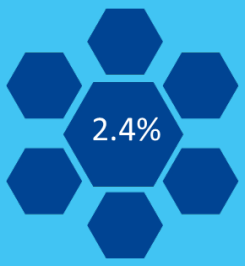

AHRC DESIGN FELLOWS CHALLENGES OF THE FUTURE

- An exploration of design-led, place-based research
- Recommendations for **Design-led, place-based research to support the UK through the current & future challenges of COVID-19**

PLACE

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Arts and Humanities Research Council

The findings described in this report have emerged from a short-life Arts & Humanities Research Council (AHRC) Design Fellowship undertaken between 1st March and 30th May 2020. The study was one of five investigations into design research commissioned by the AHRC, with the intention of taking stock of design research initiatives since 2010 and suggesting priorities for the future. Each study was set against the backdrop of UK Research & Innovation's (UKRI), strategic goal of increasing UK Research & Development to 2.4% of GDP by 2027.

> *"To achieve this target of increasing research & development spending across the whole economy to 2.4% of GDP by 2027 (and 3% in the longer term) it will be critical to stimulate a substantial increase in private sector spend"* [1]

The brief for the AHRC short-life projects asked for a vision for the field for the coming decade and a set of recommendations for next steps.These are all detailed in this report, for the theme of 'place'. Before peering into the future, however, it is useful to take the 'long view' and look back at what history might tell us about how design has been supported and promoted in the UK.

In the last 200 years the UK has made two very significant financial and intellectual commitments to design; the 1836 Select Committee Report into Art and Industry (reflecting on Britain's poor productivity at the beginning of the Victorian era) concluded that: '*From the highest branches of practical design down to the lowest connexion between design and manufactures, the Arts have received little encouragement in this country*'. The committee recommended investment in design across the UK, and *Government Schools of Design* were initially established in London (Royal College of Art, 1837), Manchester (Manchester School of Art, 1838), Birmingham (Birmingham School of Art, 1843) & Glasgow (Glasgow School of Art, 1845) and simultaneously in many other UK towns and cities (Bath, Newcastle, Norwich, Leeds etc) to *'service the needs of local industry'* [2]. In 2020 the UK has 3 Art & Design Higher Education Institutions in the QS World Rankings global top 10 (Royal College of Art=1st, University of the Arts London=2nd, Glasgow School of Art=8th) [3].

100 years later in 1944, the UK Design Council was established by Winston Churchill's wartime government to support Britain's economic recovery. The Council of Industrial Design, as it was initially called, had the founding purpose of promoting *'by all practicable means the improvement of design in the products of British industry'.* Over 75 years the Design Council has supported many design initiatives across the UK, each reflecting the design priorities of the time [4].

In 2020 as we acknowledge once again the UK's productivity challenges, relatively low R&D investment, regional inequalities and as we face the disruption caused by the ongoing COVID-19 pandemic, design once again has much to offer. The UK has well established design research expertise in many design disciplines and has invested in research into design as an approach to problem solving. This expertise must now be proactively linked to the UK's place-based need for innovation across the economy, society & the environment.

References:

[1] Industrial Strategy: Building a Britain Fit for the Future (2017), HM Government
[2] Bell, Q. (1963) The Schools of Design, Routledge, London
[3] www.topuniversities.com/university-rankings/university-subject-rankings/2020/art-design
[4] www.designcouncil.org.uk/who-we-are/our-history

CONTENTS

UKRI Arts and Humanities Research Council

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INTRODUCTION

Background

The findings described in this report have emerged from a short-life Arts & Humanities Research Council (AHRC) Design Fellowship undertaken between 1st March and 30th May 2020. The study was one of five investigations into design research commissioned by the AHRC, with the intention of taking stock of design research initiatives since 2010 and suggesting priorities for the future. Across all five studies, there was a focus on how design research could contribute to the UK's ambition of increasing R&D spending to 2.4% of GDP (Gross Domestic Product) by 2027. This study has explored the theme of design research associated with 'place' and specifically how design-led approaches have led to place-based innovation. The original proposal for this Fellowship was written in January 2020. The review work was to be undertaken through face-to-face interviews and a series of workshops across the UK. By March 2020, the COVID-19 pandemic was impacting on all aspects of life and the UK lockdown of late March necessitated a rethink of the Fellowship's research methodology. This was revised to become a literature review, online survey and interviews with researchers. It was also clear, by this point, that the pandemic would have a significant long-term impact on the 'place' agenda being explored through the review. The study's scope was adjusted to include reflection on future place-based challenges in the new world of COVID-19.

Definitions

In its call for Design Fellowships in December 2019 [1], the AHRC sought proposals that would explore the theme of 'place' in a broad way, considering the '*role of design research in the physical, social, cultural and economic realities of place'*. In this review this has been interpreted as an exploration of design-led, place-based research. Design is taken to be both a set of design disciplines, each with their own set of skills and knowledge and an approach to problem solving which is increasingly applied to broad challenges. The review is interested in design research in its academic setting and in particular how it is undertaken with place-based partner(s) for whom the specific geography of a place and its systems and clusters define the context of the research project. This introduction explores these definitions in more detail.

Scope

The study has reviewed design research projects that have been funded by the AHRC since 2010. A majority of these did not explicitly set out to support design-led, place-based research but many research projects have been with partners located within specific geographies. Many other funders have also supported place-based activity and examples of the contribution of this other support has also been reviewed. Due to the short-life nature of the study it, engaged with leading researchers working in this field, but not the many non-academic users and partners of research projects. In further work, if future investment in design-led, place-based research is being planned, engagement with place-based stakeholders should be undertaken to help define future needs, challenges and opportunities in more detail.

Reference:

[1] Call Announcement: AHRC Design Fellowships: Challenges of the Future, Dec. 2019

Policy interest in 'Place'

Before taking a detailed journey into the world of place-based design research, it is useful to take a step back and consider the UK's growing policy interest in research associated with 'place'. This policy backdrop underpins many of the recommendations within the report. The UK government has put research & innovation at the heart of its industrial strategy, setting an ambition for the UK to be one of the most innovative countries in the world and increase its total R&D expenditure to 2.4% of GDP by 2027 [1]. This broad commitment is now influencing investment priorities of all the research councils within UKRI [2]. Forth & Jones (2020) [3], however, highlight how the UK's current R&D spending is significantly, regionally imbalanced, arguing that with a focus on R&D funding in London and the South-East other parts of the UK currently miss out on £12 billion of public and private sector R&D funding per year, Forth & Jones identify broad factors that have contributed to this imbalance, amongst them a '*conscious decision of focusing resources on fewer centres to maintain excellence (as defined by academic criteria)'.* McCann (2019) [4] highlights the gaps in the productivity growth of different regions of the UK, particularly since the 2008 financial crisis, explaining how the UK has alarming levels of low productivity growth in all areas except London and the South East. McCann argues, like Forth & Davies, that a shift in the deployment of research funds is essential if inequalities within the UK are to be addressed.

Design's contribution to the UK economy

Design plays a key role within R&D in two ways. Firstly, we can all think of companies that consistently use design to satisfy user needs & integrate the latest technologies into their products & services. Familiar examples include, Apple, Dyson and Google but in almost every industry sector, and increasingly in the public sector there are organisations that develop their productivity, services and advantage using design. In these successful examples, design is hard-wired into the very early stages of the R&D process and plays a key role in enabling multi-disciplinary teams to connect with user needs, structure thinking, work collaboratively, prototype and innovate. Secondly, in both business and the public sector we have also seen design being used as a strategic approach to problem solving with methods, processes and skills from design being applied to the development of projects, policy, public services and future strategies.

The UK Design Council has undertaken research to quantify the value of this contribution to the UK economy [5]: In 2016 this was estimated at £85.2bn in Gross Value Added (GVA) (7% of UK GVA), equivalent to the size of the distribution, transport, accommodation and food sectors combined. Between 2009 and 2016 the GVA of the design economy grew by 52%. In a recent follow-up report estimating the impact of COVID-19 on the Creative Economy, Oxford Economics [6] is projecting that from the end of 2019 to the end of 2020, design's GVA contribution could drop to £48bn and that 300,000 design jobs could be lost. Importantly, the report notes this will have disproportionate impacts in different regions of the UK. (see Fig. 1).

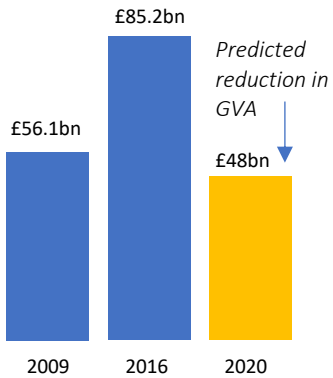


Figure 1: Predicted impact of COVID-19 on GVA of the UK Design Economy

References:
[1] *Industrial Strategy: Building a Britain Fit for the Future* (2017), HM Government
[2] *UKRI Delivery Plan 2019* (2019) UKRI, Swindon
[3] Forth, T. & Jones, R.A.L (2020) *The Missing £4 billion: Making R&D work for the whole UK,* NESTA, London
[4] McCann, P. (2019) *UK Research and Innovation: A Place-Based Shift?* University of Sheffield Management School
[5] *The Design Economy 2018: The State of Design in the UK* (2018) Design Council, London
[6] *The projected economic impact of COVID-19 on the UK Creative Industries* (2020) Oxford Economics

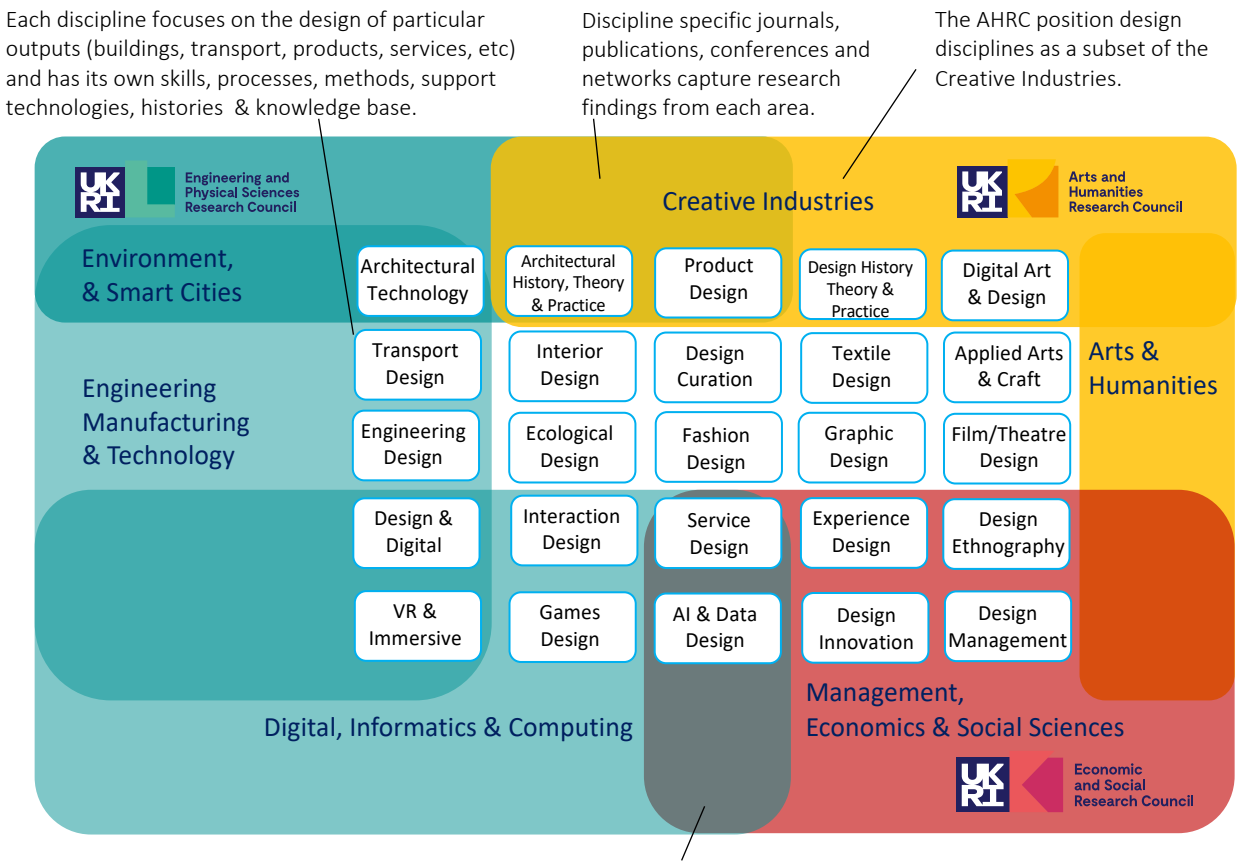
REFLECTION 1: Increasing UK R&D investment to 2.4% of GDP has to be done in a way that enables all places in the UK to increase their productivity. Design has an important role to play, but 2020 research predicts the UK design economy is likely to be hit hard by the impact of COVID-19, particularly regions outside London & the SE.

Design research: The design disciplines

Funding for research at a UK level is supported by UKRI. The AHRC, who commissioned this review are one of 6 subject-based research councils within UKRI and position design as a subset of the Creative Industries. The AHRC list the following design disciplines as being eligible for AHRC funding: Architecture History, Theory and Practice; Design History, Theory and Practice; Digital Art & Design and Product Design. The Engineering & Physical Science Research Council (EPSRC) also support design research focused on engineering design, technology and the digital, the Economic & Social Research Council (ESRC) support design research connected to innovation, social sciences, management & the economy. Fig. 2 provides a more detailed listing of design disciplines and their position relative to AHRC, ESRC & EPSRC support, highlighting how design can explored from a technological perspective (EPSRC), creative & cultural perspective (AHRC) and economic & management perspective (ESRC). Each perspective is built on a different platform of knowledge and reflects long established academic traditions in how design is taught, organised and researched within Higher Education (HE).

