the ‘homeless/complex needs/migrant’ clientele of soup kitchens (Perry et al, 2014; CAS, 2016). In accordance with that, a recent study of people experiencing destitution in the UK has found that UK-born people without complex needs constitute the largest group within the destitute population (Fitzpatrick et al, 2015 and forthcoming).

The State of Hunger will be an authoritative, sector-leading UK-wide annual benchmark study to answer the question of what is driving hunger in the UK and who it affects. The study will provide Trussell Trust with the evidence base it needs to create policy recommendations to end hunger in the UK. Crucially, it will provide much-needed detailed evidence on specifically which policies and factors are primary drivers of hunger. Furthermore, it will provide evidence from different areas of the UK regarding ‘what works’ in alleviating hunger, in terms of policies and other practical solutions.

See: www.trusselltrust.org/what-we-do/research-advocacy/
www.i-sphere.hw.ac.uk

Evaluation of dedicated (prescribing) pharmacist input into the healthcare of homeless people.

This qualitative study will assess homeless people’s perceptions and personal experiences of dedicated clinical (prescribing) pharmacist input into their clinical care. It will focus on the delivery of services to homeless people who are recruited to the service via specialist homelessness health centres, in hostels, and via street outreach. The study will also seek homeless people’s views regarding the outcomes that should be assessed and means of recruitment employed in a proposed Randomised Control Trial (RCT) which will measure the effectiveness of the approach at a larger scale.

The information gained will be used to improve user uptake and the effectiveness of the pharmacy service itself, as well as to maximise the proposed RCT’s relevance, recruitment and retention.

See: www.i-sphere.hw.ac.uk
The Homelessness Monitor is commissioned by Crisis and is funded by Crisis and the Joseph Rowntree Foundation providing an independent analysis of the homelessness impacts of recent economic and policy developments in the United Kingdom.

A wide definition of homelessness is adopted in the Homelessness Monitor, and considers the impacts of relevant policy and economic changes on all of the following homeless groups:

- People sleeping rough.
- Single homeless people living in hostels, shelters and temporary supported accommodation.
- Statutorily homeless households – households who seek housing assistance from local authorities on grounds of being currently or imminently without accommodation.
- ‘Hidden homeless’ households – people who may be considered homeless but whose situation is not ‘visible’ either on the streets or in official statistics.

The series uses four main research methods:

1. Review of literature, legal and policy documents
2. Annual interviews with key informants from statutory and voluntary sectors
3. Statistical analysis on a) economic and social trends, particularly post-2007; and b) trends in the four homeless groups
4. Online survey of local authorities

Related outputs:
Website: www.i-sphere.hw.ac.uk

It considers both the consequences of the post-2007 economic and housing market recession, and the subsequent recovery, and also the impact of policy changes.

The first English monitor was released in 2011 and with eight annual report years, the subsequent reports document the change in homelessness trends since this baseline data was undertaken in England, Scotland, Wales and Northern Ireland.

The Homelessness Monitor: Scotland 2019

The Homelessness Monitor: England

Resilient Borders is about empowering communities to propose and communicate ambitious development plans at the scale of the town. The project was based on the premise of putting together an ambitious plan for Galashiels in 2040 following the catalytic effect of the Borders Railway.

As a starting point, the project utilises work completed by postgraduate design students in a series of workshops that provoke and encourage communities to think about themselves in a spatial and infrastructural way. The project methodology helps stakeholders to understand their own settlements as networks of energy, resource and communication. Community workshops asked participants to look at all the work, rate the projects to a series of sustainable metrics, and ultimately agree on a series of themes. Specifically, the second workshop embedded these themes in the town as a series of ambitious and far-reaching proposals. These were then refined as a vision of how that town can be 25 years in the future. In this we adapted techniques such as appreciative enquiry to provide a series of narrative that is then translated into an array of spatial infrastructures.

The project is important because it lifts expectations of what a sustainable town might be. Resilient Borders provides the means to a vision and ambitious blueprint for sustainable development. It is designed to inform and influence existing planning and development processes for the town.

Outputs included a public exhibition of the work and the preparation of a project toolkit circulated throughout the Borders region [October 2016]. Further outputs in the form of peer reviewed articles are in preparation that chart how academic – educational – community partnerships can be sequenced in a way to maximise benefit to all parties.
Supported Lodgings Pilot

Youth homelessness has historically been addressed via congregate hostel-type supported accommodation. This can hinder young people’s capacity to address their support needs, maintain healthy lifestyles, and/or develop independent living skills.

The high costs of these models are known to dis-incentivise engagement in paid work. In this context, there is strong sector support for developing a spectrum of ‘community hosting’ models for this group. Such models involve young people living with private host households, with support to the host and young person provided by a specialist organisation.

Existing services in this area in Scotland are limited: a small number of emergency ‘Nightstop’ schemes have recently been established and longer term ‘Supported Lodgings’ models are used in some areas for care leavers, but longer-term community hosting models targeting the broader youth homeless population do not currently exist.

This project explored the potential opportunities and challenges associated with pursuing such an approach ‘at scale’ for young people experiencing or at risk of homelessness in Scotland. The study was particularly well timed giving pressures on public finances, temporary accommodation and other homelessness provision, and young people’s benefit entitlements, which combined with housing market pressures have made it increasingly difficult for many young people to access and maintain appropriate accommodation. I-SPHERE researchers reviewed the international evidence base on ‘community hosting’ models; and using primarily qualitative methods, explored the success and challenges of existing Supported Lodging schemes in the UK, and examined the feasibility of pursuing Supported Lodging schemes in Scotland, from a business and financial sustainability perspective and by investigating the attitudes and perspectives of potential ‘host households’ and young people in existing forms of homelessness accommodation to such models.

