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# Design Capital: *Unearthing the Design Capabilities of Community Groups*

Katerina Alexiou, Vera Hale, and Theodore Zamenopoulos

*The Open University, Milton Keynes, UK*

The paper focusses on exploring the design capabilities of community groups. It formulates a framework which synthesises Amartya's Sen capability approach with asset-based approaches to community development, to propose an original view of design capability as a collective attribute, pertaining to the interaction between individual skills and knowledge and the socio-cultural environment within which they are developed. The paper further uses the seven capitals framework as an analytical tool to explore the actual design capabilities of community/citizen groups as they unfold in the context of a design project, and from their own perspectives. The analysis reveals a new type of capital, *design capital*, which refers to the collective command of converting assets into new constructs that enhance a community's capabilities to achieve what they value to do or be. The proposed capability perspective of design frames design practice in relation to power and freedom, placing emphasis on *valuation* as a driver and outcome of the design process, and positioning professional designers as *enablers* acting within a network of human, social, cultural, economic, political, and environmental assets.

**Keywords** – Co-design, Community, Assets, Capability Approach.

**Relevance to Design Practice** – The paper provides a distinct perspective of design/design practice, which places emphasis not on (expert) skills but on the collective capabilities held by a network of people and resources. Design practice is thus re-focused on developing the conditions for this network to mobilise and enhance its own capabilities.

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## Introduction

There is an increased awareness of the value of creative civic leadership in developing innovations to deal with complex social issues and create sustainable local places (Chrislip & O'Malley, 2013; Seyfang & Smith, 2007; Purdue, 2000). In this context, supporting and empowering citizens and local communities to participate in design projects and lead social innovation is becoming more and more important (Ehn et al., 2014; Hargreaves & Hartley, 2016; Manzini, 2015). The paper is driven by the motivation to understand and ultimately create the conditions for unlocking and enhancing the capabilities of community groups to lead design tasks.

Community-led design is a term used particularly in the domains of planning and architecture to denote cases where local people directly engage in or indeed lead the design of their own environment. The term has its roots in initiatives originally developed under names such as community design or participatory design and which emerged as part of the civil rights and democratic development movements in the 1960s and 1970s (see Blundell Jones et al., 2005; Jenkins & Forsyth, 2010; Sanoff, 1999, 2011; Toker, 2007; Wates & Kneivitt, 1987; Zamenopoulos & Alexiou, 2018). Although perceptions and definitions of community-led design vary substantially (Alexiou et al., 2013), the term is ideally used to characterise design projects that are initiated and owned by a self-defined community, a group of people who share an interest in a place. These groups may partake in or oppose mainstream

frameworks and design practices in the built environment. Although design experts are indeed involved in those projects, the group of people who steer them are fundamentally non-expert designers (i.e., not trained professionally as designers).

To date, little research has focussed on investigating what makes a group of non-experts capable of defining and carrying out design tasks. Our aim is to explore a notion of design capability that applies to a group of people working together in a design project, and who may not be formally trained as designers. To do this, we build on the capability approach to human development (Nussbaum, 2000; Sen, 1999), which relates the notion of capability to one's human, cognitive, social, and political conditions and their freedom to pursue their own objectives.

More specifically, the purpose of this paper is two-fold: to develop a theoretical framework for approaching design from a capability perspective; and to use this framework to explore what enables or hinders the capabilities of community groups to lead design projects.

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\*Corresponding Author: katerina.alexiou@open.ac.uk

This study draws from a research project that aimed to investigate community-led design in the wild by working with groups who undertake projects to revive, adapt, or renovate their historic places of worship to create more sustainable solutions and better serve their communities. The paper draws specifically from work with eight groups looking after historic churches.

The paper is organised as follows. First, we critically examine the capability approach and how design literature has looked at design from a capability perspective and progress by formulating a theoretical framework for approaching design capability. Second, we discuss the context and methodological approach of the paper. Finally, we present specific insights about the design capabilities of community groups and conclude with a summary and discussion.

## The Capability Approach

The capability approach is a normative theoretical approach that was developed in order to offer a framework for human, economic and social development and for assessing social justice. It aims to shift attention from economic and utilitarian measurements and outputs, to the actual capabilities people have and their freedom to promote their own ends and *lead the kind of lives they value* (Sen, 1999). According to Nussbaum (2000), “the central question asked by the capabilities approach is not ‘How satisfied is Vasanti?’ or even ‘How much in the way of resources is she able to command?’. It is instead ‘What is Vasanti actually able to do and be?’” (p. 71). In defining capability, Sen uses the notion of basket of goods, or primary goods, that a person holds, which are thought to be put into action or *converted* to promote one’s objectives, under the influence of personal and social circumstances. Sen also uses the notion of functionings, which are the things that a person values doing or being, such as meeting people, moving from one place to another or being safe and warm. The final crucial notion is that of a capability set, which is the set of alternative combinations of functionings that are feasible to achieve and from which the person is free to choose. Sen and Nussbaum agree that the focus should be on capability, not functioning, and the opportunities and liberties that a person has to achieve their functionings. One of the key differences between Nussbaum’s and Sen’s approach, is that Nussbaum proposes a central list of human capabilities, serving as a basic minimum that should be universally respected, while Sen perceives that rather than being universal, such a capability list would depend on the context and would be defined through processes of public discussion and democracy (Robeyns, 2005).

**Katerina Alexiou** is Senior Lecturer in Design. She has published articles in design cognition, collaboration, creativity and complexity. Her current research is focused on co-design and co-production with civil society organisations and communities engaged in place-making and creative civic action.

**Vera Hale** is Lecturer in Design at the Open University. Her interests are concentrated around the critical pedagogies of enabling approaches for co-design. Her thesis is focused on the intersection of Empowerment, Transformation, and Enabling within community participatory practices.

**Theodore Zamenopoulos** is Professor of Citizen-led Design. He is a professional architect with expertise in design cognition, citizen-led design, and places that grow (design) capabilities. He has been involved in numerous research projects on empowerment and civic leadership in design.

Both Sen and Nussbaum explicitly claim that their approach focusses on the individual, considering the freedom of individuals (and the expansion of their capabilities to achieve their aspirations) as the basic building blocks for a just society. However, they also recognise the two-way relationship between individual agency and social arrangements or structures, with agency being crucial for changing social rules and values, and social structures being essential in expanding (or limiting) individual freedoms. Furthermore, “individual *conceptions* (...) depend on social associations—particularly on the interactive formation of public perceptions and on collaborative comprehension of problems and remedies” (Sen, 1999, p. 31, emphasis added). In the paper we are also interested in a notion of *collective capabilities* which the approach affords. The notion of collective capabilities is not widely accepted, even by Sen himself, as collective capabilities are valued differently by individuals and they can compromise or indeed be detrimental for individual capabilities (Alkire, 2008; Volkert, 2013). However, the notion is important especially for understanding collective action and collective agency (Ibrahim, 2006).

The capability approach has been picked up by design researchers, particularly as an ethical standpoint or set of principles for promoting design practices and processes that are socially minded (Boylston, 2019; Dong, 2008; Dong et al., 2012; Oosterlaken, 2009; Oosterlaken & van den Hoven, 2012). The literature positions design as an important aspect within the capability approach: for example, Oosterlaken (2009) reasons about the important function that technology and engineering products play in enhancing or limiting someone’s capabilities, while Nichols and Dong (2012) argue that design *in the sense of envisaging and realizing a valued material world* is a central capability, a *freedom* with both intrinsic and instrumental value. Most relevant to the question of exploring the notion of design capability per se is the work of Dong (2008) and Dong et al. (2012).