This review explores how design discipline research in academia is connected to place-based stakeholders.

Figure 2: The relationship between design disciplines and other academic fields.



Within UKRI most research associated with design disciplines is funded through AHRC, ESRC & EPSRC. Each Council sees design through its respective subject 'lens', the interests of each research council overlap.

REFLECTION 2: The disciplines we associate with design have relationships with many academic fields and are funded through a variety of different UKRI research councils. This has the advantage that design is supported by many funding streams. Equally the disadvantage that there is not a single voice lobbying for design research and design research projects are often reviewed by peer review colleges from different disciplines. Future funding for design research might benefit from having a theme that cuts across disciplinary divides

Design research: Design as an approach to problem solving

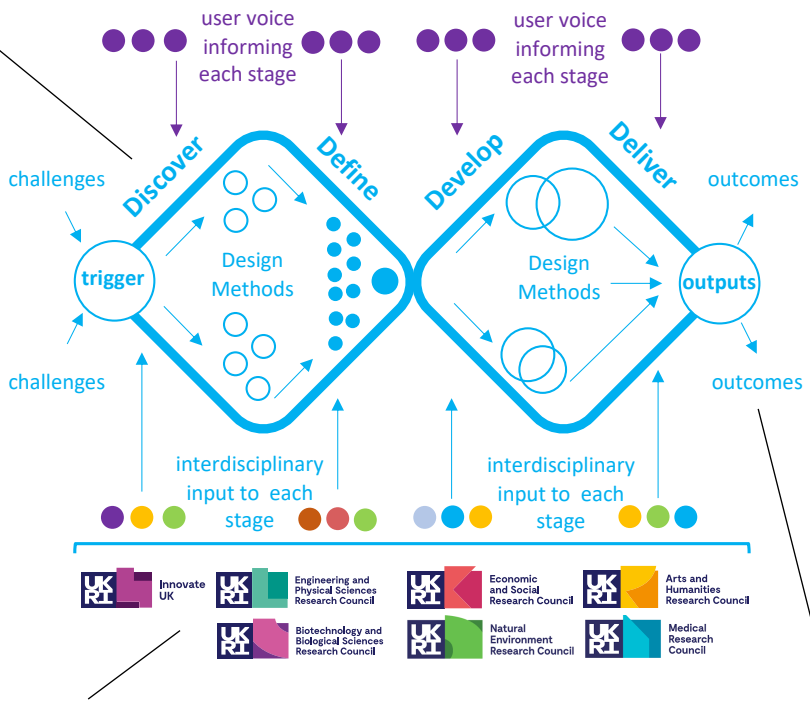
Recently we have also seen how design also plays a role beyond its disciplinary boundaries. Processes, methods and skills from design are increasingly applied to broad challenges: to help teams devise strategic plans, new initiatives, policies and systems and sometimes as a precursor to developing new buildings, products and services. There is no consensus on what we call these new roles for design, although many refer to this as design thinking [1]. The *Double Diamond* diagram, shown in Fig 3, [2] provides a useful example of the way a design approach can be applied to problem-solving. The diagram suggests teams move through a process of divergent and convergent thinking, working through stages of *discovery, definition, development* & *delivery*. The process can be augmented with appropriate design tools and skills to structure thinking at each stage and help visualise, prototype and map insights. Design thinking approaches like the *Double Diamond* are increasingly used within academic research to support the work of interdisciplinary teams exploring complex challenges such as global warming, mental health, migration, crime reduction, ageing populations, inequalities etc. This review explores how academic research using these design thinking approaches can be used to explore place-based challenges.

Figure 3: The *Double Diamond* diagram provides a useful short-hand to describe the way a design approach can support problem solving. Many research groups have developed other models with alternative names that have similar principles.

Design frameworks like the *Double Diamond* can be deployed at different stages within research projects.

Sometimes the approach is used at the very start of research when identifying potential areas for investigation at events likes research sandpits.

The *Double Diamond* supports collaboration & ensures user needs inform research activities.



Many of the interdisciplinary research projects supported through the UKRI research councils have taken a design approach. Examples include projects exploring, community engagement, healthy ageing, the challenges of acquired microbial resistance, crime reduction etc. Often the user voice informing each stage has a been a 'place-based' stakeholder of some form to give projects a real-life context.

Design disciplines focus on delivering outputs that are specific to the discipline.

When design frameworks like the *Double Diamond* are applied to interdisciplinary research the framework can be used for *discovery, definition*, *development* and *delivery* of research projects & plans.

These design frameworks can support the delivery of many different forms of research outputs.

References:
[1] Brown, T. (2008) Design Thinking, in *Evolution of Design Thinking* (2015) Harvard Business Review, Boston
[2] *The Double Diamond: A universally accepted depiction of the design process*, Design Council

REFLECTION 3: The UKRI's definition of design could be extended to include research being undertaken into design as an approach to problem solving, particularly its role in supporting interdisciplinary discovery. So many of the challenges associated with 'place' are interdisciplinary - design has a key role to play.

Forms of design research

Having defined design for the purpose of this study it is useful to explore what we mean by 'research'. Frayling (1993) [1] explains how all designers undertake research for design, research into design and research through design. All these forms of research occur in industry and professional practice as well as in academia. The NHS might commission an architectural firm to undertake research to inform the design of a new hospital; an in-house design team within a business might be working with R&D colleagues to develop a new material; a service design agency might be commissioned by a local authority to develop new insights into user needs through co-design activities. All these activities are examples of the UK economy investing in design-led R&D and need to be encouraged and included as the UK looks to deliver its 2.4% R&D investment target.

Design researchers working within academia, also undertake research for, into and through design, but the aims and ambitions of this work can be quite different to design research in its industry setting. The structure and funding of academic research projects is determined by a wide range of funding agencies, beneficiaries are often wider, sometime the work is much more speculative and involves a wider range of disciplines.

To contribute to the UK's R&D investment target of 2.4% the work of academic researchers needs to connect with and influence R&D in industry. To overcome regional inequalities design researchers need to influence the work of place-based stakeholders. This report explores the many structures that support design research and reflects on how effectively they support place-based partners as well as the impact each mechanism has on leveraging the 2.4% commitment to R&D.

Figure 4: Design research in its industry and academic paradigms.

Design research in Industry	Design research in Academia
• Funded through commercial contracts, work is often tendered for in open competition. • Research usually undertaken by designers working within a business, working within a design consultancy, as freelancers or designers based in academia providing consultancy services. • Emphasis on research results driving performance of a project (often with financial measures of success). • Responsibility to deliver results to the project sponsor. • Set within an industry network of peers. • Designer often undertaking many shorter, parallel research projects. • Research results often focused on immediate application.	• Funded through a wide variety of project structures each with different aims, financial arrangements and review mechanisms. HEIs have the organisational and governance structures to construct consortiums drawn from across industry, the public sector and HE. • Research undertaken by design researchers employed through a Higher Education Institution (HEI) on fixed-term or tenured contracts. • Emphasis on research results informing knowledge, outputs & outcomes – for the benefit of the immediate project, but also for the benefit of all. An increasing interest in ultimate impact on economy & society. • Responsibility to synthesise findings, publish & disseminate. • Set within a global network of academic peers. • Researcher often undertaking longer stand-alone projects. Researcher sometimes performing other teaching and administrative roles within their host HEI whilst undertaking design research projects. • Often speculative, blue sky exploration of ideas.

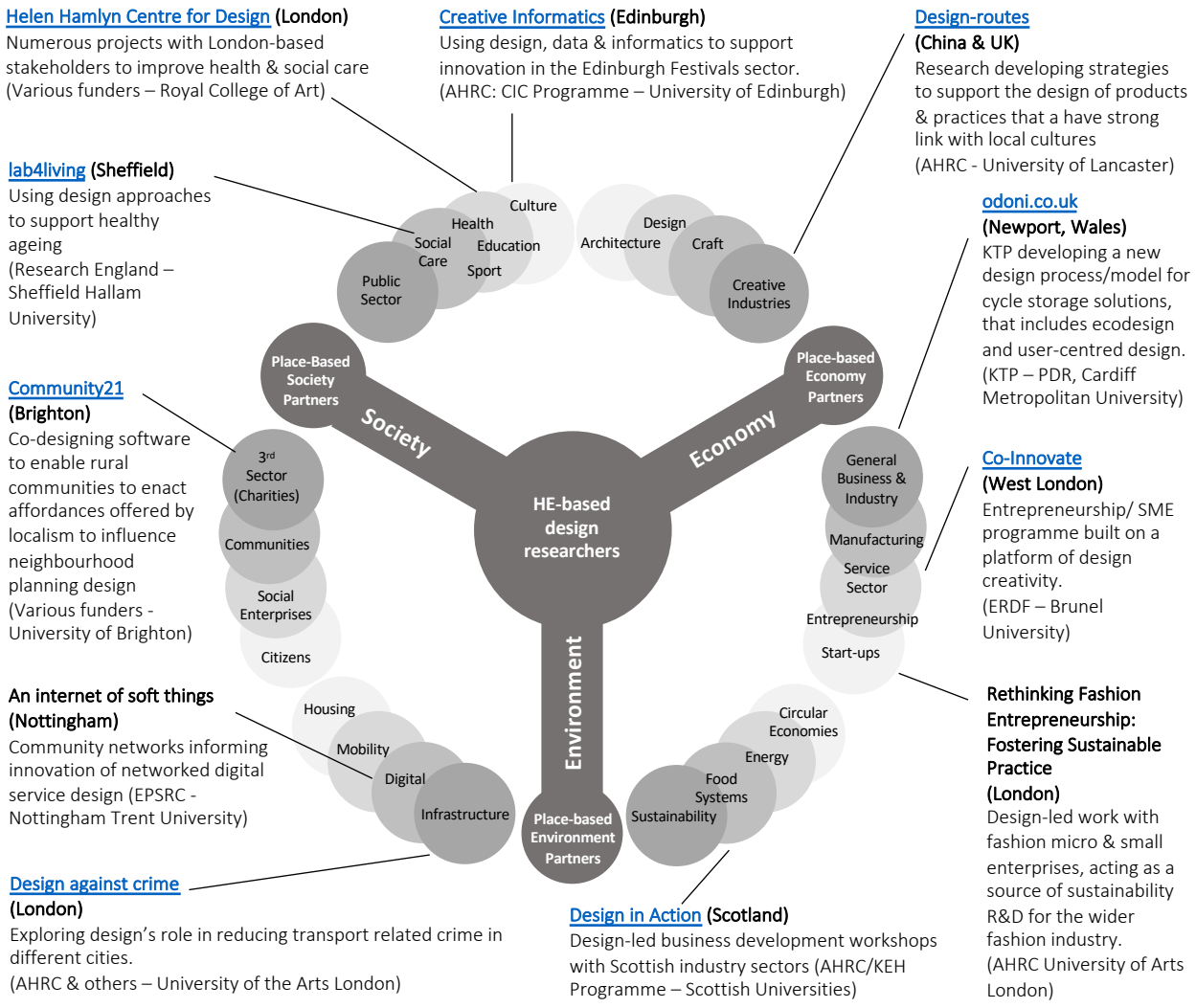
Reference:
[1] Frayling, C. (1993) Research in Art & Design. *Royal College of Research Papers* vol.1, no.1, Royal College of Art.

REFLECTION 4: Design research exists in both industrial practice and in an academic setting. To deliver a 2.4% investment in R&D, greater synergies between both research paradigms need to be developed. Research in the academic paradigm has a role to play in leveraging more R&D activity in industry, the public sector and other parts of society, particularly at a place-based level. HEIs have the governance structures & infrastructure to develop place-based collaborations that connect stakeholders drawn from across industry, the public sector and HE.

Place-based research

The *Strength-in-Places-Fund* [1] which was announced in the UK Industrial Strategy White Paper, describes place as '*specific economic geographies with regard to supply chains and clusters'*. In the UK these 'specific geographies' might be regions, cities, areas linked by transport corridors, places governed through devolved administrations and so on. For this review 'specific geographies' is a useful definition, but the review has shown that design researchers have worked with many different place-based stakeholders in addition to those associated with the economy (as shown in Fig. 5). For this review place-based research is defined as being with place-based partner(s) for whom the specific geography of a place and its systems and clusters define the context of the research project. The report summarises the shared research questions that place-based research projects are investigating and reflects on the future questions that might be addressed through design research as places recover from COVID-19.

Figure 5: An overview of the many different 'place-based' stakeholders with whom design researchers have worked on place-based projects. The diagram gives examples of projects undertaken with place-based partners across the UK.



Reference:
[1] *UKRI Strength in Places Fund (SIPF) Programme Overview* (2018) UKRI, Swindon

REFLECTION 5: The UK design research community has well established connections with a very wide spectrum of place-based stakeholders. These projects have been funded through a variety of different programmes and explore the role of design in society, the economy and the environment.

OVERVIEW

This review was informed by a literature review and a survey of 40 design researchers located in 25 different Universities across the UK. Through a structured questionnaire participants were asked to describe their experiences undertaking place-based design research. Responses were explored in more detail through a series of follow-up interviews. Listed below are some general findings from the review.