Published in 2017, the report fed into the work of the Scottish Government convened Homelessness and Rough Sleeping Action Group, leading to the inclusion of a focus on community hosting models in the Government’s 2018 High Level Action Plan to End Homelessness.

Supporting Oak’s Evaluation and Research on Homelessness

The project supports the development of a stream of early career researchers equipped to undertake high-quality, policy and practice-applied research on homelessness, via establishing and managing a bespoke Oak Foundation internship scheme.

It also provides expert advice and support on the research and evaluation elements of Oak’s homelessness and related projects, both to Foundation staff and directly to organisations holding grants from Oak.

Related outputs:


See: www.i-sphere.hw.ac.uk
Evaluation of an innovative peer mentor project assisting homeless people with multiple and complex needs.

Shelter Scotland’s ‘Time for Change’ project, based in Dundee, will establish and train a network of volunteer peer mentors with lived experience of multiple and complex needs. The peer mentors will assist homeless people experiencing severe and multiple disadvantage to access and maintain engagement with support services relevant to their needs. They will aim to ensure that support is relevant, improve choice and control, and help those involved develop skills and resilience. Using qualitative methods, a team based at I-SPHERE will evaluate the impact of the project on both peer volunteers and those helped, in order to assess the effectiveness of this model as a mechanism for sustainable change within the homelessness sector.

Evaluation of the effectiveness and ethicality of welfare conditionality.

The use of conditional welfare arrangements that combine elements of sanction and support is an established element within welfare, housing, criminal justice and immigration systems. This five year research project creates a collaborative, international and interdisciplinary focal point for social science research on welfare conditionality by exploring the efficacy and ethicality of conditionality across a range of social policy fields and diverse groups of welfare service users.

Heriot-Watt led on three of the total nine ‘strands’ of work, including assessments of the impacts of sanction and support on homeless people, lone parents, and social housing tenants.

Related outputs:


FROM SHARING TO CARING: AN ETHNOGRAPHIC STUDY OF THE REFUGEE CRISIS AND ACTIVE CITIZENSHIP IN ATHENS

This ethnographic research engages with a real-life situation: the “refugee crisis” in Athens.

Since early 2015, Athens has become one of the key stopovers of refugees entering Greece before they continue their journey to Northern Europe. Building upon previous ethnographic work on collaborative and peer learning practices within emerging network communities, it investigates the role of refugees/migrants as catalysts for social change and as active agents reshaping their host-communities through their involvement in solidarity networks. Amidst the pressures generated by massive state debt, neoliberal austerity and large numbers of newcomers in need (refugees, other migrants), what are the processes and agents that make possible the emergence of innovative models of living, sharing of resources, surviving and resisting state policies? What is the catalytic role of the nomadic/mobile everyday life experience of refugees/migrants and how does this constitute a new paradigm of citizenship, that of active “nomad” citizenship?

The study explores how migrants exercise their agency to construct new forms of European citizenship through a politics of care in this moment of political and economic instability. This ‘politics of care’ allows migrants/refugees to develop a political consciousness in which caring is invoked as a symbol of power to build new kinds of citizenship and solidarity. The study engages with practices of collaboration and peer learning that strengthen and expand the groups and collectives in which refugees/migrants participate, and, by doing so, contributes to the making of common spaces in the city. The fieldwork looks at spaces within a solidarity network formed around collaborative/sharing practices among local activists and migrants/refugees (i.e. collective refugee kitchens, housing squats for refugees and self-organised migrant collectives). Looking at ‘food’ as a paradigm of common good and a caring praxis, the study focuses on a collective kitchen of African refugees, local and foreign activists in Athens.

Related publications:


Publishers:

ASSESSING THE IMPACT OF MINIMUM UNIT PRICING ON HOMELESS DRINKERS, STREET DRINKERS AND SERVICE PROVIDERS

Minimum Unit Pricing (MUP) was introduced in Scotland in May 2018 with the aim of reducing the amount of alcohol that people drink.

Existing evidence suggests that it may be effective for the general population, but the impact on very vulnerable people, including those who are homeless or drink on the street, is unknown. This study examines the impact of MUP on homeless peoples’ and street drinkers’ consumption of alcohol and other aspects of their lives such as involvement in other forms of substance misuse, crime, begging, relationships with family/friends etc. It will also explore the implications of MUP for services supporting homeless people and street drinkers and reflect on policy implications.

Website: www.healthscotland.scot/health-topics/alcohol/evaluation-of-minimum-unit-pricing-mup/separately-funded-evaluation-of-map

BY: Sarah Johnsen
Heriot-Watt University
WITH: Lawrie Elliot (PI)
Glasgow Caledonian University
Carol Emslie
Glasgow Caledonian University
Robert Rush
Queen Margaret University
Anne Whittaker
University of Strirling
FUNDING: £13,500 of £280,000 project
Chief Scientist Office (CSO)
YEAR: 2019 – 2020

ENDING STREET HOMELESSNESS IN VANGUARD CITIES

A group of 12 vanguard cities on six continents have committed to end street homelessness by 2030 as part of the Institute for Global Homelessness’ A Place to Call Home initiative.

This team will be on the front line of the larger global movement, leading by example and demonstrating what’s possible. Each city has committed to achieving a goal by the end of 2020 that puts them on a path to ending street homelessness by 2030.

