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DRS2020 Editorial: Design for Tangible, Embedded and Networked Technologies

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Editorial: Design for Tangible, Embedded and Networked Technologies

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The third DRS conference tentSIG section builds on at least two of themes explored in 2018, and in many ways extends the theme of this year's conference, *Synergy*, beyond any simple conceptualisations of collaborative or co-created design research. In particular the papers this year demonstrate further the continuing 'geometric expansion' of the design space, first discussed by Lee, Cooper and Hands in 2018, through worked examples of diverse aspects of the design experience, impacted in quite profound ways by a shift away from the human-centred, and towards a 'flat' ontology through distributed notions of users, processes, authorship, value creation, business models, and of course, products and services. Simultaneously, these papers do a sterling job of flying the flag for design research, and particularly for Research-through-Design (RtD), demonstrating and articulating its value to responsible research and innovation where it is needed most, in ensuring agency, negotiability and legibility in complex product-service and 'intelligent' systems. Between them, these researchers are mapping a new relational landscape of design, akin to Ingold's world without objects.

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Of all the authors, Akmal and Coulton (paper 188) are the most explicit in presenting this landscape, in their discussion of an Object-Oriented Ontology (OOO) as a framework for thinking Internets-of-Things. It is key to this section in its attempt to bridge design and the 'flatness' of the OOO. Where the other papers more or less implicitly unpack the emergence of flat ontologies in practice, of distributed, open-source imaginaries of technology and design, Akmal and Coulton introduce us to the philosophy itself. Through Bogost's *carpentry* (tools for 'doing philosophy'), a set of Tarot cards is developed to act as a provocation to designers, asking them to envisage how objects might be acting on each other in unexpected ways, and to see Internets of Things from the perspectives of a wider

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range of possible (non-cognisant) actors. Like Kunneman and Alves da Motta-Filho in their paper on data science, they touch on a move away from “the generalisation of user bases in design” as a result of object-oriented ontology, while introducing questions over the potential for “ever accumulating loops” of information based on data extraction. They point to “collectives of users” – not quite practices, which are more explicitly brought into play by Acharya, Campinoti and Presser’s *Curated Chronology*. Instead the *Tarot of Things* makes a methodological contribution through the discussion of a playful methods for breaking apart HCD and HCI – a kind of breach experiment for otherwise user-oriented design practitioners, which aims to open our eyes to the possibilities and challenges of the OOO.

Set loose in this landscape, our first point of call is the process of New Product Development (NPD), and the impact of the IoT on these practices, developed for 20th century manufacturing paradigms. Lee, Cooper, Hands and Coulton (paper 139) continue the work of their 2018 tentSIG paper, exploring further the non-hierarchical ecologies of distributed innovation, endlessly scalable, but with increasing levels of risk due to increased interdependencies and interconnectedness – a constellation, rather than a routemap. In their discussion of the commonalities and differences between success in traditional and IoT business activities, the first item shifts the imaginary of ‘the user’ as a phenomenon to be understood and designed for, towards an entangled and active stakeholder role which is “mutually rewarding”. Values in this new field of NPD are built through a constellation of relationships, rather than built into autonomous, market leading products, and data becomes jointly curated. Lee et al finish with a question highly pertinent to the DRS community: if innovation is distributed, what is the role of designers ... generating values for IoT products and services within value constellations?

Särmäkari and Vänskä (paper 195) answer this question in part, by examining open-source approaches in the fashion industry, and the decentralisation of authorship that this entails. Even where practices could not be claimed to have been entirely autonomous previously (‘traditionally’), their reconfiguration draws attention to distributed ecologies of creativity and production in new ways. They show how protectionism and secrecy, conventionally the guardians of value, are challenged by new constellations of design activity; the identity of the designer as heroic individual is no longer possible, or relevant as “unprecedented operational processes” are developed. They bring forth the question of the active versus the passive consumer, who must now become politically, materially and conceptually invested in these open-source models of production and consumption; their agency, having been somewhat designed out of the competitive, agile design process, is now necessary for the success of the whole new egalitarian network of design. They become “authorized”, given authorial status and capabilities – not fashionable, but “fashion-able”. The authors go on to show how the ontological shift cannot stop there, but must necessarily underpin the redesign of the design process as a service; the case studies they use illustrate the difficulty of then extending this to the redesign of the industrial business model itself, seeking ways to become or remain viable in a wider field.

Acharya, Campinoti and Presser, in ‘A Curated Chronology’ (paper 377), address the

subject of material itself, namely energy as material, and the ways in which it too is subject to an object-oriented ontological turn. They explore how design engages with technologies, transforming them into things available for negotiation and value creation, as ‘design subjects’. Through their methodological contribution, which will help doctoral design candidates look for the traits of projects beyond their visual representations, and complement the standard literature review, they illustrate the opening of technology to become more undecided, through “designing through material and form” rather than “predicting use”. Functionality and use are nudged away from “individual action” towards practices and the creation of publics, without losing the embodied, phenomenological dimensions of experience, which remain preserved in a “socio-relational’ framework.

Another paper that demonstrates the benefits of a well-articulated Research-through-Design approach is that of Lindley, Akmal, Pilling and Coulton (paper 237). In using Design Fiction as World Building, these authors seek a way to approach AI responsibly, and summarise Piercian semiotics into the bargain. The design of a range of icons to make legible the presence and dimensions of AI systems highlights the potential for human agency given relevant information, or at least, points to its potentially tightly controlled parameters by various commercial and political interests. The speculative nature of this design research also goes effortlessly beyond the human, through the introduction of AI as an actor imagined as one of a constellation of contributors in the authoring of a creative work; what happens to (human) heroic authorial identity then?

Kunneman and Alves da Motta-Filho (paper 331) map out how data science plays a role in service design development, systems which contain “social, material, and relational elements”. Like Lee et al, they see a need to extend previously discrete models of design to include preparation and maintenance phases, although this version stops short of moving from an essentially linear progression with internal feedback loops, to an ecological constellation of connected interests and practices. What this work does, is provide us with another aspect in the design landscape that is becoming ‘flattened’, that is, the concept of user testing. In the context here of data-mining, the experimental setting is suddenly exposed as entirely inadequate to the iterative development of an IoT; instead, in-the-wild approaches such as that discussed by Lee et al are necessary. At the same time, a shift from user segmentation by characteristics (and in the case of health, diagnosed conditions), can be seen both here and in Lee et al. The user is becoming a schmoozer, no longer so easily confined and codified; however, data depends on pattern recognition and lends itself to predictive algorithms, and users now share behavioural rather than demographic characteristics. Perhaps the socio-cultural frameworks mentioned elsewhere will start to challenge even this turn - Akmal and Coulton mention a psychodynamic approach, but others, such as person-centred theory, may also fit well with the non-directive design of “generic but customisable systems” as in the SPHERE project discussed by Lee et al – there is plenty of further work to be done in this direction.

As a whole, this group of papers allows us to spot the edges of our imaginaries when it comes to decentralising the world of design: what would it be like to remove the single

person from the visualisation of an IoT constellation in Akmal and Coulton's paper, or to replace it with bats, cats and trees, in an extension of the discussion on consciousness? What would it be like if the data collected and shared in Kunneman and Alves da Motta-Filho's account of data science came not only from 'users', but from machines, developers and organisations, and was accessible and legible to more than one kind of stakeholder? What if the business models struggling in Särämäkari and Vänskä's account were to apply Lindley et al's icon for intrinsic labor to the fashion sector, so that reward might be negotiated more openly and flow in more than one direction - have we in fact been guilty of imagining involvement in a creative network to be reward enough in itself?

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