Dong (2008) focusses on the question “If I wanted to engage in design, what set of capabilities would I need?” (p. 79). Drawing on Nussbaum’s approach, he offers a “capability set for design as the foundation for ethical principles in design policy” (p. 82), and ties it to the 10<sup>th</sup> item in Nussbaum’s list which focusses on the capability to control one’s own environment in political and material terms. His list consists of 6 capabilities: information, knowledge, abstraction, evaluation, participation, and authority. Information capability relates to availability, accessibility and accuracy of information available, knowledge refers to conceptual and technical understanding of design practice, abstraction refers to understanding the different levels of design work, evaluation refers to the capacity to validate design solutions during and after the design process, participation refers to being part of the design process at all stages, and authority relates to the power to influence design work. Dong et al. (2012) propose a measurement framework (the Design Capability Report), which focusses on evaluating whether policies support or implement these capabilities by exploring the preconditions that scaffold design capability, the operational conditions that transform capabilities to functionings, as well as the degree to which choice exists and is used. Pre-conditions include internal

factors (such as cognitive skills) and external conditions (such as investment in vehicles that increase awareness and attitudes towards design), while operational conditions include actions that support and materialise design capabilities (such as investment in education or provisions for inclusive participation).

From this review, it is clear that the capability approach is a suitable lens through which to approach community-led design. Existing literature offers arguments about the importance of design and technology in development, defines (new) principles for design practice, new values and roles for designers (Boylston, 2019; Frediani & Boano, 2012; Oosterlaken, 2009) and provides policy assessment and policy recommendations (Dong et al., 2012). There is a clear gap in exploring the actual design capabilities of *non-expert designers/citizens* as they unfold within the confines of *a design project in action*, and *from the perspectives of those citizens*.

## Viewing Design through A Capability Lens

In this study, we approach design capability in relation to the opportunities of people to access resources (knowledge, tools, social, or technical infrastructures) and the ability to use these resources to carry out design tasks. In other words, we see design capability as a potential or power that is shaped by the interaction between individual characteristics (skills, values, access to resources) and environmental parameters that influence (enhance and constrain) the formation and access to these opportunities and resources (Alexiou & Zamenopoulos, 2008; Sosa & Gero, 2005).

We share Dong's perspective about the value of the capability approach as a lens through which to approach the capabilities of citizens to participate in design. However, rather than taking a stance on what a list of design capabilities (should) consist in to start with, our focus is on exploring how design capabilities are unearthed and come to fruition in practice, in the context of a design task or project. In this section, we will start with a general exposition of our capability approach to design and then progress with its specific framing which draws on asset-based community development approaches.

## A Capability Approach to Design

We start with a broad conception of design capability in relation to the opportunities and potential of people to access resources (knowledge, tools, social, or technical infrastructures) and to mobilise and convert these resources into constructs that produce something of value. This conception embraces the typical view of design in design research which, crudely stated, involves making sense of a situation, imagining valued futures, and developing constructs (e.g., artefacts, activities, strategies) that would realise these futures. It also brings to the fore the notion of agency (and power) of people to identify what matters to them and lead the conversion of resources into valued outcomes. In our preoccupation with community-led design, we find it important to include a notion of leadership in the definition (as opposed to participation), to emphasise the focus on (self-)defined community objectives and on community ownership of the process, irrespective of whether the design outcome is eventually specified or materialised by an expert designer. In other words, design capability encompasses a notion of (collective) agency.

To start with, following Sen, we see capability in relation to *the potential to exercise choice*, and to *act*, based on what is available as a resource and what is possible to realise. Capability can be defined in relation to the potential of an agent (or group of agents) to achieve those functionings that they consider of value and that they have the freedom to choose to pursue at any given moment by utilising or converting items in the available basket of goods. Endogenous and exogenous constraints and circumstances (physio-cognitive and socio-political factors) influence both the constitution and availability of/access to goods and the ability to put them in action.

Figure 1 shows a static representation of some the key notions underlying the suggested capability view of design: the focus of design is the conversion of a network of goods into desired valued functionings (achievements). Let us clarify these notions further.

First, it is important in this conceptualisation to reflect on the notion of *conversion*. To effectively convey a notion of (design) agency, we need to go beyond a general interpretation of conversion as *use* of existing resources to achieve a valued

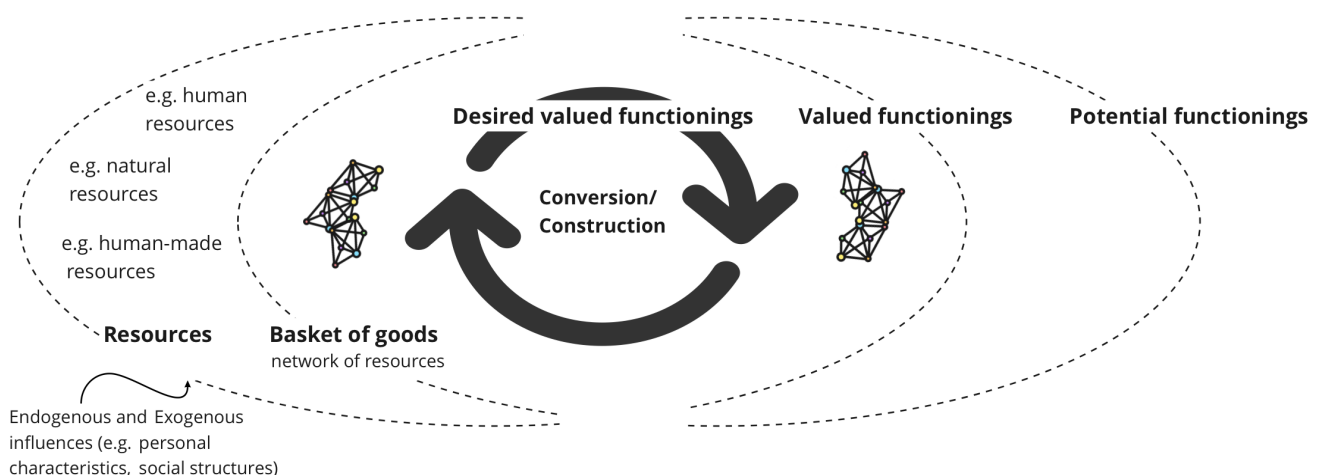


Figure 1. Key notions underlying the proposed capability approach to design.

functioning. We require an active notion which involves unearthing relevant resources and goods (knowledge, skills, funds, social connections, etc.) and then developing, mobilising, and connecting them to achieve valued functionings.

Second, we introduce the idea that design capability relates to the potential to *devise constructs* that embody or realise the conversion of resources to valued functionings. Take the example of a group who want to create a community hub. The community hub is a construct that focusses attention to those skills, resources, etc., available to the group that need to be developed, mobilised and connected together to achieve objectives such as community cohesion, provision of local services, etc. The construct is in a sense both a *good* and a valued functioning; or in other words, it serves to link the two together.

Third, we introduce the notion of *desired* functionings. While an individual or group may have a number of valued functionings, there is a combination of functionings that drive design activity, which not necessarily covers all valued functionings. The potential to frame possible desired functionings, that is to identify and prioritise desired valued ways of being and doing, is an important part of design capability. Sen (1999) distinguishes desires from values highlighting that valuation is a reflective activity, whilst desiring need not be. Sen's focus on value comes from a preoccupation to refute an utilitarian approach to freedom and wellbeing, and to focus not on how satisfied or *happy* one is with the resources they have, but on what they are actually able to be and do, their actual opportunities. We agree with Sen's view of the importance of this valuation process. When we refer to desired functionings here we simply imply a focus on valued functionings that become the drivers or objectives to pursue in the context of a design project/process. Design capability involves therefore the potential to actively frame both the basket of available goods and the valued functionings that the individual and/or group intent to pursue (desired functionings). As is generally accepted in design literature, this framing is an iterative process, where the goods/available resources frame the desired functionings and vice versa.

Finally, as in this paper the focus is on design capability as a *collective property*, it is important to clarify that conversions are conceptualised as interacting *networks of goods* which include resources, skills and knowledge that are distributed among a group of people and may often lie latent or unrecognised. Similarly, the *set* of desired valued functionings is complex and may include ideas that are undisclosed or conflicting. Design capability therefore involves reflecting on and negotiating the constitution of the available basket of goods, the desired functionings and the values associated with them. Collective valuation is therefore applied in defining both the capability set and the basket of goods.