This research will work across all 12 cities preparing in-depth, qualitative case studies which evaluate what works, for whom, in what circumstances, informing how to take on the challenges of ending street homelessness across the globe.

Website: www.ighomelessness.org/a-place-to-call-home-initiative
www.i-sphere.hw.ac.uk

BY: Suzanne Fitzpatrick
Heriot-Watt University
WITH: Beth Watts
Jenny Wood
Jill McIntyre
Volker Busch-Geertsema
GISS Bremen
Marie-Therese Reichenbach
GISS Bremen
The Institute of Global Homelessness
FUNDING: £230,000
Oak Foundation
YEAR: 2019 – 2021
Housing First England Evaluation

The study is an evaluation of the major MHCLG Housing First pilots in three combined authority regions: Greater Manchester, Liverpool City Region and West Midlands. The study involves formative, process, impact and economic evaluations.

The evaluation is being led by ICF Consulting, and involves a consortium between ICF, Heriot-Watt University, BSPR Social Research, Homeless Link, and the Institute for Employment Studies (IES).

Website:
www.i-sphere.hw.ac.uk

Housing First Scotland Pathfinder Evaluation

The Housing First Scotland Pathfinder project represents a significant development in the expansion of Housing First (HF) provision across Scotland within the context of a broader policy shift toward rapid rehousing by default.

The research will involve an assessment of monitoring outcomes, process evaluation (including fidelity assessment) and cost benefit analysis. It is being conducted in partnership with ICF Consulting.

Website:
www.ghn.org.uk/shien/housing-first/
www.i-sphere.hw.ac.uk

The study is an evaluation of the major MHCLG Housing First pilots in three combined authority regions: Greater Manchester, Liverpool City Region and West Midlands. The study involves formative, process, impact and economic evaluations.

The evaluation is being led by ICF Consulting, and involves a consortium between ICF, Heriot-Watt University, BSPR Social Research, Homeless Link, and the Institute for Employment Studies (IES).
TIME FOR CHANGE (STAGE 3) EVALUATION

This study is a qualitative evaluation of the Social Innovation Fund’s Stage 3 development and expansion of Shelter Scotland’s ‘Time for Change’ pilot project.

Website: scotland.shelter.org.uk/about_us/projects/time_for_change

www.i-sphere.hw.ac.uk

Photo: Brian Capaloff

BY: Sarah Johnsen
Heriot-Watt University

WITH: Janice Blenkinsopp
ICF Consulting

FUNDING: £35,000
Social Innovation Fund

YEAR: 2019 – 2020

USING CHILD MAINTENANCE AS A TOOL TO ENHANCE THE CIRCUMSTANCES, OUTCOMES AND WELLBEING OF LONE MOTHERS AND CHILDREN

When lone-mothers receive child maintenance the risk of poverty reduces and the poverty gap closes by 30% in the UK.

Child maintenance is where a non-resident parent regularly gives money to the parent with whom the child lives most of the time as a contribution towards the costs of raising a child. When the non-resident parent pays child maintenance they are also more likely to remain actively involved in their children’s lives.

This research uses longitudinal quantitative data from children and parents and, qualitative data from children, to explore the impacts of the payment/non-payment of child maintenance on child and lone-parent socioeconomic and other outcomes.

Website: www.i-sphere.hw.ac.uk

BY: Morag Treanor
Heriot-Watt University

WITH: Glen Bramley
Kay Tisdall
University of Edinburgh

FUNDING: ESRC through the Scottish Graduate School of the Social Sciences

YEAR: 2019 – 2023
How can digital data help housing associations to reduce fuel poverty? The social housing sector wants to understand how digital innovation can offer business and tenant value – in reducing running costs and providing more affordable homes.

This project is one of 11 ‘SFHA Innovation and Future Thinking Programme’ projects that emerged from the Innovation Boot Camp which took place in September 2018. The research team is developing ways that digital data can be used to reduce fuel poverty in social housing.

The project team includes three housing associations, as well as Bruach Design and Scottish Futures Trust. Initial work explored the data that housing associations collect and store on their housing, tenants, repairs and maintenance activities, yet make little use of.

The aim is to develop a better understanding of data and the unlocked value it has for the social housing sector. The priority for housing associations is to reduce fuel poverty. This project is exploring the opportunities that data creates to address this societal challenge.

Future work will involve developing an Asset Management model for the social housing sector and a framework and guidance for SFHA members, many of whom have told us this is a business priority.

This is a longstanding project/research interest examining the anatomy of commercial property cycles.

The research has looked at the changing relationship between rents and capital values through a cycle, the associated variation in market transaction activity and the influence of the scale of investment funds and bank lending.

Bank lending for investment and development through a cycle is considered. The impact of the property boom on green office development has been assessed. It has also examined the changing relationships between the yields on government bonds and commercial property yields. This particular research was funded by the Investment Property Forum.

The research has focused primarily on the UK but has taken a global perspective, examining the experience of Australia, Europe and the USA.

Related outputs:


Colin Jones was invited to present a paper on this work at the University of Chicago in November 2018.

Over the last thirty years or so a new dispersed sub-regional urban system has emerged in many developed countries.

Key accessibility relationships have been transformed inevitably leading to a ‘rationalisation’ of the national and local retail hierarchies.

Out of town centres and retail parks together with superstores have become common features of the urban landscape. Some of the long term culminations of these trends have been stressed in a series of well publicised reports, notably The Portas Review. This research seeks to assess the underlying economics and quantify the changing form of retail hierarchies, including the consequences for rent patterns and the spatial pattern of shops. In particular the impact of online sales and the role of planning has been examined.

