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Digital Britannia – Secret Histories and Hidden Practices

Published in:
Conference Proceedings of the Academy for Design Innovation Management

DOI:
10.33114/adim.2019.08_360

Published: 01/01/2019

Document Version
Publisher's PDF, also known as Version of record

Please cite the original version:
Digital design practice is distinctive in its relationship to material and focus on fabricating that into interactive products and services. It’s a discipline that has evolved from significantly different disciplines: Product Design and Human-computer Interaction (HCI).

The foundational role that HCI played in the growth of digital design is largely hidden, as is the secret world of design practice. These two shrouded phenomena have evolved from early user interface research, through user experience, to today’s post-agile world and tomorrow’s open design. We report ten years of first-hand accounts to create a grounded, contextualised and evidence-based account of design in the real-world from the 1980s to today. This condensed history of digital design in the UK forms the basis of the concluding sections. The first traces the evolution of design practice over the last ten years. The concluding section presents a first-hand account of practice. This case study shows how design is now deeply permeated by business and development ideas and practices. The paper concludes with some ideas of how digital design practice might progress beyond this presently constrained condition.

Introduction

1980s Invention – from controls to interfaces

Human–computer interaction emerged in in the UK in the late 1950s. In 1959, Brian Shackel, published the first article in the area entitled ‘Ergonomics for a Computer’. This was based on his experience designing what was effectively the ‘user interface’ of the EMIA C II, albeit one that consisted largely of knobs and lights. Shackel’s influence in HCI continued to be felt in later years both in the industry-facing HUSAT research centre at Loughborough, and his role in establishing IFIP TC 13 and the INTERACT conference series in the early 1980s.

However, academic HCI in the UK owes perhaps its greatest debt to the Alvey programme. In 1983, and in response to the Japanese 5th generation computer programme, the UK launched its own half–billion-pound funding programme. This covered five core research areas including the ‘Man–Machine Interface’. The choice of these areas was determined by a commercially savvy, industrial committee. The group foresaw the essential role of the human in future computing, something that computing academics at the time regarded as marginal.

This programme was largely responsible for the creation of major cross-disciplinary HCI research groups, including those at York and QMUL, as well as strengthening existing work in the area such as Loughborough, John Long’s Ergonomics Unit at UCL (now UCLIC) and usability standards work under Nigel Bevan at National Physics Laboratory. Early work on accessibility can also be traced back to this time in the UK (Edwards, 1987) catalysed by Alan Newell’s work at Dundee University. To this day, the ‘children of Alvey’, PhDs and researchers first employed in the programme, are widespread in the professoriate across the UK and contributed to growing early commercial adoption.

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Another initiative of that period was the British HCI Group, (now a specialist group (Interaction) of the British Computer Society (BCS)), and the British HCI Conference. The latter was one of the core international venues at the time as well as nurturing the growing UK HCI community, both in academia, but also the initially small group of practitioners employed in agencies and companies such as IBM in the midlands and NCR in Dundee.

The close connection between research and practice continued into the 1990s with the UK joint industrial–academic CSCW programme. Whereas Alvey had fostered research connections between psychology and computing, the CSCW programme brought sociologists and management science into the interdisciplinary milieu, which was unusual if not unique in the world. This rich community attracted both Lucy Suchman, who brought ethnography into HCI, and Xerox Europarc to the UK. During this time, early courses in interaction design emerged coinciding with Bill Moggridge’s tenure at the RCA.

By the dot-com years at the end of the 1990s, the British HCI community, in both academia and industry, was mature, and had a unique character of its own that often connected theory with more practical methods and design. The small but growing number of interactive agencies were filled with graduates of the UCLIC’s MSc programme. Indeed, some of the children of Alvey, themselves became the hi-tech entrepreneurs of the dot.com boom.