General Findings

- Most of the design researchers had worked on a series of design-led, place-based research projects.
- Design researchers were collaborating in projects with a wide variety of place-based partners, sometimes place-based industries, sometimes with the public sector and other groups. Researchers are agile at moving across their place-based networks, often from sector-to-sector, often in response to funding opportunities.
- With each project, researchers and their teams were building knowledge & expertise in a focused area of design research, ie the application of a particular technology to design (for example, University of West of England developing new printing technologies), an approach to designing (for example, Imagination, University of Lancaster, research into facilitating co-design), a design outcome (for example, PDR, Cardiff Metropolitan University, research into design-led policy development), or understanding of design in a context (for example, Royal College of Art, exploring design's role in healthcare).
- Many design researchers have built long standing relationships with place-based stakeholders. The importance of building trust was cited as being critical in developing and delivering successful projects.
- Maintaining place-based project relationships requires a steady of stream of funding, design researchers emphasized their entrepreneurship and their flexibility in responding proactively to funding opportunities as they came on stream (and then faded), but also systematic use of long established funding streams which had been offering support in a similar format for many years, for example using KTP (Knowledge Transfer Programme) partnerships.
- Some project funding (particularly UKRI schemes) offer UK wide funding opportunities. Within different parts of the UK there was also an increasing number of more local funding funding opportunities, for example, different forms of 'innovation vouchers' in the regions of England, Scotland, Northern Ireland and Wales and recent design research investments made by Research England in England and SFC in Scotland. Many design researchers explained that HEI processes could make engaging with short-term funding, such as Innovation Vouchers challenging.
- Different forms of project funding, come with different priorities, some funding supported infrastructure, some focused on economic impact. The emphasis on undertaking research as part of a given project varies between funders. ERDF funding is focused on economic impact, KTP funding on economic benefits for industry and academic benefits (including opportunities for research), Strategic & Responsive mode funding offered by UKRI was more focused on research excellence.
- Although place-based project partnerships were between research teams embedded within academic schools or research centres and place-based partners, the high-level institutional commitment of the host HEI to place-based working has a significant impact on the ease of operating projects. Many respondents suggested this is strongly influenced by institutional leaders and their personal attitude to place-based partnerships.
- It was very clear that although the ecosystems of different places had shared characteristics, the actual structure and emphasis in different geographically defined parts of the UK were very different.
- Respondents all described similar challenges when undertaking place-based projects – having to connect different systems and different stakeholder groups. There was considerable interest in taking a UK wide view on skills development for place-based research. There are currently very few platforms for sharing experience and undertaking skills training for this very particular form of research.

REFLECTION 6: Across the UK there are some well established research groups that have worked with place-based partners over many years. Researchers have sought continuity of funding for place-based activity and have often shifted the focus of projects to fit the aims of different funders.

Design-led place-based research funding

The study has reviewed design research that has been funded by the AHRC & others since 2010, a majority of this did not explicitly set out to support design-led, place-based research but many research projects have been with partners located within specific geographies. The review describes the structure and role of the following funding schemes and reflects on the contribution each form of funding has on place-based innovation.

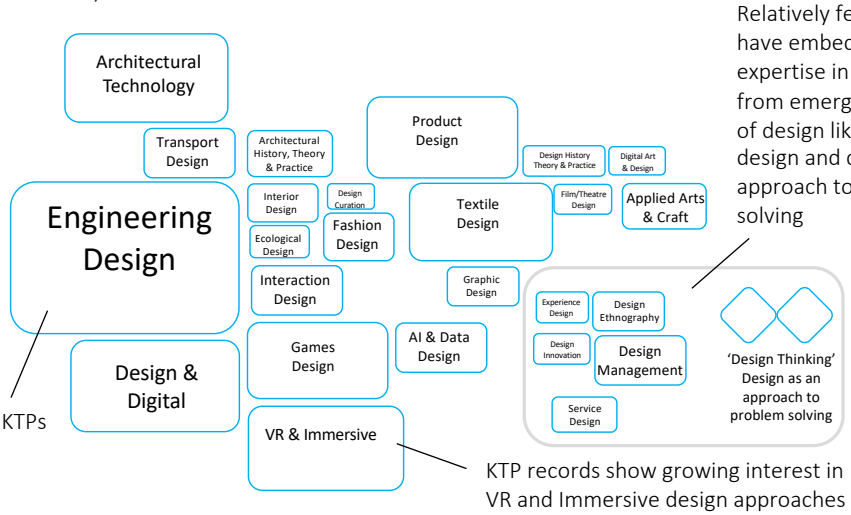
- Knowledge Transfer Partnerships
- EU funding
- Regional funding for knowledge exchange & design research
- UKRI Strategic Programmes
- UKRI Responsive Mode Funding

Knowledge Transfer Partnerships

Knowledge Transfer Partnerships (KTP) is a UK-wide programme that has been helping businesses for the past 40 years to improve their competitiveness and productivity through the better use of knowledge, technology and skills that reside within the UK Knowledge Base. A KTP serves to meet a core strategic need and to identify innovative solutions to help that business grow. KTPs between academia and industry deliver knowledge exchange through KTP Associates appointed to work within the host business under the supervision of academic partners. KTPs are funded through UKRI by Innovate (often in partnerships with ESRC, EPSRC & AHRC)

Many design-led KTP programmes have been established, some enhance the technical design capability of a business, often co-funded by EPSRC, others link to design disciplines such as architecture, product design, fashion and textiles, often co-funded by AHRC. Fig. 6 show the relative number of KTPs that have been funded to support the transfer of knowledge from different design disciplines. (Deduced from KTP records). As most businesses operate from and have a supply chain across a defined geographical territory this form of funding can be seen to have a direct impact on place-based productivity. An overview of the geographical spread of design-led KTP programmes is shown in Fig 7. A review of KTPs shows a wide range of specific project objectives, but some key questions shared across all design-led projects (shown in Fig. 13). Many researchers commented that the agility of KTP funding was an advantage, it was possible to build partnerships with local industry with certainty of funding (once initial criteria had been met).

Figure 6: The relative number of KTPs that have been funded to support the transfer of knowledge from different design disciplines. (Deduced from KTP records- the size of each oblong indicates the relative no of KTPs).



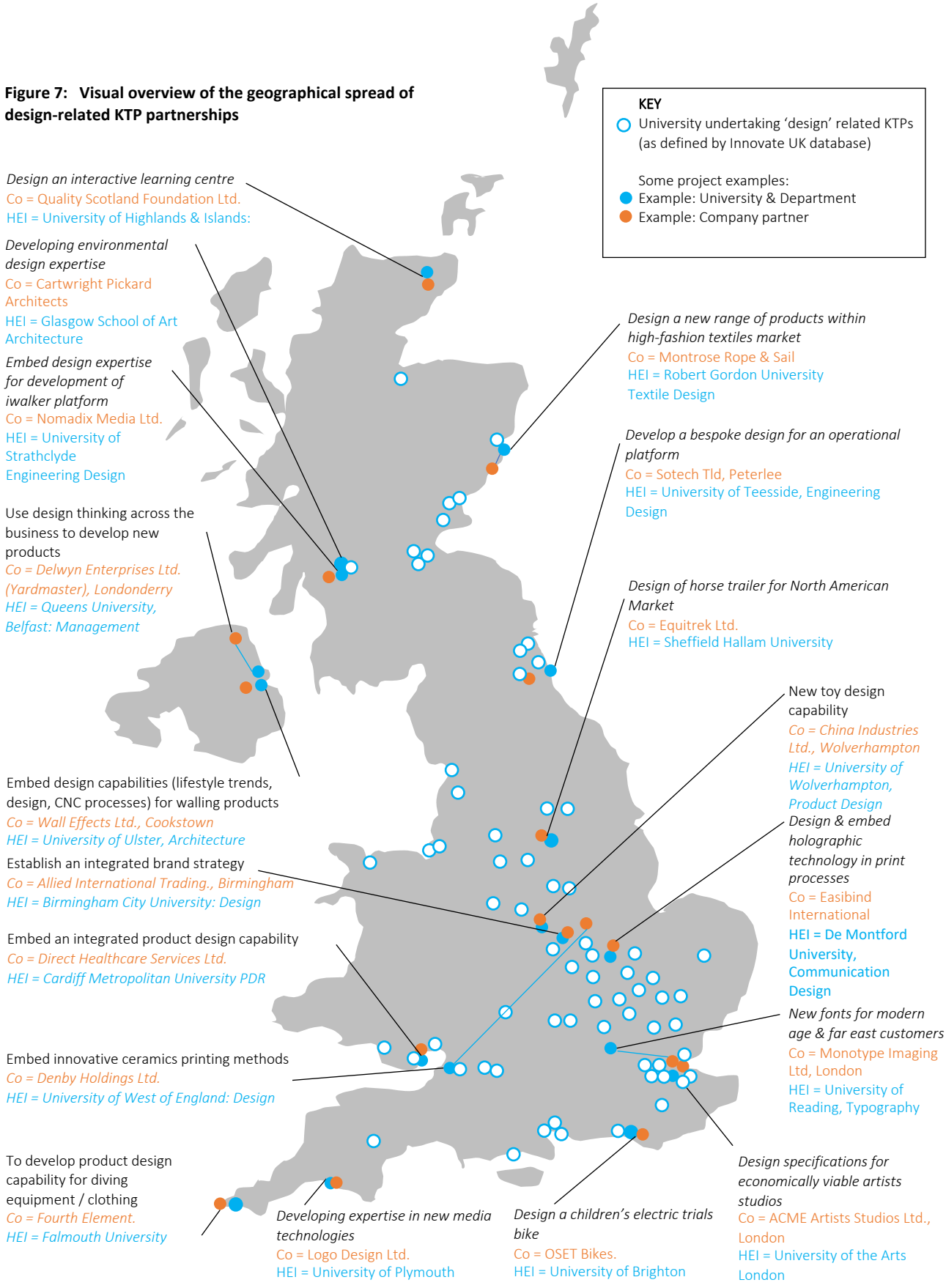
Relatively few KTPs have embedded expertise in industry from emergent areas of design like service design and design as an approach to problem solving

A majority of design related KTPs have been embedding engineering & digital design expertise into businesses

KTP records show growing interest in VR and Immersive design approaches

REFLECTION 7: KTP projects have been established with a wide range of UK businesses and have connected with many different areas of design expertise within HEIs. The majority have developed an aspect of product or engineering design capability, more recently projects related to VR & immersive expertise have been established. Development of funding criteria has allowed KTPs with not-for-profit organisations to be established. To date relatively few KTPs have explored innovation through service design and building design thinking capacity.

Figure 7: Visual overview of the geographical spread of design-related KTP partnerships



REFLECTION 7: Universities supporting 'design' related KTPs (as defined by Innovate's database) are spread across the UK. Although not a stipulation of funding a majority are partnerships between businesses and HEIs located in close proximity to each other. KTPs do deliver place-based innovation.

Regional investment in knowledge exchange and research programmes

England, Scotland, Wales and Northern Ireland all provide different forms of innovation funding to support connections between the research expertise of universities and external partners (see Fig. 8) . This review doesn't map these mechanisms in detail but notes how these support mechanisms have supported place-based design research. Research England, Scottish Funding Council (SFC), Higher Education Funding Council for Wales (HEFCW) and the Northern Ireland, Department of the Economy (NIDE), distribute quality-related research funding (QR) to the UK's universities based primarily on REF performance using slightly different algorithms. Most of the researchers exploring design as an approach to problem solving returned their research outputs into Unit of Assessment 34 (Uoa34) in the 2014 REF exercise. Universities also have research groups with specialist design research knowledge in the built environment, engineering, computing and management.

SFC also support eight industry sector driven Innovation Centres which offer place-based businesses & public sector bodies an opportunity to collaborate with academic researchers. Several of these Innovation Centres, have made extensive use of design research expertise to support co-design project activity, In particular, the Digital Health & Care Institute (DHI) run between University of Strathclyde & Glasgow School of Art, which has devised co-design labs exploring solutions to health and care challenges facing Scottish communities living in both urban and rural environments, many place-based stakeholders have engaged in this process. Research England has recently made two substantive investments in developing design research capacity through its Expanding Excellence in England (E3) funded, designed to build the capacity and quality of research in departments and units within English universities, where excellence exists but at a small scale. At the University of Lancaster a £13.2 million investment has been made in Beyond Imagination, a three-year project (2019-2022) which will explore and demonstrate how cutting-edge design research can create a healthier, more prosperous and sustainable world. At Sheffield Hallam University interdisciplinary research group lab4living was awarded £4 million in funding (2019-2022) to focus on living to 100 and the future home with a particular focus on increasing engagement with local communities. Design Wales was established in 2000, based at PDR, Cardiff Metropolitan University and ran a wide variety of support services for business and regional development offices in Wales, most recently a Service-Design Programme from 2010 – 2013, customised for Welsh stakeholders, supported by the then Welsh Assembly Government Department for Economy and Transport. HEFCW is currently undertaking a strategic review of innovation & knowledge exchange funding in Wales from 20/21 onwards.

Innovation voucher schemes (valued at £5,000 - £20,000) to support interaction between industry and other non-academic organisations and HEI based researchers are run by a variety of different universities and regional enterprise bodies in England, through invest Northern Ireland, SMARTCmryu in Wales and through Interface in Scotland (funded by SFC) – Interface provide highly informative case studies of how the Innovation Vouchers have enabled industry to engage with research expertise.