Colin Jones was invited to present a paper on this work at the University of Chicago in November 2018.

Related outputs:


A collaboration with the Saltire Society to record and reflect on distinctive developments in Scottish rural housing.

This is a project that reflects on how the best in rural housing design makes a vital contribution to cultural, social and economic life in Scotland as series of rural housing studies drawn from recipients of the Saltire Award for Housing.

Our themes include:

**Local Production**
Distinctive procurement methods such as self-build and housing co-operatives devolve power and resources to a local level. How can housing contribute to rural economies and societies? These homes are often resources of art, literature and performance that define and explain the places around them.

**Ecological Response**
Many homes are exemplars to use resources sparingly and live a life less dependent on fixed infrastructure. They push boundaries exactly because of the challenges and opportunities that their contexts bring.

Landscape Relations
The rural landscape is often untouchable for development, even if to sustain and nurture communities. Many successful rural housing projects have an intelligent and mutually beneficial relationship with their host landscape. The research builds a comprehensive resource to illustrate the regenerative potential of good housing design in the countryside to include:

- Record drawings to a common template and format.
- Interviews with architect/occupiers.
- A photographic survey of the building.
- A publications and media bibliography.
- A text for each project.

The project will help mark the Society’s Housing Awards anniversary. The work will be launched as a digital publication and website towards the end of 2018. A book will be published in 2020.

Analysis of quantitative datasets and qualitative/quantitative case studies to learn lessons for delivery of genuinely affordable housing in the South West of England.

In the context of national problems of housing affordability and delivery, the study examines the specific issues in the South west of England, including low wages, high house prices and popularity of second homes. The study seeks to enable planners and others to get a better idea of what has been happening to housing delivery and house prices in the South West with an aim of increasing understanding about the ways in which the housing market is changing and to assist in the adoption of more appropriate approaches in the delivery of housing that is genuinely more affordable.

The research analysed a range of data sources to track issues of affordability and housing supply in the South West, in comparison with other parts of England and the country as a whole.

Related outputs:
Report (July 2017) and presentations to RTPI.
Compilation of annual review of housing policy and markets in the UK, including commentaries and extensive set of statistical tables; as well as an annual briefing.

The UK Housing Review celebrated its 25th edition in 2017. The Review has become an authoritative record and analysis of housing policy and markets in the UK, assessing a wide range of policies and housing outcomes, including Right to Buy, housing in devolved nations, homelessness, affordability, welfare reform as well as contextual chapters on issues such as the economy and public spending.

It contains more than 100 statistical tables drawn from a wide variety of government and non-government sources.

A shorter briefing is also published usually in the summer. The Review was founded and led by Steve Wilcox until 2017, when Mark Stephens assumes this role.

The project will evaluate the policy to restructure social rents in Wales and test the effect of reforms.

Following the Essex Review of social housing in Wales, the Welsh Government adopted its recommendations to review rent policy in the social rented sector which was subject to anomalies between social landlords and different parts of Wales. A new rent standard was adopted and the 2014 Housing (Wales) Act required social landlords to set average rents within band limits.

This project reviews the progress and experience of landlords to date through a scoping review, survey of all social landlords and case studies. It will examine the perceived fairness of the new system and its impact on the capacity of social landlords to deliver new affordable housing. Potential reforms will also be modelled.
EXPLORING THE LIVEABILITY 
AND SOCIAL SUSTAINABILITY OF 
MICRO-HOUSING IN THE UK

Micro-homes are compact, energy efficient, high density forms of housing which appear to satisfy multiple policy objectives related to housing provision, affordability and sustainability.

The sector is very varied, ranging from low-carbon and eco-conscious stand-alone dwellings made with innovative materials and designs, to shoe-box bedsit or studio flats created from the conversion of existing offices and commercial buildings. There is also a related, but distinct, application of micro dwellings as accommodation for the homeless, either individually or arranged in villages. However, while there is ongoing discussion about the merits of this category of housing – there has been little considered scrutiny of the parameters that make micro-homes more or less good places to live.

In this work, I am interested in exploring different dimensions of contemporary micro-housing. First the narratives and discourse around these homes among architects, designers and developers. A common narrative seems to be about micro-homes as supporting a new way of living and new lifestyles. Second, I am interested in the motivations and experiences of people who live in these homes – are they attracted by the resource and energy efficiency of small-home living, or is it just about affordability? Are micro-homes good places to live, or a substandard form of modern housing?

Some pilot work in 2018 points to significant compromises for residents, having to sacrifice certain standard items (freezer; dishwasher; dining table; storage) – and few, if any, advantages over other larger flats.

BY: Caroline Brown
Heriot-Watt University
Funding: £3,000
Intergenerational Funding (2018) for initial scoping study
Year: 2018 – ongoing

UK COLLABORATIVE CENTRE FOR HOUSING EVIDENCE (CaCHE)

The UK Collaborative Centre for Housing Evidence (CaCHE) is a consortium of 14 institutions led by the University of Glasgow.

The centre, which was established in August 2017, is a multidisciplinary partnership between academia, housing policy and practice. Over the course of the five-year programme, CaCHE researchers will produce evidence and new research which will contribute to tackling the UK’s housing problems at a national, devolved, regional, and local level.