1990s Refinement – from text books to standards

The rapid emergence of multimedia for both business and consumers in the early 1990s, extended HCI from the ergonomics of the workplace into the mainstream. Dix et al (1993) was a prevalent HCI textbook for the early masters’ degrees in multimedia. Until this point the consumer had little access to technology, but as early handheld devices (e.g. Palm Pilot) appeared, and mobile phones became not just a tool for young professionals but a fashion accessory, ergonomics for consumer electronics converged with IT design.

The first edition of Dix, et al (ibid) is often thought to be engineering-driven, and iterative waterfall methodologies are not unusual for its time of publishing. Part I, Foundations, spends a hundred pages on “the science bit” and part III a similar amount on futuristic and emergent issues, but part II, Design Issues, spends three hundred pages on the process. Therein are multiple references to standards and guidelines (pp 161-168) for that which is produced, but also for the processes (pp168-188) for producing it, leading with Usability Engineering. This focus on design rules and guidelines is extended further in later editions of this book and also in Preece et al (1994), Benyon et al (2005), Sharp et al (2007), other definitive textbooks that followed.

Nowadays, the engineering focus is almost a curiosity. At the time, however, constraints of processor, memory and connectivity were considerable, and, in our experience, the risks of any failure were high and expensive. Personal computers booted from floppy disks, CD-R was an expensive (£20 per disk) and fragile technology. In 1991, a SCSI hard drive with the capacity of a CD cost over a thousand dollars. It cost $25,000 (and a flight to LA) to digitise an hour’s MPEG-1 video to fill a CD-i in 1994. Any failure or unnoticed error in the digitisation, the authoring, the mastering, or the pressing, erased profit margins and drove many early multimedia companies out of business in the latter 1990s.

Nevertheless, it became clearer that good usability is a fundamental objective of digital design and that this should be achieved by conforming to standards both for content and for process. By INTERACT’99, the conversation had progressed to how to make usability, itself, usable. The gathered academics viewed usability as mature, the attendees from government felt that "Usability Now!", a decade earlier, had “transferred the technology” to industry, and local TV captured industrial exhibitors using “ease of use” to differentiate their innovations. Yet employers complained about graduate skill sets, and major product investments were still leading to marketplace failure due to poor usability or accessibility.

In the meantime, dedicated individuals such as Charles Brennan, Nigel Bevan, Jonathan Earthy, Martin Maguire and Catriona Campbell had succeeded in codifying, first into British and then ISO Standards (e.g. ISO13407 (1999) - see below), and then into government policy, definitions of process and content.

[...] an approach to interactive system development that focuses specifically on making systems usable. Whatever the design process, the allocation of responsibilities and roles adopted, the incorporation of a human-centred approach is characterised by the following:

- the active involvement of users and a clear understanding of user and task requirements;
- an appropriate allocation of function between users and technology;
• the iteration of design solutions; and
• multidisciplinary design.

(ISO 13407, 1999)

At this time, the British HCI Group saw two opportunities - one, to create a website that would provide a global hub for usability knowledge and debate, and two, to update the standards used by business to define job roles and employment contracts. UsabilityNews.com went live in 2001, employing an editor/author part-time to create and collate content. Over the next few years it achieved a global following and was the conduit by which tales of practice fed back into the group. Initially these were detailed accounts of practice and increasingly via a steady and growing stream of detailed job vacancy descriptions. This information fed into the efforts led by Jonathan Earthy to have HCI more adequately reflected in the primary definition of skills in this sector, SFIA - The Skills Framework for the Information Age.

