E X P E R I E N C E U N B O U N D

The Effects of Coworking on Workplace Design Practice

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Abstract

Experience Unbound: The Effects of Coworking on Workplace Design Practice

This thesis uses the typology of coworking and the values associated with it as a lens through which to look at the design of the broader workplace. It examines the ways in which people behave in these new working environments and how these designed spaces are planned, briefed, commissioned and evaluated. The study responds to a continuing gap in the knowledge around the spatial constitution and behaviours of coworking despite a growing interest from corporate organisations.

Taking an inter-disciplinary approach that draws on environmental psychology, design practice and the social sciences, the thesis is rooted in both academia and industry, presenting four design studies that map the development and spatial manifestations of coworking and explore user behaviour in space. The thesis explores the values and spatial strategies of coworking through the quantitative analysis of 100 coworking home pages and 73 floor plans, and places coworking in the wider context of historical and current workplace development. Alongside this, it adopts design ethnography techniques to explore user behaviour in space at three different sites: the Impact Hub in Birmingham and Second Home in London - both coworking spaces - and Sony PlayStation in London, a commercial workplace seeking to build a more creative community. Each site uses different strategies for managing change and co-creation, but with the same aims of prioritising user experience and building and supporting collaborative relationships. In the final design study, new user-centred design tools for brief making and evaluation are developed and applied at the Impact Hub and Sony PlayStation.

With relatively little academic research into the spaces of coworking, these design studies provide a platform to explore the values, infrastructures and spatial strategies associated with coworking, identify points of departure from established models, and identify whether there are central ideas within coworking that might be applied to the wider workplace.

Six original contributions to knowledge are presented: a new definitional model of coworking, quantitative coworking spatial analysis, a design taxonomy of coworking spaces, an adapted framework for considering user experience, a user-centred design toolkit, and recommendations for incorporating aspects of coworking into wider workplace design.

The study identifies that the success of a coworking space depends on the experience that they create. This relies on complex and evolving interactions between space, support and service infrastructures, brand identification and community management, and the thesis highlights that simply adopting the spatial strategies or aesthetics of coworking without acknowledging its careful curation of space and relationships is unlikely to produce the desired results. This presents new challenges for the briefing, design and ongoing management of the workplace, which are discussed in the thesis. This PhD concludes with insights into how the essential qualities of coworking might be used to reshape spaces for creative knowledge work alongside a set of practical tools and recommendations that relate to briefing, design and post-occupancy evaluation processes.

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Author's Declaration

During the period of registered study in which this thesis was prepared the author has not been registered for any other academic award or qualification.

The material included in this thesis has not been submitted wholly or in part of any academic award or qualification other than that for which it is now submitted.

Imogen Privett
April 2020

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Introduction

1.1 Coworking as a lens upon the wider workplace

> 'Coworking creates a mechanism by which we can truly see what is a desirable workplace', (Marsh, 2016: online).

Coworking is a workspace typology that can be considered as a disruptive innovation (Christensen et al., 2015). Despite its significant growth, coworking is still a relatively small-scale manifestation of global shifts that are reshaping workplaces in general. However, the behaviours associated with coworking as a specific typology are attracting much more attention than the scale of the movement might warrant. Arguably still an 'edge case' of workplace trends at the outset of the study (Spinuzzi, 2012: 399), it is now well established in mainstream discourse. This has been influenced by a growing interest from corporate organisations as they seek to restructure their own space to be more agile and responsive - and better support innovation - to meet the demands of a global knowledge economy. The resulting interest in coworking is driven partly by its model of highly flexible and cost-effective space provision, but also by its promise of community, collaboration and the innovation that is perceived to result from informal and cross disciplinary knowledge exchange (Allen, 2007; Toker and Gray, 2008; Pentland, 2012; Peschl and Fundneider, 2014).

For the purposes of this thesis, coworking was provisionally defined as 'the flexible provision of membership-based workplaces where individuals and small groups who are not employed by the same organisation can share facilities, ideas and knowledge in a communal setting'. This was a working definition based on existing academic research and grey literature which was developed as an initial steer early in the study; it was revisited as the research developed. It should be noted that the unhyphenated form 'coworking'

that is generally considered to be correct within the coworking community has been used rather than 'co-working', which can be used to describe colleagues at the same organisation working together.

The reason for using coworking as a lens for looking at the wider workplace can be summed up by the quote at the beginning of this chapter. As a market offering, coworking spaces that do not meet the needs of their users are likely to go out of business; given the short-term nature of most coworking leases, this can happen very quickly. The rise of this typology therefore emphasises people's agency in their environment and the quality of user experience in ways that organisational space has not always had to consider. While it is easy to see the appeal of the ideals of community and collaboration - and the innovation generating knowledge sharing that is commonly perceived to be the result - they are easily mythologised. There are therefore dangers in adopting the aesthetic style of coworking without a critical understanding of the underlying infrastructures that define its departure from existing workplace design practice. This tendency to follow design fads without fully understanding the strategic relationship between space and organisational needs has a long history in workplace design, highlighting the need to critically analyse emerging typologies before drawing on them.

1.2 Fad, fashion and faith: designing space for knowledge work

> 'Fashion is fun for (certain) architects, but it's deadly for users', (Brand, 1994: 6).

Following a period of neglect, there has been a growing recognition that the strategic use of space is central to shaping organisational success (Preiser, 2001; Clegg & Kornberger, 2006; Chan et al., 2007; Baldry and Hallier, 2010; von Marrewijk and Yanow, 2010; Laing and Bacevice, 2013; Skogland and Hansen, 2017). This renewed acknowledgement of the importance of space accompanies a period of change in organisational structures and workstyles with resulting implications for how workspace is procured, designed and used. However, changes in work styles and organisational structure have not, as yet, resulted in a specific new workplace model. Rather, many models and ideas exist concurrently, with

designs depending on the organisation, it's work practices, culture and customers; the U.S. management expert Thomas Davenport described most new knowledge work environments as driven by 'fad, fashion and faith' (2002: 25).

The widespread tendency to follow the design fads that arise from this constant development and iteration rather than taking the time to match design to specific organisational needs has been identified by a number of authors (Heerwagen et al., 2004; Chan et al., 2007, Moultrie et al., 2007; Klooker et al., 2016). Recognising that work processes are increasingly reliant on fostering interactions between people, businesses often appear to be confusing the design of collaborative workspaces with connections to business strategy. Even organisations wishing to use the workplace as a tool for organisational transformation tend to rely on the imagery of more open and collaborative work areas as the basis for change, meaning that planning is more often driven by trends than strategic decisions about organisational needs. This results in the widespread adoption of design approaches that have not been properly interrogated, leading to what might be described as the 'aestheticisation' of collaboration. Problems inherent in this approach are easy to identify; if space is a crucial parameter in shaping organisational success, then derivative designs that are divorced from their context are unlikely to produce the desired results (Moultrie et al., 2007; Friedman, 2014; Peschl and Fundneider, 2015). Laing and Bacevice (2013) argue that this issue is particularly critical given the transformation of working practices by technological development, stating that:

> '[The] quality of physical space is perhaps more important now, given that users have choices of whether or not to physically go there; they will choose to go to places that provide compelling value for their learning and work experiences', (2013: 43).

1.3 Context and contemporary relevance

There are a number of contextual factors that establish the timeliness of this study, including changes in the way that we work, an increasing recognition of the importance of innovation to organisational success and significant shifts in organisational structure. These present new challenges to which workplace design professionals are required to respond.

The way we work is fundamentally changing. Routine work is increasingly automated, and in its place is a type of work that is based on applying theoretical knowledge and learning, making a finite knowledge set less important than the ability to adapt and learn (Zarkadakis et al., 2016; Pricewaterhouse Cooper, 2018). This shift in what is required of the workforce has been described as a new 'knowledge economy' in which innovation is recognised as central to an organisation's commercial success (Moultrie et al., 2007; Price, 2007; Crossan and Apaydin, 2010). The central character of knowledge work has been identified as communal rather than solitary (Laing and Bacevice, 2013), with diversity of experience and non-structured interaction (to share knowledge as widely as possible) commonly viewed as key enabling factors in innovation processes (Brown and Duguid, 2000; Florida, 2002; Gertner, 2012; Clifton et al., 2013). With traditional corporate structures struggling to deliver the level of responsiveness required to compete in this globalised knowledge economy, organisations are increasingly moving towards a decentralised and less siloed form of management, with the emphasis on highly empowered and flexible teams (Harrison, 2004; Laing and Bacevice, 2013; Harris, 2014; Deloitte, 2016). Along with technology that has the potential to allow the uncoupling of work from space (Fawcett and Song, 2009), this has resulted in changing patterns of work that can be characterised as more fluid and unpredictable (Heerwagen et al, 2010; Laing and Bacevice, 2013) with a greater dependency on social skills and technological competence, greater cognitive complexity, increased requirements for collaboration and less dependence on geography (Heerwagen et al, 2010).

These shifts present new challenges for workplace design professionals, particularly in light of the increasing body of evidence that design interventions do not always have the anticipated results (Elsbach and Pratt, 2007; Pepper, 2008; Stryker et al., 2012; Morrison

and Macky, 2017). There is a long tradition of designer as expert in the architectural profession. As a result, architectural design has tended to be driven by the intuition and experience of the designer or, less helpfully, by widely held assumptions that have no basis in evidence. At a moment when architecture is having to make claims about its fundamental value in a workplace context, how it does this is poorly understood and infrequently evaluated. As a discipline, architecture lacks a strong research tradition and workplace design research typically falls under the remit of disciplines such as environmental psychology with poor transferral into architectural practice (Chan et al., 2007; Sailer et al., 2008; Sailer, 2010). The future of workplace design could be considered to be an open question, and the design profession is likely to need new skills to answer it.

Finally, although coworking is a rapidly expanding phenomenon, it has garnered much more attention from industry-situated writers than from academia. At the start of this study coworking was arguably still an emerging typology, with only a small number of academic publications in existence (e.g. Lange, 2011; Spinuzzi, 2012; Butcher, 2013; Moriset, 2013; Capdevila, 2013; Parrino, 2013; Spinuzzi, 2012; Surman, 2013; Kojo and Nenonen, 2014). Its arrival into the mainstream of workplace provision in the intervening period has resulted in a growing body of academic research (e.g. Gandini, 2015; Merkel, 2015; Rus and Orel, 2015; Salovaara et al., 2015; Bouncken and Reuschl, 2016; Clifton et al, 2016; Gerdenitsch et al., 2016; Waters-Lynch et al, 2016; Brown, 2017; Garrett et al., 2017; Jakonen et al., 2017; Wang, 2017; Ivaldi and Scaratti, 2018; Marchegiana and Arcese, 2018; Weijs-Perrée et al., 2018). However, there are still significant gaps in the literature. Academic studies have tended to focus on the social functioning of coworking spaces, the reasons for and benefits of accessing these spaces, their emergence and manifestation in particular cities, and the role of coworking spaces in innovation clusters. The analysis of the spaces of coworking has been limited to descriptive accounts of spatial features and aesthetics, with most studies limited to one or two coworking sites and space rarely linked to observed behaviours. This leaves the question of whether coworking is reliant on common spatial strategies or features unanswered. In addition, coworking has been studied as an isolated phenomenon rather than as part of a wider body of knowledge on workplace behaviours and development, with only one author making explicit connections between coworking and organisational space (Salovaara, 2015).

1.4 Research questions

To address these challenges, this thesis asks whether coworking does in fact constitute a set of spatial strategies and behaviours that are transferable to the wider organisational workplace. It aims to address he gaps in knowledge identified in the previous section by identifying the existence (or non-existence) of common spatial strategies, placing coworking in its wider context, and relating coworking practices back to organisational space. The research has been guided by the following questions:

1. What is coworking?

This question focuses on the values, infrastructures and spatial strategies associated with the coworking model and aims to arrive at a clear definition of what coworking is. It traces the development of coworking and defines strategies and elements that can be specifically associated with coworking as a practice.

2. To what extent does coworking signal a substantive departure from established models, relationships and practices in workplace design?

This question critically analyses the often 'celebratory framework' around coworking (Gandini, 2015: 193) and attempts to identify points of departure from established models of workplace design and design practice, outlining the development of the interior spaces of the office and comparing current organisational practice to coworking.

3. What new tools and approaches would support the application of the central ideas of coworking to the wider workplace?

In the context of widespread interest in coworking as a model, this question interrogates whether coworking is a self-contained phenomenon or whether there are central ideas within coworking that might be usefully applied to the wider workplace, exploring the potential impact on existing spatial strategies, relationships and approaches.

1.5 Locating the research

This section outlines the theoretical location of the thesis, in addition to presenting key professional experiences that have influenced the researcher's interest in the subject.

1.5.1 Theoretical location

While the thesis is grounded in architecture as a discipline, the research draws on several fields of knowledge including organisation theory, environmental psychology, and architectural practice. The research has explored changes to organisational structure, innovation and knowledge management, the space-organisation relationship, developing workplace typologies, spatial behaviours, workplace planning and management, and the architectural design process.

The links between these fields can be framed as follows: the organisation as an entity, the relationships between people, behaviour and space, and the architectural response in terms of workplace planning and the design process (Figure 1).

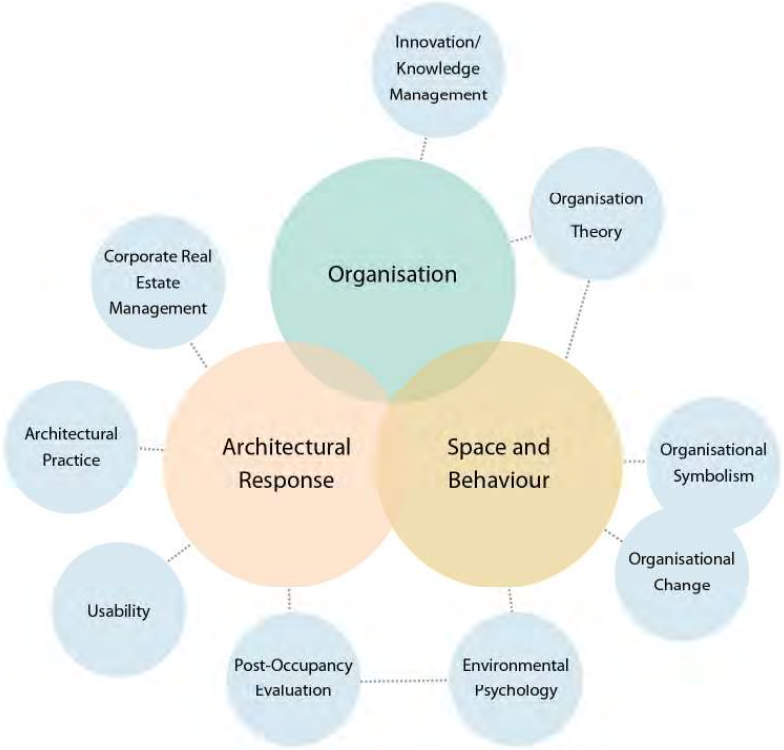

Figure 1. *Disciplinary research map*

1.5.1.1 Organisational structure

Organisation theory is a significant field in its own right, and this thesis does not provide a detailed account of what constitutes an organisation, their historical development or how they can be managed. The focus has been on work that accounts for and describes changes in organisational structure that are impacting on the ways in which organisational space is procured, planned and managed. Organisation theory and innovation literature therefore provide a context for the interest in space - and in coworking in particular.

1.5.1.2 Organisations, space, and behaviour

Organisations are intrinsically embedded in a physical environment; space can therefore be identified as a crucial parameter in shaping them. Becker identified the ability of space to act as an intangible asset for organisations in 1981 and, following a 'lean period' in terms of attention given to the role of spatial settings in organisational life (Sailer 2010), this can be identified as increasingly attracting attention - particularly in the field of organisational change (Higgins and MacAllaster, 2004; Carr and Hancock 2006; Clegg and Kornberger 2006). The study draws on the current theoretical understanding of the role of space as an organisational asset in terms of its symbolic, instrumental and aesthetic functions (Rafaeli and Vilnai-Yavetz, 2004) in addition to identifying changes to the ways in which space is procured and used in an organisational context.

1.5.1.3 Design practice and the architectural response to changing organisational contexts

The research evaluates both the architectural response to changing workspace contexts, and the processes by which spaces are commissioned and designed. It looks at the design process from initial brief making to post-occupancy evaluation and beyond. It is notable that the vast majority of the literature on post-occupancy evaluation in particular falls within disciplines that are not architectural. Post-occupancy evaluation has, on the whole, been the remit of environmental psychology following a failure to make it a routine element of architectural services, and the study of usability has been the purview of

facilities management.

1.5.2 Locating the researcher

In terms of disciplinary position, the researcher has a background in architectural practice with a strong interest in research, holding undergraduate degrees in both architecture and history and a Master's degree in architecture. This section briefly outlines three formative professional experiences that led the researcher to the position outlined in this thesis, each highlighting different limitations of existing workplace design practice and education.

1.5.2.1 Workplace design practice

The researcher was based at a well-established practice specialising in workplace design throughout undergraduate and masters level study, with time spent both on site at a large-scale workplace project and in the office, benchmarking completed projects to create a database for use in future work. The latter project was instigated by a senior partner who identified repeated issues in the lack of any systematic basis for capturing information from completed work; once he left the practice, updates to the project dwindled. These experiences resulted in three observations that were influential in developing future research interests:

- Even though the benefits of knowledge capture were recognised, a lack of time to reflect at the end of a project meant that information remained tacit, with staff turnover meaning that knowledge could easily be lost
- Tensions between the speed of change in organisational demands and the timescale of large construction projects – for example, increased headcounts once a floor plan had theoretically been issued for construction
- A lack of time for end-user research, with consultation typically limited to senior decision makers and focused on schedules of activities and adjacencies.

1.5.2.2 Integrating practice and research - The Helen Hamlyn Centre for Design

After graduating from the Royal College of Art, the researcher spent three years working at The Helen Hamlyn Centre for Design (HHCD) on a research project exploring what workplace design could learn from other disciplines, including the theatre, temporary urban interventions and intensive teams (e.g. air traffic control). This culminated in the publication of a book called *Life of Work: What Workplace Design Can Learn from the World Around Us*, co-authored with Prof. Jeremy Myerson. The experience highlighted two further shortcomings of existing workplace design practice.

- Workshops revealed repeated themes around a lack of agency in space, either with little consideration given to making space any more than a purely functional asset, or with workplace design decisions driven by an employer who was rarely in the office
- A language gap between designers, occupants and clients, with a lack of bridging communication tools.

1.5.2.3 Teaching Masters students

Over the past three years, the researcher has been teaching a summer school for MA students run as a collaborative endeavour between The HHCD and IE University Madrid. The course focuses on ethnographic design techniques for early-career professionals, primarily from architectural or design practice. While they were all familiar with quantitative research tools such as surveys and time utilisation studies, a user-centred, qualitative approach has been new to all of them, indicating a wider lack of engagement with user-centred design research within architectural education.

1.6 How to read this thesis

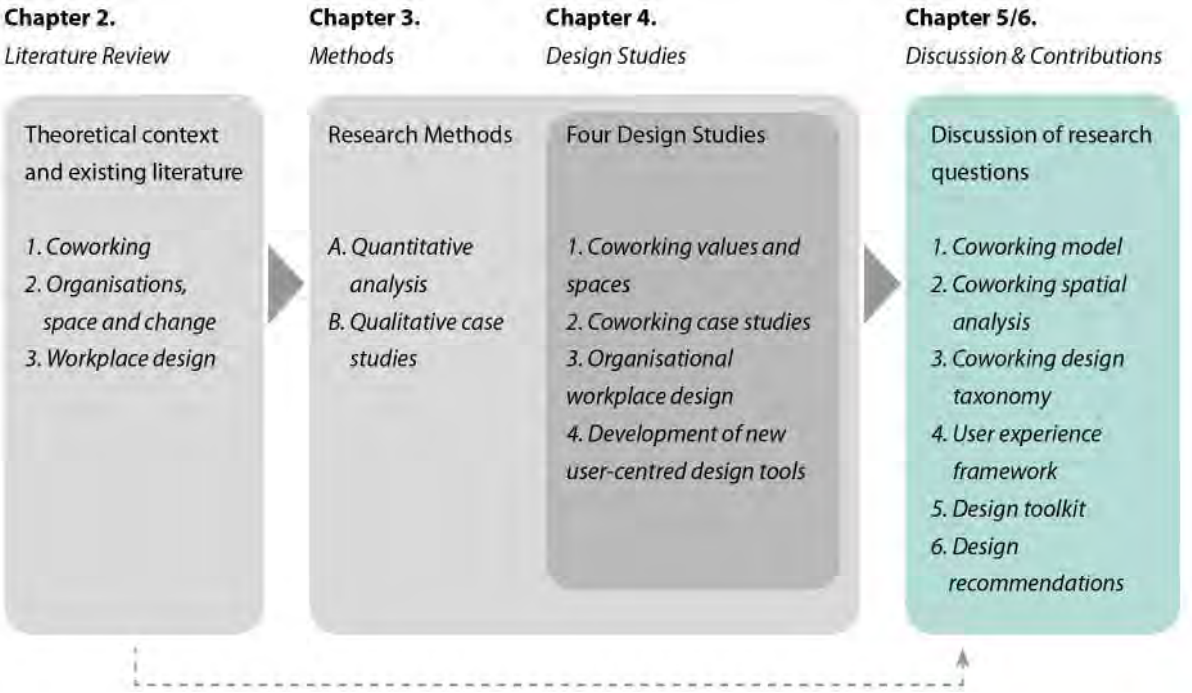

Figure 2. *Overview of the thesis structure*

In order to answer the research questions, the argument will be developed through the following structure.

Chapter 2: Literature review

Chapter 2 is split into three sections: a review of coworking development and existing literature (2.1); a literature review that outlines the theoretical framework of the research and relevant existing academic literature (2.2); and a review of the literature around workplace design and design processes (2.3). Section 2.2 draws on conventionally recognised academic publications, while sections 2.1 and 2.3 also draw on grey literature including but not limited to conference papers, reports, online publications, blog posts, survey data and design magazines. This reflects the wider positioning of the thesis between academia and industry, with sources such as Harvard Business Review representing industry focused publications that are influential in organisational workplace design.

2.1 Coworking review

This section introduces and defines coworking as a typology and provides a justification for making it a focus of study before reviewing the existing academic literature. The research has focused on self-declared coworking spaces; although there can be significant crossover with other emergent typologies such as maker and hacker spaces, accelerators and incubators, these have not been a focus of the study. This review concludes that while coworking is increasingly attracting attention in academic circles, there are still significant gaps in the knowledge. This is exacerbated by the fact that it is constantly evolving, potentially at a faster rate than can be matched by publication timetables of academic journals.

2.2 Organisations, space and change

This section reviews the relevant literature in the fields of organisation and space, beginning with a brief outline on the major organisational changes that are driving the emergence of new approaches to workspace. It then discusses the literature around the role of space as a tool for organisational change, outlining the various facets of the role that space plays in organisational life through a framework originally proposed by Rafaeli and Vilnai-Yavetz (2004). Finally, the section addresses the issues around the existing evidence base.

As the focus of the research has been people who are co-located in physical space, this review excludes the literature on people working in dispersed or virtual teams. Similarly, the extensive literature on the relationship between physical and digital has been largely excluded; while digital space is a fundamental aspect of the development of the workplace, it is a relatively minor aspect of most coworking environments. The research has therefore focused on how physical space has been used to promote behaviours that are desirable to organisations (e.g. interaction/collaboration).

2.3 Workplace design review

Section 2.3 conducts an analysis of historical workplace design trends, before identifying

the current problems in relation to the potential needs of business organisations today. In response to current debates about the role and value of architecture, this section discusses the literature relating to architectural practice, with particular consideration given to how spaces are briefed and evaluated, how and when end users are engaged in the process and how space is evaluated post-completion.

Chapter 3: Methodology

Chapter 3 outlines the overall research approach that was adopted in the thesis before briefly introducing the three case study sites and the methods that were employed at each one. The three sites were the Birmingham Impact Hub and Second Home in London - both can be considered to be coworking spaces according to the definition given earlier in this chapter - and Sony PlayStation in London, a creative business organisation. It provides the reasons for the choice of methods and explains the use and development of the ethnographic research tools that were employed during the study. Finally, it details the qualitative and quantitative methods and their contribution to the research process.

Chapter 4: Four design studies

Chapter 4 consists of four major sections: a quantitative analysis of the values and spatial strategies at coworking spaces; an in-depth case study of two coworking sites; a review of organisational workplace and a new user experience design toolkit employed at two of the case study sites.

4.1 Coworking values and spatial analysis

Section 4.1 presents a content analysis of 100 coworking website home pages and the spatial analysis of 73 coworking spaces, identifying the core values associated with coworking and a design taxonomy of common strategies and design elements. While visits were made to some of these sites, the data in this study was largely based on the analysis of floor plans, photographs, websites and associated information.

4.2 Coworking case studies

Section 4.2 outlines the ethnographic research and spatial analysis at two coworking case studies, interrogating behaviours and interactions, exploring aspects of member experience and agency, and comparing the use of the space to the original intent of the designers.

4.3 Organisational workplace design

Section 4.3 builds on the literature review to place the development of coworking in its wider context by analysing contemporary developments in workplace design, paying particular attention to attempts to shape specific behaviours through design interventions. It also outlines the process of developing a spatial brief within a corporate organisation – Sony PlayStation – seeking to achieve some of the same aims as coworking spaces.

4.4 Development and application of a user-centred design toolkit

Section 4.4 discusses the development of an experience framework and user-centred design toolkit based on the first three design studies. The first component is a design game designed for use in developing a spatial brief. The second component addresses the process of evaluating space use post-completion, combining elements of traditional post-occupancy evaluation with experience mapping techniques derived from consumer experience design.

Chapter 5: Discussion

This chapter draws together the design studies to discuss the findings and implications of each phase of the research. It provides answers to the research questions, speculates on the future of coworking as a typology, on its potential ongoing impact on workplace design more generally, and identifies the limitations of the current study.

Chapter 6: Conclusions

The final chapter identifies the original contributions of this thesis, presenting insights into how the essential qualities of coworking might be used to reshape spaces for creative knowledge work alongside a set of practical tools and recommendations that relate to briefing, design and post-occupancy evaluation processes. Finally, it outlines opportunities for further research.

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2

Literature and Context Review

This chapter provides a critical assessment of the literature covering the areas needed to locate and underpin the research. It is divided into three main sections: coworking (2.1), organisations, space and change (2.2), and architectural response (2.3).

Section 2.1 introduces coworking as a typology, discusses the existing literature around the values and spaces of coworking, and identifies gaps in the knowledge base that the thesis aims to address. It does not address the business models or makeup of the coworking population in any detail; these have been relatively well covered elsewhere (e.g. Waters-Lynch et al., 2016; Deskmag Global Coworking Survey, 2017).

Section 2.2 briefly outlines the nature of current organisational change and reviews the roles that space plays in organisational life according to a framework proposed by Rafaeli and Vilnai-Yavetz (2004). It identifies issues with the existing evidence base, and highlights the need for continuing research in the context of workplace change.

Section 2.3 addresses the literature on the historical development of the office as a typology and architectural practice as it relates to workplace design, with a focus on briefing, co-creation, and post occupancy evaluation, identifying gaps in the literature around user experience in particular.

2.1 Coworking

2.1.1 Why is coworking of interest?

The wider interest in coworking has been driven by a rapid and continuing market growth (Jones Lang LaSalle, 2016; Instant Group Global Review, 2017), a perceived association between entrepreneurial spaces and innovative capacity (DeGuzman and Tang, 2011; Moriset, 2013; Merkel, 2015; Cabral and van Winden, 2016; Jakonen et al., 2017), the perception that it in some way represents the future of working practices (Leclercq-Vandelannoitte and Isaac, 2016), and high levels of reported engagement and productivity (Spreitzer et al., 2015; Deskmag, 2016, 2017). Leclercq-Vandelannoitte and Isaac argued that:

> 'Better than any other previous model of work organisation, coworking spaces address the five conditions that characterise knowledge work: access to information, access to knowledge, access to symbolic resources, access to social capital and opportunities for serendipity...they represent a deep change, or even reversal of, the paradigms for work processes in organisations.' (2016: 6).

Coworking spaces therefore appear to represent a solution to some of the problems posed by a global economy that demands rapid iteration and cross-disciplinary knowledge exchange and this has driven growth of interest in the model (Figure 3). However, rapid evolution, increasing diversity and a lack of empirical knowledge about the constitution and behaviours of coworking spaces have made coworking increasingly difficult to define; the following section will present a definition of coworking that was used to steer the research.

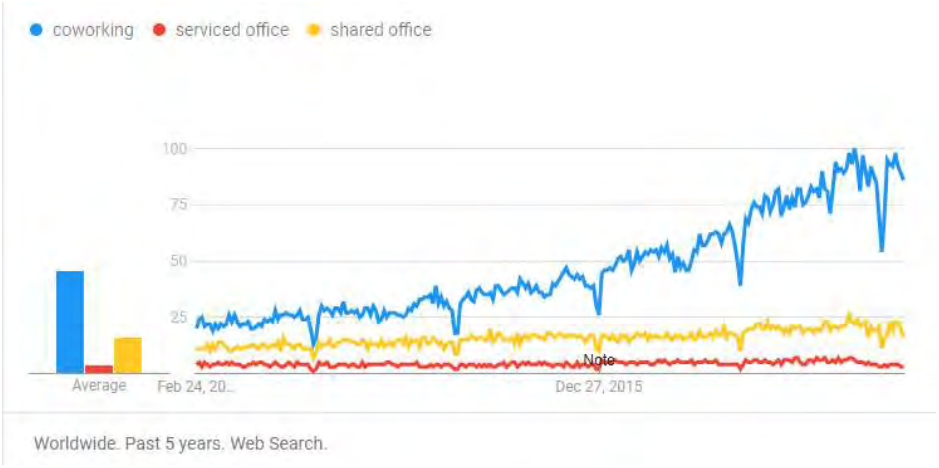


Figure 3. *Five-year Google search data for 'coworking', 'serviced office' and 'shared office'. Values represent search interest relative to the highest point on the chart*

2.1.2 Defining coworking

> 'A proper noun to describe a movement...a verb to describe an activity...[and] an adjective to describe coworking spaces', (Sundsted et al., 2009: 8).

The precise definition of coworking has consistently been under debate, with the overlap with other types of flexible space such as creative hubs, incubators and serviced offices resulting in a lack of definitional clarity within the academic literature (Brown, 2017). This lack of clarity is compounded by the fact that 79 per cent of spaces declared that they are 'more than just a coworking space' in the 2017 Deskmag Global Coworking Survey (DGCS), prompting questions as to the extent to which coworking represents a 'coherent phenomenon' at all (Spinuzzi, 2012: 17; Waters-Lynch et al., 2016; Ivaldi and Scaratti, 2018). Numerous definitions have been made by academic and non-academic sources, each tending to reflect the disciplinary or positional bias of the author. Most focus on relatively narrow aspects of coworking, perhaps reflecting the difficulty of developing a single definition for a widely varying phenomenon; several commentators have suggested that it may be 'impossible' to generate an absolute definition of coworking based on either organisational or spatial characteristics (e.g. Pohler, 2011).

However, there are some common threads. One relates to the positioning of coworking as a new form of work organisation that responds to the issues around freelance work and the

casualisation of labour. There is general agreement that coworking spaces are characterised by the colocation of different professionals, and that some combination of collaboration, networking, community building and knowledge exchange are part of the value proposition. In both of these instances, coworking is more than a space, representing a 'third way' of organising (Gandini, 2015: 195; Marchegiana and Arcese, 2018). However, a number of definitions do tie the activity of coworking back to the material space in which it happens, raising the question of whether there are, in fact, specific material infrastructures that do (or do not) support coworking.

In this thesis, coworking has been initially defined as:

The flexible provision of membership-based workplaces where individuals and groups who are not employed by the same organisation can share facilities, ideas and knowledge in a communal setting.

This definition includes the criteria around shared space, participation and membership as important conceptual elements in the practice of coworking. This is a working definition and will be interrogated through the course of the research. As the rapid growth of coworking has been accompanied by increasing diversity, this review will not attempt to track the development of every variation of the model in detail. Rather, the following sections will briefly outline its origins and key developments.

2.1.3 Origins, growth and diversification

Coworking can be situated within a much longer history of emerging shared spaces for work (Waters-Lynch et al., 2016). These have variously been identified as Oldenburg's 'Third Places' such as cafés, 'techno-social' spaces such as internet cafés in the 1990s, hacker spaces, serviced offices and artists colonies and collectives such as La Ruche in Montparnasse (O'Brien, 2012; Foertsch & Cagnol , 2013; Waters-Lynch et al., 2016). 2005 is widely viewed as the year in which the term coworking became recognised as an identifier for shared workspace practices (Sundsted et al., 2009; Botsman & Rogers, 2010; Spinuzzi, 2012; Capdevila, 2013; Kojo & Nenonen, 2014; Gandini, 2015; Parrino,

2015; Bilandzic & Foth, 2016; Waters-Lynch et al., 2016). Waters-Lynch et al. identify three parallel 'origin stories', with spaces emerging in San Francisco, London and New York within a relatively short period of time (2016: 6). Coworking was a bottom-up development based around an informal decision to share space, with the originators presenting it as a 'third way' of work organisation that combines high levels of autonomy with interaction and structure (Neuberg, 2005). It is typically based on a membership-model of flexible, short-term space rental of hours, days or weeks (Spinuzzi, 2012; Moriset, 2013; Garrett et al., 2014; Gandini, 2015; Bouncken and Reuschl, 2016). While the business is broadly similar to serviced offices (Kojo and Nenonen, 2014), the nascent movement actively sought to differentiate itself from established offers by translating the informality of central urban cafes into its organisational culture in contrast to the tendency of serviced offices to replicate the image, language and business conventions of existing organisations (Waters-Lynch et al., 2016).

While the period between 2005-2010 can be viewed as the 'beginning era' of the coworking movement (Moriset, 2013), subsequent years have witnessed a rapidly increasing diversification of coworking (Waters-Lynch et al., 2016; Ivaldi and Scaratti 2018; Marchegiana and Arcese, 2018). Coworking spaces can be identified as differing according to the motivations of founders and members, organisational form, size, coworker values, membership population (e.g. industry focused or heterogenous), services offered, membership options, level of trust between coworkers, and the importance given to social and collaborative dimensions (Capdevila, 2014c; Rief et al., 2015; Spinuzzi, 2015; Brown, 2017). With global growth in the market, coworking has continued to evolve, adding new services, amenities and business partnerships, developing new networks and forms of organisation, and simultaneously specialising and hybridising. Significant shifts include the development of global cooperative networks of spaces, coworking networks who do not run their own space at all, an overlap between coworking and serviced offices, hybridisation, coworking as big business and corporate coworking (Figures 4-8 overleaf). As identified previously, this diversification makes locating specific identifiers of coworking difficult.

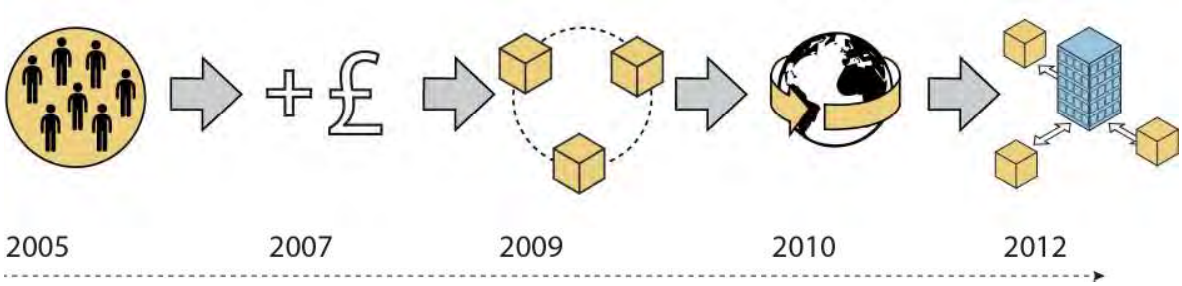


Figure 4. *Since 2005, coworking has gone through various developmental stages, described here as: (L:R) social movement, profit making, small chains, global networks and corporate proposition*

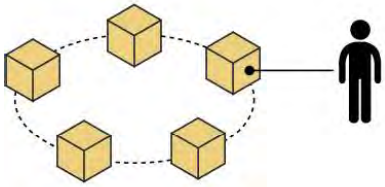


Figure 5. *Individual spaces formed networks. These were initially local but turned into global cooperative networks offering reciprocal membership benefits. Membership is still to a specific space*

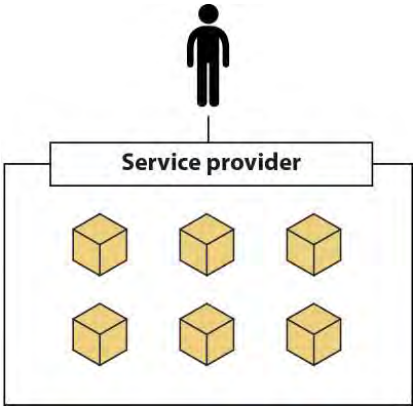


Figure 6. *Middle-men providers such as Croissant which offer membership to a network rather than to a specific space*

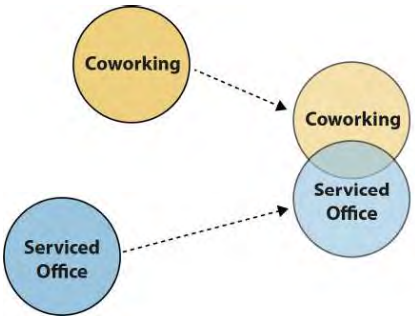


Figure 7. *An increasing overlap with serviced offices, with established serviced office providers increasing adding coworking as a bolt-on to existing services*

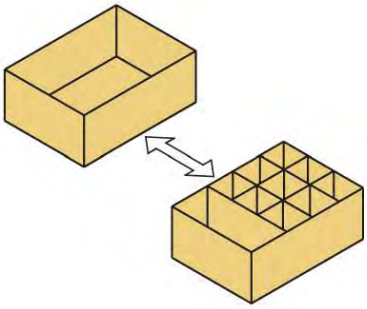


Figure 8. *Spatial diversification from open plan to hybrid spaces comprising larger numbers of enclosed office suites*

2.1.4 Academic literature on coworking

As might be surmised by the rapid evolution outlined above, the practice of coworking has consistently outpaced the development of knowledge about it. At the outset of this research coworking was arguably still an emergent typology with only a limited number of academic publications in existence. The first academic publication located on coworking appeared in 2010; increasing professional interest has been matched by growing academic attention and the number of academic studies relating to this topic has been increasing rapidly, with the number of publications increasing year on year (Table 1). These figures include book chapters, journal articles and conference papers that relate specifically to coworking, excluding the wider literature on other varieties of spaces that support entrepreneurship. Given the year-on-year growth in academic attention, a continuous literature review has been a feature of the research.

Year	Number of publications
2010	1
2011	1
2012	3
2013	5
2014	7
2015	8
2016	11
2017	14
2018 (incomplete year)	12

Table 1. *Number of identified academic publications in each year from 2010 to completion of study*

The growth in the body of research has been marked by a diversity of perspectives rather than consensus, with academic studies based in a variety of disciplines including psychology, sociology, management, real estate, workplace and engineering. Early studies were predominantly explorative theoretical works focusing on the emergence and drivers of coworking, but the literature has developed to increasingly include empirical studies. These - and the methods employed in each - are outlined in Table 2 overleaf. The body of empirical literature is still small, and it should be noted that 75 per cent of these were published during the course of study with almost half of these published in the latter two

years (2017-18). In terms of methodology, interviews were the most commonly employed strategy, often supported by visits or observation. However, longitudinal observation is rare, with periods of observation typically lasting less than a week in total, generally over multiple visits. In terms of quantitative analysis, this has exclusively taken the form of surveys or questionnaires, sometimes carried out in conjunction with qualitative data collection. Aside from the content of the literature, the relative newness of this field means that there is a methodological and validity gap that these study aims to address

	Interviews	Ethnographic observation	Number of sites visited in this study	Survey/Questionnaire	Desk research	Other
Spinuzzi, 2012	9 managers, 17 coworkers	No	9			
Butcher, 2013		Longitudinal (period of 2 years)	1			
Capdevila, 2013	10 interviews across 5 spaces					
Parrino, 2013			2 (one arguably not coworking)			Network analysis, 2 spaces
Capdevila, 2014a	15 interviews	20 hours				
Capdevila, 2014c	28 interviews	30 hours				
Moriset, 2014					Yes	
Kojo and Nenonen, 2014	15 interviews, 1 site		1			
Bauer et al., 2015	Unknown number		Unknown number			
Brodel et al., 2015	20 interviews, hosts and members			113 people surveyed		
Gandini, 2015					Yes	
Merkel, 2015	25, held with hosts					
Rus and Orel, 2015	Unknown number	Longitudinal participant observation, estimate 18 months (one author was a space founder)	1			
Salovaara, 2015	10 interviews at 2 spaces		2			
Spreitzer et al., 2015	'Several'	Limited observation	Unknown number	'Several hundred' people surveyed		
Cabral and van Winden, 2016	18 short interviews at 2 sites		2			
Clifton, 2016			1			'Reflective' case study
Gerdenitsch, 2016				Survey, 69 respondents		
Waters-Lynch et al., 2016					Yes	
Brown, 2017		Limited observation		Q-sort questionnaire and follow-up survey		
Castilho and Quandt, 2017	31 interviews					
Fabbri and Charue-Duboc, 2017	19 interviews	Longitudinal participant observation	1			
Garrett, 2017	19 interviews	Regularly over 6 months	1			
Jakonen, 2017	Between 9-29 interviews at 3 sites	4-5 days at each site	3			
Ivaldi, 2017 (thesis)	24 interviews with founders		Unknown number, limited duration			Workshop to validate findings
Balakrishnan, 2017 (thesis)	16 interviews at 2 sites	20 hours	2	Online survey, 102 respondents		
Marriotti et al., 2018			One-off visits to 20 spaces		Desk research on 68 spaces in Milan	
Weijs-Perree et al., 2018			Unknown	Questionnaire across 25 spaces, 219 respondents		

Table 2. *Empirical studies, methods employed at each and number of coworking spaces covered*

by combining quantitative and qualitative analysis. This will be described more fully in Chapter Three.

In terms of the focus of the academic literature, while there is a diversity of disciplinary perspectives, the majority has revolved around the social functioning of coworking spaces (Brown, 2017). Much of coworking's promise is built around the notion of collaboration and community; this has therefore drawn the most regular attention and will be considered first in the literature review. Other areas of review will be member experience, coworking as a new organisational structure and the relationship between coworking and its locale. Finally, this review will address the literature on the relationship between coworking and space; this is currently limited, with space typically considered as a by-product of an interest in collaboration or sociality. As there is a limited body of literature, it will be considered as a whole rather than pre and post commencement of the research, with the review highlighting any points at which there was a divergence in opinion at a specific point in time.

2.1.4.1 Community

The desire to belong to a community has been widely and consistently identified as a key factor in the decision to join a coworking space (Spinuzzi, 2012; Kojo & Nenonen, 2014; Spreitzer et al., 2015; Richardson, 2017), often resonating more highly than knowledge exchange or networking (Brodel et al., 2015; Gerdenitsch et al., 2016; Garrett et al., 2017). This centrality is so pronounced that the positioning of community has even been argued to be a key differentiator between coworking and other workspace providers (Clifton et al., 2016), with community building identified as the predominant objective of coworking by some academics (Butcher, 2013; Rus and Orel, 2015).

More recently, several authors have addressed the processes of building coworking communities. Early recommendations from within the movement can be summarised as 'community first, space second', with spaces built around existing communities and not vice versa (Brown, 2017). Rus and Orel (2015) identified community building as a multi-stage process that required time and careful management, with small groups of people initially

occupying temporary space to create the incipient demand for a permanent home - a 'beta phase' for the space itself. This suggests a conception of community as a deliberate product, albeit through a process of loose facilitation rather than strict regulation (Capdevila, 2013; Rus and Orel, 2015; Brown, 2017). Garrett et al. (2017: 19) similarly identified members as actively involved in the co-construction of community, with this exercise of agency resulting in a sense of ownership and 'authentic connection'; the authors argued that the study of coworking community could provide insights into how a sense of community could be fostered by traditional organisations.

The use of various tools of engagement to manage the ongoing curation of community has been a consistent focus of the literature. These can be categorised as community managers, events and communication strategies. Most of this research has focused on the role of community managers (or hosts/curators/community animators) who are seen as undertaking affective work which might include relationship-building, provision of knowledge and mentoring (Fabbri and Charue-Duboc, 2014; Merkel, 2015). They are typically viewed as central to the fostering of encounters, trust and interaction between members, promoting and enacting a shared sense of culture (Butcher, 2013; Fabbri and Charue-Duboc, 2014; Merkel, 2015; Parrino, 2015; Brown, 2017). The role of community managers in fostering collaboration will be discussed in more detail in Section 2.1.4.2.

Events can include member lunches, external speakers, skill sharing sessions, networking drinks and product tests, with events typically tailored to the member community. Internally, these have been viewed as providing opportunities for members to get to know each other, precipitating knowledge sharing, strengthening the sense of community (Butcher, 2013) and potentially extending the community beyond the bounds of the physical space to create wider networks of knowledge sharing opportunities (Capdevila, 2014c). Finally, communication strategies have been identified as including social media, web-boards, physical notice boards and newsletters which are used to communicate values (Parrino, 2015; Fabbri and Charue-Duboc, 2017) and community symbolism (Butcher, 2013).

The literature has identified both social and instrumental benefits of community for coworkers; both positions have featured in the literature as it has developed, rather than consensus moving from one to the other. Authors arguing for the social benefits have emphasised the use of coworking spaces as a way to replace the relational aspects of traditional office work (Butcher, 2013; Merkel, 2015; Spreitzer et al., 2015; Gerdenitsch et al., 2016). Literature on the instrumental benefits has centred on the use of coworking as a way to access social capital resources and construct and maintain a network position (Spinuzzi, 2012; Gandini, 2015). This 'duality' between social and instrumental aspects was highlighted by Rus and Orel (2015), who proposed to reconcile this by calling the coworking community a 'community of work', with community acting as a social structure that facilitates the sharing of information and knowledge. In this sense, community might have both social and instrumental functions.

While community has been an area of focus in terms of research, as with all aspects of coworking, the relatively recent burgeoning of interest means that there is not yet a comprehensive body of knowledge. However, the role of programming and community managers in shaping community is a relatively consistent feature of both the academic and wider literature and, as such, will be considered to be a distinguishing feature of coworking spaces. Overall, the aim of community building strategies is interaction which may or may not be work-related, linking the desire to cultivate community to the emphasis on collaboration.

2.1.4.2 Collaboration

The underlying principle of collaboration is the second quality that has been consistently argued to set coworking apart from earlier models of shared workspace (Capdevila, 2014c; Waters-Lynch et al., 2016; Brown, 2017). While collaborative practices may exist in other forms of shared workspaces, it is the explicit intent that has distinguished coworking from these other offers, with coworking spaces typically presented as sites of encounter, spontaneous collaboration and knowledge exchange (Lange, 2011; Capdevila, 2013; Schmidt et al., 2014; Merkel, 2015; Clifton et al., 2016; Castilho and Quandt, 2017). Lange ascribed this to the links between coworking and the open source movement,

resulting in a 'collective, networked approach' (2011: 202). Uda (2013) suggested that the blend of high autonomy and high collaboration was a key differentiator between coworking and traditional organisations, in which these two aspects have been viewed as two ends of the spectrum to the point of being impossible to reconcile; Peuter et al. later took a similar view (2017). The potential benefits of collaboration for coworkers have been variously identified as the strategic expansion of professional networks (Gandini, 2015), access to complementary knowledge or skills (Spinuzzi, 2012; Brodel et al., 2015; Brown, 2017), job opportunities (Spinuzzi, 2012; Gandini, 2015), peer support and critical feedback (Spinuzzi, 2012; Gerdenitsch et al., 2016), formalised collaborations (Brodel et al., 2015; Gerdenitsch et al., 2016) and informal help (Spinuzzi, 2012; Brown, 2017).

Joint project collaborations between members have not thus far been identified as a common outcome of coworking (Spinuzzi, 2012; Brodel et al., 2015; Brown, 2017), with knowledge exchanges tending to be informal and ad hoc. Gerdenitsch et al. (2016) identified work-related social support as the typical focus of interactions - while this is arguably a desirable result in itself, it may simply replicate the kind of support networks that might be found within organisational workplaces. These findings are backed up by Deskmag survey results - in 2017, the survey identified high levels of collaboration but predominantly based around small tasks, with 42 per cent of respondents having informally partnered on a project and only 27 per cent contracting work (Deskmag, 2017). This suggests that the romanticised image of coworking as a collaborative free-for-all should be treated with caution.

This romanticised view has tended to emphasise serendipity as a key signifier of coworking (Sundsted et al., 2009; DeGuzman & Tang, 2011; Coonerty & Neuner, 2013; Waters-Lynch & Potts, 2016), with Moriset describing coworking spaces as 'serendipity accelerators' (Moriset, 2013: 1). However, there is a growing body of evidence that interaction and knowledge sharing do not just happen, rather depending on what has been described as a degree of 'coordinated serendipity' (Brown, 2017: 119). Brown argued that both the 'promotion and enactment of particular coworking values...and coworking practices' in addition to tailored engagement activities strongly influenced the types of interactions that took place (2017: 121). van Winden et al. (2012) argued that handpicking

members helped to increase the chances that they formed mutually beneficial relationships. Conversely, Capdevila (2014c) argued that this coordination could happen organically, with members tending to leave if a space did not meet their needs, tending to reinforce dominant behaviours.

Research on the curation of relationships in coworking spaces has focused on the role played by the active mediation of community managers in structuring interactions, facilitating introductions and promoting social coherence (Capdevila, 2013; Merkel, 2015; Parrino, 2015; Spinuzzi, 2015; Brown, 2017). While there has been relatively little systematic analysis of the role of the host (Brown, 2017), existing studies suggest that the way in which the space is curated has significant implications for the interactions and exchanges that take place between coworkers. Varying levels of engagement have been identified in the role; there has been general agreement with Merkel's conclusion that 'service provider' roles foster less interaction than highly engaged hosts who actively mediate synergies between members (Capdevila, 2013, 2014c; Merkel, 2015: 128; Parrino, 2015; Brown, 2017).

Research on collaboration has also explored the mediating role of events. Butcher argued that events provided opportunities to share and merge best practice, while Cabral and van Winden (2016) highlighted event attendance as a factor in awareness, which was beneficial to members in terms of knowing what other members were capable of. Martins (2014: 81), however, was more sceptical about the role of events, concluding that 'structure rather than chance' is required to increase the likelihood of useful interactions, in addition to active engagement from the coworkers themselves.

2.1.4.3 New forms of participatory organisation

While it has been less well explored, the active engagement of coworkers and their willingness to participate in shared routines can be viewed as fundamental to coworking (Capdevila, 2014; Rus and Orel, 2015). The participatory nature of coworking has been linked to its connection to the open source movement (Hillman, 2011) and the 'collaborative economy' (Botsman and Rogers, 2010; DeGuzman and Tang, 2011).

Some authors have identified coworking as a new form of work organisation based on decentralised leadership and shared responsibility, with - typically - relatively few degrees of separation between founding entrepreneurs and members resulting in bottom-up rather than top-down leadership practices and a collaborative decision-making process (Bizzari, 2010; Salovaara, 2015; Leclercq-Vandelannoitte and Isaac, 2016).

The framing of coworking users as members rather than occupiers in the traditional sense implies an attitudinal difference which has been identified as a potential factor in participation within coworking spaces (Salovaara, 2015: 39), with participation in shared routines linked to a sense of ownership and social responsibility (Garrett et al., 2017). It is not uncommon for coworking spaces to set out simple rules of engagement, including giving members responsibility for ongoing maintenance tasks such as cleaning the kitchen or looking after plants (Salovaara, 2015; Kojo and Nenonen, 2016). Participation can also extend to routines that go beyond simple chores, with members organising events on an equal footing with the space founders or managers, or even funding improvements to the space (Salovaara, 2015; Garrett et al., 2017).

2.1.4.4 Coworking and the city

A small number of authors have explored the role of coworking in local regeneration, viewing coworking spaces as typically locally embedded, demonstrating 'strong identification with and commitment to their local surroundings' (Merkel, 2015: 134; Brown, 2017). In participating in local civic life, they have been considered to have the potential to provide important place-making and urban renewal functions, although this aspect has not yet been widely studied (Capdevila, 2013; Moriset, 2013; Merkel, 2015).

2.1.4.5 Member experience

Coworking has been argued to be a 'rediscovery of the centrality of the individual' (Bizzarri, 2010: 214), and the foregrounding of member experience within coworking spaces is essentially an answer to their central challenge; persuading potential members that their experience of work will be worth the ongoing price of entry. Flexible rolling contracts

mean that a space which does not meet the needs of its members can fail quickly, making customer focus and the provision of value-added services that enhance member experience a key value for coworking spaces (van Meel and Brinkø, 2014; Cabral and van Winden, 2016; Balakrishnan, 2017). Founders of some spaces have emphasised the need to evaluate the services offered and constantly improve them, although this has not been an area of research focus (The Instant Group Global Review, 2017). As identified previously, the wider value proposition for members can be instrumental (space and service) or relational (social interaction and community), depending on personal values and the motivation for joining a space. Overall, the need to prioritise the needs of members while remaining profitable has resulted in what have been described as 'heavily people-centric investments', with spaces finding that they cannot simply over invest in people, space or technology (Hood, 2015: 241).

Despite the perceived centrality of member experience, it has not been an area of focus for research, with earlier studies tending to talk about it only in general terms. Balakrishnan (2017) studied coworking from a servicescape perspective to identify five distinct elements that coworking offers in providing value to members. These comprised social interactions and support, community and events, management support services, the physical environment and collaborative culture (2017: 178). Most recently, Weijs-Perée et al. (2018) conducted a survey to explore user preferences in coworking space which could in some senses be considered to be addressing member experience.

2.1.5 Literature on coworking space

> 'While the best coworking spaces understand that they are selling an experience and a network, all coworking spaces are, on some level, selling workspace', (Egan, 2013: online).

As originally conceived, coworking was less about the physical design of a space and more about bringing people who shared values and attitudes together (Brown, 2017). However, it is not a virtual support network - although the community might extend beyond the bounds of the physical space, the concept centres around physical co-location, making physical space a fundamental part of the proposition. The following two sections will outline the existing literature on the physical spaces of coworking in terms of their spatial manifestation and design processes.

2.1.5.1 Space as a dimension of coworking

There has been very limited research into the spatial strategies of coworking spaces, with early literature in particular tending to be restricted to broad descriptions of the general qualities of spaces or visual surveys (e.g. Davies & Tollervey, 2013). More recently, some authors have argued for a role for physical space as an important dimension of coworking, although reviews have typically been limited to a brief description of types of space and technological infrastructures – for example, 'The available space is purposefully separated into working areas...and social interaction areas' (Bouncken and Reuschl, 2016: 325).
In terms of overall spatial strategy, Kojo and Nenonen (2016) identified a tendency towards activity-based working layouts in 15 Finnish coworking spaces, and a study by Brown (2017) identified the spaces in the study as 'very diverse', but neither included any detailed spatial analysis. Gertner and Mack (2017) argued that coworking spaces were more spatially innovative than traditional incubators; this was only based on a limited photographic analysis of three spaces. A more recent study by Weijs-Perée et al. (2018) used a stated-choice survey across 16 coworking spaces to identify spatial preferences. While some common characteristics were identified (e.g. a home-like interior and semi-open layout), these were high-level, and the responses were not cross-referenced against the

spaces that respondents worked in.

In terms of interior design, Waters-Lynch et al. (2016: 10) argued that the aesthetic features of coworking were a distinctive element that differentiates it from serviced offices, with spaces generally adopting a 'Post-Fordist' aesthetic that blends work and play, describing the 'intentional design of publicly visible white boards; inspirational quotes; digital discussion platforms projected onto walls; idiosyncratic art and spacious kitchens.' The authors linked the design of coworking spaces to a desire to communicate the intention and meaning of the space to members and encourage social interactions.

While the empirical evidence is still limited, the relationship between space and interaction has been the most frequently explored aspect of coworking space. Spinuzzi (2012) and Capdevila (2013) both linked the types of collaboration in evidence to the physical features of the space, connecting the client base and shared construction of the meaning of coworking to the size, location, internal layout and interior presentation. Several authors have broadly described the integration of lounge areas or cafés to provide spaces for interaction, although with little detailed analysis of how this was achieved or how successful it was in practice (Spinuzzi, 2012; Capdevila, 2013; Bilandzic and Foth, 2016; Balakrishnan, 2017). Cabral and van Winden (2016) argued that space was one of four strategies for interaction, with elements of 'design for interaction' including: printers and coffee machines, homely themed rooms, one entrance, open and secluded spaces, walls for work display, coffee house, themed laboratories, hallways to foster encounters, and brainstorm areas. The authors identified open shared spaces as being communication enabling and secluded offices less so; however, the study provided a snapshot of only two spaces, and design features were described in general terms ('open and secluded spaces'), lacking a more detailed picture of the way in which the spaces were organised. Fabbri and Charue-Duboc (2017) developed Fayard and Week's (2007) theory of the interrelationship of social and spatial affordances, arguing that the interaction dynamics of a French coworking space were supported by the affordances of commonality, inclusion and gathering. Similarly to other studies, the authors emphasised the role of the management team, concluding that interactions were not automatic and could not be taken for granted. However, the research was limited to a single coworking site and based on informal

observations and interviews, with no structured mapping of how and where interactions took place. Jakonen et al. (2017) were similarly interested in encounters which were broadly linked to spatial strategies that generated motion (e.g. attractors). This study included three coworking spaces and, again, relied on ethnographic observations without any structured space mapping.

The relationship between space and community was investigated by Butcher (2013), looking at the role of physical features within the space in constructing and maintaining community symbols and rituals. The author talked in general terms about the features of one coworking space - such as a large kitchen table - which supported community routines.

In terms of the relationship between the design of coworking and the potential for it to translate into organisational workspaces, Salovaara (2015) looked at the way in which company practices and coworking principles coincided in three organisational case studies, which the author equated with activity-based work layouts with varied look and feel and a managerial culture that prioritises collaboration, trust and openness. Salovaara did not demonstrate a clear link between coworking and the design of these specific organisational spaces, arguably pointing more to global trends pushing organisational and coworking space in the same direction, than organisations consciously adopting coworking principles. Hood (2015) similarly identified the potential for useful lessons for the corporate workplace, referencing in broad terms the provision of choice in activity settings, convenience of location and an amenity/cost/space balance without providing any specific recommendations.

2.1.5.2 Design processes

In an industry that is all about member experience, placing the occupant at the centre of the design process would seem logical; a handful of studies have looked at design processes within coworking spaces, highlighting the role of member participation. The literature reflects two mechanisms by which this takes place; these can be described as a 'beta phase' and a more traditional co-creation process carried out in the space itself.

In a 'beta' phase, temporary spaces effectively serve as a testing ground for a future permanent coworking space, and may take place in the final space or an interim location (Rus and Orel, 2015). The incorporation of additional features such as a temporary design shop, exhibition and community space was noted by Rus and Orel. The authors identified this as preceding a co-creation phase, in which members were mobilised to provide input into the space design, do construction work and furnish the space, arguing that the co-creation of the space ran alongside the co-creation of the organisation, with members helping to articulate the core values. A similar co-creation process was identified at the Impact Hubs in Melbourne (Butcher, 2013) and Berlin (Klooker et al., 2016), both bringing in design professionals to facilitate a co-creation design process.

While some spaces have involved outside design expertise, a study of 15 Finnish coworking spaces by Kojo and Nenonen (2016) found that few spaces had used a design professional, with the design being carried out by space managers or by the members themselves. Marshall and Witman (2010) discussed the use of space as an empowerment tool, and Waters-Lynch et al. (2016: 10) identified early members as 'often' involved in the funding, design and construction of a space, linking it to the influence of the open-source movement and the presence of community as an organising theme. Some researchers have suggested that co-creation by members is a process that continues after a space has opened, with examples of members being able to experiment or implement continuing improvements to the physical space (Capdevila, 2014c; Klooker et al. 2016; Kojo and Nenonen, 2016).

2.1.6 Summary of key points

This section aimed to identify key values or spatial identifiers of coworking and highlight gaps in knowledge within the existing literature. While coworking has attracted increasing academic interest with a growing body of empirical research based in a widening variety of disciplines, the practice of coworking has consistently outpaced knowledge about it. The number of available studies at the outset of this research was extremely limited; although this number has grown significantly, subsequent studies have tended to build on and confirm previous findings rather than come to radically new conclusions. For example, the role of the host has attracted relatively high levels of attention, with authors

generally agreeing that they play an important role in the affective work of community and relationship building.

A significant proportion of the literature has focused on the social functioning of coworking spaces (Brown, 2017), and far less is known about the spaces of coworking, how they are planned and their professed effects. Early findings that simple co-location is insufficient to result in interaction (Spinuzzi, 2012: 399; Merkel, 2015; Parrino, 2015) have arguably side-lined any systematic analysis of the constitution of coworking spaces or micro behaviours of interaction in relation to spatial layout; while it seems likely that some degree of curation or transpatial support for relationships to form is essential, wider organisational literature supports the argument that space does play a role in interaction - even if only providing a frame within which relationships can develop after an initial connection has been established (Duffy, 1997; Sailer, 2011). The specific attributes of coworking spaces have therefore rarely been analysed in detail and to date, individual studies have typically been limited to one or two spaces, with the question of whether there are any common spatial strategies or attributes remaining unanswered.

In addition, the difficulty around arriving at a clear definition of what is - or is not - coworking makes drawing clear conclusions more complex. For example, Parrino's 2015 study on the relationship between physical co-location and knowledge exchange was limited to two sites, one of which was a design firm that simply rented a small number of excess workstations to external workers - it is debatable as to whether this can be considered to be coworking. In this instance, it does not seem surprising that no evidence of sociality or collaborative relationships was found. The provisional definition of coworking established at the outset of this study will therefore be interrogated through the research.

It could be argued that member experience is a central quality of coworking. Given the short-term nature of most coworking contracts, spaces are reliant on providing an experience that their members will continue to pay for and member experience encompasses a range of aspects, depending on motivations for joining, the market that the space is trying to serve, and the demands of the membership community. In each case, the experience of coworking is one that has been described as crafted by the coworkers

themselves (Spreitzer et al., 2015), operating with a high degree of autonomy. This arguably represents an inversion of the traditional orientation of organisational space, in which decisions are made from the top and the focus is on efficiencies and outputs. Despite this apparent centrality of experience, there has been very little research into the aspects of experience from a members' point of view within a coworking space.

There has been similarly limited research into how spaces are briefed, developed and evaluated in use. A small number of articles and conference papers have identified participatory processes as a key part of establishing a space and some authors have suggested that members are given a level of agency in ongoing spatial routines, but there has been very little longitudinal analysis of how this works in practice.

While there is increasing corporate interest in coworking as a model, whether or not coworking leads to desirable behaviours that are relevant to organisations is still far from clear. Coworking has typically been studied as an independent phenomenon, with the body of research isolated from the wider body of knowledge on workplace behaviours. While coworking may be a distinct typology with its own unique set of behaviours, this is impossible to judge without using existing studies as a reference point.

In addition, the wider literature on coworking can be criticised for its widely 'celebratory' framework, with the model rarely placed under critical scrutiny (Gandini, 2015: 193). Given the history of workplace design adopting design fads without critical analysis and subsequent misfires, a critical analysis of coworking would seem to be timely.

The study aims to address these gaps by looking in detail at the stated values and spatial organisation of a variety of coworking spaces in addition to mapping how interactions, member experience and ongoing change are managed at two coworking spaces, within a wider context of organisational workplace research. In order to do this, the following section will discuss the role that space plays in organisational life.

2.2 Organisations, space and change

This section will outline the relevant literature on the role of space in organisational life and change to identify issues with the existing evidence base that highlight the importance of continuing research, and provide a theoretical foundation for the analysis of coworking spaces. For the purposes of this thesis, the extensive literature on physical aspects of space such as ergonomics, lighting, air quality, temperature and noise has been disregarded. Similarly, literature that focuses on organisational outcomes such as job satisfaction has not been included in this review. With the exception of key studies, the focus has been on more recently published literature to reflect the pace of change in workplace design and research.

2.2.1 Organisations and change

> 'The static business that persists with traditional management-employee relationships will not flourish...The alternative is to devolve [their] operations so that they resemble a federation of interests bound together by common values and a common purpose.', (Donkin, 2010: 26-27).

The complexity and pace of global business has put pressure on traditional forms of organisation and this study is set within a context of significant changes to organisational structures with resulting implications for the spaces in which work takes place. Significant shifts in organisational structure that have been identified include reducing hierarchies, the blurring of boundaries between different parts of the organisation, new management perspectives, continuous change and a shift towards teams as the basic building blocks of organisational structure (Heerwagen et al., 2010). With a thorough review on organisation theory outside the scope of this study, this review briefly outlines new and emerging forms of organisation that are linked to changes in spatial practices.

2.2.1.1 Hierarchies to networks

Organisations can be considered to be structures that are embedded in their environment, requiring them to continually respond to changing social, cultural, political and technological conditions in order to maintain competitive advantage (Miles and Snow, 1978, 1984; Heerwagen et al., 2010, 2016; Snow, 2015). Miles and Snow (1984) described this as organisational 'fit', arguing that organisations necessarily adapt by reconfiguring their resources to maintain fit with their environment. The need for rapid response to changing contexts has put pressure on traditional forms of organisation, with organisational theorists identifying a broad shift from bureaucracy and hierarchy to networked organisational structures (Hecksher and Adler, 2006; Snow and Fjeldstad, 2015; Heerwagen et al., 2010, 2016). While emerging variants of this form of organisation are typically associated with innovative high-tech firms (Heerwagen et al., 2016), networked forms involving the resources of multiple partners can be found in most industries today (Snow and Fjeldstad, 2015). Snow argued that a shift from cooperation to collaboration as an organising principle is driving the continuing evolution of organisational forms, with firms reorganising their value creation processes through the use of various forms of multi-party collaboration and the locus of innovation increasingly considered to extend beyond the individual firm (2015: 7).

2.2.1.2 Creativity and innovation as key factors in organisational performance

Global competition, challenging market conditions and the pace of change have made creativity and innovation highly desirable capabilities for organisations. Creative capacity has been cited as key to organisational performance, competitive advantage and growth (Woodman et al., 1993; Oldham and Cummings, 1996; Blomberg et al., 2017), with innovation similarly regarded as a source of competitive advantage in the context of changing organisational environments (Dess and Picken, 2000; Tidd et al., 2005; Crossan and Apaydin, 2010). While the terms are often conflated, broadly speaking, creativity can be seen as a precondition for innovation (Amabile, 1996; Blomberg et al., 2017), with creativity typically defined as producing novel ideas and innovation as successfully implementing those ideas within an organisation (Amabile, 1996: 1). For comprehensive

literature reviews see for example Crossan and Apaydin, 2010 (innovation) and Blomberg et al., 2017 (creativity). This section briefly outlines the relationship between the two, and highlights some of the factors which have implications for workplace design.

2.2.1.3 Creative capacity

Woodman et al. (1993: 293) defined organisational creativity as 'the creation of a valuable, useful new product, service, idea, procedure, or process by individuals working together in a complex social system.' While the precise relationship between creativity and the physical environment is still an open question, there is widespread agreement that environmental context is an influencing factor on creativity (Csikszentmihalyi, 1996; McCoy and Evans, 2002; Sternberg, 2006). A key aspect in this relationship is the view of creativity as a collective or social process, suggesting an inherent link with interaction (Amabile, 1996; Allen, 2007; Oksanen and Stahle, 2013). This link between creativity and communication strongly implies a mediating role for the physical environment. Researchers have also argued that space has an effect on people's emotional well-being, which can in turn be taken as fundamental for creative work (Csikszentmihalyi, 1996; Oksanen and Stahle, 2013). Organisational culture and climate have also been suggested to be among the most important organisational factors that affect creativity (McLean, 2005; Dobni, 2008), similarly implying a supporting role for physical space in the creative process.

2.2.1.4 Innovative capacity

Innovation is commonly viewed as the implementation of creative ideas, with an innovation consisting of a technology, product or solution that leads to the generation of some new form of value (Amabile, 1988; Laing and Bacevice, 2013; Anderson et al., 2014). Similarly to creativity, innovation is viewed as relying on a complex range of enabling factors which are still poorly understood, although diversity of experience and interaction are commonly considered to be important factors in innovative capacity. The literature on mobile creative people has highlighted the importance of diversity of experience (Florida 2002; Clifton et al., 2013), and it has been suggested that the more diverse a team, the more likely it is that they will generate significant innovations (Allen and Henn, 2006; Gertner, 2012). In

this respect, innovation has been viewed as an explicitly collaborative process (Amabile, 1988; Gertner, 2012; Laing and Bacevice, 2013). Amabile et al. (1996: 1155) argued that creativity by individuals and teams was a 'necessary but not sufficient precondition' for innovation, further proposing that innovation can stem from ideas generated outside an organisation as well as internal inspiration - for example, technology transfer. This view can be linked to the wider identification of new forms of innovation, such as 'open innovation' - a term coined by Henry Chesbrough (2003) - describing a process by which organisations generate new ideas and bring them to market by drawing on both internal and external sources. In a similar vein to the literature on creativity, this emphasis on diverse networks, interaction and the cross-fertilisation of ideas suggests the potential for spatial solutions.

2.2.1.5 Implications for organisational space

This focus on creativity and innovation as key drivers of organisational success has led some writers to argue that modern organisations should be considered to be 'forums for interacting and collaborating', leading even relatively bureaucratic organisations to try to develop processes and spaces that improve information flow within and across groups (Heerwagen et al., 2016). This emphasis on the combination of interaction and diversity of experience could be argued to be a key driver of organisational interest in coworking. However, it neglects the multiple roles that space plays in organisational life and change. The following sections will discuss these multiple and overlapping roles.

2.2.2 Organisations, space and change

> '[Space has become] performative and purposeful in that it is less defined by physical qualities and more defined by the achievement of collective organisational purpose', (Laing and Bacevice, 2013: 29).

Following widespread neglect of the potential of space to act as a business asset (Clegg and Kornberger, 2006; van Marrewijk & Yanow, 2010; Alexander and Price, 2012; Skogland and Hansen, 2017), recent years have seen an increasing body of rigorous studies that link physical space to psychological and behavioural outcomes (Appel-Meulenbrook et al.,

2010; Baldry and Hallier, 2010) including employee motivation (e.g. Oldham and Brass, 1979), organisational engagement (e.g. Millward et al., 2007), job satisfaction (e.g. Veitch et al., 2007; Bodin Danielsson and Bodin, 2008), and employee performance (e.g. Haynes 2008; Vischer, 2007b). Changes in organisational structures and work processes have therefore been accompanied by an increasing recognition of the potential for physical space to act as a powerful tool to support organisational strategy (Kornberger and Clegg, 2004; Levin, 2005; Lindholm and Levainen, 2006; Baldry and Hallier, 2010; Dale and Burrell, 2010). In this view, constructing new corporate buildings, (re)designing internal spaces and renovating existing buildings can all be important ways of supporting organisational transformation (Becker, 2002; Bell, 2006; Clegg and Kornberger, 2006; Baldry and Hallier, 2010; Vischer, 2012).

However, it has been claimed that as many as 70 per cent of organisational change initiatives fail (Skogland and Hansen, 2017: 95-96). Even if this is an overestimation, it is clear that effecting organisational change is a complex task, not least because of the multiple functions of space in organisational life (Rafaeli and Vilnai-Yavetz, 2004; Elsbach and Pratt, 2007). This complexity has arguably not always been recognised in change management literature; Skogland and Hansen considered that an emphasis on functional change management strategies has resulted in a 'simplified and often highly deterministic view on space as a change management tool' which has resulted in 'cause-effect thinking, suggesting that all, or at least a majority of, people read and react to space in the same or similar ways' (2014: 106-107). Elsbach and Pratt (2007) argued that the lack of a consistent pattern of desired outcomes in the workplace is a direct reflection of these multiple functions, which will be discussed in the following section.

2.2.2.1 Frameworks for understanding organisational space

There are numerous analytical models for understanding the role that space plays in organisations (e.g. Steele, 1973; Becker, 1981; Davis, 1984; Hatch, 1997). This review will draw on a framework that originated in a study on organisational sense-making, in which Rafaeli and Vilnai-Yavetz identified three primary functions of organisational space: instrumental, symbolic and aesthetic (2004; Vilnai-Yavetz et al., 2005; Elsbach and

Bechky, 2007; Sander, 2014; Kallio et al., 2015). This framework offers a straightforward way of describing the role of the physical environment whilst also recognising its multiple, overlapping functions; the presence of one aspect does not exclude the simultaneous existence of another.

Instrumental: Instrumentality refers to the extent to which a physical space and its artefacts support or hinder specific activities (Rafaeli and Vilnai-Yavetz, 2004). Vilnai-Yavetz et al. (2005) identified this aspect as similar to Gibson's theory of affordances (1986), with physical artefacts able to either support or hinder desired activities. Dimensions of instrumentality in workplace research will be discussed in Section 2.2.2.2.

Symbolic: Symbolism refers to the associations elicited by space which have an important role in the formation of organisational identity, culture and meanings, focusing on the effects of subjective interpretations rather than objective attributes (Hatch, 1993; Lindahl, 2004; Kallio et al., 2015). The literature will be briefly outlined in Section 2.2.2.3.

Aesthetic: Aesthetic refers to the sensory reactions to a physical environment and its artefacts, and is the least explored aspect within the field of organisation studies (Rafaeli and Vilnai-Yavetz, 2004; Kallio et al., 2015). Aesthetics will be discussed in Section 2.2.2.4.

2.2.2.2 Space and instrumentality

Early studies on the impacts of workplace design focused on research into improving worker efficiency and output through environmental factors such as ergonomics, lighting, and climate and noise control (Zalesny and Farace, 1987; Charles and Veitch, 2002; Newsham et al., 2008). The functional perspective is arguably still dominant in existing organisational literature (Taylor and Spicer, 2007; Davis et al., 2011; Skogland and Hansen, 2017). This strand of research was described by Taylor and Spicer as 'Space as Distance', in theory offering a 'highly controllable' way of strategically manipulating the spatial environment, resulting in a relatively extensive practice based on this approach (Taylor and Spicer, 2007; Skogland and Hansen, 2017: 100). More recent research has focused on how the instrumental functions of space can support knowledge-intensive work processes such

as interaction, creativity, innovation, knowledge exchange and organisational learning.

Perhaps the largest single body of research concerns workplace layout, examining the relationship between furniture, spatial configuration, tools and behaviour (Taylor and Spicer, 2007). The consequences of open plan offices were an area of early interest (e.g. Brookes and Kaplan, 1972; Oldham and Brass, 1979; Zalesny and Farace, 1987; Sundstrom et al., 1994; van der Voordt, 2004). The relevance of earlier studies has arguably been compromised by more recent changes to working arrangements such as Activity Based Working (ABW). Despite a growing body of research, there is a lack of evidence that describes the outcomes for employees in these types of workspaces (Davis et al., 2011; Hirst, 2011). In addition to the complaints registered in open plan environments (lack of privacy and status, noise, distractions, climate control - see e.g. Baldry, 1997; Parker, 2016), it has been suggested that hot desking can result in a lack of informal social interactions (Hislop and Axtell, 2009: 44; Hirst, 2011).

An emphasis on collaboration and knowledge exchange has resulted in a body of research into how space can influence organisationally desirable behaviours such as innovation, creativity, knowledge exchange and interaction (Allen and Henn, 2006; Peponis et al., 2007; Appel-Meulenbrook, 2010; Stryker et al., 2012; Kabo et al., 2014; Orbach et al., 2014). Recent studies have explored the relationship between creative processes and the environment (Dul et al., 2011; Martens, 2011; Sailer, 2011; Heinonen & Hiltunen, 2012; Kallio et al., 2015; Appel-Meulenbrook et al., 2016; Lee, 2016; Blomberg et al., 2017). While the results have been far from conclusive, evidence suggests that a balance between space for communication and concentration, informal interaction, and visual stimulation could all be considered to be broad factors in stimulating creativity (Amabile, 1983; Csikszentmihalyi, 1996; Haner, 2005; Meusberger, 2009; Sailer, 2011; Laing and Bacevice, 2013; Lee, 2016; Blomberg et al., 2017). Research on organisational innovation has tended to focus on interaction and spatial configuration (Penn et al., 1999; Allen and Henn, 2006; Moultrie et al., 2007; Appel-Meulenbrook et al., 2016). Some authors have explored the concept of dedicated innovation spaces as a way to nurture a culture of creativity or innovation, with authors identifying unconventional layouts, non-hierarchical furniture and elements of play as common elements of these spaces (Haner, 2005; Lewis and Moultrie,

2005; Heinonen and Hiltunen, 2012; Lee, 2016).

With innovation and creativity particularly difficult to measure, interaction is often used as a proxy. Much of the existing research on the relationship between creativity/ innovation and the environment therefore focuses on interaction (Martens, 2011; Sailer, 2011). A number of dimensions of physical space have been identified as influencing interaction within organisational environments, with a particular focus on overall spatial configuration, visibility, movement and proximity. The effect of varying levels of enclosure have been investigated by a number of authors, with more recent studies leaning towards a link between increased levels of interaction and open plan work environments (Becker and Sims, 2001; Rashid et al., 2006; Orbach, 2014). Several studies have indicated that most interactions take place around workstations, with deliberately placed informal seating areas relatively underused (Brager et al., 2000; Steen et al., 2005; Rashid et al., 2006; Boutellier et al., 2008). Research on the effects of spatial layouts have suggested that building configurations with a high degree of integration (broadly, the proximity of spaces to each other) may enhance face-to-face interaction (Heerwagen et al., 2004; Steen et al., 2005; Allen and Henn, 2006; Kabo et al., 2014). The likelihood of interaction has also been linked to levels of visibility (Rashid et al., 2006; Markhede and Koch, 2007; Stryker et al., 2012; Coradi et al., 2015a), and movement patterns with simple circulation, common movement pathways, meeting points and zones of overlap all contributing factors (Allen, 1977; Backhouse and Drew, 1992; Kabo et al., 2013).

Finally, following a landmark study in which Allen (1977) found that communication between colleagues decreased rapidly with distance, with very little spontaneous interaction beyond thirty metres - the so-called 'Allen curve' - proximity has been consistently identified as a factor in patterns of interaction. Evidence points to a strong relationship between communication and physical distance, with vertical separation typically having a greater negative effect then horizontal distance (Wineman and Serrato, 1997; Allen and Henn, 2006; Sailer, 2014; Kabo et al., 2015). It should be noted that interaction is not only a function of physical distance - Fayard and Weeks (2007) argued for the consideration of social designation in addition to privacy and proximity as factors in interaction, describing the social norms that allow people to feel like it is acceptable to stop and talk

to one another in a given setting. Sailer (2014) identified transpatial forms of solidarity as providing a necessary 'social glue' for collaboration patterns (although these transpatial forms had spatial contextuality).

