Sheffield Hallam University

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ATKINSON, Paul <http://orcid.org/0000-0002-6633-7242>

This document is the Accepted Version [AM]

Citation:

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One of the aspects of design research I am constantly reminded of in the role of Editor is the huge number of different theoretical models aiming to describe, locate, define, and explain design. This is no real surprise, as design's complexity, breadth, and variety mean that such models are crucial to our understanding of an often intangible and inscrutable activity. These models commonly present design as a being at a point of integration between disparate disciplines, placing design either at the centre of a complex Venn diagram, as the hub at the centre of a spoked wheel, or as the activity at the centre of a triangle of a variety of factors. As will become clear, these models pervade every aspect of design research, and the papers herein are no exception.

Continuing our series of invited reflection pieces considering how the field of design research has developed over the past two decades, Vasco Branco and Francisco Providência explore design as cultural mediation. They explain how design pedagogy at the University of Aveiro (the design programme celebrating its 20th anniversary in the same year as this journal) is based on a conceptual triangle of authorship, technology, and brief. In their first year, students learn to become an author of design, in part through learning how to sketch (more of sketching later). In their second year, the focus moves to understanding the physical constraints on design exerted by technological, materia, and production limitations. In their final year, students concentrate on the brief by learning how to work with companies and clients. As the authors state, in a national market where 90% of companies are small to medium-sized enterprises, such an approach provides valuable training in a holistic approach to design. Valuable because, as the triadic model indicates, design operates at the intersection of different territories – 'as an activity of cultural mediation'. Design sits 'between people and functionality, needs and desires'; between technology, society, and aesthetics.

The topic of Anders Haug's paper is located precisely at this nexus of technology, society, and aesthetics. 'Defining "Resilient Design" in the Context of Consumer Products' looks at the issue of product lifespans and the fact that so many objects cease to function on an emotional level and are discarded long before they cease to function physically. Part of the problem, Haug states, is that a focus on designing products to be more environmentally sustainable by designing them to be more 'durable' involves dealing with a complex array of issues that are not universally understood in the same way by different designers. By detailing a range of requirements to produce 'resilient designs' (i.e. designs that can '"recover" or "adapt" when damaged, decayed, or similar') rather than merely 'durable' objects, Haug proposes a framework enabling designers to expand the longevity of their creations.

In a paper clearly concerned with where design sits in the scheme of things, Sylvia Liu, Huirang Liu, and Yanming Zhang consider 'The New Role of Design in Innovation: A Policy Perspective from China'. The paper provides a rare insight into Chinese design development and associated industrial policy. 'Made in China 2025' is a 10-year government-driven plan to turn China into a 'world-leading

manufacturing powerhouse with international competitiveness and the capability of indigenous innovation'. Where Haug looked at renaming 'durable design' as 'resilient design', Liu, Liu, and Zhang look at the reframing of design as 'Innovation Design': essentially stressing a new role for design as an 'Innovation Driver'. The authors, in reviewing the development of design and innovation strategy in China, position design with respect to three historically framed economic paradigms: Industry (1980s), Experience (1990s), and Knowledge (2010s). In a western context, within the Industrial economy, design and mass production create new products. In the Experience economy, enterprise is focused on branding and marketing. In the Knowledge economy, know-how and technological capability are foregrounds, and design becomes a strategic planning tool. China, however, followed a different path to integrating design and innovation. As a rapidly developing economy, China initially built its technological innovation capability by learning from others, buying foreign licences and patent technology and entering co-production contracts, followed by building knowledge and experience. Once on a level playing field, the strategy became one of moving from 'made in China' to 'created in China', where China would move from being a manufacturer for other nation's innovations, to become an independent innovator in its own right.

In the paper 'Interplay of Sketches and Mental Imagery in the Design Ideation Stage of Novice Designers', Mia Tedjosaputro and her colleagues study the act of design ideation by sketching when designers are at the same time able to access external representations and are forced to generate mental images without access to external representations (i.e. blindfolded), and then sketch design concepts from memory at a later time. Sketches used in the first scenario perform a supporting, reflecting role as the designer 'thinks on paper', whereas sketches produced after designing purely in 'the mind's eye' take a generative role in externalizing internal representations, which are then manipulated further. The author's area of interest lies in the interplay between the generation of mental images and the production of sketches: of vital importance to design educators.

Building on Crilley et al.'s work on defining designers' intentions, Santosh Jagtap uses an extensive survey of practising industrial designers in India to determine their intentions in designing products and where they found their inspiration. A rigorous statistical analysis of the findings confirmed that designers do indeed frequently expect a specific response to their designs, and mostly expect this response to be elicited through the visual appearance of the product. There is also evidence to suggest that other shared attributes related to quality, reliability, and modernity and emotions related to happiness, satisfaction, and pride are frequently elicited by designers. The most common source of those inspirations to communicate intentions is 'similar products', although a much wider range of inspirational sources is used in the idea-generation stages. Again, these findings are important in informing the curriculum of future design education programmes.

Simon Ramm and colleagues' paper raises an interesting point. Even well-established products having a long history of accepted design solutions may

need re-assessing in the context of new technological developments. In 'An Exploratory Design Workshop to Elicit what Feels Natural when Interacting with an Automobile's Secondary Controls', Ramm et al. examine the example of the automobile and the interface design of its secondary controls (such as windscreen wipers, indicators, and horn) in the light of competing for space with the growing number of comfort controls (seat positioning, lighting, and climate control) and infotainment controls (sat nav, radio, CD, cellphone, internet, etc.). This is an important aspect, bearing in mind the adoption of additional automatic functions (ABS, adaptive cruise control, and lane-keeping technology) moving us ever closer to the idea of the self-driving car. Ramm et al. employed an immersive workshop environment to explore the complex issue of how 'natural' using all these secondary controls feels to drivers.

In 'Design Management Capability Framework in Global Value Chains', Bilgen Manzakoğlu and Özlem Er highlight the connections between the business strategies that companies follow and the design management capabilities of those companies. Citing the increase in international trade as a driver, the research focuses on the growing importance of global value chains and, in particular, 'latecomer firms' and their aims to move from being Original Equipment Manufacturers, through being Original Design Manufacturers, to being Original Brand Manufacturers. An in-depth analysis of a range of existing Design Capability and Design Management Assessment Frameworks reveals that current frameworks do not address design management capability development strategies in global value chains. This is a clear deficit – particularly to latecomer firms desperate to upgrade their businesses quickly through the trajectory from Original Equipment Manufacturers to Original Brand Manufacturers.

In his PhD study report 'Flourishing through Smart Tourism', Bruce Wan outlines his research into the co-design of technology-mediated traveller experiences. Smart tourism offers the traveller personalized, memorable, and meaningful experiences related to the individual's particular psychological profile and personality traits, perceived to be more beneficial to positive personal growth.

Matt Malpass provides a thoughtful review of 'Design for Life: Creating Meaning in a Distracted World' by Stuart Walker. Malpass finds the book usefully provocative—a polemic call to arms for designers to effect change.

Finally, this issue closes with Anne Massey's review of 'The Routledge Companion to Design Studies', edited by Penny Sparke and Fiona Fisher. Massey supports the book's bringing together of design history, design research, and design studies, finding virtue in 'its impressive collection of contributions' covering the 'study of design in its breadth and variety'.