SFIA had grown out the BCS’s Industry Structure Matrix (or Model) ISM (1986) and is used in many countries as the basis for employment contracts, identifying training needs, and demarcation of labour. In the UK, Sector Skills Councils (SSC) coordinate this effort, and most work domains have a relevant SSC. The challenge in design practice is that there are (at least) three relevant ones which sometimes overlap (SFIA, Skillset, CCSkills). SFIA, by 2009 defined 86 “skills” each at several levels of competency, with each of these based on underlying items of knowledge or other attributes. Bodies such as e-Skills or BCS then build more detailed definitions, with BCS’s SFIAPlus running to several thousand pages of detail. Employers then might define a job role as, say, requiring level 3 of skill X and level 4 of skill Y. While this may sound reductive, equality legislation has required human resource professionals to use objective ways of measuring the demands of, and capabilities needed for, a specific job. This enables equal pay, removes possible areas of ethnic discrimination, and provides the individual with a clear career ladder.

An HCI2009 Educators Workshop paper (McEwan, 2009) records that joint efforts from 2002, by BCS and the Usability Professional Association, to develop accreditation of competency in usability had foundered, both in terms of the legal implications of administering ‘licence to practice’, and the dearth of competency definitions in the upper (Professional) levels of SFIA. This effort subsequently led, however, to five rather than two HCI-related skills (and 20 separate role-levels) in version 3 of SFIA (2005), including at the most senior professional level. This success was not unqualified, as SFIA continued to use outmoded terminology, such as ‘non-functional needs’, and HCI and Usability were still excluded from relevant skill sets such as ‘requirements engineering’, and ‘content creation’.

2000s – Augmentation – from labs to agencies

A handful of digital ‘labs’ emerged in the late 1980s, that provided HCI style offerings, such as usability testing. Some way distant from marketing, these evolved into the 1990s as highly specialised industrial and product design organisations (e.g. IDEO) or emerging technology service providers (e.g. Sapient). As Interactive CD-ROM production company’s success peaked, their staff found a new niche as ‘multimedia’ web developers. The growth of a new kind of agency was sustained by the New Economy (Tapscott, 1997). Here the emergence of email, the internet, mobile communications and ever maturing software platforms created demand for ‘digital’ design and improved usability.

The commercial application of HCI had two effects. Firstly, it shifted and extended research agendas into commercial product and service contexts, thus opening up hitherto unaccounted for issues and domains such as use. Secondly, it spurred growth in what would now be called ‘start-up’ organisations, seeking to provide commercial variants of classically developed tools and methods. In 2001, the UK market for such services was limited to approximately 50 organisations, with the biggest concentration in London (Jefsiotine and Knight, 2003) including Oyster, FramFab and Wheel. These early pioneers were a mix of the traditional advertising agency, with some of the strategic mettle of their global counterparts (e.g. Frog and IDEO) and a close connection to academic HCI founded through the Alvey programme. Nowadays, that figure has grown tenfold.

In this climate, some students started their own commercial agencies (e.g. Amberlight) or gained employment in niche design oriented ergonomic and usability labs including User Focus and System Concepts. This diverse milieu found common cause in developing a small but influential community of practice through discussion lists (e.g. London Usability Group that first met in 2000) and catalysed the growth of the BCS HCI Group, UPA (now UXPA) and iXDA (now SDA).
A further significant shakeout of advertising-oriented agencies occurred during the dot.com bubble. Frenzied capitalisation in new, internet-oriented business led to a bonanza in web design. The resulting downturn and reaction against ‘creative’ fostered commercial interest in usability and process. ‘Web 2.0’ (O’Reilly, 2005) heralded venture capital’s love affair with the tech start-up scene. Lessons learnt in the dot com bubble had a significant economic impact too. Behemoths such as Amazon and Apple were deeply scarred and shaped by that experience, including their embrace of design. The particular type of design that these companies, and the many agencies that serviced them employed was a hybrid. This HCI based fusion encompassed ‘User-centred Design’ (UCD), that drew on the distinctively British socio-technical tradition of Trist (1951), Scandinavian Participatory Design (Ehn, 1988), instrumentally oriented engineering approaches (e.g. Usability Engineering, Gould and Lewis, 1985) and experience oriented product design (e.g. Jordan, 2000).