2.2.2.3 Space and symbolism

The physical environment can be viewed as a non-verbal communication system, conveying information about the organisation, its values, its culture and expected behaviours (Davis, 1984; Berg and Kreiner, 1990; Becker and Steele, 1995; Clegg and Kornberger, 2006; Hancock, 2006; Elsbach and Bechky, 2007; Duffy, 2008). In this sense, the symbolic functions of space can be viewed as a potentially powerful tool for strategic management (Gagliardi, 1990; Cooper et al., 2001; Allen et al., 2004; Khanna et al., 2013; Skogland and Hansen, 2017). While the symbolic value of office spaces has been recognised within the research community, it has been argued that employers have only recently started to view buildings as a means of encapsulating organisational culture and values, leading to an increasing range of symbolic space management strategies (Hancock, 2005; Chanlat, 2006; Clegg and Kornberger, 2006; Markus, 2006; Baldry and Hallier, 2010).

Non-verbal artefacts that play a role in communicating organisational narratives include spatial arrangement and design, spaces within buildings, furnishings and artefacts, and building design and location, reflecting how external visitors and employees view the organisation's capacity, position, values and identity (Hancock, 2006; Appel-Meulenbrook et al., 2010; Danielsson, 2015; Waber et al. 2014). Spatial design can thus be used to connect employees to organisational mission, symbolically reflecting the organisation and its working culture (Danko, 2000; Davis et al., 2011) and affecting employee perception of leadership and organisational structures as well as influencing recruitment and retaining employees (Danko, 2000). Leveraging artefacts or internal branding to create narratives around organisational change has also been found to act as a support mechanism for change processes (Skogland and Hansen, 2017), helping employees to understand the rationale for change and communicating it successfully to external audiences (Stegmeier, 2008; Danielsson, 2015).

The interest in symbolic space management can also be linked to new trends in organisational branding in a globalising society in which the value of a company and its products depend increasingly on adequate branding. This locates workplace strategy, location strategy and portfolio management as potentially powerful means of communicating brand values to internal and external stakeholders (Hatch and Schultz, 2003; Khanna et al., 2013: 217; Skogland and Hansen, 2017).

Empirical research has pointed to a range of effects on employees, including employee identification with the organisation, empowerment and a positive attitude to work (Raymond and Cunliffe, 1997; Cairns, 2002; Marrewijk, 2010), a sense of belonging (Allen et al., 2004), and positive effects on satisfaction, creativity and motivation (Bjerke et al., 2007). Symbolic aspects of space have also been linked to identity creation, making it possible for individuals to differentiate themselves and signal their workplace identity (Danko, 2000; Elsbach and Bechky, 2007; Khanna et al., 2013), or to construct shared meanings between previously segregated groups (Laing and Bacevice, 2013).

Users can be viewed as playing an active role in producing spatial meanings (Zhang and Spicer, 2014), with the same environment potentially perceived in profoundly different ways as a result of different life histories, cultural heritages, and professional or gender backgrounds (Stegmeier, 2008; Rylander, 2009; Van Marrewijk and Yanow, 2010; Zhang and Spicer, 2014). Rylander (2009) found that employees interpreted a new workplace design based on perceived hidden messages, assuming (incorrectly) that design features had explicit intentions behind them. Zhang and Spicer (2014: 741) argued that research suggests that the subjective experience of users - either symbolic or aesthetic - can differ hugely from the intentions of space designers. Kjolle and Blakstad (2014) identified expert knowledge as potentially resulting in a lack of interest in end user need, resulting in further mismatches between end user and professional perspectives of the space. This requires researchers to think about how and why corporate artefacts create meaning in a particular context (Hancock, 2005), suggesting that management understanding of what employees' value is important for the organisational space to fully enact the correct and intended values (Elsbach and Pratt, 2007).

2.2.2.4 Space and aesthetics

'Aesthetics' refers to the sensory experience of an artefact or environment, with its most straightforward aspect concerning the experience of beauty or ugliness (Rafaeli and Vilnai-Yavetz, 2004; Elsbach and Bechky, 2007; Sander, 2014; Kallio et al., 2015: 392). With sensory aspects such as sound and daylight most often considered in relation to the instrumental functions of space (Kallio, 2015), aesthetics is typically considered to include design elements of the physical environment such as colours, materiality, artwork and overall design (McCoy and Evans, 2002). This is distinct from the wider field of organisational aesthetics, which highlights the materiality of everyday routine in organisations, studying 'how individuals and groups act in organisations by heeding their feelings, desires, tastes, talents, and passions' (Strati, 2010: 880). A broader rise in consumerism, increasingly blurred boundaries between 'high' and 'low' culture, a heavy reliance on imagery, and widespread access to mass media resulting in a lean towards 'slick aestheticised presentations' has been argued to make aesthetic considerations an issue of 'prime social and organisational possibilities' (Warren and Fineman, 2007: 110-111).

While it may be growing in importance, aesthetics is the least researched aspect of organisational space, representing a relatively new concept in management literature (Elsbach and Bechky, 2007; Kallio et al., 2015). Most existing research has been situated within the field of environmental psychology. Aesthetics can most obviously be used to create specific sensory experiences (Nasar, 1994; Heft and Nasar, 2000). Aesthetics have also been argued to promote an overall sense of belonging, creating a particular atmosphere and meaning over time as people create emotional bonds with the objects around them and has therefore been linked to place attachment, influencing individual experiences and creating shared interactional experiences (Elsbach and Bechky, 2007: 90). Cognitively and perceptually stimulating workplace environments have been conceptually linked to enhanced creativity, although the evidence is sparse (Csikszentmihalyi, 1998; Haner, 2005). Enriched workspaces, compared to workspace stripped of extraneous decorations, have also been found to positively affect employee concentration, engagement, satisfaction and perception of productivity (Haslam and Knight, 2010; Nieuwenhuis et al., 2014). Office refurbishment has also been linked to positive changes in employee perceptions in terms of

organisational culture, satisfaction and affective organisational commitment (McElroy and Morrow, 2010). However, organisational change studies typically do not address aesthetic affects in isolation, and the precise effect of the aesthetic and sensory environment is still an open question.

2.2.3 Problems with the evidence base

While there is strong evidence to suggest that physical space has an influence on organisational outcomes, the evidence base as a whole remains partial and fragmented, resulting in often unforeseen responses to organisational change initiatives, and a lack of wider distribution of knowledge into architectural practice.

While organisations may seek to use spatial configuration as a tool, the idea that a workplace designed in a particular way will automatically lead to organisationally desirable behavioural outcomes such as interaction is problematic. Kabo et al. argued that 'spatial effects are probabilistic and contingent rather than deterministic and universal' (2015: 59), with the potential for the same material conditions to produce different results (Elsbach and Pratt, 2007; de Paoli et al., 2017). There are numerous examples in the literature of spatial changes resulting in unintended outcomes, with occupants influenced in ways that are contrary to what the designers desired or predicted (Elsbach and Pratt, 2007; Pepper, 2008; Lansdale et al., 2011; Stryker et al., 2012; Morrison and Macky, 2017), and Davis et al. identified workplace redesign as an 'organisational risk' in terms of the potential for unwanted outcomes (2011: 201). With a building or spatial configuration able to potentially afford uses that are outside the control of the space planners, the impact of design interventions can only be understood in usage (Pepper, 2008; Sailer et al., 2010). This raises questions about where the limitations of the promises that workplace designers can make to their clients lie, particularly for emerging typologies such as coworking.

Even within more traditional workplace environments, the problem of predicting the behaviours that might result from a design intervention is exacerbated by an evidence base that is ambiguous and often inconsistent (Kim and de Dear, 2013; Skogland and Hansen, 2017), with studies resulting in very different findings (e.g. McCoy and Evans,

2002/Ceylan et al., 2008). There are several contributing factors, including a limited range of research settings, a wide range of variables and lack of consistency, difficulties in measuring intangible outputs, and the highly complex nature of the relationship between space and other influencing variables (Davis et al., 2011). Outcome evaluation can be viewed as particularly problematic where the desired outputs are intangible - for example, productivity, creativity or knowledge exchange (Sailer, 2011; Ruostela et al., 2015; Lee, 2016). The study by Toker and Gray (2008) which measured patent applications is still a rare example of spatial behaviours being tied to concrete intellectual outcomes. The fact that significant spatial redesign tends to be part of a wider organisational change process similarly makes it very difficult to demonstrate a relationship with specific elements of the physical environment (Coradi et al., 2015a; Appel-Meulenbrook et al., 2016).

A further issue is created by a recognised gap between academic research and architectural practice (Heerwagen et al., 2004; Sailer et al., 2010). Research outputs are often highly specialised and not readily accessible to design professionals. This is a problem that has been identified in the POE literature, with information produced by POE professionals rarely presented in a way that facilitates the crossover into design practice (Section 2.3.2.3). This means that the studies that do exist are relatively poorly known within design practice (Vischer and Zeisel, 2008; Sailer et al., 2010). This problem carries through to the wider academic literature; for example, Pepper (2008) discussed the plan arrangement in some detail, but there are no illustrations and only a small number of photographs. Conversely, data that is gathered by designers is held internally, with little time or opportunity to analyse it before moving onto the next cycle of work.

These issues are compounded by changes in office design between when early studies were carried out and today, limiting potential confidence in the extent to which results are transposable (although recent studies suggest that factors such as proximity and integration continue to be relevant). This presents particular problems for the continually evolving world of workplace design, with the pressure to present 'new' solutions to developing organisational demands. This means that there is a need to understand the reasons for and manifestations of workplace change if research efforts are to be usefully focused.

2.2.4 Summary of key points

This section has discussed the multiple roles that space plays in organisational life, outlined the existing evidence base around these roles, and highlighted continuing issues with that evidence base. As stated in Section 2.1.6, while there has been significant organisational interest in coworking as a model, it has been isolated from the wider body of knowledge on workplace behaviours. The extent to which coworking represents a distinct typology with a unique set of behaviours therefore cannot be fully answered without using existing organisational literature as a reference point. This review has therefore provided an important contextual foundation for the study of coworking. The following paragraphs will identify the specific gaps in knowledge that this study aims to address.

The organisational literature highlights the existence of significant gaps between design intent and reality, exacerbated by a lack of empirical evidence on the relationships between space and behaviours. With a limited existing evidence base, this makes the empirical study of coworking both timely and critical given the growth of interest in adopting coworking as a model – both as an extension of organisational space and as a potential influence in shaping the ways that organisations develop their own internal workplaces.

The existing literature also emphasises the varying functions of space for organisations in addition to highlighting the increasing recognition of space as a strategic tool. These functions are most commonly viewed from an organisational perspective. If coworking can be regarded as having a distinctly bottom-up orientation, this suggests the need to focus on the perspective of end-users rather than decision makers in developing a deeper understanding of the functions of workplace for occupants. In addition, successfully leveraging the symbolic potential of space emphasises the importance of intangible qualities such as affect, experience and values – these similarly need to be understood from a user as well as an organisational perspective. This requires new approaches and frameworks that place the occupant at the centre of the design and evaluation of new spaces.

Popular literature around coworking has made significant claims about its ability to generate innovation, loosely linked to cross-pollination between diverse groups of users

and the promotion of interaction between them. With innovation and creativity extremely difficult to measure, interaction is most often used as a proxy within the organisational literature. However, there has been limited analysis of the spatial strategies employed by coworking spaces to promote interaction and no structured mapping of patterns of interaction; this study aims to address this gap in the knowledge.

In addition to its isolation from the wider field of organisational studies, coworking has largely been discussed entirely separately from wider organisational workplace design. The next section will outline major developments in the history of the office before discussing the implications for workplace design professionals and literature around briefing and evaluation, placing coworking in its historical and current context.

2.3 Workplace design and practice

Changing organisational demands have always had an impact on the development of the office as a typology. This section therefore analyses the historical development of the office as a typology, picking out key shifts in order to place coworking in its wider context. It then highlights the implications of organisational change for workplace design practice – particularly in the light of the challenges identified in Section 2.2.3 – and finally reviews the literature around design briefing, co-creation and post-occupancy evaluation. Current workplace design trends will be addressed in Section 4.3.1.

Without entering into the literature on space and place in detail, workplace is used rather than workspace. Workplace describes the whole environment for work, which increasingly includes networks of overlapping places (Laing and Bacevice, 2013). Place also implies a phenomenological aspect in which space is imbued with meaning; see Agnew's discussion of space as consistent with containment, whereas place assumes both geographic and social significance (2011: 317).

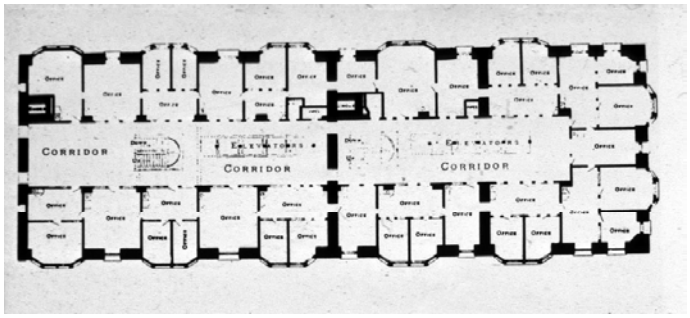
While the influence of technological development on workplace design continues to be pervasive, it has not been a specific focus of this review. Virtual networks support the development of increasingly fluid modes of work, but even the most flexible working is not placeless, and the physical office persists despite early predictions of its demise (Parker, 2016). Harris (2016: 8) notes that it seems 'increasingly unlikely' that technology enablement alone will provide a panacea for large swathes of the workforce to work from home, rather offering enhanced choice and flexibility to work in a variety of settings.

2.3.1 The development of the modern office

While the relationship between patterns of work and developing architectural forms dates back centuries, it was the growth of industry in the late nineteenth century that drove the development of the office building as a typology, with the development of large business firms creating a need for centralised administration and control (Duffy, 1997; van Meel, 2000; Snow, 2015), and the term 'office' increasingly referring to a place rather than to a position or function (Felstead, 2012). The history of the office has been broadly divided into three primary waves of development: Taylorist, Social Democratic office and Networked (Duffy, 2008; Myerson, 2009, 2013). This review will also briefly discuss the earliest skyscrapers as an example of the first serviced offices.

2.3.1.1 The early entrepreneurial workplace

In 1870, almost a third of American workers were still self-employed entrepreneurs, with early dedicated office buildings such as the Rookery Building (1885) and the Monadnock Building (1889-91) in Chicago designed and built to be subdivided into a variety of office sizes on either side of a central corridor (Gatter, 1982: 14). These were speculative developments that offered a range of possible spaces for hire, with the need to anticipate and respond to future demand making flexibility an early concern in the office program, setting up a separation between internal and external architecture. The need for natural light and ventilation alongside easily subdivisible space resulted in two predominant plan forms - rectangular, with a single-loaded central corridor, and a wider 'donut' shape, with a double-loaded corridor and a large central light well (Figure 9). Like hotel rooms for work, cleaning and maintenance were the responsibility of the landlord, and it was fairly common to include facilities for dining to serve the tenants at lunchtime.



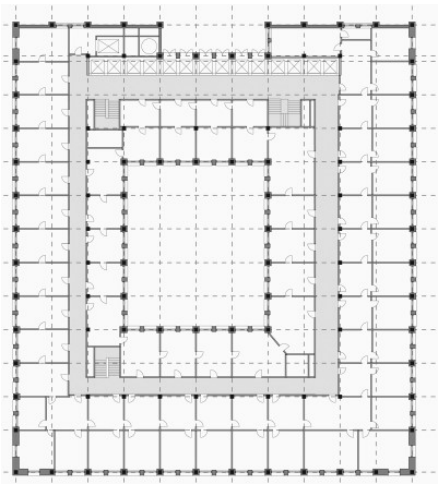


Figure 9. *L: Monadnock Building, Chicago, R: Peoples Gas Building, Chicago, 1911*

2.3.1.2 The Taylorist office

Characterised by a drive for perfect efficiency, this was the era of scientific management in which Taylor carried the principles of factory line production through into his proposals for the structuring of office work (Myerson, 2013; Daniel, 2015). The chief concerns of scientific management were a layout based on functional efficiencies, efficient circulation, an integrated plan and structural system, spatial 'compactness' and the intensive, efficient use of leased space (Daniel, 2015: 62). Interiors were designed to enable both uninterrupted flows of work and close supervision of clerical staff, with open plan space enabling clear lines of sight and hierarchies expressed through the privileged positioning of senior staff (van Meel, 2000; Felstead et al., 2005). The Larkin Building by Frank Lloyd Wright is a much-cited example of Taylorist principles at work, over one thousand employees were seated in large open spaces to process large volumes of paper. Efficiency was considered in every aspect, and the space designed to reflect the power of the business owner and the unity of the organisation (Figure 10 overleaf).

The enduring legacies of Taylorism include what became known as the 'International Style' - lightweight metal and glass boxes hung from a central core that allows for the efficient subdivision of space. The internal plan is dominated by the efficiency of the grid, with interior spaces designed to express an image of efficiency, hierarchy and managerial control (Duffy, 1997; Skogland and Hansen, 2017). The Union Carbide Building by Skidmore, Owings and Merrill is an example of this approach, with the interior space designed based on an integrated modular system which could flex with any changes to the arrangements of

partitions and workstations. The design reflected the rigid expression of hierarchy through the size and location of offices, type of furnishings, and access to views (Figure 11). The scientific office managers arguably set the scene for over a hundred years in terms of their approach to office interiors, with Duffy (1997) referring to 'Taylor's century' as a result of the enduring dominance of Taylorist principles in twentieth century workplace design. Built in 1992, One Canada Square by Pelli Clarke Pelli exhibits all the characteristics of a Taylorist office: large central core and servicing, standardised modules, easily subdivisible space, and hierarchy expressed by the perimeter office (Figure 12).

https://online.ucpress.edu/jsah/article/77/3/300/60485/The-Larkin-s-Technologies-of-Trust

Figure 10. *The Larkin Building, Buffalo, 1904, Frank Lloyd Wright*

Figure 11. *Union Carbide Building, New York, 1960, Skidmore, Owings and Merrill, © Ezra Stoller/Esto, all rights reserved*

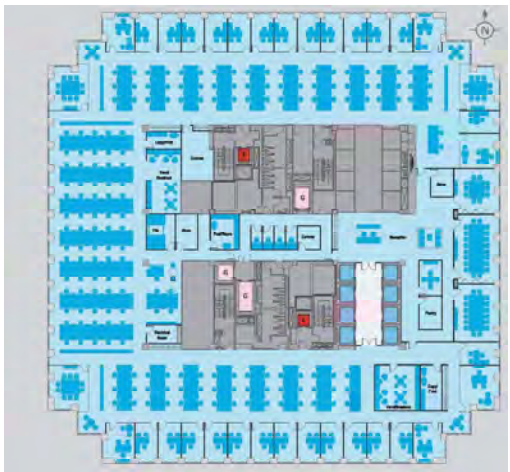


Figure 12. *One Canada Square, London, 1992, Pelli Clarke Pelli, © Pelli Clarke Pelli, all rights reserved*

2.3.1.3 The Social Democratic office

During the 1950s, an increasingly social democratic climate in Europe led to calls for equality, less emphasis on status and authority and a greater staff voice in decision making, with European corporations competing for staff by providing high-quality working environments that responded to occupant needs (Forty, 1986; Myerson, 2009). This was accompanied by an increasing recognition of the importance of interaction in making work happen (Russell, 2001). This was the beginning of a workplace design development that can be described as the 'Social Democratic' office (Duffy, 2008; Myerson, 2009, 2013). This was less influential globally than Taylorism but created the 'highest quality of office environment in the world' (Duffy, 1997: 34). An early expression of this shift was the concept of Bürolandschaft or office landscaping, an open plan, organic approach that laid out the office on the basis of close communication as well as efficient workflow. The Osram Offices by Walter Henn are a classic example, breaking away from rectilinear arrangements in favour of a fluid, meandering arrangement. Plants, artworks, or screens divided the space, with the design intended to support communication and interaction (Figure 13 overleaf).

However, increasingly empowered workers councils in the 1970s spoke out against both the lack of privacy and distractions of open plan space, and the deep floor plates that limited access to natural light and ventilation. This led to the reintroduction of private and semi-private offices (van Meel, 2000). The need to give offices a window and natural ventilation resulted in architectural innovation in Europe, moving away from deep block plans towards narrow and highly articulated floorplates (Harrison et al., 2004). The Debis Tower by Renzo Piano was planned based on the provision of relatively equally sized offices which all have access to natural light and ventilation, giving individual workers control over their environment (Figure 14 overleaf). The potential lack of communication and social isolation was a recognised disadvantage of this building form. The increasing recognition of the importance of human interactions therefore led to a new interest in theories of social design and the reappraisal of historical precedents, with buildings such as the SAS headquarters in Stockholm (Figure 15 overleaf) designed like small cities united by internal streets or squares (Duffy, 1997; van Meel, 2000; Russell, 2001; Myerson, 2013). Here, Niels Torp connected long office wings to an internal 'street' that formed

a spine to the building. Lined with trees, shared spaces, and programs such as meeting rooms and cafes, this was intended to be the focus of company life. Employees were actively encouraged to spend time in shared spaces, balancing the potential isolation of the individual offices.

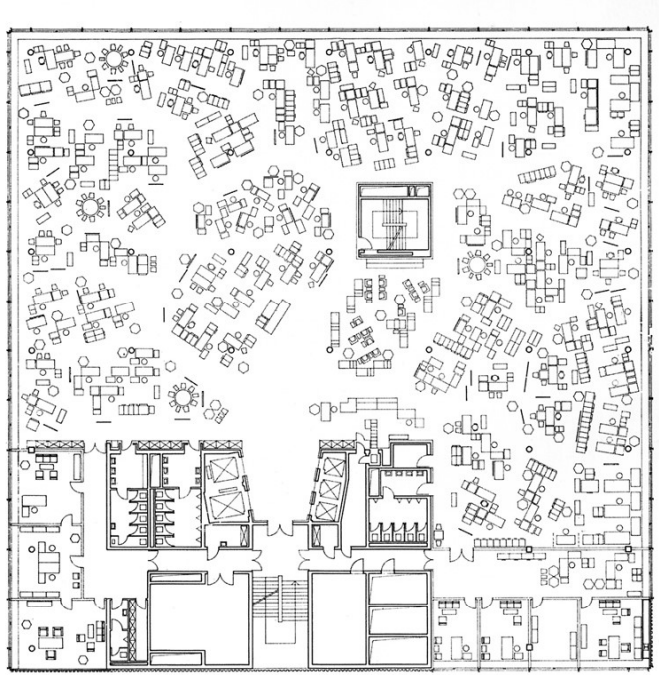


Figure 13. *Osram Offices, Munich, 1963, Walter Henn, © HENN, all rights reserved*

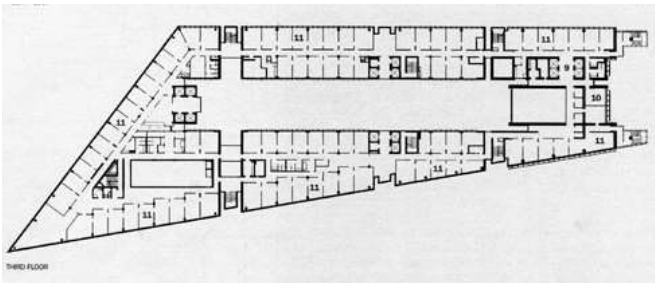


Figure 14. *The Debis Tower, Berlin, 1998, Renzo Piano, © Renzo Piano Building Workshop, all rights reserved*

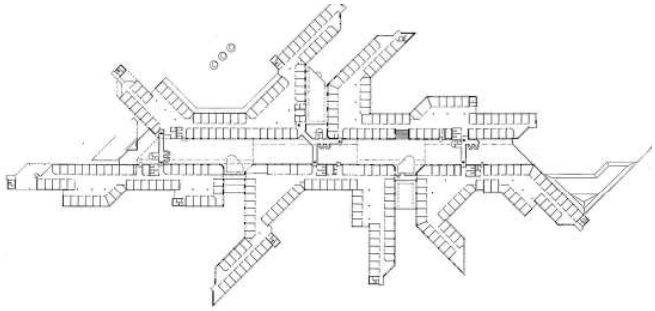


Figure 15. *SAS Headquarters, Stockholm, 1988, Niels Torp, © NielsTorp + architects, all rights reserved*

2.3.1.4 The Networked office

The development of new mobile technologies and sharpening focus on the centrality of interaction to knowledge work highlighted the limitations of the earlier models (Albrecht and Broikos, 2001; Duffy, 1997, 2008; Myerson, 2013). With the Taylorist office too heavily biased towards top-down control to support increasingly autonomous teams, and the Social Democratic focus on individual satisfaction inflexible, expensive and tending to mitigate against collective discourse (Duffy, 1997), these changes triggered 'radical' new ideas about what office buildings should be like (van Meel, 2001). The workplace that resulted has been characterised as the 'Networked' office, in which a single workplace is only a node in a network that encompasses both physical and virtual space (Duffy, 2008; Myerson, 2009, 2013; Greene and Myerson, 2011).

In spatial terms, this period witnessed the emergence of a variety of office environments, moving towards open plan, more flexible, increasingly non-territorial layouts that represented varying levels of actual innovation (Felstead et al., 2005). In 1985, a seminal article by Stone and Luchetti entitled 'Your office is where you are' suggested that organisational space should be structured around multiple activity settings with different technical and physical characteristics to support a variety of modes of work (Figure 20 overleaf). This would become known as Activity Based Working. Gaetano Pesce's design for Chiat Day in New York was widely regarded at the time as an exemplar of what the office of the future should look like. The scheme was designed for a highly mobile workforce equipped with digital technologies that would allow them to use the workplace as an occasional hub (Figure 16 overleaf). The end of the twentieth century also brought new approaches to the aesthetic presentation of workplace interiors, with traditional symbolic expressions of corporate status replaced by the shaping of distinctive organisational identities that represented brand values. The Quiksilver Corporate Headquarters by Bauer Architects located meeting rooms along a timber 'boardwalk' as an expression of distinctive brand identity (Figure 17 overleaf).

Figure 16. *Chiat Day, New York, 1994, Gaetano Pesce, © Haj Ando, all rights reserved*

https://bauer-architects.com/project/quicksilver-headquarters/

Figure 17. *Quiksilver Corporate Headquarters, Huntington Beach CA, 1999, Bauer Architects*

2.3.2 Implications for workplace designers

The design of office space is clearly inseparable from the economic, political, cultural and social contexts in which it is created (van Meel, 2000; Kuo, 2013), and these contextual factors can affect the design of an office building 'long before an architect or consultant is hired' (van Meel, 2000: 9). The increasing complexity of organisational demands, speed of change and growing body of evidence that design intent does not always translate into use therefore have significant implications for workplace design practice. The traditional processes of workplace design have arguably become increasingly ill-suited to meet these changing demands (Chan et al.,2007; Van der Linden et al., 2016).

With a wide range of solutions available in any design situation (Rapoport, 1969), decisions cannot be optimised without a base of evidence to draw on, highlighting the need for a rigorous research base. However, as a discipline, architecture does not have a strong research

tradition, rather drawing on intuition, practical experience and 'learning-by-doing' (Sailer et al., 2008). At a moment when architecture is having to make fundamental claims about its value, this lack of research tradition - coupled with the gaps between architectural practice and academic research - seems increasingly problematic. The primary challenge lies in Archer's definition of research as 'systematic inquiry whose goal is communicable knowledge', with architects tending not to make decisions through systematic evaluation, nor to explicitly communicate knowledge which therefore remains tacit (Till, 2007). There has been a growing interest in research within the architectural community, and in recent years the RIBA has embarked on initiatives to develop the use and value of architectural research, challenging the view often expressed by practising architects that design practice is in itself a form of research. However, with design and research often perceived as being fundamentally contradictory in nature (Leatherbarrow, 2012), the methodology of design research in architecture is a contested site (Fraser, 2013). Practitioners predominantly borrow from more established methodologies such as the social sciences (Groat and Wang, 2002, 2013). Fraser (2013: 4) argued that, in order for the creative aspect to come to the foreground, architects will have to develop their own ways of testing and evaluating: 'today the conceptual challenge is for them [architects] to become experts in how architecture produces its own insight and knowledge - and its particular forms of practice - through design research.'

While there is a need for a rigorous and clearly communicated evidence base, it is also the case that the relationship between people and space is dynamic and highly contextual, and the sensitivity of buildings to contexts means that success may emerge from a combination of factors that may not be repeatable (Leaman and Bordass, 2001). This means that, while precedents can be valuable guides, each project requires individual consideration if misfits between the user and work environment are to be avoided (Vischer, 2007c; Rashid and Zimring, 2008; Van Koetsveld and Kamperman, 2011). Golembiewski (2013) argued for a combination of behaviour settings and affordances as conceptual frameworks to understand the way in which the environment moderates behaviour. Both are theories derived from ecological psychology. Behaviour settings were proposed by Roger Barker (1968), describing environments that embody predetermined uses according to the normative limits of social acceptability within (Golembiewski, 2013). Essentially, they limit choices

by suggesting or enabling specific actions. For example, a football pitch could be used for multiple activities, but there are culturally accepted rules of play that govern behaviour. The theory of affordances derives from the work of James Gibson (1986), with the affordances of an object the possibilities for action that are perceived to exist. Affordances therefore represent a series of relational and subjective choices about how to engage with the environment which are nested in and moderated by behaviour settings (Thanem et al., 2011; Golembiewski, 2013). It could be argued that organisations - and workplace designers - typically aim to generate behaviour settings within which particular forms of activity take place, while affordances describe the range of possible alternative actions that employees carry out, which may or may not be organisationally desirable (Pepper, 2008).

There are also ongoing tensions relating to how a profession that deals in concrete realities can contribute in increasingly dynamic or volatile environments (Kuo, 2013). The briefing and construction of large-scale workplace projects might take place over multiple years; organisations may well not know what their needs will be over that timescale, challenging traditional efficiency-based approaches. Finally, leveraging the symbolic potential of space highlights the importance of intangible qualities such as affect, values and experience, which need to be understood from a user as well as from an organisational perspective if change initiatives are to be successful. All of these challenges highlight the importance of the design process - both in understanding end user needs and behaviours, and in evaluating how these manifest in new spaces. This requires a systematic approach to briefing that draws on more than management perceptions of working practices, and to the evaluation of space post-completion. The literature around briefing, co-creation and post-occupancy evaluation will be considered in the following sections.

2.3.2.1 Brief making

Briefing is generally understood as one of the first phases of a construction project (Yu et al., 2006; Bogers et al., 2008; RIBA, 2013b), and should express goals for the project, requirement specifications and end users' needs (Preiser and Vischer, 2005; Ryd and Fristedt, 2007; Blyth and Worthington, 2010; Elf et al., 2012). It is widely accepted that briefing consists of multiple stages, comprising multiple documents that represent different

areas or levels of detail (Bogers et al., 2008; Blyth and Worthington, 2010; Elf, 2012). While there has been some debate about how these are described, three types of brief are most commonly defined: a strategic brief in the pre-project phase, a functional or design brief at the beginning of the design phase and a detailed brief during the technical design phase (Bogers et al., 2008; Blyth and Worthington, 2010; Arge and Blakstad, 2010; RIBA, 2013b). The strategic brief, during which the foundation for the project is developed, can be regarded as the most crucial phase in the briefing process and is the most relevant to this review (Yu et al., 2006; Pemsel et al., 2010; Elf et al., 2012).

The importance of brief making as a process has been highlighted by a number of authors, providing critical information in guiding building outcomes (Barrett and Stanley, 1999; Leaman and Bordass, 2001; Kjølle et al., 2005; Bogers et al., 2008; Alexander, 2010; Hansen et al., 2010; Blyth and Worthington, 2010; Mallory-Hill et al., 2012; RIBA, 2013a), particularly where an increased emphasis is placed on the strategic value of a building project (Kjølle et al., 2005). Briefing documents play a crucial role as a means of communication in the relationship between architect and client, translating from organisational to architectural language (Kjølle et al., 2005; Bogers et al., 2008), functioning as a reference point against which design proposals can be tested and alternatives considered, and facilitating conversations about the quality and value of design proposals between client and architect (Heintz and Overgaard, 2007; Bogers et al., 2008; Mallory-Hill et al., 2012). The brief can also be linked to effective evaluation of the impact of design decisions on building performance and user experience (Preiser and Vischer, 2005; Mallory-Hill et al., 2012).

The RIBA recently identified better briefing processes and clearer definition of required outcomes as a 'crucial' element in improving project outcomes, with the new RIBA Plan of Work (2013b: 13) setting out proposals for a 'rigorous brief development process', including the introduction of a new stage called 'Strategic Definition'. The identified issues - particularly the gaps between client expectations and architectural reality - indicate that a deeper understanding of the organisation and its workers is a critical aspect of the briefing process, particularly where the project aims at supporting an organisational change process.

While briefing is critical to project success, it is also 'problematic' in its effectiveness (Yu et al., 2006: 198; Lindahl and Ryd, 2007), and multiple issues with completed projects can be traced back to problems with the briefing (Yu et al., 2008; Pemsel et al., 2010). Although research on briefing processes is sparse - particularly outside healthcare contexts - some key deficiencies can be identified (Yu et al., 2006; Heintz and Overgaard, 2007; Bogers et al., 2008; RIBA, 2013b). These are an over-reliance on standard requirements, abstract or generalised terminology, and a lack of user input.

Architects have criticised the briefing documents that they receive from clients as often inadequate or restrictive, consisting of little more than schedules of standard requirements (Brown, 2001; Heintz and Overgaard, 2007; Bogers et al., 2008). Heintz and Overgaard (2007) identified the program of requirements - in the form of a list of specific spaces required along with their dimensions - as the most common form of briefing document. The most common criticisms raised were that these were an inadequate expression of the client's wishes, were not structured in a manner that helped architects to understand client priorities, and resulted in architects having to seek additional information from their clients. Bogers et al. (2008) found similar issues, with often contradictory briefing documents consisting of long lists with standard requirements based on generic standards which designers are already aware of.

Decisions based on unexpressed, abstract or diffuse visions about the organisations future were identified by Kjølle et al. (2005) as a factor that often impacts on the success of a project, with vague or ambiguous information resulting in confusion when proposed solutions do not match the expectations of the organisation or end users. This was exacerbated by the overuse of generalised terminology - such as 'teamwork' or 'collaboration' - as collective expressions for every interaction with other people, preventing designers from using them as precise terms as they design spaces to support group activities (Kjølle et al., 2005). Abstract values such as 'openness' have been identified as particularly difficult to translate into architectural solutions when they are not accompanied by additional relevant data, highlighting the need to include qualitative or 'soft' information about culture, attitudes, ambitions and desires of the clients and users alongside proposed activities and business processes (Bogers et al., 2008; Van der Linden et al., 2016).

Finally, briefs have typically been written by experts, with users involved as sources of data if they are consulted at all (Whyte and Gann, 2003; Jensen et al., 2011; Elf et al., 2012; Van der Linden et al., 2016). This has resulted in calls for the inclusion of more clearly articulated user perspectives that provide architects with information about diverse users' spatial experiences and needs (Heintz and Overgaard, 2007; Vischer, 2008b; Jensen and Pedersen, 2009; Annemans et al., 2014; Van der Linden, 2016), especially where work processes are changing within an organisation (Jensen and Pedersen, 2009). Overgaard and Davidson (2006) found that the inclusion of 'soft' data in the form of direct quotes from building users provided a source of inspiration for designers. Heintz and Overgaard (2007) similarly suggested a need for briefing documents to express the social and emotional content of the project in addition to its technical requirements, finding that the provision of multiple expressions of the need for a specific space seemed to facilitate the production of designs that met client requirements.

Usability briefing has taken a step towards increasing user input into the design process, with the primary characteristics identified as: it concerns user needs in existing or future facilities, it runs as a continuous process with changing focus depending on building life cycle stage, and users are actively involved as co-designers (Jensen et al., 2011; Fronczek-Munter, 2017). However, there is limited research on how it works in practice (again, primarily within healthcare environments), and both authors have identified the need for further research in the role of users in the briefing process. The next section will discuss the benefits, tools and approaches relating to user engagement in workplace design.

2.3.2.2 Co-creation

> 'In many parts of industry, investment in research is looked upon as a non-obvious step, investment in user studies a big and expensive step, and user participation a radical step into the unknown', (Sanders and Stappers, 2008: 10).

While user involvement in the design process has been a well-established principle for several decades (Sanders and Stappers, 2008), prioritising user input into the architectural design process has developed at a slower pace (Valand, 2011). Research has identified

a general lack of consideration given to end users' needs and preferences in workplace design and construction processes (Vischer, 2001; Way and Bordass, 2005; van Schaik, 2008; Deuble and de Dear, 2014), with the end result being a workplace that 'feels cold, hostile, or phony to many residents no matter how 'good' the design is in some absolute or architectural sense' (Steele, 1986: 9). However, the traditionally singular relationship between client and architect has been evolving into a broader understanding of the client body (Valand, 2011), which is increasingly engaged in the design process and characterised as a potential co-designer (Fröst, 2002; Boland and Collopy, 2004; Binder et al., 2009; Valand, 2011). In the US, the Council for Interior Design Accreditation identified human-centred design as a key theme for interior design education, including it as a new standard as of 2017.

The consideration of occupants and user participation in the design process have been widely argued to result in more positive outcomes (Ornstein, 1989; Duffy, 1997; Green and Moss, 1998; Vischer, 2005; Schwede et al., 2008; Deuble and de Dear, 2014). These have included an increase in the likelihood that employees will accept design solutions, reducing the potential for sabotage as a result of the perception of gaps between their needs and the environmental support provided (Ornstein, 1989; Duffy, 1998; Jensen, 2006; Vischer, 2007a; Davis et al., 2011), and improved employee satisfaction (Ornstein, 1989; Preiser and Vischer, 2005). Participatory processes have also been argued to create opportunities for the negotiation and clarification of ambiguous aspirations (e.g. using a building project to become a 'modern, public organisation'), where lack of clarity as to what these kinds of intangible ambitions - arguably a common thread in design ambitions for organisational space - may contribute to a less than satisfactory end result (Valand, 2011).

Engaging with end users is increasingly important given what Sanders and Stappers (2008: 11) identified as a shift from the traditional focus of the designing of products, to designing for people's purpose, such as experience, interaction or transformation (Figure 18). These emergent practices centre on the needs of people or society, and the authors argue that this shift will change what we design, how we design and who takes part. The authors identified the disciplines of architecture and planning as 'the last to become interested' in exploring these new design spaces that focus on purpose as the driving force for design, with the

exploration of new design spaces in architecture taking place primarily within the area of healthcare environments at the time of writing.

The traditional design disciplines focus on the **designing of** "products".	. . . . . while the emerging design disciplines focus on **designing for** a purpose
visual communication design interior space design product design information design architecture planning	design for experiencing design for emotion design for interacting design for sustainability design for serving design for transforming

Figure 18. *A snapshot of traditional and emerging design practices (Sanders and Stappers, 2008: 11)*

The landscape of design research in which user engagement takes place was mapped by Sanders (2008), who organised it into five key areas: user-centred design, participatory design, design and emotion, critical design and generative design, with the approaches positioned on a dual axis framework (Figure 19). The vertical axis describes whether the research is predominantly design-led or research-led. The horizontal axis describes the design approach, from an expert mindset in which users are informants and subjects of the design, to a participatory approach in which users as active partners and co-creators of the design outcome.

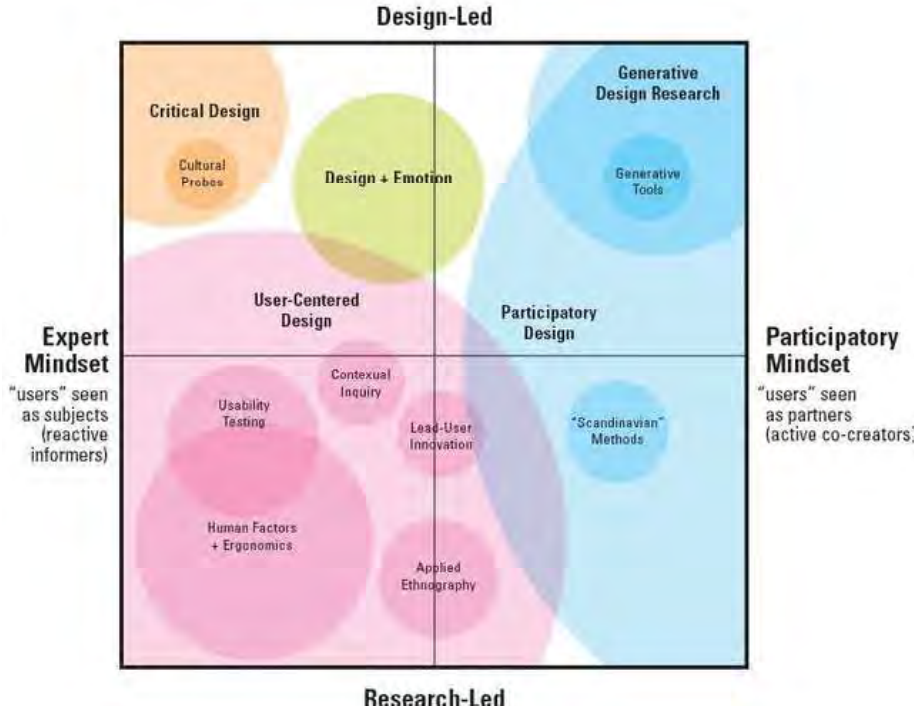


Figure 19. *The landscape of design research map (Sanders, 2008: 15)*

The two areas most relevant to this study are user-centred design and participatory design research. User-centred design takes the approach of designing 'for' and describes the development of products and services that better meet the needs of their end users. The approach is research-led with an expert mindset; the designer acts as the expert in the process, with participants acting as subjects and sources of information. Commonly employed methods include observation and interviews, with the data collected informing the eventual design proposals. Usability testing, human factors and ergonomics and applied ethnography all sit within the larger area of user-centred design.

Participatory design can be either design or research-led and attempts to actively involve the people who are being served by the design process - design 'with' rather than 'for'. Users are active partners in this process, and Sanders et al. (2010: 195) identified a concern within participatory design as to how non-designers can articulate design proposals in ways that can provide a starting point for professional design work. Spinuzzi (2005: 163) argued that participatory design is always research, describing it as a way to 'understand knowledge by doing: the traditional, tacit, and often invisible...ways that people perform their everyday activities and how those activities might be shaped productively.'

In order for this to happen, participants must be given appropriate tools for expressing themselves in that setting (Sanders and Stappers, 2008; Jensen, 2010; Mattelmäki and Sleeswijk Visser, 2011). Physical artefacts that act as thinking tools during the design process are referred to as boundary objects (Granath, 1998; Kjølle, 2005; Blakstad et al., 2008; Kjølle and Gustafsson, 2010; Broberg et al., 2011). Boundary objects function to construct a common foundation and understanding onto which different stakeholders with different expertise, knowledge and points of view can explore user experiences and needs, supporting the translation of a brief into architectural solutions (Carlsen et al., 2004; Kjølle et al., 2005). Kjølle et al. (2005) found that a better translation of user needs into design proposals was achieved through the use of boundary objects including: discussions of culture and workstyle, descriptions of future work, descriptions of physical concepts, analyses of patterns of use and creative development of ideas for use in design.

2.3.2.3 Post-occupancy evaluation

Despite widespread recognition that few buildings are problem free at the point of handover (Bordass et al., 2004; Bell, 2010; Göcer et al., 2015), most occupants, owners, designers and contractors never evaluate how well their buildings perform once complete (Blakstad et al., 2008). This results in 'performance gaps' between design intent and how buildings operate in use (RIBA, 2016a), and the perpetuation of mistakes due to a lack of any better information (Leaman et al., 2010; Göcer et al., 2015).

The evaluation of buildings in use is generally referred to as post-occupancy evaluation (POE) and can be viewed as having multiple benefits at various stages of the building life cycle (Cohen et al., 2001; Bordass et al., 2004; Hadjri and Crozier, 2008; Deuble and de Dear, 2014; Hay et al., 2017). An RIBA publication (2016a) simply defined it as 'the process of understanding how well a building meets the needs of clients and building occupants', recognising the range of methods, approaches and outcomes that exist in the literature (Hadjri and Crozier, 2008; Deuble and de Dear, 2014; RIBA, 2016b: 6). Following a period of systematic neglect, POE is now well established within academic research (Cooper, 2001; Preiser and Nasar, 2008; Mallory-Hill et al., 2012) and a wide range of POE techniques are available globally (Preiser et al., 1988; Bordass et al., 2004; Preiser and Vischer, 2005; Oseland, 2007; Loftness et al., 2009; Göcer et al., 2015). However, there remains little evidence that this extensive body of research has linked up with architectural practice (Preiser and Vischer, 2005; Riley et al., 2009; Leaman et al., 2010; Kelly et al., 2011; Dye and Samuel, 2015; Hay et al., 2017).

The RIBA has tried to address the issue, arguing that regular evaluation is standard in the most innovative industries and should be standard practice in architecture (2016: 4). The RIBA Plan of Work (2013b) introduced a new stage (Stage 7 'In Use') at the end of the construction process, reflecting a renewed focus on the importance of building evaluation. In addition to this new stage, the RIBA has been producing a suite of guidance on POE, as well as promoting Soft Landings, a procedure designed to extend the relationship between the client and the project team, assisting occupiers as they work through the fine-tuning of building systems. However, despite the widespread acceptance of the importance of

evaluation, there are still recognised deficiencies in the process, including the lack of dissemination of findings, a technical orientation, narrow focus on user satisfaction and a lack of contextual information.

Traditionally seen as a post project one-off, POE is increasingly viewed as a cyclical process that creates a basis for the design of new space by feeding knowledge gained into the briefing process (Preiser, 2001; Blyth and Worthington, 2010; Deuble and de Dear, 2014; RIBA, 2016a) (Figure 20). However, researchers have argued that the theoretical link between POE and a new building programme is often lacking in practice, with research either published in journals that are not consulted by practitioners or languishing unread on library shelves (Way and Bordass, 2005; Vischer, 2009: 240). Of the few architectural practices who consistently conduct POE studies, even fewer make the information publicly available (Bordass et al., 2001). Hay et al. (2017) identified a relatively widespread tendency to conduct something like a light-touch POE - a 'lessons learned' review at the end of a project, possibly including talking to clients and stakeholders. However, these findings remain internal to the practice and their dissemination across extended periods of time was not addressed. This lack of feedback results in repeated mistakes being made (Vischer and Zeisel, 2008; Fronczek-Munter, 2017).

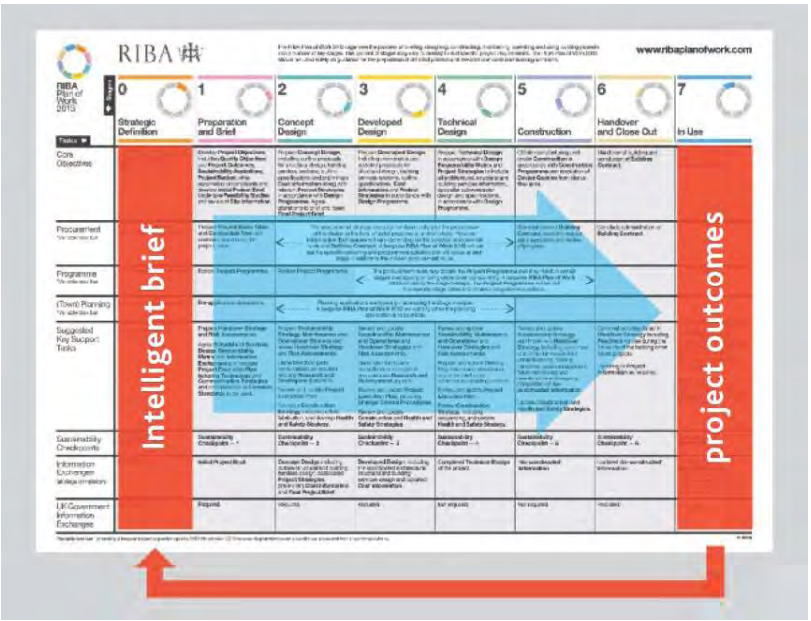


Figure 20. *This diagram at the end of the Client Conversations booklet expresses the intention for a cycle of feedback and learning, with project outcomes feeding into the briefing process. However, this has been identified as an issue in practice (RIBA, 2013a: 20)*

This is exacerbated by the tendency of feedback to take the form of reports and check boxes with little visual content (Leaman and Bordass, 2001; Kelly et al., 2011). Candido et al. (2015) argued that this has resulted in feedback that is neither accessible nor meaningful to key stakeholders. This has led to calls for simple and accessible graphics in POE feedback reporting that can be readily understood by people who will not necessarily be versed in specialist language (Green and Moss, 1998; Bordass et al., 2010; Kelly et al., 2011). It has also been argued that current mechanisms of feedback have limited the consideration of POE by architects as they are at odds with key architectural practices (Kelly et al., 2011; Göcer et al., 2015). Limited attempts have been made to improve the data visualisation of POE outputs; Göcer et al. (2015) proposed mapping the spread of satisfaction and dissatisfaction onto the floor plan, facilitating the identification of patterns of discomfort. This study still had a technical orientation with a focus on occupant satisfaction.

POE has tended to be seen as more technically oriented, with an emphasis on energy performance and technical aspects of building design, resulting in a concomitant neglect of issues of social or cultural value (RIBA, 2016a). A literature review of scientific articles published in the last 15 years by Vasquez-Hernandez and Restrepo Alvarez (2017) analysed the type and content of existing academic studies on POE, finding a strong bias towards technical evaluations (Figure 21 overleaf). In an analysis of the tools used to gather information from users, the clear majority were user satisfaction surveys (41.5 per cent), with focus groups, interviews, expert surveys, drawings and open questions making up only 6.6, 4.7, 2.8, 1.9 and 1.9 per cent respectively.

Methods traditionally used in building assessment have tended to be expert-based and focused on functionality, seldom assessing the quality of user experience or contingent user values (Vischer, 2007a; Baird, 2011; Alexander et al., 2013; Keeling et al., 2015; Windlinger et al., 2016). Where user perceptions are assessed, this typically consists of occupant surveys aimed at identifying areas of underperformance (Schwede et al., 2008; Baird, 2011). The two best established survey tools in the UK are the Building Use Survey (BUS) and the Centre for the Built Environment (CBE) (Baird, 2011). Both utilise a seven-point Likert scale that relates levels of satisfaction to specific aspects of the environment; a sample question might be: 'How satisfied are you with the colours and textures of flooring,

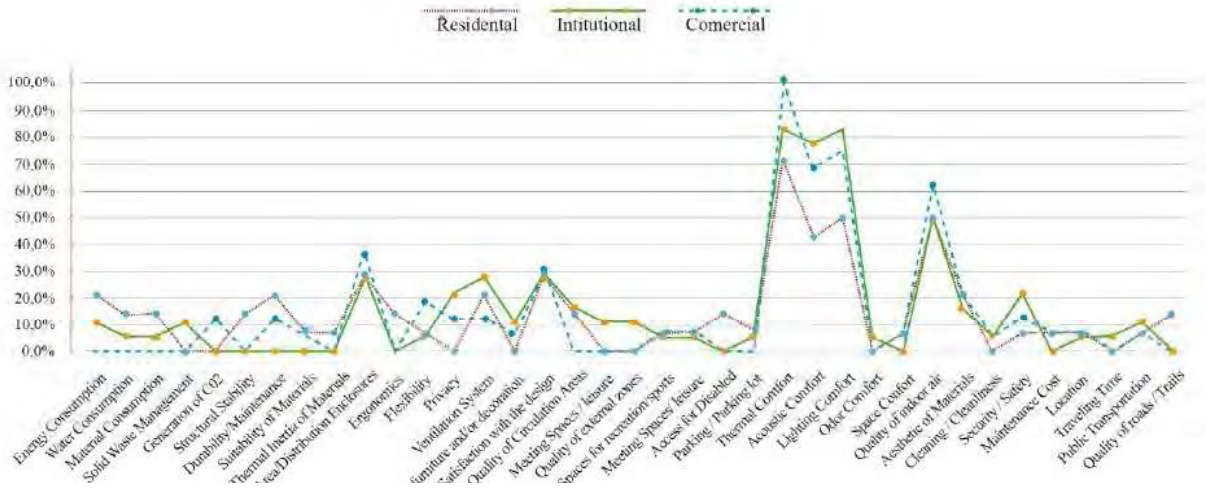


Figure 21. *Vásquez-Hernandez and Restrepo Álvarez identified a strong bias towards technical evaluations in POE literature – the focus of each study identified is mapped along the horizontal axis (Vásquez-Hernandez and Restrepe Álvarez, 2017: 33)*

furniture and surface finishes?' (Schwede et al., 2008; Kim and de Dear, 2013: 19). While surveys do have advantages, they can be argued to provide only a surface level of detail that cannot account for the complexity of user experiences, or provide an understanding of the reasons for particular responses (Kelly et al., 2010; Deuble and de Dear, 2014). Some do offer space for comments to generate more contextual and qualitative data (Bordass and Leaman, 2005; Moezzi and Goins, 2011; Baird et al., 2012). However, Baird and Dykes (2012) found that only one-third of respondents took up the opportunity to comment, with the responses supporting a general view that building occupants are more likely to complain than praise.

In view of this, there are ongoing arguments about occupant satisfaction being an inadequate measure for building performance (Vischer, 2007b, 2008; Leaman et al., 2010; Deuble and de Dear, 2014). Vischer (2007b) argued that it is an ongoing weakness in POE as it places the focus on personal preferences, with what people like and dislike in an environment dependent on a wide variety of influences. Hay et al. (2017) identified efforts to broaden POE analysis beyond narrow surveys of satisfaction to include user experience, opinions and behaviour, with interviewees expressing dissatisfaction with existing POE toolkits that favoured quantitative measures but did not capture the experiences or feelings of building users. A focus on 'how a building works in spatial, social and cultural terms' was viewed as being the 'unique contribution that architects could bring in developing the POE

agenda' (Hay et al., 2017: 9). Despite this, the RIBA schedule of activities for building evaluation still appears to focus on functionality and satisfaction and is framed largely in terms of the relationship between occupants and building systems (Stages 3 and 4 in Figure 22).

No.	Evaluation activities	Essential activities	Comments	Standards and guides
1	**Review Of Project Delivery**		**Usually a Stage 6 activity but useful if not already undertaken.**	
1.1	Discuss Clients Experience		Conduct interviews and/or focus groups. Check if the client is managing knowledge gained for future use.	RIBA Job Book Ninth Edition (2013)
1.2	Discuss Project Team Experience		Conduct in house appraisals and/or focus groups. Ensure project knowledge is managed for future use. Gather information and support from the Project Team.	RIBA Job Book
2	**Project Outcomes**	✓	**The overall outcomes a client wishes to achieve, as defined by the client in a Strategic Brief in RIBA Plan of Work Stage 0: Strategic Definition.**	
2.1	Review Strategic Brief	✓	The Strategic Brief will encompass the client's vision and primary aims of the project that support delivery of the Project Outcomes. Issues of comfort and productivity can be tested under Occupant Feedback and issues of use can be tested under Building Use/ Occupant Behaviour.	Briefing: A practical guide to the RIBA Plan of Work 2013 (2013), RIBA Plan of Work Guide: Project Leadership (2015)
2.2	Review Business Case	✓	Discuss with the client how the project meets the business needs, risks and opportunities, and social, environmental and economic benefits as defined in the Business Case.	Briefing, Project Leadership
2.3	Review Sustainability Aspirations	✓	These may be set in Stage 1 of the RIBA Plan of Work and may be tested under Energy Performance and further tested under Environmental Performance, which may need additional expertise.	Briefing, Guide to Using the RIBA Plan of Work 2013 (2013)
3	**Building Use/ Occupant Behaviour**		**Conduct A forensic walkthrough and inspection of the building, reviewing building documentation, aftercare plans and observing how occupants use the building to meet their needs, which can help the building to be run more efficiently.**	
3.1	Analyse Building Layout	✓	Note any changes of use, extensions and equipment.	
3.2	Examine Building Fabric and Detailing	✓	Check for any inconsistencies in documentation following walkthrough. The building services may be checked with facility manager during a walkthrough in System Behaviour activities.	
3.3	Analyse Occupants' Use of Building And Systems	✓	Observe how occupants understand systems and how, why and when they change their environment. Check how spaces are used and if there are improvised alterations.	NHBC NF 35,
3.4	Analyse Occupation Patterns		Observe and conduct surveys of when spaces are used and whether they over or underused.	
4	**Occupant Feedback**	✓		
4.1	Conduct Questionnaires/ Surveys	✓ dependant on project size	This activity can provide an understanding of user satisfaction. Concerns on comfort from occupants can be tested in Environmental Performance. Difficulties of building use may be tested in System Behaviour.	Such as the BUS methodology, RIBA Plan of Work Guide: Project Leadership (2015)
4.2	Conduct Semi-Structured Interviews and Facilitated Discussions	✓	Interview key occupants after or during a walkthrough to allow occupant to demonstrate understanding of and concerns with System Behaviour.	eg. EVOLVE Toolkit (Housing LIN)
5	**Energy Use**	✓		
5.1	Analyse Utility Invoices And Meter Readings	✓	Check energy use against design prediction. Reconcile energy consumption across building during the buildings daily use.	CIBSE TM22 Energy Analysis tool, DCLG EPC guidance, BRE IP1/15
5.2	Analyse Metering Strategy	✓ dependant on project size	Visual inspection against M&E drawings to identify energy usage by building user. Check the meters are correctly commissioned. M&E expertise may be required.	CIBSE TM39, BS EN 50491-11:2015
5.3	Conduct Equipment Survey	✓	Check electrical equipment against designs noting any extra load.	
5.4	Analyse Embodied Carbon	✓	A full life cycle analysis of embodied carbon will help to understand the impact of the building, its components and products.	PAS 2050:2011, University of Bath Inventory of Carbon & Energy, BSRIA BG 10/2011
5.5	Analyse Measurement And Verification Strategy		If a continuous M&V strategy is necessary (e.g. for finance or organisational purposes), check this is appropriate.	BS ISO 50015:2014

Figure 22. *RIBA POE schedule of activities (RIBA, 2016a: 8-9)*

Several authors have identified a lack of contextual information that links data to user perceptions as an issue, with corresponding ramifications for the validity of the evaluation (Vischer, 2005; Loftness et al., 2009; Kim and de Dear, 2013; Candido et al., 2015; Watson et al., 2016). Contextual and qualitative information becomes particularly important in light of studies which have found that POE is often used as an outlet for non-space related issues, with POE functioning as a risk-free way to complain (Finch, 1999; Turpin-Brooks and Vicars, 2006; Pepper, 2008; Loftness et al., 2009; Jarvis, 2009; Vischer, 2009; Baird and Dykes, 2012; Deuble and de Dear, 2014; Candido et al., 2015). Given the potential significance of a wide variety of mediating variables, there have been calls to include information on aspects such as psychosocial context, corporate structure and culture, management styles and structures, operational decisions and facilities management cultures (Bordass et al., 2004; Vischer, 2007b; Deuble and de Dear, 2014; Watson et al., 2016).

2.3.3 Summary of key points

This section outlined key stages in the historical development of workplace design in addition to discussing the literature on briefing and evaluation processes in the light of changing demands on workplace designers. The following paragraphs will highlight critical gaps in the literature that this study aims to address.

The first gap relates to the relationship between the spaces of coworking and the historical development of the wider workplace. The changing nature of work and organisations has increasingly placed workspace design under scrutiny (Davis et al., 2011). The emphasis on innovation and creativity undermines the traditional organisation of the office floor plan, while the rise of multi-locational work that blends virtual and physical landscapes can be seen as challenging even our ideas of the office as a typology (Gillen, 2006; Kuo, 2013). This is resulting in the search for new paradigms that suggest more fluid and dynamic environments. The press around coworking has often presented it as an innovative new approach to the organisation of work and space; however, as identified in Section 2.1.6, there has been little systematic analysis of the spatial organisation of coworking spaces and they have typically been considered entirely separately from the wider organisational workplace. The course of office architecture has historically been driven by new office concepts that are appearing at an ever-increasing rate, each one seeking to present itself as an innovative/productive/cost-effective dismantling of traditional routines (van Meel, 2011; Parker, 2016). This tendency to label iterations and repackaged versions of earlier ideas as significant innovations means that we need to look at the wider development of the workplace in any critical analysis of the novelty or innovativeness of a new workplace concept such as coworking.

The second gap relates to design and evaluation processes. The literature around coworking suggests that member experience should be viewed as a central quality, with the originators of coworking taking a bottom-up, user-centric approach to the design of both space and organising structures. As described earlier in this section, conventional approaches to briefing and evaluation have tended to be heavily focused on the use of design standards or technical aspects of space, with user input limited to survey formats. An emphasis on

experience would suggest that conventional approaches to briefing and evaluation are no longer adequate. Experience is subjective and contingent on a wide range of influences. With the literature pointing to a long-standing lack of end user engagement in workplace design, a move towards a more people-centred approach has implications for the processes by which space is designed and evaluated, which this thesis will attempt to address.

Finally, both academic and more practice focused literature speak to a disconnect between the academic and architectural communities. With an evidence base that is already sparse, the lack of dissemination into practice can only compound the tendency for the same mistakes to be repeated, with a need for research outputs that are better suited to dissemination across diverse populations. This thesis will therefore attempt to speak both to academia and industry, taking a multi-disciplinary approach and developing visual and transferable outputs.

The next section will present a brief summary of the three major sections in this review of the literature.

2.4 Summary of literature review

The three sections in this chapter create the foundation that supports the research approach in exploring the spatial strategies and behaviours of coworking and their potential application within the wider organisational workplace.

The first section addressed the existing literature around coworking. While community and collaboration have increasingly attracted academic attention, there has been little detailed analysis of the spatial constitution of coworking. Coworking spaces would seem to emphasise settings and spatial strategies for bringing people together, agency in the use of space, flexibility and quality of user experience. However, there is a lack of research that explores precisely how these values manifest in physical space, and how or where interactions take place. Existing studies have tended to deal with a small number of sites across a limited period of time, and typically focus on physical elements for interaction rather than a more comprehensive analysis or identification of common strategies across multiple sites.

The second section outlined the changes to organisational structure and priorities that are driving changes in the modern history of workplace design, describing the multiple roles that space plays in organisational life - symbolic, aesthetic and instrumental - and outlining existing research on the relationship between space and behaviour in order to contextualise the current literature on coworking which has been carried out separately from research into organisational space. There are clear gaps in the existing literature, with unresolved tensions between the need for a robust evidence base and the highly contextual nature of the relationship between organisational space and behaviour that highlight the importance of both a user-oriented approach and a robust empirical evidence base, particularly as organisations look to new solutions to meet their changing needs.

The third section described the architectural responses to shifting organisational structures and priorities. It identified a number of key historical shifts in workplace design, highlighting that change has not been a linear or inevitable progression, but has rather ebbed and flowed based on economic, cultural, political and social factors which

all influence the way that 'the office' manifests in any given period of time. This presents significant challenges in the way that workplace is designed and evaluated at a time when the architectural profession is having to make fundamental claims about its value. A shift away from traditional measures of efficiency towards a more used-centred, experiential approach adds to these challenges, with traditional approaches to briefing and evaluation appearing ill-suited to capturing qualitative user insights, leading to calls for the profession to develop new strategies and methodologies for designing, testing, and evaluating space.

The PhD therefore aims to fill significant gaps in the knowledge by taking a critical look at the design and planning of the spaces of coworking, asking whether they do in fact represent a new development or are simply another repackaging of existing routines, whether they achieve the kinds of serendipitous exchange that is driving the interest in them, and whether they hold any lessons for the wider organisational workplace. The research comprised four related design studies: one, a quantitative analysis of the values and design strategies of coworking spaces; two, an in-depth analysis of the design and use of two coworking spaces; three, an analysis of current organisational design trends and a traditional approach to supporting interaction and community within an organisational workplace, and four, the development of new user-centred tools and approaches. The next section will discuss the methods employed in these design studies.

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3

Methodology

This chapter will present the methodology used to conduct the research. The chapter will first discuss the overarching research design, followed by a description of the quantitative and qualitative methods employed during each stage of the research.

3.1 Research design

This study took a Mixed Methods-Grounded Theory (MM-GT) approach to the formulation of the research questions by methodically gathering and analysing quantitative and qualitative data in order to generate inductive concepts. Mixed methods research (MM) is an approach that integrates quantitative and qualitative data collection and analysis to provide a richer understanding of the research topic than either approach standing alone by 'incorporating the depth of participants' lived experiences with broader, generalisable quantitative results' (Creswell and Plano Clark, 2011; Denzin and Lincoln, 2011; Ågerfalk, 2013; Guetterman et al., 2017: 181). The quantitative and qualitative strands were carried out concurrently, with equal status between methods and integration occurring during data analysis and interpretation.

Grounded Theory (GT) has been identified as a useful qualitative method to adopt in MM research (Denzin and Lincoln, 2011; Charmaz, 2014; Birks and Mills 2015). The term MM-GT was coined by Johnson et al. (2010: 65-66) who noted that Grounded Theory (GT) as a research method fits 'remarkably well' with MM. A mixed method approach that combined GT with Ethnography was the optimum combination for this study because the ethnographic elements allowed the researcher to enter the world of each workplace and better understand the end user perspective. GT provided a structural framework through which the ethnographic observations could be configured into a research subject, allowing

for the identification of novel concepts and formulation of conclusions. GT also served to unify data from the disciplines of architecture and environmental psychology by providing an interdisciplinary framework through which the relationships between space and behaviour could be effectively cross-examined.

3.1.1 Two phases

The research can be broadly divided into two phases across four design studies, taking a convergent rather than sequential approach with the quantitative analysis continuing throughout the period of research (Figure 23). The four design studies related to the research questions: coworking spaces, organisational space and the development of a new design toolkit. The methods employed during each will be discussed in more detail in Sections 3.2 and 3.3.

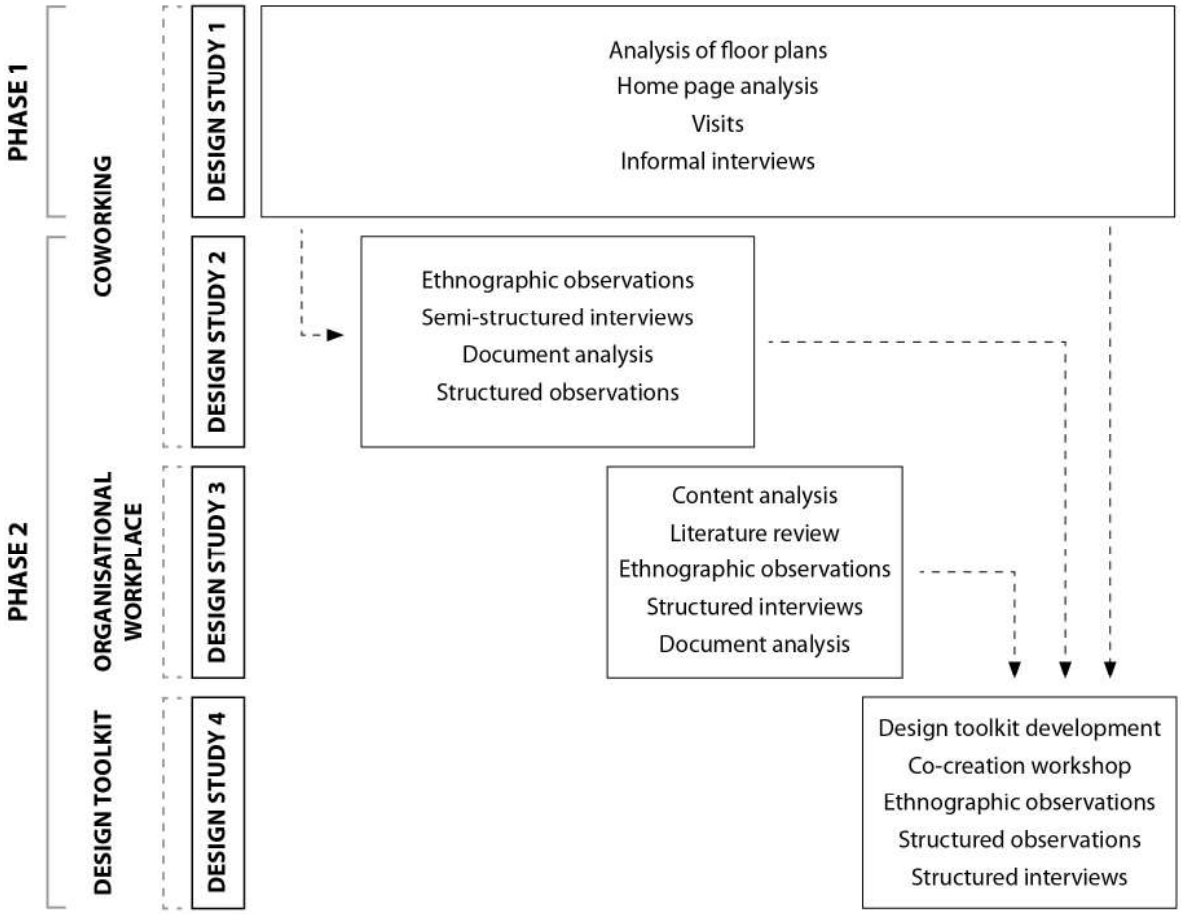

Figure 23. *Phases of the study and methods employed in each one*

The first phase involved a quantitative examination of the values and spatial strategies of coworking spaces, aiming to identify the key values and elements of coworking in order to then define how they depart from, and how they might contribute to, wider workplace design practice. This analysis continued throughout the period of research to account for the continuing development in the coworking market.

The second phase involved an exploration of current trends in workplace design in order to set coworking in its wider context, in addition to a detailed exploration of the spaces and behaviours of two coworking spaces and one organisational workplace through three qualitative case studies which provided a richer and more detailed picture of how interaction, user experience and change and agency were managed.

3.1.2 Use of Grounded Theory

The research draws on GT as a way of structuring data collection and ongoing analysis. GT is a research approach which addresses data collection and analysis simultaneously, with each part informing the other (Thornberg and Charmaz, 2014: 153). Essentially, GT methods provide rigorous but flexible guidelines for:

> 'collecting and analysing data to build middle-range theoretical frameworks that explain the collected data. Throughout the research process, grounded theorists develop analytic interpretations of their data to focus further data collection, which they use in turn to inform and refine their developing theoretical analyses', (Denzin and Lincoln, 2011: 509).

The underlying logic moves between abduction and induction, with abduction referring to the construction or selection of a hypothesis that best explains a set of data as a worthy candidate for continuing investigation (Thornberg and Charmaz, 2014: 153). GT also stresses constant comparative methods in a) comparing different people (views, experiences, situations, actions and accounts), b) comparing data from the same individuals with themselves at different points in time, c) comparing incident with incident, d) comparing data with category and e) comparing a category with other categories (Charmaz, 1983,

Glaser, 1978, 1992, Denzin and Lincoln, 2011: 515).

3.1.3 Ethnographic approach

An ethnographic approach as defined by Shaughnessy et al. (2000) has been used:

> 'Ethnographers frequently combine data obtained through various observational methods, such as naturalistic observation and participant observation, as well as that obtained through the examination of documents and interviews, in order to describe the context and meanings of everyday social situations', (Shaughnessy et al., 2000: 100).

Ethnography is a particular form of qualitative enquiry (Hammersley, 2006), in which researchers enter a particular context for an extended period of time to capture the perspective of participants, actions, and symbols and rules in use (Fetterman, 2010). It can be understood as a 'way of writing about and analysing social life, which seeks to understand the realities of 'how things work' in organisations', relating the spoken accounts of organisational members and the practices observed to the overall framework in which they occurred to produce embedded and situational knowledge (Hirst, 2011: 775; Watson, 2011). If ethnographic literature emphasises the way in which the lived experience of the researcher is the primary research tool (Van Maanen, 1995), this kind of empathic understanding presupposes an emic perspective, with the researcher studying the organisation from within. However, Strati (2006) values the experience of the user over that of researchers, calling for an interpretative understanding of the interdependency between spatial settings and organisational change. In this instance, understanding behaviours requires the researcher to put themselves in the position of the research subject.

> 'Empathic understanding of intentional action essentially requires the researcher to place him/herself in the shoes of the social actor studied. This process presupposes active willingness, knowledge gathering methods, definition of the empathy situation, the architecture and style of accounts and an option for the dominant character of the knowledge process', (Strati, 1999: 67).

According to the typology of roles established by Adler & Adler, the researcher's position was that of 'peripheral-member-researcher' (1987: 36). This role is described as seeking an insider's perspective on the people, activities and structure of a particular social world through direct, first-hand experience. However, the researcher refrains from participating in activities that are central to group membership and identification, interacting with the community but without crossing the line into friendship outside of the research context.

3.1.4 Triangulation

Methods inevitably impose certain perspectives on reality – to counteract this, researchers need to combine several lines of sight to obtain a better, more substantive picture. This can simply be restricted to the use of multiple data-gathering techniques; this aspect is addressed by Fielding and Fielding (1986), who suggest that the important feature of triangulation is not the simple combination of different kinds of data but the attempt to relate them so as to counteract threats to validity identified in each. Denzin and Lincoln take the view that triangulation represents varieties of data, investigators, theories and methods (Denzin and Lincoln, 2011). Data triangulation has three subtypes: time, space and person. Person analysis, in turn, has three levels: aggregate, interactive and collectivity. Investigator triangulation consists of using multiple rather than single observers of the same object. Theory triangulation consists of using multiple rather than simple perspectives in relation to the same set of objects. Finally, methodological triangulation can entail within method triangulation and between method triangulation. In this study, triangulated methods included researcher observation and field notes, informal discussions with coworking space members and hosts, interviews, study of marketing and promotional materials, the results of internal surveys and other related documents, and workshop sessions.

3.1.5 Researching a field in flux

The rapid evolution of coworking throughout the period of study meant that it had to be treated as a 'live' subject, which posed some significant challenges and had implications for the overall methodology. Where a traditional literature review might be largely carried out

in the early stages of a research project, the researcher continued to evaluate the literature to within two months of submission of the thesis. The lack of empirical academic research at the outset meant that grey literature also formed a significant part of this review. Similarly, the analysis of coworking space plans continued all the way through the period of study. The constant development meant that definitions and conclusions had to be continually revisited and updated; the final year of the research comprised both writing up and additional discovery.

This constant flux resulted in some unavoidable limitations of the study which should be viewed as a snapshot of how coworking could be considered at the time of submission; given the continuing speed of change it is unlikely to present a full picture of the market at the time of reading. The process also highlighted the limitations of conducting academic research in a rapidly evolving field - the timescales involved meant that some of the conclusions arrived at were entering mainstream discourse by the point of submission.

3.1.6 Ethical considerations

This study conformed to standard ethical procedures. For the interviews, a consent letter and brief outline of the purposes of the research were emailed to participants, and they were asked to sign a consent form before interviews commenced. They were assured confidentiality and anonymity in advance of the interview; this was particularly important at Sony, where information was fed back to senior management. Interviews at Sony were conducted in a private area away from colleagues and senior management to ensure that disclosure of information did not cause discomfort.

3.1.7 Consideration of sensor-based methodologies

Recognising that sensor-based data collection (as in a device or subsystem that collects input from the surrounding environment) will be an increasingly significant factor in ongoing workplace research, there was an early discussion around trialling sensor-based

technologies being developed by Haworth. They required an RFID tag to be scanned so that individuals could be identified and surveyed as they left the space. This was discussed with the Birmingham Impact Hub team, but it was felt that most members would not want to participate in something that required that level of input. Even in organisations where participation can to some degree be mandated, levels of participation in research surveys tend to be low; this would seem to be compounded in workplaces where taking part is purely voluntary, raising challenges for future research in these types of environments.

3.2 Quantitative methods

Three quantitative methods were used during the design studies: quantitative spatial analysis, structured space observations and standardised questionnaires.

3.2.1 Spatial analysis of coworking spaces

The architectural plan was used as the primary unit of analysis, with 73 scaled plans of coworking spaces used as the basis for data collection. This was a random sample based on the availability of the information; some were spaces which had been visited, with other plans drawn from coworking space websites, blogs and design publications. Only plans which could be scaled were used, from spaces which had been open for a minimum of one year, suggesting a basic level of stability. While this generated a wide range of data, it had some limitations - primarily the strong bias towards spaces which opened after 2012. Many early spaces did not necessarily involve an architect or designer and therefore no scaled floor plans existed. The availability of floor plans could therefore be considered to roughly correspond to the increasing professionalisation of coworking space design.

The plan was used as the primary unit of analysis due to its importance in the reading of workplace design. Kuo argued that efficiency, marketability and corporate culture all unfold primarily in plan - 'More than any other building type, the office building is conventionally dominated by the plan...It is the plan multiplied vertically that betrays it's true workings' (Kuo, 2013: 26). Bertram (2013: 116) similarly argues for the importance of the plan as the 'primary architectural device for organising space...not only functional, but also

social, relationships are established - or not established - by the actions of planning.' Kuo proposed three levels of spatial analysis as a way to compare strategies, which were broadly followed in this study: structure, circulation and occupancy (2013: 89). Structure describes the regulating logic of internal spaces, circulation focuses on human movement although could include any strategy used to demarcate or connect spaces, and occupancy relates chiefly to the spatial organisation of furniture, representing a 'narrative of the organisation and the space'. Diagrams were made describing the spatial strategies employed at each space covering aspects such as circulation, visibility, positioning of attractors, zoning and stacking, and the arrangement of individual settings (e.g. kitchen layout). These were grouped according to commonalities (e.g. spaces with primary lounge/kitchen space at entrance, spaces with multiple lounge/kitchen areas, spaces with primary lounge/kitchen space elsewhere in the building) and used to assess whether there were any identifiably dominant approaches to the organisation of coworking spaces.

In addition to the organisation of the space as a whole, individual types of settings (e.g. kitchens, breakout spaces, offices) were analysed as a group to establish whether there were any common patterns across them. This was done by isolating them from the overall plan and identifying the design moves employed across the following categories: relationship to primary circulation, level of enclosure, adjacencies, access, capacity, furniture type and provision of technology. The most common were used to create a definition of how that type of setting was typically organised.

Conventional measurements of Net Internal Area (NIA) were also taken to calculate the overall amount of space dedicated to different settings (e.g. lounge, kitchen, informal meeting, enclosed meeting). Each different setting that could be identified was measured individually; where the intended use of a space was ambiguous and it was not possible to physically visit the space, social media photographs were used as the basis for classification. As not all of the floor plans were available as CAD drawings and therefore had to be manually scaled, the NIAs were compared using percentages rather than absolute figures to allow for minor inconsistencies in scaling. In addition to the NIA, the number of seats

allocated to different types of work settings were counted.

Photographs derived from the websites and social media feeds of the spaces were downloaded and used as the basis for the analysis of elements of the interiors which could not be identified in plan, including community assets such as noticeboards or photo walls, digital tools, detailed aspects of the design strategy such as the use of flexible partitions, and the overall aesthetic approach.