## **An Asset-Based View of Design Capability**

Starting with this framework we further turn to asset-based approaches in order to delve deeper into the notion of basket of goods and their relationship to valued functionings. By asset-based approaches we refer to a variety of practices which take a positive stance towards development: rather than focusing on limitations,

challenges, or deficiencies, they focus on unearthing and mobilising what is already there, building on existing strengths (Emery et al., 2006; Fey et al., 2006; Garven et al., 2016; Kretzmann et al., 2005; Kretzmann & McKnight, 1996; Mathie & Cunningham, 2003; O'Leary et al., 2011). These existing valued resources are called assets. Assets can be tangible goods, such as artefacts, buildings, spaces, or infrastructures but also intangible things such as knowledge, skills, emotions, culture, and social relationships (Kretzmann et al., 2005).

Asset-based approaches have been developed mainly empirically and mainly in the context of public health, community development, and social services, by practitioners who experienced the failures of *deficiency-based* approaches which eventually perpetuate a cycle of dependency and fail to empower people to lead their own lives (Kretzmann & McKnight, 1996). Asset-based approaches are only starting to receive attention in the design literature, mainly in relation to the development and use of methods for supporting co-design (Alexiou et al., 2016; Lam et al., 2017).

There are a number of theoretical and methodological reasons for using an asset-based perspective. First, what is relevant to the notion of capability is that assets are considered to be bearers of value, not only in the sense that they can be used to obtain something or fulfil a need, but also because they give people the capacity to act, to engage more meaningfully with the world, and to change it (Bebbington, 1999). In the context of community development, the focus is on creating the conditions for people to unearth and articulate their ideas about their assets, and use these as a basis for producing change. According to Mathie and Cunningham (2003), the asset-based community development approach *is not only people-centred, but is a citizen-driven approach*, it encourages a *proactive role for the citizen*. Assets are therefore both means (goods) and ends (desired outcomes) in a design or development process, and offer a useful concept through which to approach design capability, consistent with Sen's ideas. Additionally, thinking about assets, practically facilitates thinking about value so the process of selection of assets to use and transform in the design process embodies a valuation process.

Second, asset-based approaches provide a framework that allows us to differentiate various types of resources that may influence individual and collective design capabilities. This makes it possible to reveal and study interactions across resources, e.g., the interaction between *human resources*, such as knowledge and skills, with *cultural resources*, such as cultural practices. These interactions are crucial for understanding more complex conditions that shape design capabilities. Within this context, of particular interest are categories of assets that allow us to study capability both at an individual and a community level, as a property of a social group. As O'Leary et al. (2011) discuss, assets can be individual (e.g., skills, knowledge) or can be held in relationship (e.g., networks, relationships) or indeed collectively by members of a community (e.g., stories, cultures, norms).

In sum, assets are seen as tools for making sense and enabling conversations about valued ways of living, as well as a tool for facilitating thinking about the nature of resources and the underlying interactions that shape design capabilities.

In this paper we draw specifically on the Community Capitals Framework (CCF) developed by Emery et al. (2006) and Fey et al. (2006). The terms assets and capital are generally used interchangeably but in CCF an asset becomes capital *when it is invested*, so the term capital denotes assets used in action. The CCF includes 7 categories or types of capitals: Natural, Built, Human, Cultural, Social, Financial, and Political. There are different interpretations of those categories, depending on the domain of application. We consider the 7 types of capitals as follows: Natural capital denotes assets that relate to a location, including natural resources and features as well as environmental characteristics of a place or landscape. Built capital refers to man-made infrastructures, such as roads, buildings as well as products and technologies. Human capital refers to the skills and abilities of people, including talents, emotions, knowledge or expertise. Cultural capital “reflects the way people ‘know the world’ and how to act within it” (Emery et al., 2006, p. 5) and includes attitudes, customs, values and morals as well as cultural establishments and events. Social capital refers to the relationships and connections among people, which includes bonding capital (relationships within a close-knit group) and bridging capital (relationships, partnerships, and collaborations with other groups and organisations; after Woolcock & Narayan, 2000). Financial capital refers to monetary resources and finally, political capital refers to access to power and power brokers and the ability to influence decisions and the distribution and access to resources at various levels (within an institution or at local, regional, national level). All the different types of capital may be individual (what individuals bring in a community setting) or collective. For example, human capital includes individual characteristics (such as leadership) and collective characteristics (such as educational attainment). Figure 2 reframes Figure 1 in relation to the CCF.

In sum, the term assets helps focus attention on what people perceive to have (basket of goods) that is valuable to them, and what they value to achieve through a design process. Thus, it helps incorporate a valuation process into both the means and ends of design activity. The CCF in specific, is used as an analytical tool, to identify different types of resources and goods and how they are put to action in a design process, without predefining a set of

specific capabilities in a normative way (i.e., the capitals *do not* define what people *should* have or be able to do). Our question is then to explore how the different capitals or types of assets are mobilised and transformed during the design process and what are conditions that enable or hinder communities to lead and carry out a design task or project.

## The Methodological Approach of This Study

The methodological approach of this study follows the traditions of research through design, co-design (Zamenopoulos & Alexiou, 2018) and participatory action research (Wakeford & Sanchez Rodriguez, 2018), whereby knowledge is developed through (design) action and through inviting research *subjects* to become *participants* in research. Our effort was to put participants in a real design situation enabling them to progress with their design project while exploring their design capabilities and how they unfold.

The study was carried out as part of a broader research project aiming to explore and evaluate a spectrum of resources (i.e., strategies and materials) used to develop community leadership in design. The project focussed in groups who undertake projects to revive, adapt or renovate their historic places of worship to create more sustainable solutions and better serve their communities. There are 14,800 listed places of worship in England which are valued for their special historic, archaeological, architectural, and artistic characteristics, but also for their role and potential to act as community hubs and deliver much needed local services (Government and Church of England, 2009).

Government, advisory bodies and funders endorse, and often require, the engagement of the wider community in the design process, and the co-production of new uses and solutions, in order to ensure the sustainability of those places in the long term. However, this complex process is mostly in the hands of small groups of volunteers who look after those buildings and who do not have professional experience in managing design projects. Therefore, they constitute prime examples of the potential and difficulties surrounding community-led design.

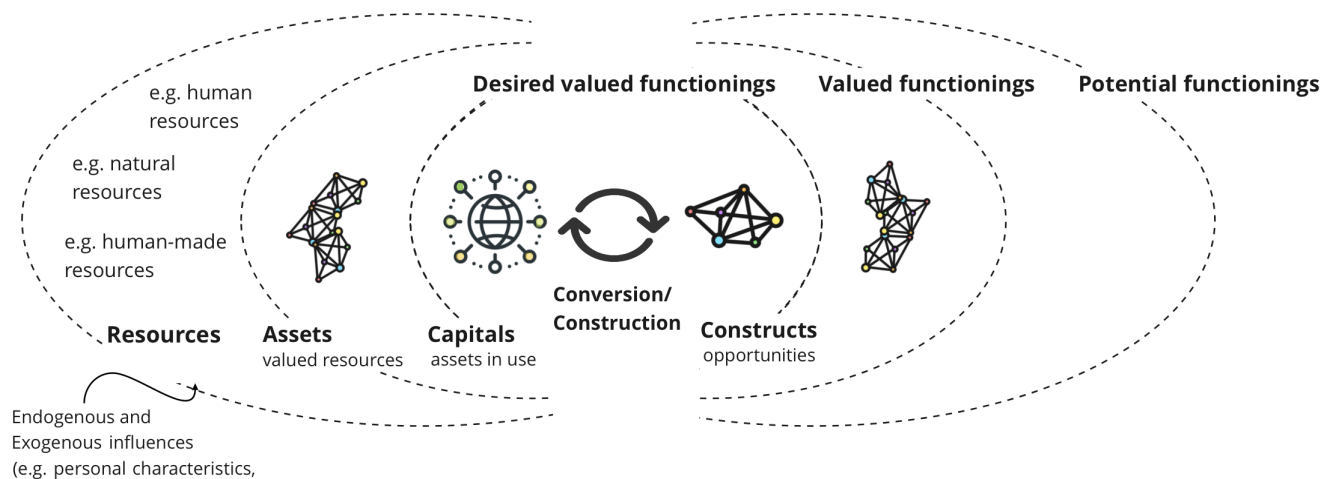


Figure 2. The proposed asset-based view of design capability.