2010s – Traction – beyond usability to service experience

Nascent agencies, internal teams and researchers adopted a loosely defined User-centred Design (UCD) process at this time. This methodology evolved across traditional disciplinary boundaries of computer science, design and even political activism. A common factor in these seemingly disparate elements was in front-ending audience research and testing with low-cost prototypes before undertaking any development work. This preliminary work reduced production risks and costs and was a good fit to the prevailing waterfall development methodologies of the time.

Participatory Design’s emphasis on a common language using “low-fidelity” prototypes (Ehn and Kyng, 1991) not only fitted engineering methodologies and focus on risk mitigation (albeit downplaying the social democratic political agenda) but were also valuable in a commercial context. Cheaply made, early prototypes bought marketing ‘ideas to life’ and were thus useful in pitching for work, let alone aiding workplace democratisation. Low-fidelity prototyping also provided a bridge between traditional design disciplines and software development. Yet over time prototyping widened a gulf between design and development, that had been absent in HCI. Focusing on prototypes rather than working software gradually shifted the focus of design, firstly from collaboration with engineers at a philosophical and practice level and secondly from “making stuff in the here and now” to a future (idealised) state as is the orthodoxy in much academic design research.

UCD’s future was now assured, albeit with a final important shift toward the experience economy (Pine and Gilmour, 1988). The result was a loose amalgamation of what were by now relatively robust design practices (e.g. wireframing) applied to a holistic definition of quality (e.g. Service Design and User Experience, respectively). The core set of practices extended into voguish notions of ‘Design Thinking’ that provided an innovation focused counterbalance to the discipline’s risk mitigation strategies. UCD’s future was also secured with the launch of highly successful consumer devices such as the iPad and the exponential growth of the tech giants of today. The speed and magnitude of this growth as well as further disciplinary accumulation of Lean and Agile has further obscured the critical role that HCI played in developing a global digital economy.

2015s – Reinvention – from abstraction to agile working software

This potted history would be incomplete without noting the critical role that agile development (Beck, et al, 2001) has had on digital design. While agility traces back to the previous century, its impact has accumulated over nearly fifteen years sparking a seismic change to practice and even the very nature of design outcomes. In a similar way to the Alvey programme, The Government Digital Service (GDS) incubated the latest incarnation of digital design that adds agility and a service orientation to UCD. From humble beginnings this organisation has established itself as a highly visible design-led organisation enabled to make strategic change in how citizens interacting with public services. GDS has also been critically important in growing the wider industry. As direct employer, it has sustained many seasoned practitioners, a mass of early career designers and developers, as well as a legion of mid-level contractors. GDS’ close coupling of interaction design and software development reflects a broader turn against the kind of surface abstraction (making blueprints rather than services) characterised by service design orthodoxy. In other words, fusing agile development with experience design marked a return to HCI’s core values of building working usable digital products and digitally enabled services. Lastly, outside of academia the number of commercial courses and accreditation initiatives grew significantly including the BCS UX Foundation Certificate, initiated by David Travis at User Vision.
The role of HCI in digital design is a hidden history that can be retraced through rediscovering the rich materials found in various the conferences, publications and initiatives described in this section. Obscurity is compounded by a lack of first-hand accounts of digital design doing. These are stories of those involved in the doing of digital design as much as the pioneers who forged this potent blend of technology, creativity and a sense of social democracy. Indeed, few researchers have shed light on the everyday world of the digital designer and when they have done their conclusions lack a feel for the craft – a practitioners perspective. There is also a dearth of substantive data on practice. This means findings are hard to generalise out into broader insights and trends in the economy.

A number of studies were prepared to address this gap. These combined empirical exploration into practice as well as a case study type of account. Experimental work included secondary research data analysis, primary research (surveys, questionnaires and data-gathering workshops), practice-based research (practitioner workshops) and immersive research in an industrial setting. Together the resulting data, combined the breadth and veracity of society level trends (e.g. changes in working patterns such as the ‘gig economy’), the narrow focus of targeted hypothesis driven studies (e.g. what methods do practitioners use most) and insights derived directly from practitioners and indeed elicited in the field of practice through immersive research.