3.2.2 Structured observations

Previous academic studies have identified the tendency for most interactions to take place around workstations (e.g. Steen et al., 2005; Rashid et al. 2006; Markhede and Koch, 2007). However, these were all carried out in organisational space, where most people in close proximity would typically be expected to be working together to some degree. As the relationship between space and interaction was of particular interest in this study, patterns of use including movement flow, occupancy, and the location of people interacting, sitting and standing were mapped in a standardised way which broadly followed the Space Syntax Observation Manual as described by Sailer (2010: 72). A single point in the space from which as much of the space as possible was easily observable was chosen as the observation location (Figure 24 overleaf). This location was returned to at hourly intervals over the course of a working day throughout the observation period. Movement around the space and the number and location of people sitting, standing and interacting were manually recorded on scaled floor plans over a five-minute period on each occasion. Movement data captured where people had moved from and where they were going to. Interactions were recorded as they took place within the 'snapshot' window. At BIH, SH and Sony, photographs were taken of the space during these periods to provide a visual record; this was used to record work behaviours throughout the day (for example, phone use, solo work, meetings). At BIH and SH, people who were seated together and engaged in collaborative work throughout the day - for example, at team tables - were included once at the beginning of the day. The results from the structured observations were overlaid at the end of each day to build up an aggregate representation of occupancy, movement and interactions. This data was analysed qualitatively based on drawn representations.

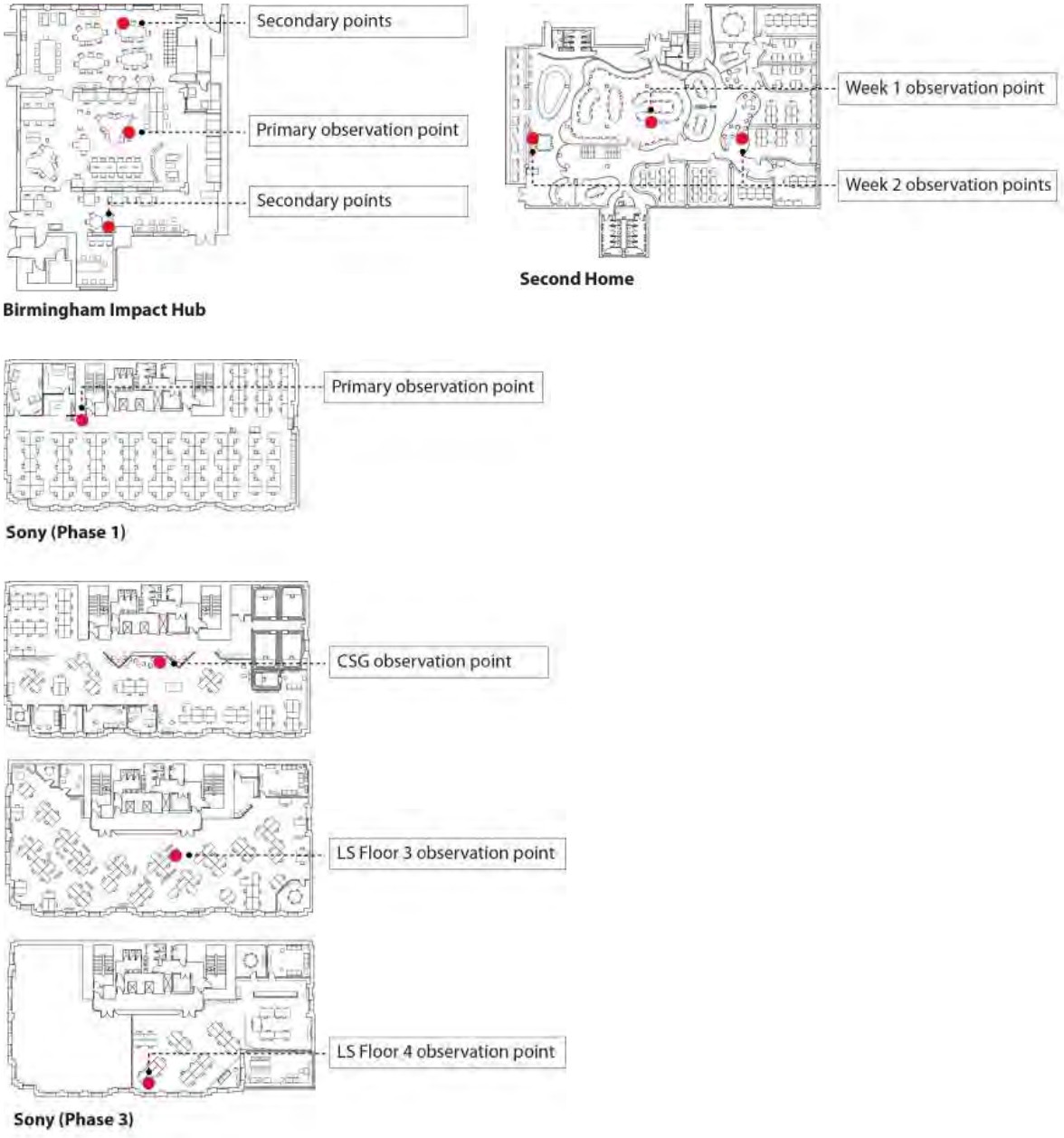

Figure 24. *Floor plans to locate observation points in space*

The recording of seated versus standing interactions was considered to be important in tracking serendipitous interactions, as these were more likely to represent spontaneous or ephemeral interactions. The rationale for interaction was also recorded where possible. For example, people interacting in proximity to primary circulation can be identified as engaged in the act of being recruited into a conversation as defined by Backhouse and Drew (1992), while interactions in kitchen areas represent an attractor-based pattern.

Structured space mapping was not carried out during the first phase of the research at

Sony. This was partially due to overall time constraints but was also a result of the timing of the observations; a significant portion of the largest games development team were out of the office at a major conference as they were at the end of a project. This meant that, while qualitative observations could provide an insight into the ways in which the space was used, the results of structured mapping would have had limited validity in presenting a representative picture of space use. This would have ideally been carried out in order to better draw comparisons between pre- and post-completion behaviours.

3.2.5 Questionnaires

Standardised questionnaires were employed during the first phase of research at Sony. These were designed and administered by the Sony team prior to the on-site research being undertaken and were provided to the researchers prior to the observation period. Each department was asked to identify their current set up, the settings, facilities, services and equipment that they felt was vital to doing their job, that which would allow them to do a better job, and elements which they felt would make the workplace more welcoming or inspiring. The questionnaires were facilitated by the head of each department in consultation with all of the employees within it. The responses included photographs of each department's workspace, and some provided additional information or priority lists. From Sony's point of view, this was partly intended to inform the design brief, but was also used internally as the basis for making a budget case and setting priorities with senior decision makers.

The responses were sorted and weighted to establish priorities. Similar responses were grouped without any pre-defined headings, falling into six broad categories: facilitating interaction, work settings, tools and resources, infrastructure, culture and identity, and relationships. If an item was listed under 'vital', it was given three points per occurrence, 'allow us to do a better job' two points, and 'desirable' one point. These were then used to create a preliminary list of priorities, with the interviews used to test and validate the researcher's assumptions and build a final list.

3.3 Qualitative methods

Content sample analysis was used to explore the values of coworking and current workspace design trends. In addition, five qualitative methods were used within the three case studies: ethnographic space observations, structured interviews, a design game, semi-structured interviews, and analysis of written documents and relevant online media. Qualitative methods were used to 'penetrate the surface' (Eisner, 1998: 35) and access the 'intricate details about phenomena such as feelings, thought processes and emotions that are difficult to extract or learn about through more conventional research' (Strauss and Corbin, 1998: 11). Coworking highlights the need to consider workplaces as a jointly physically and socially constructed environment (Fayard and Weeks, 2007); qualitative methods were therefore considered to offer a holistic and interpretive approach that was appropriate to the field of study.

3.3.1 Content sample analysis of coworking spaces

Content sample analysis was carried out on the home pages of 100 coworking spaces to assess how they described their own offer; these included 73 spaces which were also analysed in plan and 27 additional coworking spaces that were visited during the research. The data was imported into Dedoose and thematically coded to identify the most commonly expressed values. Coding was carried out inductively, identifying themes based on the initial generation of codes. These were used to sort the spaces into categories based on whether their offer was centred on service, values or mission. The data was also used to identify the most frequently expressed aspects within those categories. Spaces which self-defined as coworking were included; while this is a potential limitation in that some may have been rebranded serviced offices, it represented the full breadth of the market and recognised the difficulty of arriving at a definitive definition of what coworking is. In addition to this content analysis, data was collected on who each space served, the type of services offered, the range of events held at the space and what their social media presence was.

3.3.2 Content sample analysis of current workspace trends

Both academic and grey literature were used in the analysis of current trends in workplace design, in addition to all of the published workplace reviews from three online publications in 2016 (Table 3). These were coded to identify current trends and priorities in workplace design.

Publication	
Contract	Primarily US based, aimed at industry professionals with a focus on commercial interiors rather than building shell or products. Has a wide readership and includes photographs and descriptive text.
OnOffice	British publication, includes projects from across the world although has an Anglo-American bias. Wide readership, includes photographs and descriptive text.
Dezeen Offices	Strong design focus, includes furniture and products as well as interiors. Wide readership, includes photographs and descriptive text.

Table 3. *Publications and brief description*

In total, 48 extracts were analysed. The text was imported into Dedoose for coding. The data was coded inductively, using a set of 'starter codes' based on an initial reading of the material. Once codes had been generated, the final themes were defined and named. The articles were analysed as short chunks of text rather than whole extracts in order to identify links between specific elements - for example, an explicit link between visual transparency as a strategy and transparency as a value. In analysing the data, mention of a specific element - for example, 'culture' as an organisational value - was only counted once per excerpt. Relationships between elements - such as the value of 'culture' linked to aesthetic or behavioural elements - were counted as many times as they occurred. Photographs were also coded for aesthetic features and settings.

The subjective and selective nature of the data was a limitation of this approach. The information presented by these publications has been through several rounds of selection - the organisation or architects propose a submission, photographers selectively frame the images, and the text may have been through multiple rounds of editing. However, it could be argued that what makes it through the selection process is informative in and of itself.

Several of the projects had also been awarded prizes - for example, BCO Workplace Fit-out of the Year 2016, indicating a wider acknowledgement that this was regarded as being at the forefront of current workplace design approaches. All of the publications studied are widely read within the industry and could thus be regarded as potentially influential to those seeking to update their own space, or to designers. The relationship between this and the problem of aestheticisation could be summed up by the following quote:

> 'The reputation of the architect is, in part, dependent on his or her ability to generate a good photograph. If an architect is successful the same image is published throughout the world, to be copied by other architects with little regard to cultural or social differences', (Hill, 2001: 62).

It was interesting to note that almost none of the articles included floor plans, instead framing the project entirely through the architectural photographs, with the precise spatial arrangements reduced to a description of general strategy. They were typically published within a short timescale from completion, and none talked about having any intention to evaluate the completed project outside of the occasional reference to environmental monitoring.

3.3.3 Three case studies and logic behind case choice

The three in-depth design study sites could be considered to be qualitative case studies. A qualitative case study is an approach that involves empirical investigation of a phenomenon within its context using multiple sources of evidence (Robson, 2002; Baxter and Jack, 2008: 544). Appropriate in circumstances in which the researcher examines current events but is not in a position to manipulate behaviours, case studies allow the researcher to ask 'how' and 'why' questions, in addition to taking into consideration how the phenomenon being studied is influenced by its context (Yin, 2003; Baxter and Jack, 2008). A case study model might draw on a combination of observation, interviews, archival material and surveys to investigate complex social phenomena, aiming to generate a rich data set which can be analysed through multiple methods to allow different facets of a phenomena to be revealed and understood.

A central aim of the research was to explore and define coworking and its associated cultures of collaboration, community and co-creation; the three sites were chosen for their potential to shed light on these aspects of workplace, both within coworking and organisational environments. The Birmingham Impact Hub (BIH) and Second Home (SH) represented different facets of coworking that had been identified in the early stages of the research, representing opposite cases to some degree. Sony as an organisation was trying to implement a sense of community and increased collaboration within its own commercial space. The different qualities of each site are summarised in Table 4. A more complete account of each organisation, including the location and a brief outline of the organisation, is provided in Sections 4.2 and 4.3.

	Second Home	**Birmingham Impact Hub**	**Sony PlayStation**
Organisational aims	Serendipitous interactions and innovation space for high performing teams	Serendipitous interactions and community	Both community and space for high performing teams in addition to maximising serendipitous interactions
Occupants	Primarily teams	Primarily individuals	Primarily team space with room for individual focus
Membership	Curated	Open to all	-
Level of enclosure	Primarily enclosed	Open plan	-
Design Processes	Traditional architect-client relationship	Participatory co-creation process	-
Design ambition	Highly designed	Low budget	-
Occupation process	Move into completed space	Beta phase	-
Agency to make changes	Management team	Members	-

Table 4. *Summary of the factors in the decision-making around case choice*

Both BIH and SH shared the curation of community and events, a fairly diverse membership population, driven by mission and values rather than primarily by service, a desire to spark interaction and collaboration between members, and connections to social enterprise (offering space at reduced rates for charities and social enterprises). Both spaces were relatively new - SH had opened less than a year prior to the research commencing, and BIH officially opened during the first year of the study. This provided an opportunity

to observe the spaces as they developed and track changes that were made almost as they happened, rather than having to unpick historical change over time. The reasoning behind design decisions was also fresh in the minds of the respective teams.

The briefing stage of the Sony PlayStation research was a commercial project carried out through the Helen Hamlyn Centre for Design (HHCD). The research was carried out in collaboration with Catherine Harrison, a colleague at the HHCD, and supervised by Prof. Jeremy Myerson. While Sony had not initially been sought out as a case study, the commission arrived at an opportune moment. With the aim of the research being to investigate crossovers between coworking and organisational space, Sony represented a corporate workspace with many of the same aims and objectives that had been identified within coworking, so they were approached to be included in the study. The studio leads wanted to encourage collaboration and interaction and respond to the needs and concerns of the people working within the space. Sony was also an illustration of the problems around aestheticising collaboration that were identified in Chapter One. They had agreed a budget for refurbishment and invited three architectural practices to submit proposals. While all three put forward aesthetically satisfactory proposals, the internal team decided not to go ahead, feeling that they had been pitched an image of what a creative technology company should be, rather than having had their specific needs and culture understood. They therefore approached the HHCD to conduct an ethnographic research process to develop a brief that specifically addressed these issues, at which point the PhD researcher became involved.

3.3.4 Ethnographic observation

Observation has been characterised as 'the fundamental base of all research methods' (Adler & Adler, 1994: 389), and ethnographic space observations were carried out at all three case study sites over varying periods of time. Several initial periods of observation were conducted over single days, moving on to a phase of 'focused observation' as defined by Werner & Schoepfle (1987). At BIH and SH, this was carried out over a two-week period of full-time observation, with more limited observations at Sony due to the time constraints associated with client work. The spaces were openly observed and an

observation diary was kept, taking field notes on observed behaviours, space use and cultural aspects. These included aspects such as what time people arrived and left, levels of interaction and occupation, how space was appropriated (e.g. leaving out belongings or using personal items as decoration), how shared spaces were used, who interacted with whom, how people were dressed, noise levels and ambience (Flick, 1998). Observations were rendered as descriptions using open-ended narrative under broad headings that were identified during the early stages; these were revisited and adjusted as appropriate as the data collection developed. Field notes remained as descriptive as possible until major themes emerged, consistent with the principles of inductive research (Glaser and Strauss, 1967).

Photographs were used as a form of visual documentation, recording the interior architecture, space, layout, furnishings, infrastructure, change over time, and any other notable characteristics. This took place at BIH and SH, but was not permitted at Sony during the brief making research due to concerns about potential leaks of confidential information. Having developed a relationship with the team, the researcher was allowed to take photographs during the evaluation phase at Sony on the grounds that the information would no longer be sensitive by the point of publication of the thesis and any identifying details could be blurred out. Photographs in all three spaces were taken at regular intervals throughout the period of observation.

Observations at BIH were primarily carried out from the central Lab space, which afforded the best view through the space (Figure 24). The space was also walked through on an hourly basis, with one day each week spent sitting in a different location (either the coffee shop or the back 'collaborative' space). The observations at SH followed a similar pattern. However, as it was not possible to see the whole space from a single vantage point, the first week was spent sitting in the central roaming members area, with the second week split between the public spaces at the front and the 'hanging gardens' towards the rear of the building. The team studio areas were walked through on a daily basis; it was not possible to unobtrusively spend extended periods of time there. During the briefing research, observation time at Sony was limited to a single day. This also coincided with a period of low occupancy levels following a significant deadline. Observations for the CSG team

were also limited as most were situated in small enclosed rooms making direct observation difficult. This meant that the analysis relied more heavily on self-reported behaviours and supplied data than would ideally have been the case. During the evaluation phase, one day was spent on each of the floors relevant to the evaluation. Observations at Sony overall were therefore too short to record repeating patterns or develop a deeper understanding (Spradley, 1979). However, this represented an accurate picture of the realities of 'real world' research (Robson, 2002), and enabled a deeper understanding of the material collected in interviews.

3.3.5 Semi-structured interview

Semi-structured interviews were carried out at BIH and SH using an interview guide, allowing for covering all topics of interest whilst focusing on the answers given by participants (McCracken, 1988). This also allowed for a conversational style, with the conversation dictating the order in which issues were discussed, and the interview guide providing a reference point to ensure that everything was covered (McCracken, 1988; Creswell, 1994). In the first instance, these were held with three members of the founding team and the architect who designed the scheme at BIH, and with one of the founders and a member of the management team at SH. These took place within each space over 30 to 50 minutes, centring on the process of opening the space, the community that was being developed around it, the briefing and design process, the intent behind design decisions, and the 'cues' that had been built into the space. These interviews were carried out prior to the observations, with the observations then used to check back on whether perceived spatial behaviours were following or deviating from these cues.

At BIH, interviews were held with members in two phases after the observation period – the first with members who had signed up before or soon after the space was ready for occupation and the second with members who joined at least a year after BIH opened. Members were selected for interview using a random sample based on a membership list provided by the BIH team. The intention was to sample one in ten of the BIH members in the order in which they joined, subsequently correcting for imbalances in age, gender and occupational background. However, as a number of members rarely accessed the

space itself, a list of members who regularly used the space (at least one day a week) was confirmed with the management team and used as the basis for random sampling. Access to members at SH was more limited and these were therefore shorter conversations, which were carried out within the space during the primary observation period. As the team were not able to provide contact details for individuals, members were approached during internally organised events and asked if they would mind talking about their experience of the space.

The interviews focused on the individual's use of the space, the activities that they carried out there, their interactions with other members, what - if anything - they felt was missing, and any other factors that fed into their overall experience as a member. However, the strategy was to keep the interviews open for interviewees to talk about any topic that they considered to be important. Interviews were recorded and transcribed as soon as possible following the interview itself; the analysis will be discussed in a later section. Interviews were carried out until there was an emergence of saturation and redundancy in participant responses (Dibley and Baker, 2001; Lincoln et al., 2011), and the results were anonymised.

3.3.6 Structured interviews

3.3.6.1 Sony briefing phase

In response to the greater time constraints of the engagement with Sony, structured interviews were held with participants briefed in advance as to the content of the session. During the briefing research, these were conducted by two researchers over a single day and included a total of 24 people representing all of the departments within the building's workforce. The participants were selected by Sony as those whose working pattern was typical of that department (by request of the researchers) and included people with a range of seniority due to limitations associated with collecting feedback only from managers (Windlinger et al., 2016). These interviews focused on the workflow and interaction patterns of each department in addition to asking them to identify the spaces, tools and people that were most important to them. An interview tool based on community development asset mapping techniques was used to structure the discussion, creating a

visual map that placed spaces, facilities, and people in positions of relative importance. Participants were asked to describe both their existing situation and any elements that they felt it would be important to enhance or introduce. It also allowed for the identification of any elements that they felt were largely irrelevant to their daily patterns of occupation. The interviews were used to develop a deeper understanding of the needs and priorities of the departments - this has been identified as an important stage in the development of a design brief, with user groups tending to maximise their wish list in anticipation of being bargained down (Yu et al., 2006). A combination of time constraints and Sony's nervousness around being able to control outgoing data meant that these interviews were not recorded; the visual map was therefore a useful record of the conversation. A short amount of time at the end of each interview was available for reflection and capture of any additional notes.

Participants were also asked to describe the amount of time spent doing process work versus creative work, with process defined as routine tasks and creative work defined as the generation of new information and knowledge. Finally, they were asked to map their level of interaction with others. The mapping tools were filled in by the researcher, verbally checking with the interviewee that the interpretation of their answer was correct. They were also asked if they felt that their responses would be similar to other members of the team; the people who responded in the negative attributed variations to differences in seniority (e.g. their peers would be similar, their line manager would have higher levels of interaction).

3.3.6.2 Sony evaluation phase

Structured interviews were also carried at during the post-occupancy evaluation (POE) phase at Sony. Similarly, participants were sent an email briefly introducing the researcher and the purpose of the research and assuring them that responses were confidential and participation voluntary. Interviews were recorded and transcribed. Interviews were held over three days with six members of the Creative Services Group (CSG) and nine members of London Studio (LS), in each case representing different teams. Participants were nominated by Sony according to criteria set out by the researcher (representative of

working patterns, had been in the space for at least one year, varying seniority, age and gender as far as possible). Ideally, participants from the briefing research would have been re-interviewed, but Sony had undergone significant turnover of staff during the intervening period and this was not possible. Each interview took place over a 30-minute period. The CSG interviews were carried out in an enclosed meeting room so that participants felt that their responses were confidential. This was not available while the LS interviews took place, and these were therefore held in the sixth-floor kitchen. While this was not a private space, it was located well away from senior management and participants were seated so that they could see who was coming in to maximise their psychological comfort.

The interviews were structured around a series of experience maps that asked participants to talk through a typical working day, discussing their experience of the spaces that they used in terms of instrumental and relational support, their sensory and affective experience, and whether they felt that a sense of team or organisational identity and culture was present. These had two main components - a diagrammatic floor plan used to map interaction and identify the 'best' and 'worst' aspects of the space, and a set of experience maps based on customer journey mapping (CJM) techniques. CJM is a methodology originating in service design within which the experiential aspects of an interaction or service from a customer's point of view are considered to be as important as observable steps or activities (Edvardsson et al., 2005; Følstad and Knut, 2018). While the content of the map is usually based on specific needs rather than generally agreed conventions (Følstad and Knut, 2018), the process typically results in a visual map of user experience spanning a number of steps or activities (Bridge, 2012; Huang et al.,2012) and including diverse types of information such as emotions, needs and pain-points (Rasila et al., 2009; Trischler and Zehrer, 2012). In this respect, it also has a temporal aspect which can be difficult to capture within a traditionally structured survey (Diana et al., 2009). CJM was chosen in preference to a physical walkthrough (e.g. Hansen et al., 2010), partly for practical reasons - it was difficult to guarantee that multiple people would have been available at the same time - and because most of the spaces in question had some proximity to senior management which raised concerns about the extent to which participants might have felt able to provide open answers. The completion of the maps was guided by a set of questions addressing aspects of the brief: ease of collaboration, adaptability, ability to work productively, orientation and

studio culture/identity.

Participants were free to bring up any other factors that they felt were important. Photographs of the spaces in question were also provided as a visual aid to memory. Participants were asked to note the location of their workstation on a printed floor plan, along with the locations of the people with whom they communicated the most (face-to-face interactions) in order to determine whether current adjacencies were likely to be appropriate. Finally, they were asked to identify the three elements that they would most and least miss.

3.3.7 Design game

The briefing tool that was developed at BIH can loosely be categorised as a design game. Design games aim to create a participatory platform that allows stakeholders to be involved (Vaajakallio and Mattelmäki, 2005). Most design games are intended for use at concept stage (Koskinen and Battarbee, 2003), with Vaajakallio and Mattelmäki (2014: 63) describing the outcome of co-design events such as design games as a 'co-constructed understanding about the context, people's experiences, potential designs and dreams' rather than final design solutions. Despite the increasing popularity of design games, Vaajakallio and Mattelmäki (2014) identified a lack of clear definition in the field, although they noted general agreement that design games are about staging participation, there is seldom a competitive element, and that there are rules and tangible pieces that guide the moves in some way. Brandt et al. (2008: 54) proposed the following features as a tentative outline of participatory design games:

- A diverse group of players gathered around a collaborative activity which is guided by explicit, simple rules, assigned roles and involving pre-defined game pieces
- Game materials (usually) point to both or either existing practices and future possibilities
- Played within a confined temporal and spatial setting, usually removed from everyday context
- A defined purpose of establishing and exploring novel configurations of the game

materials and the practices that these materials indicate

- The production of representations of one or more possible design options at the end of game play

Vaajakallio and Mattelmäki (2014: 66) proposed four core functions that exist simultaneously in most design games: creating a common design language, promoting a creative and explorative attitude, facilitating the players in envisioning and enacting 'what could be', and helping to define the roles of participants in the interaction during a session. The varying capabilities of participants in terms of expressing aspirations and requirements is a commonly encountered problem in the architectural design process (De Jong and De Bruyne, 2008; Eckert and Lupino, 2016). Eckert and Lupino attribute this problem to hierarchical cultures, lack of expertise, or a failure in the design process to produce scenarios that are open enough to allow for negotiation. Design games therefore act as tools for creating a common language between end users and designers, ideally being sufficiently open-ended to allow for the possibility of multiple alternatives (Brandt and Messeter, 2004; Johansson and Linde, 2005; Brandt et al., 2008; Vaajakallio and Mattelmäki, 2014). In this sense game playing forms a basis for mutual learning between designers and end users (Brandt, 2006), with participation allowing stakeholders to gain fluency in the language of expressing design moves (Brandt et al., 2008).

The exploratory nature of design games can be an enabling factor when negotiating future design strategies with stakeholders (Eckert and Lupino, 2016), placing players in a shared conceptual space - also called 'design worlds (Johanssen and Linde, 2005) and 'as-if worlds' (Brandt, 2006) - that allows them to explore scenarios. The use of stylised pieces seems to open questions up to interpretation and encourage participants to be explicit about their understanding of the questions and elements when playing (Habraken and Gross, 1987; Horgen et al., 1999; Brandt, 2006). In this sense, the game pieces function as boundary objects; they are shared artefacts, which allow for multiple interpretations. Brandt et al. (2008: 57) identified 'diagrammatic approaches' as particularly suitable as game formats, with the need to include game materials and rules that enlist group participation, but that also allow for ambiguity and interpretation. This level of abstraction is considered to distance participants from functional requirements, preventing them from

becoming conceptual boundaries at an early stage of design development and preventing future disappointment from participants who had visualised future solutions 'too well' (Habraken and Gross, 1988; Valand, 2011: 56). The open-ended and ambiguous nature of such tasks helps participants to engage in an 'empathic and playful way' in proposing new interpretations and alternative solutions (Vaajakallio and Mattelmäki, 2014: 73). The evolving game configuration also provides physical documentation and reminders during and after the game play process (Brandt et al., 2008; Vaajakallio and Mattelmäki. 2014).

The design game was played at BIH. The context around the game and development of the pieces will be discussed in more detail in Section 4.4.2. As the session was held in a large open space with people regularly passing through, it was difficult to accurately record conversations. The researcher therefore moved around the table discussing participant's choices and making notes. The outputs of the game were analysed visually, in line with the intended final outcome in wider use.

3.3.8 Written documents

Although they were not systematically analysed, written documents (posters, handbooks, notice boards and web pages) were looked at and, where possible, recorded to enrich the understanding of the space derived from the interviews and observations. This included any visible guidance as to the rules or guidelines around the use of a specific space. At BIH, this included access to the internal Yammer network. SH similarly has a dedicated internal network but access to this was not available during the research.

3.3.9 Analysis of data

In line with the research design outlined earlier in the chapter, an inductive approach was employed to the data analysis, with meaning developed from primary data with no prior hypothesis. The aim of analysing and interpreting qualitative data is to provide definition, categorisations, concepts, explanations, exploration and mapping of data (Ritchie and Spencer, 2002). In general, a thematic analysis approach was used to provide a robust and

grounded approach to data analysis. Thematic analysis is an effective qualitative analysis method for 'identifying, analysing, and reporting patterns (themes) within data' (Braun and Clarke, 2006: 79). The process involves the review and interpretation of research data, identifying general categories, generating initial codes based on familiarisation with data, then identifying themes among these codes.

Analysis iterated between data collection and sampling, data reduction and representation, and conclusions and verification (Miles and Huberman, 1994; Strauss and Corbin, 1998). Emerging themes were identified as the data was collected; these were used to iteratively organise new data (Glaser and Strauss, 1967). Data was then coded using Dedoose. This took the form of line-by-line coding as described by Denzin and Lincoln (2011), in order to define and categorise the data, ask questions of it, and pinpoint gaps on which to focus during subsequent data collection while remaining open to emerging themes. Computer-assisted qualitative data analysis software (CAQDAS) has several advantages in qualitative analysis, allowing the researcher to store, organise and retrieve coded text quickly and relatively simply, in addition to tracking and organising a variety of data sources in the same location (Baxter and Jack, 2008; Garcia-Horta et al., 2009). While CAQDAS can help to overcome some of the deficiencies of 'human as analyst' (Robson, 2002: 460; Garcia-Horta et al., 2009), the researcher must still ask the questions, interpret the data and decide what to code (Bringer et al., 2006). A number of potential limitations of CAQDAS have been identified (Mangabeira et al., 2004; Bringer et al., 2006; Garcia-Horta et al., 2009), with one of its greatest drawbacks argued to be the distancing of the researcher from the data (Baxter and Jack, 2008). The use of CAQDAS was therefore supplemented by drawing diagrams by hand, printing and reading through transcriptions, printing and physically grouping visual materials, and using a whiteboard to map out concepts as the research developed.

The following chapter will discuss the four design studies to which these methods were applied. The coworking quantitative analysis will be discussed first, followed by the coworking case studies, organisational workplace study and finally the design toolkit development.

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4

Design Studies

This chapter will discuss the four design studies which are at the heart of this thesis, outlining the aims, objectives and processes for each. The four studies directly relate to the research questions set out in Section 1.4. The first two studies address coworking from a quantitative and qualitative perspective, attempting to shed light on its associated values, behaviours and spatial strategies, asking whether it does in fact have distinctive spatial or behavioural characteristics. The first coworking study comprises a quantitative analysis of 100 coworking space home pages and 73 floor plans of coworking spaces across a ten-year period of time. The second takes an in-depth look at two coworking spaces which represent different aspects of the model, exploring interaction, member experience, agency and change. The third design study focuses on organisational space, looking at current trends in organisational workplace design before presenting an in-depth case study of the redesign of a commercial organisation's workplace seeking to enhance interaction and community - two of the same aims identified as central to coworking. This design study addresses the question of whether coworking represents a substantive departure from traditional or current organisational models by identifying trends, key concerns and design processes within organisational space. The final study explores the potential for new tools and approaches in organisational workplace design, presenting a design toolkit for experience-centred briefing and evaluation that was grounded in the coworking research.

4.1 Design Study 1: Coworking values and spatial strategies

This design study provides a quantitative analysis of the values and spatial strategies of coworking spaces. The first section explores the values of coworking, looking at how coworking spaces describe their core offer based on the home pages of 100 coworking websites (Section 3.2.2). While community and collaboration are commonly considered to be key values of coworking, this seems to be assumed rather than based on empirical analysis of how they describe themselves. The spatial analysis is based on the floor plans of 73 coworking spaces established between 2007 and 2017 (Section 3.2.1). Existing analysis of the interior spaces of coworking is extremely limited, with most research studies focusing on only one or two spaces with little systematic analysis of space allocation or spatial strategies. The apparent diversity of characteristics within coworking spaces make comparisons of these existing studies problematic. The Deskmag surveys include the most detailed information of the spaces of coworking, although this has been largely restricted to self-reported space densities and relative provision of open plan, private offices, classrooms, meeting space, and 'other'.

This study therefore attempts to identify whether there are any common values or spatial strategies that define coworking. Coworking was conceived of as a participatory and decentralised movement in which information was freely shared, and the principle of sharing experience and best practice has been described as a core value (Core Values). While the primary aim of partnerships such as the Global Coworking Visa was to create a network of spaces with reciprocal membership arrangements, it was also viewed as an opportunity to share best practice, with members and founders able to visit other spaces, share their approach, and take home ideas for how to improve their own offer. There are a number of community resources for seeking and sharing advice, including a Google Group, wiki, blog and website, which all invite volunteers to help improve the information resources of the coworking community. The willingness to share mistakes in particular is arguably a key difference between coworking and organisational space; while workplace designers or decision makers are typically happy to share positive outcomes, there is rarely

any open discussion about decisions that did not work. The prevalent sharing of best practice and tendency to adapt space to members' needs would suggest that commonly occurring elements or strategies have been loosely identified as suitable to support coworking practices. No attempt was made to develop distinct spatial typologies, but rather to identify whether there are any common strategies or design elements while recognising that there are detailed differences in spatial arrangements across the market as a whole.

4.1.1 Coworking values

> 'Is coworking a new way to cut up office space and lease it to businesses at a profitable margin, or is it about something more important? We're building a movement to change the way we work forever.' (Cockrell, 2015: online).

Coworking has been a self-proclaimed 'movement' almost from its inception, with the earliest coworking spaces conceived as places in which people could come together to forge a new way of doing work, rather than as profit making enterprises (Spreitzer et al., 2015). As such, the development of a set of shared values was at the heart of the original coworking offer. These were articulated by the founders and members of the first coworking spaces, comprising collaboration, community, sustainability, openness and accessibility (Kwiatkowski and Buczynski, 2011). These can be viewed as an attempt to conceptually distance coworking from the wider space rental market (DeGuzman and Tang, 2011), with the identification of a set of shared values that align with the social needs of members viewed as a key marker of a coworking space:

> 'You don't have to adopt the 5 Core Values to be a coworking space, but do adopt some values, and make them yours.' (Core Values, n.d.: online)

To identify the values most commonly adopted by coworking spaces, the home pages of 100 coworking spaces were coded for statements that described their core offer. Websites typically included information on rates, amenities and spaces, an introduction to the team, upcoming and past events, news and blog posts and information about the location and existing members. Where these sat within the overall architecture of the website varied;

some emphasised the community aspect on the homepage with pricing and benefits in a secondary menu, while others prioritised the cost and benefits offer. One consistent element was a strong narrative of added value, comprising services and infrastructures that support work processes, promoting a sense of community, and encouraging synergies between members by providing events and curation by community managers. The following quotes are typical of this:

> 'So much more than just a space', (Ampersand, n.d.: online).

> 'Coworking isn't just a rented desk', (Flywheel Coworking, n.d.: online).

The statements were divided into three groups comprising service, values and mission. Services described statements relating primarily to instrumental functions of the space, highlighting comfort, efficiency, productivity, infrastructure and scalability. Value-based statements typically emphasised the relational aspect of coworking, highlighting community, sharing and collaboration, alongside aspects such as accessibility, participation and shared culture. Finally, there is arguably still a sense of social mission inherent in coworking, with some spaces emphasising social impact and innovation or building networks for positive change. The majority could be categorised as having a service-values offer, in which selling the space was accompanied by an emphasis on shared values (Figure 25). A lesser number talked only about services, suggesting that these might sit somewhere in the overlap between coworking and serviced offices - most of these spaces were either very small (twenty seats or less), or had names such as 'Worksmart' or 'Workzones' that strongly suggested an instrumental orientation. The rest referred only to their values - with information about space pricing and services on subsequent pages - or had an orientation that could be described as values-mission. The following sections detail the key words that were identified in each category,

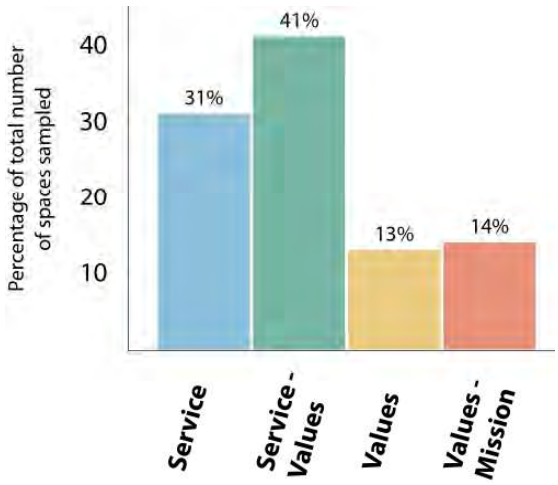


Figure 25. *Distribution of sampled spaces across service, service-value, values and mission*

along with two representative quotations from coworking homepages.

4.1.1.1 Service

> 'We make your day to day operations as stress free as we can…housed within spaces you can feel comfortable and confident growing in.', (Bond Collective, n.d.: online).

> 'We…eliminate the work that comes with owning an office…We also provide flexibility for...expanding companies.', (Cloud Coworking, n.d.: online).

Access to resources – ranging from basic essentials to amenities and services which might otherwise be out of reach to a small company – was the most frequently cited aspect of a 'service' offer (Table 5). A basic level of amenity which included printing, events, high speed internet, meeting space and good quality free tea and coffee were constants. In addition, many spaces provided a more sophisticated level of resource which might include specialised space, access to partnerships and discounts with relevant service providers, or in-house expertise.

This was closely followed by network building, with a focus on growing member businesses rather than community or knowledge sharing. The third most common related to the space being flexible and/or scalable, enabling members to accommodate changing requirements without having to move to a new space provider. Some described their core function being to free members from having to think about the functioning of their space, allowing them

Service	Number of mentions
Access to resources	11
Network building	10
Flexibility/scalable space	8
Don't have to worry about space	7
Professional environment	4
Affordability	3
Comfortable	2
Help you succeed	2

Table 5. *'Service' descriptors and number of mentions*

to focus on their work with no distractions. Some sold themselves on offering a professional or comfortable environment, with relatively few explicitly emphasising affordability.

4.1.1.2 Values

> 'Catalyst is a collaborative workspace community', (Catalyst Coworking, n.d.: online).

> 'The heart of Makeshift is our community of like-minded peers who work next to, collaborate with, and learn from one another', (Makeshift Society, n.d.: online).

Values	Number of mentions
Community	31
Collaboration	26
Sharing knowledge/experiences	18
Diversity	8
Participation	7
Creativity	6
Equality	5
Experience	4
Authenticity	4
Accessibility	3
Transparency	3
Trust	3
Autonomy	3
Serendipity	2
Meaningful work	2
Cocreation	1

Table 6. *'Values' descriptors and number of mentions*

The most frequently expressed values were collaboration and community (Table 6). Some spaces did not explicitly reference these but still referred to aspects of them; members sharing knowledge or experience was the third most frequently cited value. This emphasis on community and collaboration was reflected in the academic literature, with the majority of the existing literature addressing these aspects (Section 2.1.4.1 & 2.1.4.2). Diversity and participation were fairly frequently mentioned and linked to collaboration and knowledge sharing. Diversity of experience was viewed as an important benefit, and there was typically

a sense that members got out what they put in; active participation in the community was needed in order to get the best out of their coworking experience. Equality, authenticity, transparency and trust were linked to this, with an emphasis on lack of hierarchy and accessibility for all. Finally, autonomy, serendipity, meaningful work and cocreation were mentioned by a few spaces.

4.1.1.3 Mission

> 'We bring together a community of entrepreneurs, activists, creatives and professionals to take collaborative action and drive positive change', (Impact Hub Baltimore, n.d.: online).

> 'The Melting Pot's mission is to stimulate and support social innovation', (The Melting Pot, n.d.: online).

Mission statements revolved around social impact and innovation, with the coworking space itself described as a place to bring together a community of people dedicated to driving positive change in the world (Table 7). A small number of these were non-profits. A few described their mission as being to help members to grow their business and were excluded from this count, which focused on mission as an expression of larger or social impact.

Mission	Number of mentions
Social impact/Social innovation	8
Non-Profit	5
Public good	4
Network for positive change	2
Make the world a better place	2

Table 7. *'Mission' descriptors and number of mentions*

4.1.1.4 Summary of key points

The home page analysis indicated that, while the overall orientation of spaces varied along a spectrum defined as service-values-mission, there were a number of common threads. While the 'original' coworking values of sustainability, openness and accessibility were rarely mentioned, community and collaboration featured in a large number of the sampled spaces. Where they were not explicitly mentioned, an analogous value such as 'sharing experiences' often featured instead. This idea of active participation was a relatively common theme, with some spaces explicitly stating that, where coworking is concerned, you get out what you put in. The analysis therefore suggested that community, collaboration and participation could all be argued to be core common values of coworking spaces.

The importance of the service offer could also be considered to be a core value, with spaces ranging from a basic level of provision in which members were asked to participate in the upkeep of the space, to highly serviced spaces which operated much more like hospitality environments. In this respect, one of the advantages of coworking for its members can be viewed as enabling individuals and smaller companies to enjoy amenities that have traditionally only been available to larger organisations. These may be as simple as access to high quality meeting and social spaces, but also extended to wider infrastructures of care and guidance such as discounted health insurance, childcare, professional facilities and software. In this sense, coworking spaces have arguably taken on a role as a kind of corporate parent, replacing benefits that have been lost through the breakdown of traditional forms of organisation or are inaccessible to freelancers.

Finally, while it was rarely explicitly referenced, the centrality of member experience was a strong theme. This was expressed through the provision of a high level of service, or through the development of a strong community and shared culture that promoted connections between members and added value. This is arguably rooted in coworking's origins as a bottom-up creation in which members often had a significant level of input into the creation of both the space and quasi-organisational structures, but is also tied to the short-term business model. With spaces typically offering rolling memberships as short

as one month, failing to attract new members with an appealing offering – or failing to meet their ongoing expectations – means that spaces can fail very quickly.

4.1.2 Spatial strategies of coworking spaces

This section presents the analysis of the spatial strategies of 73 coworking spaces using the methods outlined in Section 3.2.1. For an overview of all floor plans, refer to Appendix 2. Spaces were grouped into Small (S), Medium (M), Large (L) and Extra-large (XL) by the total number of seats available across all work settings (Table 8). The average number of seats across all 73 spaces was 166.

Size	Number of seats	Average across all spaces
S	0-99	66
M	100-199	140
L	200-299	250
XL	300+	561 (445 excluding WeWork)

Table 8. *Size categories by number of seats*

While S and M spaces were present throughout the ten-year period under review, L spaces only featured from 2011 onwards, and XL spaces from 2015 (Table 9). While this may be a result of the limited sample size, it is consistent with the growth in the coworking market in recent years.

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	TOTAL
S		1		3	2	4	3	3	8	4	2	30
M	1	1	1	3		2	2	4	5	5	1	25
L					2	1	2	2		3	1	11
XL									2	3	2	7

Table 9. *Number of spaces in each size category per year*

4.1.2.1 Occupation density

The measurement of occupation density was not included in this study. As described in Section 3.2.1, relatively few of the plans were available as CAD files so had to be scaled from pdfs or images. This introduced a margin of error that could be significant when dealing with numbers as small as the amount of space occupied by a single workstation. The

space allocations were therefore calculated as a percentage of the total Net Internal Area (NIA) in order to account for that inaccuracy; this did not allow for an accurate calculation of occupation density

In addition, while detailed spatial strategies have received little attention, occupation densities are part of Deskmag's annual coworking survey. In 2016, Deskmag identified the average occupation densities of coworking spaces as being 130 square foot per desk (global mean), with a median figure of 100 square foot per desk (Deskmag, 2016). This figure includes all of the settings within a coworking space (e.g. meeting room, kitchen, breakout etc.). The mean being much larger than the median suggests that the data is generally skewed right (in broad terms, a few values are larger than the rest), suggesting that closer to 100 square foot per person might be more typical.

4.1.2.2 Allocation of space to enclosure, communal areas and private offices

The spaces were initially analysed in terms of the overall percentage of enclosed space (as opposed to open plan, regardless of function), communal space (as opposed to private offices or individual workstations) and private offices (as opposed to open plan workstations). These criteria were selected as the wider dialogue around the development of coworking suggests that there has been a move towards enclosure from its largely open plan origins, the apparent privileging of collaboration and the development of the 'hybrid' coworking space with the introduction of private offices.

Enclosed: The proportion of space that is enclosed or open plan, irrespective of function (Figure 26 top). There is a slight trend towards increasing enclosure, which can most likely be linked to higher numbers of private offices.

Communal: Communal workspace includes all shared areas, including kitchens, informal and formal meetings spaces and breakout areas. While there is significant variation – the range is from 77 per cent to 16 per cent of communal space - the majority of spaces have given between thirty and forty per cent of the NIA over to shared facilities. The analysis suggests that proportions of communal space are on a downward trend – all but one of the

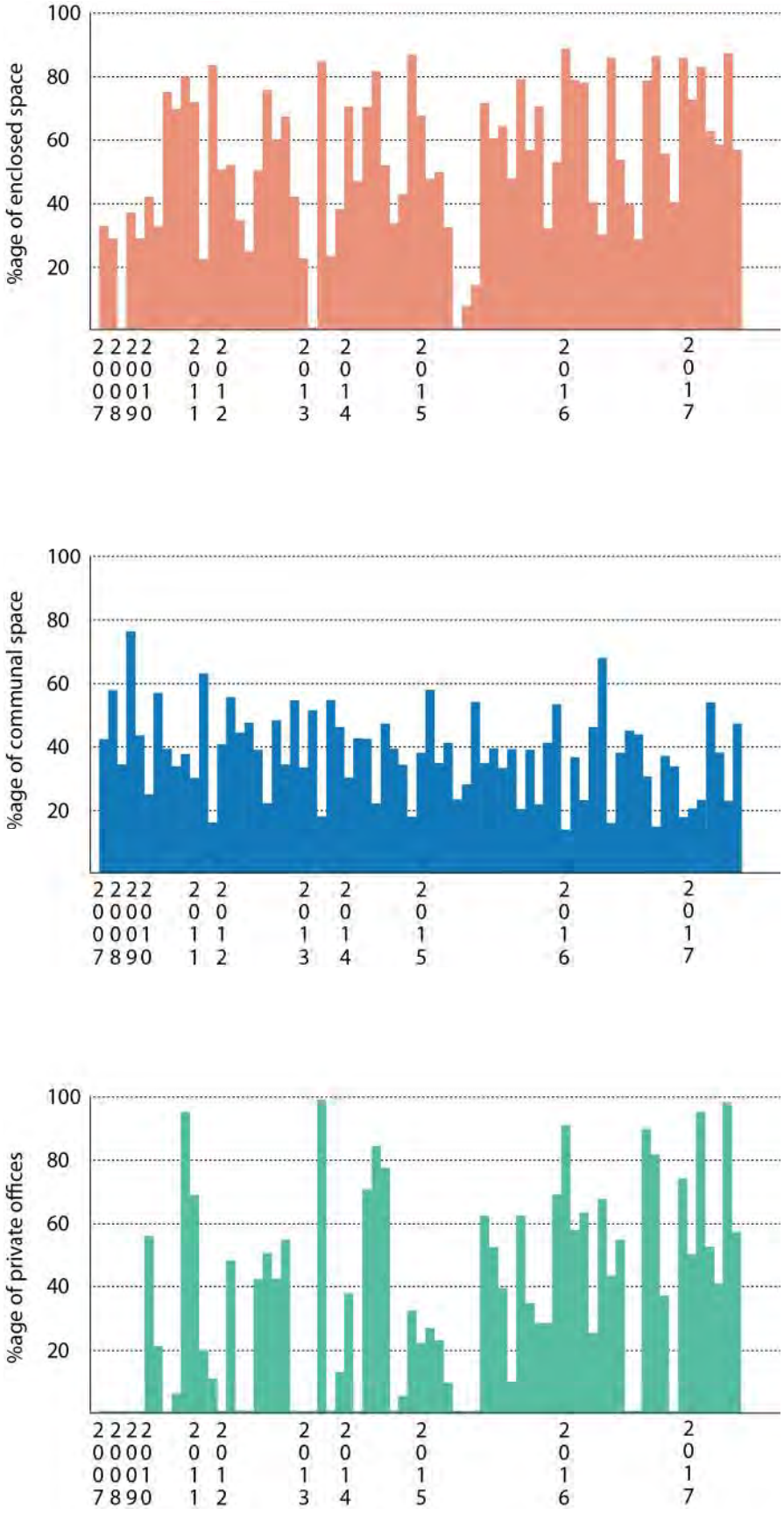


Figure 26. *Graphs showing the amount of enclosed space, communal space and private offices as a percentage of the Net Internal Area (NIA) over time. Each bar represents a single space*

spaces which had the smallest percentage were built after 2013 (Figure 26 centre).

Private offices: Spaces ranged from providing only open plan workstations to 98 per cent private offices with a small amount of individual touchdown space, with a general trend towards increasing proportions of enclosed offices (Figure 26 bottom). The earliest example of a private office was 2010, which is more or less consistent with coworking entering the mainstream of flexible workspace provision. While there were peaks throughout the sample, private offices were an increasingly common feature in the three most recent years. While coworking originated as an open plan working arrangement, it did not solve the problems that came with open plan space and many space providers appear to have moved towards providing a mixture of open plan workstations and private offices. This might be described as a hybrid model that blends some of the qualities of the more traditional serviced office with coworking space.

The proportion allocated to all three categories varied according to the size of the space (Figure 27). S and M spaces tend to have a higher proportion of communal space and lower proportions of private offices/enclosure, while the converse is true for L and XL spaces. While there is not a strict correlation, this does loosely link the figures to a timeline with a tendency for coworking spaces to have become larger as the market matures. Only one of the XL spaces dates to before 2015 - this was an Impact Hub, a network of coworking spaces generally considered to date back to the beginning of the movement. Similarly, only two of the L spaces date to before 2012.

The percentage of private offices, communal space and enclosed space was also related back to the service/values/mission categorisation to determine whether the orientation of a space had any effect on the distribution of space across these categories. While all four categories appear to have a broadly similar profile (Figure 28 overleaf), the dotted lines representing the mean for each category do indicate some points of difference. The most significant is in the percentage of space allocated to private offices; the average for mission driven spaces is just over ten percentage points lower than spaces with a more service-based orientation. There is a slight increase across all categories in the average amount of communal space, rising approximately seven points from service to mission-oriented spaces.

The least variation can be seen in the figures for levels of enclosure, with mission-oriented spaces tending to be slightly more open-plan. This loosely links a service orientation with the more recent hybrid form of coworking in which more of the space is given over to private offices and suggests that the 'original brand' of coworking – more closely associated with open plan space and collaboration settings – is more typically represented by a values/ mission orientation.

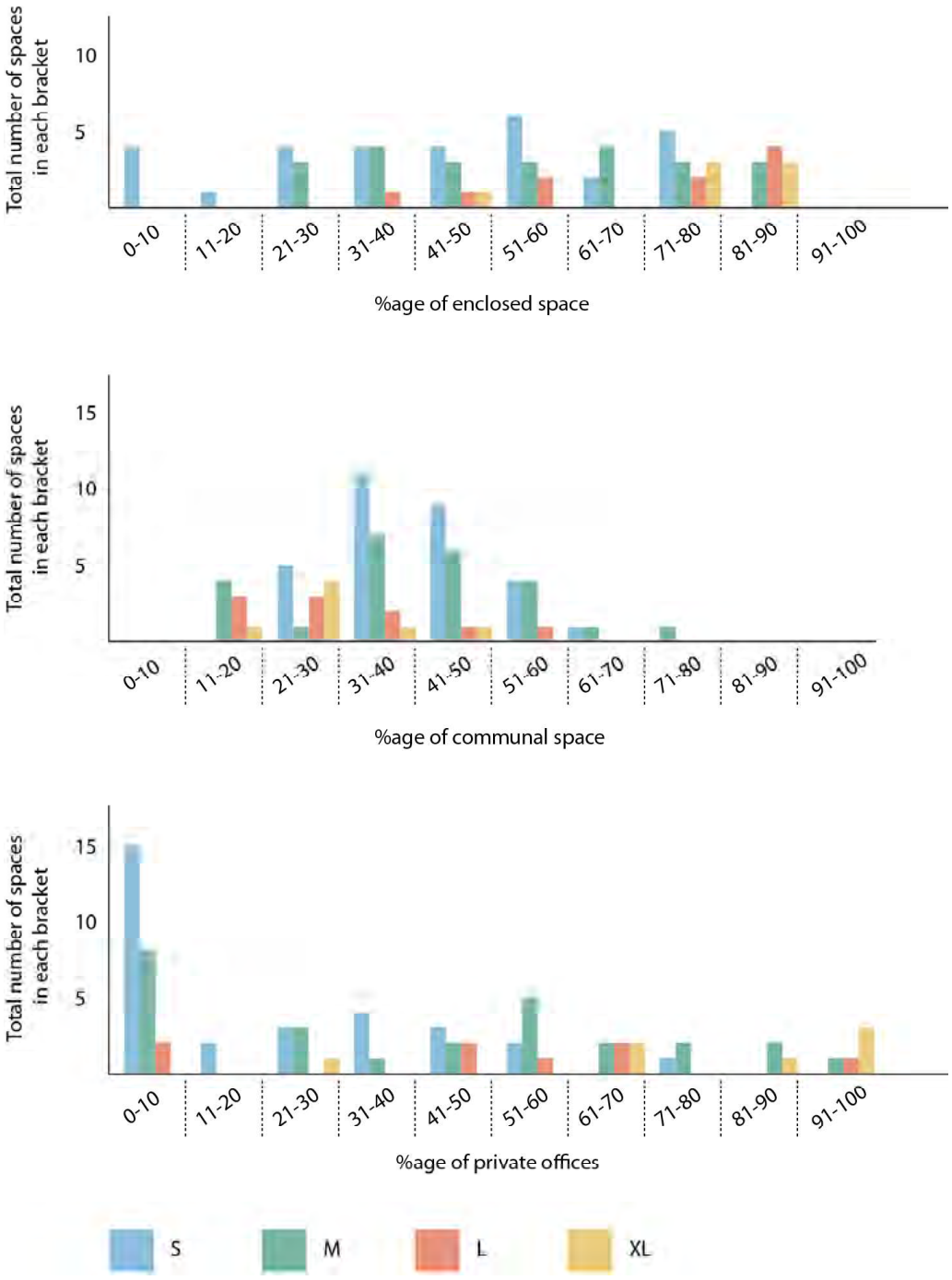


Figure 27. *Figures showing percentage of enclosure, communal space and private offices by overall size of the coworking space*

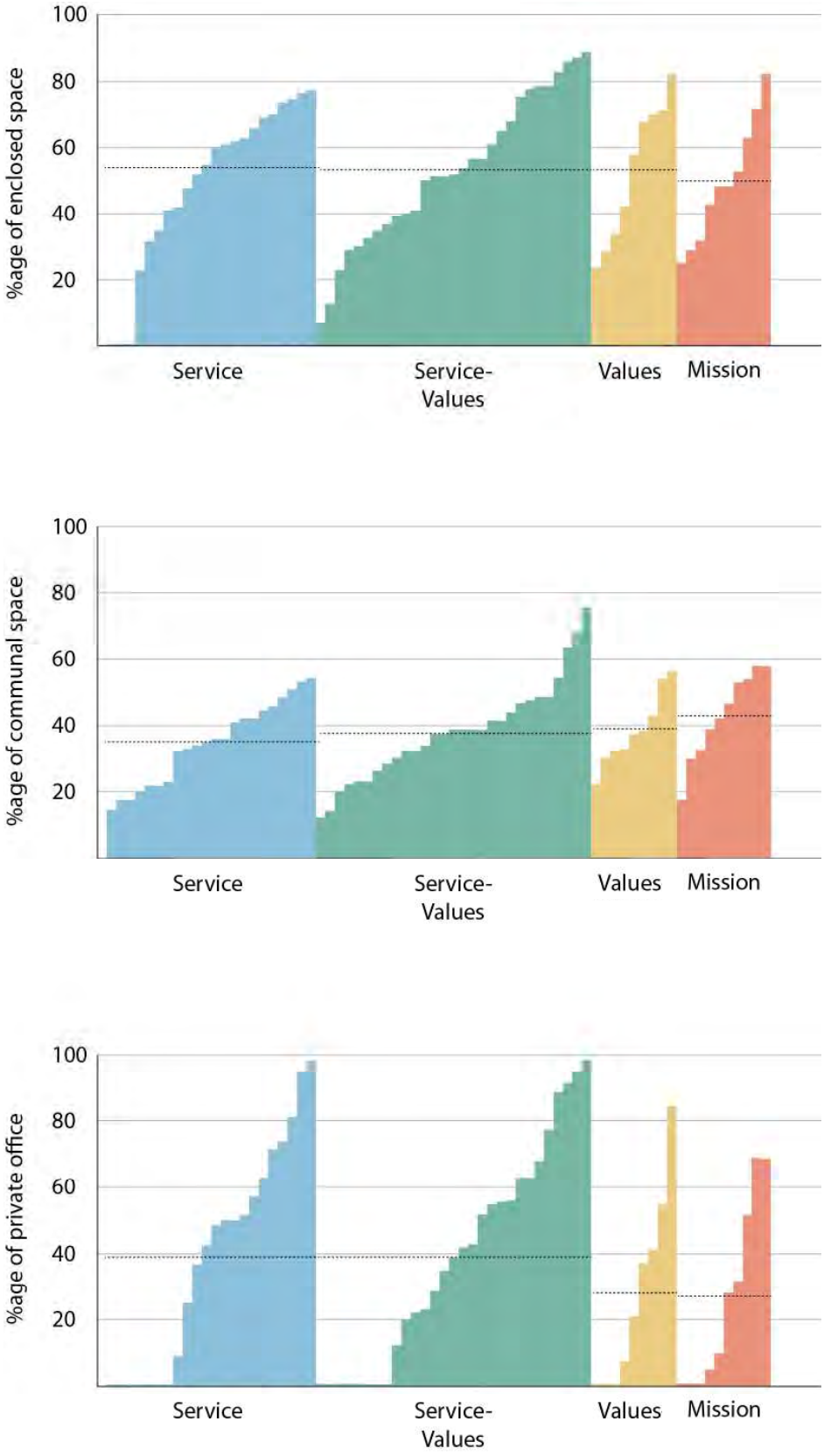


Figure 28. *Percentage allocation of private offices, collaborative space and enclosed space against service/service-values/values/ mission driven spaces. Each bar represents an individual coworking space*

4.1.2.3 Allocation of space to different activity settings

Following this high-level analysis, the percentage of the NIA given over to different types of settings was calculated. Settings were grouped into individual workspace (blue), enclosed meeting (pink) and open plan informal meeting or social space (green) and then broken down into different categories within each type. These included open plan workstations, private offices, phone or focus booths, enclosed meeting rooms, informal meeting and kitchen/breakout. It was not always possible to clearly differentiate between spaces designed for meetings, training or learning - flexible modular furniture often meant that one space might serve all three purposes in different configurations - these were therefore grouped together under 'enclosed meeting rooms'. The boundaries between informal meeting space and kitchens or breakout could also be somewhat fluid. In spaces which were not physically visited, the distinction was made according to the type of furniture and photographs of the space in use. Kitchens and breakout space have been considered jointly as they were typically co-located and difficult to definitively separate.

Figure 29. *Key for figures 30-42*

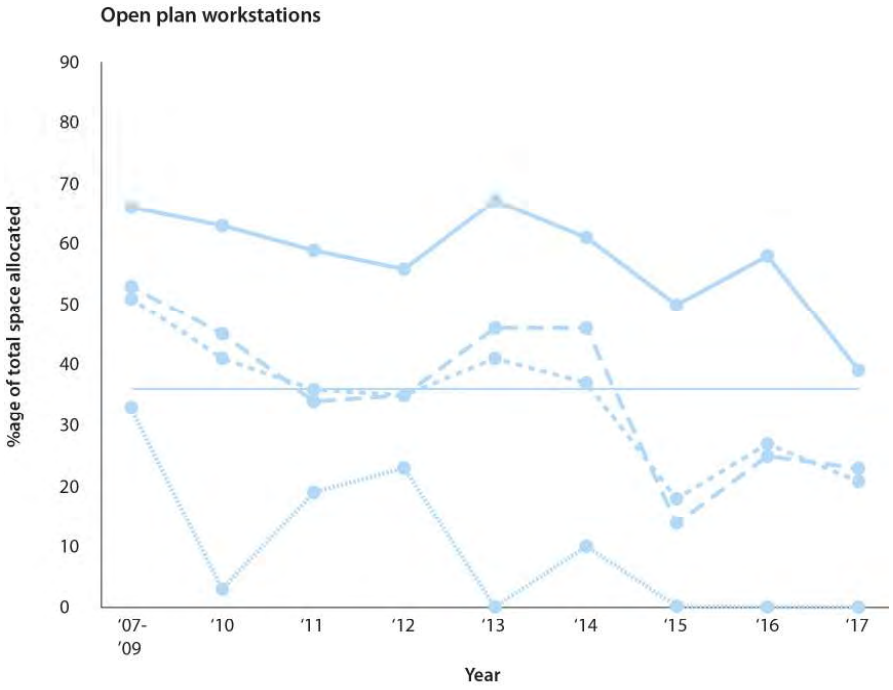


Figure 30. *Above: Percentage of space allocated to open plan workstations by year. The range, mean and median figures are given*

Figure 31. *Left: Overall range, mean and median provision of open plan workstations*

Open plan workstations includes all settings for individual work in open plan space. There is a significant gap between the minimum and maximum provision. Some spaces provided no open plan workspace at all; conversely, it could constitute as much as 74 per cent of the NIA. The overall averages (mean and median) were both in the region of 36 per cent. While there is variation year on year, the trend strongly indicates a reduction in the provision of open plan workspace – the overall mean is brought down by the very low provision of open plan space between 2015 and 2017. This is consistent with the move towards a 'hybrid' model as described earlier, in which a greater number of private offices are provided.

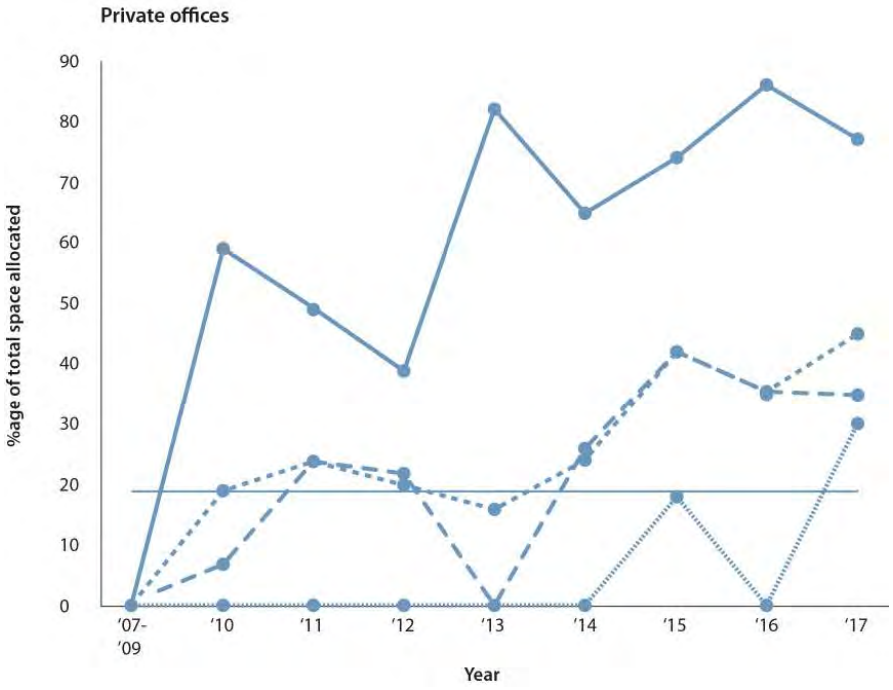
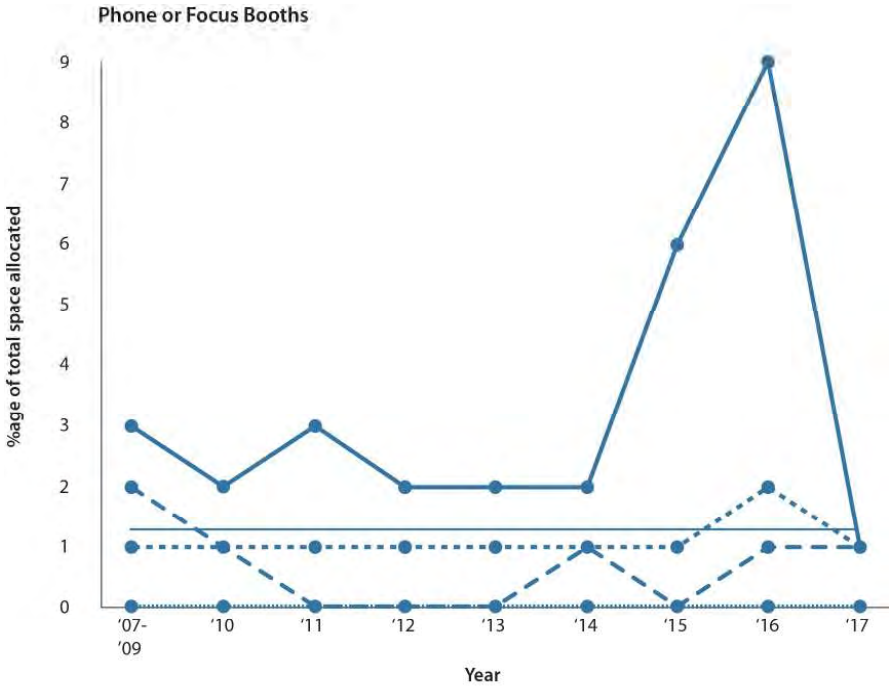


Figure 32. *Top: Percentage of space allocated to enclosed offices by year. The range, mean and median figures are given*

Figure 33. *Left: Overall range, mean and median provision of enclosed offices*

Private offices are defined as enclosed space containing workstations for one or more people. The data suggests that the reduction in open plan workstations correlates to an increase in the provision of enclosed offices (as opposed to dedicating more space to meeting rooms or informal areas, for example). The data reveals a distinct upward trend in the provision of enclosed offices, with the maximum provision 86 per cent of the NIA; this would seem to sit in opposition to the popular perception of coworking as a collaborative free-for-all. However, the minimum provision in the majority of years remained zero and the slightly smaller median in relation to the mean reflects the fact that a number of extremely high percentages pulled the overall averages up. As indicated previously, these extremely high levels of enclosure were typically found in the L and XL spaces. As bigger players move into the coworking market and competition potentially increases, it remains to be seen whether the majority of spaces will move towards this model.



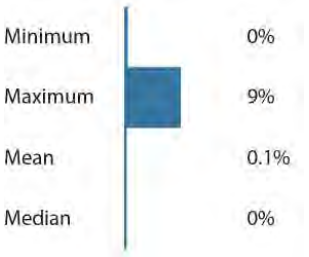


Figure 34. *Top: Percentage of space allocated to phone or focus booths by year. The range, mean and median figures are given*

Figure 35. *Left: Overall range, mean and median provision of phone or focus booths*

Phone or focus booths describe the provision of small, enclosed booths for individual short-term occupation. The percentage of NIA allocated to phone or focus booths was fairly consistent throughout the ten-year period of study. The majority of spaces did not include these as part of their planning, with the minimum provision zero per cent in all years. The maximum was nine per cent; this was a single outlier.

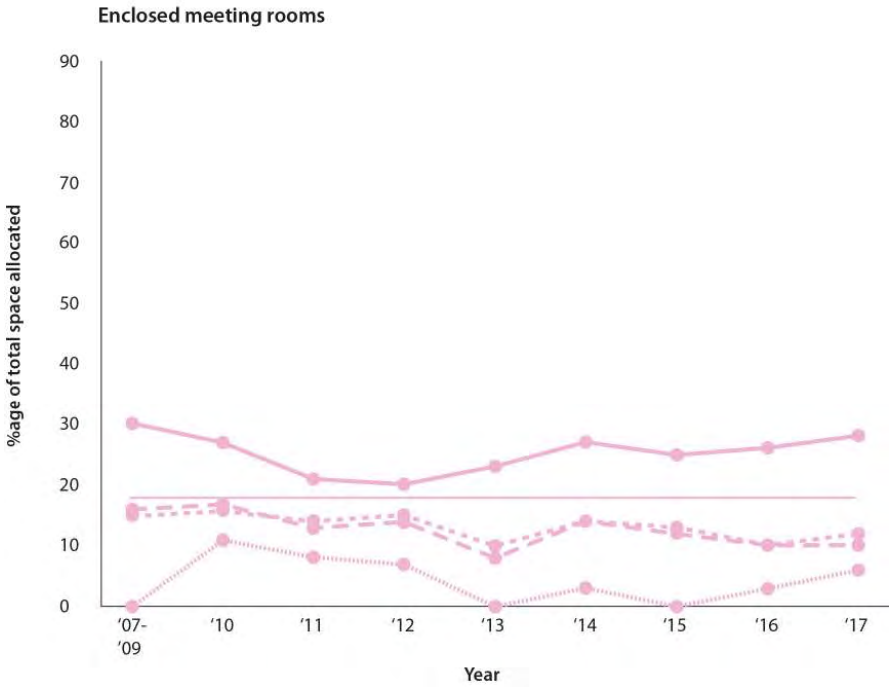


Figure 36. *Top: Percentage of space allocated to enclosed meeting rooms by year. The range, mean and median figures are given*

Figure 37. *Left: Overall range, mean and median provision of enclosed meeting rooms*

Enclosed meeting rooms included any enclosed space designed for people to meet or learn together; more often than not, these consisted of a conventional layout with chairs around a central table. It was unusual for a space to provide no enclosed meeting space at all, with the maximum provision 30 per cent. However, there were only a small number of spaces in the early years of the sample, so it is difficult to judge whether or not these were typical. Provision of enclosed meeting rooms was relatively consistent throughout the period of study; looking at the mean and median in each year indicates a slight downward trend as a percentage of the NIA. It may be that as an amenity meeting space is less directly profitable than workstations; whether or not a space charges separately for meeting rooms varies. Again, it would need a longer period of study or larger sample to determine whether this is a trend or simply a function of this particular data set.

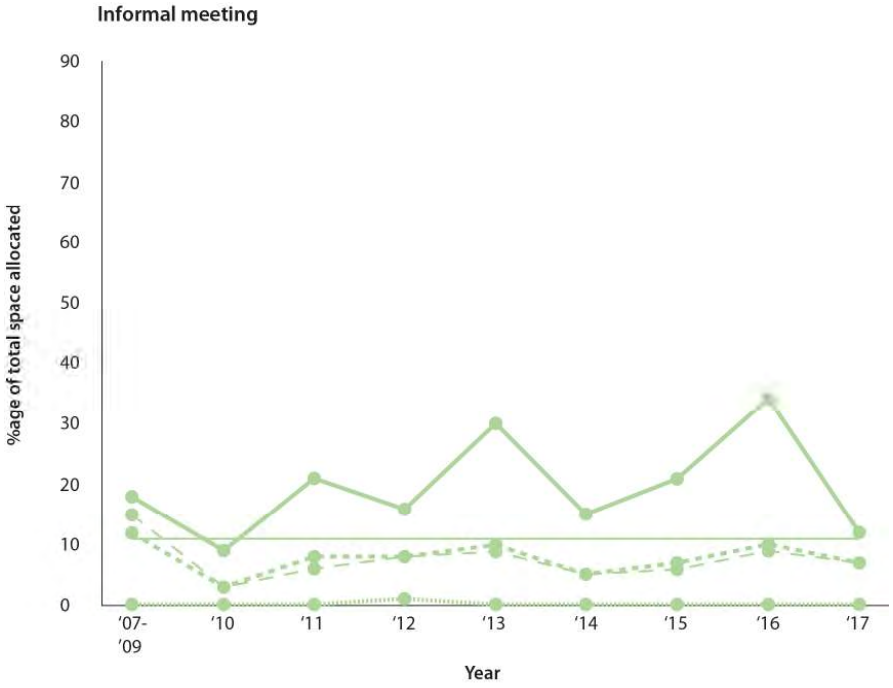


Figure 38. *Top: Percentage of space allocated to open plan informal meeting areas by year. The range, mean and median figures are given*

Figure 39. *Left: Overall range, mean and median provision of informal meeting space*

Informal meeting spaces typically consisted of small free-standing tables and chairs in open plan space; this category also included semi-enclosed meeting booths if they were not directly adjacent to a kitchen. Provision ranged from zero to 34 per cent. The higher figure was unusual; it was more common for a space to provide no dedicated informal meeting areas than to provide that high an amount. This is reflected in the mean and median figures of 7.8 and 6 per cent respectively – the slightly lower median indicates that the data was skewed slightly to the left, with the mean pulled up by a smaller number of cases. However, it should be noted that all spaces which did not provide any informal meeting areas did have kitchen and breakout provision. Where spaces were not large enough to have both as distinct settings, they tended to prioritise a kitchen and social seating which could double up as space for informal meetings.

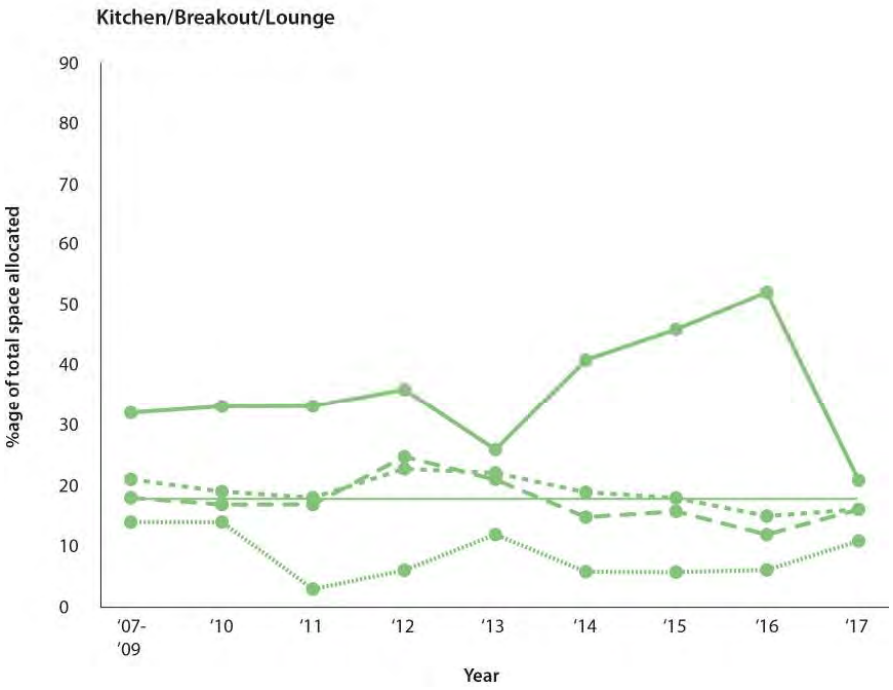


Figure 40. *Top: Percentage of space allocated to kitchen and breakout/lounge spaces by year. The range, mean and median figures are given*

Figure 41. *Left: Overall range, mean and median provision of kitchen and lounge/breakout spaces*

Kitchen, breakout and lounge spaces included pantries, dedicated kitchen and breakfast bars or tables and directly adjacent dining booths or soft seating areas. All of the spaces included a small pantry with a few spaces to sit as a minimum; this was the only setting which was universally provided. Looking at the mean and median, the data suggests a slight downward trend. The only three years in which the mean and median were both under the overall average were 2015 – 2017, despite two of these years having at least one example of extremely high provision. In both instances, these spaces had a strong hospitality slant – one had an onsite public café and the other operated as a café and bar in addition to the workspace and meeting provision.

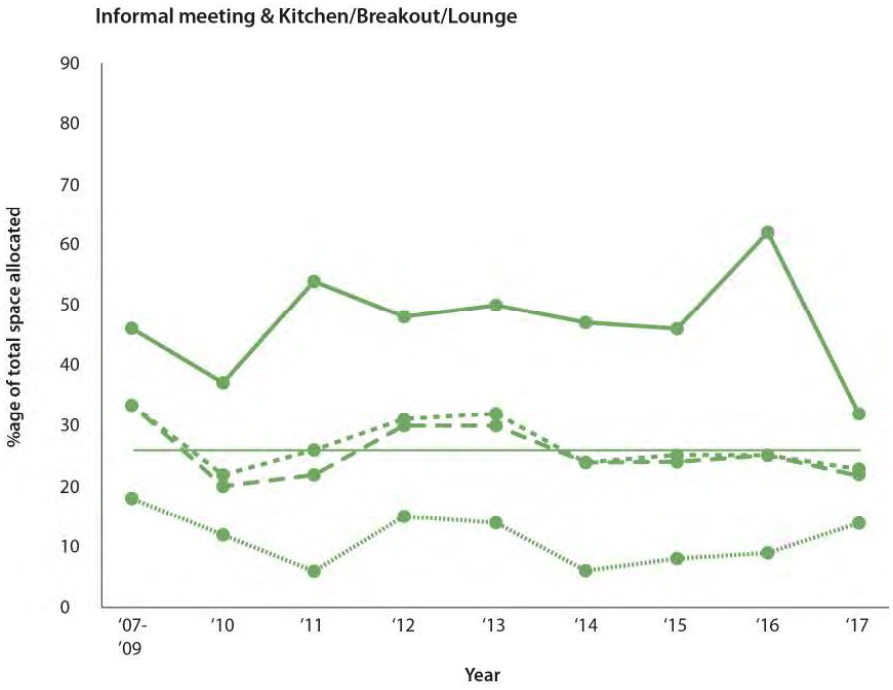


Figure 42. *Percentage of space allocated to all informal meeting/kitchen/breakout and lounge spaces by year. The range, mean and median figures are given*

Combining the values for informal meeting space and kitchens/breakout also suggested a slight downward trend, although the limited sample size in each year could mean that these values are not representative. However, combined with the shift towards private offices, this may suggest the prioritisation of more clearly profitable space over social and collaborative areas which generate less obvious value. Again, this would need to need to be an area of further study in order to identify whether this is a wider trend or simply an anomaly in this sample.

In terms of size distribution, offices were typically small with almost three-quarters of the total for four people or less (Figure 43). This may be reflective of coworking's origins as a space largely targeted at individual workers; smaller offices are likely to be in higher demand and providing these means that members can be retained rather than seeking office space elsewhere. This may also indicate that coworking spaces have targeted a gap in the market between open plan coworking space and the point at which companies are large enough to consider more traditional serviced office provision. It remains to be seen what impact the increasing enclosure of coworking space has on the stated values of community and collaboration. At smaller sizes there is still an incentive to interact with other members,

but this may be less the case as companies and office sizes grow.

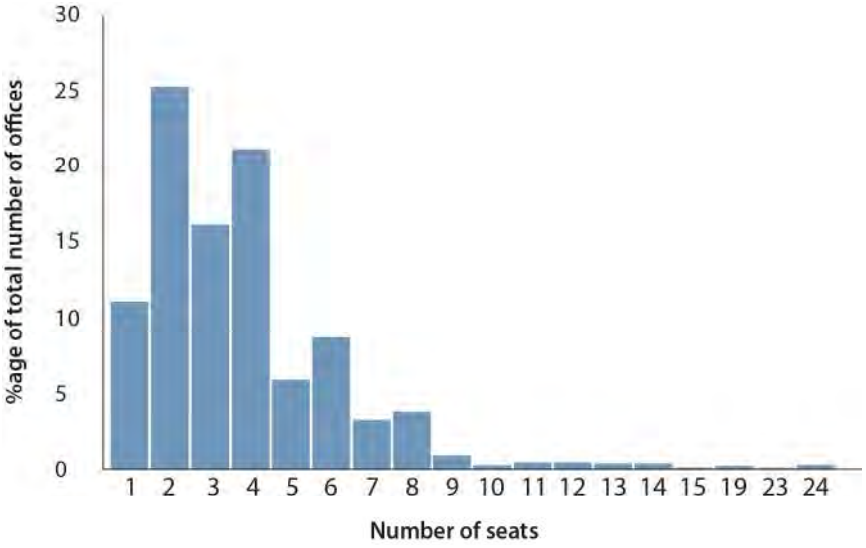


Figure 43. *Size distribution of enclosed offices*

Almost one-third of meeting rooms were designed for four people; these were typically simple spaces with minimal technology provision suggesting that they were likely to have been designed for relatively short and predominantly internal use (Figure 44). Just over one-third more were for groups of eight to twelve. These typically had a conference room setup with video-conferencing and presentation provision, providing members with a facility that individual members and small organisations might not otherwise be able to afford. Six person rooms made up just over half of the remainder, with the rest distributed across very small two to three person rooms or slightly larger conference rooms.