The paper draws specifically on work with eight groups looking after historic churches in urban, suburban and rural settings, focused at investigating the self-perceived challenges and assets of those communities and understanding what enables or hinders their ability to instigate and partake in a design project.

## Research Design

To explore our research question, we designed a Challenges-Assets-Opportunities method delivered as a workshop that brings different groups together. The method aimed both to enable participants to progress with their thinking by unlocking their capabilities, and to help elicit and capture the conditions that enable or inhibit these capabilities. More specifically the method was used to explore a) how different types of assets and challenges are unearthed and reconfigured in order to create opportunities for design (i.e., ideas/constructs for fulfilling desired functionings) and b) what enables or hinders communities to do this. The method used the New IDEAS Hexagon tool developed by Imagination Lancaster, which consists of different coloured hexagon cards that can be connected at their corners to record associations and connections. Three different colours were used to represent the three themes: red for challenges, green for assets and blue opportunities. In addition to the hexagon cards, the method uses a set of stickers that act as prompts to help participants think about different types of assets (or lack of them) and make them visually explicit: people & connections (which includes skills and knowledge as well as relationships with other groups and organisations), resources & tools (which includes spaces, infrastructures, natural and financial resources), and values & emotions (Figure 3). Values & emotions was formulated specifically to help draw attention to and investigate people's motivations and underlying principles and perceptions of themselves and their community.

The participants came from eight groups looking after historic churches in urban, suburban, and rural settings (three groups had one representative and five groups had two or three

representatives). The eight groups were organised together in four pairs, each pair sat at a different table. First, each participant had a few minutes to think individually about challenges and assets and record them on the cards. Then one of the groups on each table started the exercise by discussing their challenges and placing them on the table. Participants were asked to discuss the roots (reasons and contributing circumstances) to these challenges and make connections between them. Following this, the groups were asked to record their assets and their relationships, and finally to imagine new opportunities that exist to utilise certain assets to address the perceived challenges. Participants had the same amount of time in each stage to discuss, generate and record first challenges, then assets, and finally opportunities. In each stage, participants were asked to think about the relationships between components (their challenges and their assets) and to create a tapestry to capture those relations. While one group carried out the exercise, the other group acted as a critical friend helping them to externalise and clarify their thoughts, often providing advice and inspiration. Besides the critical friends, each table had at least one facilitator and a (heritage) professional sharing their knowledge and experiences. The exercise had two rounds, and groups rotated around the tables so that every group had the opportunity to share their project as well as act as critical friend to another.

Overall, the proposed method was developed in order to create participant-led representations of assets and challenges and how they become converted into valued opportunities. We hypothesised that, through this exercise, participants will be able to interrogate their challenges and shift their attention from thinking about problems and barriers, to thinking about existing capabilities, and how to mobilise them to meet their potential. Referring back to our proposed framework, the research set-up allowed us to unearth participants' perceptions about their basket of goods (their assets) and the challenges or barriers that affect these assets; but also their desired valued functionings and how assets can be connected together and converted in order to meet those functionings.



Figure 3. The tools used in the challenges-assets-opportunities workshop.

It is useful here to also connect this discussion back to the context of this study. The groups who joined the workshop were considering ways to develop their historic churches so that they can fulfil aspirations such as creating a comfortable space for the worshippers, delivering local services (such as foodbanks, health, and wellbeing programs), or providing cultural events. These are the things they wanted to be able to do or be, their desired functionings.

Based on the suggested framework, the notion of design capability has been approached as a potential that is associated with a network of human, social, cultural, financial but also built and natural assets. The different types of assets shape the potential of those groups to frame and achieve their desired valued functionings. For instance, discussions about the layout of a place of worship or about the facilities of a place of worship, are not only about what the building (a designed object) can do, but also about what the community is able to do or be. Capability is approached as a notion that resides in networks of different types of human and non-human assets/resources.

Through the process, participants were asked to consider the things they value as a collective (their assets/goods) and the things that compromise their capability to convert these assets to meet their desired functionings (challenges). For example, the building (and its architectural or heritage characteristics) can be seen as a resource for achieving what they want to do, but at the same time the layout of a church or its lack of facilities, may also present challenges that compromise this conversion (e.g., the lack of toilets precludes the option to run cultural events).

Through the process, participants were also able to create new opportunities: new framings of their desired functionings and new ways to convert assets to those functionings, i.e., new constructs (e.g., create an exhibition of local history). The analysis focusses on understanding what types of challenges and assets were common, but more importantly how these were connected and mobilized in the process of design, and what the barriers were, i.e., what compromised what they can actually be and do.

## Data Coding

Data from the tapestries that the groups created were combined with the transcripts of the conversations around the tables and were entered for analysis in nVivo. This initial preparation of the data involved a) defining a set of nodes by identifying the challenges, assets and opportunities in the transcripts and cross-referencing them with the hexagon cards and b) defining a set of connections among nodes (i.e., a set of links). The data were essentially pre-coded by the participants themselves and the research team transcribed and organised them.

More specifically, for the definition of the nodes, we started from the set of unique challenges, assets and opportunities (corresponding to the hexagon cards) and we assigned a weight on each node which reflected the number of mentions of each particular challenge, asset or opportunity. This was done so that we have a more accurate representation of nodes based on the weight/importance each card had in the conversation. Subsequently the identified nodes were coded (categorised) using

the CCF as discussed previously. Three members of the research team coded the data independently and then met to review and develop an agreed set of codes.

In reviewing the codes, the team discovered a set of nodes which were not readily categorised under one of the seven capitals. Examples included *broad understanding of the building*, *agreed clear goals*, *competing priorities*. These in essence had specifically to do with the design process and tasks such as negotiating diverse needs and objectives for their design project, clarifying a community vision or planning actions. In other words, they referred to the conversion of assets into constructs. These nodes could not be categorised as human or cultural capital as they were defined by participants at the level of the group but also did not refer to shared cultural attitudes or values. We therefore decided to code them under a separate category: *design capital*. See Table 1 for the coding scheme.

## Data Analysis and Results

Table 2 summarises the size (number of mentions) of the challenges, assets and opportunities nodes (columns) with respect to the eight categories of capitals (rows). Although we see different distributions of capitals in each column, overall, built capital is the most mentioned capital in the conversations (27%) followed by cultural capital (23%). The two together constitute half of the reported capitals. This is expected as it reflects the context of the study, which is the development of design interventions for faith buildings.

The focus of our analysis in this section is to garner participants' perceptions of their assets (basket of goods), the challenges that affect those assets and how these become transformed into opportunities—potential constructs that can realise their valued functionings. We focus in the first instance on node sizes over 10%.

### Challenges

We start by considering the challenges, the things that limit and constrain the availability of assets (Figure 4). The majority of challenges were associated with the building itself (33%), and referred to limitations of the layout design of a church, the lack of facilities (such as accessible toilets), the state of repair of the fabric, etc. The second most mentioned type of challenge was cultural (16%, half the size of built challenges). Cultural challenges referred to issues such as dissonance with the surrounding community or lack of communication with local people; concerns around maintaining the church's mission when congregations dwindle; and lack of understanding of how to utilise heritage to increase worship. Following cultural challenges, were financial (13%), political (11%), and design challenges (10%). Financial and political challenges were both associated with the specific context of maintaining historic places of worship: lack of funding or fundraising experience, but also difficulties in navigating the legislative and planning regulations (such as listing constraints or conflicting expectations by the relevant authorities). Design challenges, as mentioned, related specifically to limitations in the design process, such as creating a *statement of significance*, which involves understanding the building and its users and beneficiaries, and creating a rationale for change.