As a longitudinal piece of work over a decade, it’s has uncovered fluctuations in how design is practised from a number of perspectives that span recruitment to tools, methods and deliverables. The findings suggest that digital design has a core set of competencies that have remained relatively stable for nearly ten years. This foundational set of practices span research to development and has, through time, included relatively specialised roles in data analysis, research and interface development.

However, a fundamental shift has taken place during the period of study and that is the relationship between design and development. The HCI-oriented ways of working that influenced practice during the early studies in this work tightly coupled these two disciplines. For a while, the disciplines diverged, and design focused on abstraction, using futuristic blueprints to map out idealised future experiences. This moving apart has begun to reverse now. Instead a focus on delivering working software (rather than descriptions of how it might be) has become a strong influence with the advance of agile. Now and looking to the future, this ebb and flow between the two ways of working is maturing into a truly hybridised discipline that manifests, arguably the best practices of both fields and where pace, innovation and deep collaboration are combined within a broad set of common tools and methods within a strongly holistic vision of the future and desired state.

**JOB DESCRIPTION ANALYSIS (S1)**

The first study (S1) addressed the lack of standard role definitions in digital design in 2010. This ambiguity caused problems for potential employers and employees alike. The research involved analysing a sample of job descriptions (n=48) from a number of organisations, selected from four regions (UK, Europe, US and Asia). The sample included a broad spread of role types ranging from research to development and were almost entirely drawn from the public sector as adoption outside of agencies and technology companies was extremely limited at the time. These were then categorised, and common role attributes identified. This was done ‘ground up’ from the data and supported the development of design role framework. This was operationalised through a job description matrix which was used to standardise job definitions.

The framework consists of four dimensions including practice, competency, role and attitudinal facets (see below). The surveyed roles showed a broad spread of employment needs from research through to strategy. The demand for research was surprisingly low (6%) especially when compared to consultancy with the biggest proportion of roles relating to interface design and development. While senior positions were few (3%) these required the relatively short tenure of three to four years’ experience. Many roles reflected the contemporary engineering paradigm noted in the history, with few mentions of design methods and practices. Instead a focus on HCI style methods including expert reviews and waterfall development was evident, as well as design to development workflows based on wireframing (see below).
COMPETENCY WORKSHOP (WS1)

An initial workshop (WS1) was facilitated to extend the analysis and validate the competency framework with attendees from academia, industry, and recruitment firms. The outputs of the workshop (2010) provide a useful snapshot of perceived in-demand competencies and also prevalent methods and methodologies used in industry at that time. Perhaps unsurprisingly, the outputs of the workshop aligned to traditional engineering paradigms for design and development. This was reflected in the prevalence of software development roles and terminology (see below) and a focus on functional requirements and business analysis. Design was tightly constrained as only relating to ‘visual design’, with a lack of facilitation skills or mention of ‘design thinking’ practices. Interestingly, however, was the explicit integration of design activities within development and relative lack of prototyping. This tight coupling between definition and working software would emerge much stronger with the widespread adoption of agile. There was also a strong focus on process that reflected contemporary work on developing standards at the time. Given the relative infancy of the discipline, it is also perhaps to be expected that that there was a strong emphasis on growing awareness, education and leadership and for strong communication skills (see below).