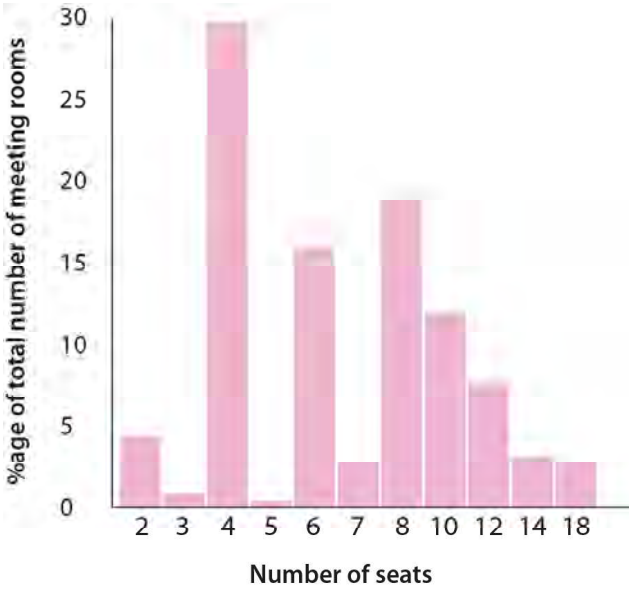


Figure 44. *Size distribution of enclosed meeting rooms*

4.1.2.4 Spatial design catalogue

In addition to analysing the spatial allocation across different work settings, specific spatial strategies (for example, the location of communal areas) were also of interest. This section therefore identifies common spatial characteristics that could be identified within the sampled spaces, from the scale of the building down to individual settings. As outlined in Section 3.2.1, these were distinguished by grouping floor plans and individual settings according to their defining characteristics across a range of categories. Specific elements which were identified in at least two-thirds of cases were considered to be a 'common' strategy. These are addressed in order of scale, from the building as a whole down to individual settings.

4.1.2.5.1 Building

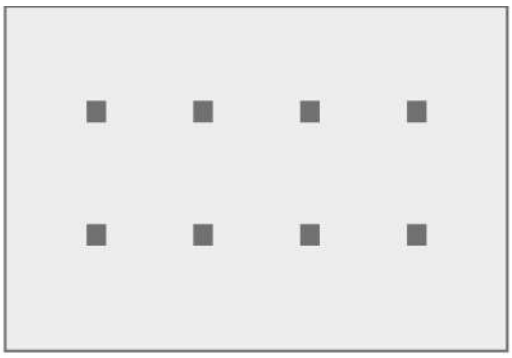


Figure 45. *Open floorplates*

Open floorplates favoured: Few of the spaces occupied conventionally built office stock with a central core (both WeWork sites fell into this category). This might simply be a question of scale, with this kind of office stock tending to have a larger floor plate.

Figure 46. *Light touch insertions*

Light touch over architectural insertions: Enclosed spaces typically sit lightly within the existing architecture, favouring lightweight partitioning and working around existing divisions and features over larger scale architectural interventions.

Reuse of non-office stock: Often occupy non-office stock such as ex-industrial or retail.

Figure 47. *Non-office stock*

4.1.2.5.2 Zoning, adjacencies, and circulation

Overall zoning: Settings were most often broadly clustered according to type, creating zones for different types of activity (e.g. focus/meet/informal meet/socialise). In larger spaces, meeting and social spaces were more likely to be distributed around the floor plan, although there would typically still be a clear central zone (Figures 48 & 49). Multi-floor spaces either placed social and meeting facilities on the ground floor, or had a large open plan social area on each floor, typically close to the main circulation.

Figure 48. *L - primarily clustered activity types. R - distributed activity types with a larger central zone*

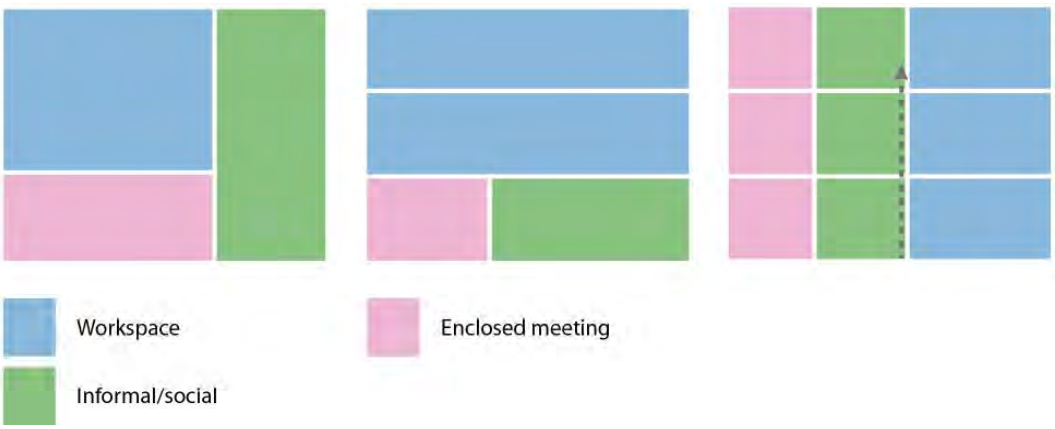


Figure 49. *Typical zoning on (L-R): single floor, multiple floors, multiple floors with central stair*

Adjacencies: Common adjacencies could be identified (Figure 50). Relatively few spaces had a dedicated events area, instead relying on loose fit planning which allowed for open plan social areas to serve multiple purposes.

Figure 50. *Typical adjacencies - with and without private offices*

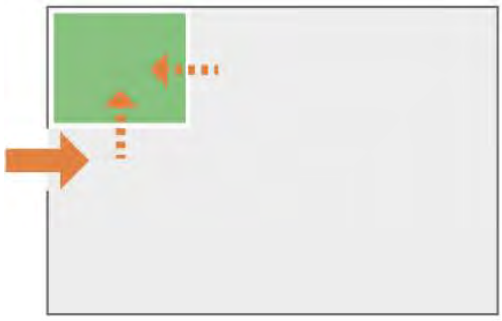


Figure 51. *Location of shared social areas*

Location of shared social areas: Open plan social areas were most often placed directly adjacent to the entrance. In some cases this was a secondary space with the primary social area elsewhere, but it was most common for visitors to enter directly into the primary kitchen/breakout space. This creates an enlarged reception area, blurring the boundaries between internal and external space. In some spaces, this was part of a publicly accessible cafe. In almost half of the spaces which did not adopt this approach, the enclosed meeting rooms were placed close to the entrance enabling external visitors to easily access meeting space.

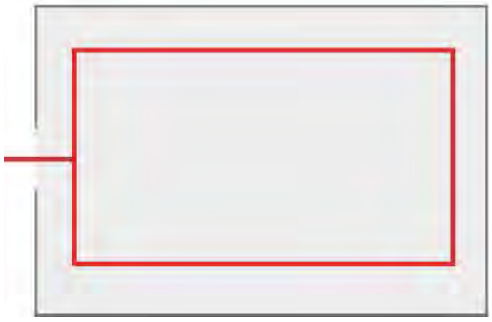


Figure 52. *Simple circulation*

Circulation: Typically simple with clear sight lines to maximise ease of orientation. Axial and looped rectilinear paths were most common, with deep plans typically broken up into smaller sections. Where spaces were split across multiple floors and had located shared social areas on each floor, wide staircases were used to link these areas creating a core of shared informal space throughout the building.

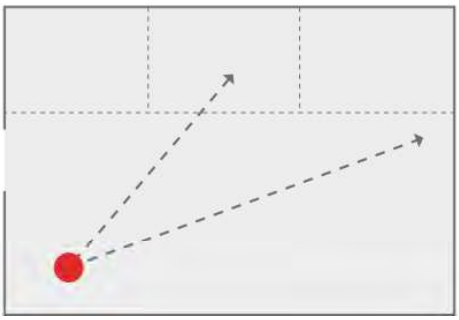


Figure 53. *Internal visibility*

Internal transparency: High levels of internal visibility, whether open plan or extensively glazed. Exceptions to this were typically the result of leasing non-office stock - many spaces did not have the budget to make structural alterations and therefore worked around existing divisions and columns.

4.1.2.5.3 Individual settings

Different types of activity settings were grouped to identify whether there were any common approaches, including level of enclosure, capacity, access and relationship to primary circulation, furniture type, and technology and fittings. As an example, kitchens could be broadly grouped into ten different configurations, most of which shared the same broad characteristics. The most common characteristics were used to create the following definitions.

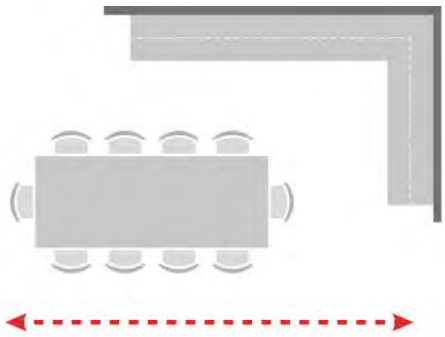


Figure 54. Typical kitchen layout

Kitchens: Typically semi-enclosed with more than one point of entry, adjacent to either breakout or informal meeting space, located on primary circulation routes, and providing shared seating either in the form of a high bench with bar stools or a large shared table.

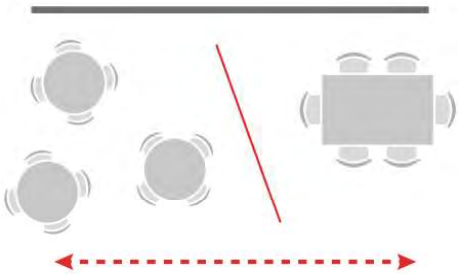


Figure 55. Typical informal meeting space layout

Informal meeting spaces: Simply set up with either round four-person tables or rectangular tables for up to ten people, and located adjacent to at least one partition rather than in the centre of open plan space.

Figure 56. Typical desk layout

Desks (open plan): The most consistent feature was a relatively short run of two to three desks with no dividers in between desks or desk runs.

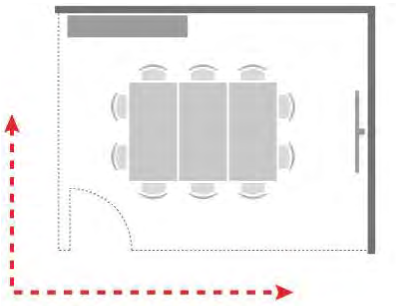


Figure 57. Typical meeting room layout

Meeting rooms: Simple and minimally furnished, with wheeled or modular tables in larger rooms and at least one fully glazed wall. Technology provision consisted of a simple wall mounted display.

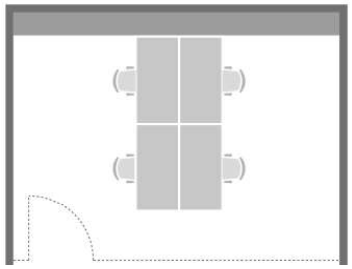


Figure 58. Typical office layout

Offices: Minimally furnished with workstations and storage, and unbranded to allow occupants to personalise the space.

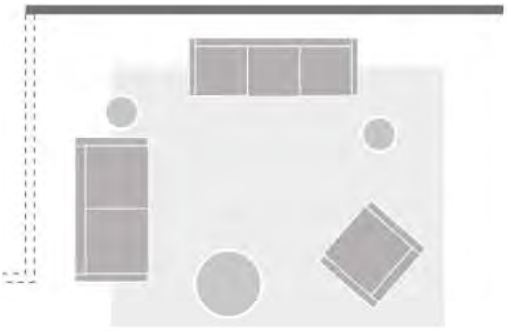


Figure 59. *Typical breakout space layout*

Breakout spaces: Typically domestic style furniture with a combination of sofas and chairs, side tables and area rugs, and either against a partition or in a corner. Exceptions to this pattern were spaces which provided scattered, informal soft seating that was lightweight and easy to rearrange. Very few spaces had a more traditionally 'corporate' seating area.

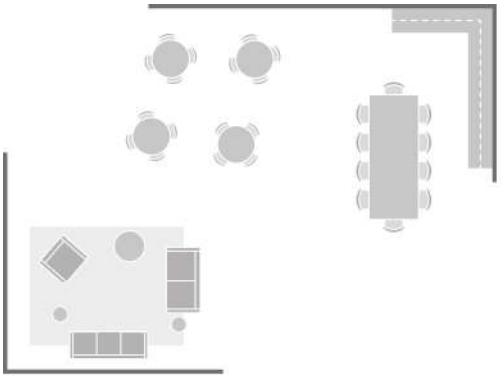


Figure 60. *Typical social/informal area layout*

Social/informal areas: In larger spaces, the kitchen, breakout and informal meeting areas were directly adjacent with no clearly defined boundaries, allowing for fluid movement between them. In smaller spaces, it was more common to have a kitchen and breakout space with no meeting tables as such.

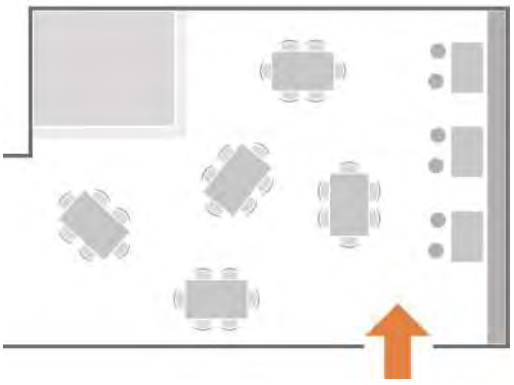


Figure 61. *Typical event space layout*

Events space: Only five spaces had a dedicated events space, with most spaces using social/informal areas equipped with a range of movable furniture that allowed different activities to take place at a range of scales. These areas were typically adjacent to the entrance, open-plan and reconfigurable to a degree. Some included a platform or small structure that could be used for informal meetings during the day and as a stage for events.

4.1.3 Spatial characteristics of coworking

In parallel with the quantitative analysis, a number of overarching spatial characteristics were identified. These represent approaches to the space which were not necessarily quantifiable but were frequently observed during the course of the research. There were seven in total, comprising: branded, flexible, permeable, social, generative, user-centred and hybrid (Figure 62). Each sits underneath an over-arching frame of workplace as an experience condition, all relating back to member needs and the overall value proposition in some way. These will be discussed in the following sections.

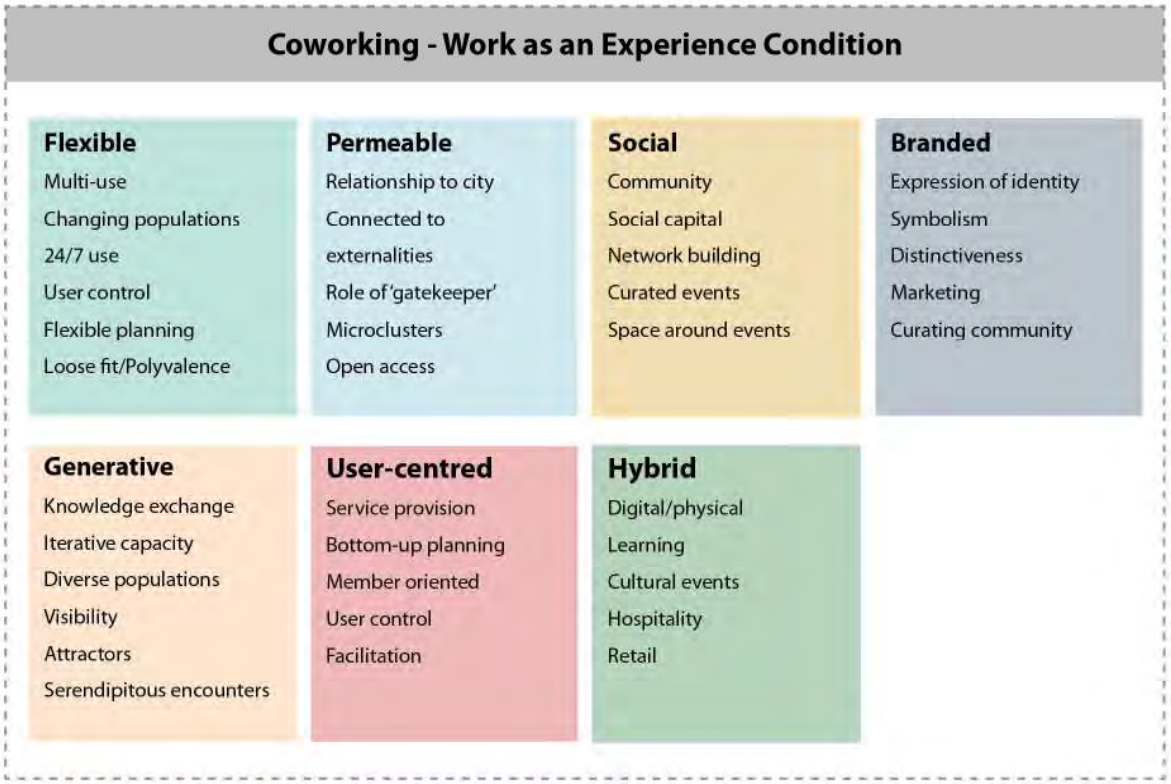


Figure 62. *Seven characteristics of coworking spaces*

4.1.3.1 Branded space

An approach to interiors that was most likely born of limited budgets and a desire to set coworking apart from organisational workspace or serviced offices has become the dominant aesthetic associated with coworking (Waters-Lynch et al., 2016). It is similar to that linked to the creative industries more widely, with a broad association between 'non-routine, creative work and playful, open and transparent workplaces with distinctly

recognisable material identities' (van Meel et al., 2010; Kojo and Nenonen, 2014; Waters-Lynch et al., 2016: 11). However, there is wide variation in terms of approach; the one relative constant is the use of design to create a clear and differentiated identity in an increasingly crowded market (Figures 63-70 below and overleaf).

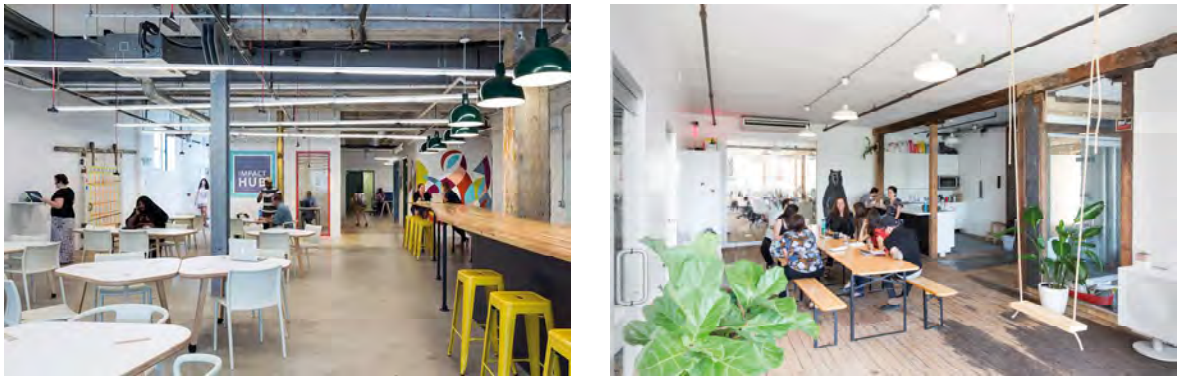


Figure 63. *Classic coworking presentation: exposed services, raw materials, reclaimed furniture and timber and plants are all widely associated with the popular image of coworking, L: © Gensler, all rights reserved, R: © Friends Work Here, all rights reserved*

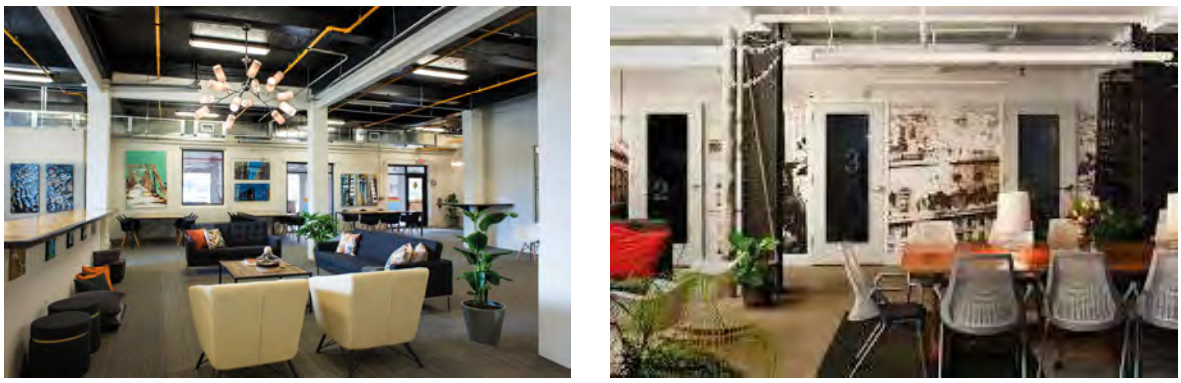


Figure 64. *Local low budget: artwork and murals with local references, a range of contract and non-contract furniture, plants, feature lighting, minimal interventions to the existing space, L: © Advent Coworking LLC, all rights reserved, R: © Cultureworks, all rights reserved*

https://www.archdaily.com/794909/co-working-utopic-us-conde-de-casal-izaskun-chinchilla-architects

https://www.archdaily.com/779238/yuanyang-express-we-plus-co-working-space-mat-office

Figure 65. *Work as play: highly distinctive visual identity drawing on bright colours and graphics/themes of 'fun'*

The aesthetic presentation of the space is a key differentiating factor in this context, acting as a symbolic expression of organisational identity as well as providing prospective tenants with a build quality that would usually be out of reach to smaller companies. This applies both to interiors and at the scale of the building, with spaces often celebrating the history of non-office stock - 'The Pencilworks' or 'The Salt Factory' - as a short cut to a sense of character and distinctiveness. It could also be argued to be loosely linked to hybridity - creating photogenic restaurants and products is common in the hospitality industry.

With early spaces operating on a low budget and somewhat makeshift basis, as the potential funding for new spaces has increased, so has the level of build cost and ambition. The founder of Gowanus in Brooklyn allegedly spent three million dollars on restoring the warehouse feel of an ex-industrial building in Brooklyn (Flamm and Geiger, 2016: online). This level of investment has become more attractive as it is considered to add a premium - one of the tenants at Gowanus Brooklyn pays approximately 50 per cent over

https://coworkingfontanella.com/gallery-fontanella-18/

Figure 66. *Minimal intervention: simply occupying existing space with minimal intervention and simple, low budget office furniture, R: © The Melting Pot, Edinburgh, all rights reserved*

https://www.bondcollective.com/locations/gowanus/

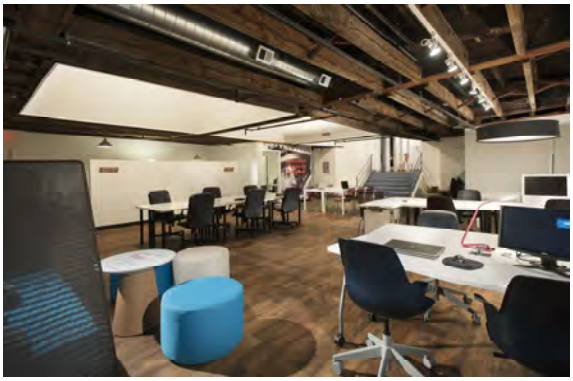


Figure 67. *High low budget: drawing on the exposed structure/warehouse aesthetic associated with coworking, but making structural insertions/design statements on a larger scale with higher quality fittings and furnishings, R: © Jay Greene Photography, all rights reserved*

the local average, explaining that building out an office of similar quality would have added $100,000 to his start-up costs. This is likely to become increasingly important as middle-men providers such as Croissant expand, with members selecting space in a way that is familiar to users of Airbnb. On this site, coworking is sold through its image, largely presented in a similar fashion to the popular aesthetic presentation of the wider workplace,

Figure 68. *Hospitality space: drawing on hotel lobbies, bars or urban cafés for style references, L: © Andrea Cole Photography, all rights reserved, R: © The Hub on Kenny, all rights reserved*

https://www.burovision.com/casestudy/civic-hall/

https://backyardonblake.com/the-workroom/

Figure 69. *Minimalist corporate: white and clean, often with the aim of providing a neutral background for member activity*

https://www.designboom.com/design/fountown-co-working-space-vermilion-zhou-08-14-2016/

Figure 70. *Polished corporate: an exclusive aesthetic that is more typically associated with corporate space or high-quality business lounges, R: © The Work Project, all rights reserved*

with carefully framed shots that typically minimise human presence and privilege informal or social areas over workstations (Figure 71).

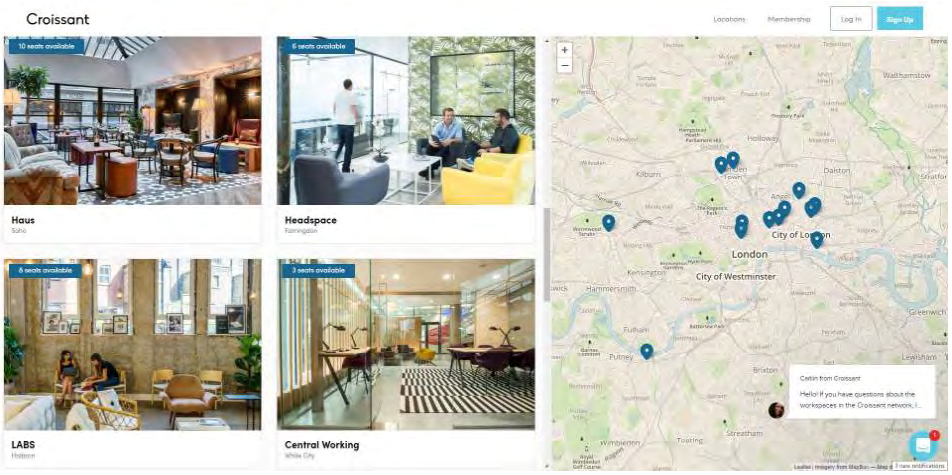


Figure 71. *Croissant London home page (screenshot), © Croissant, all rights reserved*

There is a possible tension within the need to create a distinctive market identity, and that is the balance between coworking brand and member identity. Some spaces attempt to resolve this by treating the interior space as a blank canvas within which members have the freedom to make their mark on the space - Grind referred to themselves as 'The Invisible Brand', encouraging members to customise their space.

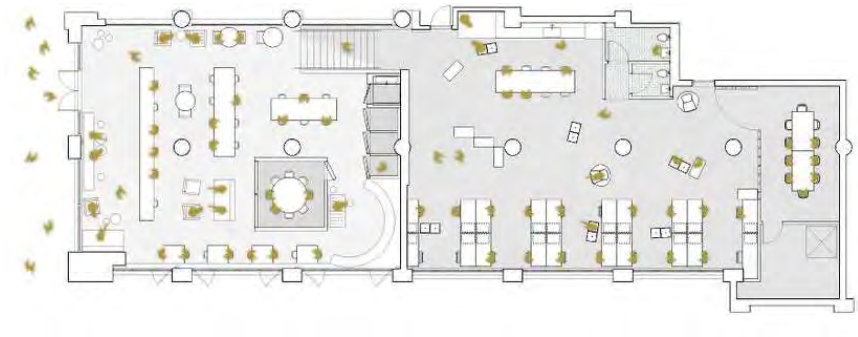
4.1.3.2 Flexible

Flexibility is a key quality for coworking spaces, needing to align with the various work styles of the individuals using them (Bizzarri, 2010; Spreitzer et al., 2014). While physical flexibility has been a feature of workplace design since the inception of the modern office, coworking spaces exhibit a range of different types of flexibility, which could be described as temporal, locational, physical and use-based. Many members use coworking as one option in a network of potential spaces for work with 95 per cent 'always' or 'often' able to determine their own working patterns (Deskmag, 2016). Spaces therefore offer extended hours and a range of services, with a growing number of spaces open twenty-four hours a day, seven days a week (Figure 72).

The need to constantly adapt to evolving member needs was a common theme, with the physical flexibility of the space intended to support a scenario in which it is never

Figure 72. *Factory Forty is among a growing number of coworking spaces to offer 24/7 access to members and Copass holders, © David Sdika, all rights reserved, https://davidsdika.com*

At Makeshift Society, members are invited to 'make' the space their own, with the result being a space used as a clubhouse, classroom, salon, lending library, conference centre, pop-up shop, and event space, © Dash Marshall, all rights reserved



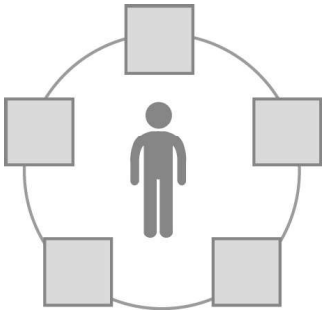
actually 'finished' in the conventional sense, rather remaining in 'perpetual beta' (Marlow, 2011). Use-based flexibility describes a level of programmatic openness, with the space supporting a range of overlapping activities that are defined by its users. This is akin to what Hertzberger (2014) described as polyvalence, in which the space allows for multiple interpretations and ways of being appropriated, responding in real time to changing activities and circumstances (Figure 73). Common aspects of the four identified types of flexibility are summarised in the following diagrams (Figure 74).

Temporal: *24/7 space*

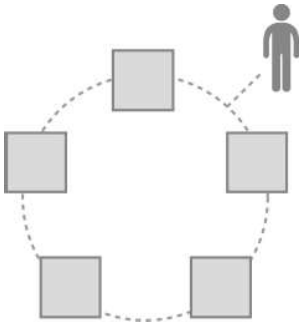
Temporal: *Provision of different services*

Temporal: *Range of membership options*

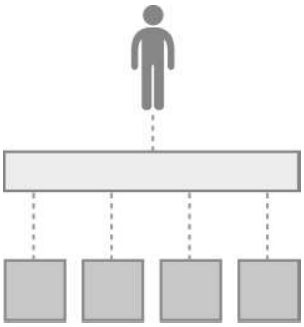
Temporal: *Hourly coworking*



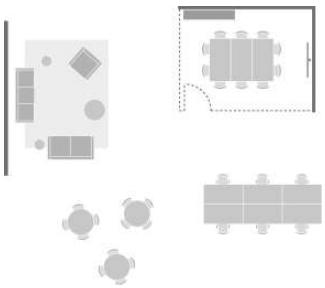
Locational: *Member of a chain*



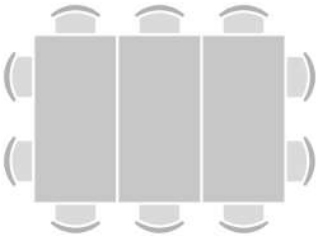
Locational: *Reciprocal membership arrangements*



Locational: *Member of a third-party service provider*

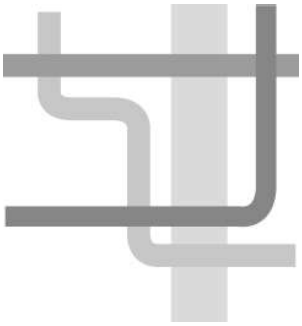


Locational: *Choice of work settings*

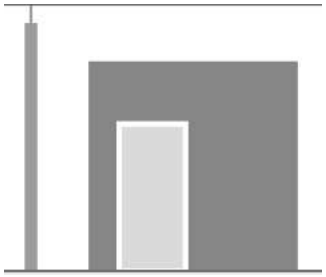


Physical: *Modular furniture*

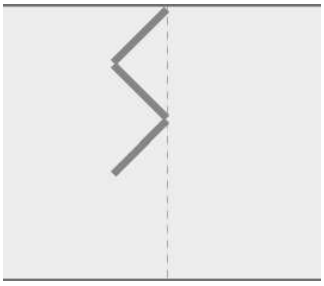
Physical: *Movable furniture*



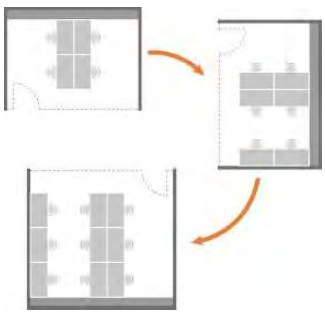
Physical: *Exposed services*



Physical: *Light touch rather than architectural interventions*



Physical: *Flexible walls (less common)*



Physical: *Scalable space for teams*

Use-based: *Meeting changing demands*

Use-based: *Multi-purpose*

Use-based: *User defined uses of space*

Figure 73. *Most common aspects of flexibility identified during the research*

4.1.3.3 Permeable

The permeability of coworking spaces was referenced in some of the literature, provisionally identifying them as tending to demonstrate a strong identification with their local surroundings and participating in local civic life. Creating partnerships with other local businesses to add value to their membership offer is not uncommon, in addition to providing events that are open to networks beyond the immediate member community. Permeability is most clearly spatially manifested in the blurred boundaries between private/non-private space, and the positioning of a large shared social space to provide an interstitial zone for internal and external parties to meet. While most spaces restrict access by placing a host between this and working spaces, some provide completely open access to much larger areas or the whole space. Physical transparency and visual accessibility were referenced as metaphors for openness to outside influences and the desire to connect people both within and outside the building.

4.1.3.4 Social

The value of face-to-face relations is central to coworking, and strategies for generating interaction could be argued to have both instrumental (e.g. knowledge sharing) and social intent. Spatial strategies for serendipitous encounter will be discussed under 'generative' qualities of space although there are overlaps with social motivations. While the analysis identified few spaces with a dedicated events area, all provided spaces for shared social occupation at varying scales - in some instances making up a significant portion of the

overall space budget (Figure 75). In creating a distinctive identity that provides a focal point for membership activity, the aesthetic presentation of space could also be considered to be a social value.

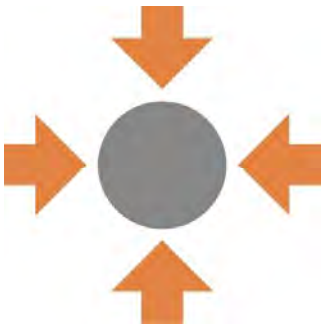
Figure 74. *The Impact Hub Baltimore combines enclosed offices and desking with generously sized multi-purpose areas that can accommodate events at a range of scales, © Gensler, all rights reserved*

4.1.3.5 Generative

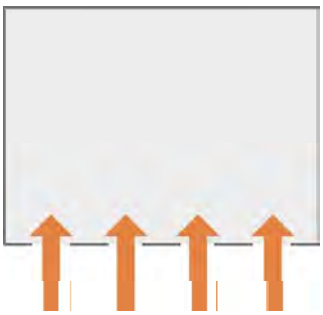
This aspect of coworking space describes strategies to promote serendipitous encounter and knowledge sharing. In terms of spatial strategies for interaction, coworking spaces reflect many of the aspects of space which the wider organisational literature highlights as potentially shaping interaction patterns. These include visibility, clear and simple circulation routes, clustered and interconnected functional zones, central attractors, conditions of proximity and social designation. These spatial strategies for interaction operate in tandem with transpatial approaches, including the use of apps or social media platforms to connect members and the active curation of community.

However, the specific circumstances of coworking spaces mean that not all aspects of organisationally based research on interaction - such as findings that most interactions take place at or around workstations - are likely to translate, and it might be expected that social designation would become a more significant factor. Studies on interaction in coworking spaces are currently limited; Parrino (2015) found that proximity was not a factor although the sample was arguably compromised, and Fabbri and Charue-Duboc (2017) identified specific affordances that related to social designation. These are questions that can only be

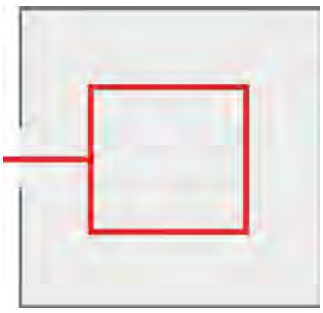
answered by a more detailed analysis of the patterns of behaviour within coworking spaces. The most commonly identified strategies for interaction are summarised in the following diagrams (Figure 76).



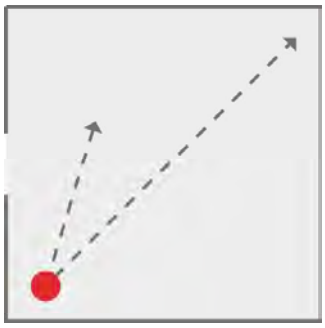
Spatial: *Attractors*



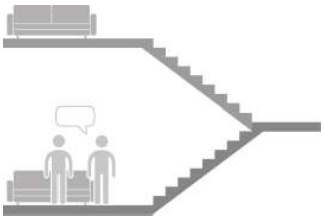
Spatial: *Permeable reception areas*



Spatial: *Simple circulation and shallow depth*

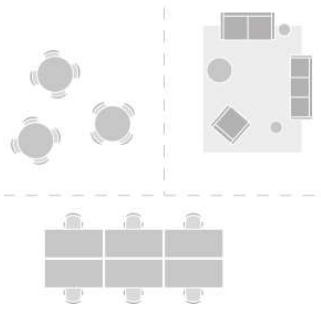


Spatial: *Visibility*

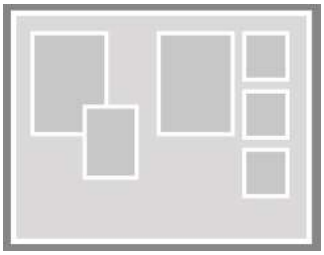


Spatial: *Wide staircases linking social space*

Spatial: *Scales of social space*

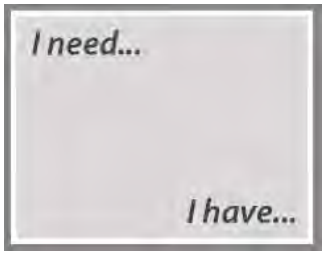


Spatial: *Open boundaries allowing flow between spaces*



Spatial: *Community noticeboards*

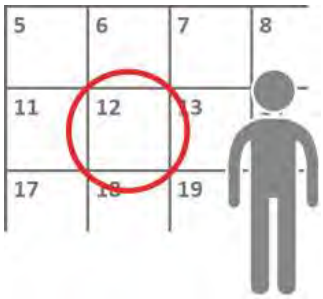
Spatial: *Member photo walls*



Spatial: *Skill sharing platforms*

Transpatial: *Apps to connect members*

Transpatial: *Social media presence*



Transpatial: *Curated events*

Figure 75. *Most common strategies for interaction identified during the research*

4.1.3.6 User-centred

The need to tune space and services to the needs of members was a consistently repeated theme, with the expression of values, services, wider offer and spatial organisation all tailored to the membership community. While the role of the host would appear to be a significant factor in curating an experience that members would value, this did have spatial implications, reflected in the provision of different types of work settings based on needs identified during an extended market research or co-creation stage and, in some instances, a loose-fit approach to programming that gave members a high degree of agency to shape the space. In terms of the broad approach to meeting members' needs, it could be argued that coworking sits across a spectrum between two directions of travel. The first is highly serviced hospitality influenced environments in which space is 'consumed' by member clients and the experience shaped in response to member needs and feedback. The second is a highly participatory model in which both the space and the experience are co-created by a member community.

Very little of the academic literature addresses how - or whether - ongoing change is shaped around members' needs. Several informal conversations with space managers referenced regular small-scale changes in the use of space that responded to changing needs - these were either in direct response to member feedback, or in reaction to observed uses of the space. Based on Brand's notion of temporality in architecture (Brand, 1994: 13), coworking would seem to sit at the lowest end of the proposed timescales for 'stuff' and 'space plan'; even three years may be an overestimation of the survival of a single iteration of the plan, with the space required to facilitate diverse activities for a diverse and likely changing membership (Figure 77).

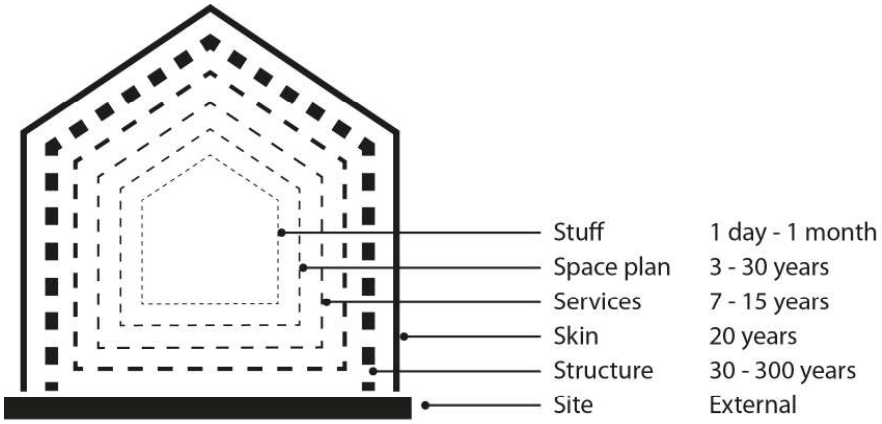


Figure 76. *Stewart Brand's six layers of temporality in architecture*

4.1.3.7 Hybrid

Coworking is typically presented as something of a hybrid animal, with the precise constitution of its parts varying between commentators. The crossover between coworking and hospitality environments is the most consistently identified; Kojo and Nenonen described the central challenge of coworking as being to provide and manage spaces with 'new practices, which are more typical to the hospitality industry with diverse customers' (2016: 311). The hybrid nature of coworking is at least partly due to the business model, in which operators have had to identify additional revenue streams in order to offset the precarious nature of a highly flexible and short-term desk rental business (Figures 78-79 overleaf). In addition to events, these can include levels of service more typically associated with members' clubs, educational opportunities, and bar, restaurant and café facilities that are open to the public. This links hybridity to user-centredness, with the provision of cross-

programmed events and services to maximise member experience.

https://www.coworker.com

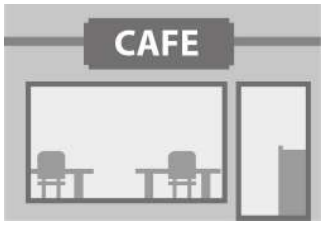
Figure 77. *The Hub on Kenny, Columbus Ohio, is a 'community workspace and social club'. A large proportion of the space is taken up by a bar and hospitality lounge, © The Hub on Kenny, all rights reserved*

Figure 78. *Covo Coworking, St Louis, operates as a coffee shop, coworking space and tap room to run three sales cycles per day within the same square footage. These spaces are open to the public, © Covo, all rights reserved*

Digital aspects of coworking provision could be argued to fall under the category of hybridity, with the growth of the movement inextricably linked to the rise of mobile technology, resulting in a contradiction highlighted by Salovaara:

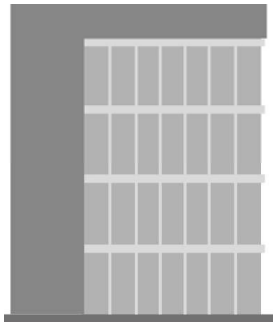
> 'There is something very intriguing at the heart of coworking; in a very old-fashioned way it brings people together, yet coworking spaces function only in today's world of endless virtual connections', (2015: 44).

The spread of coworking as an idea was facilitated by sharing best practice through sites such as the Coworking Wiki, with international networks of coworkers and space operators developing around it. While it is fairly common for coworking spaces not to offer digital tools beyond high-speed Wi-Fi, projectors, screens and printing, the use of digital tools to manage social networks, the space itself, and locate and access coworking opportunities is widespread. The most common forms of hybridity that were identified are summarised in the following diagrams (Figure 80).



Café

Hotel



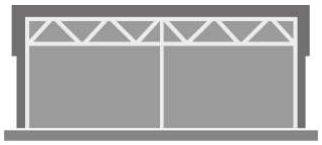
Serviced office

Members club

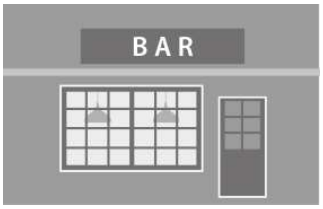
Home

University

Restaurant

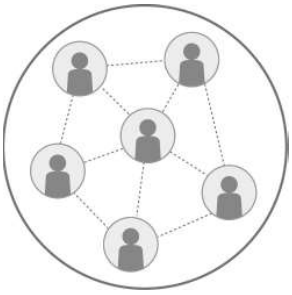


Event space



Bar

Social networks: *Commercial internal network e.g. Yammer*



Social networks: *Custom internal network*

Social networks: *Meetup*

Social networks: *Member to member messaging*

Space management: *Cashless payments*

Space management: *Cloud printing*

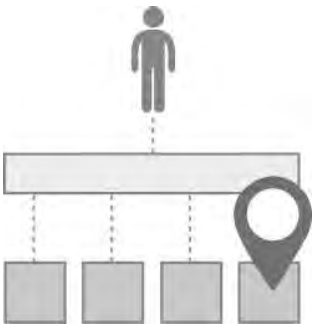
Space management: *Membership management*

Space management: *Space booking*

Space management: *Newsletters*

Space management: *Keyless door access*

Location finding: *Apps to find space*



Location finding: *Third party membership services*

Figure 79. *Most common aspects of hybridity identified during the research*

4.1.3.8 Summary of key points

The spatial analysis – both in terms of plans and interior décor – revealed a wide spectrum of provision with coworking having moved far beyond its DIY roots. The spaces of coworking could be argued to be characterised by diversity. Some broad trends in spatial allocation over time were identified: reduction in open plan space, an increase in private

offices, and a slight reduction in the provision of open plan shared facilities (particularly as spaces grew larger). However, these were not the result of universal travel in the same direction, rather indicating increasing diversity over convergence as more players entered a maturing market (Figure 81).

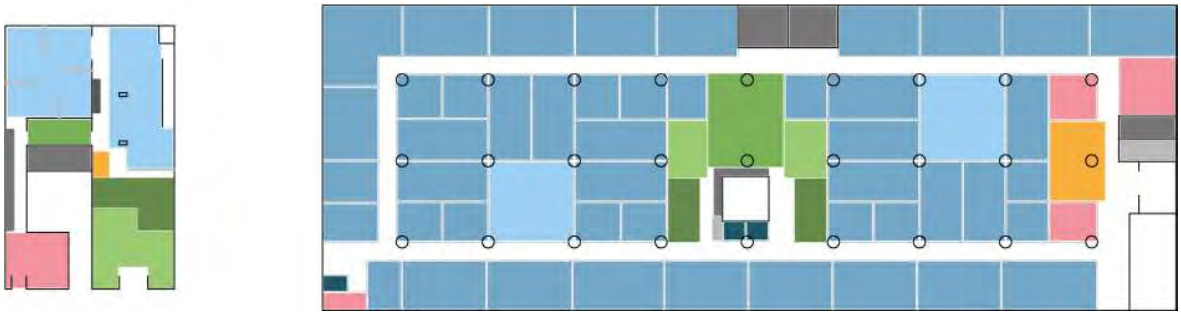


Figure 80. *Both of these spaces opened in August 2016*

In terms of the provision of settings, there was no overall pattern of space allocation, with wide variation according to the primary focus, size, age and membership of the space (Figure 82). This diversity can be seen within spaces in the same network, suggesting that the most important factor in terms of overall allocation is the need to tailor the space provision to the local membership community. Moboff has three different sites; Yotsuya in the city centre has the highest proportion of private offices and enclosed meeting rooms, Harajuku is in the 'trend-setting' district, with half of the space occupied by a publicly accessible café and lounge areas, and Shinjuku is in the business district, with the lowest provision of informal or social space (Figure 83 overleaf). The only exception across the sampled spaces was WeWork, where provision across different sites was relatively uniform (Figure 84 overleaf).

Figure 81. *Two extremes of space allocation*

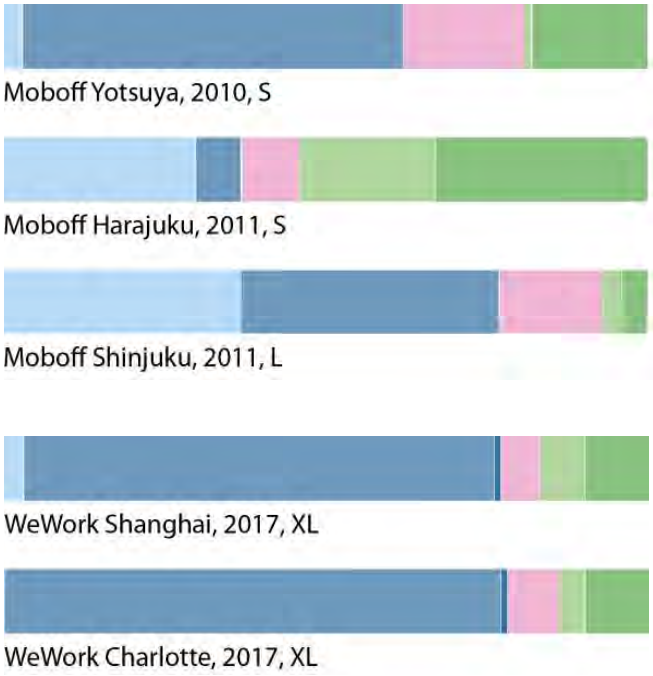


Figure 82. *Three sites in Tokyo run by Moboff, each with different allocations of space*

Figure 83. *WeWork facilities vary less by location than the other examples. These two spaces are on opposite sides of the globe, but the allocation and arrangement of the internal plan is very similar*

In terms of approach, spaces typically adopted an Activity-Based Working (ABW) strategy within the overall spatial allocation, providing a range of settings tailored to different activities or modes of work. Although informal meeting space, for example, was measured as a single category, it often included a range of furniture settings that offered different seating types and table sizes. A significant increase in the provision of private offices is shifting some spaces away from ABW towards increasing homogeneity; offices were typically identically fitted out and the resulting reduction in open plan space reduced the variety of settings available. However, most of the spaces which focused on private office provision did offer some range of work settings across the communal areas.

While there was no definitive single approach, a number of common spatial strategies could be defined. These included:

- Patterns of zoning and adjacencies
- Relationship of communal areas to the entrance
- Provision of attractors in key locations
- Fluid interface between external and internal space
- Provision of a range of informal meeting and social spaces
- Reprogrammable rather than mono-functional space
- Hybrid elements

- Some common patterns within individual settings
- Low differentiation between open plan settings
- Informal and domestic references
- Use of interior design elements to support identity/branding strategy

In addition to these, seven spatial characteristics were identified. Branded space was universal, with all spaces recognising the need to present a distinctive sense of identity and culture to prospective members. Design for interaction - both in terms of facilitating community building and more work-related (generative) interactions – was a consistent theme. The ability of the space to accommodate change would also seem to be important, whether expressed through multi-functional and reprogrammable space or the ability to quickly alter partitions to allow member organisations to scale up or down. Permeability and hybrid elements both related to the need to offer a range of services to increase revenue potential and get as many potential members as possible through the door. Finally, user-centredness and the need to tune space and services to the needs of members was a consistently repeated theme, with the expression of values, services, wider offer and spatial organisation all tailored to the membership community.

4.1.4 Summary of findings

'Are you chatty and beautiful? General Assembly. Subversive? NYC Resistor. Sweet? New Work City. Just want to listen to techno on your headphones and get some f******* work done? Projective Space. Poor? Wix Lounge.' (Jeffries, 2011: online).

One of the most consistent features of coworking throughout this review is its diversity; it has been developing throughout the period of study and seems likely to continue to do so as interest in the market develops. However, there were some identifiable commonalities across both the values and spatial analysis; these will be discussed within this section as an initial response to the question of whether coworking can be considered to have definable characteristics.

The home page analysis highlighted a number of common values of coworking. While

there was some overlap with the values outlined in the original coworking manifesto, they were not all the same. The core values identified in this study were community, collaboration, service and experience with the relative importance of the first three in particular varying from space to space.

While it could not be claimed that there is a clear set of coworking spatial practices, the study did identify a number of commonly used strategies in addition to seven broad spatial characteristics. While these were not all present at every space, they were identified as the most commonly shared qualities. One of the most consistent features was the need to tailor the space to the specific membership community, ensuring that they received a quality of experience that would keep them paying the membership fee. The seven broad characteristics identified could arguably also be linked to the quality of member experience, whether in tailoring the offer to a specific member community, adapting to member needs, or adding value to the overall offer by connecting people and offering a range of events and services (Table 10).

Aspect	Experience-related element
Flexible	Adapting to member needs
Permeable	Feeling of inclusivity by virtue of open access and partnerships with external businesses to add value
Social	Add value by facilitating social connections
Generative	Add value by facilitating growth of networks
User-centred	Tune space and service to the needs of members
Hybrid	Expand the offer beyond simple provision of workspace to a more hospitality oriented offer
Branded	Facilitating the creation of a distinctive identity/culture that members could identify with

Table 10. *Link between spatial characteristics and member experience*

This suggests that member experience might be viewed as the single central element of coworking across both space and values, with coworking spaces across the spectrum placing member experience at the heart of their offer. While the business model – having been comprehensively covered elsewhere – has not been specifically addressed in this study, the shift towards short-term flexible leasing would seem to be relevant. As outlined earlier in this thesis, spaces which do not meet member expectations can go out of business

very quickly, with the risk inherent in signing long-term leases effectively shifted to the coworking space provider. Whether one of the bottom-up 'original brand' spaces, or a newer and more service-oriented provider, this places significant pressure on coworking spaces to attract and retain members.

While the plan analysis, combined with visits and informal conversations with hosts, could be used to identify spatial strategies and design intent, these visits were not long enough to gather reliable data on resulting patterns of behaviour and interaction, rather providing pointers to potential areas of interest that could be investigated in more detail. Some of the behaviours that were highlighted during these early visits included:

- Signs of nesting in non-territorial space (this is reflected in organisational literature e.g. Hirst, 2011)
- Levels of movement during a single day were not observed to be particularly high
- Varying degrees of active participation
- Tensions between providing for teams and individuals, with some hosts identifying a tendency for less interaction between groups when there were a large number of teams. They were identified as more self-contained and focused on building a group identity which provided them with everything that they needed day to day
- User input in theory, but sometimes still very dependent on perceptions of permission with people seeking permission when they did not in fact need to. This suggested that the idea of providing agency in space was still a delicate balance that could be disrupted by perceived hierarchies or 'management'

Outside some short informal interactions with members, these visits did not provide any significant insights into less tangible aspects of space – such as experience – from the users' points of view. In order to explore the relationship between space and behaviours and understand the member perspective in more detail, the following section will present an in-depth study of two coworking spaces exploring whether design intent was reflected in use, patterns of interaction, aspects of user experience, and management of change and user agency.

4.2 Design Study 2: Coworking case studies

This section presents the findings of the two qualitative coworking case studies. These were the Birmingham Impact Hub (BIH) and Second Home (SH) in East London, both representing different aspects of the coworking model (Section 3.3.1). While design intent can to some degree be determined by spatial analysis in plan, the literature points to frequent gaps between design intent and use (Section 2.3.4.3). The case study research therefore links designed space to observed behaviours to interrogate the relationship between design intent and actual use, in addition to exploring how coworking space members perceive their experience.

While user behaviours were mapped more widely with data collected on movement and occupancy patterns, these will not be discussed in detail in this thesis. Rather the writeup will focus on interaction, quality of user experience and change and agency as key areas of interest. With community and collaboration the most frequently identified values of coworking, interaction was identified as a central area of importance. Experience was of interest because while member experience is central to the offer there has been little research into what this means in practice. Finally, change and agency describes how the space evolves in response to changing needs, who has decision making power and what the structures and processes for ongoing management are. This was of interest because the centrality of member experience suggests that coworking spaces need to be responsive to the needs of their users in ways that organisations might not be.

For the purposes of the analysis, interactions have been categorised as seated and standing/mixed to examine behaviours in more detail. Seated interactions are likely to be intentional and of longer duration, involving two or more people who are already connected in some way. Standing interactions are more dynamic and arguably depend to a greater degree on spatial affordances with the potential for generating new connections (Sailer et al., 2016).

4.2.1 Birmingham Impact Hub

Part of the Impact Hub network, BIH opened in June 2015, offering workspace on a rolling monthly basis to individuals and small companies alongside business support and events space. BIH is located in the Walker Building, a repurposed factory in Birmingham's industrial quarter; the founders made a conscious decision to locate outside the city's central business district (Figure 85). The space has a maximum capacity of 200, with approximately 90 members who were actively using the space at the time of research. Most worked in social entrepreneurship or the creative arts, with some members who were employed in corporate or professional roles. Members were predominantly individuals signed up for anywhere between one day a month and three days per week, with two small companies who paid a higher fee for fixed desk space and storage, and three 'floating' groups who worked in small teams but used the open studio areas. Membership benefits include events, printing, free tea and coffee, and regular breakfasts, lunches or afternoon teas. Members also have access to a wider network of contacts through the global Impact Hub network.

The design for BIH was developed across three phases with active community involvement. The first was a three-month pop-up in a temporary space. The second was a soft launch in the space, with a basic minimum of furniture and facilities which members were invited to arrange as they pleased. At the end of this period a co-design week was held, facilitated by the design practice Architecture 00. This was aimed at early information gathering rather than discussing specific design elements. Finally, the process of putting the internal space together was highly participatory, with early members joining the founding team in constructing CNC cut furniture and assembling

Figure 85. *Impact Hub location near Birmingham city centre*

chairs and fittings. Once the furniture had been assembled, the members set it out within the space, actively challenging the layout provided by the designer in the process.

Observations took place from January 2015, with the researcher able to track the development of the space from empty shell to full fit-out. With early visits limited to single days, a longer period of observation took place over a two-week period once BIH had officially opened, followed by additional single day visits to track changes to the space throughout the period of study. Observations were supplemented with semi-structured interviews with the BIH team and members as outlined in Section 3.3.3.

4.2.1.1 Design intent

The drivers behind the design strategy were the promotion of serendipitous encounters, providing spaces that supported a range of modes of work and interactions, the ability for the space to flex and change at short notice, and enabling members to participate in shaping the space and community routines.

The space was broadly divided into six zones over two floors (Figure 86):

1. A coffee shop open to other tenants of the building with provision for informal meetings and touchdown space,
2. Meeting booths and a 'secret' meeting room hidden behind bookshelves,
3. The 'Studio', designated for focused quiet work, with two dedicated team tables and various styles of open plan desking in addition to a small soft seating area and mobile whiteboards,
4. The 'Lab', designated for group work. This was the most explicitly flexible area, with mobile tables that could be packed down to create space for events,
5. A shared kitchen centred around a large high table with an additional soft seating area,
6. Two minimally furnished spaces upstairs to be used for events or for quiet working,
7. Shared printing facilities in a small service lobby adjacent to the coffee shop.

Figure 86. *Birmingham Impact Hub zoning diagram*

A central idea behind the design was that nothing was too perfect to change, effectively remaining in beta. Members were encouraged to self-organise within the space, taking part in day-to-day management and changing furniture arrangements to suit themselves. The space was therefore designed with a relatively loose fit approach to allow for multiple potential uses across varying levels of physical flexibility (Figure 87 overleaf). Additional architectural structure was minimised, with all of the cabling run from movable points on the ceiling. Although not all of the furniture was mobile, it was lightweight and interchangeable with an element of spontaneity underlaying any particular arrangement of elements. The Lab and upstairs event space were the most explicitly flexible, employing flip-top tables and containing simple wooden boxes that could be stacked to create seating or stages.

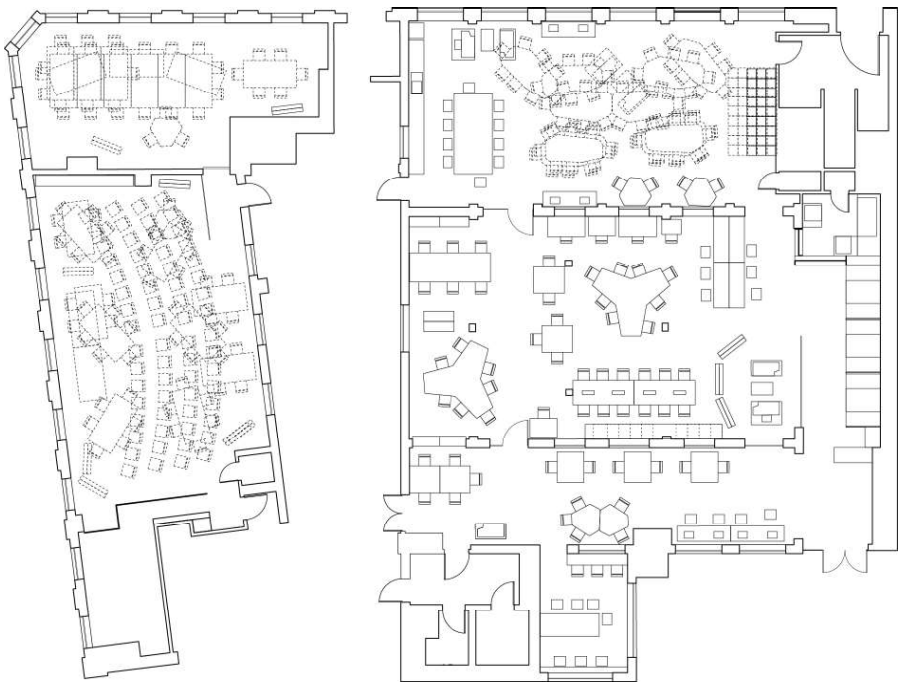


Figure 87. *This image indicates the areas that were designed to flex according to need, showing the various layouts that were observed during the period of research*

The team wanted the space to be distinct from traditional corporate offerings. The character of the interiors was influenced by the architecture of the historic building, with a feeling of informality accentuated by the extensive use of plywood furniture and warm textiles (Figure 88). Careful attention was paid to developing a distinctive brand that ran through the space, promotional materials and artefacts, using vivid yellow and stylised graphics and murals that referenced Birmingham history and culture.

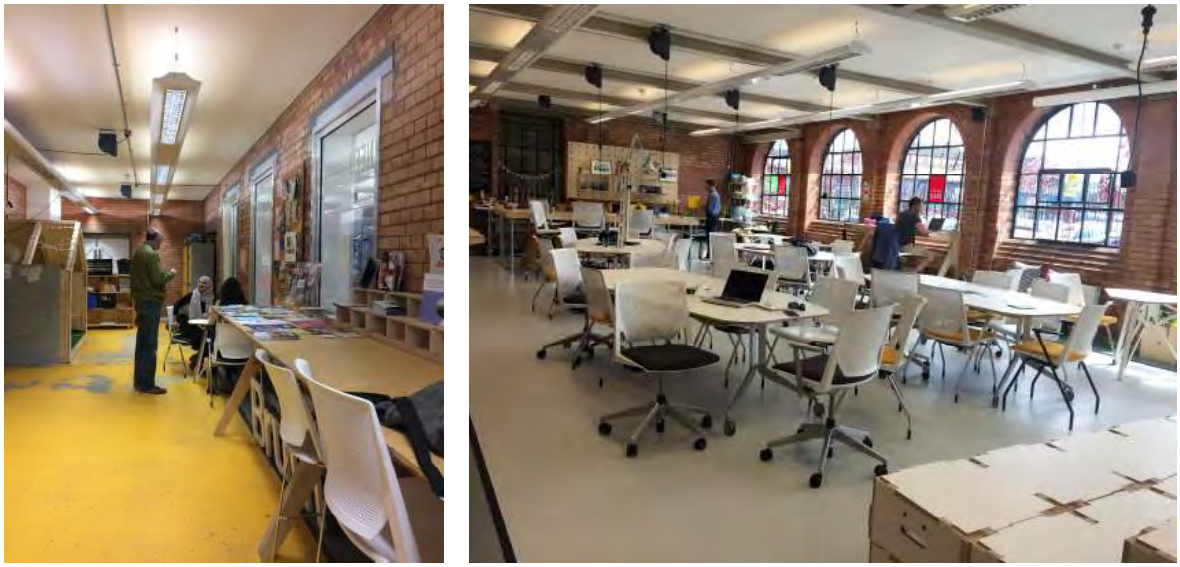


Figure 88. *L: Coffee shop and main entrance, R: The 'Lab', designed for collaborative group work and events*

The following sections will outline key findings relating to interaction, member experience managing change.

4.2.1.2 Interaction

This section discusses the strategies for interaction, observed patterns of interaction within the space, the perceived benefits of interaction to members and the barriers to interaction. Facilitating connections between members was a key concern of the team, with strategies for generating serendipitous interaction centring around spatial arrangements and programming of regular community events. The host also took an active role in facilitating contact, and BIH had an internal Yammer account which all members were signed up to when they joined.

Spatial strategies for interaction were leveraged at three scales: the floorplate, individual settings and points (objects primarily in between settings intended to provide opportunities for conversation). These are described in Figure 89.

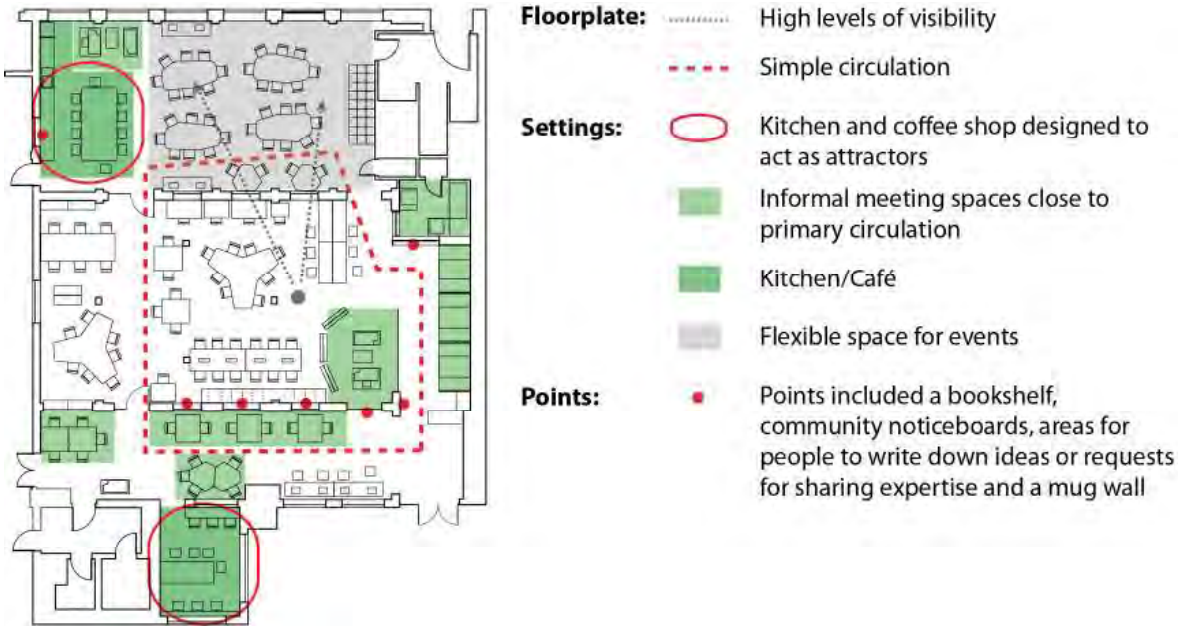


Figure 89. *Spatial strategies for interaction*

The spatial mapping revealed dense clusters of dynamic interactions around the kitchen table and coffee shop, with sparser patterns of interaction in the desk areas (Figure 90). The mapping excluded groups who were working together over the course of a day, focusing on contingent interaction. Key findings were as follows:

- The kitchen and coffee shop worked as intended (attractors), displaying the densest patterns of dynamic encounters. Both were used throughout the day, with peaks in early-mid morning, at lunchtime, and mid-afternoon
- Interactions in the kitchen were typically shorter, with people occupying the kitchen table recruiting passing members into conversation
- The coffee shop typically supported longer conversations, providing a greater degree of privacy and a distance from working areas that meant there were no concerns about disturbing people. In addition to people going in for coffee, the presence of the host was a factor in attraction, providing a reliable opportunity for conversation
- Movement was linked to interaction to a degree, although arguably more dependent on the members who were present than the spatial affordances. For example, longer-standing members occupying the table in the Studio attracted more frequent interactions with those passing by than recent joiners
- The points for interaction were not observed to generate any exchanges. While members appreciated the symbolism of elements such as the shared bookshelves, they were not used frequently enough to generate serendipitous encounters as intended

Seated interactions were concentrated around the meeting booths, coffee shop and Studio (Figure 91). Key findings were as follows:

- The booths were popular for seated meetings, with soft informal areas typically poorly used. Interviewees reported that the booths afforded more privacy, and for short informal meetings they tended to sit at the kitchen table or in the coffee shop.
- The booth location near the main entrance was cited as ideal for client meetings.
- The coffee shop and kitchen were both used for informal meetings, with the coffee shop and booths preferred for planned encounters

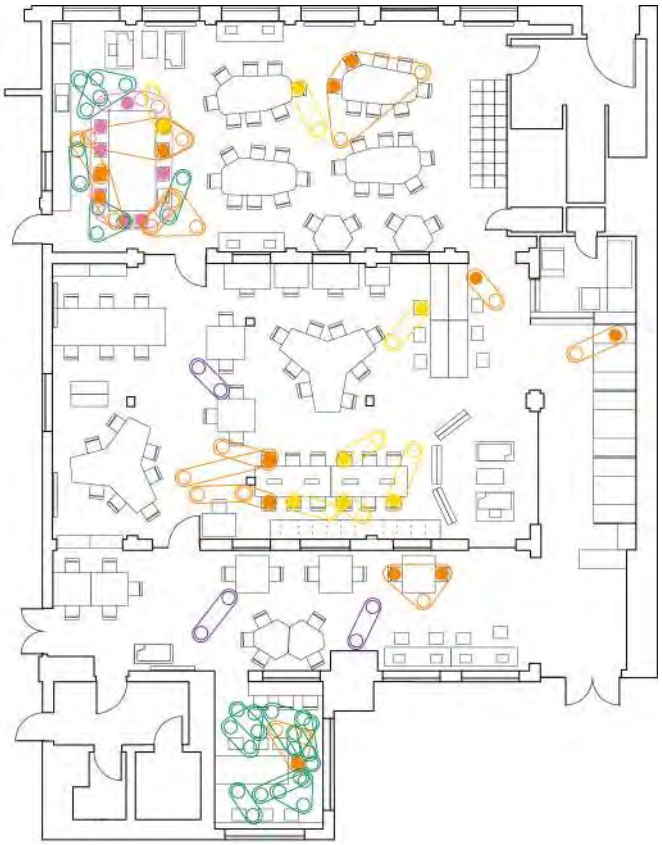


Figure 90. *Dynamic interaction map on a typical day. The colours indicate the micro-behaviours of interaction in terms of rationale: Green - attractors (accessing food or drinks); Pink - participating in events; Orange - people in transit recruited into conversation with seated members; Purple - movement between spaces; Yellow - visiting (deliberately seeking out interaction with a specific person)*

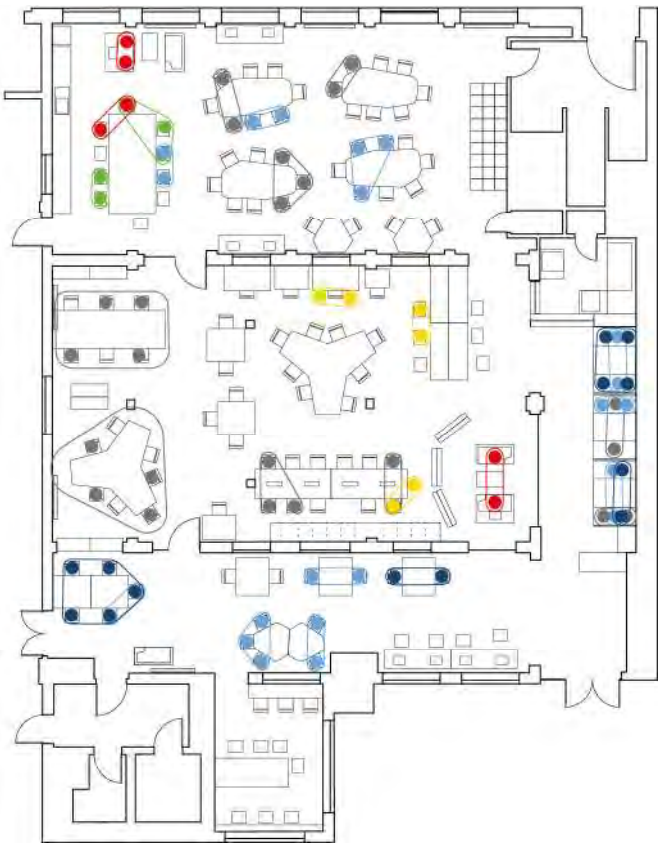


Figure 91. *Seated interaction map on a typical day. The colours indicate the micro-behaviours of interaction in terms of rationale: Grey – Working together throughout the day; Dark blue – planned meetings; Yellow – visiting turning into a longer interaction; Red – breakout/ informal conversation; Green – sitting to eat together; Light blue – meetings which could be identified as informal/unplanned*

While strategies for interaction were designed into the space, interaction was not only reliant on spatial affordances, with a focus on organising a variety of regular events which the team described as 'soft ways to create conversations'. They aimed to do something at small scale every day, with events regularly tailored to the membership community as the team had found that events that were less relevant to members tended to fizzle out. During the two week observation period there were nine scheduled events (Figure 92, Table 11). Attendance varied, but events typically drew in a minimum of ten members. Observations and interviews confirmed that they provided valuable opportunities to meet other BIH members, with people often sitting next to members that they had not met before and engaging in a blend of social and work-related conversation that was observed to lead to new connections being made on more than one occasion. These were the result of a membership that was strongly biased towards social entrepreneurship, creating areas of crossover for sharing experiences and expertise.

Figure 92. *L: Afternoon tea at the kitchen table, R: A workshop event in the upstairs space*

Event	Participants	Location
Open Project Night	21	Coffee shop
Q&A with invited guest (over lunch)	17	Kitchen table
Open Project Night	16	Coffee shop
Pot Luck Lunch	13	Kitchen table
Afternoon tea	12	Kitchen table
Afternoon tea	11	Kitchen table
Pot Luck Lunch	10	Kitchen table
Yellow Wednesdays (film screening)	9	Studio
Hub breakfast	2-4	Coffee shop

Table 11. *Events and participation*

While for some members their interactions at BIH had generated new work or potential projects, for most interviewees the value of their presence in the space related to accessing wider networks, peer feedback that improved their work, or exposure to new ideas. Interviewees predominantly linked work generated out of membership to participation in events, while opportunities for peer feedback were more closely connected to visibility of activity - simply having work out on display generated conversations that enabled members to discuss their ideas and identify opportunities for improvement or offer help with specific skills. The interviews also highlighted the fact that, while members might find their interactions at BIH valuable in terms of generating work or new connections, these could take time to come to fruition. This has implications for any quantitative measurement of the usefulness of interactions - it might be several months or even longer before a social interaction has a work-related outcome.

Not all interviewees reported frequent or useful interactions with others. Contact with others was not necessarily a primary motivation for joining, and the need to find a balance between interaction and focusing on work was a common theme. Newer members also reported a sense that there was already a well-established community who all knew each other, with some nervousness around breaking into established social groups, and the BIH team identified an element of 'hand-holding' needed to encourage people to engage in community activities. Fluid patterns of occupation were also a factor - relatively few members were there full time, so a connection might be made at an event with little opportunity to follow through outside of Yammer which interviewees tended not to use to reach out to others unless they had a specific question. Finally, members of the three small companies at BIH were only observed to participate in organised events on one occasion. While this could be partially ascribed to motivation, one team member identified a sense of hierarchy as a factor, with team members not feeling like they had the same level of autonomy over their time as individual members.

4.2.1.3 Member experience

Based on the analysis of member interviews, factors that contributed to the quality of member experience at BIH could be described as a sense of shared ethos, community engagement, generosity, and space.

Ethos: A sense of shared values, purpose and culture was a significant factor both in joining BIH and in intent to stay. This was influenced by the clear expression of BIH's core values, the language around membership, the diversity of membership and symbolic aspects of the space. These values were enacted by the BIH team, who were present in the space rather than acting as remote managers.

Engagement: This describes community and relationship building activities. Even those who did not regularly join in appreciated the sense that interesting things were happening. The events programme was developed throughout the period of study, with the team phasing programmes in and out according to member feedback and levels of participation, aiming for a blend of events which were social, related to member needs or skills, or presented an interesting point of view (such as inviting external speakers).

The host was based around the front desk or coffee shop, but regularly moved through the space to check in with members. Although it did not overlap the period of observation, BIH had employed a barista to run the coffee shop for a period of six months, which had been very popular with members. He was reported to carry out the kind of affective work identified by other researchers (Merkel, 2015; Brown, 2017), providing a regular sounding board and conversation partner who could be approached at any time. BIH had been unable to continue paying him on a permanent basis, with the community manager highlighting the difficulty of finding an ongoing balance between quality of experience and operational costs.

Generosity: Generosity describes attempts to make members feel valued. One aspect was the building of services and programmes around member needs, but it also describes what the team called 'generosity drivers' and an openness to reciprocal arrangements in kind

rather than simply focusing on cash value. Generosity drivers were small details that made the members feel like they were being thought about - for example, leaving out a cake for people to help themselves. In a number of cases, the team also offered space in exchange for time or other services to members who could not otherwise afford to join. This created bonds of perceived reciprocity and a sense of loyalty from those who benefitted, in addition to creating value for BIH in allowing them to provide services for other members that it would not have been possible to finance directly.

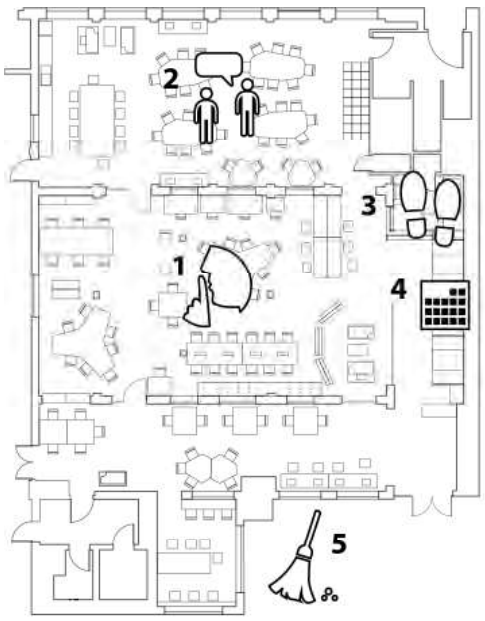
Space: While the space was viewed as providing a backdrop against which things could happen rather than being instrumental in generating them, the quality of the interior spaces was a factor in overall member experience, with participants talking about its affective, sensory, instrumental and symbolic qualities. The space was described as feeling 'welcoming' and 'warm', with the colour, materiality, and spatial arrangements all seen as enhancing the sense of distinctiveness from previous experiences of conventional office environments. Several members used the space to meet clients, considering it to be a significant asset in building client relationships.

In terms of the instrumental qualities of the space, its flexibility was commented on most frequently as a positive aspect, both in terms of facilitating events and engagements that contributed to culture, and the range of settings for different modes of work. The open plan nature of the space was less positive for the floating teams, one of which was considering finding new space because they wanted to be able to work visually on projects without having to pack down each night.