Figure 8: Regional research support mechanisms

	England	Scotland	Wales	NI
KTPs	Innovate UK - University based offices across England, Wales, NI – 4 regional offices in Scotland (N,S,E&W)			
Innovation Vouchers	Regionally delivered	Interface	SMARTCmryu	InvestNI
QR (core) R funding	Research England	SFC	HEFCW	NI Dept Education
Other Initiatives	Research England E3 investments	SFC/SE/HIE Innovation Centres	Under review by HEFCW	- NI HEIF

REFLECTION 8: The devolved governments of the UK and regions of England are making investments in innovation & knowledge exchange in different ways, over the last 5 years place-based design-led research has become part of this agenda. Interaction between design researchers and business is supported in all areas through innovation vouchers, the level of reporting, access to case studies and foregrounding of use of design in each part of the UK varies.

EU funding: Horizon 2020, ERDF & INTEREGG funded programmes

Many forms of EU funding have supported HEIs in the UK, partnerships between design researchers and place-based partners, the University of Lancaster's Design in Europe project provides information on EU funding for design projects. In this review of design research the support of EU's, Horizon 2020, ERDF and INTEREGG programmes were regularly cited.

- Horizon 2020, the EU's biggest ever research and innovation programme has made €80 billion available between 2014 and 2020 with the aim of taking great ideas from the lab to market.
- The ERDF aims to strengthen economic and social cohesion across the EU by correcting imbalances between its regions. A number of ERDF partnerships have focused on design, sometimes providing access to facilities and technology to support design in industry, other programmes have focused on bringing design thinking skills (design as an approach to problem solving) into professional training programmes or encouraging entrepreneurship, for example, Launchpad a programme to support start-ups at Falmouth University.
- IINTEREGG funding aims to support cooperation across borders to jointly tackle common challenges and find shared solutions in fields such as health, environment, research, education, transport, sustainable energy and more. Examples of INTEREGG funding include Design4Innovation, based at Cardiff Metropolitan University involving eight European partners working to promote design as a tool for user-centred innovation.

With the UK leaving the EU, many researchers suggested there is an opportunity for design and design research to be embedded within future forms of regional assistance that might be deployed to continue correcting imbalances within the UK.

REFLECTION 10: Different forms of EU funding have played a key role in developing the regional innovation ecosystems of the UK, these have developed many HEI stakeholder partnerships that have subsequently supported a wide range of design research interactions. Brexit brings both a need and opportunity to explore new ways of connecting design research knowledge and skills to the needs of place-based stakeholders.

AHRC research funding

Since its inception as a research council in 2005 the AHRC, like other UK research councils has invested in both responsive mode and strategic programme funding.

Responsive Mode Funding

The AHRC welcomes research proposals at any time for standard research projects, research networks and research fellowships. Since 2010 a large number of design research projects have been supported, many with a place-based dimension. Disseminating 'Design Thinking for Prison Industries' (University of Arts London), has been focused on embedding design thinking capacity and capability within UK prisons, based on place-based pilot work with prisons in London & India, an example of learning from a specific context and then packaging knowledge to share widely. Leapfrog: Transforming Public Service Consultation by Design (University of Lancaster) has been building collaboration with 'hard-to-reach' community groups developing co-design techniques to give them a voice in community consultation exercises (motivated by the sweeping powers given to communities through the 2011 Localism Bill) again the research has been undertaken with partners located in place: Highland & Islands and community groups in Lancashire for roll-out and dissemination more widely. The Public Collaboration Lab (University of Arts London) looked to explore how collaborative approaches to service delivery might be supported, the London Borough of Camden's Library Services formed the place-based platform for the research.

REFLECTION 11: Responsive mode funding has supported focused projects with place-based partners that have enabled design researchers to develop, prototype and then package new approaches to complex challenges for wider dissemination.

Strategic Research Programmes

Since 2005 the AHRC has also supported strategic research programmes, often in collaboration with other UKRI research councils to support clusters of projects with shared aims. Strategic programmes have been initiated in response to a key report, identification of a research gap or change in the external environment. Examples include: Designing for the 21st Century AHRC & EPSRC [2005-2010], initiated as the Cox Review (2015) [1] reported on the opportunity to enhance UK business productivity through design; The AHRC Priority Area Leadership Fellowship in Design [2016-2021], initiated in response to a perceived need to strengthen the UK's design research community, particularly around design's role in social change. The Creative Industries Clusters Programme (CIC), AHRC [2018-2023], initiated as the Bazelgette Review (2017) [2] reported on the economic significance & needs of the UK's creative industries.

Creative Industries Clusters Programme [2018-2023]

The AHRC has invested £80 million in eight Creative Industry Cluster (CIC) projects and the Creative Industry Policy & Evidence Centre (PEC) (NESTA et al). The CIC programme supports research that is largely place-based and will enhance the productivity and competitiveness of the UK's Creative Industries (of which creative design disciplines are a sub-sector). Each CIC projects has its own focus, a number are supporting fashion & textile design, design & informatics, games design etc.

- Future Fashion Factory (University of Leeds & Royal College of Art) in which designers are leading a creative process of applying, co-developing and implementing new technologies in the UK's high value luxury textile & fashion sector. Regional partners such as Yorkshire Textiles and the Huddersfield based Textile centre of excellence give the project a 'place' based dimension.
- Collaborative Business of Fashion Textiles and Technology Collaborative R&D Partnership (University of Arts London, QMU London, University of Cambridge, University of Leeds, UCL & Loughborough University) again seeks to increase productivity in the fashion design sector and is working with SME's across East London's Fashion & Textiles hub.
- Creativeinformatics (University of Edinburgh, Napier University) Seeks to put businesses and creative entrepreneurs in the driving seat of data-driven innovation in Edinburgh's lively design and advertising sector. Partners from different sectors in Edinburgh include - museums, galleries, design agencies and the BBC.

Other CIC projects are using approaches from design to support interdisciplinary collaboration.

- Future Screen Northern Ireland (Ulster & Queen's University Belfast), focused on the creative economy in Northern Ireland, acting as a developmental catalyst. Within this design researchers are using design-led methods to enable new collaborations.

The PEC is commissioning a series of reviews and investigations into the UK's creative industries, some of this work has explored regional and place-based creative ecosystems. More recently the PEC has established a portal tracking sector reviews and reflections on the impact of COVID-19. To date the PEC has not undertaken review work specifically on design, design sectors or the relationship between design and place-based innovation.

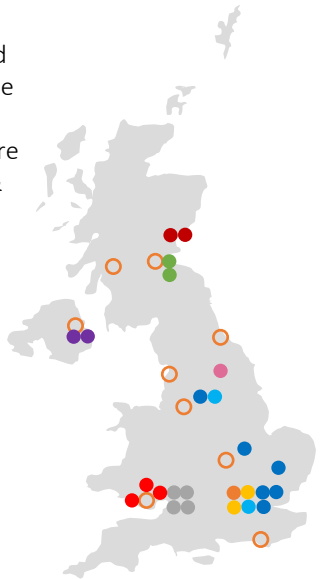


Figure 9: Location of HEIs engaged in the CIC Programme Projects

References:
[1] Cox, G. (2005) *Cox Review of Creativity in Business*
[2] Bazelgette, P. (2017) *Independent Review of the Creative Industries,* DCMS, London

REFLECTION 12: Some design disciplines (fashion, textiles, product design, etc) are subsectors of the broader Creative Industries (and are consequently the focus of CIC research programmes). Other design disciplines are linked to other sectors: product & engineering design with manufacturing; service design with service industries & the public sector; and design as an approach to problem with all sectors of the economy and society. Clearly design-led, place-based research cuts across many sectors.

Knowledge Exchange Hubs (KEH) [2012-2016]

The AHRC committed £16 million to support four Knowledge Exchange Hubs for the Creative Economy. Design in Action (DiA) (University of Dundee), and The Creative Exchange (CE) (University of Lancaster) were the two more design-oriented hubs, both used design approaches, to support interdisciplinary knowledge exchange. DiA aimed to demonstrate design as a strategy for economic growth within business, focusing on the value of design-led innovation across: food, sport, rural, ICT, legal services, digital imaging, crypto-currencies and the circular economy through focused one-day chiasma co-design workshops. DiA had a place-based partner(s) in the form of Creative Scotland for whom the specific geography of a place and its systems and clusters were an important part of the project. CE brought together companies and academics in intensive one-day design-led CX labs to explore the potential of digital public space, co-create new products, experiences and business opportunities. Both KEH products distributed project funding to demonstrator projects using predetermined criteria, geographical location (other than being in Scotland for DiA support) was not a funding criteria.

Design Centres for Doctoral Training [14/15 – 18/19]

The four AHRC Design Centres for Doctoral Training, allocated 186 PhD studentships between 14/15 & 18/19, exploring research questions in a broad spectrum of design and creative arts practices. Amongst the portfolio of design-related PhDs a small number have been set in the context of a particular place, For example Robert Djaelani (Northumberland-Sunderland) introducing design approaches to the work of mental health providers in the North East England, based on design ethnography and workshops. The low number of awards that focused on issues associated with 'place' reflects the fact that having place-based partners was not a key criteria for any of the locally distributed Design CDT studentship allocation processes.

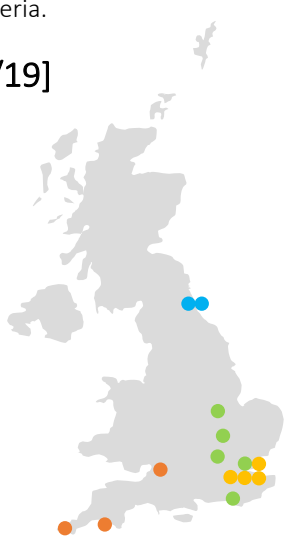


Figure 10: Location of HEIs engaged in design centres for doctoral training

REFLECTION 13: Many strategic research programme projects have featured a structure in which pilot projects and small investigations (and PhD studentship allocations) are commissioned by some form of project panel using criteria that support project objectives. Some of these structures, for example *DiA* and the *CIC* have supported place-based projects. Other such as the Centre for Doctoral Training have not used this criteria.

Design research in specialist programmes: GCRF, Newton & AMR funding

A number of specialist cross-council strategic programmes have engaged with design researchers in place-based research. The Global Challenges Research Fund (GCRF) is a £1.5 billion fund supporting research that addresses the challenges faced by developing countries. At the heart of the programme is the ambition to promote challenge-led interdisciplinary research. Design research approaches have played a key role in many of these projects, WASHable (University of Lancaster) a participatory design network for Francophone & Lusophone communities in Africa specifically aims to build capacity in design methods with different African communities around issues of water, sanitation & hygiene. Newton funding has supported a wide range of international place-based design research projects Located Making (University of Lancaster) explored how design expertise could increase the visibility of heritage based making practices in China. Chicken or Egg (University of Arts London), is exploring AMR (Acquired Microbial Resistance) within the poultry supply chain in India, the project has been highly innovative in the use of co-design approaches with industry stakeholders.

REFLECTION 14: GCRF, Newton & other strategic programmes have demonstrated the interest in design-led place-based research internationally. UK based design researchers have been using design approaches with a focus on building capability and capacity with international project partners.

Mapping design and creative sector ecosystems

AHRC has supported many reviews of the design sector at a UK level, As part of the Designing for the 21st Century programme, 2020 Vision – The UK Design Industry Ten Years On (University of Salford) used surveys and focus groups to make predictions of how the UK design sector might need to evolve to remain globally competitive by 2020, many of the report's predictions about increasing interest in strategic design and design within public services have been realised. The Value of Design: A study of the role of design in innovation (University of Lancaster) identified the conditions at a UK level under which design contributes to innovation (working with the then Technology Strategy Board (TSB)). The study found that understanding and uses of design varied substantially among companies, and overall most companies perceived design as being multifaceted, not one, easily defined activity. Developing an Action Plan for the strategic use of design in UK (Manchester Metropolitan University) has explored how the strategic use of design at the national level benefits from coordinated activities that understand and then integrate key stakeholder agendas.

AHRC has supported many investigations of the creative industries (of which the creative design sector is part), some of this has been 'place' based, most notably the Brighton Fuse (University of Brighton) and Creative Fuse North East (University of Newcastle) projects, both of which systematically mapped the local creative sector. The studies then explored interventions that would enhance creativity, collaboration and ultimately productivity within each region's creative sector. Place-level connectivity between industries and sectors was critically important.

AHRC funded, Mapping Design for Innovation in Wales and Scotland (Cardiff Metropolitan University) systematically mapped the design innovation ecosystems in both these areas of devolved government in the UK, using literature reviews, surveys and workshops, the study showed both ecosystems having different strengths and weaknesses, that the ecosystems were complex and stakeholders within both regions saw great benefits in having greater insight into where design fitted into regional innovation policy.

Figure 11: Mapping design ecosystems

The complexity of regional design ecosystems was also explored by AHRC funded, Bristol and Bath by Design (University of West of England). The project used surveys and interviews to map the connections between design sectors in the Bristol & Bath region and commissioning bodies, highlighting the significance of history, collaborations, cross-sector working linked by place. The research highlighted the importance of co-creation, flow between design sectors (notably engineering design & the creative sector), shared values and the physical and material attribute of place in supporting an ecosystem of design-led innovation. The study emphasised that all places and their ecosystems are very bespoke.

AHRC funded Design Innovation for New Growth [DING] (Glasgow School of Art) engaged creative industries practitioners across the Highlands & Islands to explore business development opportunities. Supported by Highlands & Islands enterprise & Creative Scotland the project used design approaches to establish needs, create collaborations and drive business growth – again the project helped map connections across rural communities in the Highlands & Islands of Scotland.

REFLECTIONS 15: Design ecosystems can be mapped at a UK, Regional and City level. Having an understanding of the ecosystem of a place (rural or urban) is important, each ecosystem mapping project has highlighted the importance of having strategies and plans to guide the development of the ecosystem if place-based productivity is to be enhanced. Design as an approach to problem solving has much to offer this process of making new connections within a place-based ecosystem.

