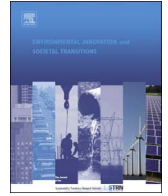


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# Systems of practice and the Circular Economy: Transforming mobile phone product service systems

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## ABSTRACT

Of late, policy and research attention has increasingly focused on making the Circular Economy a reality. A key part of this agenda is the creation of Sustainable Product Service Systems (SPSS) that meet consumers' needs whilst lessening negative environmental impacts. Although the SPSS literature has grown recently, key aspects require further examination. In response, this paper discusses empirical research exploring consumers' reactions to a novel, hypothetical mobile phone SPSS, utilizing qualitative methods that included 'business origami'. It examines consumers' knowledge about current mobile phone life cycles, and responses to the proposed SPSS, drawing on a 'systems of practice' framework to discuss the potential for significant changes in phone purchase and use. It outlines barriers to alterations in practices, underscoring the centrality that connectivity and data storage now have in many peoples' daily lives, which have for some become clustered around the capabilities and accessibility of the mobile phone.

## 1. Introduction

LiBTle is new in the assertion that current global production and consumption systems are highly unsustainable. For decades an array of actors and institutions have drawn attention to the need to alter how products and services are made and used, if we are to collectively maintain some semblance of environmental and social well-being into this century (European Commission, 2011; RSA, 2016; Stahel, 2006). While various pertinent discourses and approaches have waxed and waned in the public sphere (e.g. sustainable development, sustainable consumption, the Green Economy) one framework—the Circular Economy (CE)—has recently gained notable policy, business, and civic traction. For one, the European Commission's 'Circular Economy Roadmap' (2011) argues that 'closing the loop' on linear product life cycles of make, use and discard, and transforming them into varying loops of re-use, repair, refurbishment and recycle, is a key strategy for Europe's competitive growth into this century. In addition, an array of non-governmental institutions such as the Ellen MacArthur Foundation—along with small-scale civic and business-to-business social enterprises that aim to share and/or repair goods—are working to rethink and reconfigure how and why we create and utilize a range of material items and services (Ellen MacArthur Foundation, 2015; Hobson and Lynch, 2016; Lacey et al., 2014).

Such goals draw and build upon decades of theory and intervention within fields such as Industrial Ecology, Eco-efficiency, Cradle-to-Cradle and Sustainable Production-Consumption (Braungart and McDonagh, 2002; Gibbs and Deutz, 2007; Shove, 2004; Spaargaren, 2003). A key component of these foundations, along with more recent work on the CE, is the concept of Sustainable Product Service Systems (SPSS). Here, the underlying impetus is to reconsider how material and service needs are being and/or can

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be met, working towards goods and parallel services that are more environmentally benign and materially/energetically efficient. Part of the SPSS rationale is to replace product ownership with renting and leasing to shift “the emphasis from selling product ownership to selling product use or its functions” (Edbring et al., 2015: 5). At the more radical end of the SPSS spectrum are attempts to ‘dematerialise’ or ‘servitize’ material goods to address fundamental needs (see Roy, 2000) e.g. providing ‘cooling’ services rather than selling fans or air conditioning.

As the policy and academic literature around SPSS has gained momentum, debates have focused on valid conceptual frameworks, applicable typologies, and empirical case studies of real or hypothetical systems. These have included clothing (Armstrong et al., 2015), electric cars (Cherubini et al., 2015), bike and car sharing (Bardhi and Eckhardt, 2012; Zhang et al., 2014), office furniture (Besch, 2005) and prams (Mont et al., 2006). For some of this literature, the conceptual focus and language utilised is not that of the SPSS per se e.g. Bardhi and Eckhardt (2012) discuss access-based forms of transportation that demand recalibrated engagement and action from the user, rather than the creation of SPSSs to foster sustainable mobilities. However, taken together, this research highlights the manifold challenges and promises of operationalising SPSSs in their varied forms (e.g. Reim et al., 2015; Tukker, 2013; Vezzoli et al., 2015). These forms have been broadly argued to fall into three main categories i.e. Product-Orientated (selling a good with additional services); Use-Orientated (leasing or renting goods with attached services); or Result-Orientated (providing a service rather than just material goods) (see Mont, 2004; Tukker, 2004). However, recent critiques suggest that this 3-fold typology fails to capture the wide variations of materials, services, and contractual relationships within potential and actual SPSS (Cook, 2014; Ostaeen et al., 2013). And thus the field of SPSS research is still in need of further development.

