

ran concurrently from 2008 until 2012. Both projects, (the Scotland Energy and Carbon Management Project and the UK SUSTE-TECH Project) were designed to examine the energy demand of Information Communication Technology (ICT) in universities and colleges. The projects also had an additional purpose; implementing sustainable initiatives that would result in energy and cost savings. This research also includes information on the use of ICT in further and higher education institutions (FHE's) and the integral role ICT plays in education and research.

Methods: Using an inductive anti-positivistic methodology and using a mixed method approach, this research examines 7 key factors that may have affected institutions ability to participate fully in those projects. Those key factors were; lacking managers, disjointed stakeholder engagement, institutional culture, government organisations as weak drivers, budget holders collective action in buying ICT equipment, poorly performing sustainable technology and cuts in funding to institutions.

Findings: From those 7 factors, 5 of them are identified as being key barriers to participation in sustainable ICT projects. For some institutions, it was a combination of more than one factor, for others just one and for some it was none. Essentially, the findings of this research highlighted the inability of institutions to participate fully in their respective sustainable (or green) ICT projects and thereby fail to achieve their anticipated cost and carbon savings.

Conclusion: This research concludes that there is considerable overlap between each of the 7 factors with one of the factors (cuts in funding) appearing to underpin most of the others. Some of the factors are interconnected and may, when coupled with one or more factor, be considered a more significant barrier. Alternatively, while some barriers appear to be connected, others appear to be isolated and bear no relation to any of the other factors.

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DESIGNING DEBATE: THE ENTANGLEMENT OF SPECULATIVE DESIGN AND UPSTREAM ENGAGEMENT

This thesis offers a critical reflection of a design

practice in which a speculative approach to design became entangled with upstream engagement with biotechnology research. Given that both practices claim to enable a public discussion about emergent technology, what is the nature of their mixing, and how should an analytical account of such a design practice be made?

I start with separate reviews of the respective features of these two approaches, considering practitioner accounts and histories along with analytical literature where those practices are objects of research. Then I take the case of the public engagement project Material Beliefs to develop an empirical account of their confluence. Initially I discuss labs as sites where designers, scientists, and non-experts come together to discuss and to problematize accounts of biotechnology research. Next, I examine the process of making speculative designs, and here I emphasise the ways in which issues, materials and practices become compiled as exhibitable prototypes. Finally I consider the circulation and reception of these designs in public settings, including exhibitions, workshops, and online formats.

I argue that speculative designs' move on upstream PEST is an imbroglia that goes beyond mixing the formal features of practice, and requires a discussion concerning the actions of the designer in relation to a broader set of accountabilities. Authorship of the processes that lead to design outcomes, the description of design outcomes, and the effects of those outcomes become distributed and negotiated by an extended set of commitments coming from researchers, policymakers, educators, curators and promoters. Ultimately, I contend that this mixing provides an opportunity to foster a reflexive and empirical account of speculative practice, to engage in analysis of the organisations and settings that support a speculative approach, and to provide a critique of upstream engagement.

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# Doctoral Research Presentations Goldsmiths Design Festival

**LG01, Professor Stuart Hall Building**  
**Thursday 3rd September 2015**  
**10am – 1pm**

*Session chaired by Professor Kay Stables*

**The Department of Design has a thriving community of scholars and practitioners engaged in doctoral research. In this session students, graduates and visiting researchers will present their research covering a broad range of topics and research interests.**

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MAKING ALGORITHMS PUBLIC: RENDERING VISIBLE THE OPERATIONS AND POLITICS OF ALGORITHMIC SYSTEMS THROUGH DESIGN

This thesis addresses the need to understand the role and make visible the workings and implications of algorithms that make possible digital services and systems that are routinely employed to automate and mediate key aspects of social and cultural life. This practice-based study proceeds by way of case studies focusing on the operations and politics of various types of algorithms. The research includes a cross-disciplinary combination of design and computing, employing 'inventive methods' that probe, expose and materialize algorithmic systems. The outcome will be a collection of

design artefacts that will support the study of, and critically reflect upon, the role and politics of algorithms in social and cultural life.

Year 1 has resulted in the development of a literature review that begins simply to ask 'what is an algorithm?' followed by an interest in prior art case studies and the beginnings of a proposal for adopting 'algorithmic assemblages' as a theoretical model for studying algorithms applied to social and cultural mediation. In the first year several 'sketches' were developed: the beginnings of projects and ideas that could be taken further. One that stood out was 'Novice Art Blogger', an automated blogger that uses an image recognition algorithm to process abstract art and publish its own commentary on Tumblr. The 'bot' amassed ten thousand followers in its first two weeks and received wide media coverage. Novice Art Blogger and other experiments will be documented in the PhD as part of an 'annotated portfolio': a method proposed by Professor Bill Gaver who joint supervises the doctorate together with Dr Alex Wilkie.

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HOW CAN DESIGN-LED RESEARCH RE-DO THE PATIENT EXPERIENCE CONSIDERING THE

## PERFORMATIVITY OF MULTIPLE SCLEROSIS?

Recently, the notion of 'patient experience' has become comparable measures of clinical effectiveness and safety in that it can be defined and this making particular types of healthcare intervention accountable. In the UK, for example there is considerable effort to improve patient experience in the NHS through a variety of design-led approaches, such as deploying Experience-based co-design toolkits as devices to facilitate co-design. Drawing on scholars in Science and Technology Studies who argue that patients' bodies and disease are ontologically multiple and performed as situated collectives this thesis will explore how design-led research can re-think or 're-do' patient experience. This research explores how performative design-led method can explore the empirical settings of scientific conferences, outpatient clinics and the home, uncovering different versions of Multiple Sclerosis (MS).