BY: Mark Stephens
Heriot-Watt University
With: Suzanne Fitzpatrick
University of Glasgow
University of Sheffield
Funding: £6 million
ESRC, AHRC, Joseph Rowntree Foundation
Year: 2017 – 22
Flexible formwork offers an alternative perception to the production processes of concrete and other materials.

Concrete has been described as a material without history. Without the crafts associated with metalwork, carpentry or stonemasonry, but reliant on elements of each of these. A forlorn mongrel that now dominates much of the built environment. Sometimes seen as a process rather than a material itself. Its character and expression conditioned by the carpenter using rigid timber to give form to the compliant fluid.

Using flexible formwork challenges the existing paradigm initially seen as counter intuitive in comparison with conventional rigid systems. It is a disruptive technology that is now gaining traction in mainstream practice. ESALA has been involved in the study flexible formwork for concrete for over 12 years and has undertaken many different studies exploring: construction process, complexity of form, precision and material behaviour through a series of research led workshops with architecture and design students. The first book that explored fabric in conjunction with University of East London was based on these workshops. Since then further studies have been undertaken including various live projects such as the Fenchurch Garden at the RHS Chelsea in 2009 and more recently the installation of panels and landscape elements at Edinburgh Gateway in 2016.

Current research includes: experiments in the use of cement replacement, GGBS and PFA in conjunction with fabric texture and permeability for contrasting tonal variation; a series of workshops in exploring construction process in practice: in Austria with DOKA GMBH, comparing with rigid systems, in Switzerland with Creabeton Materiuax AG on the use of highly flowing concrete in architectural elements and introductory workshop into fabric forming techniques in conjunction with the Royal Danish Academy at South East University, Nanjing, China; the completion of a doctoral study into the use of grid-shells as re-deployable formwork; the culmination of an extended study into the behaviour of non-prismatic columns.

Very little information exists on the behaviour non-prismatic columns in concrete, most probably due the complexity of construction using conventional rigid formwork. Flexible systems are simple to construct. Over 80 structural tests on varying geometries of column and results show that relatively subtle changes in shape can influence the strength significantly. It is possible to optimize geometry to improve performance whilst simplifying construction process.

Related publications:
Using Building Information Models to smartly process point cloud data produced by modern reality capture technology.

This highly influencing work aims to integrate novel reality capture technology like terrestrial laser scanning with Building Information Modelling to speed up the processing of the point cloud data produced by the former.

The goal is: by aligning the 3D point cloud data with the Building Information Model, the geometric and semantic information of the model can be used to smartly interpret the data. This technique has been shown to have potential to objectively track construction progress, and more interestingly to robustly and automatically conduct dimensional quality control.

**Related outputs:**

Website:
http://cyberbuild.hw.ac.uk/projects-scanvsbim.html

**Scan-vs-BIM**

Reconstructing 3D Building Information Models of buildings interiors from point cloud data produced by modern reality capture technology.

Scan-to-BIM is the process of capturing and processing 3D information (augmented with colour and other information) to generate a 3D Frédéric Bosché BIM model of an existing facility. This process is of significant and ever increasing importance to the construction industry, because 50% of the construction industry turnover relates to refurbishment and renovation (as opposed to new construction). Yet, this process remains manual, skilful and time-consuming.

This on-going collaborative project has initially focused on the modelling of the structure of buildings but is also now uniquely focusing on other secondary components, like electrical components (lights, switches, sockets, etc.).

**Related outputs:**

**Scan-to-BIM**
KTP project aiming to develop a bespoke, real time data information portal and dashboard for effective and efficient construction decisions

This is a Knowledge Transfer Partnership (KTP) project that links Heriot-Watt University with Careys. This is a unique opportunity that brings together the disciplines of Construction Project Management and Computing Science to deliver a company tailored and streamlined information management system, CarLi (Careys Live). The aim of this project is to develop a bespoke, real time data information portal and dashboard for effective and efficient construction decisions. This involves effective, market-leading processes which produce live data for commercial reporting, health & safety, quality, project status and productivity, and reduced company exposure to risk.

The vision is to have a bespoke, cloud based, digital information management system for every construction project which tracks quality, health and safety, engineering, commercial, planning and project processes – turning paper based systems into an app based portal. Data will be collected, integrated with reports for all levels of the business, and produced in real time. This will lead to an intuitive user centered system which will collect and push the correct level and detail of information to the right people at the right time.
Assessing the Effectiveness of Kyle of Sutherland’s Cosy Homes East Sutherland Scheme (CHESS)

Assessing the validity of fuel poverty-related data collected by a social enterprise partner, and suggestions to improve their work.

The Kyle of Sutherland development trust, a social enterprise in the Highland and Islands region of Scotland, has been collecting data on its approach to reducing/mitigating fuel poverty in an area where this problem is widespread (up to 80% of the population in some sectors).

We were hired via Interface to assess the statistical robustness of data collected on fuel poverty and health/wellbeing outcomes for the population in relation to measures implemented to combat fuel poverty by the organisation.

Due to problems with the data collection methodology and the small scale of data collection (as well as other factors), we were only able to produce limited results.

We also came up with recommendations to KoS in order to improve data collection and methods in the future, and are currently applying for another grant to advance this.

CESI: National Centre for Energy Systems Integration

Modelling and understanding UK energy systems for future scenarios.

An ‘energy system’ is a network comprising energy demand, distribution/infrastructure and energy supply. Across such a system, there are different terminologies, metrics and models used to help guide efficient and robust design. CESI is looking at applying a ‘system of systems’ approach to integrating different models together (informed by real data and case-studies), such that genuinely low-carbon and resilient systems can be created within a context of future change.