Such development includes the noted tendency of SPSS research to draw upon and speak to specific sub-disciplinary epistemologies, methodologies and audiences. For example, a great deal of this work has been published in business, management and industrial ecology journals (Hobson and Lynch, 2016; Reim et al., 2015). Whilst this latter literature has, of course, great value in advancing the SPSS and CE fields of knowledge, it has been argued that there is also now a need to draw upon more interpretive social science epistemologies and methodologies (e.g. Cook, 2014; Hobson, 2016). The goal here is to further capture and understand how, for example, consumers engage with the ideas and concrete examples of SPSSs in ways that take into account a broad array of contextual social, economic and cultural factors (Bocken and Short, 2015; Cook, 2014).

In line with such critiques this paper discusses a sample of consumers’ responses to a novel, hypothetical mobile phone SPSS. This product category has to date received little attention in the SPSS literature, in terms of testing alternate approaches to providing the service of individual, mobile connectivity through hand-held devices (see Canning, 2006; Ongondo et al., 2011). This is in part understandable given the complexities of current mobile phone manufacture and use. However this product and attendant services do warrant attention, particularly as they arguably epitomise the manifold challenges of the CE agenda e.g. containing critical minerals, many of which are not recycled or re-used. The aim of this paper is therefore to provide some insight into individual and shared meanings around the use and ownership of these devices, drawing on qualitative data gathered through participatory ‘business origami’ interviews with members of the UK public.

This approach is in-keeping with arguments in this journal that more interpretive stances to SPSS research are required, making full use of specific, small-n case studies and including ‘various voices’ (Cook, 2014), such as in the design and evaluation of SPSSs (Wilson et al., 2015). In terms of epistemological approaches, this paper draws on recent social science work around ‘Practice Theory’ (PT) in relation to issues of meso-level or macro-level system transitions, including the development and actioning of new forms of SPSS. Broadly speaking, some recent iterations of PT—although a diverse and often highly contested field of debate (see, for example Shove, 2010, 2004; Whitmarsh et al., 2011; Wilson and Chatterton, 2011)—stem from critiques of how policy makers, practitioners and oftentimes researchers approach issues of fostering more ‘sustainable’ everyday behaviours. In recent decades, educational or material interventions have been applied to single behaviours (e.g. recycling), often with less-than-ideal outcomes (Hobson, 2006). PT researchers have argued that this approach fails to comprehend how everyday (unsustainable) actions are part of complex circuits of other, linked behaviours; are enmeshed with shifting material cultures (e.g. new ‘gadgets’ such as mobile phones); and are replete with individual and collective meanings e.g. changing norms of efficiency (Shove, 2004) or mobile connectivity. Thus:

‘The successful introduction of new products [thereby] comes to depend not just on their ‘mental appropriation’ by human agents, but equally on the levels of fit or misfit they show with respect to the existing portfolios of objects, bodies and meanings that are involved in practice’ (Spargaaren, 2013: 238)

As such PT enables the framing of mobile phone purchase, use and disposal not only as a historically situated practice, but also one that is now part of broader ‘systems of practice’ (Watson, 2012), linked to a whole series of other practices (e.g. work, child care, keeping fit) which in turn may or may not make the uptake of a new SPSS, like the one explored in this paper, more tenable. To that end, this paper aims to explore how prevailing practices around the mobile phone are perceived, and therefore potentially open to change within the aims and rationale of the CE and in response to a novel, proposed SPSS.

The remainder of this paper is structured as follows. The opening section explores why the mobile phone and electronic waste constitute a worthwhile case study for SPSS research, given the many challenges of transforming this sector in a resource scarce world (Hobson, 2016). Then the research project and methodology of this papers’ case study are outlined, followed by a discussion of the qualitative data gathered about research participants’ current practices and their reactions to an alternate phone SPSS. Finally, the concluding section reflects upon this case study and its contribution to rethinking the mobile phone in the CE.

## 2. Closing the loop on mobile phones: e-waste and transition scenarios

Consumer electronics is one of the fastest growing sectors in global markets. In the last decade the purchasing of such products has

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