JOB ANALYSIS (S2)

The data from the workshop was used to refine the framework and operationalise it as a set of role definition criteria. These were used to standardise job adverts on Usability News. At the time, this website was one of the most reputable and visited sites for gaining information on the growing topic of user experience and finding jobs in this emergent industry. The high traffic into the site generated much data on the type and characteristics of design employment at the time. In just two years the site, had accumulated hundreds of standardised job descriptions from many potential employees and a sample of these (407) were analysed in 2013. In retrospect, it is interesting to note the prevalence of senior and middle management roles in the sample (71%) at this time with a (relatively short) expected tenure of five years. The high number of permanent to freelance roles (83 to 17%) is also surprising and counter to the largely freelance constituency of current employment patterns.
**PRACTITIONER SURVEYS (S1,2 and 3 and ) AND IMMERSIVE RESEARCH**

While this study uncovered valuable insights into broad employment patterns it lacked detail on the specifics of design work in industry. To address this gap, an online questionnaire was (S1) used to survey practitioners’ method use and also one to explore common design practices involving a range of senior practitioners (n = 28) with a range of skills and employment experience in 2015. The study found a shift from engineering practices toward a growing hybrid combination of agility, ‘design thinking’ and UCD methods. Interesting to note is the strong separation with development and the trend for more “designerly” methods such as workshop facilitation. Diminishing influence of engineering methods and software development practices is also noteworthy, with the requirements focus of the competency workshop five years earlier reducing. The growth in agile (scrum) goes some way to explain this as these would have replaced many of the more traditional waterfall activities such as requirement management. This might also explain the relative decline in blueprinting. Research was also strong, and the number of methods used expanded from the previous studies. Together these findings suggest practitioners were using an ever-diversifying set of methods, with a continued focus on design outcomes and also structurally managing collaboration with other disciplines and stakeholders. These broad trends can be traced in Table 1 and 2 that summarise the key data taken from the various studies that is also elaborated in the section below:

Table 1

<table>
<thead>
<tr>
<th>Responsibilities</th>
<th>(S1) %</th>
<th>(S2) %</th>
<th>(IR) %</th>
<th>(WS2) %</th>
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</thead>
<tbody>
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<td>Analytics</td>
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<td>4</td>
<td>5</td>
<td>5</td>
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<tr>
<td>Research</td>
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<td>9</td>
<td>12</td>
<td>39</td>
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<tr>
<td>Requirements</td>
<td>16</td>
<td>12</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>Development</td>
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<td>16</td>
<td>12</td>
<td>11</td>
</tr>
<tr>
<td>Management</td>
<td>26</td>
<td>7</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Design</td>
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<td>52</td>
<td>32</td>
<td>36</td>
</tr>
<tr>
<td>Project Management</td>
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<td>0</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Facilitation</td>
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<td>0</td>
<td>16</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
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Table 2

<table>
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<th>Deliverables</th>
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</thead>
<tbody>
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</tr>
<tr>
<td>Reports</td>
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<td>13</td>
</tr>
<tr>
<td>Prototype Development</td>
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<tr>
<td>Conceptual Models</td>
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<tr>
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</tr>
<tr>
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</tr>
<tr>
<td>Co-design</td>
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<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>
IMMERSIVE RESEARCH (S3)

A full immersive ‘account of practice’ was undertaken as a case study to validate the survey and workshop findings. This was also grounded in a full literature review of six other practice-based studies (Knight, 2017). This work found a lack of similar research on the confluence of design and development. Combining practice-based data with insights from the literature review led to creating a set of practice-based constructs within an overarching descriptive theory. Together this describes digital design activity as a collaborative, goal directed activity; (Mission) that creates knowledge, capability and value (Agency) for clients’ and users’ needs (Vision) at pace (Velocity).

In agile, design activity often starts in a ‘Discovery’ phase or ‘sprint 0’ which delivers ‘Little Design Up Front’ and where designers originate enough assets to start development. Working in teams, variously known as ‘pods’, ‘trios’ ‘cells’ or the ‘three amigos’ designers are usually paired with a developer and product owner. Pods work in situ (or are ‘co-located’ to maximise communication), often using ‘The Wall’ to ‘crit’ work and run ‘Show and Tells’. Designers’ multifaceted role can be challenging; as they need to ‘feed’ developers’ assets, maintain vision, and conduct research. Often, their contribution is limited to low-value ‘production’ activities. A lack of user research, marginalization of designers and dearth of design thinking is also a common challenge.