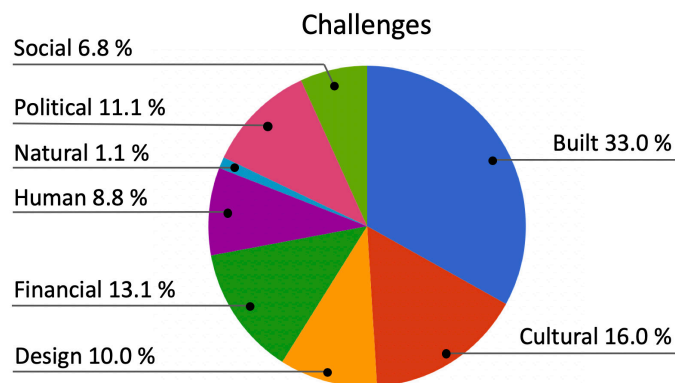


**Table 1. The coding scheme applied, corresponding to different capitals.**

Nodes types/capitals	
<b>Built Capital</b>	<ul style="list-style-type: none"> <li>Challenges and assets relating to the historic building, its layout, size, architectural characteristics, facilities, fabric condition, etc.</li> <li>Example node: "Church in the main high street - good position"</li> </ul>
<b>Natural Capital</b>	<ul style="list-style-type: none"> <li>Features of the surrounding landscape and associated open spaces or greenery</li> <li>Example node: "Lack of garden space"</li> </ul>
<b>Financial Capital</b>	<ul style="list-style-type: none"> <li>Funding available to carry out a refurbishment/renovation project and ability to access it</li> <li>Example node: "Lack of financial resources"</li> </ul>
<b>Human Capital</b>	<ul style="list-style-type: none"> <li>Skills and roles of the clergy, volunteers, and other people involved in the development of the project</li> <li>Example node: "A few individuals with very thorough knowledge of the existing building"</li> </ul>
<b>Cultural Capital</b>	<ul style="list-style-type: none"> <li>Shared values and beliefs of the faith community, practices associated with the place (rituals and cultural activities), but also shared values and perceptions of its heritage</li> <li>Example node: "Place within community - a much loved church building"</li> </ul>
<b>Social Capital</b>	<ul style="list-style-type: none"> <li>Connections and collaborations with the local community (such as schools, voluntary organisations, other churches or businesses), connections with local authorities and dioceses, as well as partnerships with national organisations</li> <li>Example node: "Links with other denominations"</li> </ul>
<b>Political Capital</b>	<ul style="list-style-type: none"> <li>Organisational structures, rules and regulations applicable to the context (planning law, regulations for historic places of worship, etc.) but also ability to access and influence decision making</li> <li>Example node: "Local authorities reluctant to accept changes"</li> </ul>
<b>Design Capital</b>	<ul style="list-style-type: none"> <li>Challenges and assets associated with the design process and tasks such as negotiating diverse needs and objectives, clarifying a community vision or planning actions</li> <li>Example node: "Conflicting requirements of partners using building, e.g., food bank, gardeners, radio station"</li> </ul>

**Table 2. The magnitude of challenges, assets and opportunities nodes against the eight categories of capitals.**

Nodes types/capitals	Challenges	Assets	Opportunities	Total	%
1. Built Capital	116	50	11	177	27%
2. Natural Capital	4	1	0	5	1%
3. Financial Capital	46	21	5	72	11%
4. Human Capital	31	26	6	63	10%
5. Cultural Capital	56	73	24	153	23%
6. Social Capital	24	52	30	106	16%
7. Political Capital	39	8	0	47	7%
8. Design Capital	35	4	1	40	6%
<b>Total</b>	<b>351</b>	<b>235</b>	<b>77</b>	<b>663</b>	<b>100%</b>
<b>%</b>	<b>53%</b>	<b>35%</b>	<b>12%</b>	<b>100%</b>	



**Figure 4. Pie chart showing the percentages of different types of challenges.**

## Assets

Moving on to assets (the basket of available goods; Figure 5) we see that the majority of assets identified were cultural (31%), followed by social (22.1%), and built assets (21.3%). Cultural assets referred to three key cultural facets of the place: the facets of community, faith and heritage. Participants referred to the existence of a strong feeling of community linked to the building, comprising of the worshipping community, but also the wider community who perceive the building as part of their identity. When participants referred to faith, they tended to talk about a sense of shared (Christian and moral) values underlying and fuelling their actions, their style of worship, mission and aspirations for change. Finally, when referring to heritage as an asset, participants referred to the history of the place (e.g., important figures or events associated with the place) and specific objects/elements (like statues or war memorials), but they also referred to dispositions or attitudes towards heritage (e.g., church members being supportive of development, or having an entrepreneurial mindset towards the building). Social assets were predominantly linked to outreach and partnership working and the connections and collaborations with various groups, organisations and networks. Finally, built assets referred to a variety of elements relating to the physical characteristics of the building (predominantly its size), the existence of facilities or auxiliary spaces (kitchen, community room), as well as the location and footfall of the building. A few comments suggested an appreciation of the building in terms of its atmosphere and beauty. The last type of assets scoring over 10% was human capital. Human assets referred mainly to existing skills amongst the executive team looking after the building, including leadership skills, but also knowledge of the building and expertise on specific project aspects (such as fundraising or business development). Commitment and time (volunteer time) were also important points of discussion.

## Comparing Challenges to Assets

When we compare challenges to assets, on the whole, we see that participants identified far more challenges than assets (351 challenges nodes versus 235 asset nodes), although the same amount of time was dedicated to each exercise (Figure 6 shows the

relative size of the recorded challenges, assets and opportunities). This reveals an initial fixation on problems or *disabilities*: on the things that weaken or constrain the groups' capabilities and opportunities to achieve their objectives. However, in the process of moving from challenges to the elicitation of assets, we can observe a shift in participants' thinking. The same kinds of things which were considered as challenges, were subsequently seen as assets. Taking an example of built capital, a church's size which was seen as a burden in terms of maintenance, was considered as an asset in terms of its potential to house different activities and/or generate income. In terms of cultural capital as well, the participants were able to overcome concerns about their relationships with the wider community, as they realised the numerous connections and collaborations they held with different groups in their locale. Similarly, human and social capital increased (in terms of percentages). Human assets in particular seemed to counterbalance the human challenges originally expressed about dwindling human resources (i.e., lack of bodies!) and lack of specialist knowledge and skills. We note that political and financial capital in contrast did not increase, revealing perhaps the more rigid limitations of external social structures.

## Opportunities

Now let us move on to opportunities (Figure 7). From a capability perspective, we are looking to see how the different assets are put in motion to create a new construct (typically an idea or strategy) that can achieve a valued way of being or doing. Putting assets in motion, transforms them in actual capital. Opportunities allowed us exactly to explore what assets were transformed into capitals and how.

The majority of opportunities identified were associated to social (39%) and cultural capital (31%). Social capital related to the creation of connections or partnerships with other organisations, friends' groups, local history societies, local councils, universities or other churches from the same or different denominations. Cultural opportunities related to the use of church spaces to engage and connect different groups in cultural activities including local exhibitions, heritage trails, festivals, or educational activities. To a lesser extent followed opportunities associated with built capital (14%), such as renovation works.

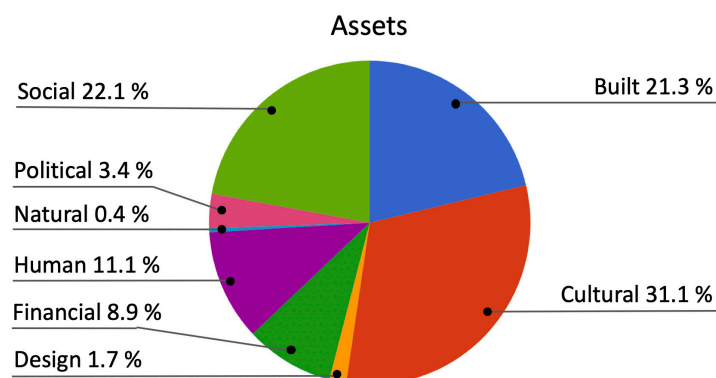


Figure 5. Pie chart showing the percentages of different types of assets.