Reflecting on the impact of different forms of research funding and next steps for place-based innovation.

The review work shows a very broad portfolio of design research funding that supports innovation with place-based stakeholders in different ways. An overview of the schemes, their application processes, engagement with place-based partners and impact is described in Fig. 14.

A majority of knowledge exchange projects are very directed and focused, usually on the innovation needs of a place-based industry partner. Partners in KTPs make a financial contribution to programmes and a place-based commitment to a 2.4% R&D investment target can be clearly tracked. In design research supported through strategic programmes partners mainly contribute time-in-kind to projects, their commitment to R&D investment can be deduced from project records. Responsive mode research funding often supports research into the innovation needs of a place-based stakeholder who acts as a co-design partner within a project.

The review shows the breadth of design research activity, which covers everything from healthcare to fashion. Within many of these design research projects 'place' has provided an important context for the exploration of ideas and engagement with research users. In parallel, various studies of place-based design ecosystems have all highlighted the importance of connecting sectors, systems and people to enable an ecosystem within a place to thrive. Over the last 36 months much has happened in terms of development of the UK's Industrial Strategy and the 2.4% R&D target has become a key driver of research policy. Reducing regional inequalities is now clearly also flagged as a priority issue.

This landscape suggests a strategic need now exists to invest in design research that explores the enhancement of productivity of the UK's places by identifying opportunities for innovation across a place's ecosystem of industry, society and the environment. A great deal could be learnt from a strategic programme that explored design-led innovation in a representative portfolio of places with different attributes located across the UK. A 'sketch' of such a programme is shown in Fig. 12.

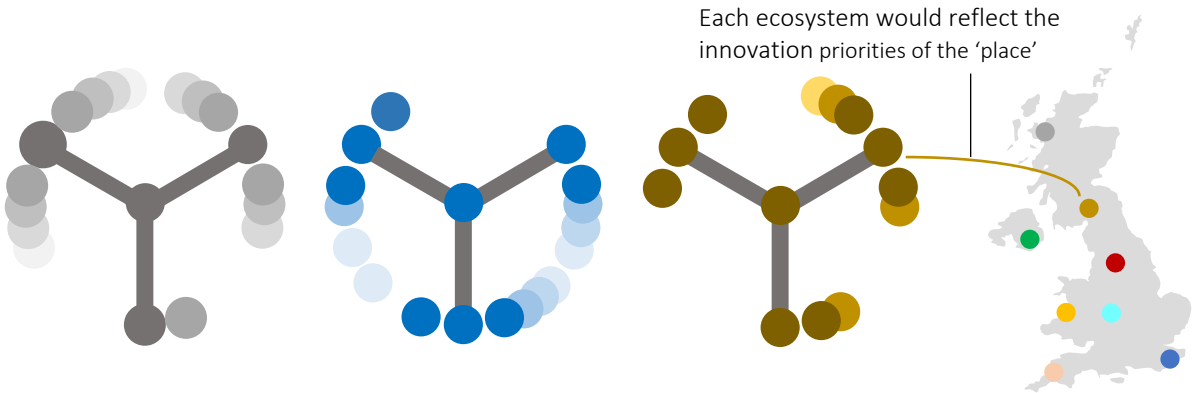


Figure 12: A future strategic funding programme could explore design-led innovation across the ecosystems (Economy, Society & the Environment) of different 'places' (rural, city, town, community, corridor etc)

Before defining the shape of such an initiative in more detail it is important to discover more about the challenges faced by design researchers undertaking place-based research, their perceptions of design research skills gaps, the research questions they have been exploring and what the place-based research priorities might be to support society's need to recover from COVID-19.

REFLECTIONS 16: There is an opportunity to look at how design research can unlock innovation potential in the places of the UK in a more holistic way. As an example this might explore what happens when a design approach is taken to innovation within place-based public services, whilst simultaneously design knowledge is exchanged with local place-based businesses, local communities are empowered through design and a design approach is taken to place-based environmental issues.

Figure 13: Three different forms of funding & their impact on place & R&D commitment of partners

	KTP funding	Strategic Programmes	Responsive Mode
Overview	Emphasis is on a three-way knowledge partnership between industry partner academic partner & KTP Associate. • Industry gains new embedded knowledge . • Academia develops its real world understanding of design. • KTP Associate gains high-level training & experience.	• Emphasis on developing new knowledge, to satisfy the funding criteria of the strategic programme. • Strategic programmes all require partnership with research users to help define research questions. • Projects emphasise training opportunities for researchers, sometimes providing support for PhDs.	• Emphasis to push the boundaries of contemporary design knowledge as defined in a responsive mode funding application. • Connections with non-academic partners encouraged to provide access to a data-set, audiences/users or some other platform for the research. Project.
Typical funding & duration	A KTP lasts 12-36 months. SMEs contribute 33%, larger companies contribute 50% of cost. Typical total cost = £150k for 2 years.	Larger strategic programmes (CICs and KEHubs) funding typically £5 million per project, over 5-years. Partner financial contribution encouraged.	Projects normally last 2-3 years AHRC funding typically £250k - £1million. Cash-in-kind (time) contribution sought from non-academic project partners.
How are project proposals reviewed?	Funding decision made by Innovate/UKRI KTP team against eligibility criteria (ROI for industry, academic benefits, quality of training for KTP Associate).	Funding decision for main proposal made by peer review and interview panel against specific programme criteria.	Funding decision made by peer review against AHRC criteria, *'the significance, & importance of project in a national or international context'.*
How is a regional spread of funding across the UK encouraged?	KTPs are awarded against regional KTP projects quotas. Majority of KTPs awarded to businesses with proximity to HEI partner.	Regional spread of strategic programme funding is preferred & encouraged through local 'town hall' meetings etc., no explicit criteria are used to ensure spread across UK.	No attention or relevance attached to geographical location of participants. Funding decisions are 'place-blind'.
Key project aims & deliverables	Emphasis on creating new knowledge, that: - Delivers impact for industry partner (usually financial, profit, jobs, turnover). - Embeds new capability & capacity within industry partner. - Provides 'case studies' for academic partner, for teaching & research. - Provides a learning platform for KTP Associate.	Emphasis on design research creating new knowledge, that: - Delivers specific new knowledge & impact for programme. - Delivers new knowledge for research users. - Makes a contribution to shared National & International understanding of the issue being researched, through publication & dissemination. - Has impact beyond project.	Emphasis on design research creating new knowledge, that: - Is beneficial to non-academic project partner. - Makes a contribution to shared National & International understanding of the issue being researched, through publication & dissemination. - Has wide impact beyond the project.
Contributions to 2.4% R&D target	For £1million turnover SME, KTP financial contribution equates to 2.4% direct place-based R&D investment.	R&D commitment of non-academic partners can be deduced from project records, largely time-in-kind.	Difficult to establish contribution to the 2.4% R&D target.

REFLECTION 17: KTPs are very directed to the needs of an individual industry partner (usually in proximity to an HEI) and leverage a substantial financial R&D contribution from industry. Strategic programmes address a sector need (often regional) and leverage some sector financial support. Responsive mode projects address knowledge needs and have partners to provide access to information, case studies and users to support research.

Challenges undertaking design-led, place-based innovation research

For this review researchers were asked to reflect on the most significant challenges they have faced in undertaking design-led, place-based research. Key challenges are outlined below:

Establishing impact

- Establishing the impact of place-based research projects can be challenging, profiling key datasets at the beginning of projects is very difficult when often only limited local data is available. Project funding is often short-term, when impacts take time to accrue, often there is little opportunity to go back and measure long-term impacts.
- Design-led projects can have significant impact in realtime, for long term impact to accrue, design capability and capacity needs to be embedded within partner organisations.

Building relationships and trust

- Working with place-based partners can involve engaging with time-poor, highly-stretched public sector partners, companies and communities. Unlocking commitment to research projects requires time and innovation in the way resources are assigned.
- It takes time to build trust and understanding with place-based partners with limited previous exposure to design approaches and experience of working with academics. In knowledge exchange projects there were often preconceptions about how a design input could have an impact on business performance.
- Even within a geographically defined context it can take time for researchers to build a real understanding of the ecosystem within which they are operating. In parts of the UK working with place-based partners can be challenging due to distance and poor digital connectivity.

Overcoming pre-conceptions

- Researchers are charged with having internationally significant research profiles – engaging in place-based projects generally involves local and regional collaborations and is perceived by some Higher Education research cultures as being at odds with REF and the idea of international significance. This can make getting institutional support for this form of research challenging. There is sometimes a gap between the high-level community commitment of Universities (within mission statements) and their management actions which are often driven by local interpretation of processes such as REF.
- Perceptions of international significance can also cloud the judgement of the peer review college, who are often judging the quality of research proposals based on narrow discipline specific definitions of research quality, without a detailed understanding of how to interpret the place-based context.

Navigating complex funding structures

- There is no entity in the UK lobbying on behalf of, providing profile for, and sharing best-practice across, the many design researchers who are undertaking place-based research projects.
- A lot of the funding that is available for place-based research activity is focused on infrastructure and facilities rather than investing in people to build-up place-based innovation capacity.
- To initiate projects often National funding such as UKRI support needs to connect with a very wide portfolio of place-based funding. Sometimes there is a lack of understanding that the UK has 3 devolved administrations, different local government structures, very different geographies - urban and rural, often with different priorities (for example the need to balance economic development with community resilience).
- There are few mechanisms through which place-based needs can more directly inform the UK research funding agenda.

REFLECTION 18: Working on place-based projects is challenging. Design researchers work across and connect many systems and stakeholders to enable projects – there is a great deal of learning that could be shared across the place-based research community of interest.

Key challenges faced by design-led, place-based researchers.

'R&D projects are so much quicker and easier if you don't explore all options, visualise the future, prototype and engage with users - my constant challenge is explaining the dire consequences of such short-termism'

'Design research is done forwards and learnt backwards - it is sometimes difficult to know the real questions until the exploration begins – that makes completing funding applications challenging'

'Working across boundaries, for genuinely interdisciplinary projects is one of the biggest challenges and conversely one of the biggest rewards'

'There is a vital need for all design researchers to help others understand how value is created by taking data seriously'

'Lack of co-ordination and scaling of local initiatives to other places and global challenges can be a missed opportunity'

'Design needs to provide a much more robust evidence base to describe its role and impact'

'Working internationally requires local knowledge to support location-based research'

'Academics are tasked with having international research profiles, place-based programmes are sometimes at odds with the idea of international significance'

'During implementation of project findings, too many compromises are made - without the continued input of design, the original intentions can be diluted or overlooked'

'Too often researchers dip in and out without leaving much behind'

'Fitting together the match-funding requirements of different partners in place-based research makes 3-D chess look easy'

'Evidencing impact in complex, interdependent environments is not easy'

'Trying to convince professionals in other fields to embrace design thinking approaches requires skill'

Career trajectories

Through the AHRC investment in the *Priority Area Leadership Fellowship in Design (PALF)* (University of Lancaster) much has been learnt about the career trajectories and needs of early career researchers (ECR) working on design research. PALF's recently published profiles of ECR trajectories suggest many paths into the role of design researcher. Through this review researchers were asked to comment on the career trajectories and skills required when undertaking design-led placed-based research.

For those participating in knowledge exchange projects (particularly KTPs with industry) it was important that the lead academic appointed to the project had an in-depth design discipline knowledge relevant to business need and could position the potential contribution of design knowledge into a business context. Many respondents commented on how important it was for KTP Associates, appointed to the KTP, to have had work experience in addition to a UG and preferably PGT qualification in a relevant design discipline. KTP Associates either follow a career path in-house within their host organization, move within the sector or occasionally move into academia. KTP Associates are provided with higher degree opportunities and access to leadership training. There is an opportunity to introduce some form of 'design leadership' training into this portfolio of KTP training provision.

For researchers undertaking design-led place-based research projects in academia, researchers highlighted the importance of having an UG degree in a design discipline, or one of the related disciplines within Fig. 2 (business, computing, built environment or engineering). Those undertaking projects applying approaches, methods and process from design to research challenges, had often taken one of an increasing number of PGT programmes in Design Innovation, Service Design, Design Ethnography etc, effectively 'conversion programmes' for those who had studied design in the context of a particular discipline. A number of these intensive 12-24 month programmes are now delivered as MRes programmes as a stepping stone to a PhD. Collaborative Doctoral Training programmes and opportunities to integrate PhDs into substantive research grants have developed a pool of doctoral talent.