This speculative method raised questions such as, what counts as scientific knowledge, to what extent do these interventions enact experts conceptions of patients, and what kind of patients might a design-led process support, enact or even bring into being? I reflect on how design-led interventions engage with the political spaces articulated by MS collectives. The thesis will reflect on the implications for design research to study enactments of MS alongside expanding on how design researchers can empirically engage with patient experience.

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## DESIGNING FOR THE AMBIVALENCE OF SEPARATION

My practice based doctoral research seeks to investigate the ways in which design can give materiality to feelings of ambivalence in mothers, by exploring the complex attitudes towards separation from home and family life, which are necessary for the development of an identity beyond that associated with motherhood and home. Ambivalences felt towards separation exist for parents in general, but as I shall explore in my research, it seems to be more complex in mothers.

My research will focus on two diametrically opposed situations in the scale of integration and separation between home and work life. The

first situation is that of mothers of young children who work or attempt to work from home. During this early period of motherhood, a complex set of emotions emerge as a mother negotiates between her identity, that may have arisen through her work, and her newly acquired, maternal identity. In this situation, the relationship with digital devices becomes complex as they may be used for integrating and/or separating work and home life, bringing a wide range of emotions towards them.

The second situation my research will focus on is that of parents who have to regularly be absent from home due to work travel. In this case, separation is not only mental, but also situational, and the way parents connect to home events at a distance can reflect ambivalent feelings towards separation. This has become evident in the Family Rituals 2.0 project<sup>1</sup> in which I worked as a Research Associate. I shall integrate part of my research experience during this project into my PhD with a secondary data analysis approach.

1. Family Rituals 2.0 is an interdisciplinary research project comprising Human Computer Interaction researchers (from Newcastle University), interaction and product designers (from Newcastle University and Royal College of Art), geographers (University of the West Of England and Bournemouth University) and social anthropologists (Bournemouth University and Royal College of Art). The project is funded by the UK's Engineering and Physical Sciences Research Council (EPSRC) as part of their Digital Economy Programme.

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The research investigates the relationship between design and materials science experimenting instruments, methods and processes for transferring the "porous design of materials" to product design. Starting from the analysis of the contemporary material scenario, dominated by digitalization, information and immaterial values, this study engages in understanding and describing new parameters for designing and selecting materials. It is necessary to redefine, understand and re-design the relationship between users and the physicality of products, according to a new ethical, aware and demanding consumerism.

The research focuses on the properties and capacities of materials in terms of porosity and

how design can inform both the development of future applications as well as scientific knowledge associated with material science. It aims to link materials science with social and cultural research, including approaches to the understanding of everyday life. The research is conducted in collaboration with Hypucem, a spin-off of the Italian National Research Council, which is investigating foams and composite materials through chemistry and engineering. The approach is practice-based, exploiting mixed methods, including, but not limited, to user-centered design, experiments with material properties and dissemination.

One strategic lever is to exploit the design communication skills, which represent an important resource for scientific dissemination of results, to generate a hybrid language for interdisciplinary collaboration. The results are new paradigms and interpretations of porosity in term of efficiency, performances and aesthetics both to use in design and to activate directions of research in the field of material science.

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The overarching aim of this research proposal is two-fold, firstly to study the transition of design students from higher education in the United Kingdom (UK) into and during their entry level roles within UK design agencies (whether this is an internship or their first job) and secondly, to determine if design graduate transition has become defined by internships and the implications of this.

There are three core stakeholder groups that fall within the research; design graduates, design agencies, and higher education institutions. My approach will be to explore the issues that design agencies and higher education in the UK raise about what they feel the purpose of design education is, in both a formal and informal environments. Through exploring their views on the issues raised, this research should uncover and explore any tensions that exist between higher education and the design industry on what, if anything, is expected from each other. Finally, and most importantly, the focus on graduates themselves as they navigate transition between higher education and the design agency, and what is being done to help them.

By undertaking this research, the purpose will be to gain an in-depth understanding on how graduates learn through practice once in design

agencies in the UK's design industry. Furthermore, I will be looking at how design agencies initiate learning through practice. Through this process I will be researching how knowledge is produced, applied and evaluated in this specific situation, by both graduates and design agencies. The intended outcome of this research will be developing a greater understanding of how learning occurs within design agencies, to help scaffold and initiate learning in the workplace for graduates, whether during internships or entry career roles.

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This research aims to utilize a metadesign approach to eco-community design in Taiwan. In order to understand how metadesign helps to synergize resources and create eco-communities in Taiwan, Yahuei explores aspects of design creativity from the point of view of self-reflexivity and collective transformation through a series of dialogical art works, Becoming, in her creative practices. Documented images as used her dialogical artwork and metadesign workshops are design tools to open up dialogues so as to create knowledge exchange and learning environment among different disciplines of professions. With this, she intends to create attitudinal or behavioral change in both the designers and the designed eco-communities.

Yahuei addressed designer's perception of the self as the key to create paradigmatic change and to underpin the logic of what is designed. Influenced by the Chan practice and philosophy, Yahuei regards eco-wisdom, which is characterized by the "nature of emptiness" and the nature of "co-arising interdependence," as the principles to map eco-communities in Taiwan. She argues that the eco-wisdom of the "nature of emptiness" represents the unlimited mind, which has the capacity of seeding the metadesign change.

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BARRIERS TO PARTICIPATION IN THE SCOTTISH CARBON & ENERGY MANAGEMENT PROJECT AND THE UK SUSTE-TECH PROJECT.

Introduction: This research examines the outcomes of two sustainable ICT projects that