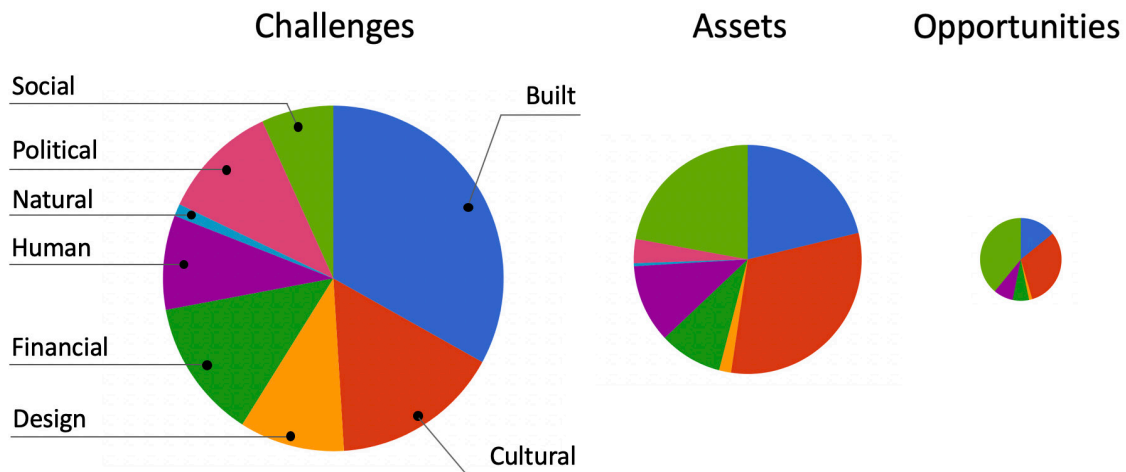


Figure 6. Pie charts showing the relative size of challenges, assets, and opportunities nodes.

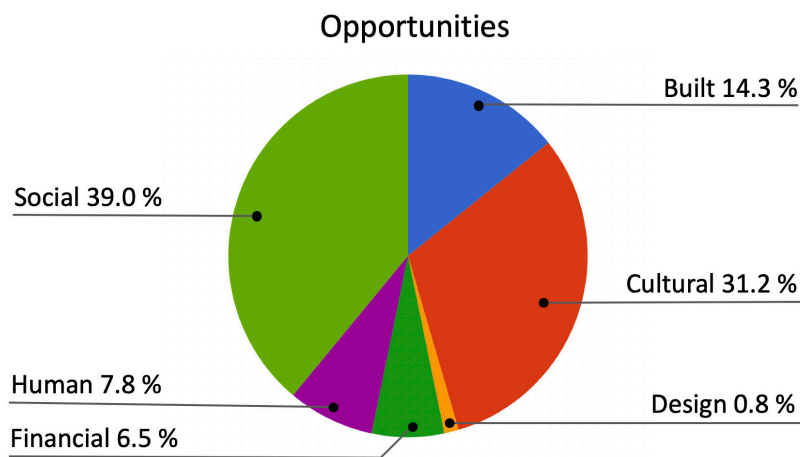


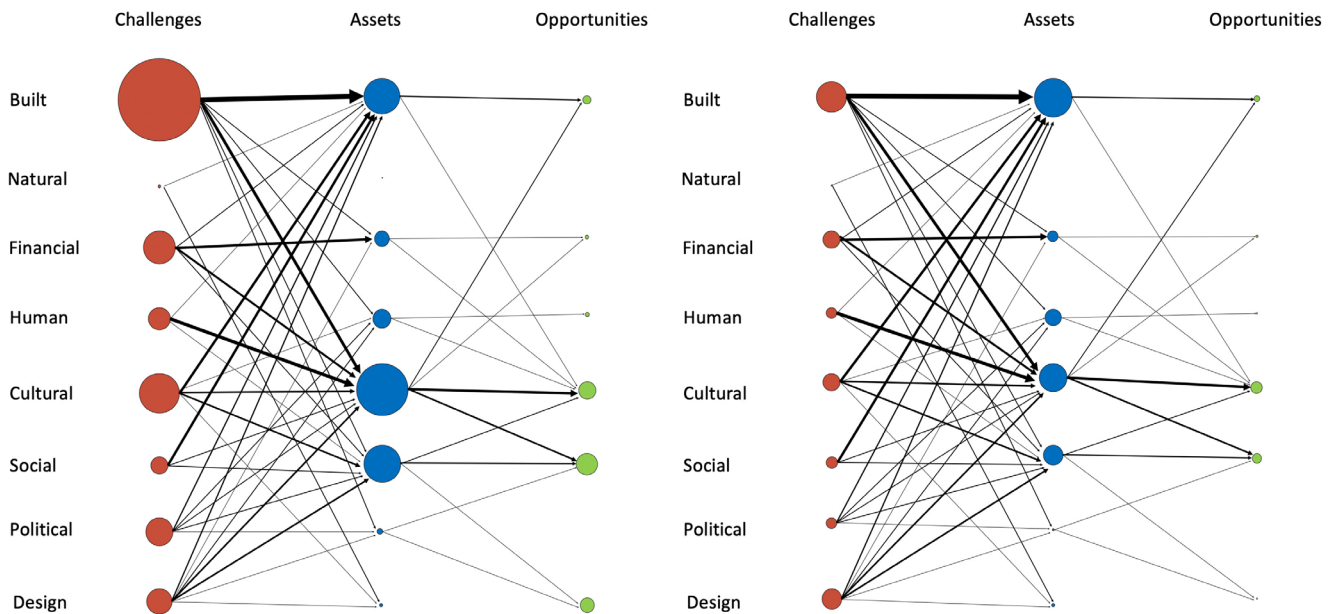
Figure 7. Pie chart showing the percentages of different types of opportunities.

Further coding of the opportunities led to a subdivision of opportunities in ideas versus principles. 56% of the opportunities were references to distinct ideas, such as set up a local history group, or organise a celebration event for the Queen’s birthday; and 44% of these opportunities were general statements, such as to create a *safe place*, or an *energy efficient house of prayer*. This exposed and verified the idea that opportunities were constructs that expressed both the participants’ (desired) valued functionings, or objectives, and their formulated ideas for actions that will realise them.

When we compare assets to opportunities, on the whole, we see that opportunities are far less than assets, which is generally expected, as generating ideas for solutions in such a short time is a difficult task. In the conversion of assets to capitals (opportunities) we can also observe that social and cultural capitals have increased (in terms of percentages) whereas all the other capitals have decreased. This reveals the importance of social and cultural assets in the design process, as motivators (objectives) as well as vehicles for design (invested capitals).

### Connections between Challenges, Assets, and Opportunities

At this point, it is useful to take a more holistic view of the process in order to derive some cumulative insights about design capability, as the potential to create constructs that enable the conversion of a network of assets into desired functionings. The network diagrams below (Figure 8) show the connections between the challenges, assets, and opportunities nodes. The first network on the left represents nodes according to their actual size (i.e., number of mentions as defined above), whereas the second network on the right, defines the nodes’ sizes according to how connected they are: challenges nodes are sized according to the number of links leaving from each node (*out degree*), and assets and opportunities nodes are sized according to the number of links arriving at those nodes (*in degree*). As the direction of flow in the exercise was from challenges to assets to opportunities, this allows us to visualise which nodes became more activated (or actively connected) in each stage. In both networks the thickness of the lines represents the quantity of connections from one type of node to another.



**Figure 8. Network diagrams of the connections between challenges, assets, and opportunities nodes.** Nodes are represented according to their size on the left network and according to their connectivity on the right. The thickness of the lines represents the quantity of connections.

Examining closely and comparing these two networks, gives us a different perspective of the importance of different types of capitals, and how they flow during the design process.

Firstly, starting again with challenges, the diagram on the left shows—as discussed—that the majority of challenges fall under built capital, followed by cultural capital. But if we look at the diagram on the right, focussing on connections between capitals, we see a different distribution of capitals, where although built capital remains very connected, design shows as the most connected amongst the rest of the capitals. The high connectivity of these two capitals is due not only to a high number of connections but also due to the breadth of connections: built and design capital are connected to all the other capitals.