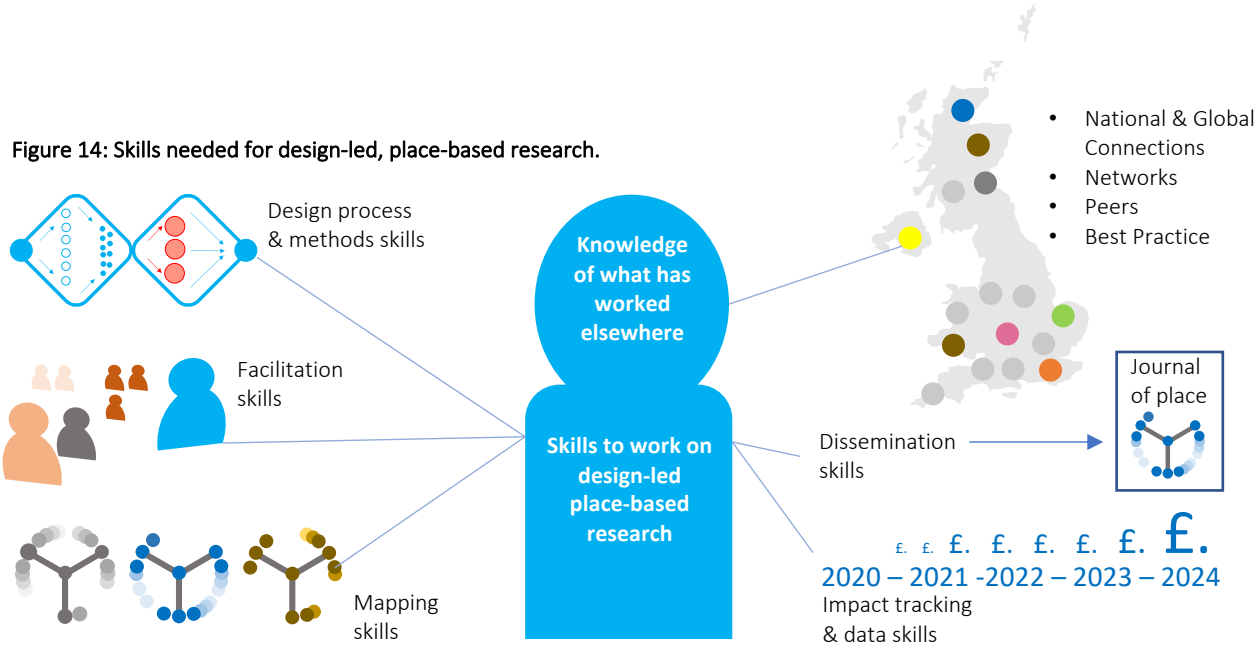
There is anecdotal evidence of researchers moving between academic design research and design research set within design consultancy, public policy at a regional government level and public services. Over the last 10 years as the UK design industry has reshaped through mergers and acquisitions, many with strategic consultancy firms, there has been an increasing demand for designers with user-research experience and an understanding of strategic context. Researchers did, however, suggest a gap - when working on design-led place-based research initiatives the ultimate aim of many projects was to embed design thinking skills into an organization. KTP programmes with industry partners achieve this through employment of a KTP Associate, more research is needed into strategies for embedding design skills into other place-based organisations within cultural, community, public service and environment sectors.

Skills needed for design-led, place-based research.

Fig 14. reflects on the skills needed by researchers undertaking place-based projects. Researchers did suggest some very particular skills that were needed when working across and connecting the many systems and stakeholders associated with these forms of project. The table highlights how skills could be developed by greater sharing across the sector.

REFLECTION 19: The KTP mechanism offers a structured approach to embedding design capability and capacity in partner organisations through the employment and fast-track training of KTP Associates. It would be interesting to see how this principle could be deployed on other sectors to develop place-based design capability across the economy, society and the environment.

Figure 14: Skills needed for design-led, place-based research.



Research skills needs when working in a place-based context	Ways to support the development of skills for place-based design research
Mapping & understanding ecosystems • The ability to build a living model of a place's ecosystem & actors and their needs & motivations. • The ability to define & establish the role of the design researcher within this ecosystem. • The ability to link local, place-based funding opportunities to National & Global research and vice-versa. • The ability to connect short-term funding opportunities (with varying objectives) to deliver a long-term vision for place.	• Build a library of design ecosystem mapping approaches and models • Draw on relevant expertise to develop UK-wide learning in ecosystem mapping and the role of the design researcher • Support greater connectivity and engagement between National and Regional funders • Draw on relevant expertise to develop UK-wide learning for place-based research funding strategies.
Tracking Impact, disseminating locally & globally • The ability to plan, deliver and track the short-term impacts often demanded in place-based project working with long-term impacts that will be transformative for place-based stakeholders.	• Collate examples of short-term and long-term impact planning, delivery and tracking in design-led place-based research projects. • Develop the networks to create a collective UK-wide understanding of impact.
Disseminating locally & globally • The ability to translate research findings into the language, vocabulary and dissemination routes of the place-based setting. (whether it be an industry, public sector body or local community) • The ability to link & position & disseminate place-based impacts in the context of National and Global knowledge	• Draw on relevant expertise to develop place-based research communication strategies. • Make connections to global interest in design-led place-based research.
Facilitation • Being an excellent facilitator. The ability to build trust and facilitate horizontally, across stakeholders, & vertically, between different levels of stakeholder in a place-based setting.	• Draw on relevant expertise to develop UK-wide learning in facilitation skills for design-led place-based research. • Offer a programme of internships to develop skills.
Design process & design methods • The ability to adapt design models, methods and approaches at speed to the needs of place-based projects to secure engagement & buy-in to research. • The ability to use data to drive insights.	• Build a library of design models, methods and approaches that have been adopted across different design-led place-based research projects. • Draw on relevant expertise to develop UK-wide customizing approaches for place-based needs.

REFLECTION 20: Much of the skills development needed for place-based design research requires sharing of expertise and experience across the UK. Some form of learning community and network needs to be established to facilitate skills development.

Research questions being asked through design-led place-based projects

This review asked researchers to share the most important research questions that they were exploring through their design-led, place-based research projects. The research questions being asked in recently funded design research projects were also reviewed.

For every project there were very specific questions being asked, depending on whether it was a public services innovation project, a project focused on empowering communities, a crime reduction project or design research that was finding new markets for a new technology in a business. There were, however, some high-level research questions that were being explored in all projects, with slightly different priorities for the two main genres of projects being reviewed; knowledge exchange projects with place-based industry and strategic & responsive mode research projects with place-based stakeholders. A summary of these high-level questions is shown in Figs. 15 & 16.

Figure 15: The high-level research questions being explored knowledge exchange projects

Knowledge Exchange projects are designed to exchange & build knowledge between academia and industry (& sometimes social enterprise & public sector organisations) for the mutual benefit of both. Research questions are framed to have direct impact on the partner's products, processes, services & position. Listed below are some of the generic high-level questions being addressed through the UK's design-led knowledge exchange projects. Industry partners might operate nationally & internationally, but are generally located in a specific geography, usually in proximity to academic partner. Investing in design-led knowledge exchange consequently has a direct impact on place-based productivity

Innovation in the design of products

- How to enhance the design expertise of a business (established or start-up) to incorporate new materials / technologies /digital & data awareness / manufacturing approaches into new products.
- How to embed this knowledge into teams.

Innovation in design & product development processes & capability

- How to embed new design processes & capability into a business (established or start-up) to improve connections with customers, improve quality, align with the needs of the circular economy (or other strategic imperative) and remain competitive in rapidly changing business environments.

Innovation in services

- How to build service design expertise into a business (established or start-up), to enhance user experience, integrate new approaches & technical/data expertise.
- How to embed this knowledge into teams.

Innovation in brand and market position

- How to take a design approach to brand development and positioning of a business offer (established or start-up).
- How to use design to integrate the brand identify across all aspects of product & service.

REFLECTION 21: Although the aims of every design-led research project are very different there are some shared themes of research enquiry across all projects. Knowledge Exchange projects are very focused on supporting R&D in products, processes, services and market position. Strategic & Responsive mode funding are focused on supporting R&D on the specific issue being explored in a project, but also contribute to shared understanding of design research methods, design supported interdisciplinary working, connecting with users and deployment of design skills in R&D projects. If more of these shared themes could be identified there would be opportunities to share lessons learnt across projects in a more dynamic way.

Figure 16: The high-level research questions being explored in strategic & responsive mode projects

Strategic & responsive mode research projects focus on research questions associated with a particular programme or the interests of the research team. As well as contributing specific new knowledge to these programmes and projects, these research projects all explore some generic research questions shown below, these are all very relevant to developing placed-based innovation capability.

Innovation in design research methods that can be used in R&D projects

- How to develop design research methods and tools to explore specific research questions within R&D projects, for example stakeholder needs, future trends, the drivers of change, mapping & visualizing complex challenges etc.

Innovation in design support for interdisciplinary working in R&D projects

- How to use design approaches to engage a wide range of stakeholders in defining problems and developing and implementing solutions, particularly to support teams exploring complex challenges, for example co-designing, prototyping methods, hackathons, design-led sandpits etc.

Innovation in bringing the user voice into R&D developments

- How to ensure future developments in a wide range of sectors are designed with an understanding of user needs, for example, participatory design, design ethnography, etc.

Innovation in how the visualization & prototyping skills of design can be used in R&D projects

- How to use the the design of objects and artefacts as a mode of research enquiry.
- How to translate research findings into well designed products, services and systems.
- How to use design methods, design skills in visualisation and design's approach to prototyping & making to support the work of R&D teams.

COVID-19

During the period March to May 2020, the biggest driver of change on place-based researchers, cited by all respondees was the impact of the COVID-19 pandemic. The original proposal for this Fellowship was written in January 2020 when COVID-19 seemed to pose a distant threat. By March 2020, when the review work began, the COVID-19 pandemic had begun impacting on all aspects of daily life.

In March 2020 the United Nations began the process of mapping the socio-economic impact of COVID-19 on Global Sustainability Goals [1], a framework which ultimately informs so much of the place-based innovation work funded through mechanisms such as GCRF. During the period of the fellowship the impact on different sectors of the UK economy and society at a National & local level unfolded in real time, reported fortnightly by the ONS (Office for National Statistics) [2]. A realtime overview of the impact on the Creative Industries was been collated by the Creative Industries Policy & Evidence Centre. In their NESTA report exploring the UK's regional inequalities in R&D activity, Forth & Jones (2020) commented that, *'The COVID-19 pandemic threatens to bring new disruption to an already fragile British economy, and to exacerbate entrenched problems that contribute to regional economic inequality.*

For this review researchers were asked to reflect on the challenges COVID-19 might bring to their work with places both now and in the future. For researchers who were working globally, bringing design approaches to internationally located places, (largely funded through schemes such as the GCRF) researchers reflected on the enormous impact COVID-19 would have on what were already very fragile communities. All the issues that were being explored through design research were likely to be magnified and distorted by the impact of COVID-19. With so much of this work being reliant on building relationships, often most effectively developed through face-to-face contact, researchers could see that ongoing travel restrictions would be extremely disruptive.

Footnotes

[1] *Shared Responsibility, Global Solidarity: Responding to the socio-economic impacts of COVID-19* United Nations

[2] *Coronavirus and the economic impacts on the UK* Office for National Statistics

REFLECTION 22: During the 3 months of this Fellowship, the impact of COVID-19 dominated the headlines. Many design-led place-based research projects (funded through initiatives such as GCRF) will be effected both in terms of research priorities and the practicality of running international research projects.

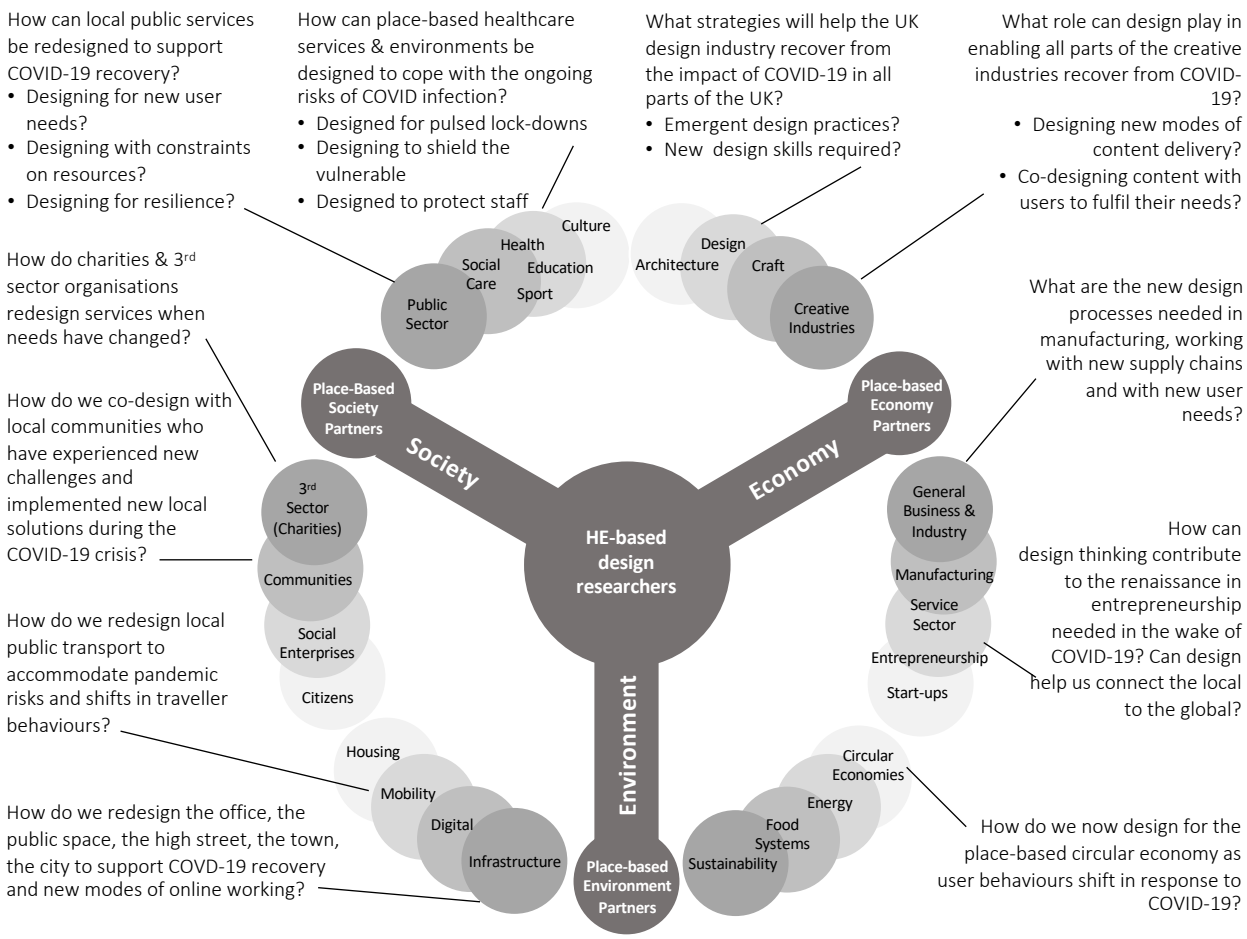
For researchers working in place-based partnerships within the UK, respondents were very clear that COVID-19 bought two challenges.