ACCOUNT OF PRACTICE (Case study)

While these general observations are applicable to many agile design practice, this study provides a valuable in-house perspective on it. This is especially important given the strong adoption of digital design outside of the traditional bounds of agencies and consulting practices. Exploring the experiences of a small team working in a largely agile software development context is also important given this is a common situation and structure in which designers work. Practice-based research was carried out in order to explore and understand the impact of agile on design. Immersive fieldwork (S3) was conducted over a one-year period in a digital design team within a large private company. The researcher was a fully participating member of this team during the period of immersion. Research activities included semi-structured observation, recording via coded notes, informal interviews, workshops and collecting relevant artefacts.

The team was involved running one of the most visited websites and apps in the UK. The team was responsible for research, design and delivery of these public facing touchpoints as well as some internal tools and systems including an intranet. The team was also supported by a number of third-party organisations. These included a human-centred design agency, an accessibility consultancy and a number of contractors. This external support helped on a number of larger projects, including contributing to the conceptual development of a new app.

For research, a university usability lab was hired on occasions, as well as an online user testing platform. The team fluctuated in size during this time, ranging from its smallest incarnation of four designers to its largest size with the team augmented by an interaction designer, user researcher and consultant. The team worked on a variety of work, spanning operations, tactical projects and strategic programmes. In all cases, they worked in a larger multidisciplinary group of developers and business stakeholders within an agile framework. The tight integration with development and a strong project management culture strongly influenced how the team operated, the methods used, and the work delivered. Their relatively small number required building advocacy, continuously showcasing the work they produced and, most importantly, being willing and able to tackle anything that the business required with a minimum of resources and often with little previous experience to draw on.

The various data outputs from the immersive research was explored and validated in a summative workshop. This revisited key activities and events during the research period and explored themes (e.g. collaboration), specific topics and issues (gaining stakeholder buy-in) with the design team itself. Different projects were analysed in detail, and the group categorised these into project types. This helped to produce a high-level practice framework consisting of Strategic, Tactical and Operational design work. The first project type related to scrum being applied to large scale strategic projects, usually with sprint-based development following a period of ‘up-front design’, roadmap and strategy definition. In the case, this (Strategic Scrum) variant was applied to developing a complete and new mobile application. In this context the focus of design work was in defining and visualising a near-future oriented and innovative solution. Considering how project outcomes might fit within existing customer experiences was deemed less important than creating a futuristic vision for the company.
At the same time, the outcomes needed to be viable within a given technology stack and commercially sensitive timescale and also to the level of detail where accurate estimates for development and follow-on interaction design work could continue from. Practically, this involved design research including co-design sessions, experience blueprinting, the development of concepts, navigation models, screen templates and some prototyping with high-fidelity visuals. The mix of functional design work with brand was an important consideration as the project was dependent on senior management buy-in and financing of future work. This also meant that this work was relatively separate from development. While agile methods were applied in a design context, the result was not ‘working software’ but abstractions of the future built experience. The disconnection between design and development was less problematic here, however, as the focus was to scope out future work and develop a business case from estimated costs and customer feedback.

The second category related to more tactical work that involved redesigning component parts of an end-to-end journey. In the research, this kind of agile project (Tactical Scrum) was most often applied to single product lines on the company’s website. Instead of the broad and strategic focus of the mobile app work, this activity was more focused on short-term gain and alignment to the existing experience, in some ways because it was delivered on a single technology platform. Taking one journey, this involved identifying ‘pain-points’ in the experience and then purposefully removing barriers to the user’s flow from a ‘landing page’ through to task completion. Improvements were a combination of better designed pages and flows, but also through improved technical solutions as well as new product features. This distributed decision-making among different teams meant that design (and technical) solutions had to be regularly reviewed with other teams. The result was a less than perfect solution, but one that could be readily implemented, and which had broad support across the organisation because of the many stakeholders (not just the design team) directly involved in the work. This way of solutioning is widespread in agile projects and frames design as one of many strands within a collaborative activity. At some junctures, this necessitates design activities, thinking and solutions taking a lead and at other points allowing and, in some cases, facilitating other disciplines to do the same.