Heriot-Watt will be focussing on Energy Demand, particularly that from the built environment. This will include understanding how the energy characteristics of buildings can be upscaled to that of communities of buildings.

Website: www.ncl.ac.uk/cesi
Breaking down barriers to achieve UK domestic energy efficiency at scale.

Within the UK, energy efficiency improvements within the existing housing stock is a key area in which governments have attempted to increase rates of activity to boost carbon reduction and end user cost savings. The most recent UK policy, the Green Deal, was a pay as you save scheme, linking the capital cost of improvements to ongoing energy bill payments. The success of this policy was limited, with minimal uptake in comparison to expectations. This research investigates the viewpoints of retrofit industry practitioners, to assess their experiences of working under the Green Deal, and evaluate what pathways could be available to move forward into the future. UK and German based individuals interviews were used to compare experiences, along with UK group interviews and focus groups to develop findings via a grounded theory approach, to illuminate possible future strategies for UK retrofit.

Key findings suggest EERS expansion is most successful if policies are designed more holistically; UK policies show strategies which focus on simply the property and not the occupants have their disadvantages. Therefore, a move away from marginal financial incentives, such as the Green Deal’s loan structure, to a wider consideration of how policy tools interact with supply chains and end users, would enable increased impact.

Related outputs:

Impact of ground albedo on the performance of PV Systems.

The total incident irradiation on a surface such as a photovoltaic (PV) module is the sum of beam, sky-diffuse and ground reflected radiation. Ground albedo or ground reflectance is defined as the ratio between the ground reflected radiation and the global incident radiation. A constant albedo value of 0.2 for bare ground and 0.5 for dry tropical localities is widely accepted and is used in the modelling of PV systems. The real albedo values of foreground surfaces are different and hence using a constant value may be unsuitable to accurately predict the output of PV systems. This research investigated the real albedo values of various foreground surfaces and how it is affected by the factors such as ageing, solar altitude, rain and cloud cover (sky conditions).

To investigate the impact of such factors, an experiment was setup to measure the albedo of conventional foreground materials (grass, sand and cement) and non-conventional materials (white pebbles, white paint, white tiles and aluminium foil). Research has shown that non-conventional materials, increased the slope irradiation and ultimately the energy generation of PV modules.

These results were validated using the long-term data from the Garston and Edinburgh database. A new computational tool was developed, which considers various albedo values of foreground materials simultaneously for any tilt angle of a PV module to compute the ground-reflected component.

Related outputs:
WHEATLEY GROUP TECHNOLOGY AND DEVELOPMENT STRATEGY 2020–2025

Wheatley Group and the University of Edinburgh will work collaboratively, bringing together our collective expertise, knowledge and skills to understand property technology trends and innovations globally which could influence Wheatley Group area.

By collecting and sharing ideas and views from stakeholders from across Wheatley Group, the project team will identify areas of most potential interest from the broad field of property technology. A global evidence review will identify interesting areas of practice and innovation which will be tested with customers and staff of Wheatley Group.

An iterative process of sharing technical, experiential, practical and academic learning and knowledge across and between Wheatley and the University will identify the key opportunities which could be applied in the Wheatley Group context. Focus groups, interviews, interactive design scenarios and a comprehensive desk review will be utilised to deliver the required outputs, to inform Wheatley Group Technology and Development Strategy 2020-2025.

SOCIO-TECHNO-ECONOMIC DESIGN OF ENERGY SYSTEMS DRIVEN BY COMMUNITY NEEDS

Developing a method that builds on traditional systems-modelling approaches in order to help specify and design energy conversion, transmission and storage technology.

With steep vectors of global change in urbanisation and climate, and the resultant pressures on building stocks and energy infrastructure, traditional energy systems approaches are ripe for revisiting. We propose that sustainable delivery of secure, affordable low-carbon energy requires design methods with the energy needs of a community as a focus. In order to achieve this, we propose to develop a method that builds on traditional systems-modelling approaches in order to help specify and design energy conversion, transmission and storage technology to meet the service needs of an existing and growing global middle class, whilst also catering for more vulnerable communities.

This will allow for a standardised form of resource identification to highlight drivers of a community energy system, but also transforming the way such modelling considers the nature of energy demand; viewing this as a series of semi-qualitative metrics. The research will focus on the thermal needs of a community and three locations have been chosen to develop and demonstrate the impact of the approach. Collection and analysis of community needs (societal), assessment of existing and natural energy resources (technological, geological, climate resilient), assessment of energy conversion and storage technology (technological), and algorithm development and system modelling (statistical) are some of the required skills to address this challenge and necessitate a multidisciplinary approach.

Three communities have been identified as case studies, Orkney, UK; Penang, Malaysia (ODA Upper Middle Income) and Santiniketan, India (ODA Lower Middle Income).
This study aims to formulate a specific assessment for eco-village development in China to guide the design, construction and operation stages with technical and quantifiable indicators and cover the social, economic and environmental aspects.

To achieve the goal, the existing commonly used sustainable development assessments, both international and Chinese domestic, were studied, and three Global Eco-village Network (GEN) registered eco-villages in China were examined. Therefore, the limitations were addressed, and the solutions were found for those assessments. In this case, a more comprehensive assessment can be formulated for existing and future eco-village development in China, in which the process of revising and formulating could be applied in other countries which share the same problems and challenges.