4.2.1.4 Agency and change

The BIH team took a participatory approach to running the space, hoping that participation would lead to a level of ownership in which the members would feel able to act autonomously within the space. The team implemented a small number of formal protocols, with members largely left to self-organise (Figure 93 overleaf).

Members were encouraged to take responsibility for keeping the space clean and tidy and



1. The Studio is for quiet, focused work

2. The Lab is for collaborative work

3. Leave your shoes outside the 'Secret' room so that people know it's occupied

4. Book booths, maximum two hours at a time (introduced several months after opening)

5. Clean up after yourself

Figure 93. *Protocols key*

helping to set up community events such as lunch or afternoon tea. Over the first year, this participation was formalised by the creation of a team of 'Wizards' who spent time hosting and running the space in exchange for a reduced membership fee. This meant that members were involved in much of the minor day-to-day facilities management such as changing printer toner and restocking WCs.

While members were able to move things around, they took advantage of the opportunity relatively infrequently, tending to move to a different space which better suited the task at hand rather than spend any significant amount of time rearranging their surroundings. The exceptions to this most often related to group work - for example, bringing whiteboards into the coffee shop seating area to create an informal meeting 'room' or rearranging furniture in one of the two rooms upstairs to make space for an all-day working session (Figure 94). The team reported that this sense of agency was easier to transfer to general members than the Wizarding team, who tended to perceive a sense of hierarchy even though that was not supposed to be the case.

Given the overall flexibility, there were relatively few unintended uses of the space (Figure 95). Early exceptions were the 'secret' meeting room and booths. The 'secret' room did not suit its intended purpose, with members gravitating towards more accessible locations for informal meetings, and the interviews revealed that it was being used for naps and as a

prayer room by Muslim members of BIH and the Walker Building. The booths were often used for individual working, providing a quiet, relatively private space. A third aspect was the use of the coffee shop for longer-term working rather than informal meetings, with members reporting that they liked the warm, social atmosphere in that area.

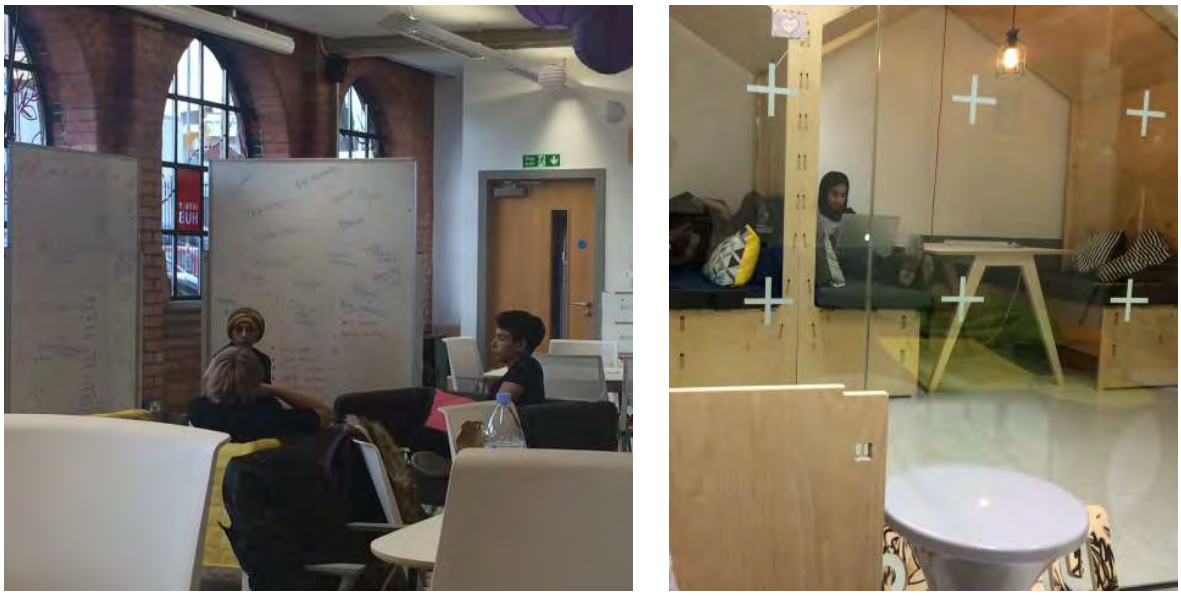


Figure 94. *L: Whiteboards pulled round to create a temporary project room, R: Individual working in the meeting booths*

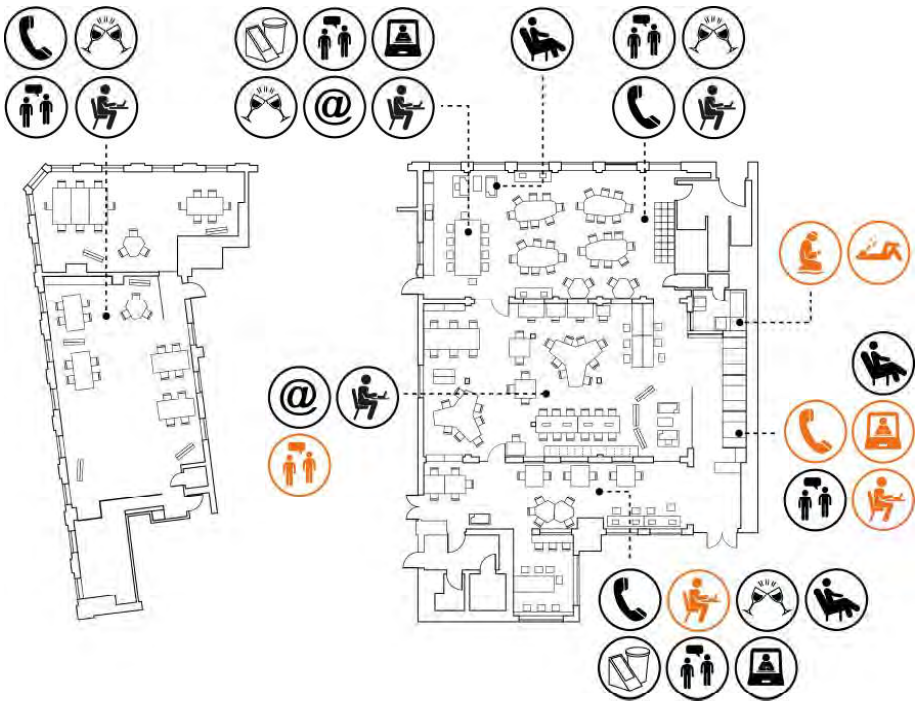


Figure 95. *The space was largely used as intended (icons in black), with some unintended uses (icons in orange)*

Deliberate attempts by the BIH team to change behaviours were rare and largely focused on discouraging people from 'squatting' in spaces that had been intended for temporary or fluid occupation by changing either the protocols or the spatial arrangement. After the first six months, the team implemented a booking protocol for the meeting booths restricting members to two-hour time slots. In the coffee shop, while BIH were generally keen to support members in their choices around the use of space, they were concerned that use of the coffee shop as a working area might be off-putting to new members or visitors. Most of the tables were therefore swapped for standing desks which were less popular for long-term occupation. This was accomplished by simply exchanging some of the furniture with settings from the Studio.

Most other changes were made either in response to direct member requests (adding lockers, creating better definition of the dedicated team areas), to improve the use of an under-used setting (swapping out unused soft seating, replacing hard seating in the coffee shop with sofas) or to better support the ways in which members had chosen to use the space (replacing the secret meeting room chairs with a soft floor surface and adding a small children's area in the coffee shop). Rather than a more traditional workplace fit-out in which all elements are specified by the designer, the team also gradually added to the space in response to member feedback, often including elements which had been introduced for events and proved popular, such as hanging lanterns, plants and artworks.

4.2.1.5 Summary of key points

The implemented spatial strategies for interaction largely worked as intended, with the kitchen and coffee shop acting as attractors and movement through the space resulting in recruitment into conversation, particularly at the junction between the coffee shop and Studio, close to the kitchen table, and at the junction between the Lab and meeting booths. The design of the space was credited in several interviews as an enabling factor in the range of events that took place, particularly in relation to the flexibility of the Studio area, and general ease of reprogramming areas to support different activities. However, elements such as the bookshelf or 'Ideas' wall did not generate any encounters. While people appreciated the symbolism, these were not used frequently enough to bring people together, suggesting that these smaller 'points' for interaction need to be designed to be useful on a more regular basis to be effective. While interactions were supported by the space, they were also reliant on the cultural environment and autonomy of members to manage their own time, with team members appearing to feel less able to take part in planned events.

Curation through events was a significant factor in generating interactions; these provided opportunities for people to meet, after which the spatial affordances became more of a factor in supporting continuing relationships. The BIH team highlighted the need to tailor events and services to the members, evaluate, and adjust to make sure that events were still relevant and providing value, with the conversation centred around meeting the need of members even though they were expected to participate in the general running of the space to some degree. However, despite the participatory culture, there were still members - particularly more recent ones - who turned up to work and then left without engaging more widely. In this sense, strategies for interaction - whether social or spatial - can only create potentialities, remaining dependent on individual motivations.

The quality of the space was a factor in experience, with interviewees consistently referencing its distinctiveness from their previous experience of offices, and the sense of comfort, warmth and welcome. However, a sense of shared priorities and the relational aspects provided by the hosts and connections with other members were also significant factors. The primary sense in which the space did not meet member needs was the inability

of floating teams to leave out work in progress, although this could have been solved by paying for a fixed space had finances allowed.

The team had tried to create a permissive environment which adapted to changing needs and allowed members to shape the space, resulting in a series of small-scale changes throughout the observation period. In instances where areas were not used as intended, the team made a decision about whether to support the change or subtly react against it, typically making small changes to spatial arrangements or settings rather than implementing new protocols, checking whether the changes worked as intended, and adjusting if they did not. While things were not constantly developing there was a sense that change was possible; this was arguably partly cultural and partly a response to the 'beta' planning of the space. The early co-creation phase was also referenced by early members as giving them a sense of ownership over the space; it was difficult to unpick the extent to which this had filtered down to newer members. While they reported feeling that it was welcoming and community-like, they typically did not seem to feel the same sense of ownership as longer-standing members.

4.2.2 Second Home

Second Home (SH) was created in response to a perceived gap in the market; the founders aimed to create spaces where small teams could develop their own identity and culture, something that they considered to be important in early stage business development. Their mission statement centres on the perceived links between serendipitous exchange, diversity of experience and innovation, and membership is controlled by a referral program, allowing for a tight curation of community. The membership roster is made up of roughly 80 per cent small businesses chosen to maximise the diversity of the community and 20 per cent larger organisations who might be able to help them as they scale. The membership capacity at the time of the opening was 250 members across 50 companies, and the space was fully occupied with a waiting list of potential new members. Individuals or small groups who are not yet ready to move into a studio can become 'roaming members' with access to a hot desking area, with desks sold at a four-to-one ratio.

Membership comes with a range of associated benefits, including five days a month of access to other Second Home locations, regular events, wellness activities, member discounts from selected partners, free filter coffee and tea, printing and scanning, lockers, postal services and a subsidised workers lunch.

Figure 96. *Second Home location in East London*

This study was carried out at the Spitalfields site which opened in November 2014 (Figure 96). The building is a conversion of a low-rise industrial building that had previously been used as retail space. SH initially occupied the lower two floors of the building, but were expanding into the upper two floors at the time that the research was carried out.

The design was carried out by SelgasCano, a small Spanish architectural practice. It was developed through a relatively traditional relationship between client and architect, in a process arguably closer to a domestic project than a large workplace scheme. While the founders had a list of things that they wanted the space to include, there was no formal written brief, with the architects making their initial proposals based on a series of conversations.

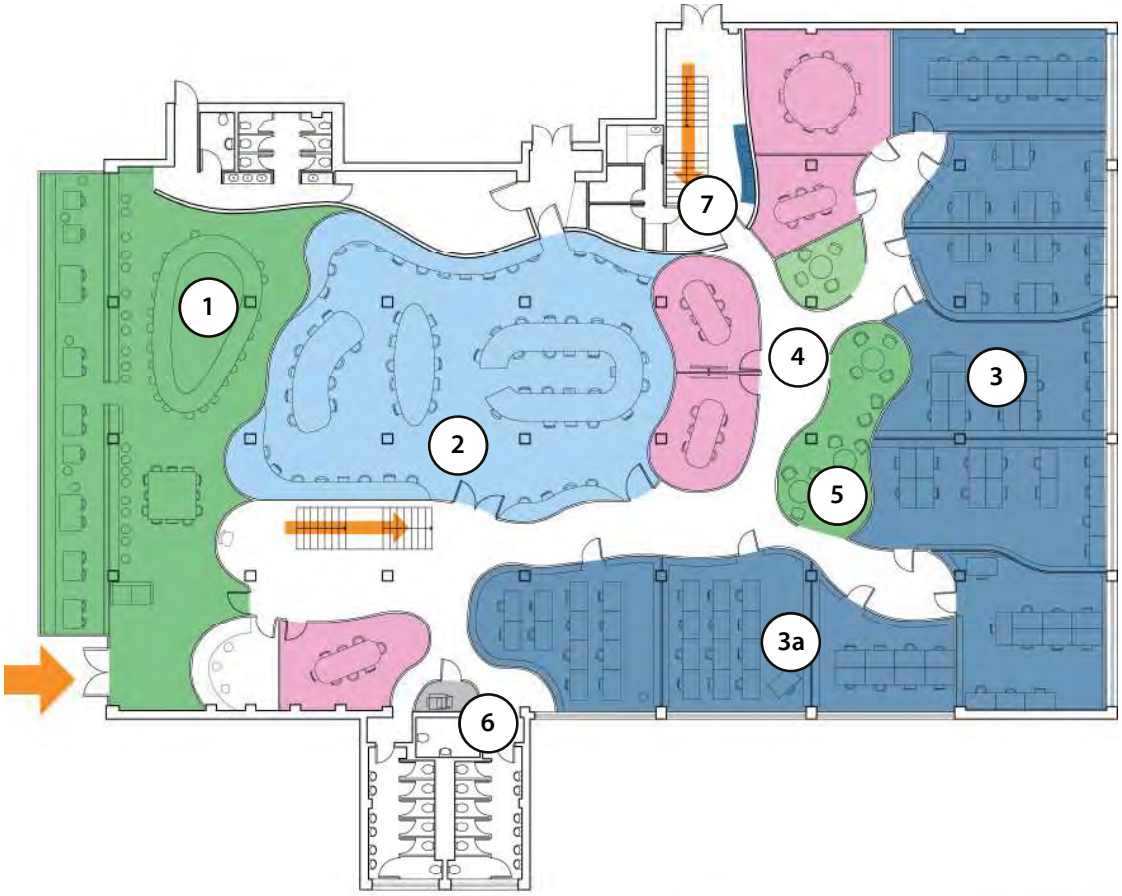
4.2.2.1 Design intent

The key drivers for the design were permeability, providing space for different modes of work and interaction, promoting serendipitous encounters, supporting developing team cultures and flexibility.

The floor plan was divided into three zones offering different levels of encounter in addition to formal and informal meeting spaces (Figure 97). The design of the space was viewed as a reaction to conventional 'antisocial' corporate architecture, with the zone at the front open to the street and a high level of internal visibility.

1. A publicly accessible zone at the front comprising a restaurant, bar serving coffee, alcohol and the members lunch, and a large members table
2. The 'roaming area', providing unallocated desk space for focused working by individual members. This had two heavy curtains that could be pulled around to create different sizes of event space
3. Team studios of varying sizes, each occupied by a single company
3a. Four rooms taken by General Assembly, a group providing public classes and workshops
4. Formal and informal meeting areas
5. The 'Hanging Gardens', informal/breakout space
6. Shared printer
7. Telephone booths

Flexibility was incorporated into the space through the use of movable, modular furniture to facilitate events and through the idea of scalability in the team studios. These were sized



Ground Floor

First Floor

Figure 97. *SH zoning diagram. Zone 1 was open to the public, Zone 2 to roaming members, while Zone 3 was seen as the most private area*

for groups of between four and twenty, allowing teams to move through the space as they grew. Although the partitions were made of lightweight, low-cost materials, the overall configuration did not allow for shorter-term adaptation. Physical flexibility was therefore restricted to the roaming area, where wheeled, flip-top tables and two heavy curtains meant the space could be turned into either a small events space or larger auditorium type area, with the 'boardroom' table hoisted up into a void above.

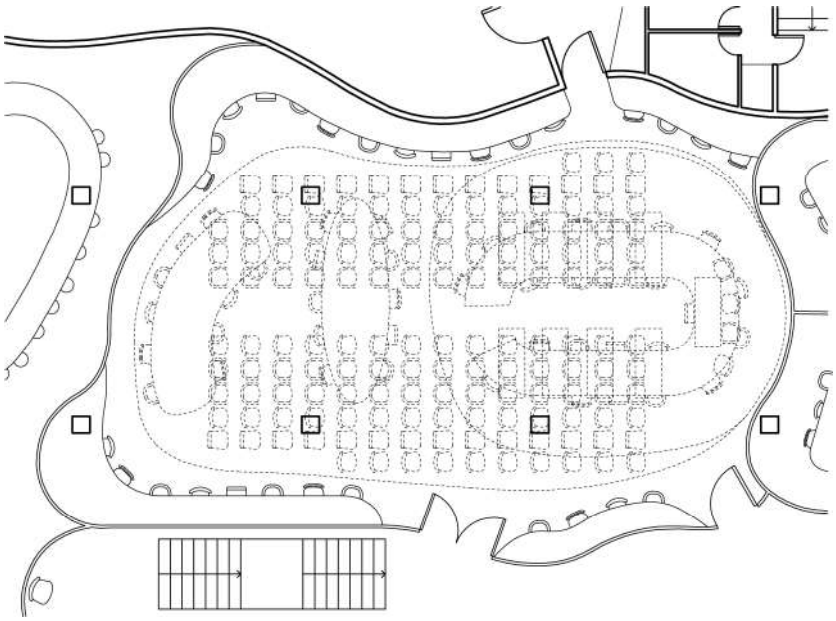


Figure 98. *The roaming area was the most flexible space, used for individual working, a Pilates class and two large-scale events for external visitors during the period of research*

As with BIH, the interiors were designed to offer a distinctive experience that set SH apart from traditional corporate workplaces (Figure 99). Curved acrylic walls delineate the studio spaces and the interiors are heavily branded to create a distinctive identity, using materials, plants and colour. Teams having the freedom to personalise their space was felt by the founders to be an important aspect of developing organisational identities. However, this was only designed to be permitted within certain limits, with team identities ultimately subordinate to the overall SH visual brand. Each studio was provided with open shelving, some wall space, and significant numbers of indoor plants, with the names of organisations were subtly displayed according to SH's stylistic guidelines. None of the interviewees identified this as an issue.

The following sections will outline key findings relating to interaction, member experience and agency and change.

Figure 99. *Highly distinctive approach to the design of the interiors*

4.2.2.2 Interaction

Creating opportunities for serendipitous interaction was a key aim of SH. In addition to the spatial strategies for interaction outlined below, SH runs a full programme of events designed to bring people together; the team aimed to provide something every day following member requests for more regular events. It also has a dedicated internal digital network which allows members to communicate internally and allows the team to publicise both member and public events. This section will discuss the observed patterns of interaction within the space, focusing on the roaming area and public zone as the spaces in which contingent and serendipitous interactions were likely to take place.

Spatial strategies for interaction were described as creating 'concentric circles of serendipity', and largely manifested through spatial arrangement and the provision of informal meeting areas. These are described in Figure 100 overleaf.

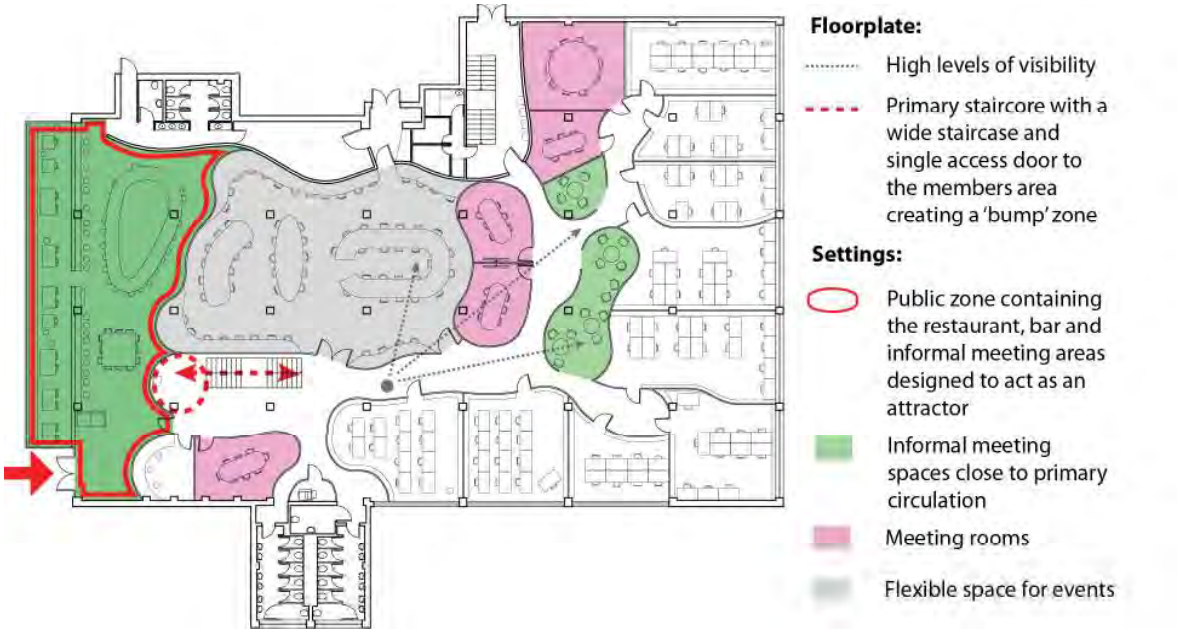


Figure 100. *Spatial strategies for interaction*

The public zone at the front was the focal point for dynamic interactions, with both social and spatial affordances playing a role. Key findings related to dynamic interactions are as below (Figure 101).

- The 'chaotic' public area did appear to afford rich opportunities for dynamic interactions, with the majority of mixed or standing interactions clustered in and around this space
- Attendance at events was a factor in bringing people together, with these interactions contingent on social rather than spatial affordances. This suggests a temporary social designation (Fayard and Weeks, 2007) based on the activity taking place. For example, a meeting held in a meeting room can only be attended by invitees, whereas an event in the same space can be joined by anyone passing by
- Very little visiting behaviour in the roaming area, with almost all of it taking place between members and hosts rather than between members
- Recruiting behaviour was slightly more common, typically focused around the public zone
- Movement between spaces did appear to be a factor in serendipitous encounters; again, this was concentrated in the public zone

Figure 101. *Dynamic interactions on a typical day. The colours indicate the micro-behaviours of interaction in terms of rationale: Pink – events; Green – attractors (obtaining food or drinks); Orange – recruiting into conversation; Yellow – intentional visits to seated members; Purple – moving between spaces; Dark pink – classes held by General Assembly; Light Blue – external visitor and temporary event host; Dark blue – standing meeting*

Seated interactions were centred around the restaurant, members table and meeting rooms, with less frequent occurrences in the informal meeting/lounge area and around the bar. Key findings related to seated interactions are outlined below (Figure 102 overleaf).

- The restaurant was well used throughout the day, with informal meetings held outside of meal service times
- Informal meeting spaces in the member areas were relatively poorly used, most likely due to the separation from the catering facilities. Both internal and external parties tended to go for coffee or tea and then stay in the public zone
- The meeting spaces were fairly well-used, with peaks in the mid-morning and afternoon. Meetings were typically informal in style and few involved a 'presenter'
- The public zone at the front was well used as an interface between members and external visitors, with meetings including pitches to potential investors, client

sessions, and catch-ups with collaborators. The restaurant was seen by interviewees as acting as a showcase for the activity that took place within SH

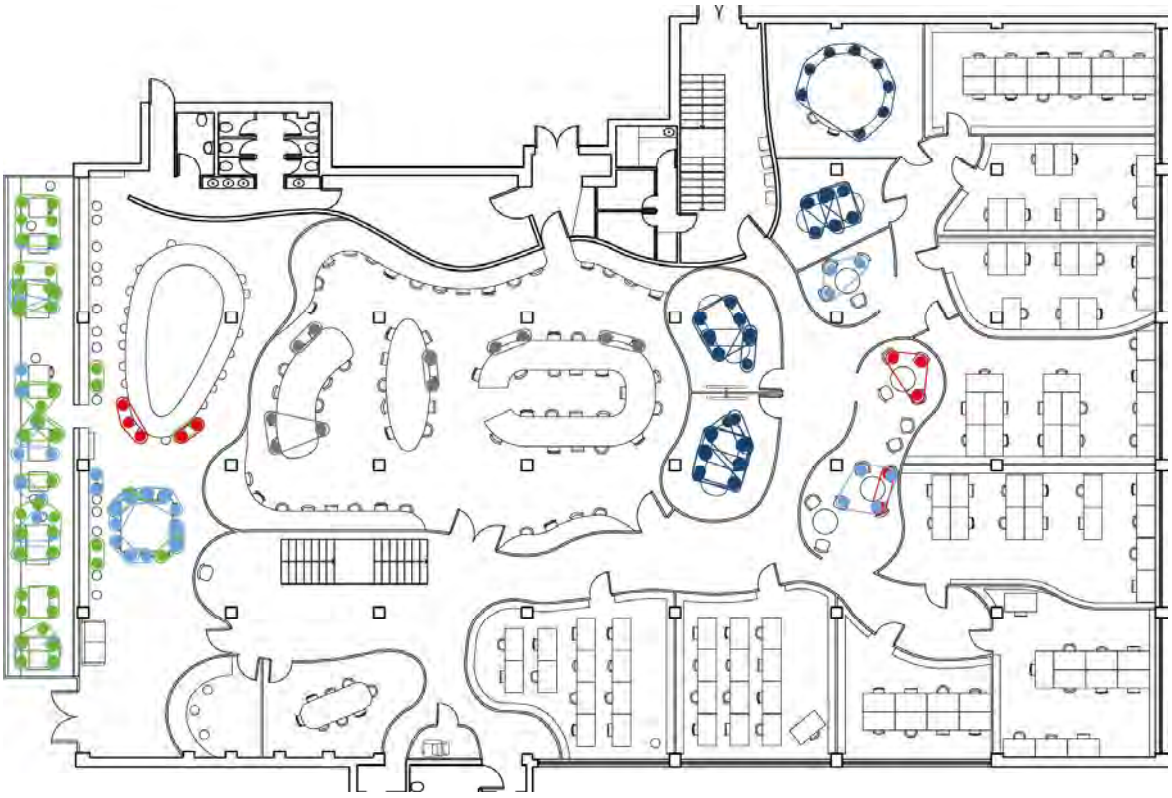


Figure 102. *Seated interactions on a typical day. The colours indicate the micro-behaviours of interaction in terms of rationale: Pink - informal meeting; Green - eating; Purple - working together; Blue - formal meeting; Orange - breakout*

In addition to spatial strategies for interaction, SH ran a regular and varied programme of member events designed to bring people together. Following a member request for more events, the team aimed to run something every day; the programme included a running club, wellness sessions, regular meet and greets, external speakers and weekly themed drinks. Attendance varied more widely than at BIH, with one event only drawing three people including the host. The type of interaction was observed to broadly vary according to the nature of the event. For example, conversation during Friday drinks or the life drawing class was more focused on general social conversation, while discussions at the Meet and Greet naturally centred around what each member did. Events attracted a mixture of individuals and people attending in groups, who did not always interact with others outside their social circle.

Event	Participants	Location
Open Project Night	21	Coffee shop
Q&A with invited guest (over lunch)	17	Kitchen table
Open Project Night	16	Coffee shop
Pot Luck Lunch	13	Kitchen table
Afternoon tea	12	Kitchen table
Afternoon tea	11	Kitchen table
Pot Luck Lunch	10	Kitchen table
Yellow Wednesdays (film screening)	9	Studio
Hub breakfast	2-4	Coffee shop

Table 12. *Events and participation*

Figure 103. *Life drawing class around the members table at the front of the space*

SH states that 75 per cent of members have collaborated on a project, although does not specify what percentage are instances of one member using the services offered by another and what percentage (if any) are instances of new product or service developments that benefit both members to a greater degree than a simple service transaction. The marketing material also claims that companies based at SH grow ten per cent faster than the national average, attributed to the creation of spaces that foster interaction and having community organisers to connect members. However, SH does curate membership, and it seems unlikely that they would take on members who they did not think were going to be successful. It may therefore be impossible to entirely unpick the beneficial effects of the cultural environment created by SH from the curation of the membership population. That being said, some members did report useful relationships arising out of their interactions within SH, with one describing it as a 'very generous and collaborative' culture. The relationships formed related to using the services of other organisations within the space. More broadly, the exposure to new ideas and ways of thinking was viewed as exciting and inspiring, with benefits in terms of broadening ideas even if not obviously work related.

There were limits to the success of the strategies that were in place. While the restaurant provision provided an attractor, the cost meant that not all members used it regularly. There were also tensions between providing teams with their own space and creating serendipitous cross-disciplinary interactions. While team members did come down into shared spaces together, there were numerous occasions on which one member could be seen acting for all of them - for example, going to the central bar to pick up lunch for five. While the existence of the events programme was valued, taking the time to engage in it was not guaranteed; as well as being extremely busy, making new connections was not the primary motivation of everyone who joined. One member working in the roaming area was waiting to upgrade to a studio space so that she could bring the remote members of her company together. For her, the benefits of co-located interaction related primarily to increased ease of internal team communication.

4.2.2.3 Member experience

In terms of member experience, similar factors were identified to those at BIH, although service provision played a greater role.

Ethos: A sense of shared culture and purpose appeared to be a significant factor in overall experience and intent to stay. While this could be attributed to a shared sense of purpose and ambition common to start-up businesses and an element of 'selecting in', other influencing factors included the language used by SH, visibility of activity and organisational structure. Staff were encouraged to talk about the mission and values of SH, and internal material drew heavily on the language of joint enterprise - community, collaboration, mission. Visibility of activity was described as supporting a sense of common purpose; this was both physical and programmatic, with members encouraged to take part in meet and greets and skill sharing sessions, and publishing member details and accomplishments online. The precise role of the curation of members by SH was not established - it seems likely that both the selection of diverse but potentially complementary members and the sense from members of having in some way been 'chosen' fed into the sense of shared purpose.

Engagement: Engagement with the community took the form of events and regular short-duration interactions with the SH team. Events were viewed as important opportunities to engage with other members and were valued even by those who did not regularly participate. The kind of public events that took place supported the values presented by SH as being innovative, forward thinking, and focused on social impact.

SH was more heavily staffed than many of the coworking spaces that were visited during the early research. At least one member of the team was typically based in the roaming area, in addition to a host at the reception desk and at least two in the bar. Team members could regularly be seen checking in with members. In this sense, they were undertaking 'affective work' as well as ensuring that functional elements of the space were working smoothly (Brown, 2017).

Service: The level of service provided to members went beyond typical expectations for coworking, environments prioritising ease of use and enjoyment of facilities. Catering services were provided within the meeting rooms, and a member of the facilities team regularly stocked up water bottles, hot drinks and fruit in addition to cleaning up. One question raised by the research was the balance between provision of service and encouraging people to move around the building. For example, packages and water were taken directly to team rooms rather than asking people to come and collect them, reducing the potential opportunities for serendipitous encounter. Service elements also included access to learning opportunities. General Assembly were located in the space with discounted access to SH members, and the hosting team also ran a 'trade school' program in which members offered to share skills in regular seminar sessions.

Space: The final factor was the space, which played both instrumental and symbolic roles. The functional provision was focused on what SH called 'world class essentials' - internet connectivity, spaces to work, and a comfortable environment. Members described the space as 'inspiring', with the distinctive aesthetic underscoring the feeling of being part of something new and distinctive, and the visibility of activity contributing to a sense of shared purpose. SH employed a range of techniques such as adjustable lighting, music, and heavy curtains that changed the level of intimacy in enclosed spaces to signal transitions

from day to evening. The chairs were the only physical element of the space that attracted criticism - mid-century classic designs had been installed rather than task chairs, but not all of them were comfortable. This led to something that was described by more than one member as the 'chair game' in which people picked a spot to sit down in, then went looking for their favourite chair.

4.2.2.4 Agency and change

The space was more closely managed than at BIH, with SH leaning towards a service/ hospitality approach rather than a participatory one. There were a number of protocols, most of which were explicitly stated using small table signs or wall graphics.

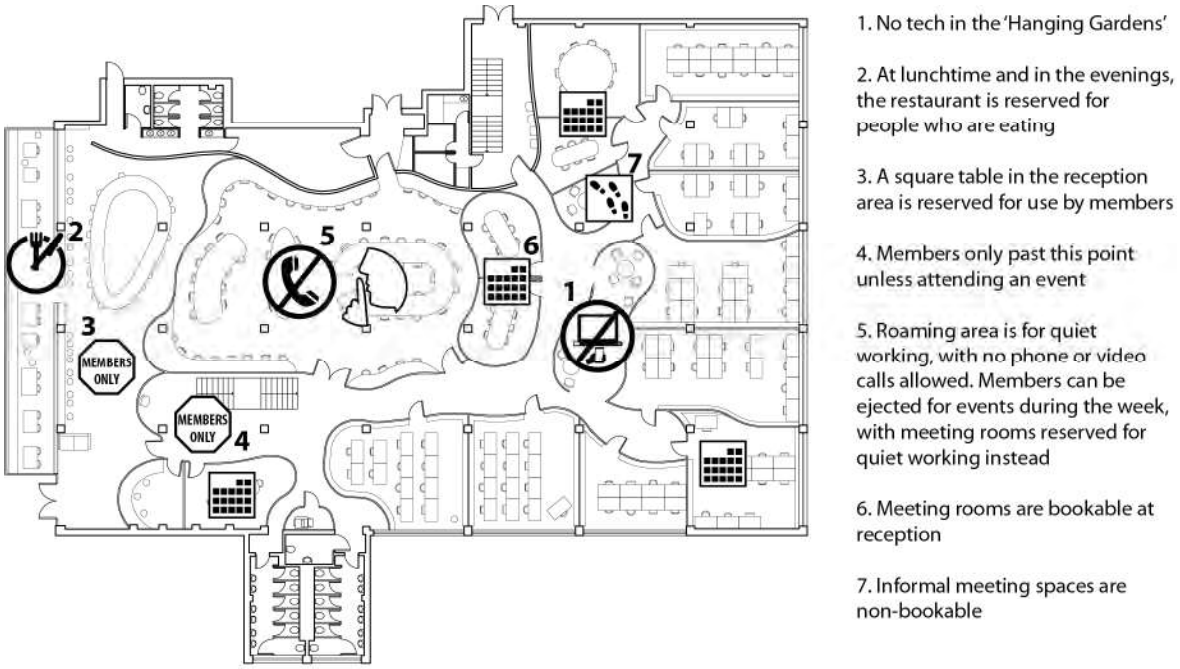


Figure 104. *Protocols key*

For the most part, these protocols were followed. In instances where they were not, they were gently reinforced by the membership team. Almost all of these related to making phone calls - while phone booths were provided in the back stairwell, they were never visibly in use. While people did tend to leave the roaming area to take phone calls, they were much less likely to move in order to use Skype, putting headphones in and staying in their seat rather than have to relocate with their laptop. One member identified the disconnect between desk areas and space for phone calls as a particular annoyance, with

areas for phone calls only useful if they were immediately accessible. The landing on the stairs was the space most often used for this purpose, affording a wide ledge at the right height for looking at a laptop, and a column to lean against.

Figure 105. *The space was largely used as intended (icons in black), with some unintended uses (icons in orange)*

The other significant aspect in which the space was not used as intended was the extensive use of the acrylic studio walls as working surfaces, in some instances significantly obscuring the view in with Post-it notes, sheets of paper and posters (Figure 106 overleaf). While it was not mentioned by the team or current members, an article which interviewed former members of staff stated that SH had initially tried to prevent people from using the acrylic walls in this way, and while published photographs of SH are populated, the walls of the studio spaces are clear. In this sense, the perceived affordances of the acrylic walls worked against the intended affordance of transparency.

The relative lack of physical flexibility within the space meant that it was difficult to directly address some of the issues raised by members; although it did not come up in interviews, staff reported that members had also requested more informal meeting and breakout seating. However, these were captured by the team and translated into the second phase of

the building work. In the case of the Post-it note walls, the protocol was simply relaxed to allow members to work as they wished.

Figure 106. *Post-it notes on the acrylic studio walls*

4.2.2.5 Summary of key points

In terms of interaction, the public zone at the front operated as intended, generating the densest interaction patterns with a wide range of motivations. However, even in this area, spatial affordances were not the only factor, with curation and social designation through the provision of events and a wider cultural acceptance of informal interaction between groups of people an important factor in bringing people together. It appeared that the type of event was an influencing factor in the content of interactions, although this would require further research to draw any wider conclusions. The relationship between high levels of service and the desire for serendipitous interaction is also an open question; bringing things to teams in their studios potentially reduces their movement through the space. Finally, the balance between providing teams with a 'home' and generating serendipitous encounters was a difficult one, with even those groups who participated in events not necessarily talking to anyone outside their immediate team. This may become more pronounced as the size of teams accommodated at SH grows; at the time of writing, they offered single occupancy studios for up to 150 people.

The experience provided by the team was valued by members, with more than one interviewee stating that they were waiting for a larger space to become available rather than seek space elsewhere. It was resource heavy, requiring relatively high levels of staffing to provide a team who were constantly accessible to members rather than trying to fit it around other work. While the space was a factor in the overall quality of experience, the sense of shared ethos and relational aspects were also frequently referenced, with members relating all of these aspects of experience to how it made them feel.

Members at SH were directed to use the space in quite specific ways, with implemented protocols and light monitoring by the host team. Most of the instances in which the space was not used as intended related to phone calls, which prompted the most frequent attempts by members to find alternative routines that suited them. The booths in the stair lobby were never observed to be in use, with members preferring to pace the corridor, use the roaming area, go to the bar, or perch on the landing of the stairs. The space had not been designed with the kind of flexibility that would allow changes to be easily made at this level; however, this feedback - along with requests for more informal breakout and meeting spaces - had been picked up by the team and incorporated into the plans for the second phase of construction. The use of the acrylic walls as display space appeared to have been accepted by the team. However, although at the newer Holland Park site, attempts appear to have been made to change the affordances by placing desks around the perimeter of team studios rather than in the centre, preventing the use of the wall surfaces as display space. It is not known whether this was a conscious attempt to change behaviours or simply a design decision.

4.2.3 Summary of findings

The case study research at BIH and SH allowed connections to be made between the designed space as analysed in the first study and the impact on member behaviour and perceptions within two coworking spaces. In both instances, central concerns of the design strategy were facilitating interaction, flexing in response to changing needs and creating a spatial experience that was distinct from traditional corporate environments. Both spaces also had areas which adapted to suit a wide range of activities - gigs, speaking events, screenings, wellbeing classes, seminars, suppers and member generated events. This section will discuss the findings across both sites.

4.2.3.1 Interaction

While the research at BIH and SH suggested that coworking spaces can provide rich opportunities for forging new connections, they were dependent on a number of factors including the willingness and motivation of individuals to participate, the active curation of member communication through the provision of events and personal introductions, the enactment of culture and interaction by the hosts and the perceived usefulness or relevance of the events on offer. Although connections were made, relatively few resulted in new partnerships or projects being formed, with peer feedback, skill sharing, or the procurement of necessary services a more likely outcome (although members did refer to the diversity of experience as mind expanding or inspirational). The presence of teams in both spaces also influenced the frequency of interaction outside the group, with strong team bonds and perceptions of hierarchy appearing to act against the narrative of interaction and collaboration to some degree.

This supports recent findings that suggest that formal collaborations are a relatively infrequent outcome of coworking. In some senses, it could be argued that interactions in coworking spaces are largely replicating the kind of routines that might be found in organisational space - obtaining input from a colleague, forming social groups that offer peer support, or seeking out help with a problem - in addition to suffering from some of the same issues.

The role of space in interaction in coworking spaces has been largely underplayed. While the importance of the role of curation - and the host in particular (e.g. Brown, 2017) – is undeniable, spatial affordances for interaction still played a role. While curation was instrumental in forming initial connections and the enactment of a collaborative culture created an overall social designation, elements of the space design then created the potential for continuing serendipitous encounters through the use of attractors, visibility and movement, and spatial settings.

This phase highlighted the difficulty of measuring the 'usefulness' of interactions. While the physical location, duration and stimulus for an interaction can be mapped, the boundary between social and work-related interactions was often fluid, making them difficult to categorise. In addition, interviews at BIH revealed that it may be a number of months before a social conversation leads to a work-related outcome; an entirely non work-related conversation might lead to recognition, then to longer interactions, and finally to a 'useful' outcome. Longer term network mapping might be one solution, although it cannot necessarily identify specifically how a key contact became part of a personal network (e.g. spatial or social affordance). There were also intangible outcomes of interaction at BIH and SH - 'I think bigger' - that make usefulness difficult to assess.

4.2.3.2 Experience

The experience of work and workplace at both spaces was reliant on multiple overlapping influences, with four identified as key. These could be described as ethos, engagement, services and space. Both spaces explicitly stated their mission and consistently enacted their values through the hosting, space, events, and literature around membership. While the approach to services was different, both put the needs of members at the heart of their offer, providing events and curated interactions that connected members with each other. In both cases the space acted as a symbolic expression of organisational values and activity as well as an instrumental facilitator of work.

Meeting the needs of members at SH and BIH was perhaps more akin to the relationship between an organisation and its clients than organisations and their employees, playing

a supportive rather than paternalistic role in the provision of space and services. This has implications for the briefing and ongoing management of workplaces; a positive experience cannot be designed for without understanding what that means for the specific community within that space. Member experience was constantly evaluated and adjusted at small scale by the teams at both sites, although neither had formal procedures in place to do so, rather relying on close relationships, constant presence in the space, and open flow of feedback between the hosting team and members. It should be noted that member experience has staffing as well as spatial implications. At both spaces it was considered to require a dedicated role in which hosts could focus on member needs over potentially competing demands.

4.2.3.3 Agency and feedback

The overall approach to managing the space at the two sites was different. BIH explicitly encouraged a permissive and participatory approach to the space in which members had a high degree of autonomy to make changes, whereas SH had a service-oriented model which could be more closely compared to a hospitality environment – members make requests which the team attempt to meet. These represented two different approaches to making the experience of members as positive as possible, rather than having different goals in mind. It was not possible to identify whether one was more positively received than the other; this would likely be down to individual preferences, with communities tending to self-select depending on which they preferred.

Both spaces were used in ways that were not what the designer had intended, reflecting the previously identified literature around designed space and unexpected behaviours. The impossibility of predicting precisely how space will be used - when an informal meeting area becomes a prayer room - highlights the need for evaluation and the ability of space to adjust to change on an ongoing basis. This was arguably best managed at BIH, where the 'beta' approach to the space provided flexibility to make small scale adjustments quickly and easily, with minimal disturbance to the architecture or services. For all of the apparent organic fluidity, SH was actually quite tightly structured, with day-to-day changes limited to the ambience and use of the roaming area to facilitate events at a range of scales,

although the team used observations and member feedback to guide the next phase of the build.

The findings of this study would seem to emphasis the centrality and curation of community and interactions, a sense of shared purpose, the interactions between space and service, a focus on member experience and a bottom up client/service model that inverts the traditional organisation/space relationship as important facets of coworking. Of these, member experience could be seen as the central quality – for example, while both sites were concerned with generating interactions between members, this was less about serving organisational goals than it was about driving value for the members themselves. This centrality of member experience would further seem to emphasise the importance of understanding the needs of specific membership communities in order to help them shape a positive experience of work.

The intention of this study was to look at coworking within the context of the wider organisational workplace rather than as an isolated phenomenon. The next section will therefore outline current trends in organisational workplace design, followed by a case study of a creative organisation looking to achieve some of the same goals as a coworking space.

4.3 Design Study 3: The organisational workplace

This design study addresses the second research question; the extent to which coworking represents a substantive departure from established models, practices and relationships in workplace design. As identified earlier in the thesis, workplace design has a long history of adopting fads and trends without actually understanding what drives behaviour in particular contexts. The lack of empirical research into the spaces and behaviours of coworking and the tendency for it to be considered in isolation make it all too easy to overestimate its potential innovations. As corporate interest in coworking grows, while there would seem to be significant potential for incorporating a coworking-like approach into the wider organisational workplace, there are risks attached to making changes based on assumption rather than a critical understanding of its relationship to existing organisational design strategies. The limited research on coworking that exists has been conducted entirely separately from studies into the wider organisational workplace.

In trying to understand the extent to which coworking is a departure from established models, it is therefore critical to interrogate existing organisational design practice. In order to do this, two pieces of research were undertaken. The first is a review of current trends in workplace design (for historical development, refer to Section 2.3.1). The second is an exploration of the design processes and priorities of a corporate workplace which was trying to achieve similar aims to those expressed in coworking around supporting collaborative relationships and prioritising user experience. These place coworking in its wider context and allow for comparison and contrast in order to establish the extent to which coworking represents a new workplace typology versus simply reflecting existing organisational norms.

4.3.1 Contemporary workplace design

The contemporary workplace is in a state of constant redevelopment, and there is, as yet, no template for the networked office (Section 2.3.1.4). However, it is possible to identify overarching themes and design directions. This section assesses current trends in workplace design based on visual and written data from 48 published articles on workplace projects from the professional magazines Contract, OnOffice and Dezeen (Section 3.2.3). Refer to Appendix 3 for the full list of projects. The analysis looked at the organisational intent behind workplace strategy decisions, building strategy, space plan and settings, and interior décor.

4.3.1.1 Organisational goals driving workplace strategy

> 'It's the kind of seemingly casual yet highly designed encounter that could lead to a breakthrough', (Olson, 2016: online).

> 'This space reflects an entire culture', (Gendall, 2016: online).

The analysis began with identifying the overarching organisational goals driving workplace design decisions. The two quotes reflect the strategic goals most often identified; promoting organisationally desirable behaviours and creating a space that reflects organisational culture and values. In terms of space as a tool for driving specific behaviours, interaction and collaboration were the most frequently cited (Table 13 overleaf). Most of the articles also specifically mentioned using space as a strategic tool for conveying organisational values. Given high levels of worker mobility, the provision of a 'corporate hub' which can convey messages about the values and culture of the organisation has been argued to be a key function of contemporary workplace (Bell, 2010; Harris, 2016).

Co-location was the third most frequently stated organisational goal. It was viewed first as an opportunity to reduce costs by increasing density and reducing overall organisational real estate portfolios. It was linked to increasing interaction and creating a focal point for organisational identity. These arguments are reflected in the wider literature, with

place argued to have an important role in engendering serendipity, promoting sociability, exchange of tacit knowledge and as a container for memory and meaning (Duffy, 1997, 2008; Davenport, 2005; Bell, 2010; Harris, 2016; Parker, 2016). Achieving these goals had an impact on workplace design decisions at four primary scales which will be discussed in the following sections: building strategy, space plan, settings and interior décor.

Stated Desirable Behaviour	Number of Mentions
Collaboration	22
Interaction	17
Socialising	17
Serendipitous encounters	11
Communication	8
Information sharing	6
Concentration/Focus	5
Creativity	4

Table 13. *Number of times specific behaviours were mentioned across all articles*

4.3.1.2 Building strategy

Building strategy related to increasing density, a shift from single occupier to multi-use and a reimagined role for the ground floor. Of two organisations that talked about increasing density, one had sought to reduce their total real estate by 30 per cent and the other by up to 60 per cent, aiming for a reduction from 350-400 square feet per employee to 150 square feet by using activity-based working (ABW) strategies. Condensing organisational footprint and increasing occupation density to achieve 'spaceless growth' has been a significant trend over the last decade, with average densities rising by a third according to the consulting group Ramidus (Harris, 2016:11). This is a response to low occupancy rates, increased worker mobility, the rising cost of real estate, and the imperative to adapt quickly and flexibly to change (Felstead, 2012; Harris, 2016).

The drive to reduce corporate footprint was also reflected in an increasing acceptance of multi-let and multi-use space (Figure 107). While designing a single building for multiple clients is not new, schemes have traditionally prioritised a strict separation between occupiers, with the reception the only shared space. This new approach results in buildings in which multiple corporate occupiers might share space with retail, serviced

offices, coworking and even residential provision, creating shared spatial resources with the potential to transform the way in which buildings are used (Harris, 2014, 2016).

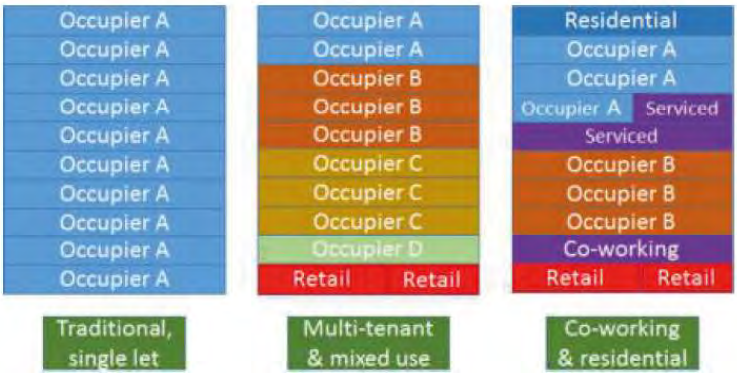


Figure 107. *Changing makeup of leased office space (Harris, 2016: 9)*

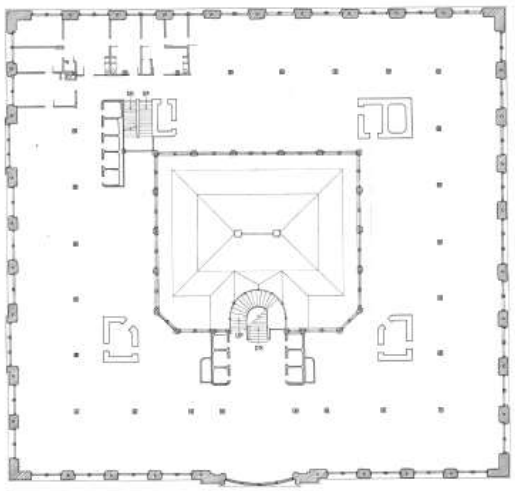
The redefinition of the occupation of the building also extended to its surroundings. In terms of the ground floor, corporate receptions were traditionally designed to express power but are increasingly conceptualised as an opportunity to strengthen physical connections or visually connect people outside with activities inside and can arguably be viewed as an extension of the public realm (Brown and Campbell, 2014; Pancholi et al., 2015). This was reflected in projects such as The Allen Institute, which included a glazed auditorium at street level to broadcast scientific presentations (Figure 108).

https://www.archdaily.com/778225/allen-institue-perkins-plus-will/565fc2b6e58ece70b60003a3-allen-institue-perkins-plus-will-photo

Figure 108. *Auditorium at The Allen Institute for Brain Science, Seattle, Perkins+Will*

4.3.1.3 Space plan

Recent approaches to spatial reorganisation have been described as placing an emphasis on openness, transparency, lack of hierarchy and spaces for accommodating teamwork in what has been called the 'communalisation' of office space (Parker, 2016: 184). Chief among these is the perceived correlation between interaction and innovation which is increasingly at the centre of spatial strategies in the workplace, with designers employing a range of social engineering techniques to try to ensure that interactions take place (Heerwagen et al., 2004; De Paoli et al., 2017). This was strongly reflected in almost all of the articles.



https://www.techofficespaces.com/tech-office-chicago-history-the-rookery/

Figure 109. *These plans illustrate changes in approach. L: Rookery Building - original floors would have been subdivided into two rows of private offices. R: Rookery Building today. This plan is an illustration of a potential layout for new tenants when taking a whole floor*

A variety of space planning strategies were identified as being strongly associated with the stated desirable behaviours (Table 14). The use of urban planning metaphors was prevalent, with centrally located 'streets' aiming to generate serendipitous interaction through movement, and 'neighbourhoods' and attractors such as social spaces aiming to create conditions of proximity in open plan schemes with high levels of visibility. A number of spaces had been named, all relating to some form of shared urban typology - agora, town hall, or village green. Within this, the strategy for organising the space plan varied, with organisations typically opting either for an ABW approach (Figure 110) or for a zoning strategy (Figures 111 and 112 overleaf). This theoretically allows for better resolution of potentially contradictory requirements such as areas for concentration and collaboration on

the same floor plate, responding to increasingly frequent criticism that the quest to enhance collaboration has been at the expense of focused work (Heerwagen et al., 2004; Myerson, 2013; De Paoli et al., 2017).

Stated Desirable Behaviour	Associated Spatial Strategies
Collaboration	Activity-based working, acoustic zoning, central spine, co-location, common areas, flexibility, open plan, urban planning metaphors, visual transparency
Interaction	Activity-based working, acoustic zoning, attractors, co-location, common areas, fixed and flexible space, open plan, visual transparency, central staircase
Socialising	Co-location, fixed and flexible space, open plan, private/collaborative zoning
Serendipitous encounters	Activity-based working, attractors, central spine, co-location, common areas, fixed and flexible, central staircase
Communication	Co-location, flexibility, open plan, visual transparency
Information sharing	ABW, central spine, fixed and flexible
Concentration/Focus	Acoustic zoning, fixed and flexible space, private/ collaborative zoning
Creativity	Co-location, private/collaborative zoning, visual transparency

Table 14. *Spatial strategies that were associated with specific desirable behaviours*

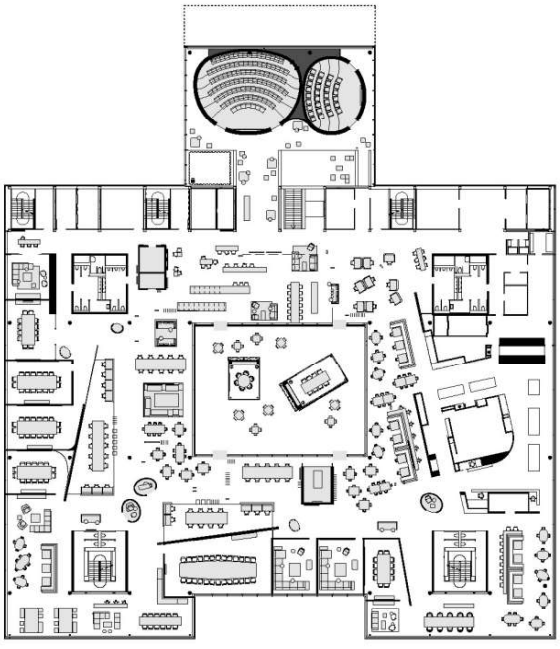


Figure 110. *The Microsoft Building, Schiphol, 2008, Sevil Peach is an example of an Activity-Based Working environment, © Sevil Peach, all rights reserved*

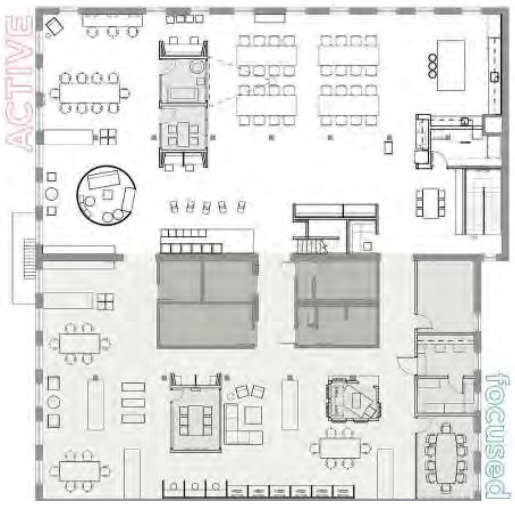


Figure 111. *Left: AirBnB, Portland OR, 2015, Bora Architects. The space is split into two zones: an 'active' zone for collaborative work, and a 'focused' space for concentrated tasks, © Bora Architects, all rights reserved*

Figure 112. *Below: Sealed Air, Charlotte CA, 2017, HOK. Team clusters organise workstations and informal meetings spaces into 'neighbourhoods' that form a focal point for project teams connected by shared facilities , © HOK, all rights reserved*

ABW working practices are now employed globally across a range of sectors, providing multiple settings that can accommodate different modes of work with workers moving between them as needed (Jones Lang LaSalle, 2012; Parker, 2016). Wider benefits of ABW have been suggested to be increased collaboration and job satisfaction, more interdepartmental communication, higher levels of movement and giving staff greater autonomy in their working practices (Parker, 2016). However, there is limited empirical evidence as to the performance of ABW spaces in use and existing evidence is contradictory, with both positive and negative effects being identified within the same studies (see Blok et al., 2009; Danielsson and Bodin, 2009; De Been and Beijer, 2014).

Zoning designates areas in an open environment for specific activities and tailors the physical environment accordingly. The most frequently identified zoning strategies in the data were varying levels of visual privacy, acoustic zoning, team clusters or neighbourhoods, and private/collaborative space. There is still less research on different zoning strategies, exacerbated by the wide range of potential variables.

4.3.1.4 Spatial settings

Only three articles mentioned cellular offices, and all had significant areas of open plan space incorporating a wide range of potential work settings for collaborative and concentrated activity. As a minimum these included kitchens, breakout, formal meeting rooms and informal meeting areas. This is reflective of wider trends; with social and informal spaces having taken on enhanced roles, designers now typically incorporate a 'much richer palette' of work settings (Davis et al., 2011; Harris, 2016: 12) (Figure 113).

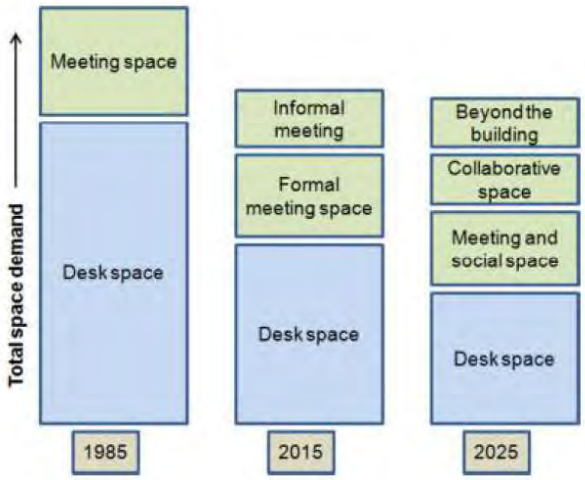


Figure 113. *Traditional workstations reducing as a percentage of the overall space budget in favour of informal meeting and social space (Source: Harris, 2016: 12)*

Social programs such as games areas and bars were commonly referenced. This is in line with arguments that the office as a typology has more or less disappeared with the general ludification of work (Dale and Burrell, 2008; Kuo, 2013). This is manifested both in the aesthetic presentation of the office and in the replacing of traditional organisational landscapes with work lounges, breakout spaces, café areas and games zones (Kuo, 2013). Individual settings were also strongly related to desired behaviours, with collaboration and interaction linked to the provision of central social areas, informal meeting spaces, bleachers, project spaces, bars, kitchens and breakout settings (Table 15 overleaf). Creative thinking was less frequently mentioned, and linked primarily to write-on walls, plants, artworks and project space.

The data also suggested that the problem of design fads identified in Section 1.2 is still a current one. For example, architectural bleacher seats occurred as a physical symbolic statement of collaboration and interaction in one third of the published projects, including some that talked about flexibility as a core strategic value (Figure 114).

Behaviours	Settings
Collaborate	Bleachers, breakout space, central shared space, central staircase, conference room, booths, formal meeting, games area, informal meeting, integrated digital, kitchen, library, multi-purpose space, 'Town hall', project spaces, write-on walls
Communicate	Bleachers, central shared space, library, multipurpose space, write-on walls
Concentrate	Booths, phone booths, focus booths
Think creatively	Write-on walls, plants, artworks, project spaces
Socialise	Bar, bleachers, breakout, central shared space, booths, dining room, events space, games area, kitchen, multipurpose space
Interact	Bleachers, central shared space, central staircase, conference room, booth, dining room, events space, games area, informal meeting, kitchen, library, multipurpose space, project spaces, workstations
Eat together	Bar, bleachers, dining room, events space, kitchen
Serendipitous meetings	Bar, bleachers, breakout, central focal space, central staircase, booths, formal meeting, informal meeting, kitchen, library, multipurpose space, project spaces, write-on walls
Share information	Bleachers, breakout, central shared space, formal meeting, informal meeting, integrated digital, kitchen, multipurpose space, projects spaces, write-on walls

Table 15. *Activity settings that were associated with the identified desirable behaviours*

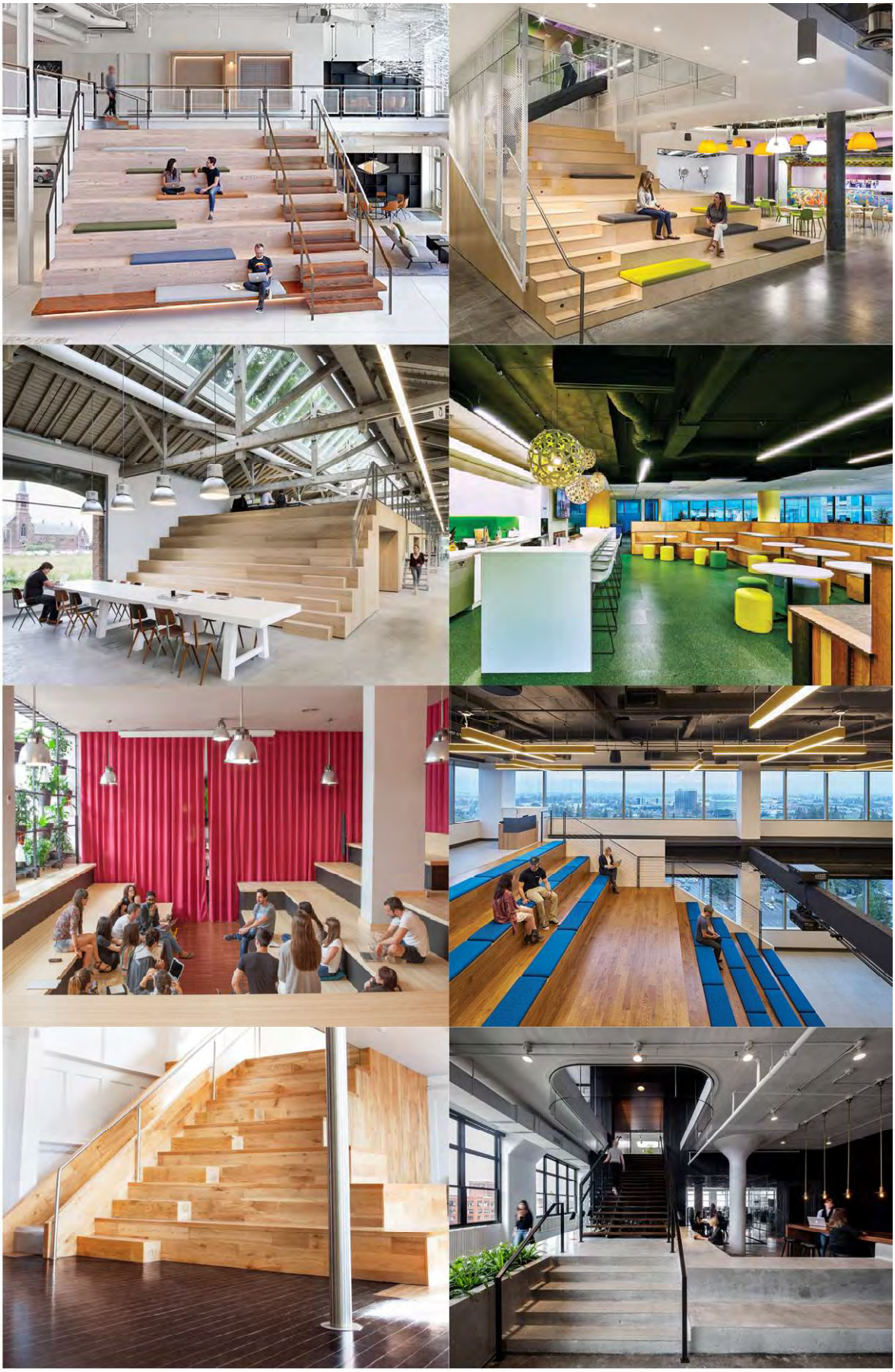


Figure 114. *Bleacher seats have appeared as a significant recent trend*

4.3.1.5 Symbolism and aesthetics

> 'We can say more about our brand with the space than we ever could with words.', (Lubell, 2016: online).

> 'It isn't an office - and if it resembles one, we've totally failed...', (OnOffice, 2016: online).

The increasing recognition that symbolic space is a potentially powerful tool, combined with the rise of the aesthetic in everyday life, has been argued to have resulted in an 'aestheticisation' of the workplace in which the 'whole workspace is constructed as the embodiment of the desired culture' (Warren and Fineman, 2007; Dale and Burrell, 2010: 20; Khanna et al., 2013; Skogland and Hansen, 2017). The breadth of design in workplace that has emerged as a result was highlighted in a 2015 article in the Architects Journal, pointing to the two extremes of the British Council for Offices and the 'playful' workplaces of technology firms as two ends of the spectrum (Adams, 2015). Stylistically, a number of overlapping themes have been identified in the presentation of workplace spatial organisations (Dale and Burrell, 2008; De Paoli et al., 2017). This shift was reflected in the research. Only seven projects adopted what might be considered to be a more traditional corporate aesthetic; the results would seem to support van Meel and Vos's assertion that 'offices should no longer look like offices' is at the core of today's ideas (2001: 325). The aesthetic themes identified in this research were industrial/heritage, home, hospitality, localism and play.

Industrial/heritage: Spaces featured exposed structure and services, with materials such as brick, concrete and reclaimed timber accompanied by vintage objects and non-contract furniture (Figures 115-116).

Hospitality: Spaces with a sophisticated aesthetic drawing on hospitality environments for inspiration. In this sense, aspects of the interior were intended to create or recreate habits that would traditionally be carried out in leisure time; most referred to on site after-work socialising as an important element of organisational culture (Figures 117-118).

Figure 115. *Industrial references at Citizen, © Mike Massaro, all rights reserved*

https://officesnapshots.com/2016/05/09/wmeimg-offices-new-york-city/

Figure 116. *Highly refined industrial palette at William Morris*

https://officesnapshots.com/2016/04/04/malwarebytes-headquarters-santa-clara/

Figure 117. *Malwarebytes featured a full functional bar, with lighting designed to create a 'dark and moody' atmosphere*

Figure 118. *The scheme for Vice similarly described a 'moodily lit look', referencing saloons and cigar lounges, © Adrien Williams, all rights reserved*

Home: Signalled by the introduction of domestic references such as rugs and non-contract furniture, this was often represented by the centrality of the kitchen to design schemes, with large shared tables acting as a symbolic 'heart' for the workplace family (Figures 119-120 overleaf).

Localism: This involved integrating references to local context, incorporating traditional or local materials, and the use of traditional building forms. It was often linked to strategic decisions about the location, with a move to a new site symbolising a change to the corporate identity (Figures 121-122 overleaf).

Play: Spaces which took a broadly playful approach, with bright accent colours, games tables or over-scaled objects (Figures 123-124 overleaf). The origin of the trend is typically

traced back to Silicon Valley in the late 1980s and 1990s, marking a desire to challenge conformity and express individuality, lack of hierarchy and a culture of creativity (Baldry and Hallier, 2010; Portillo and Meneely, 2013; De Paoli et al., 2017).

Figure 119. *'Family' dining and a slice of home at MVRDV, Rotterdam, © MVRDV, all rights reserved*

https://www.contractdesign.com/projects/workplace/spotify/

Figure 120. *Student living room at Spotify*

https://www.dezeen.com/2016/08/16/airbnb-tokyo-suppose-design-office-traditional-japanese-interior/

Figure 121. *AirBnb in Tokyo, referencing local architecture and materials*

https://www.onofficemagazine.com/interiors/item/4924-vic-s-meat-hq-sydney-by-those-architects

Figure 122. *Vics Meat headquarters referencing agricultural vernacular in building forms and detailing*

https://www.nydesignagenda.com/tpg-architecture-designs-spotify-new-york-office/

Figure 123. *Over-scaled objects at Spotify*

http://marckilkenny.com/selected-projects#/bloomfield-house/

Figure 124. *Game and childhood references at Boys and Girls, Dublin*

4.3.1.6 Organisational workplace design

This section has built on the review in Section 2.3.1, identifying recent trends in workplace design. Key themes in terms of organisational concerns and their effect on workplace design can be identified as follows.

Densification of corporate space: Rationalising real estate portfolios and increasing occupation density to manage under-utilisation of space and respond more flexibly to change, often resulting in more permeable, mixed-use developments as single-occupier monoliths become less common. This frames the corporate hub as the centre of a network of spaces for work and suggests an increased permeability of space. Densification has also been argued to raise employee expectations for the provision of higher levels of service and amenity as a trade-off for giving up their personal space (Harris, 2016). This shifts the focus towards resource-based rather than place-based management.

Using space to promote desired behaviours: This particularly relates to interaction, with a proliferation of architectural strategies used to try to encourage interaction and serendipitous encounters. These range from the use of urban planning metaphors to bring people together to large-scale symbolic statements about the importance of interaction such as bleacher-style installations.

Increasingly varied palette of settings: Relating both to the centrality of interaction and to space densification, moves towards environments that are activity based or zoned has resulted in a wider palette of settings for work and a growth in the relative proportion of collaborative to individual space.

Symbol/identity-rich environments: Environments that reflect corporate values, often moving away from traditional hierarchical workplace structures towards a more informal or network-based form of organisation.

Blurring typological boundaries: The introduction of home/leisure/hospitality references into the presentation of the office raises questions about the future of the office as a

typology. Increasing hybridity - especially when drawing on retail or hospitality references - arguably raises an expectation that the 'consumer' experience will be considered in workplace environments in new ways.

Need to account for time and change: Rapidly changing global markets, corporate space as a hub in a physically distributed network and high levels of worker mobility point to an increased importance of managing space and time, curtailing the life of design spaces as a result (Worthington, 2006; Watch and Wagner, 2017) (Figure 125). Stewart Brand's conceptualisation of the building as a series of layers that change and adapt after a building is completed argued for a lifespan of the 'space plan' of between three and 30 years; even the low end of that range would now seem optimistic in some cases, suggesting the need for new ways of conceptualising flexibility or adapting to change (1994: 13).

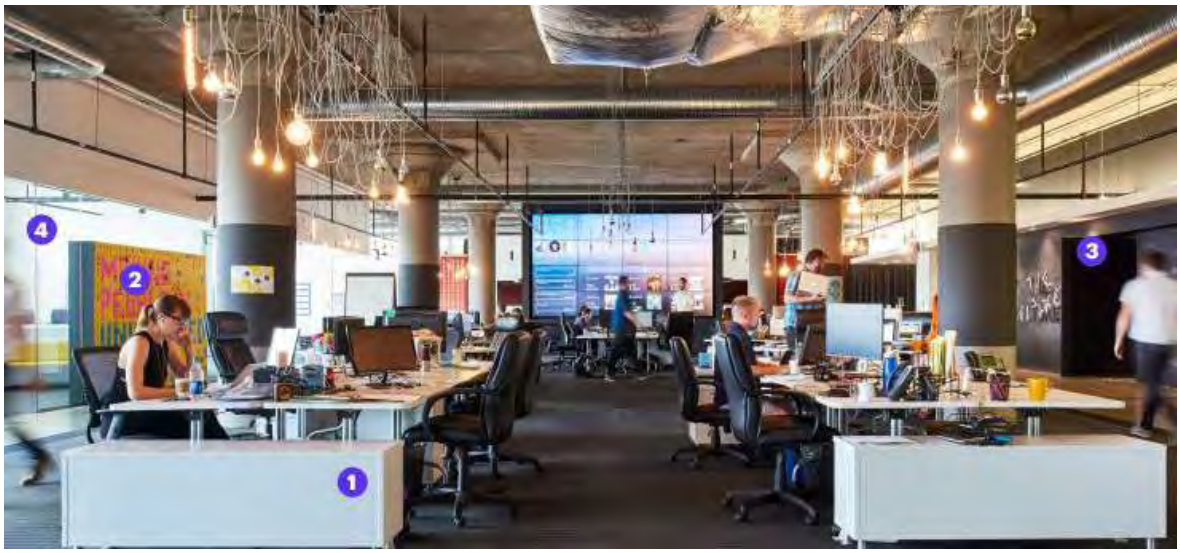


Figure 125. *Watch and Wagner argue for an increasing focus on levels of flexibility that allow spaces to move at a moment's notice (Watch and Wagner, 2017: 26)*

Returning to the historical office development presented earlier in the thesis, a number of key shifts can be identified (although there can be variation within each - for example, networked workplaces are theoretically highly autonomous, but the actual freedom to choose is highly dependent on how the space is managed).

These include (Figure 126 overleaf):

Individual-Communal: Focus on individual occupation and productivity-focus on collective spaces and activity
Fixed-Flexible: Ability to make changes restricted to architectural scale interventions-able to make short-term changes at the level of the individual
Physical-Digital: No technology-integrated digital tools
Static-Mobile: Based at an allocated workstation with no alternative work settings-moving freely between different settings for work
Contained-Permeable: Organisational container closed to outside-free movement across spatial boundaries
Process-Generative: Designed for process work-focus on knowledge or creative processes
Hierarchy-Autonomy: Top-down forms of organisation-worker autonomy to make choices
Low interaction-High interaction: No privileging of interaction-strong emphasis on interaction
Prescriptive-Personalised: Governed by organisationally imposed rules - Able to exercise agency to make changes
Centralised-Distributed: Permanently located in a single organisational space-distributed across multiple sites of work

It should be noted that progress has been neither inevitable nor linear. The three models discussed earlier in the thesis - Taylorist, Social Democratic and Networked - represent a continuum of options rather than wholesale change, and none has entirely replaced the others (Harrison et al., 2004; Duffy, 2008; Myerson, 2013). There are not always clear-cut lines between them, and some workplaces may represent elements of more than one; Myerson (2013: 218) argued that Google's office in Zurich embodies some of the essential characteristics of the Social Democratic model in addition to a Networked element.

Moreover, there is an historic tendency for the office buildings which are widely discussed and published to be the exceptions rather than the rule; this review is not immune from that. Office layouts have tended to evolve in an organic and piecemeal way over time, and many organisations are still discovering basic workplace efficiencies that were first exploited

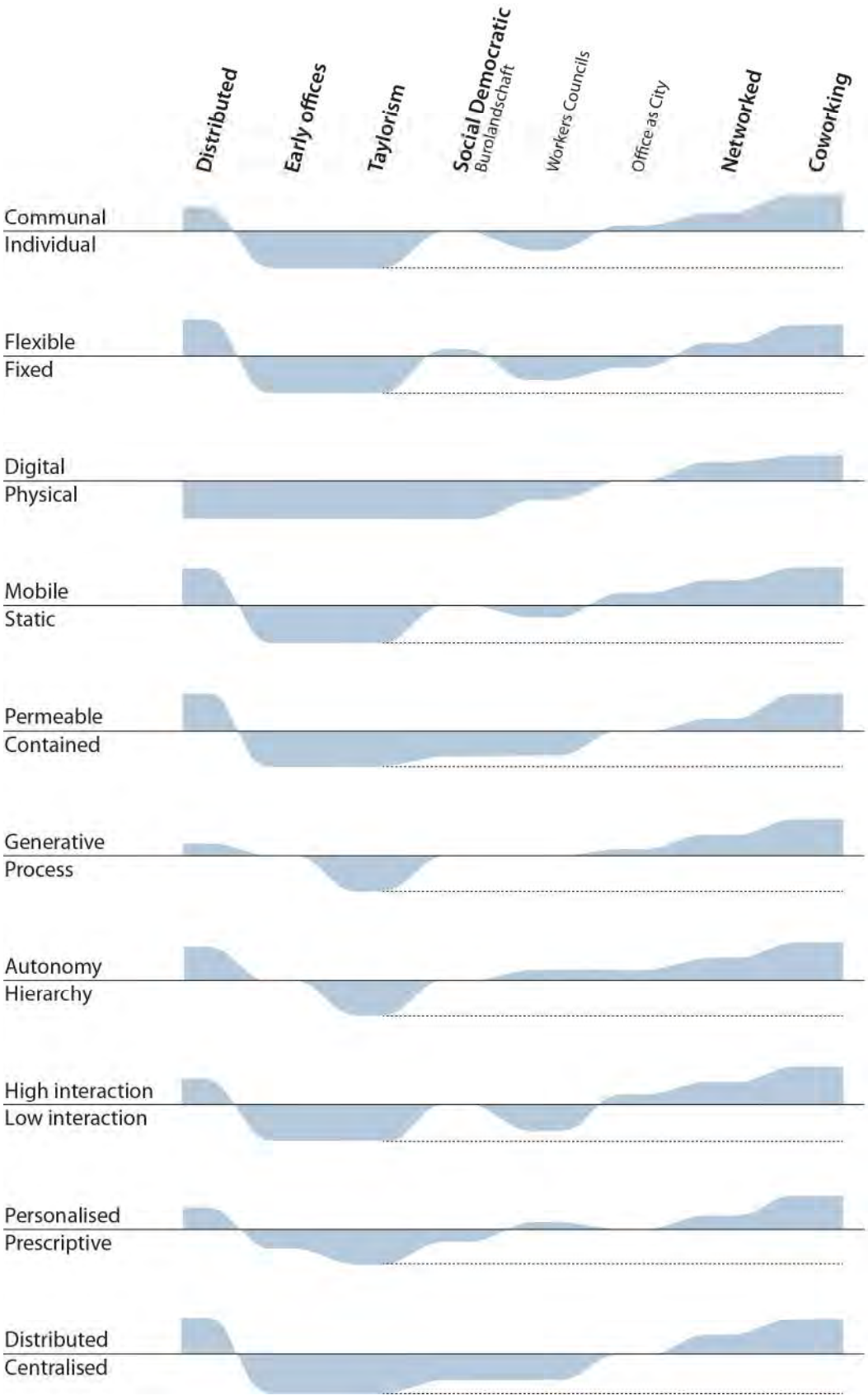


Figure 126. *Key shifts across the development of the workplace of the contemporary office. Blue indicates the primary orientation of each wave of development, while the dotted line represents continuity rather than wholescale change*

over two decades ago (Bell, 2010). In Duffy's 1997 book *The New Office*, he similarly noted that the examples he provided of workplace innovation were far from statistically significant, with limited innovation in office design tending to lag behind, rather than anticipate, organisational initiatives.

This first phase of investigation has identified overarching trends in current workplace design; the second phase presents an organisational case study, allowing for a more in-depth look at how these themes and concerns inform spatial change, and the analysis of current workplace design processes through the lens of organisational consultancy.

4.3.2 Sony PlayStation: A corporate case study

This section outlines the development of a brief for Sony PlayStation, a corporate workplace seeking to build a more collaborative community, improve user experience and enhance the capacity of the space to flex in response to changing needs. The project was a fairly conventional consultancy process, and as such provided an opportunity to compare and contrast an organisational setting – in terms of both space and design processes – with the coworking research. This took place towards the end of the first year of the study and was therefore informed by the early coworking visits and literature review, but not by the detailed spatial mapping. The context to how this project came about is outlined in Section 3.3.1. The following sections will briefly introduce Sony, the objectives of the redesign, the existing space, and key findings around workstyles, interaction, employee experience and managing change. They will then outline the proposed spatial response in terms of enhancing community, collaboration, experience and responsiveness to change – the same aspects which were of central concern in the coworking review.