- In the short-term considerable innovation support was needed for all organisations. '*No organisation, business or community will recover to the same shape as it embraces the challenge of COVID-19, places need to know how to innovate'*. Many respondents could see that unless the right structures and support were put in place COVID-19 would accentuate many of the challenges they had been exploring through place-based research. Design had much to offer, so many of the immediate COVID-19 mitigations will involve adjustments to products, services and the physical environment, informed by user needs. Respondents highlighted that research was needed to fast-track the sharing of design solutions and approaches between different places within the UK.

- In the longer term to ensure the sustainability of places, respondees suggested more fundamental design research will be needed. Design as a form of problem solving was seen to be well placed to help co-create, synthesise and visualise preferable future products, services and environments. As places and their communities peer into an unknown future, this form of design research was suggested as being key in the longer-term COVID-19 recovery. Many respondents highlighted how important it was going to be that this this work was undertaken in a co-ordinated way across the UK. '*We need shared place-based learning'.*

Through the survey and through follow-up interviews respondents suggested some specific research questions that design-led place-based research might address to support COVID-19 recovery. A summary of some of the potential research questions is shown in Fig. 17 mapped out onto the diagram of place-based economy, society and environment used to communicate current place-based research interests of UK design researchers in Fig 5.

Figure 17: A summary of the specific research questions that design-led place-based research might address to support COVID-19 recovery.



Through the survey and through follow-up interviews researchers also reflected on the high-level design research questions that could be explored by looking across a broad portfolio of design-led COVID-19 recovery projects.

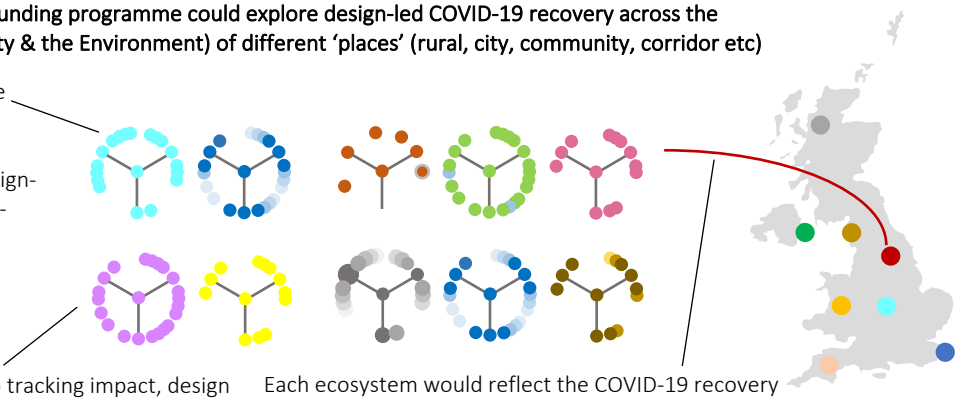
- COVID-19 raises many questions that will require a truly interdisciplinary approach. How can design research develop processes of discovery, definition, development and delivery to support interdisciplinary collaboration during COVID-19 recovery?
- COVID-19 demands new solutions, new ways of running systems, connecting people and operating services. How can design research develop the skills and knowledge needed to synthesis research, model ideas and translate then into prototypes for evaluation and implementation to support COVID-19 recovery?.
- COVID-19 impacts on all of us as humans. How can design research develop approaches for bringing the voice of users, consumers & stakeholders into the research process to inform problem solving and to build buy-in to COVID-19 recovery?
- COVID -19 has shown us how so many aspects of contemporary life are interconnected and impact on all our lives. How can design research develop strategies for taking a step back to see the system within which COVID-19 challenges exist, bringing skills of visualisation and mapping to research teams?
- COVID-19 challenges are new and unprecedented, true ingenuity and innovation will be needed to enable economies and societies to recover. How can design research encourage creativity enabling everybody within a team to make a creative contribution to COVID-19 recovery by thinking both divergently (generating a wide range of solutions) and convergently (ensuring the best ideas are selected to take forward).

Researchers also highlighted the very pragmatic impact COVID-19 was having on design research methodology. So much design research undertaken through engagement with users, through face-to-face workshops, ethnographic observation, prototyping and testing. Mitigating against ongoing COVID-19 infection will restrict the use of many of these methods. The design research community is going to have to innovate and share new approaches.

Reflecting on the impact of COVID-19

This review has already suggested a strategic need to invest more in design-led place-based research. The challenges of COVID-19 magnify this need. Building on the programme 'sketch' provided in Fig. 12, a more detailed programme of 6-10 demonstrator projects focused on COVID-19 recovery is suggested in Fig 18.

Figure 18: A future strategic funding programme could explore design-led COVID-19 recovery across the ecosystems (Economy, Society & the Environment) of different 'places' (rural, city, community, corridor etc)



REFLECTION 23:
Clearly design has a lot to offer place-based recovery from COVID-19, a key role for design research could be to ensure that this is achieved in a connected way. To be effective connections need to be made at a place-based level; an innovation in a local public service, must fit with needs of the community, the same insights may well inform how the local economy needs to innovate to recover from COVID-19. In addition connections need to be made between places, all places are different, but so much can be shared between design researchers to ensure best practice develops quickly and is widely shared.

PARTNERSHIPS

The brief for this review project asked whether UK centres of research excellence could be identified in the area of design-led place-based research. This is a challenging question to answer. If the primary objective of UKRI policy was to simultaneously increase UK R&D investment to 2.4%, whilst reducing regional inequalities in productivity, then partnerships between design researchers and place-based partners would need to be encouraged in all parts of the UK. There are knowledge exchange relationships between design researchers (across the spectrum of design disciplines) and place-based industries in all regions of the UK, supported by KTPs and Innovation Voucher schemes (as shown in Fig. 8).

There are then a smaller number of research groups that have established track records in securing research funding to develop broader design-led research projects. Largely speaking these projects are in the HEIs with a more developed research culture (as measured by the scale and quality of their research performance in the 2014 REF exercise). Most of the researchers exploring design as an approach to problem solving are returning their research findings into UoA 34 (REF, 2014), some of the key universities returning design research in this field include: Lancaster, Northumbria, Cardiff Metropolitan, University of the Arts London, Royal College of Art, Goldsmiths, Reading, Open University, Glasgow School of Art; UWE, Brunel, Brighton, Robert Gordon, Kingston, Loughborough, Sheffield Hallam, Edinburgh, Dundee and Manchester Metropolitan. Each of these research groups has particular areas of expertise, some have used design approaches to support innovation in healthcare others have focused on design-led policy development etc. Other Universities have research groups with specialist design research knowledge in the built environment, engineering, computing and management.

Rather than focusing on investment in one centre of excellence, encouraging design-led place-based research to support COVID-19 recovery would benefit from an investment in knowledge transfer and design research in 6-10 'demonstrator' projects located in different parts of the UK. In parallel some form of 'backbone organisation' should be established to encourage sharing between projects, development of best practice, tracking of impact and connections to the global.

There are many ways of structuring such an investment, further consultation would be needed with key stakeholders and potential funders to define options and then select the most effective route forward. Some guiding principles might be:

- To make a conscious decision to fund research projects in representative parts of the UK - demonstrating the role design-led, place-based research can play is supporting innovation within cities of different sizes, towns, villages, within rural & urban communities, coastal areas, places that are digitally connected, places that are not.
- To work at three interconnected levels. The initiative would require partners at a UK level (to support collective impact and the sharing of best practice), at a regional level / devolved government level (to connect to policy issues and funding which is devolved across the UK), and at a local place-based level (to ensure the investment was genuinely having an impact in the places of the UK). Fig. 19 provides an initial list of generic partners with a potential interest in researching the use of design as a driver of place-based innovation.
- To be internationally connected. All parts of the world will be interested in the role design can play at a place-based level in COVID-19 recovery. The UK needs to play its part in this global narrative, by contributing its experience of taking a design approach to embedding place-based innovation capacity to support recovery. By linking the local to the global some of the stigma of working with local research partners will be reduced for UK based design-researchers who are committed to research with international impact.

REFLECTION 24: Rather than focusing on investment in one centre of excellence, encouraging design-led place-based research would benefit from an investment in knowledge transfer and design research with place-based partners in all parts of the UK - but in parallel with investment in some form of backbone organisation.

Figure 19: Potential Design-led place-based research partners

Stakeholders who have an interest in design-led research that would develop the productivity of place-based economies. (Particularly in the context of COVID-19 recovery over the next 24-36 months)	Stakeholders who have an interest in design-led research that would develop place-based innovation capability for society, culture, public services & the environment. (Particularly in the context of COVID-19 recovery over the next 24-36 months)
UK Level • Organisations interested in the collective economic impact of design and success stories: *Design Council / NESTA / RSA / Design Museum / V&A / DBA / CIF / CIC / RIBA* • Funding bodies looking for return on their investment in research to develop the economy: *UKRI (Innovate/KTN, and AHRC, EPSRC, ESRC)* • UK Gov areas with a UK-wide & international policy influence, who should be interested in the UK's use of design *(BEIS, Dept International Trade, All-Party Parliamentary Design & Innovation Group)* • Industry with a high-level interest in design/innovation & UK productivity: Examples: *(Industry – Entrepreneurial Community): Dyson. (Consultancy): PA Consulting, Deloitte, PWC, EY. (Finance): HSBC, Santander, (Networks): IoD, CBI,* • National HEI bodies & networks representing interests in industry, place & design etc *NCUB, CHEAD, UPP Foundation*	**UK Level** • Organisations interested in the collective societal impact of design and success stories: *Design Council / NESTA / RSA / Design Museum / V&A / RIBA* • Funding bodies looking for return on their investment in research to develop society: (all *UKRI research councils)* • UK Gov Depts with UK-wide interests & international influence (DCMS, Home Office, DFID [FCDO from 9/20]) • International links (British Council, UN) • National bodies / trusts/ charities with a remit for society, public services, culture & environment at UK level, for example, *NHS, Rowntree Foundation, Paul Hamlyn Foundation* • Businesses with (potential) society/environment priority: *Examples, National Retailers, Energy Firms, Banks, Digital & Telecoms,*
Scottish Government, Welsh Government, Northern Island Assembly, London Assembly other devolved regions of England. Each of these geographical areas has devolved responsibilities (examples cited for each area of interest): • Government, Enterprise & the Economy: (SE, HIE, Entrepreneurial Scotland, Business Wales, 38 LEPs, Combined Authorities, Metro Mayors) • Higher Education: SFC, HEFCW, Research England, NI Dept for Economy • Organisations with design interest. Arts Council England, Creative Scotland, RIAS, AD&S, Design Wales, Design Commission for Wales etc, London Design Week. V&A Dundee	**Scottish Government, Welsh Government, Northern Island Assembly, London Assembly other devolved regions of England.** Each of these geographical areas has devolved responsibilities (examples cited for each area of interest): • Government, public services, health etc (Scottish examples: COSLA, NHS Scotland etc • The environment (SEPA, Zero Waste Scotland, Scottish Landfill Communities Fund and other UK regional equivalents) • Trusts/ charities with a remit for society, public services, culture & environment at regional level • Organisations with a design interest
Local – City, Town, Place-based Industry Network • Local Government (Council, departments etc) • Local industry trade bodies & networks (Chambers of Commerce) • Local businesses - or an industry cluster associated with place (textiles, food&drink etc) • Local HEIs	**Local – City, Town, Place-based** • Local Government (Councils etc) • Local social, cultural & community organisations & networks • Local NHS Boards/Trusts, charities etc. • Local cultural & community organisations • Local HEIs

REFLECTIONS 25: A future investment in design-led place-based research could be organised in partnership with a wide range of UK level, Regional & Devolved Administration level and local level partners. Careful choice of stakeholders and alignment of aims could unlock place-based funding and deliver collective impact.

RECOMMENDATIONS

This review shows that the myriad of different knowledge transfer mechanisms in place across different parts of the UK can unlock (largely) industry R&D investment in design, particularly at a place-based level, but there is little collective harvesting and sharing of insights and impact from this activity. Investment in responsive mode and strategic research programme funding has pushed the UK's position as a leader in using design as an approach to problem solving, but to date embedding design capability and capacity in place-based partners to promote regional innovation capacity has never been a strategic priority of programme funding. Although special interest research groups do meet to share findings from these projects, there is no real time collective harvesting and sharing of insights: Particularly, who is working with which place-based partners on design-led economy, society and environment projects? Using which design approaches? Exploring what research questions? With what long term anticipated benefits and impact? Unlocking what level of R&D investment from partners?

COVID-19 is a global challenge, this review, which ran in parallel with the UK's March to May COVID-19 lockdown, was highly cognisant of the disruption caused by the pandemic. With many demands for solutions to new problems, for engagement with communities and for economic innovation there is clearly much that design research expertise can contribute. There are immediate pragmatic challenges for the economy, society and the environment, many will need design-led place-based solutions driven by local context. There are also longer-term opportunities to use design approaches to help shift the way we collectively find solutions that work across places, systems and societies.