The study was carried out at four stages and in four years. At the first stage, various existing commonly used sustainable development assessments and their limitations were studied, and these study cases were examined and selected. The initial literature review which focused on the comparison of the British assessment methods, like BREEAM, and the Chinese ones, like GBES (Green Building Evaluation Standards) was completed. Besides, the methodology was determined in the same academic year. The second stage was for data collection by a series fieldwork in China and Scotland, specifically, four eco-villages in rural and suburban areas in China, the Huatao Eco-village (Chengdu), the Southern Life (Fuzhou), the Sunshine Eco-village (Hangzhou) and the Letu Eco-village (Zhangjiakou), and one Scottish project in Orkney.

The Chinese domestic sustainable development assessment methods were studied as well as the potential issues when applying to the select Chinese eco-villages. In parallel, a renovation of a historic building into a local arts centre in Orkney was investigated by examining ten years data on technical, economic and social sides, which provides valuable experience for addressing sustainable development assessment limitations and formulating a more comprehensive assessment method. It also offered a chance to compare the sustainable renovation in a single building in the UK to those refurbishments in the eco-villages of China.

At the third stage, a follow-up research was conducted during the second fieldwork to track aforementioned eco-villages’ development progress, and two more eco-villages in China were getting involved in as the study requires long-term tracking to identify the limitations of those existing assessments and find the solutions. At the final stage, a more comprehensive assessment method for eco-village development in China will be presented.

Related outputs:
A STAKEHOLDER-ORIENTED INTELLIGENT SYSTEM FOR BUILDING ENERGY RETROFITTING

The SISER project generates an intelligent, data-centric, decision-making tool to inform retrofit processes and occupant comfort within existing buildings.

Two key activities are addressed: 1) developing advanced ICT methods for the easy and precise energy modelling and simulation of existing buildings and retrofit scenarios, 2) collaborative decision-making for improvement of energy and comfort.

For both activities, novel methods and tools will be developed for the aim of improving the performance and quality of the existing buildings and realising environmental and economic impact.

SISER facilitates both automated and manual decision-making combining intelligent algorithms and human judgement. This research project differentiates itself from past research efforts by: (1) combining automated and human decision-making in an integrated system, (2) the development of novel image/video analysis methods for the energy analysis of existing buildings and alternative retrofit scenarios, (3) developing an integrated stakeholder-centred approach that addresses the conflicting interests and preferences of all stakeholders, (4) focusing on both occupant comfort and energy performance simultaneously.

Related outputs:

HOUSING INNOVATION: ZERO CARBON HOMES, MMC AND SMART TECHNOLOGY

Innovation in social housing is needed to help reduce fuel poverty and improve the quality of homes. This project identifies innovative approaches for designing, developing and maintaining homes in Scotland.

The project involved working with the SFHA and CS-IC to develop a better understanding of innovation in housing. Three themes emerged: ‘Net Zero Carbon Buildings’, ‘Modern Methods of Construction’ and ‘Digital Driven Technology’.

The project considered design and construction issues, and also the lived experience of tenants. It recognised that improving the lifespan of the home is vital for social housing providers who maintain them, and the tenants who live in them.

Innovation in housing for both new and retrofit developments focuses on achieving ‘Net Zero Carbon’ through improved fabric of buildings combined with ‘Modern Methods of Construction’ including off-site fabrication. Both offer opportunities to reduce fuel poverty by improving the quality of housing. In addition, integration of renewable energy systems within homes and communities is an important element of reducing fuel poverty through reduced energy costs. ‘Digital Driven Technology’ presents interesting opportunities for designing and operating buildings using Building Information Modelling (BIM) software and Smart Connected Technologies.

Related publications:
Exhibition and report “Innovation in Housing” – June 20 2019, Edinburgh.
**COMMUNITY-LEVEL ENERGY DEMAND REDUCTION IN INDIA (CEDRI)**

By: David Jenkins  
Heriot-Watt University  

With:  
Andrew Peacock  
Sandhya Patidar  
Sarah Payne  
Eddie Owens  
Valentin Robu  
David Flynn  

Funding:  
£1.4M total  
EPSRC/Indian Department of Science and Technology (Newton Bhabha scheme)  
(50% UK/ 50% India)  

Years:  
2017 – 2020

Community electricity demand modelling through applied aggregation algorithms to build community-level profiles in India.

Whilst many countries are seeing significant change in the use of energy in homes and the provision of that energy through local energy networks, the pace of change recorded in India is particularly notable. The “refresh” rate of the housing stock is high (with new build constituting a much higher percentage of the housing stock than many developed countries) and, simultaneously, the approach to delivering electricity to those homes is changing (e.g. the growth in distributed renewable generation, such as solar photovoltaics). If further change is to be planned amongst this already uncertain landscape, in the form of community-wide energy demand reduction strategies, then a full impact of such measures must be understood.

Minimising cooling requirements, controlling/managing appliance loads and encouraging distributed generation should all be promoted in a way that i) is consistent and complementary to a functioning local electricity network and ii) relate to measures that are likely to be accepted across communities, rather than having only niche appeal.

The CEDRI project will allow for community electricity demand modelling through applied aggregation algorithms, converting small samples of individual building demand profiles into community-level profiles. After carrying out surveys and workshops with householders, the project will identify the demand-reducing measures likely to succeed in such regions (informed by real case-study communities and empirical data) and apply these to the community demand models to quantify potential impact.