4.3.2.1 About Sony PlayStation

> '[We want] something that says modern game studio, people dream about working for PlayStation, I don't think they imagine a first party studio that looks like a call centre.' (Saunders, 2015: interview).

Sony London Studio is part of the division responsible for the distribution, marketing and sales of PlayStation, PlayStation Network software and PlayStation hardware. This study focused on the games development teams, which comprise a range of disciplines including animators, character artists, designers, sound designers, music producers, developers, coders and other specialists.

The study was based at 15 Great Marlborough Street (15 GMS) in London's West End, one of two buildings comprising Sony's London headquarters (Figure 127). At the time of the study, 15 GMS had a total capacity of 441, with an approximate headcount of 360. The project was led by the Head of Studio Operations and the Director of the Creative Services

Figure 127. *Sony London Headquarters in central London*

Group which includes the audio, graphics, video and production teams. The discussion in this section relates primarily to the Creative Services Group (CSG) and London Studio (LS), the largest games development group.

Sony had identified a list of key priorities for the redesign. These were similar to the stated aims of coworking spaces, centring around enhancing collaboration, community, facilitating mobility and flexibility, and enhancing user experience. There were also proposed changes to team and department adjacencies; the most crucial of these were co-locating the distributed CSG teams and locating the LS teams on two adjacent floors. Information provided by Sony included a set of identified priorities, the results of a department survey on essential and desired elements within the space, current and proposed floor plans, photographs of the existing space, and seating plans with details of existing adjacencies and current occupancy levels for each floor.

4.3.2.2 Existing space

Set over six floors of a 1980s office building, the office had not undergone any significant refurbishment since being built and ongoing development had been ad-hoc and reactive, organised through the Facilities team. One of the project leads identified ongoing problems in vocalising their needs to Facilities, with the two departments 'speaking a different language' in terms of experience and priorities.

The space had been planned according to basic efficiencies, maximising the number of desks and providing predominantly enclosed meeting spaces. Each floor had a 'demo room' for testing and demonstrating game play. Informal meeting space was limited to a single area on the second floor, with very limited provision of informal breakout and social spaces. Each floor had an area for a photocopier and a kitchenette with a small shared kitchen and

seating area on the sixth floor (Figure 128).

Interaction was poorly supported by the space, with people apparently collaborating despite their surroundings rather than as a result of them. On-floor shared facilities were located in corridors and while there were some informal breakout spaces, these were so close to workstations that it was not possible to hold a conversation without disturbing adjacent colleagues. While visibility across the floor was good, the arterial circulation combined with densely packed workstations resulted in long routes between desks. Overall, the building lacked any sense of a social hub (Figure 129).

Figure 128. *Zoning diagram*

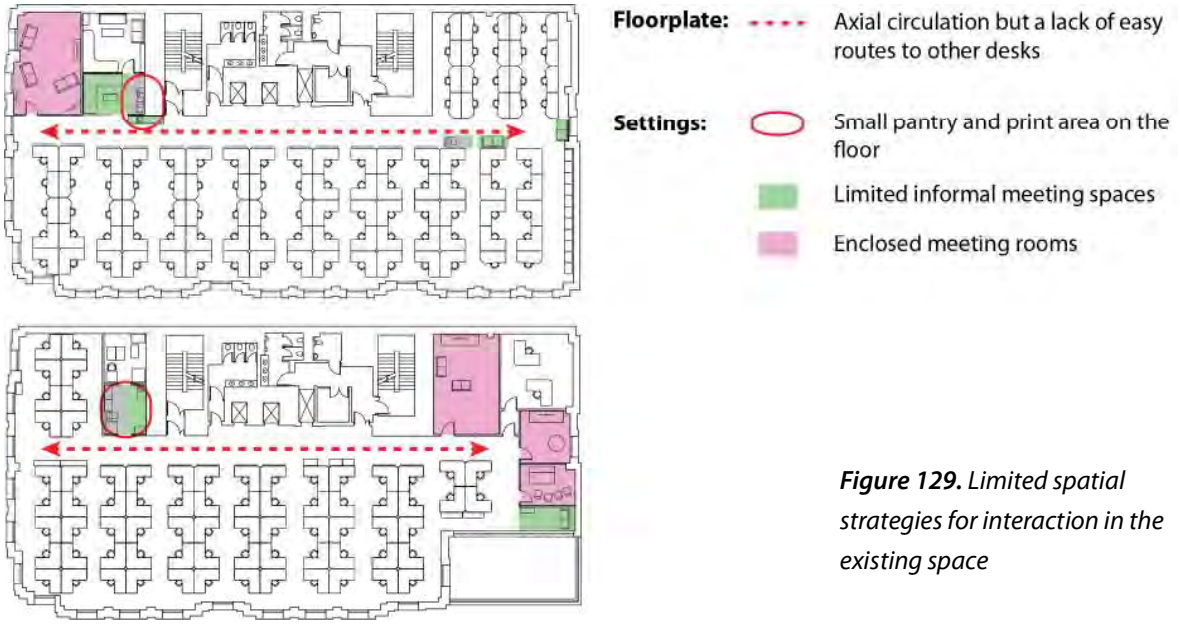


Figure 129. *Limited spatial strategies for interaction in the existing space*

The interiors were dark and featureless, with suspended ceiling grids and the extensive use of blue fabric panelling making the spaces look gloomy and dated (Figure 130). The only sense of the creativity of the work that took place came from images and objects introduced by team members, using the limited wall space available to pin up images of work in progress, and extensive personalisation of workstations with reference materials and small game related objects.

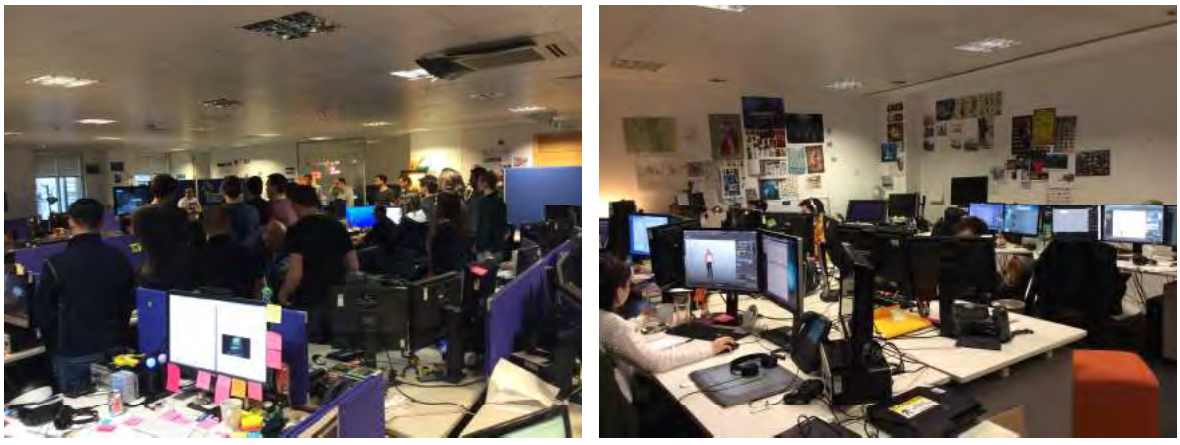


Figure 130. *London Studio interior*

4.3.2.3 Sony workstyles and interactions

Sony follows an agile work methodology, with daily scrums to identify potential issues and set workflow. LS teams were seated in disciplinary groups but could be split out to form smaller, mixed discipline strike teams for specific projects. The CSG groups were seated in discipline teams, with peer-to-peer learning an important part of their process. Two mapping tools were used to guide structured interviews (Section 3.4.3.1) (Figure 131-132). The interviews highlighted the complex nature of games development, with multiple disciplines feeding into the process at different stages and varying needs through the course of a project. This resulted in changing spatial and resource implications, with a common need for creative thinking and planned meetings during early stages, and a more structured workflow reliant on at-desk interactions in later stages of production.

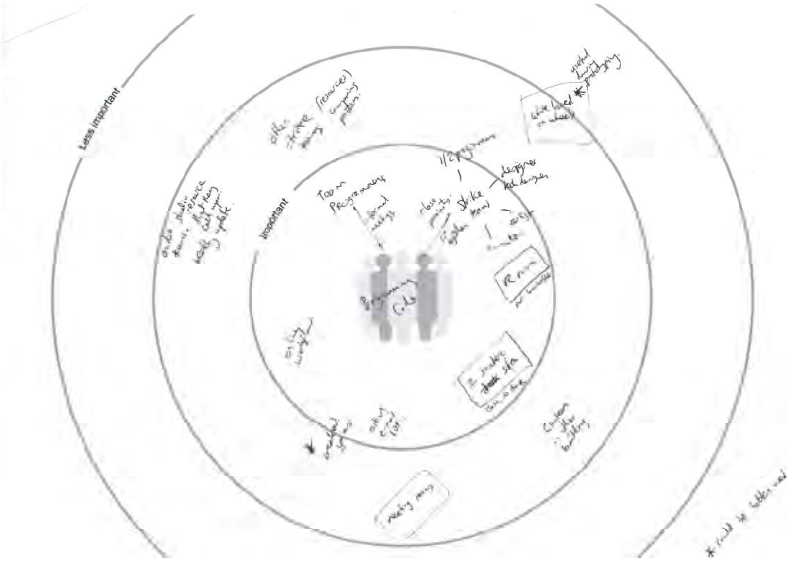


Figure 131. *Example of a completed asset map for a LS programmer*

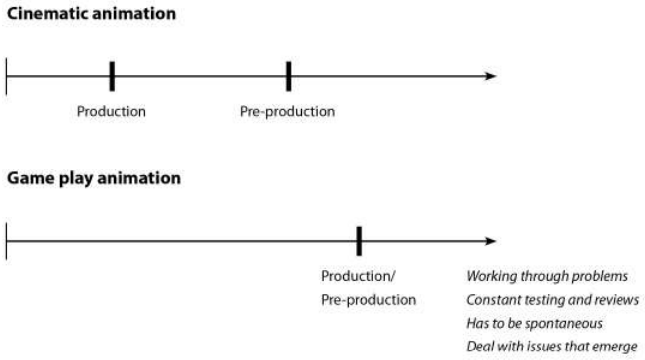


Figure 132. *Interaction diagrams for game play and cinematic animators. For some disciplines the level of interaction was consistent, for others it varied significantly depending on project phase*

Given that enhancing interaction was a central goal of the redesign, understanding patterns of interaction within the complex work processes was critical. While the need for interaction varied, some clear patterns emerged, primarily relating to seniority, discipline, and project stage (Figure 133). These were as follows:

- Although current adjacencies were working well, ease of access was a clear issue due to the identified spatial limitations
- Project leads and producers reported consistently high levels of both planned and informal interaction
- Programmers reported predominantly individual, focused work with some at-desk interactions. Other disciplines varied more according to project phase
- Pre-production relied much more heavily on informal meetings and collaboration with other teams, with a preference for this to happen away from desks. During production, there was a need for high levels of spontaneous, at-desk collaboration in order to deal with issues. Digital communication took 'too long' in these circumstances
- CSG typically worked individually or in planned meetings, with at-desk interaction taking place within discipline groups as needed

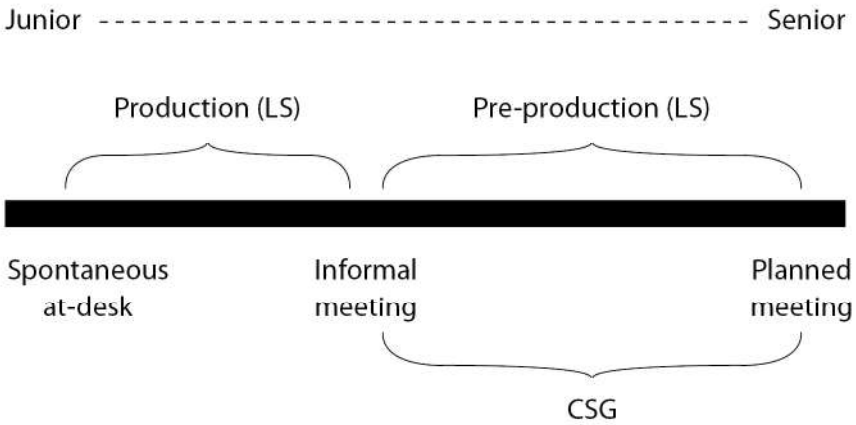


Figure 133. *Type of interaction according to project phase and role*

The interviews also revealed strong social relationships, and a sense that feeling part of a community was important to employees. While social cohesion had some instrumental advantages in supporting peer-to-peer learning, it was therefore not purely an instrumental function. With limited social or breakout areas in which to congregate, Sony staff tended to

go to the canteen in the adjacent building or to nearby pubs, but this had the disadvantage that groups were rarely all able to sit together.

4.3.2.4 Employee experience of Sony space

The research highlighted challenges across each of the functions of space that were identified in the literature review (Section 2.2.2.1). In terms of the instrumental functions of space, Sony had provided the results of a survey asking staff to identify essential, important, and desirable elements; Table 16 sets out the priorities identified in the data. The observations and interviews were used to validate and prioritise these findings. The results suggested that few of their instrumental needs were currently being met, particularly in terms of interaction and flexibility around workstations, the ability to keep project resources at hand, formal and informal meeting space, social space and orientation.

Workstations	Tools and resources	Shared settings	Infrastructure
Enough space on desks for kit	All of our current kit	Team room for demos	Better lighting with no glare
Space for desk visits	Wall space for project work	Game play space adjacent to desks	More power sockets
Space to draw with pen and paper	More storage for games, kit, stuff	Decent refreshment options on floor	Better cabling solutions
Individual lighting	Library space for reference materials	Informal meeting spaces	Improved acoustics
More customisable desk solutions	Consistently sized monitors	Proper space for presentations	Raised monitors
Room to grow	Smartwall	Breakout spaces	More environmental control
Make desk moves easier		Better formal meeting facilities	Better networking infrastructure
Our own, comfortable chairs		Quiet/focus area	Constant temperature
Standing desks		Better/new specialist areas	Meeting room booking system
Improve monitor setup		Access to outdoors	
Better storage at desks		Recreational/off-line game play space	
		Better quality, more varied furniture	

Table 16. *Desired elements identified in the survey data. Black: Present in the space, identified as working well, Blue: Present but limited in provision or poorly handled, Red: Not present in the space. Colours are based on the researcher's observations*

Relating to symbolic and aesthetic functions, there was very little formal expression of the creative nature of the work that took place or any sense of organisational identity. The desire for a stronger sense of identity in the space was articulated at both organisational and team level, with interviewees expressing a wish for a combination of PlayStation branding and individual team display that highlighted recent accomplishments. In terms of look and feel, plants, natural materials, and a brighter, more colourful environment were the most often stated priorities.

Identity	Look and feel
More sense of identity - both Sony and local team	Plants
Display space for objects and game memorabilia	Natural materials
Digital artwork displays that can change	Brighter lighting
Displays of current project work	Brighter, fresher, more colourful
Staff photos	Neutral background with accent colours
Team signage	No suspended ceiling
	New flooring
	More homely
	More modern

Table 17. *Weighted survey data priorities for identity and look and feel*

4.3.2.5 Managing change

The approach to the ongoing management of the space was a conventional organisational one with a resident Facilities team. This was primarily reactive, responding to issues as they arose. With high rates of churn as a result of rapidly changing project requirements, they were also responsible for coordinating desk moves; this was reported to be time consuming for both employees and Facilities.

Recognising that there were significant issues with the space, employees had been allowed to create their own workarounds in some areas. Most had personalised their desk space to some degree, with notes, reference images, memorabilia, photographs or other personal objects. The LS teams had also created two improvised informal meeting areas - one small games review area set up with a sofa, games console and TV monitor, and one informal meeting area with a boundary formed of whiteboards and a rug in the centre. This space was highly valued by the teams that used it (Figure 34 overleaf).

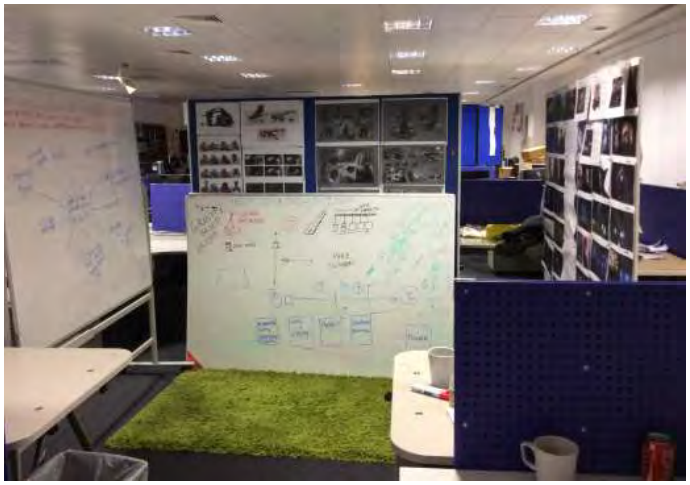


Figure 134. *Improvised meeting area*

4.3.2.6 Developing typologies of Sony workers

Having mapped out workstyles, patterns of interaction and the negative aspects of employee experience, the first step towards developing a spatial brief was to develop a framework that identified the key differences between how the various teams worked. Interaction was mapped against the type of work that people did in the overall production of a game - this was described as 'integration'. Integration describes workflow in relation to the specific tasks carried out by each department, with some departments working on single assets, others working on bringing those elements together, and others working on overarching narrative or at a senior level making more strategic decisions. This mapping was used to identify four typologies of Sony worker based on their levels of interaction and integration: Crafter, Fabricator, Weaver and Consul (Figures 135-136).

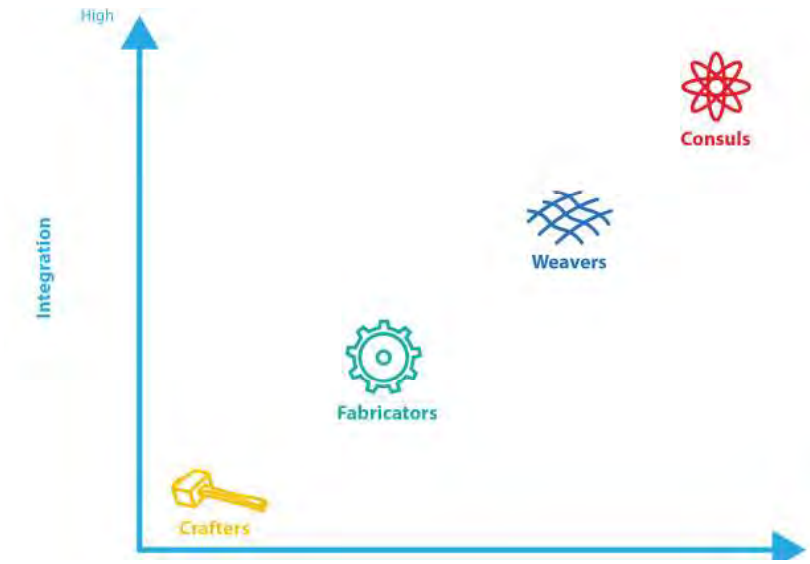


Figure 135. *Typologies by level of interaction and integration*

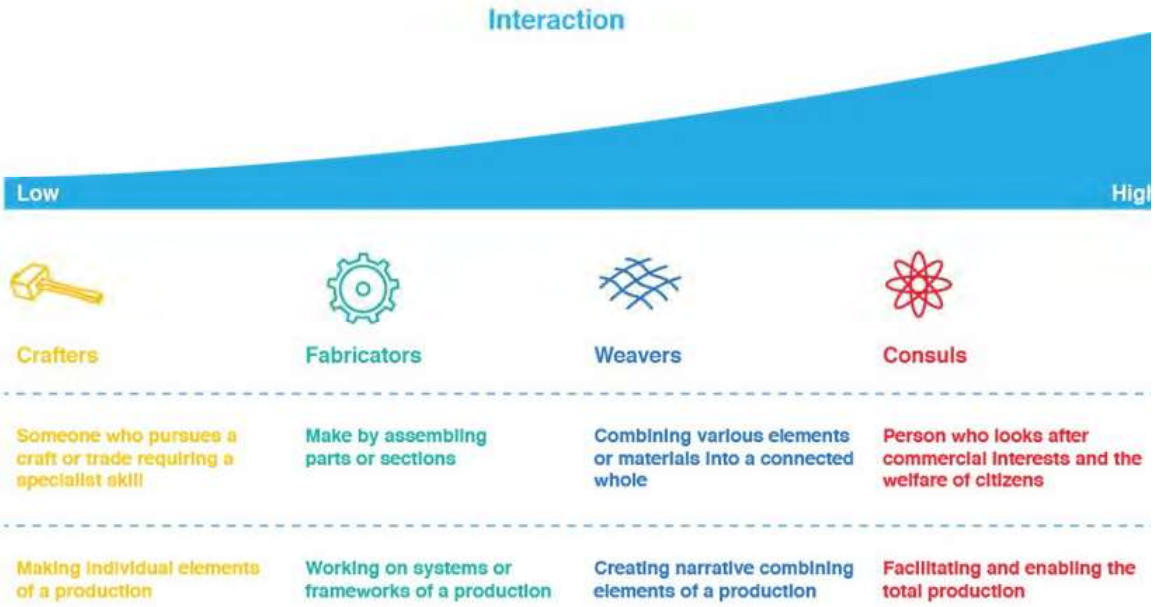


Figure 136. *Typology definition, role and workstyles*

While the aim was to enhance interaction, community and experience across all of these groups, there were varying requirements in terms of specific settings that they needed access to – and where they might best be located on the floor. The differences between Consuls and the other three typologies were the most significant, with Consuls tending to require greater access to private and more formal meeting spaces, and less access to wall or display space. The high-level space needs of each typology are summarised in Figure 137.

Crafters	**Fabricators**
• space to concentrate away from busy walkways • large desks • access to at-desk guest seating • wall space for problem solving • access to review space for both small and larger groups	• space to concentrate • large desks • at-desk guest seating • wall space for problem solving • access to review space for both small and larger groups
Weavers	**Consuls**
• seated in more accessible locations • large desks • wall space for problem solving • access to review and informal meeting spaces of varying sizes	• seated in central, visible locations • smaller desks • space for confidential conversations • access to a range of formal and informal meeting and review spaces • access to review, informal and formal meeting space

Figure 137. *Top level space needs of each typology*

4.3.2.7 The spatial brief

In responding to the typologies, the spatial brief had two main components: a set of high-level priorities and a suite of customised settings. In terms of design priorities, four key areas that needed to be addressed were identified, with recommendations made in each area. These were interaction and collaboration, adaptability and flexibility, identity and orientation. Although this briefing process took place before the coworking research was complete, early observations from coworking spaces fed into the design recommendations. The recommendations in each area are summarised below.

Interaction and Collaboration: Recommendations were made to create larger multi-functional social spaces on the studio floors and in the sixth-floor kitchen to create hubs for social activity that could be used both ad hoc and to support programmed events. These were in addition to smaller social settings for local community activity in teams or discipline groups. More varied circulation routes to generate more movement around the floor and provision for at-desk guest seating were also specified to support ad hoc, informal interaction. It was also recommended that the reception area be reconfigured to provide a more welcoming visitor area where people could meet.

Adaptability and Flexibility: The guidelines proposed that using materials and furniture that were robust rather than 'precious' might help encourage people to take ownership of moving things around and reduce the impact of ongoing changes. More variety in settings was proposed to give people greater autonomy in how they worked. It was also recommended that desk kit be standardised, along with the use of easily reconfigurable furniture to create a flexible layout so that the design studio areas could more easily evolve.

Identity: The building needed to better reflect the creative culture of its inhabitants by expressing a sense of distinctive shared identity. This involved injecting character and brand identity into shared spaces and circulation areas, in addition to providing departments with places to showcase their work to support their sense of pride and identity. Recommendations were also made around creating a lighter, brighter, more welcoming

atmosphere by using plants, colour, maximising daylight where possible and choosing light reflecting materials.

Orientation: Recommendations were made for colour, materials, artwork and signage that could act as landmarks to help differentiate each floor.

In addition to these high-level recommendations, the brief included a full list of the general spaces and more specialist facilities that each typology required access to (Figure 138). While some teams needed individual access to more specialised spaces, a common need was identified for informal break-out space, game demonstration space, review space and informal meeting areas across the typologies.

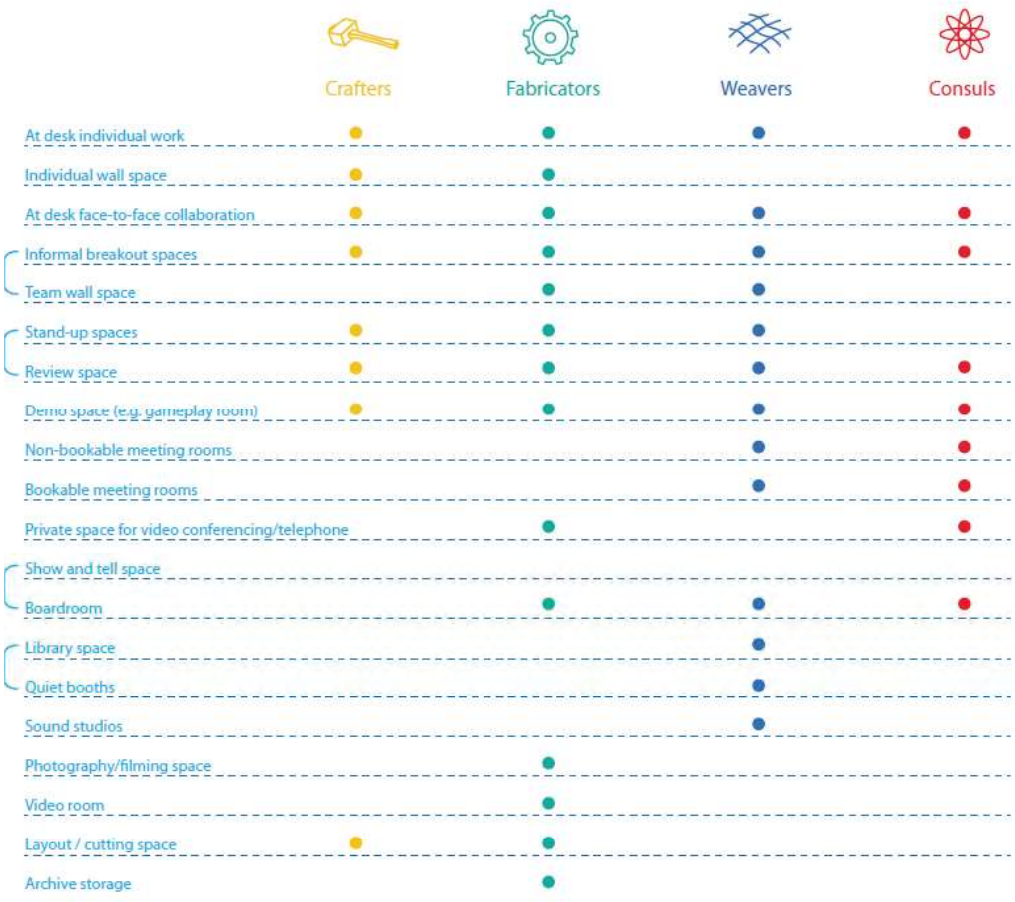


Figure 138. *Space requirements by typology*

The proposed settings were broadly categorised as spaces for community, collaboration and focused work (Table 18 overleaf). The brief for each type included a short description of the space, ideal location, supported activities, defining characteristics, and some precedent

Community	Collaborative	Focus
• Exchange (informal breakout) • Playzone (informal game play review)	• Huddle (informal meeting space) • Lab (game play demo room) • Cabin (formal meeting room)	• Den (one-to-one rooms) • Workbench (at desk work)

Table 18. *Table summarising space types*

images (Figure 139). The brief attempted to define specific characteristics based on the data rather than general typologies, and it is not suggested that the same suite of settings would be transferable to a different workplace. During the process, the names were found to be helpful in making the proposed solutions feel more tailor made, encouraging the Sony teams to feel a sense of ownership - a sense of 'our' space rather than generic space - although this was not interrogated during the research.

The information was packaged up into a briefing document for Sony to pass on to their architect once appointed. While the data collection had identified some issues relating to infrastructure, environmental and networking, these were outside the scope of the study; other than recommendations on lighting and workstation set-up, the data relating to these was passed on to Sony separately.

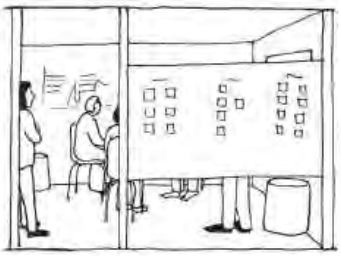
4.3.2.8 Summary of key points

It seemed clear from the initial walk through that Sony's current workplace was unlikely to support their stated goals; these initial impressions were supported by the study with a number of key issues identified in the space. The team felt that the final brief that was developed was an accurate representation of their needs. However, there were also limitations in the brief-making process, particularly relating to understanding and articulating user experience. The following sections will discuss the key observations across space and design processes.

Relating to interaction and community, a culture of knowledge sharing was hampered

Huddle

Informal meeting area/Bus stop



Description

These spaces are non bookable and should be designed to support impromptu conversation and collaboration, providing people with somewhere to work together for longer periods of time without disrupting people at their desks. These spaces are shared by multiple teams, and should be flexible enough to allow people to move furniture to suit different group configurations. Working wall space (magnetic writable walls, whiteboards or writable acrylic surfaces) should be maximised. Providing furniture which can be moved away from the walls would help to ensure this.

These spaces should be located close to main circulation paths to make them easily accessible, and should be partially enclosed to provide a level of acoustic screening and maximise usable wall space whilst remaining clearly distinct from more formal meeting spaces. They can be located anywhere on the floor, but should be clearly identifiable from a distance to enable people to locate them easily.

Activities

Discussing, problem solving, planning, strategising, brainstorming, creating,

The Huddle is used for informal collaborative meetings either within a team or across different disciplines. Used at various stages of a project, this might involve brainstorming new concepts, developing existing ideas or trouble shooting and problem solving. Gameplay and demonstration is an important element of this process but the ability to share and capture ideas manually is equally important.

Defining characteristics

- Accommodates 4-6 people
- Large centrally located screen and associated kit
- Movable soft seating and low tables to create an informal, permissive environment
- Writable and magnetic wall space. Could include movable acrylic boards that can be taken back to team areas to retain work and ideas for a later date
- Well lit, avoiding glare on working wall surfaces
- Distinctive presence in the wider landscape

32

33

Figure 139. *Example briefing pages for one space typology*

by the existing spatial limitations. Some attempts had been made to address this by the LS teams, who had created two improvised meeting areas to give themselves somewhere to map out work in progress; these were highly valued by the teams that used them. The space arguably limited social/community interactions even more than instrumental ones, in which instance the spatial impediments had to be overcome to some degree. While there were some social rituals, these were limited by the lack of space in which people could gather. Creating spaces that supported interaction and the development of community life was therefore crucial.

In terms of the overall experience of the space, deficiencies were identified across all three functions of space identified by Rafaeli and Vilnai-Yavetz (Section 2.2.2.1), with the teams apparently achieving high-quality outputs in spite of, rather than because of, the space. The functional limitations were the most straightforward to identify, with less tangible desired outcomes more difficult to articulate in the limited time available. The small number of user-led adjustments were identified as opportunities for insights into what the space might be missing; these included the informal meeting spaces and desk personalisation. This suggested that a certain amount of agency in organising the space may be positively received. However, while this was encouraged by studio management it created some tension with the Facilities team who functioned entirely separately; this was seen as resulting in a lack of understanding of day-to-day needs.

The research also highlighted some key requirements that were specific to the context of games development, perhaps going some way towards explaining why the team had not felt that the early pitches from architectural practices reflected their needs. This emphasises the need for context-specific research to be an integral part of the briefing process.

The asset mapping approach that was adapted from community planning worked well as a way to structure a conversation about working life, enabling overlapping narratives about space, tools and people to develop rather than handling each one as a separate issue. Inviting interviewees to add elements to the map meant that they were structuring and prioritising information, rather than it being retrospectively filtered by the researcher. Although the asset maps were supplemented with written notes, they also formed a useful

visual aid to memory in the analysis of the data. The primary drawback of this mapping approach was that it tended to limit the conversation to functional aspects of the space rather than talking about experience more holistically. The research therefore relied primarily on the survey data for feedback on other aspects of experience which limited the richness of the potential feedback.

The second issue relating to understanding user experience was the level of involvement of the teams in the design process. Although Sony were committed in principle to integrating employee feedback, this was limited to the initial survey inputs and engagement of a relatively small number of employees. The outputs were validated with Sony, but the researcher wrote the brief for each space type and selected precedent images based on earlier conversations. There were no challenges to any of the spatial proposals; this may have been because the teams felt that the proposals closely reflected their needs, but arguably could have been the result of the researchers having been established as 'experts' by that stage, with individual employees feeling less able to challenge the proposals. Briefing workshops to invite teams to expand on the initial proposals may have been a useful stage in the process, but with limited time to engage with employees had not been possible. This highlighted difficulties around trying to create user-centred design proposals within existing design processes and frameworks.

There were some limitations to the research relating to interaction. The first was the lack of access to digital interactions which could have formed additional valuable information as to the networks of communication. However, most interviewees identified digital interactions as being either primarily social or used to ask someone to come and look at work on screen. A further limitation was the lack of structured interaction mapping, which would have provided a more detailed picture of patterns of behaviour. Finally, the typologies were based on self-reported levels of interaction rather than the kind of structured mapping that took place at BIH and SH. To mitigate this as far as possible, the project leads were asked to circulate the typologies to all of the teams before design solutions were proposed, inviting feedback as to whether they were felt to accurately reflect the character of the work at Sony. Only one classification was challenged by a team, making a relatively small shift from 'Fabricator' to 'Weaver'.

4.3.3 Summary of findings

This section has used the analysis of published articles on recent workplace projects and an organisational case study to explore current organisational workplace trends and priorities in order to locate coworking within its wider workplace context. This will be discussed in relation both to space design and design practice and processes.

4.3.3.1 Space

A number of overarching trends in organisational space design were identified, including design for interaction, a varied palette of settings to support different modes of work, branded space, a reimagined and more permeable ground floor, multi-tenanted buildings, accounting for change and blurred typological boundaries. There are commonalities here with the coworking spatial strategies identified in Section 4.1, suggesting that, in spatial terms at least, coworking does not necessarily represent a substantive departure from wider workplace development. While some commentators have ascribed these shifts to coworking (e.g. Lachlan, 2015), it may be more reasonable to say that both coworking and the front runners in organisational space are reflecting wider cultural and economic changes, which are manifesting in similar spatial terms. Overall, it cannot be argued that the seven identified characteristics of coworking do not exist in organisational space. It could even be argued that large creative industries, for example, leverage space to support interaction much more actively than some of the large coworking providers. With the trend in coworking spaces to move away from an entirely open-plan floor plate, the majority of the floor plan in some larger providers is taken up by small cellular offices, and it is in the programming of routines and provision of digital networks that connections seem most likely to be formed.

However, while organisational and coworking spaces may exhibit similar qualities, it could be argued that these characteristics are much more consistently present in coworking spaces, with most if not all existing simultaneously in some form. Spatial strategies such as enlarged interstitial areas at the boundary between internal and external space were identified as a common feature in coworking (Section 4.1.2.2) and represent a distinct

departure from a traditional organisational reception. While these may be found in some organisational workplaces, most people do not work in the kind of offices that were discussed in Section 4.3.1; these are likely to represent outliers rather than the norm as evidenced by the Sony workspace. The results may also have been affected by the fact that the sampled articles were taken from 2016, just over a decade after coworking spaces first appeared (articles were not available online in sufficient numbers pre-2012/2013 for a more precise comparison). This places coworking at the front edge of shifting preferences in workplace design.

The orientation is also a significant point of difference. While a few articles mentioned enhancing employee wellbeing, there was a strong focus in the published articles on space as a strategic tool for supporting organisational goals – whether behaviours around interaction or organisational loyalty and brand identification. The quoted users were all senior decision makers, and only three referred to any level of end user input. Conversely, the coworking spaces in the study typically emphasised the provision of a desirable end-user experience, focusing on the ways in which space was at the service of the members. Trends such as increasing provision of enclosed offices are likely to be the result of member demand – conversations in this study indicated that growing teams found it difficult to work together effectively or to develop a sense of shared culture in open plan space, so changes in provision may be reflecting what end users are asking for. It should be noted that this may change if the size of member organisations continues to grow, with the potential result of reduced autonomy for individual members.

4.3.3.2 Design practice and processes

The consultancy process at Sony highlighted some limitations of traditional workplace design processes, particularly around interaction, user input, and developing a language for talking about experience beyond simple instrumental needs.

As outlined in this study, there are a number of recognised spatial strategies for promoting interaction within workplaces. The coworking study emphasised the importance of providing social spaces at appropriate scales to enable interaction to take place; this was

lacking at Sony, limiting communication across groups and restricting the development of social routines. The extent to which the proposed spatial changes were able to enhance this will be explored in a post-occupancy study as part of the fourth Design Study. However, the limits of a spatial brief should be recognised. While there was frequent interaction between team members at Sony, departments were relatively isolated from each other unless there was a specific instrumental need, with relatively little informal encounter across departmental lines. Simply designing spaces in which people can come together neglects the importance of transpatial routines and incentives to interact.

The coworking research highlighted the importance of curation and the role of the host in bringing people together; the role of active curation is not something that has been specifically explored in organisational literature. It potentially presents specific problems within an organisational context - at Sony, the work of the coworking host was effectively split across multiple roles with different priorities. The team administrators played a key role in team cohesion and communication, but ultimately had a job to do beyond forging connections and making sure that people had what they need, and care of people/care of space was conventionally split across two departments - Human Resources and Facilities - with apparently little feedback between them. This suggests that there is a need for new roles and research around the relationship between curation and interaction within organisational space. It also suggests that the ongoing activation of the space is a factor that should be explicitly addressed during the briefing process.

In terms of user input, although Sony had an interest in involving employees in the design process, there was no time or budget available for developing customised co-creation processes or involving the researcher in design workshops. As a result, user involvement was limited to a series of interviews and the opportunity to email feedback on the typologies and design brief. As previously stated, this was limited, potentially due to the researcher having been established as the 'expert' in the process. This was identified in the literature in Section 2.3.5 as a common problem in both briefing and evaluation – as previously stated, only three of 48 published projects mentioned any kind of user engagement. While this may have been a simple issue of omission, it was presented in the text as something

unusual and worth highlighting, as opposed to being so commonplace that it might not be mentioned at all.

The research also highlighted the need for a way of talking about the experience of space more holistically. While the methods used in the study were effective in uncovering the instrumental needs of employees and a general desire for a more identity-rich environment, the opportunity for developing a shared understanding of what the desired experience of the proposed new settings might be for Sony employees was limited. If experience is to be foregrounded as a key consideration within workplace design, then ways of understanding what that might mean for specific groups of people are essential.

This section has presented the analysis of organisational space design strategies and processes with an initial discussion of how these compare to the coworking findings; this will be expanded on in Chapter Five. In response to the identified limitations of conventional design and briefing processes in accounting for user experience – and the centrality of experience within the coworking model – the final design study will present the development and application of a user-centred design toolkit for briefing and evaluation. This is based on an experience framework derived from the coworking research. The toolkit has two components. The first is a briefing design game that can be used without expert facilitation, generating visual outputs that add richness to an architectural brief. The second is an evaluation tool that addresses post-occupancy evaluation from a user perspective to form an additional layer of insight to more conventional approaches.

4.4 Design Study 4: Development and application of a user-centred design toolkit

The research has pointed to gaps in existing workplace design processes around user input and experience. These were highlighted both in the literature review and in the previous design study, with consideration of user experience often lacking in organisational workplace design processes. Conversely, the first two design studies pointed to member experience as a central component of coworking. Although employee experience has increasingly become part of organisational dialogue in recent years, coworking would seem to represent a bottom-up model of space provision with a responsiveness to member needs that is distinctly different from traditional organisational provision. If workplaces are to be designed more closely around user experience, this points to a need to understand what experience means to the people who inhabit them. This suggests the need to develop new frameworks and approaches that can be used to guide workplace design and evaluation. This section therefore presents an experience framework and a user-centred experience design toolkit with two components – a briefing design game and an evaluation tool. This design study will present the development and application of this design toolkit.

4.4.1 Experience framework

If experience within workplace is to be foregrounded, then a framework for considering it is needed. Rafaeli and Vilnai-Yavetz's framework (Rafaeli and Vilnai-Yavetz, 2004) outlines the role that space plays for organisations, but this study suggests that it does not fully describe the experience of space for occupants. The existing framework has therefore been expanded and adapted to add two components - 'relational' and 'affective' - and change 'aesthetic' to 'sensory' (Figure 140).

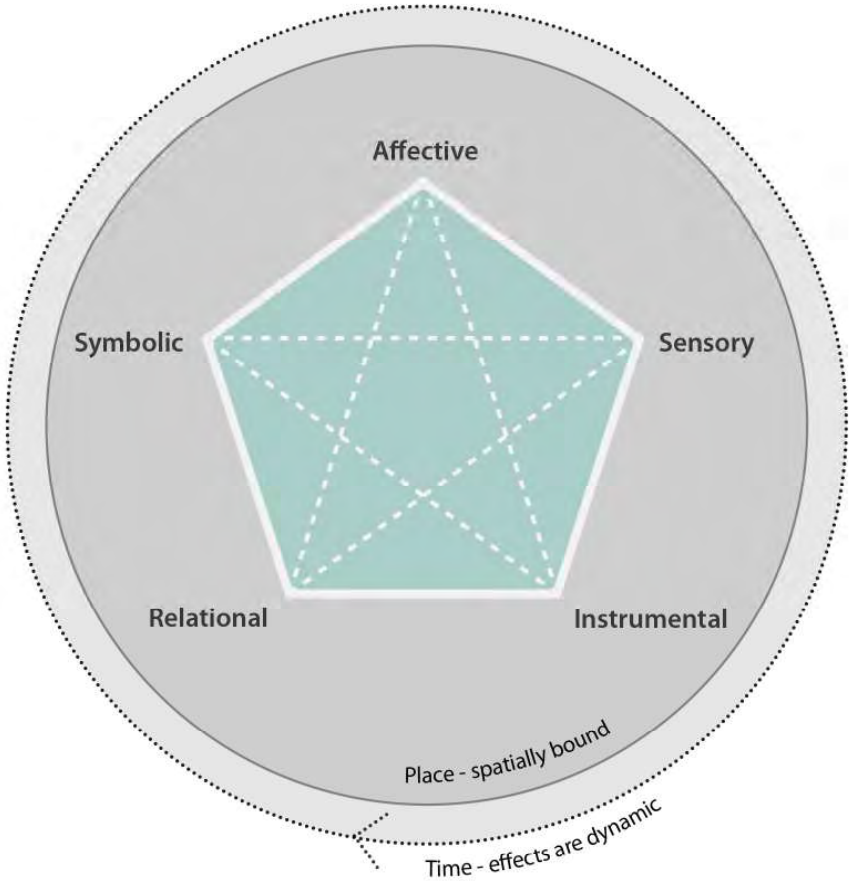


Figure 140. *Experience framework with five key aspects that should be considered. These five aspects are interconnected, spatially bound (our experience of work is fundamentally located), and temporally dynamic (experience can change depending on a wide range of contextual factors)*

Instrumental: The extent to which the physical space supports or hinders specific activities. This aspect is similar to Gibson's theory of affordances. Essentially, are people able to carry out their various tasks.

Symbolic: The associative role of space in the formation of identity, culture and meaning. The symbolic functions of space are arguably even more pronounced when the space itself is the brand.

Sensory: Aesthetic was found to be closely associated with visual qualities. 'Sensory' better describes the full range of visual, tactile, audio and scent inputs that are part of our experience of space.

Relational: People join coworking spaces for reasons that go beyond functional requirements, seeking access to community and social interaction in and of itself, making the relational component of their experience an important aspect.

Affective: Mood or affect is generally wrapped up with aesthetics in organisational research, but it is proposed that it is considered separately. Our affective response to space is a response to much more than our immediate surroundings, with social and cultural background, gender, previous experiences, or even just our journey to work influencing our emotional responses on any given day.

All five aspects are interconnected, spatially bound - our experience of work is fundamentally located - and temporally dynamic, with experience changing depending on a wide range of contextual factors. This framework was used to inform the development of the design toolkit; the following section will present the briefing design game.

4.4.2 Briefing design game

The briefing component of the toolkit can be considered to be a design game (Section 3.3.5). Based on the experience framework, it also drew on findings from the coworking design studies. It was developed in response to an identified gap in the Sony process. The development of spatial solutions was an entirely designer-led process; while the proposed settings were validated with the Sony team, the limitations of time and budget prohibited a more extended participatory process. While there are undoubtedly benefits to a custom designed co-creation approach, the researcher felt that a pre-prepared framework for co-design that allowed for a degree of adaptation in engaging with different organisations would have allowed a wider range of stakeholders to participate. The briefing design game was therefore developed to facilitate a wider conversation around the desired experience of space. It is intended to be carried out following the initial analysis of space needs with a client organisation, and could be administered by a designer who is working with the organisation or internally in instances where the program does not allow for extended professional engagement.

The game aims to create an understanding of users' perceptual frameworks before committing to specific design proposals that limit responses to like/don't like, providing the designer with a set of rich, highly visual information that is the direct product of participants (Restrepo, 2004; Lofthouse, 2006; McGinley and Dong, 2009). The aim is to facilitate a discussion around the desired experience of space that moves beyond simple functional requirements and stylistic decisions, building on the aspects of experience identified in Section 4.4.1. It also aims to create space for negotiation between team members or different groups who might use a space by recognising and accepting contradictions that can be addressed in ongoing dialogue.

While the use of mood-boards is a long-standing mode of client engagement, this process deliberately avoids the use of precedent images. Firstly, unless participants are asked to supply their own images, the designer is inevitably imposing restrictions on the choices available. Secondly, unless the designer is present and has the time available to discuss each choice in depth, there is no way of knowing which aspects of an image people

are responding to. Thirdly, research has suggested that relatively abstract components enable participants to switch into design mode more easily (Valand, 2011; Fronczek-Munter, 2016). Finally, when using precedent images, it can be difficult to escape entirely from overused or popular imagery around particular aspects of work. The game was therefore designed to facilitate a discussion about desired or perceived experience at a level of abstraction. The following sections provide a summary of the design game and its application at the Birmingham Impact Hub (BIH). The full game can be found in Appendix 6.

4.4.2.1 The design game

The game has three stages based on three different scales of analysis, each addressing aspects of experience that were identified as being most relevant to that scale (Figure 141). The following sections describe the three stages of the game.

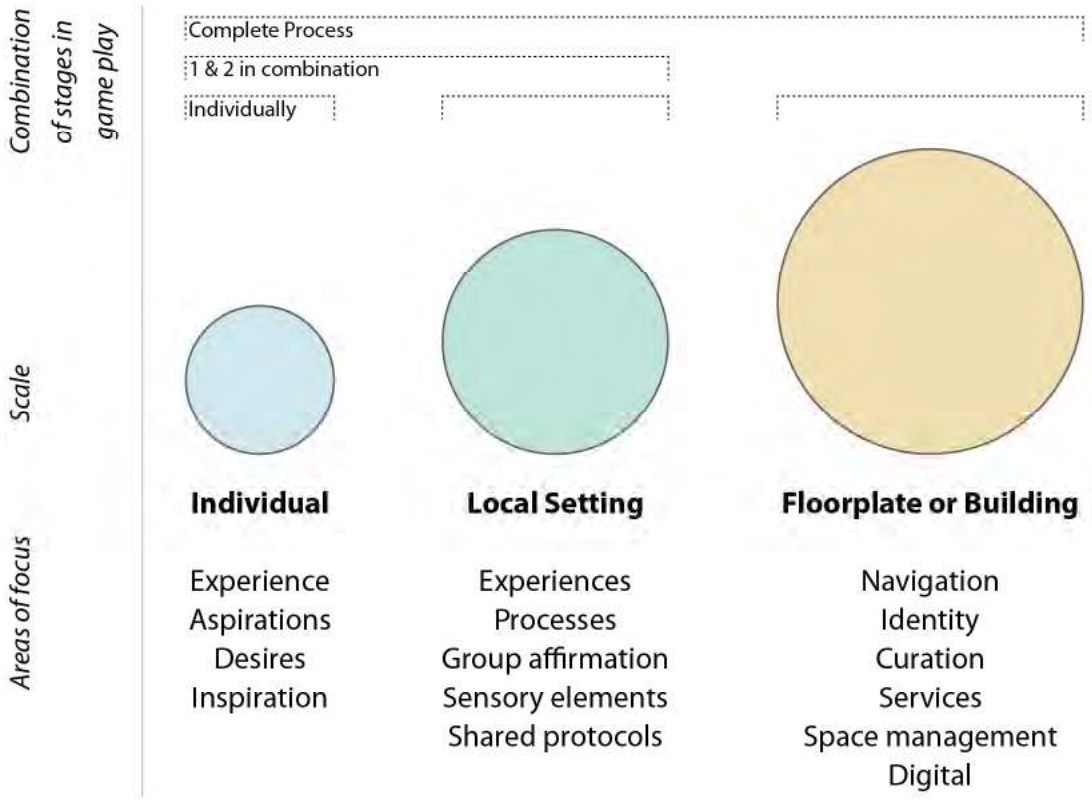


Figure 141. *Scale and focus of each phase*

4.4.2.1.1 Stage 1 - individual cards

The first stage asks employees about their perceptions of their needs, experiences and values by filling out a series of individual cards (Figure 142). The number is limited, making this an exercise that could be completed within a short period of time. Not all of the cards have to be used and they could be tailored to a specific organisational context by adding or substituting questions. The desired outcome is to get people thinking about space as more than a functional container for work, building up a picture of people's emotional responses to space and identifying whether the corporate and employee perceptions of organisational identity and values match (Khanna, 2013).

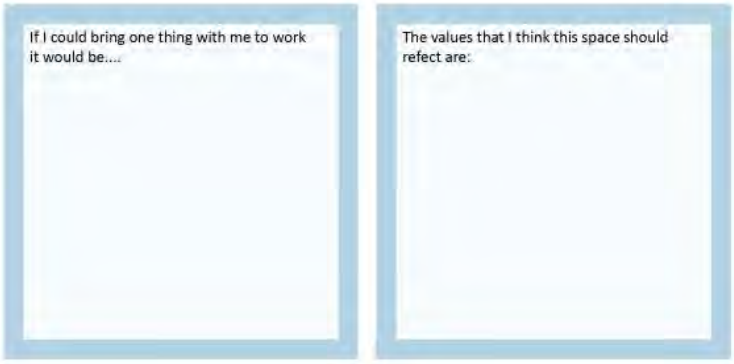


Figure 142. *Examples of the individual values cards*

4.4.2.1.2 Stage 2 - local settings

At this scale, the game describes the qualities of individual settings, moving the conversation away from look and feel by starting with how people want to feel in the space, then considering which physical elements would best support that. It has two main components: settings cards and experience building blocks.

Settings cards: These describe the proposed range of spaces, including both generic types and blanks so that they can be customised to organisational context. The cards include space for describing the activities that would take place, critical adjacencies to other space types, and a series of semantic differential scales asking participants to describe the high-level qualities of the setting (e.g. open-closed/formal-informal) (Figure 143 overleaf).

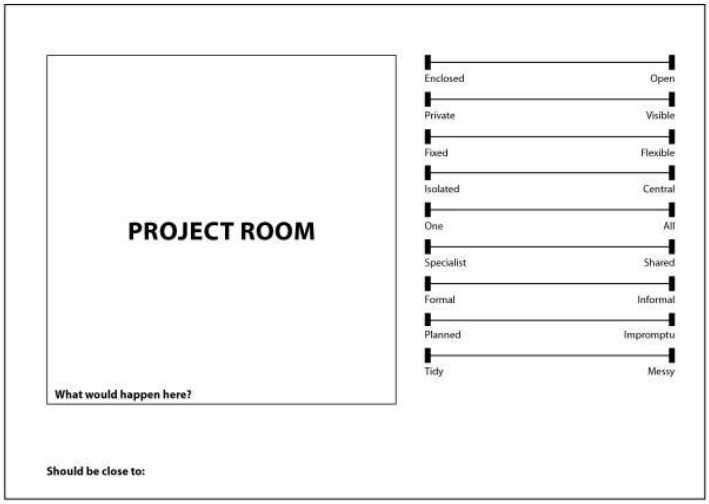


Figure 143. *Example of a blank settings card*

Experience building blocks: The experience building blocks sit within three primary categories that relate to different aspects of spatial experience: tangible, sensory and intangible. Each of these is broken down into sub-categories which contain a series of building blocks (Table 19). The cards are colour coded to allow for easy identification, using neutral language and iconography to avoid premature discussions about specific colours or styles of furniture (Figure 144).

Category	Sub-category	Definition
Tangible	Edges	Physical boundaries and surfaces surrounding the space
	Elements	Furniture/non-structural elements
	Tools	Things that are required to get work done
	Objects	Other small objects which may have symbolic value, express identity, or simply give pleasure
Sensory	Lighting	Type and quality of lighting (e.g. warm, cool)
	Colour	Qualities of colour (e.g. bright, subtle)
	Materials	What surfaces and objects within the space look and feel like
	Acoustics	The auditory qualities of space
Intangible	Protocols	Mutually agreed guidelines around how the space should be used
	Affect	How people feel within space and the values that it should convey
	Atmosphere	Other types of environment that might be referenced
	Postures	How the space is bodily occupied

Table 19. *Primary categories, sub-categories and definitions of the experience building blocks*

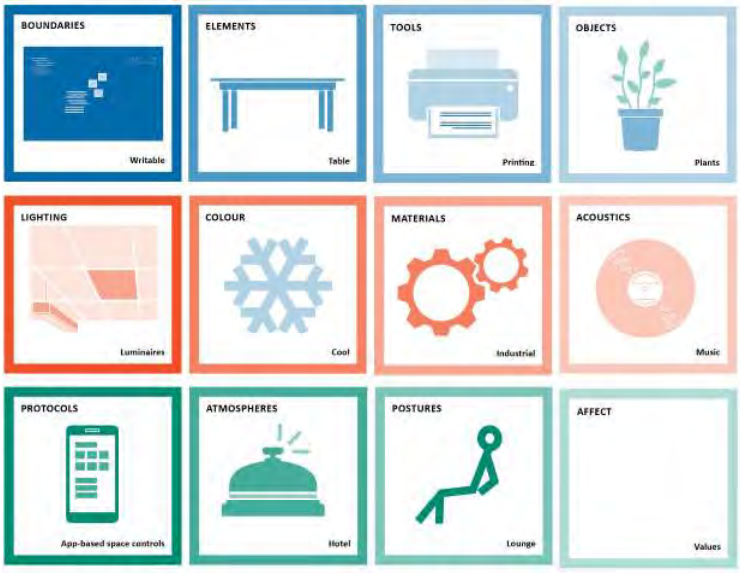


Figure 144. *Examples of the experience building blocks. Blue cards are tangible, orange are sensory and green intangible*

4.4.2.1.3 Stage 3 - building scale

At this scale, the cards relate to the adjacencies, relationships, services and other elements on the floorplate or building as a whole. There are four components: a plan or diagram of the floorplate, space types, experience building blocks and question cards.

Floor plan: This can be a diagrammatic plan which is included in the toolkit, or a printed floor plan of a known building. The first option allows for a discussion around ideal scenarios with no pre-existing constraints, while the second focuses the discussion around existing or known problems, constraints and opportunities.

Space types: These are cards which describe different space types - either the standard set can be used, or they can be customised to reflect earlier findings in the briefing process Figure 145 overleaf).

Experience building blocks: These describe a range of different aspects that should be considered. Each category is split into tangible and intangible elements, reflecting the entangled nature of spatial and non-spatial aspects. It also encourages participants to think carefully about non-spatial elements that might have spatial implications; for example, space management tools that need to be integrated into the design, or programming that requires appropriate spaces in which to take place. The categories include spaces, digital,

services, identity, curation, and accessibility (Figure 146).

Questions: Each category includes one or two questions to act as prompts for discussion.

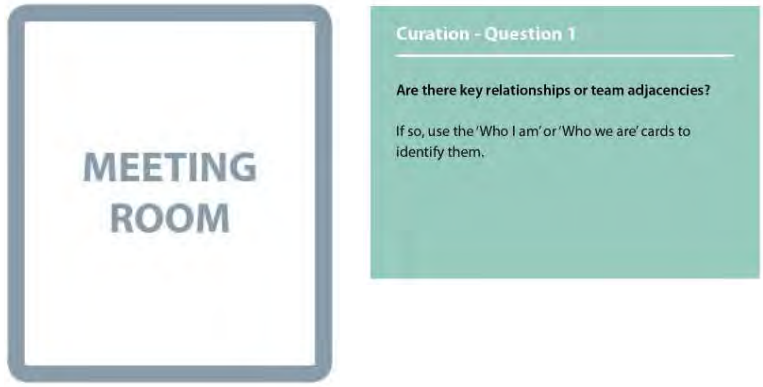


Figure 145. *Example space type and question cards*

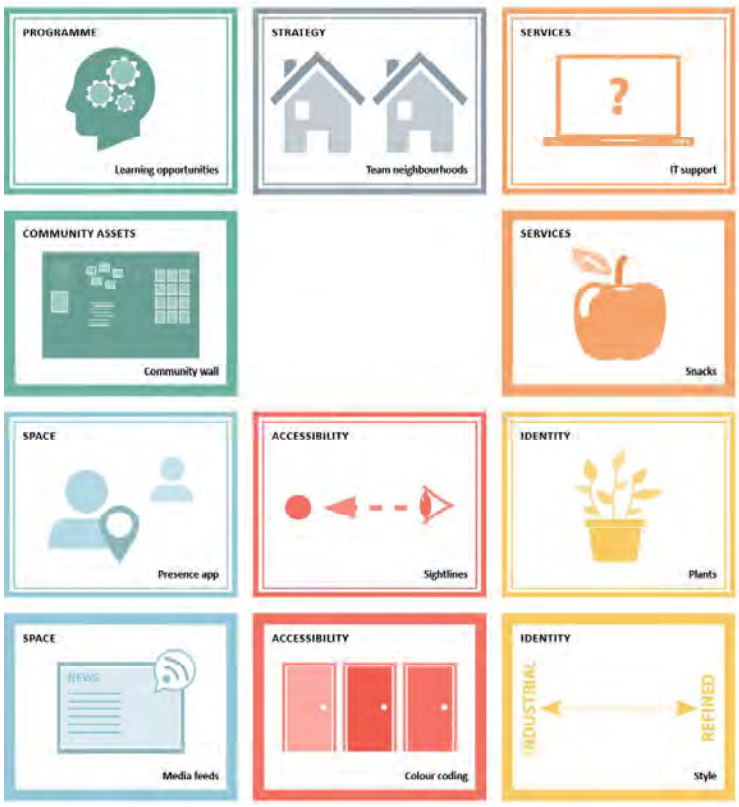


Figure 146. *Examples of the experience building block cards. Green cards represent curation, grey - space, orange - services, blue - digital, red - accessibility and yellow - identity*

4.4.2.2 Workshop at the Birmingham Impact Hub

With wider changes to the space being planned, the design game was played at BIH. With the lease due to expire in less than two years, the team were starting to plan the next iteration. As this was still relatively long-term thinking, they were not yet ready to share this with members; therefore, where the participating members were concerned this was a

purely theoretical exercise. Fourteen members joined the session, although one left after the first stage saying that she liked the space so much she could not imagine anything being done differently. This section sets out the results of the session.

4.4.2.2.1 Stage One - individual values

The cards revealed significant overlap between people's perceptions, preferences and values, with the most variation relating to 'If you could build an inspiration room, what would it contain?'. The cards describing the values that should be expressed by the space could be broadly grouped into five categories which were similar to those expressed by BIH - openness, inclusivity, creativity, welcome, and freedom - suggesting a high degree of overlap between organisational and individual values.

The participants were asked to share two of their cards with the group. The group found it interesting to see other people's responses and compare what they thought the space was about, and liked that the questions covered more than just the functional aspects of space. Participants who had worked in more traditional offices said that, if they had ever been asked about the design, it had focused on purely functional aspects. Overall, the researcher felt that the exercise provided a useful overview of what people felt was important in terms of values, their emotional responses to the space, and their perceptions of community.

4.4.2.2.2 Stage Two - local settings

Participants were asked to either think about a space which BIH did not currently have or about how an existing space might be improved. All four groups chose a space which did not currently exist: office, lounge, project room and brainstorming space. Participants were left to play the game, with the researcher moving between the groups to discuss their responses. The groups running concurrently had the advantage that it facilitated conversation between them, but it equally limited the time that the researcher was able to spend with each one. However, the intention was to create a tool which could still usefully feed into a brief without the designer necessarily having to be present. The following paragraphs briefly describe the results for each group.

Group One: This group was made up of people who usually worked together and felt that a dedicated office would be useful, allowing them to host visitors, retreat to focus when needed, and have their 'own' space. They did not use the 'Affect' or 'Values' cards and found that they generally agreed on everything. The first two results on the differential scale were apparently contradictory - both more 'open' and more 'private'. The group explained that they wanted to describe a balance between openness to visitors and other members and privacy for confidential meetings (Figure 147).

Group Two: The group chose a 'lounge' because they felt it was a space that BIH did not have, explaining that they wanted it to be a true space for relaxing rather than an informal semi-work area. They found that they agreed on everything, so had laid out the cards in a grid so as not to suggest any kind of hierarchy in the results. Although lounge type spaces are often open to the surroundings for high levels of movement and visibility, they selected enclosed/private/isolated, feeling that the space should be acoustically enclosed and located away from work areas so that it could be used without worrying about disturbing people (Figure 148).

Group Three: The group felt that BIH lacked a space that supported creative, collaborative working, and therefore proposed a shared project space. They thought that it should be centrally located and highly visible, representing values of openness and collaboration. Their focus was on elements that supported dynamic occupation with the ability to map out thinking at a range of scales, and with the potential to be opened up to larger groups (Figure 149).

Group Four: This group also wanted a space that supported creative group work to visually map out thinking and ideas. While the differential scales generated extensive discussion, the group worked relatively quickly through the cards, with the tightly clustered layout reflecting their view that every element was important. This group disagreed most strongly about the acoustic qualities of the space, agreeing to compromise on a space that was acoustically isolated from the surroundings, but adding a protocol that music was allowed. They used the combination of flexible, planted and partial boundaries to describe an ideal situation in which the space would open up to the outside (Figure 150).

Figure 147. *Completed exercise for Group One*

Figure 148. *Completed exercise for Group Two*

Figure 149. *Completed exercise for Group Three*

Figure 150. *Completed exercise for Group Four*

The two groups who had chosen very similar space types were asked to look at each other's responses and identify any areas where they had not agreed (Table 20 overleaf). The two sheets were similar, with few items causing any debate between the two. Group Three had identified their space as being for 'impromptu' use, but on discussion agreed that it would probably be good to be able to book it. Group Four had chosen 'silent' as the acoustic condition but had already compromised on protocols around allowing music so there was no real conflict. One other area of difference was in preferences over materiality - primarily 'industrial' versus 'natural' - but both agreed that they wanted a feeling of informality, incorporating wood and varied textures.

Affect	Inspired, up for it, ready to play active role	Inspired
Values	Openness	Respect, courtesy
Atmospheres	Workshop, playful	Workshop, playful, restaurant, home, cafe
Posture	Lounge, dynamic	Lounge, dynamic, seated, standing, recline
Protocols		Keep it tidy, music allowed, quiet space, bookable
Lighting	Adjustable, feature	Adjustable, feature, warm, soft, natural
Materials	Informal, industrial, reclaimed	Opaque, textured, natural, smooth, translucent, informal
Colour	Varied, mid	
Acoustics	Music, lively	Silent
Boundaries	Flexible, planting, writable, occupied, enclosed	Writable, partial, planting
Elements	Shared seating, table	Table, cupboard, shared seating, individual seating
Tools	Stationery, whiteboard, video conference, coffee	Projector, camera, working walls, stationery
Objects	Plants, group display, pinboard/ noticeboard	Plants

Table 20. *Responses across the two groups*

4.4.2.2.3 Stage Three - floor plate

The settings cards that were used included the existing spaces at BIH and the new settings that each group had proposed, rolling the 'project space' and 'brainstorming area' together. Many of the adjacencies remained as currently planned, with new spaces slotting in around them. The one area of debate was the location of the 'quiet working' and 'group working' spaces; locating quiet working away from the busier entrance areas was desirable, but the current rear studio space with its adjacency to the kitchen was considered to work well for events and communal eating. This highlighted the chief limitation of running the workshop as a theoretical exercise, with participants finding it difficult to imagine things that they felt worked well being any different. However, in the context of running it as a 'real' design exercise, this would still be useful feedback, providing information about things that should

not change as well as things that should.

In terms of Curation, the elements chosen largely reflected the existing programme at BIH, with the addition of opportunities for regular project or idea sharing between members to raise awareness of what other people were working on. Services largely revolved around access to food, coffee, and the continuing provision of childcare and IT support, with hospitality available for seminars or other larger events. Digital elements were restricted to intangible provision such as the maintenance of the blog, an online events calendar, and an internal platform for communication between members. The existing spatial expression of the identity of BIH was considered to be optimal, with the use of colour, murals, graphics, and quotes - particularly in the informal and social areas. Accessibility was less of an issue in the relatively compact space - people found it easy to navigate but agreed that the existing presence of signage suggesting the different uses of each space was helpful.

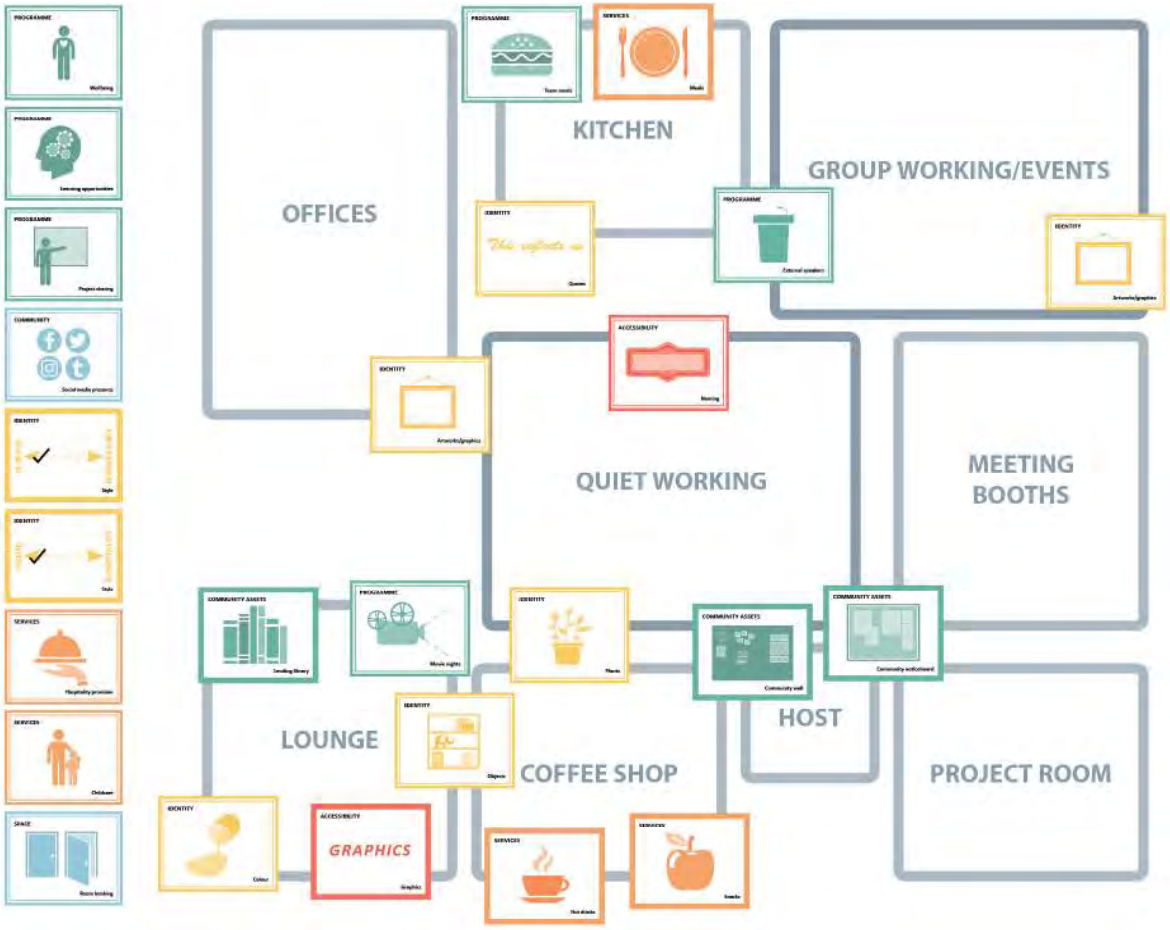


Figure 151. *Representation of the completed adjacencies and elements layout*

4.4.2.3 Increasing the scope

While the game was designed to be downloaded and printed locally, the most significant limitation of this approach is the time that is required to prepare the pieces. In small numbers this is not significant, but would limit its use across larger numbers of people. While design games have been described as face-to-face rather than online tools (Sanders et al., 2010), a digital version would provide the scope to include larger numbers of people in the process, providing access without time consuming preparation and facilitating analysis of the data (Figure 152). The disadvantage of this mode would be limiting discussion between participants, although online inputs could include comment and discussion sections. This was beyond the scope of this study in terms of time and resources but was mapped out as a potential future development.

Individual Values: This would be straightforward to administer online. While some of the analysis could be digitised, it would require human synthesis in order to identify emerging themes.

Local Settings: Settings could be laid out in individual tabs, with drag and drop 'cards'. The size and position of the cards would vary according to the number of people who had chosen that element, creating a clear visual representation of dominant preferences. Additional sections for comments and insertion of chosen precedent images could also be included.

Floorplate/Building: This could be laid out in a similar way, with adjacencies inputted in advance. It would probably require pre-selection of some of the options around digital tools, services and curation to ensure that options were not given that senior management had no intention to support.

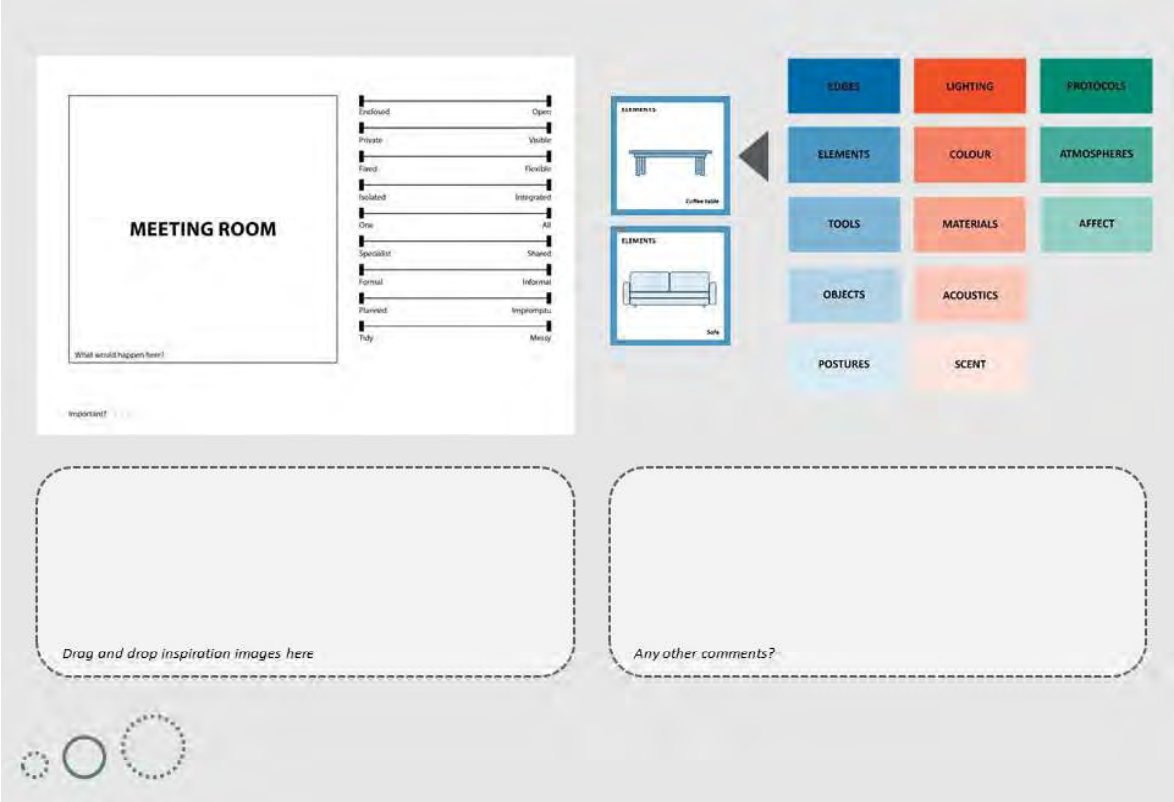


Figure 152. *Potential digital interface layout (local settings)*

4.4.2.4 Summary of key points

The workshop at BIH demonstrated that it was possible for groups to use the game without expert facilitation. However, the insights captured were richer if a facilitator engaged in the dialogue and recorded key points as conversations took place. Input by individuals was fairly evenly distributed during the first and second stages, but at the scale of the floorplate, the discussion benefited from having a single person lead, reading out the instructions and presenting questions for discussion due to the greater complexity of the elements and the larger group size. In terms of the three stages of the game, participants felt that grouping the first and second activities together was an advantage, allowing them to 'get in the mindset', with the third stage potentially working well as a standalone activity.

The cards created a useful framework for opening up a negotiating position between participants, providing some structure around different potential positions. Although the groups typically reached a compromise, participants liked that cards did not have to be completely discarded if people did not agree, creating space for different voices to be heard.

The protocol cards provided a useful bridge between different preferences around sound and access in particular.

Participants were asked for feedback on the process and potential relevance of the game. They all felt that the instructions were clear and easy to understand, with nothing missing in terms of describing their desired experience, and only a few using the blank cards to add additional elements. The most consistent piece of feedback was that they felt the game had prompted them to think about their experience of space and how they would want their workplace to be in ways that would not necessarily have occurred to them, with the cards providing useful structure to questions that might otherwise be difficult to answer due to the broad scope. Although one group chose not to use them, three groups identified the inclusion of emotions and values in the set as valuable, feeling like that is not usually considered within the workplace.

The visual outputs were felt by the researcher to be clear and easy to understand, with only one instance in which there was the potential for a mismatch between the participant's intention and the researcher's reading of their map. Analysing the individual values cards in detail would potentially require some experience in qualitative analysis; people often added a number of responses on a single card, so simply grouping them was not necessarily sufficient to identify key themes. This would be time consuming across large groups of people. While it could be administered online, the aspect of sharing responses with other participants would be lost and the data could only be easily sorted digitally if the range of possible responses was reduced to be more survey-like. Simply grouping the cards did however give a sense of the overall field of response.

The primary limitation of the process in this context was its presentation as a theoretical exercise, which meant that a few participants found some of the questions difficult to answer. The researcher's familiarity with the context also made it difficult to critically analyse how much information this would give a designer coming into an organisation. However, the game was intended to work alongside other data collection rather than as a standalone tool. In addition, the game did not always capture dynamic demands successfully - for example, people might use 'atmosphere' cards to describe a space being

like a café during the day and a restaurant in the evening. This detail would only be captured if the conversation was recorded or if they thought to write it down, suggesting that a 'time' card might be a useful addition.

As previously identified, the success of a brief can only be fully assessed once the scheme has been built and occupied. The lack of consideration given to user experience identified in the post-occupancy evaluation (POE) literature suggests that, in addition to the front end of the design process, foregrounding user experience also requires the development of new qualitative evaluation tools. The following section will therefore present the application of the evaluation tool at Sony PlayStation, using the experience framework as the basis of a user-centred evaluation that focuses on generating visually accessible outputs.

4.4.3 Application of the evaluation tool

This section will discuss the application of the evaluation tool based on the experience framework to the completed Sony PlayStation scheme. The researcher revisited Sony a year after construction was complete. As in Section 4.3.2, the evaluation focused on the Creative Services Group (CSG) and London Studio (LS) teams. The study aimed to develop an evaluation tool that would capture qualitative user experiences in a visually accessible way, aiming to address some of the issues identified in the literature around lack of dissemination of results and a failure to account for user experience (Section 2.3.5). As the study was focused on the development and application of the tool rather than the results of the evaluation, the following sections will focus on this aspect and provide a high-level summary of the evaluation results.

In terms of organisational context, Sony had restructured LS approximately six months prior to the evaluation with fairly extensive staff changeover. A new round of desk moves had also taken place four weeks before the evaluation. The LS teams were at a different stage of project delivery than during the briefing visits, with all of the disciplines focusing on the execution of well-resolved ideas. This meant that problem solving was oriented towards details of gameplay rather than design, with a high demand for short, at-desk interactions and minimal group work outside scheduled meetings. An ongoing refurbishment of the adjacent Sony building meant that parts of Floors 2 (F2) and 4 (F4) had been turned into swing spaces. This meant that Floor 3 (F3) was more densely populated than intended, with a resulting loss of informal areas which is likely to have affected the evaluation.