Secondly, looking at assets, we observe that the majority of assets are cultural followed by social and built. But when we look at the connections between capitals, we see that cultural capital shrinks into second place. Although the category of cultural assets has links to all the types of capitals, it has a smaller number of connections than built capital. When we interrogate the connections, we see that built assets are primarily linked to built challenges (which corresponds to the switch in perception that we have already commented on); interestingly however, cultural assets are most connected to human challenges. This shows perhaps an ability of the groups to use their shared values and sense of community and identity, to overcome perceived lack of skills or capacity to drive change. Finally, it is also worth noting that although design challenges are quite well connected, design assets by comparison are not only minimal in terms of size, but they are also highly un-connected.

Thirdly, looking at opportunities, we observe that social and cultural are the main capitals in terms of size. When we take connections into consideration, we see that social capital

is slightly bigger in terms of size, but cultural capital is slightly bigger in terms of connections. It is also worth observing that cultural capital is mainly linked to cultural assets and interestingly both cultural and social assets have little or no connection to built assets (and no connections to design assets).

Overall, judging on the significance of built challenges and the size and connectivity of built assets, we would expect opportunities to be highly connected to built capital, which is not the case. We observe that in the absence of design capital, groups did create valued constructs, by building on their cultural and social assets, however these had no clear connection to the building itself (built capital) and the challenges it embodies. The results therefore suggest that cultural and social assets play a critical role as motivators and vehicles of design activity; however, design capital serves as a glue connecting all different types of capitals together, and consequently its lack seems to significantly compromise both the framing of assets and objectives (desired functionings) relative to one another, and the conversion of assets into constructs that will realise desired valued functionings.

## Summary and Conclusions

This paper set out to explore a notion of design capability that can be aptly applied to community-led design, as an individual and collective attribute. Drawing on the capability approach and the CCF we formulated a framework for characterising design capability in relation to the opportunities and potential of social groups to access, develop and convert their network of resources into constructs that will realise their desired valued ways of being and doing.

Using this framework, we examined the actual capabilities of eight groups of non-expert designers/citizens as they unfold within the confines of a design project in action. The method

focused specifically on unearthing participants' perceptions about their challenges and their assets and how these are connected and transformed into new constructs (i.e., opportunities).

In coding participants' outputs and narratives we discovered a need to create a separate category, design capital, in order to record challenges, assets, and opportunities that centred on the conversion of assets into constructs of/for design.

Analysis of the sizes of challenges and assets recorded by participants showed that they were initially overwhelmed by challenges (across the different types of capitals), although they held an abundance of cultural and social assets. We found that through the design process participants were able to switch perceptions about their challenges, and to use their assets to generate new potential assets and solutions to move their projects forward.

Analysis of the connectivity/relationship between challenges, assets and opportunities, showed that although groups were able to build on their cultural and social assets to create opportunities, the connections between assets and opportunities were very scarce and participants were able to create assets, but without a clear connection to the building itself (which was their primary source of concern) or a vision for it in design terms.

We hypothesise that the lack of design assets and connections with design assets played an important role in this disconnected picture. In other words, we posit that design capital acts as a glue in the process, helping forge connections between human, social, and cultural assets that are both meaningful/valuable to people and pertinent to overcoming their challenges to meet desired outcomes.

Design capital is crucial to the notion of capability as it relates not only to the opportunities that people have to access key assets, but also their ability to unearth, mobilise, and develop these assets in order to frame and negotiate desired functionings and their value. Design capital is thus *capability enhancing* in the sense that it expands the opportunities and potential that people have to achieve desired valued functionings.

The results are based on the analysis of a relatively small sample, and more work is needed to evidence the importance of *design capital*, however we have empirically observed the same pattern of existing strong cultural and social assets but with weak or latent design assets, in most of our work with community-led design projects over the past 10 years, including over 50 places of worship (Alexiou et al., 2020; Zamenopoulos et al., 2021).

These results can serve to raise awareness of the importance of design in community development efforts, in the context of adapting historic places of worship and more generally. Current efforts to support community engagement and leadership in development (through legislation, funding, or training), all too often overlook design capital, focussing on business skills, fundraising, and injection of expertise (human and economic capitals). We maintain however that the development of design capital is essential in any kind of development project and has a value in contextualising/grounding the process on what people consider important.

We would like to conclude with a word on the wider implications of this study. The proposed approach to design through a capability lens has potentially important implications for design research, education and practice. First, it shifts

attention from the study of design as a way of *thinking, knowledge, or practice* to the study of design as an expression of *power, freedom, or potential*. Two key elements in this perspective are a) the emphasis on studying the interconnections developed within an ecosystem (or network) of human, social, cultural, economic, political, and environmental (natural and built) assets that constrain and enable the realisation of valued functionings and b) the emphasis on valuation/value creation as both a driver and an outcome of the design process, i.e., the approach emphasises a process of framing and negotiating what people collectively consider to value among the things they have (goods or assets) and the things that they are able to do (functionings). Second, the capability perspective implies a distinct role for design practice; that of aiming to empower people to pursue their valued ways of living. This suggests a shift in power from the hand of professional designers to those of citizens, but also suggests a different role for designers. In conceptions of design as a socially engaged practice, there is often an implicit or explicit re-positioning of the role of designers as *facilitators* of design (or co-design) practices (Aguirre et al., 2017; Lee, 2008; Napier & Wada, 2016). Here we propose a subtle distinction: by becoming design *enablers*, professional designers take a responsibility to help develop skills, processes, infrastructures, but also *opportunities* for people to lead the design process, by helping connect and mobilise their distributed assets. Finally, thinking about design education, the capability approach draws explicit attention away from a singular preoccupation with design skills (such as visual skills, creativity, or *design thinking*) to an equally important preoccupation with the structures (environments, opportunities) that help individuals develop their own value systems and practices by recognising their diverse capabilities (see Strickfaden et al., 2006).

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## References

1. Aguirre, M., Agudelo, N., & Romm, J. (2017). Design facilitation as emerging practice: Analyzing how designers support multi-stakeholder co-creation. *She Ji*, 3(3), 198-209. <https://doi.org/10.1016/j.sheji.2017.11.003>
2. Alexiou, K., & Zamenopoulos, T. (2008). Design as a social process: A complex systems perspective. *Futures*, 40(6), 586-595. <https://doi.org/10.1016/j.futures.2007.11.001>
3. Alexiou, K., Zamenopoulos, T., & Alevizou, G. (2013). *Valuing community-led design*. Retrieved July 31, 2022, from [http://valuing-community-led-design.weebly.com/uploads/1/2/8/5/12856329/vcld\\_summary\\_report.pdf](http://valuing-community-led-design.weebly.com/uploads/1/2/8/5/12856329/vcld_summary_report.pdf)