The ability of such changes to improve the local energy network will be fully investigated, such that measures deemed to successfully reduce total energy demand can be managed in a way that improves key characteristics of that network (such as frequency, voltage and peak demand). The project will therefore provide guidance that will ensure that approaches to demand reduction “co-evolve” with changes in the methods used to supply electricity to residential communities, over future timescales that already have considerable levels of uncertainty.
The aging population is a challenge for sustainable development in UK society. Age-related dermatological conditions such as dry skin are a common occurrence for older people and may cause discomfort.

In winter, this condition may become worse as people heat their homes, making the air quality much drier and subsequently exacerbating skin conditions such as: dry throat and skin and itchiness. This can disrupt sleep and lead to discomfort and even compulsive scratching, which can further damage the skin. The room humidity is overlooked in indoor environmental design and heating operation, yet room humidification can be a simple solution to avoid winter dryness with the assessment on its environmental and economic costs. Currently, there is no clear guidance on indoor thermal-humidity conditions as there is no evidenced data determining if there is an optimum trade-off between these costs and benefits.

This project investigates the effects of room hygrothermal conditions on older people’s comfort and skin condition and also the energy consumption associated with maintaining comfortable room conditions. A multi-disciplinary approach is applied through collaboration with a building physicist, building services engineer, environmental psychologist and two dermatologists. Its ultimate aim is to collect evidence-based data that would help to establish the guideline for design and running living environment that provides thermal and humidity comfort for older people with energy efficiency.

Over a period of three years, we are carrying winter surveys in an Edinburgh Care Home, where local residents are categorised as oldest-old occupants, who are more likely to suffer from dry skin, dry throat and other similar symptoms associated with winter dry. These group of residents also have a high proportion of dementia and amnesia that make them unable to recognise such condition and response with adjusting measures such as applying moisturiser and drink water more frequently. In the surveys, we have developed a procedure that endeavours to minimise disruption of the residents’ daily routine and to maximise data collection. The data are collected over a range of various room conditions through simple domestic humidifiers and by two approaches. One is through physical measurement to obtain objective variables: the room temperature and relative humidity for room conditions and the Transepidermal Water Loss (TEWL) and the Stratum Corneum (SC) hydration for skin conditions. The other is through a questionnaire survey and interview with selected volunteers who have no cognitive problems.

Currently, we have results show that most of the rooms were warm and thermally comfortable according to both the objective measurement and subjective interview surveys. But the results reveal that the rooms were indeed very dry, 98% of the measured Relative Humidity was out of recommended comfort zone for older people and measured skin was dry too. The major concern is that the subjective survey results do not show the perception of dryness. This suggests that the older people are sensitive to temperature change but not to humidity change, even when measured results indicate dry skin. On the other hand, the TEWL appears to have a very close correlation with room condition, which allows us to carry on the investigation to find the most appropriate room humidity that is most suitable for oldest-old residents.

Related outputs:
RESPONSIVE FLEXIBILITY (ReFLEX)

REsponsive FLEXibility (ReFLEX) is a £28.5M project funded led by the European Marine Energy Consortium, with multiple industry partners, and Heriot-Watt University as the academic partner.

The aim of ReFLEX is to create a Virtual Energy System in Orkney, which intelligently manages the distributed and intermittent renewable generation of that region. To achieve this, the project will be modelling and demonstrating a range of technologies relating to local supply and storage of energy, as well as taking a new approach to modelling energy demand of buildings in that community.

Heriot-Watt University will be particularly focussed on the importance of energy demand within local energy systems, implementing a range of modelling solutions that allow informed decisions to be made around such issues as demand response, technology selection, and the integration of smart storage with buildings that have specific energy requirements.

The Urban Energy Research Group will be particularly looking at the bottom-up modelling of energy demand of groups of buildings. This will incorporate both thermo-physical modelling of buildings and statistical techniques applied to empirical information of energy use. The challenge of applying such techniques to multiple, not just single, buildings is core to the research outputs of the project.

ENHANCE: REDUCING ENERGY DEMAND IN PUBLIC BUILDINGS THROUGH DIGITAL INNOVATION AND BEHAVIOUR CHANGE

Enhance is a multi-disciplinary project, led by Dr Nigel Goddard (School of Informatics), Professor Jan Webb (School of Social and Political Science) and Dr Kate Carter (Edinburgh College of Art) and funded by the Engineering and Physical Sciences Research Council (EPSRC).

The project is part of the Edinburgh Living Lab – a city-wide collaboration which aims to bring academia, the public sector and the third sector together in order to work with the community to co-design, test and implement new services, processes and products that generate social, environmental and economic value. Enhance has taken up a 12 month residency at Assembly Rooms, to help the venue understand and reduce its energy usage. The Georgian building earned a place on the project after a lengthy selection process, primarily based on the venue’s continued commitment to sustainability.

The Assembly Rooms is owned and managed by the City of Edinburgh Council. Shona Clelland, Cultural Venues Development Manager at the Council, comments: “Being chosen to participate in the Enhance project is a great way for us to push the venue in terms of sustainability and further develop our green credentials. Our team is very excited to welcome the researchers in and start working with them to identify problem areas and develop solutions to reduce our energy usage over the course of the year. We’re ready and willing to take responsibility for our carbon footprint and hope that the learnings from this project can deliver long lasting impacts on the business.”

Councillor Richard Lewis, Culture Convener, adds: “We hope this unique project can provide inspiration to other sites in Edinburgh to reduce their energy output and, subsequently, the city’s carbon footprint. Already as a Council we have installed LED lighting at the Usher Hall and more recently the Scott Monument. This is another great stride towards increasing the sustainability of our cultural venues.”

Website: www.enhance-project.org/
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