Commonly applied techniques in this type of project typically align to ‘Design Thinking’ methods where there is a need to diverge, converge and reach consensus. Of all the different contexts for design, this is in some ways the most challenging as successful outcomes rely as much on social skills, communication and persuasion than traditional design competencies. At the same time, practitioners are also part of the delivery team and so cannot just help team’s reach consensus, but need to be cognisant of how collaborative interactions impact their own deliverables.

The last type of agile project is perhaps the most commonly applied variant. This aligns to the common practice of ‘small change’ or ‘Business as Usual’, where a shared backlog combines purely technical, operational and design-led improvements together. In the case, this kind of agility was used to make small, incremental changes to easily adapted assets such as content and wording. Even then, modifications often involved substantial resources, but provided imperceptible improvements. Where this operational design activity (AKA Design Ops) provided value was when it was coupled to a broader and more strategic programme of change. In the case, this was exemplified by a workstream dedicated to solving common issues that the organisations call centre dealt with. Connecting small change to such measurable issues, not only provided evidence to prioritise tasks, but also helped create a focus on customer needs throughout the company.

This ‘low-level’ design activity is perhaps the most unfamiliar to the broader design community. Not only is the focus on micro-level aspects of the product or service, but the nature of the work means that design is a fractional part of the work. In some cases, (e.g. adding a register mark to a logo) it is hard to categorise as design, but in most cases is almost always carried out by people or teams who align to that practice. Agile is often considered as merely a development methodology that focuses on delivering at pace. In reality, this study not only shows a diversity in context for scrum-based working but also highlights how these different ways of working frame design activity. Traditional design is most closely associated to the first case, where the outcome is an abstract vision of the future. The second, sets design as a facilitator and the third as micro-level tweaking. The range of design activity is at odds with the design orthodoxy where it is primarily future oriented and focused on abstraction rather than tangible change. While these conclusions need further validation, the study provides an example of an account of practice too. Such research is needed to extend our understanding of the design economy at the level of practice.

**PRACTITIONER WORKSHOP (W2)**

While the case and supporting studies and literature review, provided deep insights into the fabric of contemporary design practice, especially in the context of agile development, it lacked validation to a wider
The results of this activity were validated during a final workshop (WS2). This was run with participants with a broad range of experience who attended a professional networking event in November 2018 and mapped the different types of projects that practitioners are involved in. The findings reinforced both the case and other studies in that design is tightly integrated into software development and delivery of digital products and services. Furthermore, in line with the general trend of the research, practitioners’ evidence greater diversity in method use, a strong tendency toward hybrid roles and ever widening employment, especially in the public sector. Other common contemporary patterns of practice include the need for small teams and individuals to be able to turn their hand to any business need (Team of one) and to be able to navigate and thrive in a diversity of organisational contexts, including where stakeholder knowledge of design is low.

Conclusion

This paper has attempted to bridge an important gap in design research and history. This account charts the important role that HCI has had on the growth of digital design between the 1980s and present day. Its influence extends beyond an instrumental focus on accounting for people in developing technology to one that promotes human values that are then practically operationalised through a set of robust tools and methods. These handed-down and evolved practices have shaped how designers work today. This paper has addressed the lack of ‘accounts of practice’ that show how designers work with these tools at the intersection between technology and people too. In describing the day-to-day work of today’s designers, the research shows how agile and hybrid are challenging traditional disciplinary boundaries. Future research will validate and extend these findings out into the broader context of the design economy and inward to more deeply explore and map the field of practice.

References