4.4.3.1 The new Sony space

The design work was carried out by ODB, a UK-based practice specialising in workplace design. The final budget for the project was just over £3 million, with phased construction taking place over approximately ten months. With the CSG teams co-located onto F2 and LS on F3 and F4, the layout had been structured using a diagonal motif to open up circulation routes around workstations, with meeting spaces placed adjacent to teams to

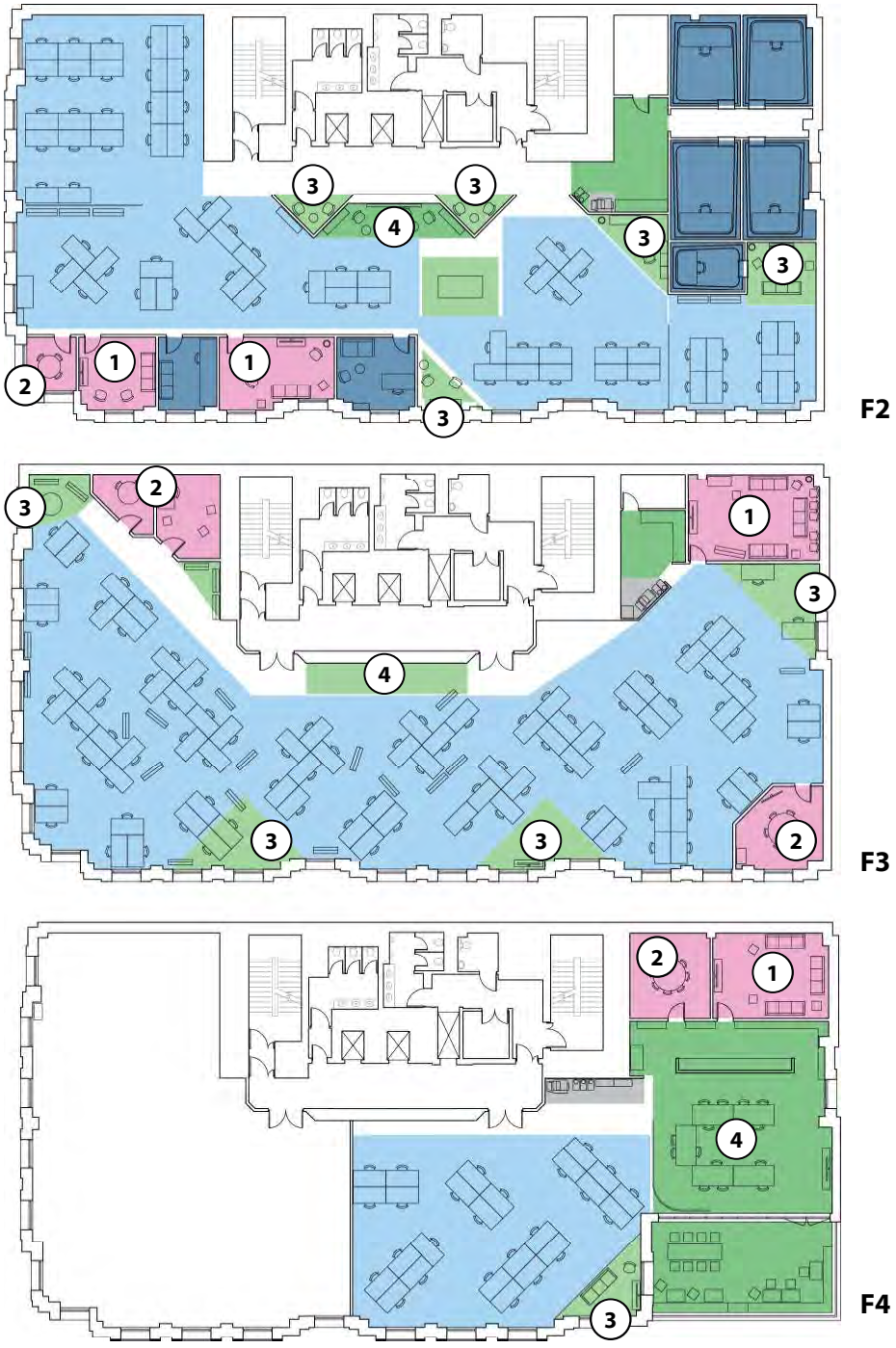


Figure 153. *Floor plans of the new Sony spaces*

give the groups ownership over them (Figure 153). In addition to enclosed and informal meeting spaces, a larger 'Exchange' had been placed on F2 and F4 to provide a social hub for each department. More generally, the space had been brightened up, with an interior scheme based around a neutral background using accent colours to aid orientation (Figure 154).

The teams were closely involved in the ongoing design work, with phased construction providing an opportunity for them to see which design interventions were - or were not - successful as the construction developed and make changes to upcoming phases. Both studio leads felt that it had engendered a real sense of ownership over the building - 'it's ours, we made it' - which had changed the relationship between them and Facilities, giving them more of a sense of control over ongoing changes.

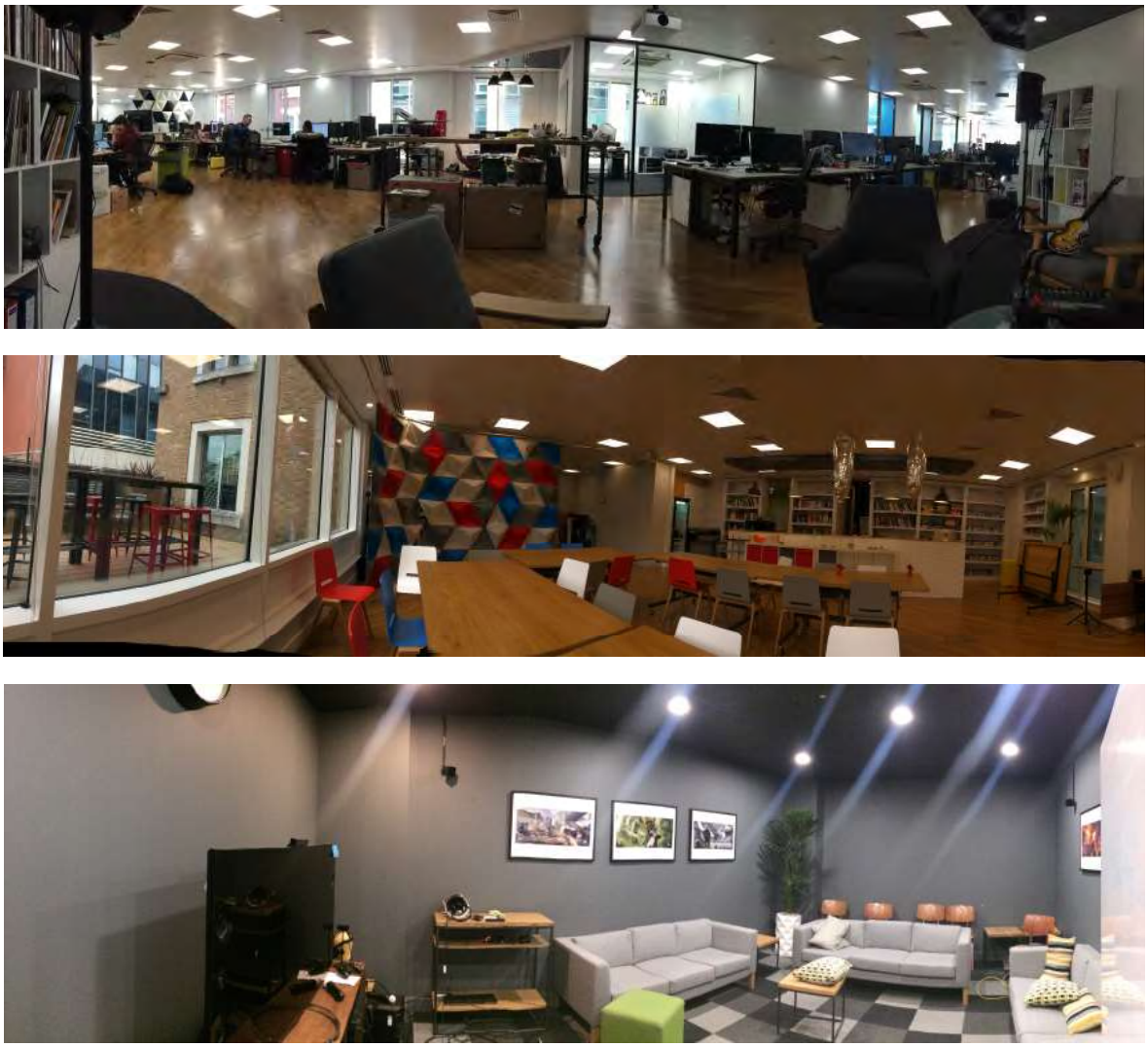


Figure 154. *Top: Open space on F2, Middle: Exchange on F4, Bottom: Demo room on F3*

4.4.3.2 Evaluation methods

The primary evaluation method was the experience evaluation tool developed during the course of the study. Based on customer journey mapping (CJM) techniques (Section 3.3.4.2) in addition to the experience framework (Section 4.4.1), this was designed to capture qualitative employee perceptions of how well the spaces in the building supported their needs in terms of the holistic experience of space. The components and purpose of each element of the toolkit are described in Table 21 and Figures 155-156. Structured interviews using the evaluation tool were held with representatives of both LS and CSG (Section 3.4.3.2).

Toolkit component	Purpose
Floor plans	Identify interviewee desk and key contacts, map out movement patterns, locate spaces used and place best and worst markers
Experience map cards	Capture qualitative feedback on the experience of the space. Different cards were produced for each type of space, creating a daily journey map for each participant
Best and worst cards	Capture feedback on individual most liked and most disliked spaces, features or aspects
Unused space cards	Capture feedback on the reasons why some spaces were un- or under-used

Table 21. *Table outlining the purpose of each component of the tool*

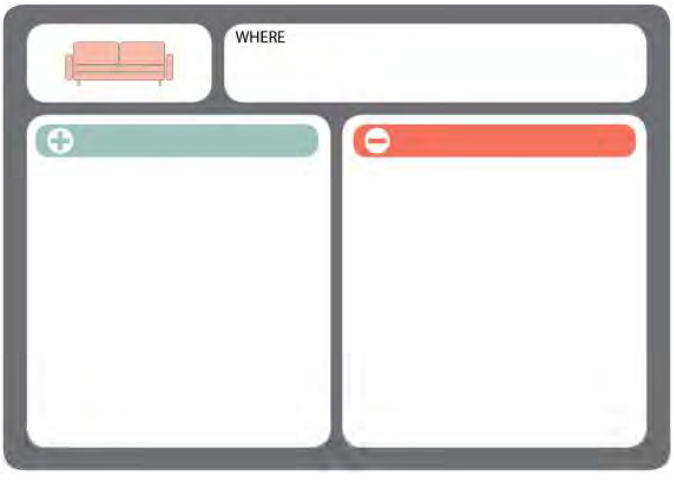


Figure 155. *L: 'Unused' space card. The right hand column captures reasons why it is not used, with space on the left for suggestions that might make the space more usable*
R: 'Best' and 'Worst' cards; participants were asked to identify the three best worst aspects of the space and place these cards in the relevant location on the floor plan

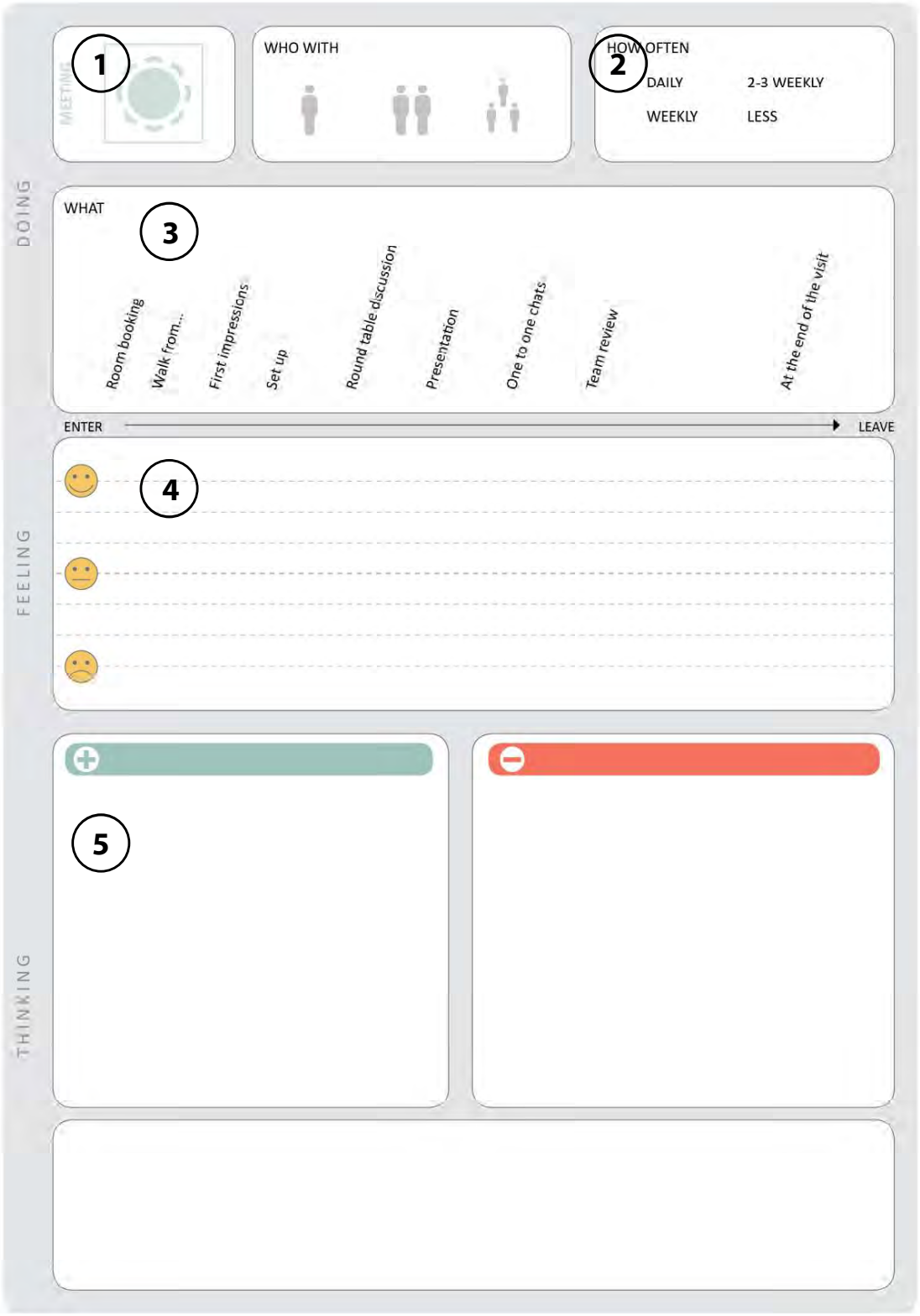


Figure 156. *Example experience map. The numbered key is as follows: 1. Space type, 2. Frequency of use and number of people typically using the space, 3. Activities that take place there (based on first round of observations with space for additions), 4. How participants feel about the space in relation to the identified activities, 5. Capture of qualitative feedback with space for both positive and negative comments. Participants were talked through the structure of the map before commencing*

The tool was designed to add a new dimension to established evaluation techniques rather than replacing them, and it was supplemented by a number of conventional evaluation techniques as outlined below:

Structured space mapping: Occupancy, movement and interactions were mapped, spending one day on each floor.
Observations: One day each on F2, F3 and F4 to conduct ethnographic space observations.
Management led walk through: An accompanied walkthrough of the space to identify key changes and discuss areas where the construction differed from the brief.
Project lead interviews: Semi-structured interviews with the two project leads to discuss their perspective on the success of the refit and any identified issues.
Space audit: Analysis of floor plans and walkthrough to calculate overall space allocations and check which elements of the brief had carried through to the finished space.

These combined methods could be described as an 'investigative' evaluation according to Preiser's classification (1998, 2003), generating an understanding of the causes and effects of design and performance issues to allow solutions to be identified.

4.4.3.3 Outputs and key findings

> 'When you're in prison you don't ask for beer [response to being asked about the reported increase in social activities].' (Bardino, 2018: interview).

In response to identified issues around transferability of results in POE (Section 2.3.4.3), the aim was to create a simple, visual package of information that presented the key findings as far as possible as 'all-at-once' visualisations (Kalbach, 2016: 13). These were condensed into three categories of visual mapping: interaction maps, overall experience summaries, and individual journey maps. These were accompanied by text to highlight the key conclusions at each stage. The findings included both elements that were potentially applicable to future projects and aspects that were highly contextual. This arguably places the findings at a crossover point between Usability and POE; the former is typically considered to consist of feedback to a specific client, while the latter more often refers

to feed-forward into new projects (Jensen, 2010). The following sections will discuss these outputs and the key findings of the evaluation across two primary areas of interest: interaction and community, and the overall experience of the space.

4.4.3.4 Interaction and community

As enhancing collaboration and community was a key aim of the redesign, this section will discuss the interaction patterns, adjacencies and feedback on social interactions and community identified during the interviews and structured mapping.

Interaction was generally viewed to have increased, with a perception that there was more desk hopping than before the refit. This was chiefly ascribed to the new circulation routes around workstations encouraging people to move around more, improved visibility, and new improved spaces for informal and social interaction. Some interviewees felt that the pinwheel layout sparked conversations by making activity more visible than the previous arrangement. Key findings for seated, mixed and standing interactions within CSG are given below (Figures 157-159):

- Although interviewees valued having them, informal meeting areas were infrequently used. With the smaller informal areas viewed as 'belonging' to adjacent teams, the Exchange was particularly valued as a space in which the disciplines could come together
- Most interactions took place at workstations
- The 'collaboration table' acted as an important attractor for serendipitous encounter; this was a space which had been created by two team leaders rather than being part of the brief. Visibility and proximity to primary circulation were both factors in the size and frequency of interactions
- The kitchen also acted as an attractor, but with less visibility it was down to chance rather than people being drawn into an observed social exchange

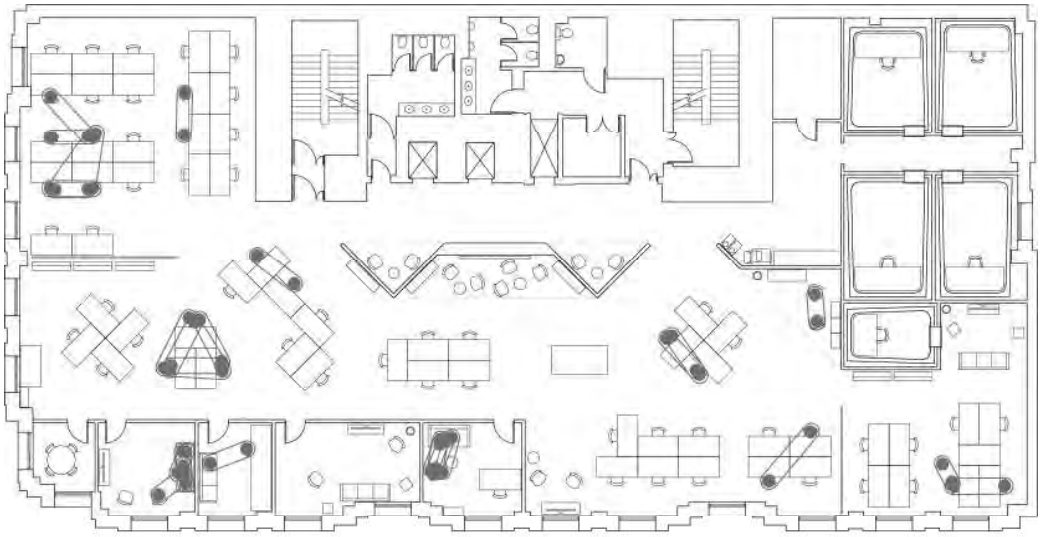


Figure 157. *Seated CSG interaction map*

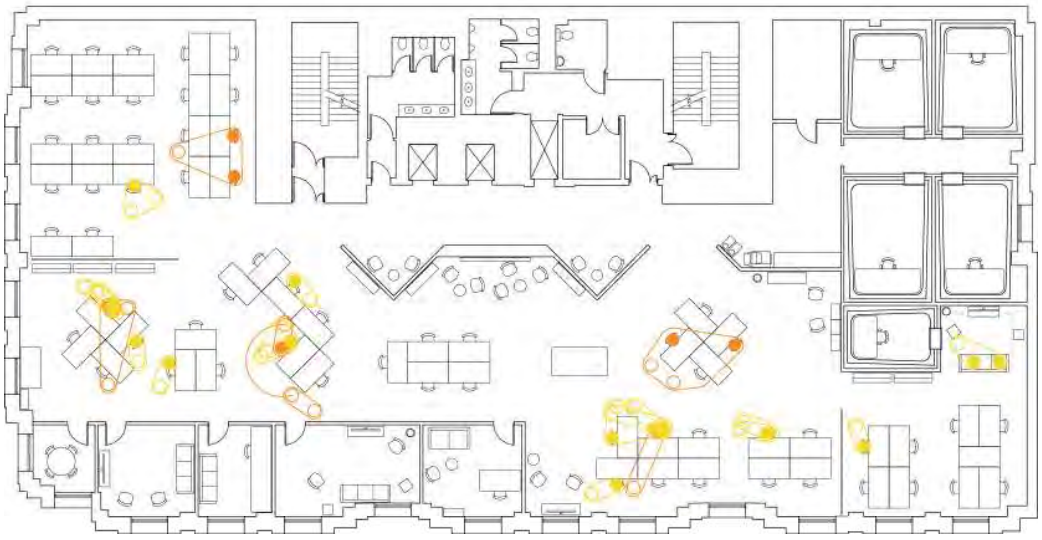


Figure 158. *Mixed CSG interaction map: orange – recruiting; yellow - visiting*

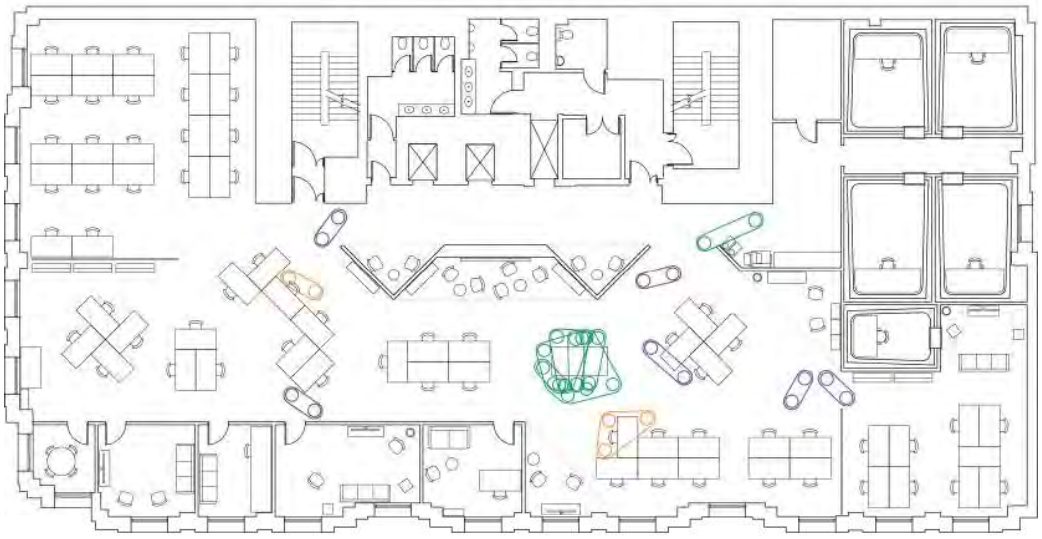


Figure 159. *Standing CSG interaction map: green - attractor based patterns; orange - recruiting; purple - movement between spaces*

Key findings for seated, mixed and standing interactions within LS are given below (Figures 161-163, right):

- Most interactions took place at workstations with a high incidence of visiting behaviours. Additional participants were often recruited into these conversations as they walked past
- Seated interactions did not indicate pre-planning or intent to stay, with people taking advantage of small mobile stools when they were available
- The Exchange on F4 acted as an important attractor, with people visiting to attend meetings, get hot drinks or snacks and pick out items from the games library. The two meeting rooms in this area were the most heavily used because of the proximity to the coffee machine which created a bump zone
- The LS teams reported that they used the 6th floor kitchen less than they had previously; although the new Exchange space on F4 had strengthened departmental bonds, this had the effect of reducing chance encounters with members of other departments

Feedback on adjacencies varied between CSG and LS; in general, those within CSG were less problematic, with all interviewees identifying their most important interactions as taking place with those sitting closest to them (Figure 163). The relatively compact floor plate meant that they were all in close proximity and the level of visibility meant that it was generally easy to see whether someone was at their desk.

Figure 160. *CSG typically identified their own discipline group and at least one member of the production team as key contacts*

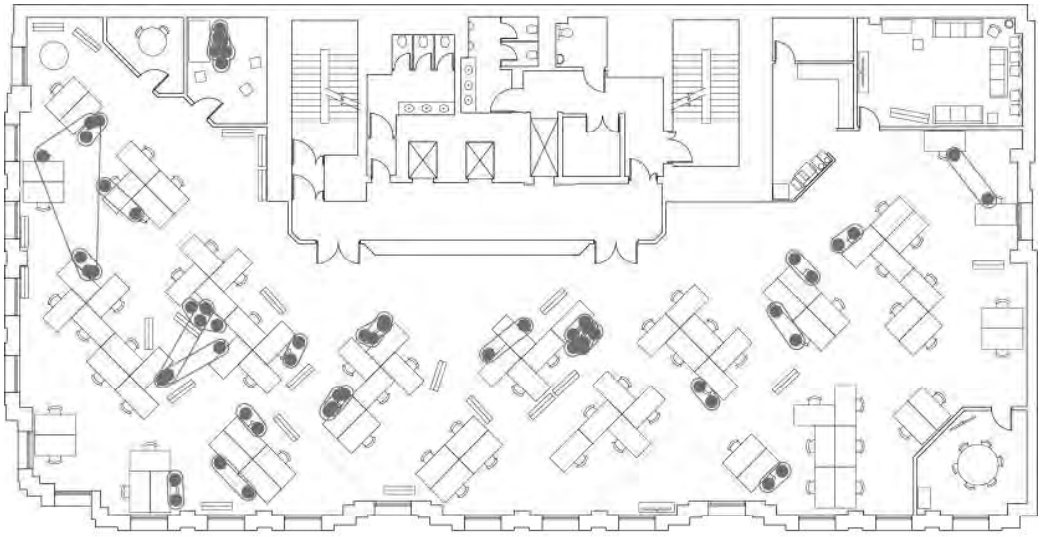


Figure 161. *Seated LS interaction map*

Figure 162. *Mixed LS interaction map: yellow - visiting behaviours; orange - recruiting*

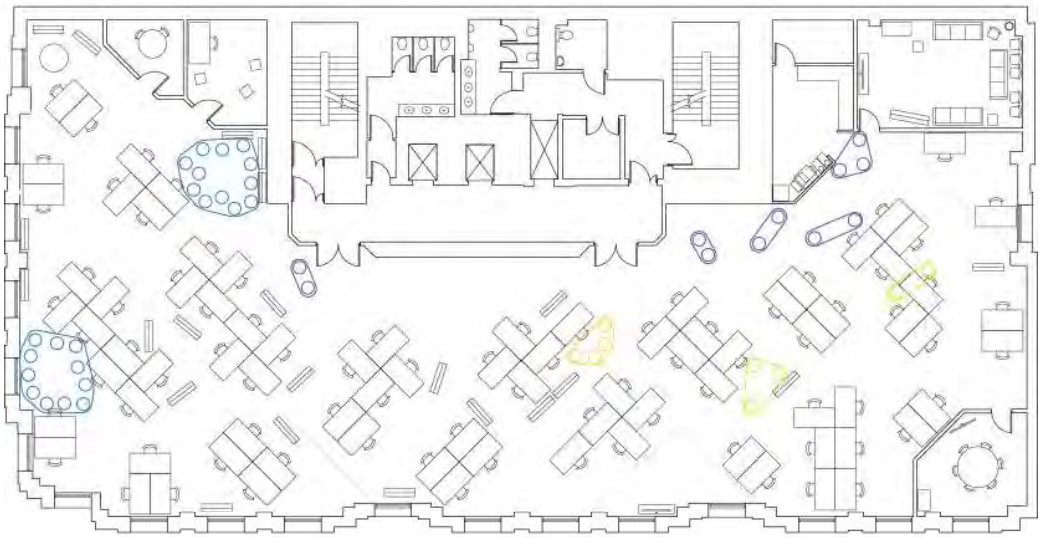


Figure 163. *Standing LS interaction map: blue - standing meetings; yellow - visiting behaviours; purple - movement-based interaction*

Team adjacencies were more problematic for LS team. The results could be grouped into the following categories:

1. Contacts spread across the floor, highly mobile workstyle.
2. Key contacts within close proximity.
3. Split across floors but with most frequent contacts close by. Digital messaging was used when physical presence was not required.
4. Seated in mission teams but with a feeling of isolation from discipline groups and reporting a sense of missing out on peer feedback. This was viewed as an emergent and spontaneous process that relied on proximity.

Figure 164. *Clockwise from top left: 1. Highly mobile and dispersed contacts; 2. Key contacts close by; 3. Most frequent contacts adjacent with some on a different floor; 4. Seated in mission teams with regular contacts close by but sense of isolation from discipline groups*

In terms of social interaction, participants commented positively on a new sense of studio culture. They highlighted a significant increase in social programming enabled by the space, including external speakers, music performances, presentations, training, regular after work drinks, movie nights, yoga classes and live streamed parties. These were predominantly facilitated by the 'Exchange' spaces on F2 and F4 which had become important hubs for both planned and informal social exchange. Both studio leads identified a perceived change in the 'vibe' of the office, feeling that people were more engaged with the culture and the

space – the Director of CSG reported that two of his longest serving members of staff had said that this was the most they had ever enjoyed working at Sony. While the space enabled this new social activity, it was both facilitated and limited by the human resource. The LS team administrator was identified as a significant driver of the cultural change, with organising CSG events spread across a small group of motivated employees. However, the CSG studio lead noted that while they would like to offer more, events took a lot of time to organise which limited their frequency.

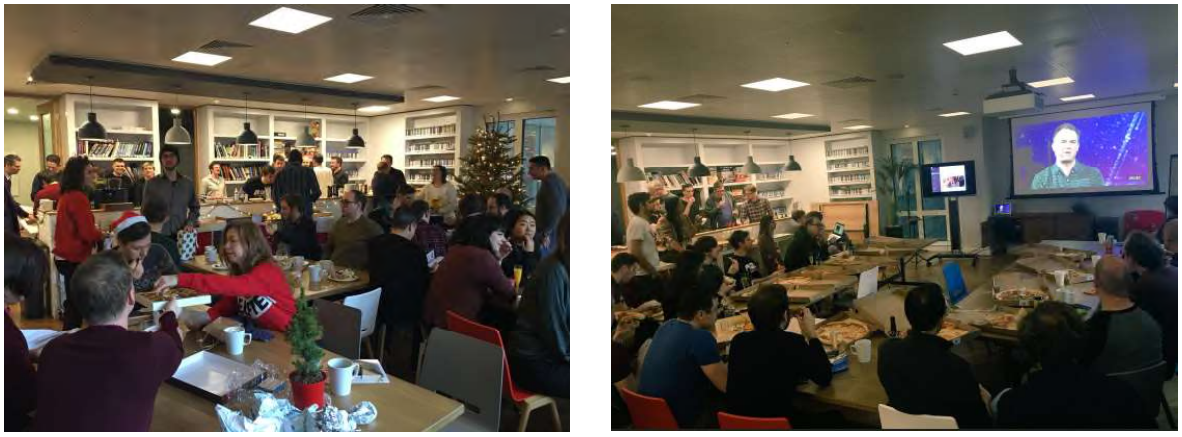


Figure 165. *Twitter feed photographs of LS Christmas party and pub quiz event*

4.4.3.5 Space and settings

This section will outline the outputs and key findings relating to the overall experience of the space. Four different visual maps were developed to provide a summary of the collected data: best and worst maps, a floor-by-floor experience overview, individual journey maps and collated journey maps. Similarly to the interaction maps, these were designed to provide a visually accessible 'way in' to the information; in the final report, these were accompanied by notes to highlight and expand on key findings.

The best and worst maps were based on participants' identification of the three best and three worst elements in the space, compiled across all interviews (Figure 166 overleaf). This provided a quick, simple overview of highlights and negatives with relatively little detailed information. For both CSG and LS, most of the 'best' aspects related to spaces which supported social and informal interaction, with the Exchange spaces in particular providing points around which a new studio culture had been able to develop. Most of

the 'worst' comments centred around infrastructural issues such as problems with the lifts, bathrooms, temperature and acoustics. The rest tended to relate to overcrowding as a result of the temporary swing space or the perception that a workstation location was particularly undesirable.

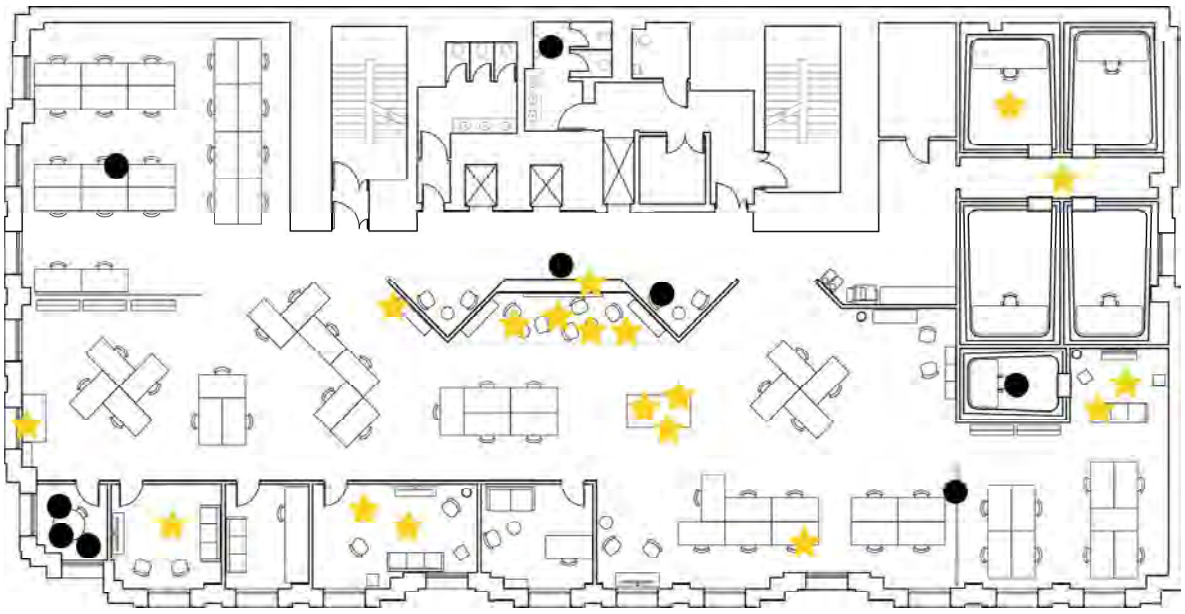


Figure 166. *Best and worst aspects of the space*

The experience overview provided a floor-by-floor visualisation of positive and negative experiences based on the elements identified in Section 5.5.1 (Figure 167). The colours refer to different aspects of the feedback and the size of the icon indicates the number of people who made the same comment, creating a simple visual heatmap of key comments. This visualisation provides a more detailed overview into the specific aspects of experience which were affecting overall feedback, allowing for the identification of possible solutions to be focused and prioritised. Key findings included:

- Although participants felt that the building was more cohesive, brighter and less corporate, there was an almost universal feeling of a continuing lack of expression of creative identity with the interior space described by one employee as being 'like a showroom'
- The other largest single issue related to sensory aspects, including complaints about noise impacting concentration, light glare on screens for art teams and temperature. Turning the lights down then caused problems for others who felt that it made the

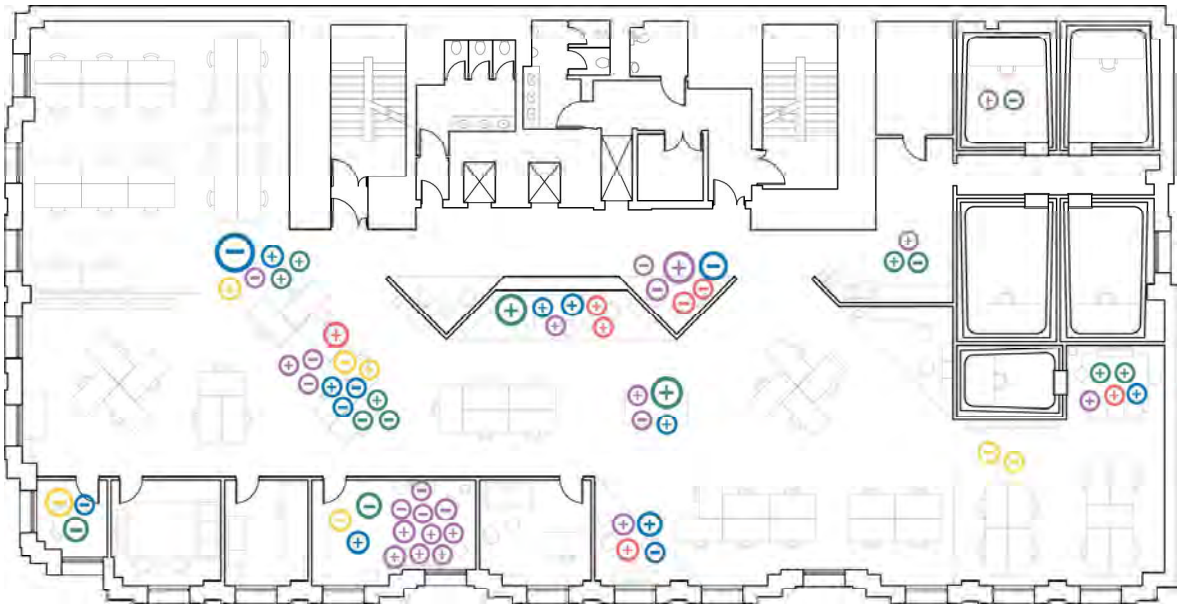


Figure 167. *Experience overview: purple – instrumental/functionality, blue - symbolic, green - relational, yellow - sensory, and pink – affective. Plus signs indicate positive feedback, minus signs negative feedback*

space feel gloomy

- People's feelings about the extent to which both social and work-related interactions were supported were very positive
- For LS, there was an issue caused by a recent decision to focus on Virtual Reality (VR) games development. The teams had found that the back to back desk arrangements meant that their controllers could be picked up by someone else's camera, resulting in disrupted game play. Some employees had compensated by moving the whiteboards to block adjacent cameras. While this solved the issue, it made the boards unavailable to others, reduced visibility across the floor, and made at-desk interactions more difficult (Figure 168 overleaf)
- The informal meeting areas on F3 were being used as overflow space. While these were felt to be a potentially useful future resource, their location was not ideal with the teams who would use them most now located further away
- Several interviewees within LS reported that it was difficult to work out the quickest way of getting across the space; with recent moves they were having to renegotiate routes on a semi-regular basis
- Some workstations were felt to be undesirable in location, resulting in resistance to desk moves from more senior staff
- Desk moves were easier but there was less scope for employees to make changes to

spaces such as internal meeting areas which were anchored to particular locations

- More minor issues included a lack of storage, domestic furniture not wearing well, a lack of fresh air at the end of long meetings, and the configuration in some informal meeting rooms being awkward for more than two people having a discussion

Finally, anonymised individual journey maps were developed to summarise the feedback from each interview (Figure 169-170). These showed the spaces used, frequency of use, number of people typically using the space, category summary of positive and negative comments, and experience mapping across various activities within that space. These linked the experience overview with specific activities or aspects of an employee's day to provide more detailed information. A compiled journey map was also provided for each space type, placing individual responses side-by-side to enable a quick visual identification of the most common pain points that could be used as the basis for solution-finding based on the most common issues. For example, the meeting room feedback revealed some common issues around room booking, set-up and kit, and lack of game material.

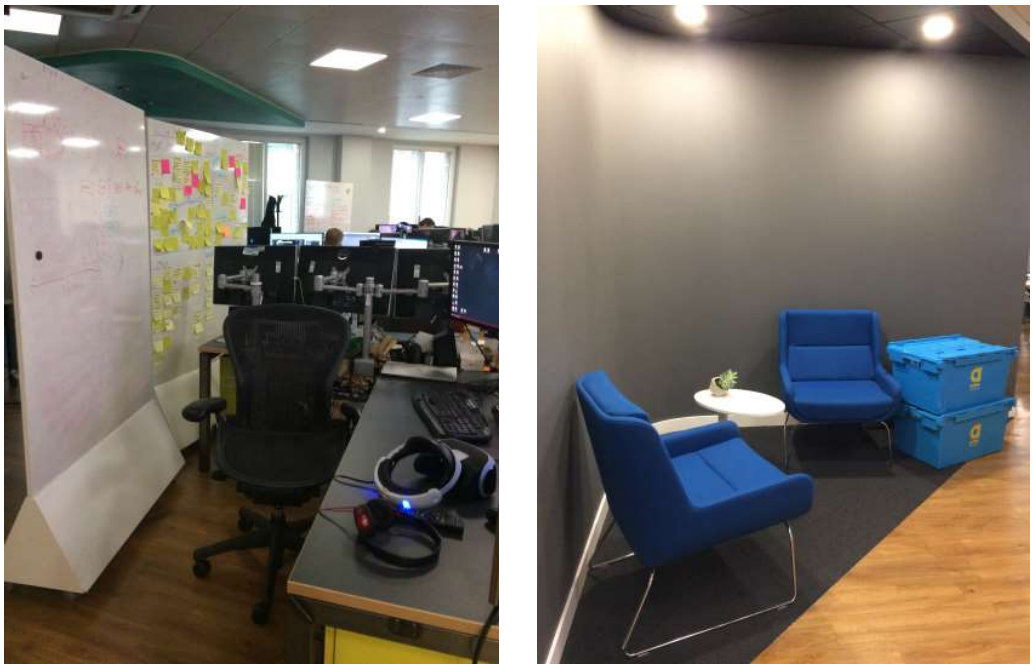


Figure 168. *L: Whiteboards used to block move controller signals, R: Under utilised 'Huddle' space in the corridor*

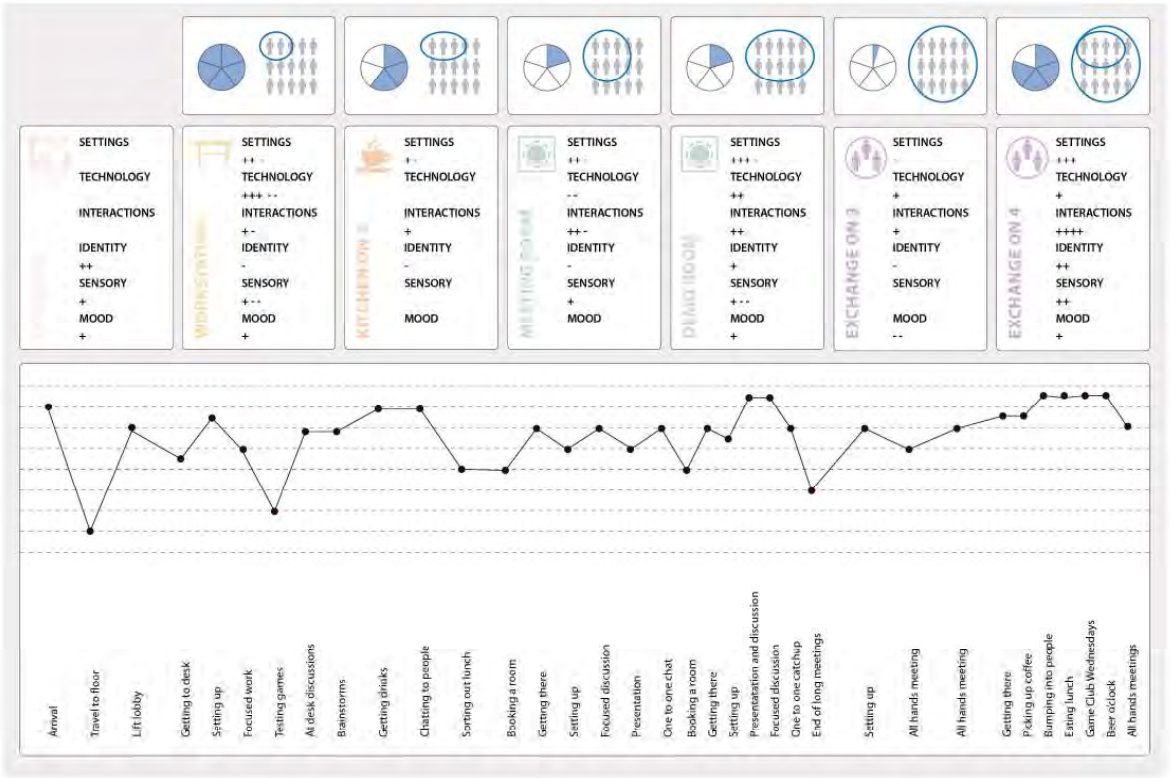


Figure 169. *Individual experience maps*

Figure 170. *Compiled experience maps for formal meeting rooms*

4.4.3.6 Summary of key points

The evaluation tool asked people to think about their experience of the space in a qualitative and multi-faceted way that went beyond an analysis of efficiencies or technical elements. On the whole, the tool acted as an effective way to engage people, stimulating them to think about different aspects of their experience through the day, with the photographs providing a useful aid to memory. For the purposes of the study the interviews were recorded and transcribed, with the transcriptions compared to the notes taken during interviews to check whether the process would still provide enough detail without recording and transcription as this is too time intensive to be realistic in every professional context. The researcher felt that, while some detail was inevitably lost, the key points were successfully captured.

Most participants were not accustomed to thinking about their experience at work in anything other than functional terms, and each interview ended up starting with a discussion about what 'experience' meant in this context. They were provided with a description of the research aims and process prior to interviews; this could usefully have been expanded to include a more detailed summary of the different dimensions of experience at work, the reasons for considering them, and an introduction to the mapping process so that they knew what to expect. If the same people had been involved in using the briefing design game this may not have been necessary.

In terms of dissemination, the project leads found the visual presentation of the information easy to understand, and appreciated that it included positive comments as well as indicating weak points. There was perceived value in differentiating between one-off comments and feedback that was repeated by multiple employees; it was the most vocal employees who tended to make complaints, making it difficult in some cases to judge the extent to which it was a general issue. The Head of LS was particularly interested in mapping team and individual interactions; the question around adjacencies identified some issues that would bear further investigation around seating people in project teams versus discipline teams. This was outside the scope of this study, with suggestions made to request a budget for more detailed analysis of this particular issue.

In a similar way to the briefing design game, the evaluation tool could be developed into a digital interface which would allow for easier cross-referencing and the potential for ongoing dynamic experience mapping as changes are made to the space, or as new employees come in. This was outside the scope of this study.

In terms of the key aims of the redesign – enhancing interaction and community, improving employee experience and making the space more responsive to change – the evaluation revealed somewhat mixed results, with the space overall more successful in meeting Sony's needs than not. The lack of structured interaction mapping at the briefing stage meant that it was not quantifiable, but interaction was perceived to have increased and the new social spaces had provided locations around which community activities could be built. However, the strengthening of relations within the two departments individually appeared to have reduced their interactions with other departments in the building; the full impact of this would require further investigation. The CSG 'collaboration table' presented an interesting space; it generated the most serendipitous interactions but had not been part of the brief. It almost had an undesigned quality - a designer might have tried to 'ground' it by adding a change of flooring or light fittings, but it was precisely that loose quality that made it so versatile. It also highlighted the value of programming in bringing people together, if only in the provision of fruit and snacks. The human resource available was the chief limiting factor in programming the space; while some employees had developed their own programmes and clubs, it was time consuming to set up larger events. With no dedicated resource, this limited their frequency.

Feedback on the overall experience of the space was largely positive. Most of the issues identified were relatively minor or fairly straightforward to solve, and the Studio leads were already aware of some of the findings around lack of storage, sense of identity, and acoustic and lighting issues. While environmental conditions such as temperature and acoustics were technically outside the scope of the brief, in retrospect, more should have been made of the varying environmental conditions that people needed particularly for the audio team who had moved from their own room into an open plan space.

The responsiveness of the space to ongoing change had broadly improved. However, the informal meeting areas somewhat fell victim to the architectural geometry of the scheme, becoming very much fixed points in space. These were intended to be able to flex and change with the desk allocations as they were more useful to some disciplines than others; this was an area where the brief should have been more explicit in linking these spaces to specific teams.

Overall, this methodology provided a relatively light touch evaluation, providing enough detail to identify and act on issues, but stopping short of answering all questions in depth. The advantages are that it can be conducted with relatively little input of time and resource, making it possible to implement where a lengthier process might be considered off-putting. However, in some areas it opened up questions that could only be answered with further research - although it allows any further study to be carefully focused.

4.4.4 Summary of findings

The experience framework presented at the beginning of the chapter provided a useful structure for considering the different dimensions of end user experience in developing the design toolkit. The toolkit itself was designed to produce actionable and visual results with a minimal need for specialised research skills, and was intended to supplement conventional quantitative mapping techniques with multi-faceted information about user experience.

At briefing stage, the design game aimed to structure a discussion around the experience of space that moved away from simple functionality or aesthetic preferences. The inclusion of intangible aspects of experience such as sensory elements and behavioural protocols worked well to structure this conversation, and the researcher felt that it formed a useful addition to the process of developing a detailed design brief.

The evaluation tool highlighted the potential value of a visual, qualitative approach in generating feedback that was transferable and actionable. While there were infrastructural issues with the Sony building, the redesign had not had the scope to address these in most instances, reducing the usefulness of more technically focused evaluation techniques in assessing the scheme. The kind of mapping employed could potentially be carried out by internal Facilities teams, generating a visual map over time rather than the existing approach to issues about space which typically resulted in lengthy email chains. This would potentially be a further development of this kind of experience-centred approach, developing tools that allow for iterative and responsive experience mapping.

The following chapter will discuss the research questions in light of the findings from the four design studies, in addition to considering the potential durability of coworking as a typology and the limitations of the study.

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5

Discussion

This chapter discusses the findings of the four design studies, reflecting on the insights and evidence that address the research questions in the thesis. It goes on to reflect on the wider context for the study and potential durability of coworking as a model, and concludes by setting out the limitations of the work.

The four design studies in the previous chapter each aimed to shed light on the central research questions as set out in Section 1.4. Design Studies 1 and 2 (DS1 and DS2) addressed the first research question, aiming to generate clarity about whether there are clear and distinctive values, spatial strategies and behaviours that can be attached to coworking through a mixture of quantitative and qualitative analysis. The spatial analysis also responded to the second research question, identifying spatial approaches in order to locate coworking within the wider context of historical and current developments in organisational workplace design. Design Study 3 (DS3) directly addressed the question of whether coworking represents a substantive change from established models and practices in workplace design, using an analysis of current workplace design trends and a case study of an organisation seeking to enhance community and collaboration; this enabled comparison of coworking with organisational workplace design approaches and processes. Design Study 4 (DS4) addressed the question of new tools and approaches. With member experience identified both as a central component of coworking and as an aspect that is often lacking in established briefing and evaluation practices (Section 2.3.5), it presented a new experience framework alongside a user experience centred design briefing and evaluation toolkit. The following sections will address each research question in turn with reference to the relevant design studies, the results of the research, and identified gaps in the literature.

5.1 Answering the research questions

5.1.1 What is coworking?

> 'Offering the best qualities of a coworking experience: redeveloped office space, short-term leases, happy hours, and varied workspaces', (Lessard, 2018: online).

The ongoing dialogue about coworking can be reductive, seeming to suggest that it can be boiled down to a nice space, flexible leasing and some interesting people to talk to. This question attempted to establish whether there were defining characteristics inherent within the coworking model that go beyond flexible space provision and good coffee. A working definition of coworking was presented at the beginning of the thesis:

'The flexible provision of membership-based workplaces where individuals and groups who are not employed by the same organisation can share facilities, ideas and knowledge in a communal setting.'

This working definition was based on existing academic definitions of coworking and provided a starting point for the study. Highlighting coworking as a business model, spatial setting(s), and practice, this definition was interrogated through the research. As the business model had been covered in relative detail elsewhere - typically defined as similar to the serviced office model but with an additional relational component - this study focused on values, space and behaviours.

As discussed in Section 2.1, the relative newness of the topic meant that the body of academic literature that existed at the outset of the study was limited. While there has been year-on-year growth throughout the period of research, the body of empirical research remains relatively small. The majority of these studies built on previous findings from different disciplinary perspectives, tending to centre on the assumed values of community and collaboration with some limited consideration of coworking as a new form of organisation, space as an aspect of coworking, and the service/value/experience offer. Key findings of the existing literature were:

- Community as a predominant objective and key differentiator of coworking, enabled by active community building, coworking hosts, events and communication strategies
- Coworking spaces as sites of collaboration and knowledge exchange, with coordinated serendipity crucial in generating interactions, events taking a mediating role, and work-related social support likely to be a more common outcome than formal collaborations
- Coworking as a new form of participatory organisation based on decentralised leadership and shared responsibility
- The importance of customer focus and a value-added service offer in retaining members
- Space as an important aspect of coworking in facilitating interaction, enabling members to feel a sense of ownership, and aesthetic features that act as a differentiator from more traditional offerings

A number of gaps were identified at the outset of this study. While some additional research relating to these was published in the interim – for example, Balakrishnan's exploration of the perceived servicescape of coworking (2017) – these largely remained unaddressed. Space in particular was typically only considered as a by-product of the interest in collaboration or sociality with no empirical analysis of space use or design strategies, and this remained the case throughout the course of study. While interaction was a key point of wider interest, no structured spatial mapping had been carried out.

The key gaps in the knowledge around coworking that this study therefore aimed to address were:

- Definitional clarity based on empirical research rather than assumed values around community and collaboration
- The role that space plays in interaction based on spatial mapping and analysis,
- Whether there were any common spatial strategies or attributes
- Aspects of user experience on the basis that coworking appears to provide an unusually responsive lens on what people from their workplace

The following sections will discuss these aspects in relation to the first research question.

5.1.1.1 Coworking values

The first aspect discussed in this study was an analysis of the values of coworking as a first step towards developing some definitional clarity (Section 4.1.1). The core values of coworking were identified as community, collaboration, participation, service and member experience, with the relative importance of the first four in particular varying from space to space, and member experience as a central aspect. While there is some overlap, these are not the values originally promoted by the Coworking Manifesto, reflecting the range in the market as it has developed. These broadly align with the areas of interest identified in the literature – community, collaboration and new forms of organisation with some more limited interest in the service offer. However, there has been little research into member experience.

5.1.1.2 Interaction

The collaborative behaviours associated with coworking are a driver in the wider interest in the model, with diverse networks and serendipitous encounter viewed as a factor in innovation (Section 2.2.1.4). This study aligned with the emerging body of evidence that suggests that the relational component of coworking is an important aspect of the coworking offer, with active curation by hosts, various communication strategies and the enactment of culture and interaction by the wider team all important factors in encouraging communication between members. The interviews at Birmingham Impact Hub (BIH) and Second Home (SH) also suggested that formal collaborations were a relatively infrequent outcome, with interaction tending to centre around peer feedback, skill sharing or inspiration (Section 4.2.4.1). While of value to members, this is arguably simply replicating the kind of social routines likely to be found within an organisational workplace such as Sony, where employees relied heavily on peer-to-peer learning and social support. Further, this study suggested that larger teams can become either too dominant, self-reliant or end up with team members not feeling that they have the autonomy to join in, reducing their tendency to interact with others; this would require further investigation.

At BIH and SH, the level of interaction was found to rely on both curation and the motivation of individuals to engage, suggesting that coworking is, in fact, highly contingent on the desire to cowork. In this sense it would be possible for someone to be in a coworking space without engaging in the practice of coworking. However, it was not the case that members who did not regularly participate did not derive any value from their presence in the space, with some reporting that simply having the sense that there were interesting things going on was valuable to them. Intuitively, this exposure to new ideas and inspiration would seem to link to innovation and/or creativity, but this would also require further empirical study.

Interaction within coworking spaces is therefore contingent and variable depending on the membership community. There is not necessarily a simple formula that can be applied and the promised interaction and collaboration exist as potentialities rather than as guaranteed outcomes. It is possible to over romanticise coworking, which could be viewed as a simple rebuilding of the organisational structures typically lost to freelancers, arguably within a relatively conventional view of what it means to be at work. The kinds of routines that BIH were trying to create - bringing people together at a time when they might naturally want to take a break from work - could be viewed as replicating the kinds of social routines that might arise naturally within an organisational context, with many of the identified benefits of interaction (e.g. peer support and feedback) simply an expected outcome of employment within a larger group.

5.1.1.3 Spatial strategies

Whether or not coworking relied on a specific set of spatial attributes was a significant gap in the literature and therefore a key concern for this study. Coworking spaces were broadly found to adopt Activity-Based Working (ABW) strategies although with significant diversity within the sample in relation to spatial allocation. Outside the longitudinal shift towards enclosed offices and slight reduction in informal shared spaces, this varied widely by community and size, with the most dominant factor appearing to be the need to tailor the space to the membership community. However, some common spatial strategies were identified at a range of scales, including adjacencies, the presence and positioning of

shared social areas, design for interaction and adapting to change, hybrid elements and the presentation of identity-rich interiors, with seven overall spatial qualities - again, with member experience as an over-arching structure. While these could be considered to serve as indicators for coworking, they do not necessarily provide a diagnostic with many of the same strategies and qualities existing in organisational space; this is something that will be discussed in more detail in Section 5.2.

The role of space in shaping interaction has been described in broad terms in some coworking studies, although it is typically minimised in favour of focusing on curation and the role of the host. This study found that, while curation was important in forming initial connections, space did play a role in shaping interactions through the provision of appropriate settings for events, common movement pathways, meeting points and attractors, and visibility. These are broadly similar to the factors connected to levels of interaction within organisational workplaces (Section 2.2.2.2). The significant exception is that studies within organisational space have tended to find that most interactions take place at workstations, which was not the case at BIH or SH (removing private offices from consideration at the latter). This makes sense in an environment in which people are not necessarily working together and has implications for encouraging interaction across departmental groups or teams.

BIH and SH had similar concerns when it came to the space: facilitating interaction, able to respond to changing needs and providing a distinctive, non-corporate spatial experience. While the design processes differed, both were built around trying to ensure that members had a positive experience in the space. The design process at BIH reflected the limited literature on design processes within coworking spaces, which has tended to focus on models of participatory co-creation. The team built out a test space that members could move around, and the community was closely involved in the design and fit-out process. SH had a more conventional approach to the design and briefing, although it was still tightly focused around the needs of members and they took feedback closely into account when embarking on a second stage of construction. The detailed mapping at both identified the existence of gaps – although typically minor – between design intent and reality, highlighting the importance of ongoing evaluation and minor changes to the space

in ensuring that members' needs were consistently met.

5.1.1.4 Experience

To a degree, the two coworking case studies took different approaches to user experience. SH built a unique, distinctive space and a culture around it, supported by high levels of service and a carefully curated community, relying on members to select in because they saw something in the offer that they wanted. BIH took an approach of co-creating the culture and experience with users of the space, giving them a stake in it and continually evolving it to meet their needs, aiming to create a sense of ownership and community that would encourage people to stay. However, both constantly evaluated and adjusted member experience at small scale – for example, by revisiting and tailoring the programme of events. Similarly, both invested in dedicated resource in the form of hosts and support staff to ensure that the overall experience was good enough to keep members coming back. In addition, common themes could be identified when talking to members about their experience; these will be discussed in more detail Section 5.1.1.5.

The centrality of member experience was a consistent theme throughout the coworking research, and the aspect in which coworking most clearly succeeds may be in giving autonomy, choice and support back to the individual worker in designing their experience of work. Coworking, to a degree, is what the membership community makes it, whether driven by the fully participatory co-creation approach at the BIH or the more curated, service focused model based around members' needs at SH. This is arguably what has resulted in it creating a lens for what people want from their workplace. The flexibility of the leasing model in the member's favour means that coworking spaces have had to meet the needs of their members to reduce turnover, therefore reflecting what people want from their workplace in quite a direct way. In this sense, while coworking could be considered to be a replacement for the organisational structures, routines and benefits that are typically inaccessible to freelancers, it represents an inversion of conventional organisational structures in which space providers take a supportive rather than paternalistic role. The fact that coworking spaces have to meet the needs of their members in order to survive results in a bottom-up or even co-created organisational structure in which members have a high

degree of autonomy to make their own choices.

5.1.1.5 Defining coworking

A working definition of coworking was given at the beginning of this thesis (Section 1.1). This highlighted flexible provision, membership and sharing of ideas, knowledge and resources as key conceptual elements of coworking. Given the continued lack of definitional clarity, one of the aims of the study was to interrogate this through the research. While different aspects of coworking were explored in the study, ultimately, it cannot be defined by any single aspect; as with other forms of organisation, it can be viewed as a complex ecosystem of interlocking variables. The research identified that the success of the experience which coworking spaces create for their members relies on inter-related and evolving interactions between space, support and service infrastructures, brand identity and ethos, and community management. This resulted in a new model for thinking about coworking as an experience of work that is member-centric, based on a sense of shared ethos, community engagement, and user-centred spaces and services.

The research therefore resulted in a new definition of coworking that identifies these aspects and highlights coworking as an experience of work that is defined by its membership community:

'An experience of work that is defined by the members, based on shared values, engagement with others, and user-centred services and space provision'.

These key aspects can be described as ethos, engagement, space and service, with member experience as a central linking quality (Figure 171). These different aspects can be defined as follows:

'Member-centric': The need for coworking spaces to shape their offer around the needs and preferences of their members, with members typically operating with a high degree of choice and autonomy in shaping their working lives.
'Ethos': The sense of shared values within a coworking community, enacted through the

hosting, space, events and literature around membership.

'Engagement': Interactions with people who would not normally be encountered during the day-to-day course of working life, encompassing the active curation of community and interactions through the presence of the host and a programme of events.

'Services': A user-centred approach to provision, with the offer based on the needs of the member community.

'Space': The spatial strategies and infrastructures that support coworking as a practice.

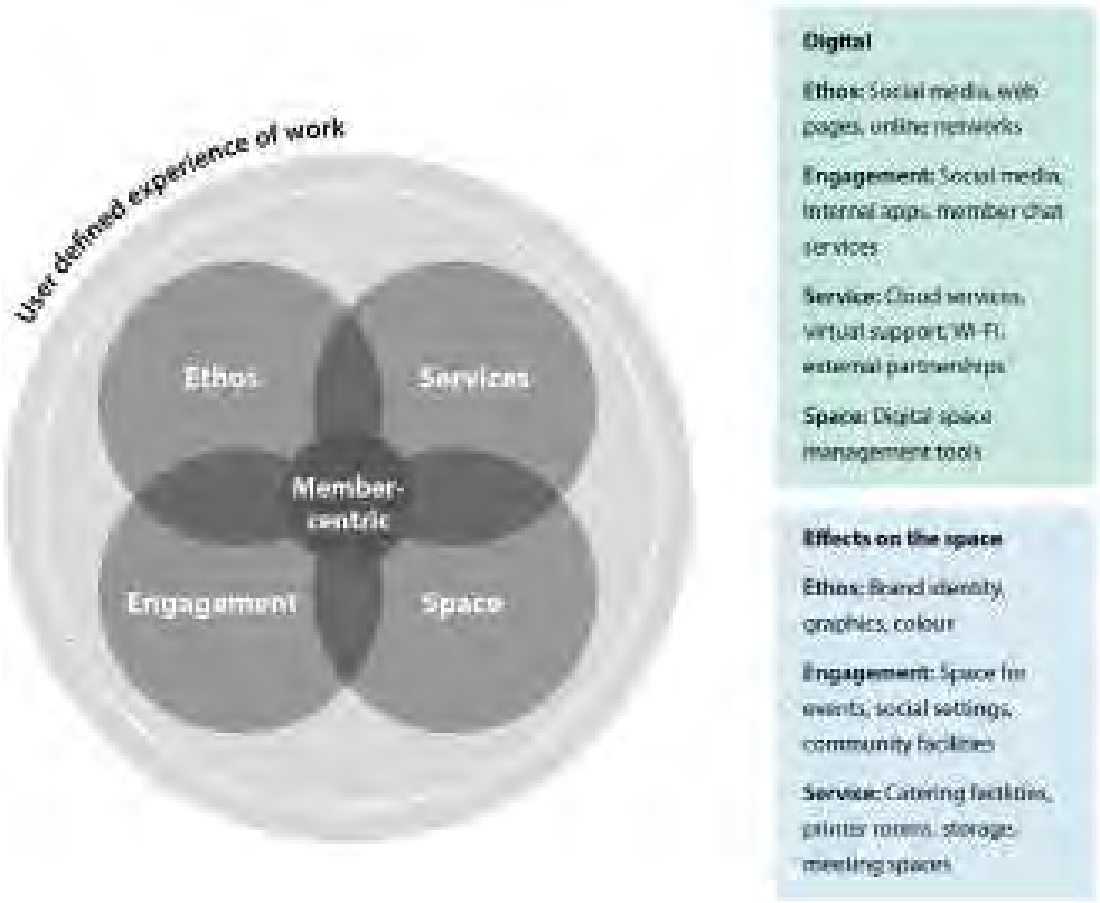

Figure 171. *New definitional model of coworking. Each aspect has a digital layer, and ethos, engagement and services all have an impact on the space*

The act of coworking has been described as independent of the space that it takes place in and networks are supported virtually. However, as it depends on bringing people together, it remains spatially bound to some extent, with the identified characteristics appearing to best support it across each aspect of experience. Ethos, engagement and service therefore each have an impact on the space, and all four aspects have a digital layer: ethos - social media, web pages, and online networks; engagement - social media, internal apps, member

chat services; service - cloud services virtual support, Wi-Fi, partnerships with external companies; and space - digital space management tools.

Elements of the earlier definition remain – flexible provision falls under member-centric services, the idea of sharing is related to community engagement, and membership is at its heart. However, the provisional definition was largely instrumental in orientation. The study revealed that shared values, and, in particular, member experience were important conceptual aspects of coworking that had not been taken into account. In addition, it was felt that the curated and relational aspect of engagement should be emphasised; community and social support were not necessarily about knowledge or idea sharing but were important to members.

This definition drew on findings from the two coworking case studies in terms of the detail of how members described their experience of using the space. Size wise, the two case studies sat at the top end of the Medium category defined in Section 4.1.2. Relating to orientation, they represented a Values-Mission (BIH) and Service-Values (SH) orientation. Although they were chosen as representing opposite cases to some degree, it was not possible to represent the full spectrum in the market at this level of detail.

It was identified at the outset of the study that coworking spaces differed according to a wide range of factors, which is one of the reasons for the lack of definitional clarity around coworking. This was reflected in the sample of spaces in DS1, with spaces ranging from just 32 seats (Igloo Liverpool) to over 1,000 (WeWork Charlotte) and a range of orientations along the identified Service-Values-Mission spectrum. While there were some common approaches to the space, the overall aesthetic and spatial allocation varied, with some spaces serving fairly specific membership groups (e.g. creative start-ups) and others hosting a more varied membership base. One of the clearest developments in the data was the growth of large global players, with L and XL spaces only appearing post 2013 and 2015 respectively. This very large, typically more corporate provision arguably represents the biggest gap in the data in terms of the case study analysis. L and XL spaces typically had a higher proportion of private office space which was loosely associated with a Service-oriented provision.

However, the new definition provided above was based not just on the case studies, but also on informal visits and conversations and the quantitative home page analysis and floor plan analysis carried out in DS1. This identified service, community and collaboration, shared values, and a distinctive and tailored approach to the space as key components of coworking, all based around providing the member with an experience that was worth the price of membership. This served to validate the findings of the two case studies, suggesting that the definition developed through the course of the study could be considered to be applicable beyond smaller, independent providers.

While the overall components of coworking that were identified should be present, given that member-centric provision is the central aspect, the precise manifestation of each of the others is likely to differ. For example, services can be delivered in a way that is highly participatory such as relying on members to make their own coffee with the equipment provided, through to hospitality-driven spaces which offer a concierge-like approach and full barista service. Similarly, there is room for variation in terms of the emphasis on each one. Relating to engagement, some spaces emphasise community and social aspects, while others place more emphasis on networking and collaboration opportunities. Based on the findings of this study, only a space which makes no attempt to curate and build relationships would automatically be considered not to be coworking.

However, it must be acknowledged that this definition is best considered to be an indicator for coworking rather than an absolute diagnostic. Aspects such as shared ethos are particularly intangible and subjective in terms of deciding whether or not they are present, and it may be impossible to generate an absolute definition based on either organisational or spatial characteristics – the point at which coworking becomes not coworking. The continuing development and diversification in the market makes this increasingly problematic; the continuing shift towards enclosed offices suggests a hybrid serviced office/coworking model that would require further investigation. The limitations of the study in this regard will be addressed more fully in Section 5.3; the durability of coworking as a typology will be considered in Section 5.2.

5.1.2 The extent to which coworking signals a substantive departure from established models, relationships and practices within workplace design?

Coworking has often been presented as an innovative new approach to the organisation of work and workplace. However, systematic analysis of its alleged innovations in comparison to the wider organisational workplace had not been carried out. To answer this question, DS2 presented an analysis of organisational workplace design through the lens of 48 recently published articles about completed projects and a standard workplace consultancy project for an organisational client. Key aspects of the literature included:

- The historical evolution of organisational workplace design across three primary phases of development
- A historical lack of consideration of end user needs and preferences in workplace design processes

The gaps that were identified as being relevant to this question were:

- A need to consider coworking within the context of the wider historical development of workplace design
- Ways in which the consideration of user experience might be better integrated into the workplace design process given the apparent focus on end users within coworking

The following sections will therefore consider the extent to which coworking departs from traditional organisational approaches to workplace in terms of spatial design and relationships and practices.

5.1.2.1 Spatial organisation

In spatial terms, the analysis of the 48 organisational workplace design articles found that coworking spaces arguably reflect many of the organisational design priorities of the day

- intensive use of space, strategies to promote interaction, varied settings, identity-rich environments, hybrid elements, and the need to adapt to changing demands at a greater rate than has historically been the case (Section 4.3.1.6). Similarly, it cannot be said that the seven identified spatial characteristics of coworking (Section 4.1.3) do not exist in organisational space. It could even be argued that large creative industries, for example, leverage space to support interaction much more actively than some coworking providers. While some commentators have ascribed the wider drive for serendipitous encounters to coworking (e.g. Lachlan, 2015), a recognition that informal interaction and information networks were a factor in work processes can be dated back to the Social Democratic era (Section 2.3.1.3). Similar points can be made for the other identified qualities; for example, flexibility has been a central concern of workplace design for as long as 'the office' has existed, and the hybridisation of office space arguably dates back to at least the introduction of urban planning metaphors.

ABW was identified as the dominant strategy for organising open-plan coworking interiors. Introduced in 1985, this is arguably not particularly spatially innovative, although global take-up has been variable. Well-established in Australia, for example, The Instant Group described it as a 'new' global trend on a report on flexible workspace in America in 2016 (The Instant Group, 2016). Meanwhile, far from being a workplace innovation, the move towards increasing provision of private offices starts to look like the serviced office spaces of late-nineteenth century America (Figure 172overleaf). Although these buildings were not designed to promote interaction, they served a diverse community of entrepreneurs and small businesses, cleaning and maintenance were the responsibility of the landlord, and it was relatively common to include shared dining facilities (Section 2.3.1.1). Offering employees access to benefits and social programmes similarly has a long history - progressive companies over one hundred years ago began to offer staff recreational facilities, social events and benefit funds in addition to hospital clinics and safety training, and the competitive perk giving of Silicon Valley has been frequently covered in the press.

While coworking can be viewed as a lens on what people want from the workplace, as identified earlier, it has not managed to solve all of the problems of organisational workspace. The grey literature mentions issues such as lack of privacy, noise, difficulties in

establishing a common culture in open plan space and overcrowding. The move towards increasing enclosure in particular seems indicative of a dissatisfaction with open plan spaces as an environment for teamwork; while the research suggested that individuals mitigate this to some degree by moving across a variety of spaces according to their needs, this is more difficult when a group needs to come together.

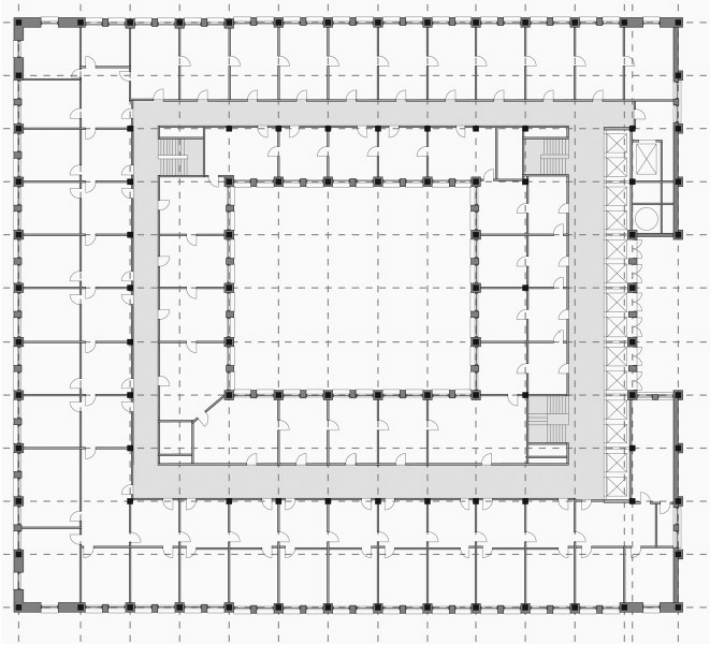

Figure 172. *Peoples Gas Building, Chicago, 1911. A double-loaded corridor, WeWork could take this building today by simply substituting a large shared kitchen/lounge/ informal meeting area for some of the offices*

Coworking could even be argued to be developing some of the same issues as the wider workplace. It is not immune to the kind of aestheticisation that was identified as a common problem (Section 1.2). With the need to develop a distinctive identity in an increasingly crowded market, the approach to marketing needs to be in line with current expectations. The design of the space becomes an even more important differentiating factor with the rise of more recent services such as Croissant (a service in which users pay a fee to a central managing agent for drop-in access to a wide range of spaces). This privileging of the imagery of coworking as a central element of the decision making arguably extends to the aestheticisation of community as well as collaboration, with each space represented by a single image that typically focuses on high-impact collaborative or community settings (Figure 173).

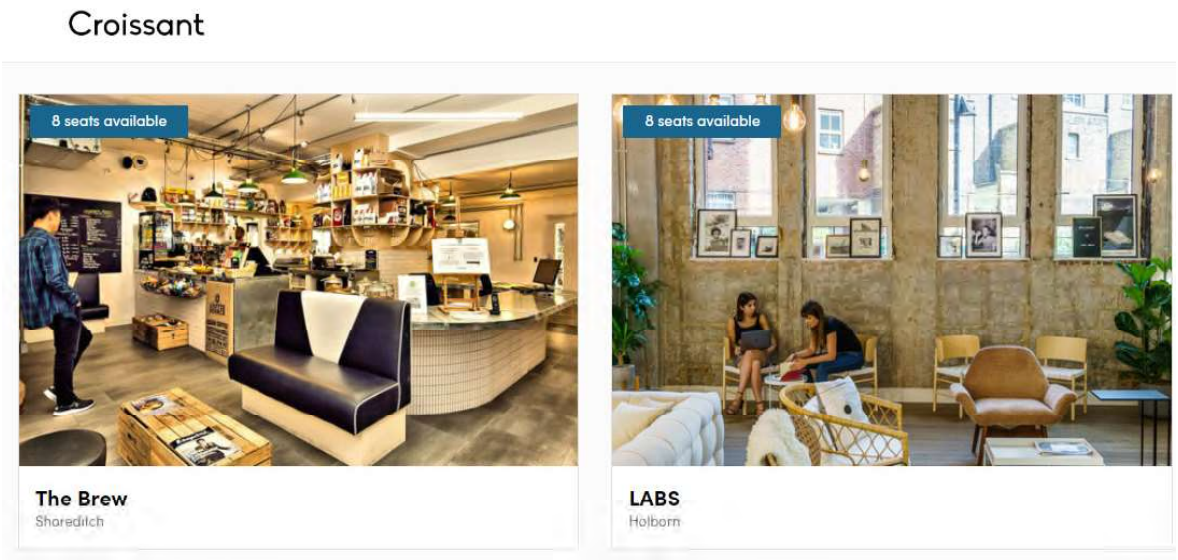

Figure 173. *Aestheticised marketing on the Croissant home page*

However, although organisational space may exhibit some of the same qualities, it could be argued that these characteristics are much more consistently present in coworking spaces, with most if not all existing simultaneously in some form. For example, features such as the enlarged interstitial areas at the entrance represent a distinct departure from a conventional organisational reception. While these can be found in organisational workplaces - for example The Lego Group headquarters in Billund - it should be recognised that most people do not work in the kind of offices that were discussed in Section 4.3.1. These are likely to represent outliers rather than the norm. Rather than neatly dividing prescribed activities, the coworking spaces in this study tended to lean towards a balance between specific and multi-purpose settings, low differentiation in open plan space that allows members to move fluidly between different modes of activity, and changes to the space managed through negotiated social processes as the community develops over time. This can be seen at spaces such as Habita in Istanbul (Figure 174 overleaf), which balances relatively prescriptive work areas with fluid, shared spaces that can accommodate a range of behaviours with a few simple changes at the level of furniture and fittings rather than architectural scale alterations. It should be noted that this was more the case within coworking spaces that lean towards a participatory culture than large-scale providers with extensive subdivision into private offices, but was not restricted to those which only offer open plan space.

Figure 174. *Habita in Istanbul offers a common combination of enclosed offices/meeting space and open-plan multi-purpose areas that can easily shift from individual or small group working to accommodating larger scale events, © PAB Architects, all rights reserved*

5.1.2.2 Relationships and practices

It could be argued that coworking does more in terms of the programming of spatial routines which can be left to chance in standard organisational contexts. Both BIH and SH aimed to generate some kind of member interaction every day. Although the space was not generating these interactions, it did need to support them, leading to generous multipurpose shared areas that could easily accommodate a range of activities without being too indeterminate. At Sony, although the cultural shift cannot be ascribed entirely to the space it was certainly a factor, with the project leads explicitly linking the earlier lack of social activities to the quality of the space pre-renovation. However, Sony also highlighted the need for curation even within an organisational context. While coworking hosts are able to dedicate time and effort to organising events, curating relationships and enhancing member experience, events at Sony were organised by a small group of enthusiastic employees, all of whom had full-time roles in other areas.

As previously identified, the emphasis on member experience is also much more pronounced in coworking dialogue. Again, while it is present in organisational design, it has tended to be limited to the most forward-thinking companies rather than being standard

practice. In terms of user-centred design, of the workplace articles that were analysed in DS3 (Section 4.3.1), only five referred to observing working practices, and only two referenced any level of user input into design or change processes. While it is possible that other projects simply did not feel the need to mention it, it does not seem unreasonable to infer that most if not all of the rest did not include these elements. Co-creation design processes have been identified in the coworking literature; a number of the visits undertaken were to spaces which had gone through some level of co-design, although it was not possible to ascertain an overall percentage of spaces which had taken this approach. While not all spaces go through a formal process, the 'traditional' coworking approach (in as far as the word can be used in this context) involved building the community first, then building the space around it, with members active participants in setting up the space. While this is not a professionally facilitated process, there is an inherent element of co-creation in it. Even when spaces do not take this approach, there is a period of market research, working out who the target members are and therefore what needs have to be met. Again, this is an inversion of traditional organisational processes; the first consideration is the person a space wants to attract, rather than setting out organisational goals and seeking to mould the employee around them.

Given the historical responsiveness of office design to wider economic, political and cultural change, it may be more reasonable to say that both coworking and the front runners in organisational space are reflecting wider shifts, which are manifesting in similar spatial terms. However, the underlying motivations are different. Even in more obviously profit-driven spaces, the underlying need is to keep the members happy; with the fit-out costs borne by the space provider, it costs members relatively little to relocate if they are not satisfied. In terms of interaction, facilitating community and collaboration are seen as adding value to the member experience, rather than attempting to shape user behaviours to serve organisational goals. Even at Sony, a relatively non-hierarchical team, the project aims were driven at least in part by organisational goals; in this context, it is arguably fortuitous if organisational and employee desires overlap.

5.1.3 Are there central aspects of coworking which could be applied to the wider workplace - and what new tools and approaches would support that process?

