Cities, Communities and Homes: Is the Urban Future Livable?

- **Paper / Proposal Title:**

Intervening in the city: co-designing domestic infrastructure with residents of a London housing estate

- **Format:**

Written paper

- **Author(s) Name:**

Charlotte Johnson[1], Sarah Bell[1], Aiduan Borrion[1], Robert Comber[2], Kat Austen[3], Jun Matsushita[3]

- **University or Company Affiliation:**

[1]University College London, [2]Newcastle University, [3]iilab

- **Abstract:**

Infrastructure shapes communities. This is particularly evident in inner-city housing where the materiality of infrastructure delineates groups of residents who share things like pipes, drains, or gardens. Even if urban neighbours are unknown to each other, they consume shared resources delivered by infrastructure and are collectively impacted by changes in the material systems or services provided. Infrastructure has the potential to generate and circulate experiences amongst groups of residents and to provoke shared or contested interpretations of these experiences. This generative potential of infrastructure is typically overlooked by systems designers, but provides an opportunity to include residents in the technical work of creating liveable cities. Conversations about the use of water or energy at home can lead on to questions of where agency over resource use lies and what changes can be made in an urban community to affect local environmental quality.

This paper presents ethnographic material generated through a co-design process that engaged residents of a London social housing estate in the co-production of small-scale infrastructure interventions for their neighbourhood. Our project used a participatory process to create an intervention that could impact local water, energy or food production. In this paper we discuss some of the questions raised through the process, including residents' interpretations of wastefulness, their concerns over managing differences between residents such as differences in life stage, or tenure, and their expectations of those living on the estate and those outside of it. We describe the distribution of agency over resource use across the material and social structures of the estate and how we used these insights to tailor interventions to the social and technical context of the estate. We present this co-design process to contribute to broader questions of how communities and housing are implicated in the production of less resource-intense, more liveable cities.

- **Author(s) Biography (200 words each):**

Dr Charlotte Johnson is an anthropologist and research associate at UCL's Energy Institute. Her work focuses on urban infrastructure and the social systems it supports. She is an early career researcher who uses critically reflexive research methods and participatory approaches to achieve real world impacts. In 2014-15 she held a public engagement fellowship, during which she developed collaborative research projects with local authorities and not-for-profit groups leading to a new community energy project in east London. She has published on the politics of knowledge production, the relevance of social theory for decentralised energy and the impact of energy policies. She has worked on projects for DECC, DEFRA, BIS, the Scottish Government and the International Energy Agency producing a number of policy evaluations and practitioner guidelines for these organisations. Her academic work has been in the Guardian and New Statesmen.

Dr Sarah Bell is a Chartered Engineer, Senior Lecturer in Environmental Engineering at UCL and Director of the UCL Engineering Exchange. She is an EPSRC Living With Environmental Change Research Fellow and an expert on the interactions between engineering and society. Dr Bell has been PI on EPSRC funded projects Bottom-Up Infrastructure, Emerging Sustainability and Bridging the Gaps – Sustainable Urban. She has more than 70 academic publications, including 34 journal articles, 2 journal special issues, and 3 books. Her book Engineers, society and sustainability, directly addresses the challenge of engineering design and practice that accounts for cultural and social factors in reducing consumption and improving resource efficiency. She is Founder and Director of the UCL Engineering Exchange and was awarded a Royal Academy of Engineering Ingenious Award to support the development of the Engineering Exchange through delivery of community based research projects and Continuing Professional Development courses on community engagement for engineers. She leads a NERC

Public Engagement Pilot project on Green Infrastructure in London. In 2015 she was a British Science Association Media Fellow and in 2010 she delivered the Charles Lyell Award Lecture at the British Science Festival.

Dr Aiduan Borrion is a Lecturer in Sustainable Infrastructure at UCL. She specialises in developing quantitative tools and methods to support decision making in the design of sustainable technology and infrastructure. Prior to UCL, She contributed her LCA expertise to the £27m BBSRC Sustainable Bioenergy Centre. She is a Co-I on a BBSRC project integrating LCA into early bioenergy research and an EU FP7 Marie Curie IRSES on biomass valorization. Alongside her research, she leads the development and delivery of an LCA CPD course providing training to industrial professionals and policy makers, in collaboration with the Ellen MacArthur Foundation.

Dr Rob Comber is an Applied Psychologist and Human-Computer Interaction researcher. He is Lecturer in Computer Mediated Communication in Newcastle University's School of Computing Science. He is lead of the Collective Action Research Group and co-lead of the Digital Local Democracy strand of the EPSRC Digital Economy Research Centre and CDT in Digital Civics, where he works with stakeholders, including local government, NGOs, citizen groups, and academic partners, to develop digital systems, design methods, and community interactions, to support the design and delivery of public services, particularly taking a bottom-up approach for service design. He specialises in design for communities and the home, and is funded to explore the practices in the water, energy, food nexus in domestic settings, the design and evaluation of decision-support systems for agriculture, and the delivery of novel environmental services in non-domestic contexts. Over the last 5 years, he has been one of the leading authors at ACM CHI, a leading venue for HCI research. His work on social media, pervasive sensing and food waste has appeared on the BBC Breakfast and Today programme, and in the Conversation, and national and international print media.

Jun Matsushita is Founder and CEO of iilab – information innovation lab – a small firm that works with community groups and innovators to develop open source technology to support social change. Jun has two decades of experience in technology and innovation management, has worked as Head of Innovation for a major technology NGO, and as CTO for two US based technology companies. His technical expertise ranges from system and network administration, web and telephony platforms, to digital security and knowledge management.

Dr Kat Austen is Head of Research and Design at iilab and an artist. She has over a decade of experience at the interface of science, innovation and technology, and a Phd from UCL where she is an honorary researcher. Dr Austen was recently appointed

to the water and wastewater resilience working group reporting to Ofwat. Her art has been shown internationally and she has had solo shows in London and Shanghai.