4. Alexiou, K., Zamenopoulos, T., Greene, K., Alevizou, G., Chapain, C., Agusita, E., Harte, D., & Ramster, G. (2016). Asset mapping and civic creativity. In I. Hargreaves & J. Hartley (Eds.), *The creative citizen unbound* (pp. 181-204). Policy Press.
5. Alexiou, K., Zamenopoulos, T., Hale, V., West, S., & de Sousa, S., (2020). Empowering design practices: Exploring relations between architecture, faith, society and community. *Open Arts Journal*, 9, Article 5. <http://dx.doi.org/10.5456/issn.2050-3679/2020w05>
6. Alkire, S. (2008). Using the capability approach: Prospective and evaluative analyses. In F. Comim, M. Quizilbash, & S. Alkire (Eds.), *The capability approach: Concepts, measures and applications* (pp. 26-50). Cambridge University Press.
7. Bebbington, A. (1999). Capitals and capabilities: A framework for analyzing peasant viability, rural livelihoods and poverty. *World Development*, 27(12), 2021-2044. [https://doi.org/10.1016/S0305-750X\(99\)00104-7](https://doi.org/10.1016/S0305-750X(99)00104-7)
8. Blundell Jones, P., Petrescu, D., & Till, J. (2005). *Architecture and participation*. Taylor & Francis.
9. Boylston, S. (2019). *Designing with society: A capabilities approach to design, systems thinking and social innovation*. Routledge.
10. Chrislip, D., & O'Malley, E. (2013). *For the common good: Redefining civic leadership*. KLS Press.
11. Dong, A. (2008). The policy of design: A capabilities approach. *Design Issues*, 24(4), 76-87. <https://www.jstor.org/stable/25224195>
12. Dong, A., Sarkar, S., Nichols, C., & Kvan, T. (2012). The capability approach as a framework for the assessment of policies toward civic engagement in design. *Design Studies*, 34(3), 326-344. <https://doi.org/10.1016/J.DESTUD.2012.10.002>
13. Ehn, P., Nilsson, E. M., & Topgaard, R. (2014). *Making futures: Marginal notes on innovation, design, and democracy*. MIT Press.
14. Emery, M., Frey, S., & Flora, C. (2006). Using community capitals to develop assets for positive community change. *Community Development Practice*, 13, 1-19.
15. Fey, S., Bregendahl, C., & Flora, C. (2006). The measurement of community capitals through research. *Journal of Rural Research & Policy*, 1(1), 1-28. <https://doi.org/10.4148/ojrrp.v1i1.29>
16. Frediani, A. A., & Boano, C. (2012). Processes for just products: The capability space of participatory design. In I. Oosterlaken & J. van den Hoven (Eds.), *The capability approach, technology and design* (pp. 203-222). Springer. [https://doi.org/10.1007/978-94-007-3879-9\\_12](https://doi.org/10.1007/978-94-007-3879-9_12)
17. Garven, F., McLean, J., & Pattoni, L. (2016). *Asset-based approaches: Their rise, role and reality*. Dunedin Academic Press.
18. Government and Church of England (2009). *Churches and faith buildings: Realising the potential*. Retrieved August 31, 2020, from [https://www.hrballiance.org.uk/wp-content/uploads/2015/01/Churches\\_and\\_Faith\\_Buildings.pdf](https://www.hrballiance.org.uk/wp-content/uploads/2015/01/Churches_and_Faith_Buildings.pdf)
19. Hargreaves, I., & Hartley, J. (2016). *The creative citizen unbound: How social media and DIY culture contribute to democracy, community and the creative economy*. Policy Press.
20. Ibrahim, S. S. (2006). From individual to collective capabilities: The capability approach as a conceptual framework for self-help. *Journal of Human Development*, 7(3), 397-416. <https://doi.org/10.1080/14649880600815982>
21. Jenkins, P., & Forsyth, L. (2009). *Architecture, participation and society*. Routledge. <https://doi.org/10.4324/97802038869499>
22. Kretzmann, J. P., McKnight, J. L., Dobrowolski, S., & Puntenney, D. (2005). *Discovering community power: A guide to mobilizing local assets and your organisation's capacity*. Retrieved August 31, 2020, from <https://resources.depaul.edu/abcd-institute/publications/publications-by-topic/Documents/kelloggabcd.pdf>
23. Kretzmann, J., & McKnight, J. P. (1996). Assets-based community development. *National Civic Review*, 85(4), 23-29. <https://doi.org/10.1002/ncr.4100850405>
24. Lam, B., Zamenopoulos, T., Kelemen, M., & Na, J. H. (2017). Unearth hidden assets through community co-design and co-production. *The Design Journal*, 20(sup 1), S3601-S3610. <https://doi.org/10.1080/14606925.2017.1352863>
25. Lee, Y. (2008). Design participation tactics: The challenges and new roles for designers in the co-design process. *CoDesign*, 4(1), 31-50. <https://doi.org/10.1080/15710880701875613>
26. Manzini, E. (2015). *Design where everybody designs: An introduction to design for social innovation*. MIT Press.
27. Mathie, A., & Cunningham, G. (2003). Who is driving development? Reflections on the transformative potential of asset-based community development. *Canadian Journal of Development Studies*, 26(1), 175-186. <https://doi.org/10.1080/02255189.2005.9669031>
28. Napier, P., & Wada, T. (2016). Defining design facilitation: Exploring and advocating for new, strategic leadership roles for designers and what these mean for the future of design education. *Dialectic*, 1(1), 154-178. <https://doi.org/http://dx.doi.org/10.3998/dialectic.14932326.0001.110>
29. Nichols, C., & Dong, A. (2012). Reconceptualising design through the capability approach. In I. Oosterlaken & J. van der Hoven (Eds.), *The capability approach, technology and design* (pp 189-202). Springer.
30. Nussbaum, M. C. (2000). *Women and human development. The capabilities approach*. Cambridge University Press.
31. O'Leary, T., Burkett, I., & Braithwaite, K. (2011). *Appreciating assets*. Retrieved August 31, 2020, from <https://www.carnegieuktrust.org.uk/publications/appreciating-assets/>
32. Oosterlaken, I. (2009). Design for development: A capability approach. *Design Issues*, 25(4), 91-102. <https://doi.org/10.1162/desi.2009.25.4.91>
33. Oosterlaken, I., & van den Hoven, J. (2012). *The capability approach, technology and design*. Springer. <https://doi.org/10.1007/978-94-007-3879-9>
34. Purdue, D. (2000). *Community leadership in area regeneration*. Policy Press.
35. Robeyns, I. (2005). The capability approach: A theoretical survey. *Journal of Human Development*, 6(1), 93-117. <https://doi.org/10.1080/146498805200034266>

36. Sanoff, H. (2011). Multiple views of participatory design. *Focus*, 8(1), Article 7. <https://doi.org/10.15368/focus.2011v8n1.1>
37. Sanoff, H. (1999). *Community participation methods in design and planning*. John Wiley & Sons.
38. Sen, A. (1999). *Development as freedom*. Anchor Books.
39. Seyfang, G., & Smith, A. (2007). Grassroots innovations for sustainable development: Towards a new research and policy agenda. *Environmental Politics*, 16(4), 584-603. <https://doi.org/10.1080/09644010701419121>
40. Sosa, R., & Gero, J. S. (2005). A computational study of creativity in design: The role of society. *AI EDAM*, 19(4), 229-244. <https://doi.org/10.1017/S089006040505016X>
41. Strickfaden, M., Heylighen, A., Rodgers, P., & Neuckermans, H. (2006). Untangling the culture medium of student designers. *CoDesign*, 2(2), 97-107. <https://doi.org/10.1080/15710880600647980>
42. Toker, Z. (2007). Recent trends in community design: The eminence of participation. *Design Studies*, 28(3), 309-323. <https://doi.org/10.1016/J.DESTUD.2007.02.008>
43. Volkert, J. (2013). Concepts of agency, sustainable human development (SHD) and collective abilities. In O. Leßmann & J. M. Roche (Eds.), *Maitreyee-e-bulletin of the human development and capability association* (pp. 9-12). HDCA. <https://doi.org/10.13140/RG.2.1.1460.5524>
44. Wakeford, T., & Sanchez Rodriguez, J. (2018). *Participatory action research: Towards a more fruitful knowledge*. University of Bristol/AHRC Connected Communities Programme.
45. Wates, N., & Knevtitt, C. (1987). *Community architecture: How people are creating their own environment*. Routledge.
46. Woolcock, M., & Narayan, D. (2000). Social capital: Implications for development theory, research, and policy. *The World Bank Research Observer*, 15(2), 225-249. <https://doi.org/10.1093/wbro/15.2.225>
47. Zamenopoulos, T., & Alexiou, K. (2018). *Co-design as collaborative research*. University of Bristol/Connected Communities Programme.
48. Zamenopoulos, T., Lam, B., Alexiou, K., Kelemen, M., de Sousa, S., Moffat, S., & Phillips, M. (2021). Types, obstacles and sources of empowerment in co-design: The role of shared material objects and processes. *CoDesign* 17(2), 139-158. <https://doi.org/10.1080/15710882.2019.1605383>