The use of space in Thamesmead: A participatory system dynamics study

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Well-designed natural and built environments are central to people's wellbeing. At the same time the interacting factors that make people use these spaces are not fully clear and can be differently understood by different stakeholder groups. This can be a problem if perceptions of what drives the use and quality of space differ between stakeholders who decide on the design of such spaces and those potentially using it. Using the Thamesmead area south-east of London as a case study, this research investigates different stakeholder groups' perceptions of what drives the long-term quality of green, blue and built spaces and their use. It introduces a method to understand stakeholder perceptions of system boundaries, which provides easy-to-understand visualisations of perception differences in participatory settings. It also presents a participatory process of engaging with stakeholders from problem scoping, to causal loop diagramming, problem refinement and the quantification of a system dynamics model. This research thus contributes to more holistic perceptions, cognition and decision-making in a collaborative multi-organisational decision-making process on the use and quality of spaces.

Nici Zimmermann is an Associate Professor in System Dynamics at the Institute for Environmental Design and Engineering, University College London. She is Co-I on grants related to systems thinking in the built environment, complex urban systems of sustainability and health, and sustainable water management in London. Her research addresses sustainability, city transformation and housing as well as organisational cognition, decision-making and change. She employs and analyses inter- and transdisciplinary research and likes to engage stakeholders from policy, private organisations and residents in her participatory work. She is a repeat Strategy Thread Chair at the International System Dynamics Conference and member of the Society Program Oversight Committee of the System Dynamics Society.

Nici developed this research with Irene Pluchinotta and Giuseppe Salvia, both Research Fellows at the UCL Institute for Environmental Design and Engineering.

Irene Pluchinotta is an environmental engineer and her areas of expertise include system dynamics and decision analysis to support decision-making in collaborative multi-stakeholder settings, e.g. for sustainable environmental policies, water management and urban planning for resilient cities. Based on a double PhD in environmental engineering and computer science (agreement for a joint research thesis), her work provides formal support to decision-makers involved in participatory and co-production activities, working on (participatory) system dynamics modelling and structured stakeholders' engagement activities.

Giuseppe Salvia holds a PhD in Design and is a qualitative researcher with a track record in international research projects addressing multi-scale socio-technical innovation especially in

favour of more sustainable patterns of production and consumption. At UCL, he explores stakeholder perceptions and priorities. Giuseppe has a key interest in developing participatory approaches for stakeholder engagement by drawing on co-design tools and methods, especially to minimise risks of unintended consequences and maximising the impact of applied research.