This review makes 4 recommendations, to the way UKRI and the Research Councils position design as a discipline and plan potential initiatives to support design-led, place-based research, all set within the context of COVID-19 recovery. Recommendations 3a, 3b and 4 are shown as a time-line in Fig. 21.

Recommendation 1: Rethinking how design research is positioned within UKRI

There is an opportunity to rethink the way design research is positioned within the work of UKRI, its Research Councils (AHRC, EPSRC & ESRC), Innovate and regional funding initiatives. Research associated with design disciplines is located across these portfolios: some of this research explores design in the context of the Creative Industries; some explores design's role as a catalyst for innovation within business and entrepreneurship; some explores particular design disciplines like engineering and service design which operate in industry sectors beyond the creative economy. Design's role as an approach to problem solving in all areas of society and the economy is also widely researched. It would be useful to explore the most effective way of positioning design research so that its potential is not weakened through this distributed approach. A useful way to frame this review would be to ask: How should all forms of design research be positioned to ensure it has the biggest possible impact on leveraging R&D investment across the UK economy, in all parts of the UK? (Fig. 20)

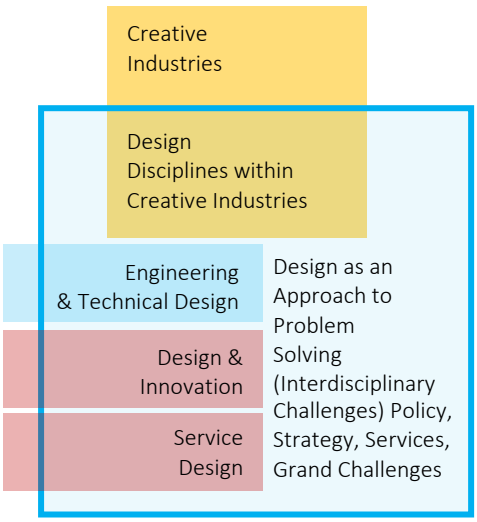


Figure 20: Design research in all these areas would bring benefits to place-based ecosystems

Recommendation 2: Connecting to national, regional and place-based stakeholders

As society works through the challenges of COVID-19 it will be important that investment in research delivers economic and social recovery in all parts of the UK. There is probably no one overall 'corporate' partner for such work, instead the initiative will require partnerships with a wide range of national, regional and place-based stakeholders (outlined in Fig. 19). A 2.4% commitment to R&D investment will accrue from across this portfolio by aligning aims of the programme with partner aims.

Recommendation 3: Investment in 6-10 'place-based' demonstrators

Recommendation 3a: Investment in design-led, place-based research to support economic innovation.
This would build on the wide range of established knowledge exchange programmes that already connect and embed design expertise from HEIs with the needs of the place-based economy (design within industry, design within the creative industries, design within entrepreneurship). Here these is an opportunity to use design research expertise to explore the COVID-19 challenges highlighted in Fig. 15 which are relevant to the economy of each demonstrator.

- Phase 1: Short-life Discovery Projects – A series of projects would be initiated in each demonstrator to explore place-based COVID-19 economic recovery. Each project would identify COVID-19 economic challenges and potential solutions (using design as an approach to problem solving). Phase 1 would develop a map of the design economy ecosystem of each demonstrator.
- Phase 2: Projects would be initiated to embed design capability within each demonstrator to deal with the economic challenges of COVID-19 using existing Knowledge Transfer project structures (Innovation Vouchers, KTPs etc). The impact of these investments would be carefully tracked and connected to the UK Design & Impact Network (UKDPI) described in recommendation 5.

Recommendation 3b: Investment in design-led, place-based research to support social, cultural, public sector and environmental innovation.
This would learn from some of the project structures and approaches that have been used within 'place-based' knowledge exchange projects, particularly how these structures have catalyzed R&D investment and how they have embedded capacity and capability.

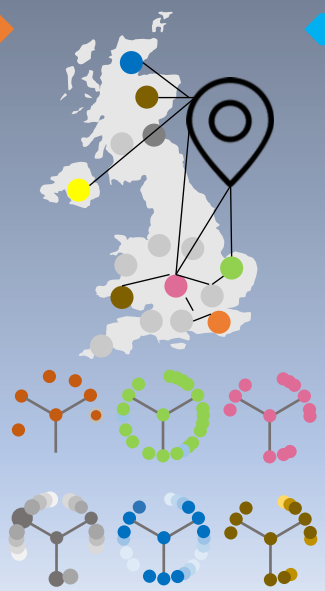
- Phase 1: Short-life Discovery Projects – A series of projects would be initiated in each demonstrator, to explore place-based COVID-19 social, cultural, public sector and environmental recovery (design within healthcare, design within social care, design within transport etc). Each project would identify COVID-19 challenges and potential solutions (using design as an approach to problem solving). Phase 1 would develop a map of the opportunities for using design within the social & environmental ecosystem of each demonstrator.
- Phase 2: Projects would be initiated to embed design capability to deal with the social, cultural, public sector and environmental challenges of COVID-19 learning from some of the existing knowledge transfer structures that help build place-based capability. The impact of these investments would be carefully tracked and connected to the UKDPI.

Recommendation 4: Establishing a UK Design & Place Impact (UKDPI) Network:
To work in parallel with Phase 1 and Phase 2, to build & share best practice across place-based projects, develop researcher skills, establish collective impact, connect place-based research to National & International initiatives. The UK Design & Place Impact (UKDPI) Network would be based on the Principles of Collective Impact. Kania & Kramer (2011) [1] argue that large-scale change requires broad hands-on cross-sector co-ordination of projects rather than simply initiating a portfolio of activity with loose reporting on project conclusions. The UK DPI Network would overcome the challenges associated with design-led, place-based innovation research identified in this review (page 20), undertaking the following roles:

- The UKDPI Network would build & share best practice in measuring the impact of embedding design capability, common approaches would be agreed, the UKDPI network would monitor collective impact throughout the life span of the Phase 1 & Phase 2 and provide regular updates to key stakeholders.
- The UKDPI Network would develop & share innovative approaches to design research demanded by the constraints of COVID-19
- The UKDPI Network would promote continuous communication, developing a shared vocabulary and trust between project stakeholders.
- The UKDPI network would develop a programme of mutually supportive activities, not requiring that all participants do the same thing, but by encouraging participants to undertake the specific activities at which they excel to supports the actions of others. This would involve sharing skills, collective problem solving, shared training, internships and secondments The UKDPI Network would curate and showcase examples of best practice and effective design approaches for local, regional, national & international audiences
- The UKDPI network would connect Local-to-national-to-global, ensuring place-based project activities, could be located as part of a programme of National impact with International significance.

Reference:
[1] Hanley, Brown & Kramer (2011) *Channeling Change: Making Collective Impact Work,* Stanford Innovation Review

Recommendations for **Design-led, place-based research to support the UK through the current & future challenges of COVID-19 (6-10 demonstrators)**

	Investment in Design-led, place-based research to support innovation in the economy.	Investment in a UK Design & Place Impact Network:	Investment in Design-led, place-based research to support social, cultural, public sector and environmental innovation.
2020 Jul Aug	• Initial buy-in sought from place-based partners • Development of Phase 1 programme specification	COVID-19 RECOVERY UK Design & Place Impact Network (UK DPI)*	• Initial buy-in sought from place-based partners • Development of Phase 1 programme specification
Sep Oct Nov Dec	**Phase 1: Short-life Discovery Projects – (Using design as an approach to problem solving)** Set within the context of COVID-19 recovery to help industry & start-ups identify design related challenges.	To work in parallel with Phase 1 and Phase 2, to build & share best practice across place-based projects, develop researcher skills, establish collective impact, connect place-based research to National & International initiatives.	**Phase 1: Short-life Discovery Projects – (Using design as an approach to problem solving)** Set within the context of COVID-19 recovery to help social, cultural, public sector & environment stakeholders identify design related challenges.
2021 2022	**Phase 2: Projects embedding design capability** to deal with the challenges of COVID-19 using existing UK & regional knowledge exchange project structures (Innovation Vouchers, KTPs etc) . Developing design capability of partners.		**Phase 2: Projects embedding design capability** to deal with the challenges of COVID-19, learning from some of the existing knowledge exchange structures that help build place-based capability – but focused on social, cultural, public sector & environment partner organisations.
2023	**industry & start-up innovation** 2.4% R&D investment	 Tracking impact:	**social, cultural, & environmental innovation** 2.4% R&D investment

29 Figure 21: Potential Design-led place-based research partners

Appendix 1: Glossary

AHRC	Arts & Humanities Research Council
CIC	Creative Industries Clusters (an AHRC funding programme)
DACRC	Design Against Crime Research Centre (University of the Arts London)
DHI	Digital Health Institute (one of SFC's Innovation Centres)
ECR	Early Career Researcher
ESRC	Economic & Social Research Council
EPSRC	Engineering & Physical Science Research Council
ERDF	European Regional Development Fund
EU	European Union
GCRF	Global Challenges Research Fund
GVA	Gross Value Added
HE	Higher Education
HEFCW	Higher Education Funding Council for Wales
HEI	Higher Education Institution
KEH	Knowledge Exchange Hubs
KTP	Knowledge Transfer Partnerships
NIDE	Northern Ireland Department of Education
QR	Quality-Related Research Funding
R&D	Research & Development
E3	Research England's Expanding Excellence in England funding programme
REF	Research Excellence Framework
SFC	Scottish Funding Council
SME	Small & Medium Sized Enterprise
TSB	Technology Strategy Board
PEC	The Creative Industries Policy & Evidence Centre
UKRI	UK Research & Innovation
UoA	Unit of Assessment (as used in REF exercises)

Appendix 2: Links to other AHRC Design Fellowship themes

An important part of the review was to make connections between this exploration of design-led place-based research and the four other AHRC Design Fellowship: Challenges of the Future themes being undertaken in parallel. Connections are shown below in Fig. 22.

	Design & Public Policy 	Design & Public Services 	Design & Mobility 	Design & AI & Data 
Suggestions for place-based design research 	**Design & place-based public policy** Research into designing policy with place-based partners, for example devolved & local government, local councils, community councils - across all aspects of policy.	**Design & place-based public services** Research into the design of services with place-based partners, for example local education authorities (England & Wales) social services (all areas of UK), NHS trusts (England) NHS Boards (Scotland).	**Design & place-based mobility** Research into design of mobility solutions with place-based partners, for example, local public & private transport, local councils, place-based transport infrastructure, mobility within rural and urban communities.	**Design & place-based AI & Data Research into** designing with local data with place-based partners, research into design enabled AI solutions supporting the needs of place.
Place and the COVID-19 recovery challenges	Research exploring how COVID-19 recovery influences place-based policy design, connecting to local communities and their priorities, supporting local economic recovery.	Research exploring how COVID-19 recovery impacts on the design of place-based public services with the need to accommodate new behaviours, shifts to online service delivery, designed-in resilience etc	Research exploring how COVID-19 recovery impacts on the design of place-based mobility solutions, accommodating shifts in travel habits, local environmental challenges, working patterns & needs, supporting local economic recovery.	Research exploring how COVID-19 recovery creates the need to design for new approaches to place-based data, collection, analysis & visualisation & local engagement with AI to support economic recovery, community building & resilience.

Figure 22: Connections between design-led, place-based research and the four other Design Fellowship Themes: Public Policy, Public Services, Mobility and AI & Data.

Acknowledgements

This review was informed by a literature review and a survey of 40 design researchers located in 25 different Universities across the UK. Through a structured questionnaire participants were asked to describe their experiences undertaking place-based design research. Responses were explored in more detail through a series of follow-up interviews. The author would like to thank design researchers in the following institutions for very generously taking the time to engage with the research: University of the Highlands & Islands, Robert Gordon University, Abertay University, University of Dundee, Glasgow School of Art, University of Strathclyde, University of Edinburgh, Heriot-Watt University, University of Newcastle, Northumbria University, University of Sunderland, University of Lancaster, University of Leeds, Loughborough University, Open University, University of Cambridge, Kingston University London, Royal College of Art, Imperial College, University of Arts London, Goldsmiths College, University of Brighton, University of West of England, Cardiff Metropolitan University and Brunel University.

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About the author

Professor Tom Inns is Visiting Professor at the Department of Design, Manufacturing & Engineering Management at the University of Strathclyde, Glasgow and Founder and Director of Cofink a consultancy using design approaches to support interdisciplinary collaboration in Universities, the NHS and industry, through face-to-face and online workshops.

He has 30 years experience in strategic leadership, developing cutting-edge design programmes, research initiatives and international partnerships, as Director of Glasgow School of Art, Dean of Duncan of Jordanstone College of Art & Design, Director of Research for the College of Art Science & Engineering at the University of Dundee, Initiative Director of the AHRC/EPSRC Designing for the 21st Century Programme and Director of the Design Research Centre, Brunel University.

Tom studied Engineering at the University of Bristol, worked for Rolls Royce PLC, studied Design at the Royal College of Art & Imperial College, London and completed his PhD exploring Design-led innovation in small companies at Brunel University.

"… it is necessary to sound more than a note, a massive sonic blast, of caution. There is no cookie cutter, off-the-shelf solution to forming a successful design sector. Each place and region will have its own talents, strengths, and weaknesses, its own 'beacons' and qualities that are specific to it"

Bristol & Bath by Design, Final report **November 2016**

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Glasgow