While a small number of commentators had identified the potential for crossover between coworking and the wider organisational workplace, this had been limited to anecdotal commentary and was not based on empirical study into the spaces and strategies of coworking (see Hood, 2015 and Salovaara, 2015). Having conducted research into coworking (DS1 & DS2) and the organisational workplace (DS3), this final element of the study aimed to identify whether there were central transferable elements – and whether this would require the development of any new tools or approaches. Key aspects of the literature included:

- Central elements of coworking including community, collaboration, participatory processes and structures and space as in Section 2.1
- That space plays multiple roles in organisational life, although typically viewed from an organisational perspective
- A gap between academic research and architectural practice

The gaps that this study aimed to address were as follows:

- Organisational research points to frequent gaps between design intent and reality, making the empirical study of coworking essential before any assumed design strategies or approaches are incorporated into the wider workplace
- The need to understand the functions of space from an end user as well as an organisational perspective
- The need for appropriate tools of expression if end users are to be engaged in design processes

The previous question identified that key elements of coworking have aspects in common with the leading edge of organisational workplace trends, responding to the same economic and cultural shifts that are driving wider changes in business structures and workstyles.

These existing areas of overlap arguably highlight the potential for the transferability of key strategies of coworking into the wider workplace - particularly in the light of predicted continuing increases in the freelance workforce with employees and contractors potentially occupying the same space.

The findings of the first research question emphasised the centrality of member experience within coworking, an aspect that was identified as historically under-emphasised in workplace design processes. This research therefore presented a user experience framework and user-centred design toolkit relating to briefing and post-occupancy processes. In terms of approaches to workplace design, while DS1 identified some common coworking design strategies at a number of scales, there were no universally applied rules and this study therefore stops short of presenting highly specific design recommendations, particularly in light of the identified tendency for design strategies to be decontextualised and misapplied. Coworking cannot be viewed as a set of simple rules that can be universally implemented, rather relying on complex interactions between space, support and service infrastructures, brand identification and community management. The following sections therefore identify high-level guidelines which show how the essential qualities of coworking might be used to shape spaces for creative knowledge work within organisations, highlighting the need for new tools and approaches across a number of areas; experience, user-centred design, sharing best practice, beta space, hybridisation and curated communities.

5.1.3.1 Experiential

Providing members with an experience that they value was identified as the central and most consistent component of coworking, with spaces typically built around member experience from the outset, inclusive of social media outreach to build membership communities, branding, location strategy, service design and spatial provision. This approach recognises experience as a dynamic process that extends beyond the physical walls of the space to all of the potential touchpoints and interactions with members, including digital interactions, journeys to and from the space, interactions with others, sensory aspects, and the way that home and work life is balanced. Crucially, coworking research emphasises the importance of choice, autonomy and flexibility in the crafting of experience.

This requires facilitation rather than control and is so intimately bound with management practices that there is a limit to what can be achieved through either the provision of space or services.

This suggests the need for new approaches that allow for the articulation of how end users view their experience – or desired experience. However, as identified in Section 2.3.5, a lack of attention has been paid to user experience in both design briefing and post-occupancy evaluation. User experience in general is a relatively new discipline, particularly in relation to its application within the workplace, meaning that theoretical models and research tools are still developing with few industry standards. The study identified experience as reliant on a complex set of overlapping variables. Within traditional organisational structures, these would fall under a range of departmental responsibilities (e.g. events and community under HR, space the remit of FM and digital interactions under IT). The multi-faceted nature of experience seems likely to require the integration of traditionally separate aspects of building or people management in order to design user experience across multiple interdependent channels. With workplace decisions traditionally made from the top, new workplace design approaches are also needed to better understand experience through the eyes of employees.

5.1.3.2 User-centred

The challenge in defining coworking lies in the lack of any one-size-fits-all solution, with the overall offer tailored to the needs of a specific community. It was not unusual in earlier spaces for the community to form before the space was even designed, with members given a voice in its design and management. BIH represented a fully participatory approach, with the community closely involved in the development of the space from the point at which the lease was signed. At SH, where members were not formally involved in the design process, their feedback on the first phase of the build was the driving force behind a series of changes made as the project progressed. Even larger more commercially oriented providers could be identified as focusing on end-user requirements.

This aspect speaks to the highly contextual nature of organisational life. The research at

Sony highlighted the need to understand organisational contexts from the employee's point of view, with initial design proposals failing to meet their very specific needs. As discussed in Section 2.3.3, user participation in workplace design is under-researched, although a number of authors have argued for the benefits of participation in workplace design schemes. This suggests the need for new tools and approaches for understanding experience, needs and values from the end user's perspective both in creating robust briefs, and in evaluating the success of completed schemes. It also suggests a shift from traditional workplace design approaches to one in which employees are treated like an equal client, rather than the recipients of a scheme in which they have had little to no input (Figure 175). This has implications for ongoing research efforts.

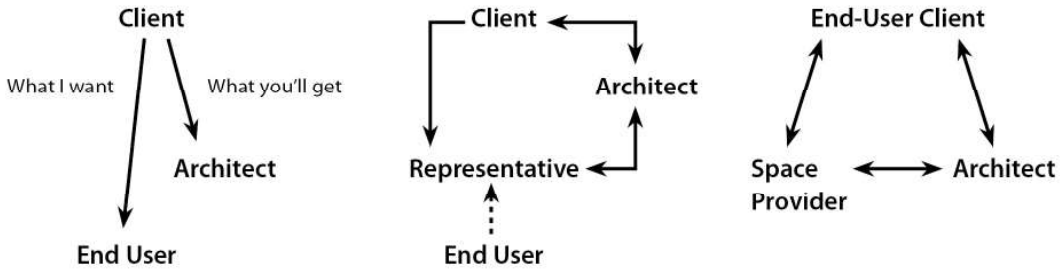

Figure 175. *Traditional workplace design approaches have involved the organisational client handing down a brief to the architect (A). Where employees are involved, this is often filtered through a smaller body of representatives who may be senior decision makers (B). A coworking approach would frame the end user as a client body with an equal stake in the design process (C)*

5.1.3.3 Beta space

At BIH, the team took the view that 'nothing was too perfect to change', and regular small-scale spatial changes were a common theme during visits to coworking spaces. Although this was most noticeable within open-plan arrangements, even those spaces with high levels of enclosure typically aimed to be as demountable as possible to accommodate short-term changes in requirement. However, this principle is not necessarily about short-term impermanence, with varying levels of physical flexibility appropriate in different organisational contexts. Rather, it is about a shift in perspective from viewing space as an object that can be perfected in a single design phase, to the inevitable need to make ongoing changes to adapt to fluid contexts or unexpected user behaviours. All three case study sites reflected the literature in the sense that design intent was not always matched to the reality in use. To a degree, this requires an acceptance that it is not possible to control

every aspect of space and user behaviour - that behaviour settings have to be balanced with the recognition of potentially competing affordances.

While there may be benefits to testing settings on a small-scale basis before going ahead with a complete scheme, the complex relationships between potential influences on user behaviour mean that it is most likely impossible to accurately predict how well the scheme will work in its totality. Treating the workplace as if it is constantly in beta implies either a continuing role of designers that extends beyond the initial design process or providing spaces and tools that empower occupants to change them according to need - whether that is facilitated by a Facilities team or directly in the hands of employees. The BSRIA Soft Landings process goes some way towards addressing the former, although it leans towards energy efficiencies and occupant satisfaction surveys.

This requires new models for design and construction; for example, building in a 'beta' budget that allows changes to be made following evaluation of a completed scheme, or leasing models for fittings and furniture that shift investment from capital to operational expenditure. It also requires a shift in mindset; the whole notion of acknowledging that, at best, workplace design solutions are predictions and not guarantees is a problematic one, particularly in a wider context in which architects are having to prove their value. Balancing a flexible approach with the best evidence available would seem to be the surest way of resolving the tension between the contextual and the universal.

5.1.3.4 Shared best practice

While individual spaces are responsive to the needs of their membership group, sharing best - and worst - practice was an early principle of coworking, with space managers sharing their experiences and research on a non-competitive basis with other spaces (as at BIH). Most of this appears to happen through informal channels, based on experience and observation rather than rigorous empirical research; nevertheless, the principle of evaluation and transparency about lessons learnt is an important one.

Creating successful workplaces requires user-centred design to be balanced with a robust

body of evidence around behaviours in use; while success stories are easy to find, failures are less frequently publicised, resulting in the potential for the same mistakes to be repeated. There are some evaluative tools - such as Building Use Studies - that build up a database of projects, but, even where workplace design schemes are evaluated, they more often appear to be internalised processes with only success stories made publicly available. This makes it difficult to develop a nuanced picture of the relative success of different approaches.

There is also a wider issue around producing a coherent evidence base of replicable methods. As part of a consumer industry, the need to be seen to hold unique and valuable insights restricts the extent to which methods and findings are genuinely shared. This need can lead to a proliferation of different models, services and consultancy offerings that are all attempting to highlight their distinctiveness, resulting in a multitude of fragmented centres of knowledge. This is a potential criticism of this study as much as any other - the need to produce a new model can become somewhat meaningless.

5.1.3.5 Hybridisation

As evidenced by DS1, coworking is a fundamentally hybrid model that draws variously on hospitality, members clubs, educational spaces and leisure environments in addition to workspace settings. This allows spaces to provide value added services to their members, in addition to bolstering uncertain desk rental revenues and extending the use of the space beyond traditional working hours.

The introduction of hybrid spatial elements such as domestic or leisure references and settings is well-established. However, the notion of hybridisation goes beyond the provision of space and services. It also has the potential to introduce new knowledge streams into workplace design – for example, learning from retail choice architectures, or the way in which service industries craft customer experiences. In considering the workplace as a service - or an experience condition - it makes sense to draw on industries with more experience in the field, opening up new avenues for workplace design research. The evaluation tool in DS4 drew on customer journey mapping; while limited in a quantitative sense, it provided easy to read, transferable feedback on areas for ongoing adjustment. More

broadly, this could encompass industries including hospitality, retail, service design and experience marketing. While the latter are used in organisational contexts, they have tended to be outward focused, exploring the experience of the consumer rather than the employee.

This may be viewed as problematic for workplace designers, with the sense that the profession is having to defend its position not necessarily sitting comfortably with admitting that expertise is held - in some areas - in other hands. This potentially needs new roles, spanning the gap between architectural practice and bodies of academic research to produce transferable knowledge.

5.1.3.6 Curated communities

Community has been identified as an important motivation for joining a coworking space, reducing the potential isolation felt by freelance workers. The study highlighted that coworking spaces actively curate community and interactions through events, internal messaging and introductions by hosts (Sections 4.2.1.2 & 4.2.3.3). These help to define the rhythm of working life, supporting the sense of shared culture and rituals, and encouraging people to take breaks during the day. Crucially, DS2 also identified that members were free to decide on the extent to which they want to take up these opportunities; some were very active participants, while others simply appreciated the sense that there was something interesting going on.

While culture and community can in theory be left to chance in organisational spaces where people have to come together to work, a cohesive culture seems less likely to develop when left to chance, particularly across larger groups of people. As seen at Sony, this kind of affective work takes more time and resource than existing members of the team may have available. This requires the development of new roles akin to the position of a coworking host, sitting between Facilities, HR and the reception team, embedded in the space rather than in a self-contained office, and proactively managing relationships, space and potential issues. In addition, although the curation of community within coworking has been argued to take place independently of the space, settings to support varied forms and scales of interaction are crucial.

5.2 Durability of the concept

> 'The work coworking won't be a word in the future, it will probably just be the way we work', (Prakash, 2016: online).

This study deliberately focused around a subject area that was emergent, meaning coworking was by definition in an evolutionary stage as a typology throughout the course of the research, representing a wide spectrum of provision that is expanding rather than narrowing. This section will therefore speculate on the durability of coworking as a concept.

The spectrum reflected in the DS1 sample has widened further as the coworking market has continued to grow and evolve. While it remains a small part of the global office market, the Global Coworking Unconference Conference annual coworking forecast predicted an average global growth rate of 16.1 per cent up to 2022, with 24.2 per cent growth in membership (GCUC, 2018). The difference between the two figures can be accounted for by the fact that new spaces tend to be larger than older ones, existing operators are expanding, and operators are serving more members per square foot of space. A significant part of overall industry growth is coming from new entrants, making for rapid evolution as they look for new ways to establish a distinctive offer. Recent trends in the market include:

- A substantial increase in corporate occupiers and employees using coworking spaces
- An increased focus on niche communities that allows for more provision of specialised services and would seem to emphasise the learning and peer support aspects of coworking
- Larger, better established operators buying up smaller businesses to diversify their offering without diluting the original brand, or to expand outside traditional revenue streams
- Quality of digital integration becoming more important. While early spaces rarely provided more than excellent Wi-Fi, printing and plug and play meeting facilities, digital payment and space management systems, room booking, cloud printing and in-house apps are all becoming more common
- Competition and new entrants - partly corporates coming into the market with high

expectations - are driving new approaches to space and services

One of these developments that would seem particularly significant is the increasing attractiveness of coworking as a proposition in corporate space portfolios with the development of large chains of coworking space that replicate the concept across multiple locations. The meaning and centrality of experience therefore seems likely to change as coworking spaces are increasingly populated by employees. In 2016, the Global Coworking Survey (GCS) identified employees as outnumbering freelancers in US coworking spaces for the first time, and in 2017 Open Work Agency noted that ten per cent of the S&P 500 companies now have employees who cowork, including Dell, GE, HSBC, Merck, Microsoft, Silicon Valley Bank, Amazon.com, Unilever, Marriott and KPMG. Although the GCS indicated similar levels of satisfaction and autonomy among freelance and employed members, the study has raised questions about the extent to which employees are free to craft their own experience, with a lingering sense of hierarchy across even small teams within coworking space. In addition, placing employees in a coworking space is likely to have been decided by the employing organisation, suggesting that coworking operators might be increasingly accountable to the organisation over the individual member and therefore increasingly responding to organisational goals rather than individual desires.

The wider workplace has seen a shift towards a concern for employee experience in recent years. Organisations have traditionally tended to implement reward and recognition schemes based on the view that satisfaction is most strongly influenced by tangible perks and benefits, with HR management tending to start with the company's needs and seek to control employee actions to meet those goals regardless of the needs of employees. However, in light of an escalating war for talent and an employee population in which fewer than half are satisfied with their jobs, more organisations appear to be shifting towards the recognition that a more holistic view of employee experience is needed. This is manifesting in new approaches and partnerships; for example, the architecture firm Hassell recently merged with UK-based experience designers Freestate, which they claim blurs the boundaries between 'places', 'things' and 'experience'.

However, although there may be a growing dialogue around employee experience and

wellbeing, the research identified real estate consolidation and cost reduction as continuing to be a significant driver in workplace strategy. While it might be hoped that the need to attract and retain talented staff would be a driver for using coworking spaces - recognising a desire for autonomy and flexibility in working practices - organisations have a long history of prioritising efficiency and cost cutting. Equally, the use of coworking spaces should not be viewed as an opportunity for organisations to simply outsource community and care to external providers. The cynical view would argue that, in many cases, underlying organisational agendas have not changed (e.g. Parker, 2016). Coworking arguably plays to both of these points of view; on the one hand, short-term, flexible leasing and increased densities, on the other, enhancing experience, autonomy and community. These arguably represent opposite directions of travel; one emphasising agency and co-creation, while the other leans towards highly scripted, serviced space which is produced for an unknown membership community to serve organisational needs. While there is currently a wide spectrum of provision between these two points, it remains to be seen whether or not efficiencies will win out.

Overall, it seems unlikely that coworking will replace organisational space, although there are increasingly hybrid forms such as WeWork's agreement to manage IBM's Manhattan campus - this was the first example of a coworking operator managing organisational space, rather than an organisation occupying coworking. At the time of writing it was too early to tell how this might work in practice - for example, is it essentially a huge hotel for work, or have WeWork subsumed their own corporate identity into someone else's? If it is the former, then that raises questions about the symbolic functions of corporate space in particular. Again, it also challenges the notion of autonomy that has been identified as a central aspect of coworking.

The arrival of coworking middle-men service providers such as Croissant that provide subscription services to a wide number of coworking spaces may also change the meaning of coworking. These essentially offer drop-in coworking, with the primary membership to a network rather than to a specific space, creating a tension between the highly networked offering and the notion that a sense of shared culture and community is an inherent aspect of coworking. Again, this would seem to shift closer to the serviced office model and place

the emphasis on the space-service elements of coworking; consumed in a similar fashion to Airbnb, the online presentation has to be aesthetically enticing, while a high level of service is needed to secure repeat visits. Similarly, this was an emergent area at the time of writing and the implications could not be assessed as part of this study.

The durability of coworking also remains to be seen given its rapid evolution and hybridisation. At the time of writing in 2018, the last two years had seen an increasing professionalisation of coworking design, with the 'coworking consultant' an emerging specialisation, suggesting that there is a recognised appetite for these services. These consultancies vary in focus - some emphasise a traditional coworking approach that highlights the importance of building culture and community from the outset, while others take a much more business-centric point of view (sometimes offering coworking as a bolt-on to an established serviced office consultancy). Overall, in the new world of serviced, flexible workspace provision, it is important to recognise what might be lost as well as what might be gained. Corporate real estate has a long history of being driven by efficiencies. Whatever else it may offer, an aspect of coworking's wider appeal is the promise of flexible, scalable real estate based on rolling out best practice solutions - or, at worst, highly aestheticised environments that bear little relation to occupant needs - that require little organisational outlay. As the market continues to widen, it is possible that the 'original' brand of coworking will rename itself to differentiate from more market orientated providers, although the word is so closely bound up in the coworking literature (e.g. The Coworking Manifesto) that it might be difficult to do so. Meanwhile, service-oriented providers seem likely to continue using the term as long as it is a valuable marketing point. It may be that 'coworking' becomes increasingly associated with open-plan space, with enclosed offices representing a hybrid form; The Office Group, a serviced office provider in the UK, uses it exclusively to describe their limited open-plan desking offer.

5.3 Limitations of the study

A primary limitation of the study could be considered to be the sheer speed of change in the market when compared to the pace of academic research. During the writing of the thesis, coworking has developed from an emergent typology to an increasingly diversified and significant segment of the growing market for flexible office space, representing a shift from the initial movement to coworking as big business. This constant and ongoing change created challenging conditions for an academic research framework which typically relies on data being gathered, analysed and written up in a linear process. Rather than gathering the data and then analysing, this meant that this study had to take a more iterative approach which included a constant literature review and data gathering. However, there had to be an end point to this continuous analysis in order to write up the final thesis. During the process of writing up the research, many of the conclusions have become part of the wider dialogue around work and space. While it suggests that the study sits within a recognised field of interest, there is a level of irony in making workplace design recommendations or developing definitions in this format; the impetus within the commercial field to produce new knowledge in order to maintain economic position is so great that academic structures arguably move too slowly to keep up. In a sense, the research was unlikely ever to be able to keep up with a typology that is mutating month by month. This highlights a wider tension in relation to conducting empirical research; by the time a body of research that is substantial enough to draw definite conclusions has developed, the industry has started to move on (see earlier studies on spatial arrangements that have been superseded by moves towards activity-based settings). As a result, this thesis arguably describes what was as much as what is; how much of it continues to be relevant remains to be seen.

One of the early criticisms made by the thesis - that a consumer driven approach to workplace innovation has resulted in the aestheticisation of workplace solutions in place of critical understanding - also problematises the study. Suggesting that there are elements that can be distilled into an easily transferable format suggests that coworking can be developed as a kind of formula, potentially creating the kind of simplified account of a complex system that has been criticised in the past. While there are some broad principles,

creating a series of detailed design suggestions based on the limited number of cases studied risks perpetuating the same issues and, as such, has been avoided as far as possible.

A further limitation is one common to workplace research - a small number of cases with a large number of potential variables. The two coworking spaces were chosen based on the earlier research to represent different aspects of coworking space provision. Although there were a number of overlapping findings, they cannot be considered to be directly comparable, and where there were areas of difference, it was not possible to identify which of the many contextual variables might be a key factor. In relation to the coworking spaces, the first design study attempted to raise the validity of the findings by conducting a quantitative analysis, although this was limited to the spatial allocations, strategies and values of the spaces in question. Similarly, Sony PlayStation represents an extremely specific organisational context with a highly specialised working practice, limiting the extent to which the findings can be held to be representative. The timing of the two phases of research at Sony was an additional limitation; it was not possible to quantitatively map interaction during the first phase in any meaningful way, limiting the ability to accurately compare pre- and post- scenarios. This meant that the study relied more heavily on observation and self-reporting than would have ideally been the case.

The assumption that maximising employee experience is a desirable outcome is also potentially problematic. While there has been increasing interest around aspects of employee experience such as wellbeing, there is still a significant drive towards workplace efficiency, with many organisations apparently unwilling to make the capital investment without overwhelming empirical evidence that it will result in monetary gains. Experience therefore needs to be linked to productivity or equivalent desirable outcomes to be more widely of interest to organisations where the motivation is far more likely to be financial than philanthropic. This has implications for the wider applicability of qualitative tools.

While the first design study included a relatively large number of spaces, it did not take account of potential differences between countries. Although nothing obvious came to the fore, other studies have identified some cultural differences. An article in Deskmag noted that concepts of proximity and privacy vary, citing The Netherlands as having a culture

that particularly suits coworking (Santacana, 2012). Parrino (2013) found that the business orientation varied in Milan and Barcelona, with Milan sites primarily existing professional spaces that opened themselves out to coworking at a later date, while Barcelona had more spaces intended to be coworking from the outset, with coworking the main activity of the owners at a significant portion. However, it may be that the precise manifestation of coworking is so context dependent that it would not be possible to decisively untangle regional or cultural differences from the specific community, working practices, membership practices and intent of a specific space. Very few instances were found of a coworking space including a culturally specific spatial setting - one space in Japan had a tatami mat area. In addition, while organisational floor plans were included in the research, they were not analysed in the same way which limits the extent to which definitive conclusions can be drawn.

There was relatively little consideration of technological solutions, or the interplay between digital and physical space. While there is an integrated digital layer in coworking, in terms of workplace tools technology was not typically found to feature that highly. Outside of high-speed Wi-Fi, good quality screens, projectors and printers, digital solutions largely related to managing space and membership. Coworking could not therefore be argued to represent the cutting edge in terms of the integration of digital solutions, and the next big wave of innovation is likely to be data led. With coworking in many respects representing a fairly conventional imagining of organisational life, there may be a more radical imagining of workplace around the corner, driven by the development of technologies such as data sensors and augmented reality. However, coworking would seem to suggest that people still want to come together, and the integration of cutting-edge technology is far from the norm in the wider workplace.

Finally, the design tools were only tested in a limited number of settings. The asset mapping interview tool and evaluation tool were used at Sony PlayStation. The design game was tested in three workshop sessions at The Helen Hamlyn Centre for Design to test the structure and clarity of the game, then run at the Birmingham Impact Hub.

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6

Conclusions

While coworking has attracted increasing attention from other academic researchers over the course of this enquiry, its relative newness means that the empirical data required to evidence its claims of community, collaboration and innovation is lacking. The most significant of these gaps concerns the nature of the relationship between the architecture of coworking environments and coworking as a set of behaviours, or, more specifically, whether there are specific spatial strategies that facilitate coworking as a practice. This kind of study has been largely side-lined and, while coworking behaviours such as community and collaboration have been areas of interest, there has been limited systematic analysis of how these relate to spatial structures. In addition, coworking has been largely separated from the larger body of research into workplace design and behaviours. The reasons for this are not clear but seem likely to be the result of the more general weakness of the empirical evidence base around workplace design, and the recent interest in coworking as a typology. To address these gaps, the thesis sought to understand coworking as a typology within the wider context of workplace design provision, identify its defining characteristics, consider it within the context of historical workplace development, and suggest ways in which it might influence the wider workplace.

The previous chapter addressed the research questions; the following sections will discuss the research validity, implications and transferability, the original contributions to knowledge and the opportunities for further research.

6.1 Research validity

The methodological approach combined quantitative spatial analysis with qualitative case study research to respond to the research questions, informed by an inter-disciplinary literature review combining evidence from environmental psychology, organisation theory

and architecture. The validity of the research is derived from the triangulation achieved by the research approach, in addition to the longitudinal engagement with all three case study sites. With particular reference to the potential gap between design intent and use, this does not necessarily manifest immediately, requiring longitudinal study to understand developing relationships between space and patterns of behaviour. This thesis is one of an extremely small group of academic studies to have undertaken longitudinal research within coworking spaces. With reference to participant observation in particular, longitudinal has been used to describe a minimum period of a year from first visit to last, with studies typically based on observation periods of three to six days (Section 2.1.4). The combination of qualitative observations and structured mapping is still less common, and it is the only detailed quantitative account of coworking's spatial makeup.

6.2 Implications and transferability

The thesis highlights that, while there are some common elements in the design of coworking spaces, simply adopting them without any organisation specific calibration around their unique culture and relationships is unlikely to produce the desired results. In effect, the success of a coworking space depends on the success of the experience that they create for their members. As identified in Section 5.4.1, 'experience' is multi-faceted and relies on complex and evolving interactions between space, support and service infrastructures, brand identification and community management. In this sense, coworking is identified as a process rather than a collection of settings or services. This means that coworking starts at the stage of brief formation and cannot simply be bought in, requiring a bespoke approach to create spaces that effectively meet the needs and convey the values of their occupants (Figure 176).

This presents new challenges for the briefing, design and ongoing management of the workplace, which are discussed in the thesis. The literature review identified a number of limitations within current practice that are currently limiting the ability to respond meaningfully to these challenges. A lack of a research tradition in architecture, a weak and fragmented evidence base within workplace more widely, and a gap between academia and practice mean that evidence is infrequently translated into project proposals. The ability

Figure 176. *A current development in Cambridge has 'reserved' space for coworking, arguably highlighting a growing tendency to treat coworking as an off-the-shelf product*

to respond to the highly contextual nature of workplace projects is limited by identified issues in the briefing process and recognised lack of end-user consultation. Finally, when evaluations are carried out, they have a predominantly technical focus, with the results poorly disseminated into architectural practice.

These issues affect both workplace practitioners and those involved in managing corporate real estate more widely, whether internal to an organisation or working in development. With space often considered purely from the perspective of meeting organisational goals, prioritising user experience in the workplace requires new tools and design approaches based on an understanding of people's values and behaviours. These approaches need to facilitate a more iterative response to spatial requirements, balancing evidence with contextuality. This would allow designers - and facilities managers - to examine the impact of design interventions on user behaviours and adjust them as necessary to respond both to changing needs and unexpected behaviours.

What this study has shown is how the essential qualities of coworking might be used to reshape spaces for creative knowledge work in commercial firms alongside a set of practical tools that relate to briefing, design and post-occupancy evaluation processes. These create a methodological template for the design and analysis of workplaces that responds to

the identified issues; the individual elements are described in more detail in subsequent sections. This template is not specific to coworking spaces. As outlined at the beginning of the thesis, the responsiveness of the coworking market meant that it provided a lens through which workplace more broadly could be scrutinised. Elements of this approach could therefore be used by design practitioners, facilities managers or space developers in the analysis and planning of new spaces across the wider workplace market.

6.3 The original contributions to knowledge

The study resulted in a new model for thinking about coworking, in addition to five inter-related research outputs that make up the previously identified methodological template (Figure 177). The following sections will discuss these contributions as a means of articulating how this study has not only met its objectives in addressing a specific knowledge gap, but has also identified and addressed further shortfalls in the knowledge and understanding of coworking.

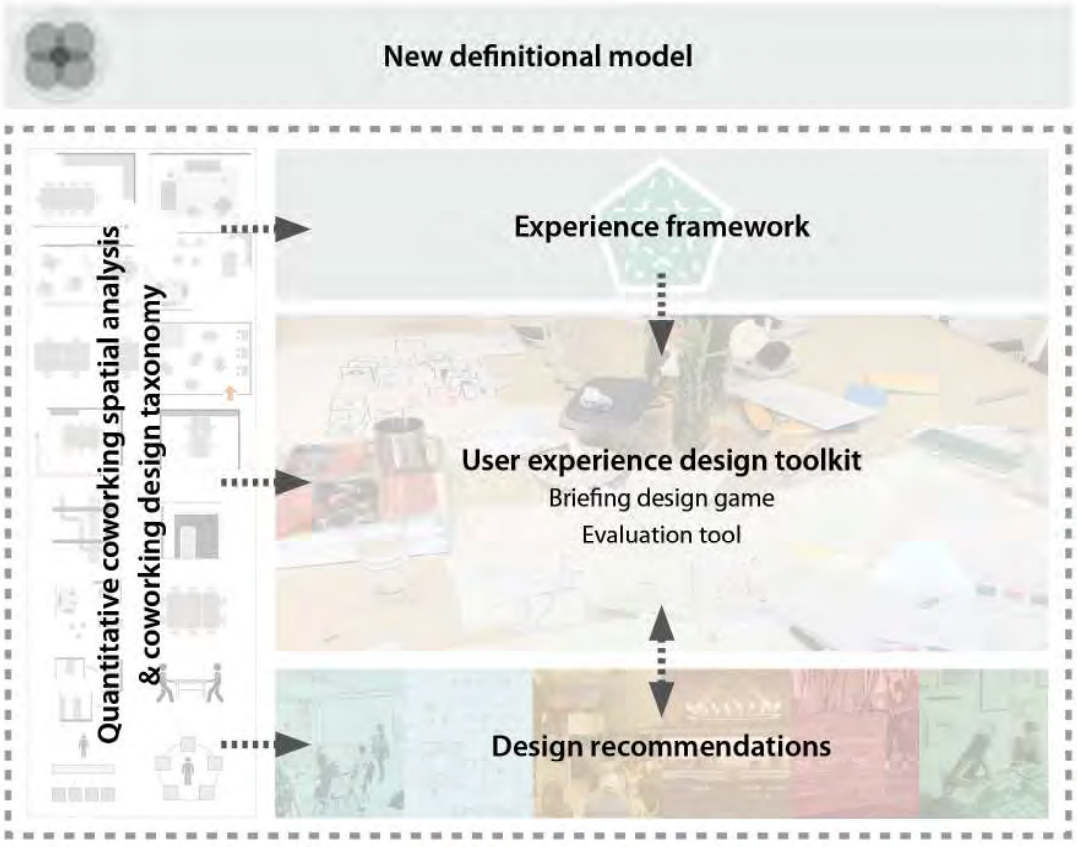

Figure 177. *Six contributions to knowledge*

6.3.1 New definitional model of coworking

The first contribution to knowledge is the new definitional model of coworking (Section 5.1.1.5). Given the continued lack of definitional clarity around coworking, one of the aims of the study was to interrogate this through the research. The research identified coworking as dependent on four interlocking variables – space, services, engagement and ethos – with their precise manifestation varying depending on the orientation and membership of a specific space. In addition to these four aspects, the research identified that member experience, in particular, was a key conceptual aspect of coworking that had not previously been taken into account. A key feature of this definitional model was therefore situating member experience at the heart of the coworking offer, with all four aspects focused on satisfying the needs of members. This highlighted coworking as an experience of work that is defined by its member community (Figure 178).

Figure 178. *New model for defining coworking*

Given the subjective nature of some of the variables, it should be acknowledged that this definition is best considered to be an indicator for coworking rather than an absolute diagnostic. However, it starts to more clearly define what would still be considered to be coworking given the increasing breadth and continuing development in the market and provides a structure for ongoing research into what defines coworking, what it offers its members, and aspects of member experience. It could also be used by founders of new

coworking spaces – or by organisations interested in adopting an internal coworking approach – to structure decision-making and priorities when considering a new space.

6.3.2 Quantitative spatial analysis and coworking spatial design taxonomy

The second and third contributions to knowledge are the detailed quantitative analysis (Section 4.1.1/4.1.2) and coworking spatial design taxonomy (Section 4.1.2.4) derived from the home page and plan analysis in DS1. Together, these responded to an identified lack of empirical analysis of the spatial manifestations of coworking in both academic and industry literature. Academic research has tended to confine itself to descriptive accounts of spatial features, remarking on whether or not particular features were present and occasionally discussing their location relative to other elements. Industry reports have tended to focus on business models, growth and market share, with the wider grey literature also tending towards descriptive accounts of features and aesthetics.

This study therefore presented a quantitative analysis of 73 coworking spaces, measuring the relative proportion of space allocated to different types of settings to provide a unique data set relating to spatial allocation that illustrates the range and development over time within the coworking market (Figure 179). The second contribution derived from this analysis was the identification of common spatial strategies from the scale of the floorplate down to individual settings (Figure 180). While the data is still too limited to make any claims of universality, this analysis identified spatial strategies and settings that could be broadly linked with coworking as a practice to create a taxonomy of coworking design strategies.

This data could be used as indicative of best practice by architects and investors in designing new coworking facilities, or by designers of organisational workplaces who are interested in implementing aspects of coworking in their space. It also provides a useful basis for structuring ongoing research both into the continuing development of coworking as a typology – what will change or survive – and into the relationships between spatial features and behaviours, highlighting common strategies that may benefit from

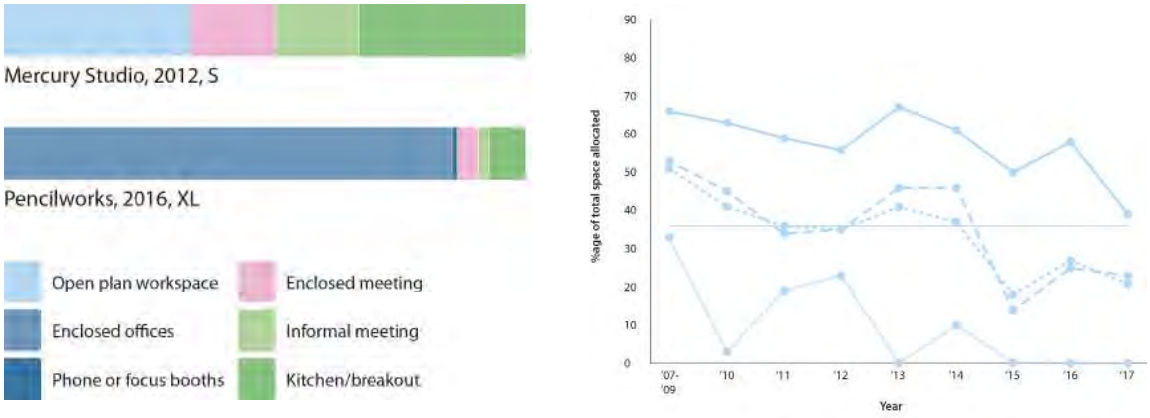

Figure 179. *Example of the analysis of spatial allocation*

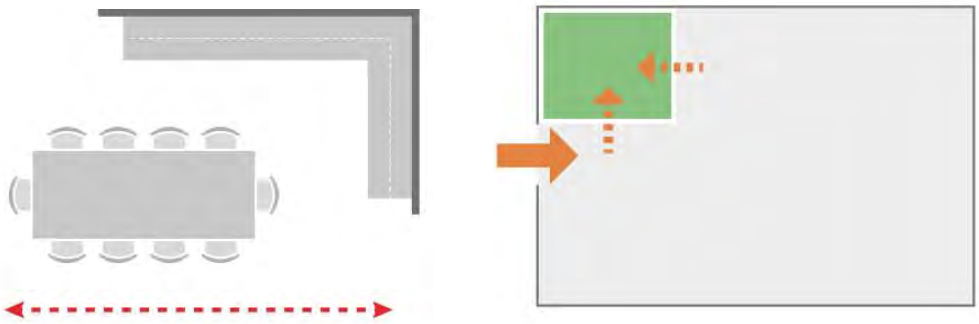

Figure 180. *Examples of the common spatial strategies identified in the thesis*

further investigation. In addition to providing the first set of data around specific spatial strategies, the range of spatial allocation identified also highlights the need to understand contextuality and specific requirements in workplace planning; the next two contributions to knowledge address this aspect.

6.3.3 Adaptation of Rafaeli and Vilnai-Yavetz's framework to describe aspects of user experience

The fourth contribution is the user experience framework that was adapted from Rafaeli and Vilnai-Yavetz's tripartite model of the role of space within organisations (Section 2.2.2.1). This identifies key dimensions of user experience that should be considered in the workplace design process, highlighting their inter-relatedness, contextuality and change over time (Section 4.4.1). Based on the three case studies in DS2 and DS3, the researcher felt that existing frameworks tend to be too focused on the role of space from an organisational perspective, requiring new ways of structuring research into employee experience (Figure 181 overleaf).

The original model was therefore adapted to create a framework for considering user experience. The additions made to the original categories of 'instrumental', 'aesthetic' and 'symbolic' were 'relational' and 'affective', while 'sensory' was substituted for 'aesthetic'. 'Affective' was added as a separate category to explicitly include emotional responses that people may not consciously associate with a specific influence. While the other four aspects relate specifically to experience within space, mood can be influenced by a wide variety of external factors - understanding how people feel when they enter the building can provide important contextual information for their overall quality of experience. 'Relational' was added as a separate category; the case studies demonstrated that not all relational aspects are related to instrumentality (the ability to carry out your work), highlighting the need to recognise the social functioning of organisational life. As a descriptor, 'aesthetics' was found to be too closely associated with visual appearance, failing to take account of the full range of sensory inputs within a space. 'Sensory' was therefore felt to better describe the overall bodily experience of occupying a space.

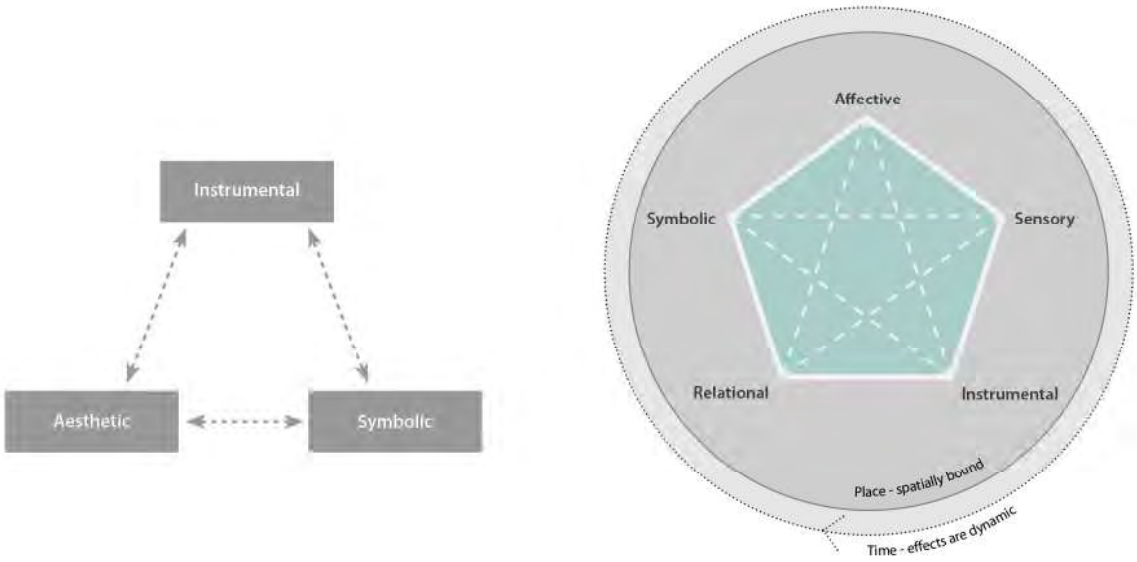

Figure 181. *L: Original tripartite framework.*
R: New framework to describe the end-user experience of space

As identified in the study, there are significant communication gaps in the design process around user experience, and proposals tend to be based on the intuition of the designer. If we are to better understand the experience of end users, then new frameworks are needed to structure ongoing research efforts. In this respect, the experience framework could be used as a design tool for architects as part of client or end user consultations. It was used to

inform the briefing and evaluation tools to create a toolkit that considered user experience in the workplace holistically, rather than being focused on instrumental needs or task-related relationships. Although primarily intended to relate to research in practice, it could cross over into other disciplines such as environmental psychology.

6.3.4 Development of a user-centred design toolkit

The fifth contribution to knowledge is the user-centred design toolkit. The literature review identified significant gaps in the empirical evidence base relating to the relationship between workplace design and behaviours, in addition to existing failures to account for user experience in workplace design processes. These have implications for the potential success of workplace design schemes, particularly as expectations around the quality of experience provided by work grow. The surest way of avoiding the potential issues around aestheticisation would seem to be ensuring that proposals are based in the specific context, requiring a balance between empirical evidence and contextualised user-centred knowledge. An in-depth understanding of organisational processes and infrastructures arguably becomes even more important when empirical evidence is lacking. For example, while there is a body of literature relating to the outcomes that Sony wanted to achieve, there was none that dealt with the highly specific context of computer game design.

The toolkit was developed as a way of approaching and understanding this kind of contextuality and more clearly articulating end user perspectives. It had two components: a design game that related to the briefing process, and an evaluation tool based on customer journey mapping. These tools drew on the experience framework identified in the thesis in addition to User Experience methodologies. Both were designed to be easy to implement and to produce actionable and highly visual results that could be easily understood by both practitioners and organisational stakeholders. The design game was employed at the Birmingham Impact Hub (Figure 182 overleaf), while the evaluation toolkit was used at Sony PlayStation (Section 4.4.3). These were intended to supplement more conventional quantitative mapping techniques with multi-faceted information about user experience in ways that can be easily integrated into existing design processes.

Figure 182. *Workshop at the Birmingham Impact Hub*

In addition to forming part of the researcher's ongoing practice, these tools could be used by a variety of groups in different contexts. The design game was deliberately structured to be played without 'expert' involvement; it could therefore be used either by a designer seeking to engage with end users but lacking the time to develop customised tools, or by facilities managers who wish to involve end users in design proposals but do not know how to go about it. External to the PhD, the design game is being used by a group seeking to set up their own coworking space. The founders wanted to engage future members in conversations about how the space might be shaped but did not know how to go about doing so; one of them had attended the workshop at the Birmingham Impact Hub and asked to use the game in this context. The evaluation tool could similarly be used either by workplace designers or by internal employees. While the process of interviews and analysis benefits from some experience in this area, clear, visual outputs can be produced without needing to have social sciences training. These tools were only used in the context of workplace design during the study; the middle stage of the design game (local settings) and the evaluation tool may have some applicability to other spatial contexts.

6.3.5 Recommendations for incorporating aspects of coworking into organisational workplace design

As previously identified, this study stopped short of generating specific design guidelines based on coworking. The final contribution to knowledge is the identification of key areas of transferability from coworking into the wider workplace, alongside new tools and approaches that might be required to implement them. These areas included: experiential, user-centred design, sharing best practice, beta space, hybridisation and curated communities (Section 5.1.3). These recommendations were derived from the research carried out in DS1, with the two coworking case studies also feeding into the conclusions.

It must be acknowledged that a number of these do not represent a radically new proposition in terms of the wider conversation around workplace; the notion of experience in particular has become a significant thread in the wider discourse around workplace provision over the course of the study. However, despite all the talk of innovation, there appears to have been relatively little substantive change in wider business practices or approaches to workplace design, and it could be argued that the organisations which have explored these areas are outliers rather than representing standard practice (Section 4.3.1). While this thesis has been situated largely within a background of architectural practice, it must also be recognised that these issues are not entirely architectural problems and making changes is dependent on a complex network of factors; designers cannot work independently of the wider socio-economic framework. It seems likely that advances in empirical research will be needed in order to persuade organisations more widely that better quality space is worth investing in.

The recommendations highlight the need for a new kind of hybridity in approach across a number of areas in workplace design in order to take better account of the complex range of influences on end-user experience. It is envisaged that they might be taken up by forward thinking organisations who are looking to embark on workplace redesign, or by workplace designers in supporting redesign proposals.

6.4 Opportunities for further research

There are a number of potential avenues for continuing research in areas covered by this thesis. First and foremost, a limited number of cases is a common limitation of qualitative studies which attempt to develop new frameworks. Future studies could be used to further validate and refine both the framework around experience and the design tools by working with a larger number of research participants and applying the tools to new projects. Similarly, further studies would be needed to draw conclusions about the relationship between coworking spaces and member behaviours.

6.4.1 Exploring dominant spatial strategies

While the quantitative analysis did identify wide variation in terms of detailed spatial configurations, there were dominant spatial strategies that bear further investigation. One of these is the role of the large shared social area often provided at the entrance of coworking spaces in generating serendipitous encounters. These are often cross programmed, with minimal differentiation or separation between settings for informal meetings, socialising, getting food or coffee and relaxing. While the primary attractors at the Birmingham Impact Hub and Second Home were similarly positioned - adjacent to the host desk and entrance, on the main circulation routes, close proximity to desk areas - the mapping would suggest that the Second Home space generated a richer range of interactions, although the limited cases mean that it is not possible to draw wider conclusions from this study alone.

6.4.2 Extending floor plan analysis

Given the continuing development in the market and limited sample size in this study, it would be worth continuing the floor plan analysis of coworking spaces to build up a larger data set. Within a short space of time of this study ending, the market may have broadened sufficiently that, with a larger sample, it would be worth developing more of a typological approach that would enable recommendations to be made to founders and developers who were interested in opening a new space.

Extending the spatial analysis to cover organisational floor plans would also allow more detailed comparisons to be drawn. While these were consulted during the study, they were not subject to the same level of analysis. The coworking space analysis and visits suggested a lean towards multi-functional uses of space that were based on facilitation rather than prescription, with a sense that organisational workplaces tend to have a much tighter fit in approach (for example, typically mono-functional organisational auditoriums). Identifying whether there is a larger scale underlying difference in these terms between coworking and organisational workspace would require further investigation.

6.4.3 Opportunities created by the diversification of coworking

The diversification of coworking offers multiple opportunities for further research. These include the following.

6.4.3.1 Longitudinal coworking network study

The thesis identified relatively few examples of formal collaboration arising from participating in coworking, although there were a number of references to expanded networks and 'thinking bigger'. Very little work has been done to track the development of networks over time in coworking spaces; Parrino's 2013 study on knowledge transfer interrogated information exchange over a period of only two weeks. This would have to encompass both physical and digital networks, with not all members regularly participating in spatial routines. Existing data tends to rely on self-reporting; network analysis would provide a greater depth of knowledge that might allow researchers to relate spatial, cultural and membership factors to the development of networks and collaborations. This is not straightforward, with contextual factors a significant element. For example, Second Home claim that businesses within their space grow ten per cent faster than the national average, but with curated membership it is difficult to assess the extent to which they have selected members or businesses with particularly strong potential.

6.4.3.2 The influence of cultural/service orientation on engagement and experience

Two broad directions were identified within the market. The first is a highly serviced experience in which the space and services are created by the space managers, while the second is a co-created and participatory approach in which the members have a high degree of input into spatial and transpatial routines. Both prioritise member experience, although in different ways. The first would seem to be more analogous to a hospitality environment, in which loyalty relies on the quality of experience that a member feels they are getting with the possibility that, should a better offer present itself, they would move on. The same kinds of questions apply to organisational space; what kind of experience is most likely to generate the kind of affective bonds that brands seek in driving customer loyalty?

6.4.3.3 The influence of a growing employee population on coworking experience

This is a growing segment of the market; employees are a rising percentage of coworking membership, and new partnerships between coworking providers and organisations - for example, WeWork managing IBM's Manhattan campus - raise new questions about the relationship between the organisation, space, and employee. Identified as a relatively direct reflection of user needs, this seems likely to be less and less the case when space is taken by organisations at scale. At spaces like Second Home, teams seem to be content to subsume their identity within the overall Second Home umbrella; however, in this instance, small teams have a degree of choice in choosing the brand that they are aligning to. This seems less likely to be the case when a space provider is developing a coworking like experience for a specific organisation. The balance of choice in this instance tips back towards the organisation rather than being in the hands of individuals, raising questions about engagement and a sense of ownership or identity.

6.4.3.4 Inter-disciplinary research efforts

The hybridity identified as a central aspect of coworking also presents opportunities for research. Industries such as retail and hospitality have arguably had a longer standing

and more consistent interest in aspects such as customer or brand experience and choice architectures. With an increasing presentation of the workplace as a service to be consumed, these disciplines potentially offer valuable lessons for workplace design research in dealing with similar issues.

6.4.4 Balancing 'big data' with qualitative feedback

In more general terms, the next significant wave of workplace innovation will be data led, with numerous proprietary sensor systems already on the market for capturing a wide range of data. While this potentially represents a huge advance in the ability to capture real time information about how workplace is used, the researcher notes two potential dangers of relying exclusively on sensor technology. The first is the risk of capturing data that relates largely to functionality - such as occupancy ratios or energy efficiencies - thereby perpetuating a traditional approach based largely on potential cost savings. The second is in amassing large quantities of data without asking carefully targeted question or considering what it is required to do. Both would suggest the careful integration and development of design approaches that draw on both 'big data' technologies and qualitative user feedback, using each one to enrich the other.

6.4.5 Behaviour settings and affordances

Finally, there is a research opportunity around the combined theories of behaviour setting and affordances. In all three case studies, some elements and settings were not used as intended, with users picking up on the affordances of the space when the provided settings were not meeting their needs. It is possible that a user-centred approach from the outset might enable a conversation about how end users perceive affordances which would mean that settings could be better tailored from the outset. This is something that the design game touched on but was not explicitly explored as part of the research process. It may also be that the evaluation process could be extended to build up a database of affordances that could provide useful design information for future projects.

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Appendices

Appendix 1: Definitions of coworking

This appendix presents some of the varying definitions of coworking that were identified during the course of the research, indicating the lack of any single definitional position.

The multiple definitions for the practice of coworking by both academic and non-academic sources were discussed in the thesis, with each tending to reflect the disciplinary or positional bias of the author. Most focus on relatively narrow aspects of coworking, arguably reflecting the difficulty of developing a single definition for a widely varying phenomenon.

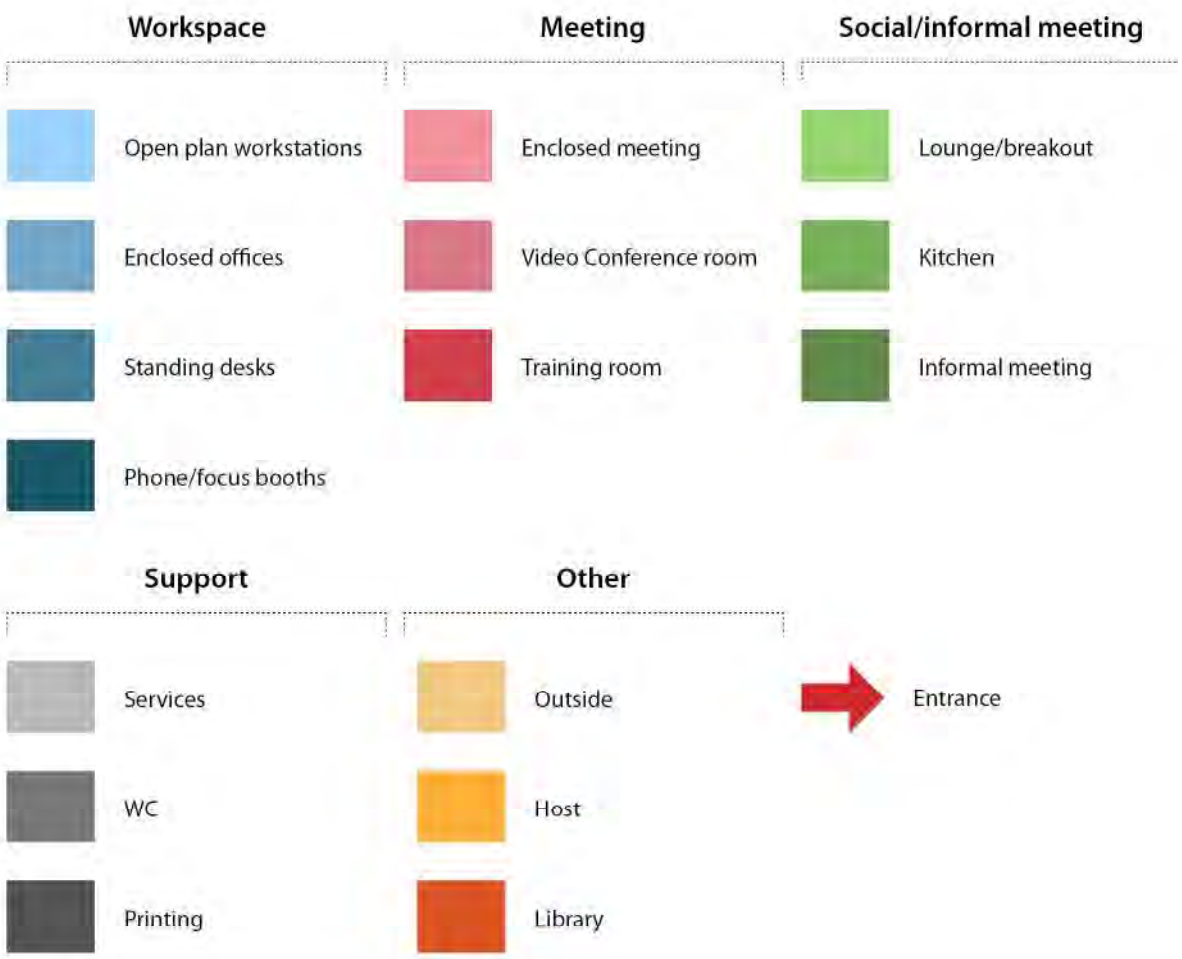
The study also included non-academic sources, with elements of the wider debate around the definition of coworking not encompassed in academic texts; to take an example, a Google Group discussion in 2014 aimed at agreeing on some basic definitional characteristics of coworking. This group included coworking space managers, Ramon Suarez (author of The Coworking Handbook) and Alex Hillman (a founder of Indy Hall, one of the longest running coworking communities in the world). A basic list of elements was agreed on which included a fully dedicated space for coworking, an active community of members rather than clients, a facilitator dedicated to connecting members and building community, treating coworkers as 'first class clients', the promotion of collaboration, interaction and serendipity, a range of membership options, and open, transparent rules around decision-making and participation in the space.

Source	*Date*	*Focus*	*Definition*
Coworking wiki	2014-2018	Spaces for community building/new forms of work organisation	'The idea is simple: independent professionals and those with workplace flexibility work better together than they do alone. Coworking spaces are about community building and sustainability. Participants agree to uphold the values set forth by the movement's founders, as well as interact and share with one another. We are about creating better places to work and, as a result, a better way to work.'
Foertsch, Deskmag	2011	New form of work organisation	'A self-directed, collaborative and flexible work style that is based on mutual trust and the sharing of common core objectives and values between members. The members treat each other equally, can increase their well-being by working in a collaborative atmosphere, and accumulate through cooperation (not competition) greater economic, social and cultural capital.'
Pohler	2011	Spaces that support new forms of work organisation for freelance knowledge workers	'Every workspace with flexible structures that is designed for and by people with atypical, new types of work - that is not exlusively for people from one certain company.'
Moriset	2013	Space for collaboration and community	'coworking spaces are regarded as serendipity accelerators designed to host creative people and entrepreneurs who endeavour to break isolation and to find a convivial environment that favours meetings and collaboration.'
Uda	2013	A form of work based on cooperation and knowledge exchange	'a way of working in which working individuals gather in a place to create value while sharing information and wisdom by means of communication and cooperating under the conditions of their choices.'
Capdevila	2014	Spaces that facilitate collaboration and knowledge sharing	'localised spaces where independent professionals work sharing resources and are open to share their knowledge with the rest of the community.'

Fraunhofer	2014	Cooperative, flexible working of independent knowledge workers	'the flexible working of knowledge workers largely independent of each other at a common, institutionalised location. In that respect, the hierarchy-free social network facilitates wide-ranging cooperation benefits for the participants.'
Gandini	2015	New form of work organisation for knowledge workers	'Coworking spaces are shared workplaces utilised by different sorts of knowledge professionals, mostly freelancers, working in various degrees of specialisation in the vast domain of the knowledge industry.'
Parrino	2015	Coworking as varying types of space	'The term coworking refers to a range of types of spaces, differing according to institutional purposes, adherence to values and movements, coworker employment, level of relations with other spaces and other aspects.'
Merkel	2015	New form of work organisation/social practice for freelancers	'Coworking is a new social practice that characterises new ways of organising labour and enables mutual support amongst freelancers and self-employed persons.'
Bouncken & Reuschl	2016	Flexible and highly autonomous structure that facilities interaction	'Coworking spaces provide their individual or institutional users a flexible and highly autonomous use of both office and social space that eases the direct personal interaction among the coworking-users for social, learning, cultural and business related interests.'
Waters-Lynch et al.	2016	Coworking as distinguished by social participation and collaboration	'coworking is about more than simply sharing physical space. In fact it is the various forms of shared social participation and collaborative activities that distinguish coworking practices from other forms of shared physical workspace like serviced offices.'

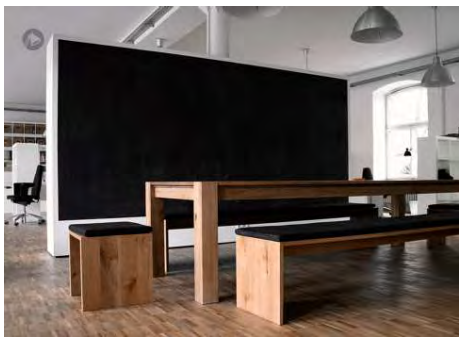
Appendix 2: List of coworking spaces included in the study

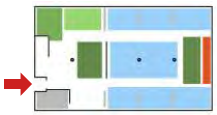
This appendix includes a photograph and diagrammatic plan for each of the coworking spaces included in the research. They are ordered by date, from oldest to most recent. While not to scale at A4, the plans are scaled relative to each other. A key to the colour coding on the plans is included below.



The Melting Pot, Edinburgh, UK, 2008

New Work City, New York, USA, 2008

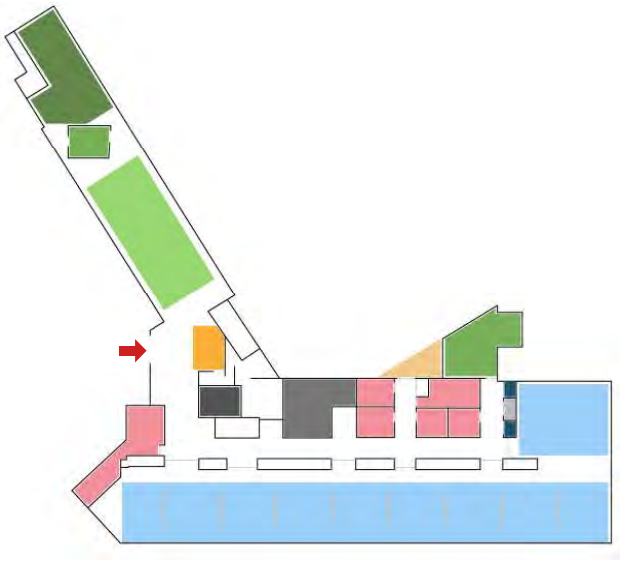




Tante Renata, Berlin, Germany, 2009

The Hub, Halifax, Canada, 2009

The Profile, Vancouver, Canada, 2010

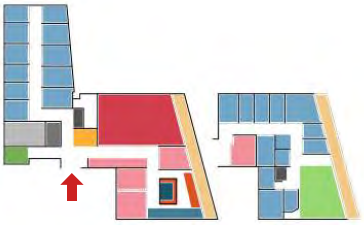


The Toolbox, Torino, Italy, 2010

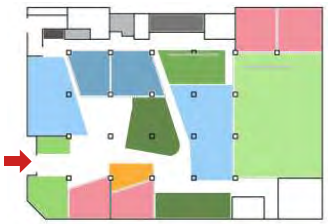
C4 Workspace, San Antonio, USA, 2010

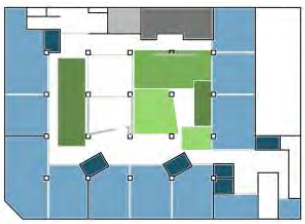
Coin Loft, Wilmington, USA, 2010

Cultureworks, Philadelphia, USA, 2010



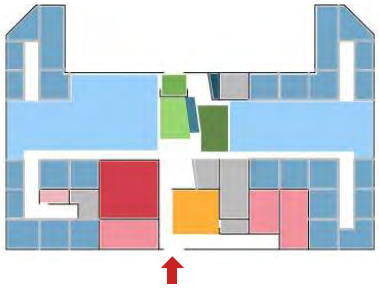
Moboff Yotsuya, Tokyo, Japan, 2010



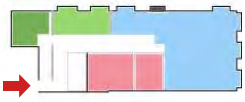


Impact Hub, San Francisco, USA, 2011

Moboff, Harajuku, Japan, 2011

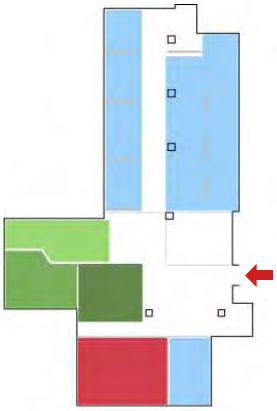


Moboff, Shinjuku, Japan, 2011

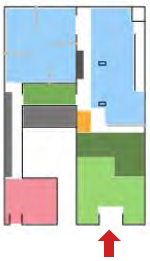


Smartmob, Florianopolis, Brazil, 2011

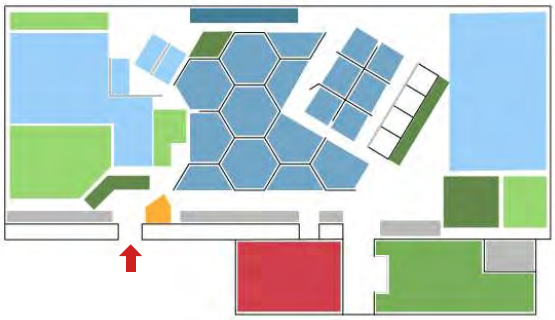
Workzones, Santa Barbara, USA, 2012



Pulsraum, Berlin, Germany, 2012



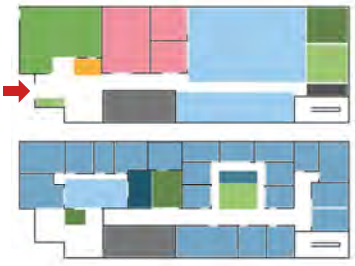
Mercury Studio, Durham, USA, 2012



CoCo, Minneapolis, USA, 2012

CoSpaces, Banrock Station, Australia, 2012

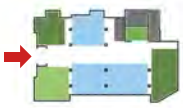
Worksmart, St Petersburg, Russia, 2012



Surge, Tacoma, USA, 2012

System Nakatsu, Tokyo, Japan, 2013

Seedworks, Hamilton, Canada, 2013

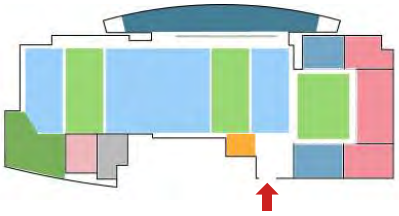


Igloo, Liverpool, UK, 2013

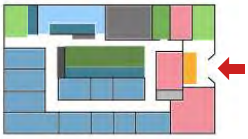
Industrious, Chicago, USA, 2013

Makeshift Society, Hayes Valley, USA, 2013

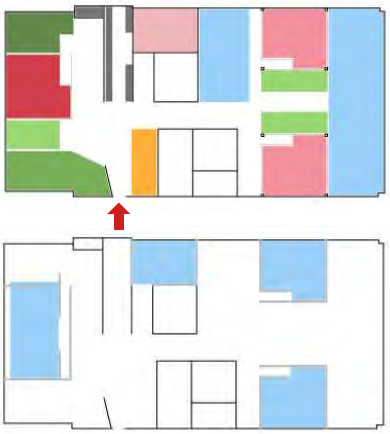
Nest71, Sarajevo, Bosnia and Herzegovina, 2014



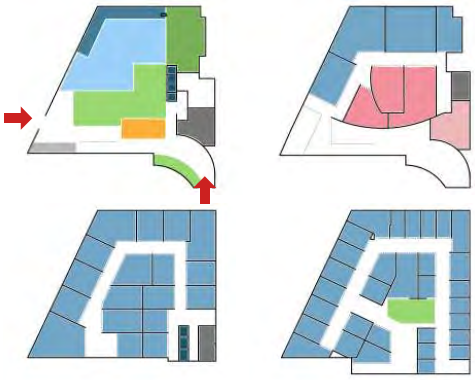
LocalWorks, Charleston, USA, 2014



Berthold Building, Atlanta, USA, 2014

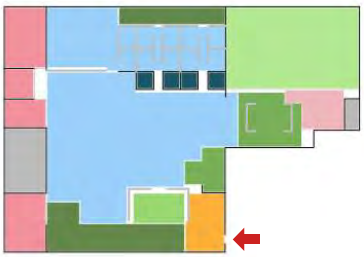


Nagatino, Moscow, Russia, 2014

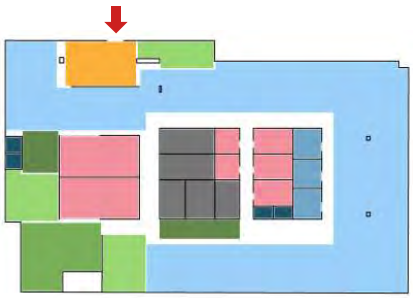


Axis, Fort Lauderdale, USA, 2014

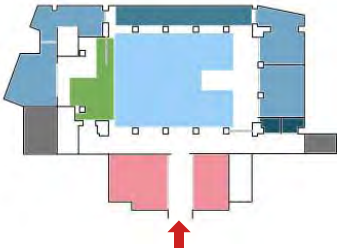
Wallstreet Common, Saskatoon, Canada, 2014



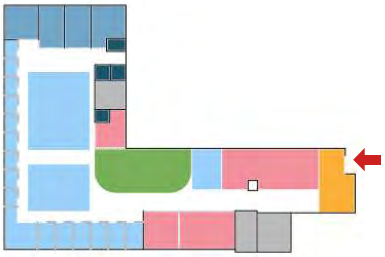
Flywheel Coworking, Winston Salem, USA, 2014



Canvs, Orlando, USA, 2014

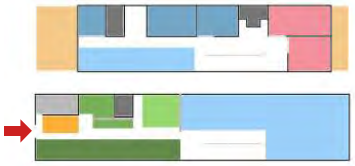


Impact Hub, Belgrade, Serbia, 2014

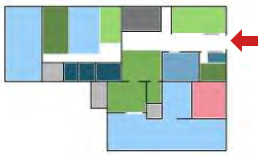


Catalyst, Orlando, USA, 2015

Civic Hall, New York, USA, 2015



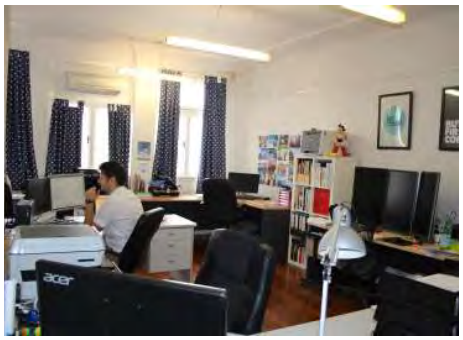
S7, Florianopolis, Brazil, 2015

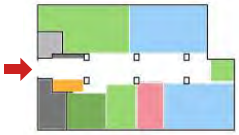


ZWorks, Zionsville, USA, 2015

Coworking Fontanella, Barcelona, Spain, 2015

Friends Work Here, New York, USA, 2015



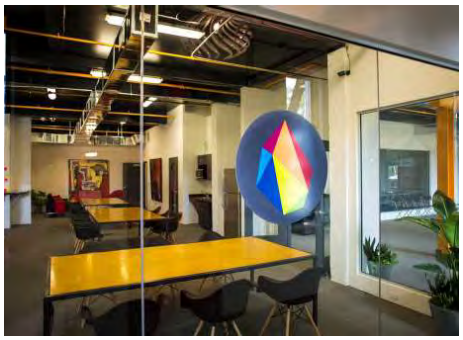


Salt Coworking, Brisbane, Australia, 2015

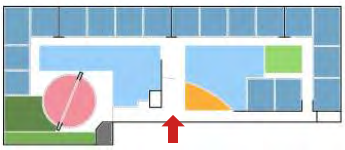
Cloud Coworking, Barcelona, Spain, 2015

Yuanyang Express, Beijing, Spain, 2015

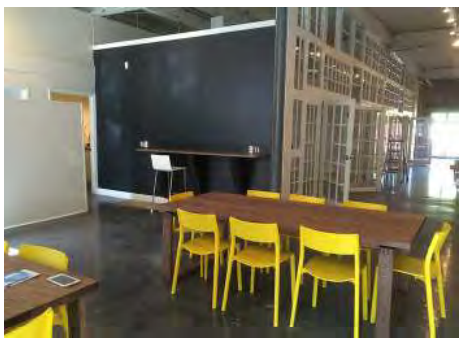
Sunnyside Station, Denver, USA, 2015

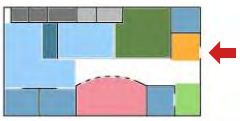


Advent Coworking, Charlotte, USA, 2015

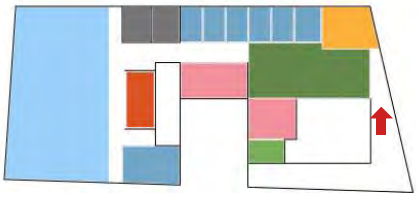


Starthub, Miami, USA, 2015



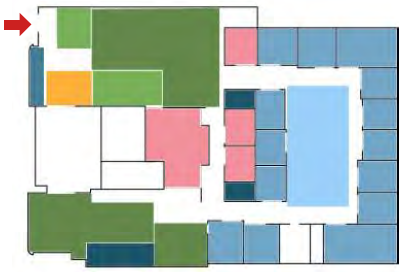


Hygge, Charlotte, USA, 2015

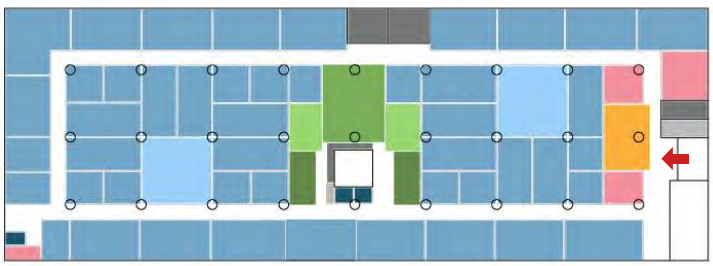


Natural Build, Shanghai, China, 2015

Dimension 5, Melbourne, Australia, 2015

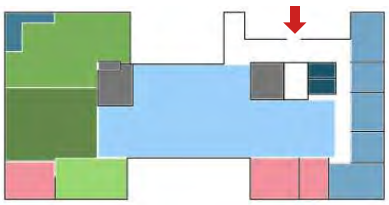


Impact Hub, Baltimore, USA, 2016



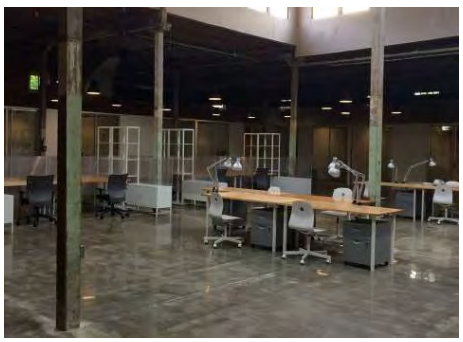
Pencilworks, New York, USA, 2016

New Town, Maacon, Canada, 2016



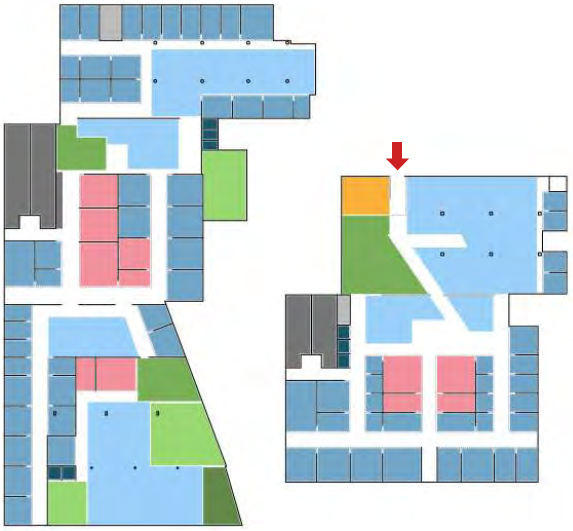
Club Level Coworking, Columbus, USA, 2016

The Hub on Kenny, Columbus, USA, 2016

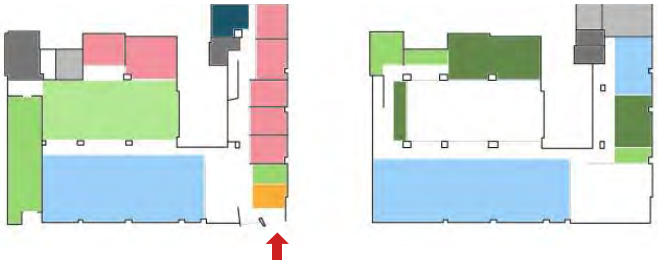


The Warehouse, New Orleans, USA, 2016

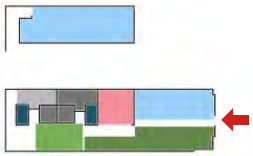
Habita, Istanbul, Turkey, 2016



Bond Collective, New York, USA, 2016



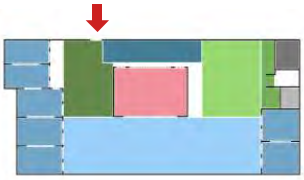
Utopic, Madrid, Spain, 2016



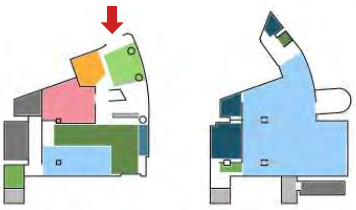
Minor Oak, Nottingham, UK, 2016

Fountown, Shanghai, China, 2016

The Work Project, Hong Kong, 2016



The Workroom, Denver, USA, 2016



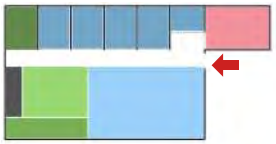
Build Studios, London, UK, 2016

SimplyWork 3.0, Shenzhen, China, 2016

Bizcovery, Da Nang City, Vietnam, 2017

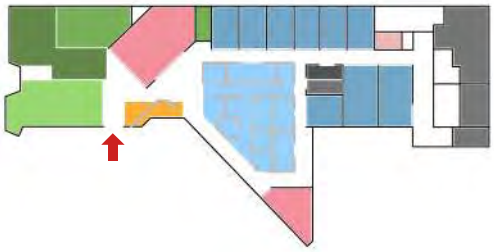
The Olive Grove, Beirut, Lebanon, 2017

WeWork, Shanghai, China, 2017

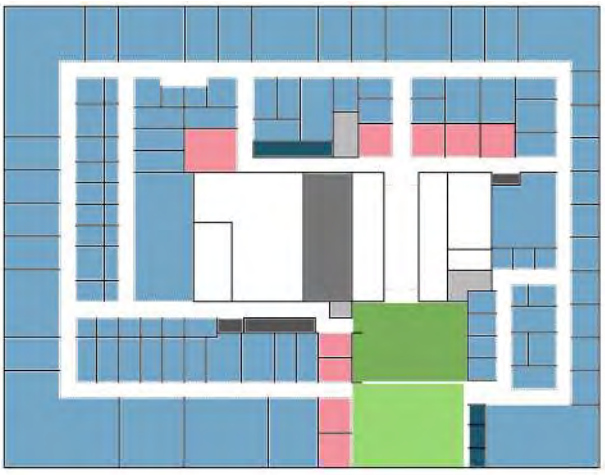


Collision Cowork, Rockhill, USA, 2017

Ampersand Coworking, Marquette, USA, 2017



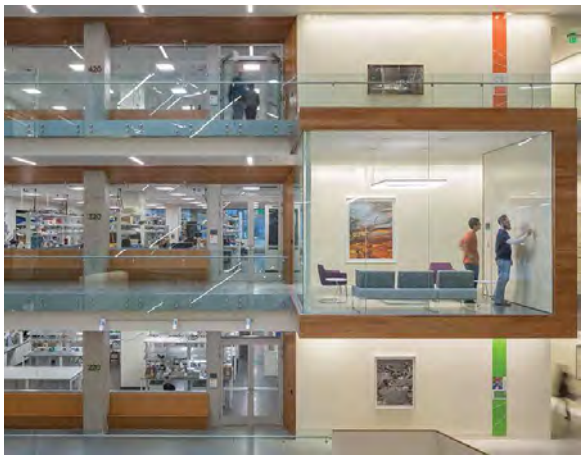
WeWork, Charlotte, USA, 2017



Appendix 3: Analysis of workplace design articles from *Contract, OnOffice* and *Dezeen*

This appendix lists the workplaces that were included in the analysis - all of the completed published projects from *Contract*, *OnOffice* and *Dezeen* in 2016.

Contract



The Allen Institute, Seattle, Perkins + Will

BBC Worldwide, London, HOK

Gensler, Oakland CA, Internal

GLG, Austin TX, Clive Wilkinson Architects

Just Fab, El Segundo CA, Ehrlish Architects

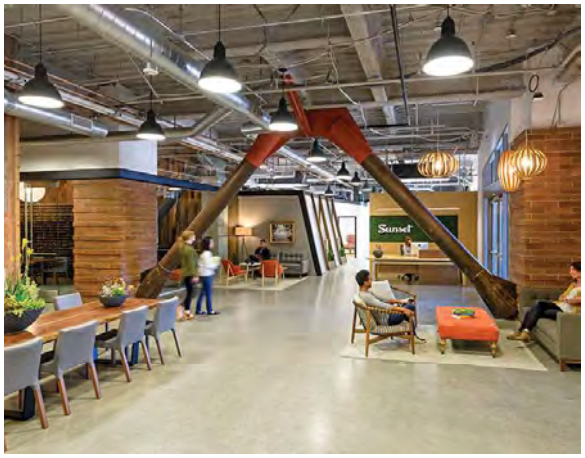
Malwarebytes, San Jose CA, Blitz Architecture + Interiors

NBBJ, Columbus Ohio, Internal

Nixon Peabody, Washington DC, Perkins + Will

Siemens, Munich, Henning Larsen Architects

Spotify, New York NY, TPG Architecture

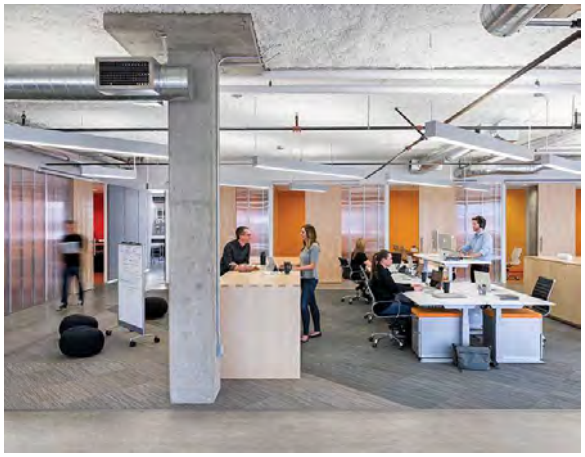


Sunset Magazine, Oakland CA, RMW

Symantec, Silicon Valley CA, AP+I Design

Teach for America, New York NY, HOK and Pentagram

Uber, Pittsburgh PA, Assembly



Venafi, Salt Lake City, Steven Christensen

The Washington Post, Washington DC, Gensler

Dezeen

Airbnb, London, Internal and Threefold

Airbnb, Sao Paulo, Internal and MM18

Airbnb, Singapore, Internal and Farm

Airbnb, Tokyo, Internal and Suppose Design Office

Ancestry, Utah, Rapt Studio

Ansarada, Chicago, Those Architects

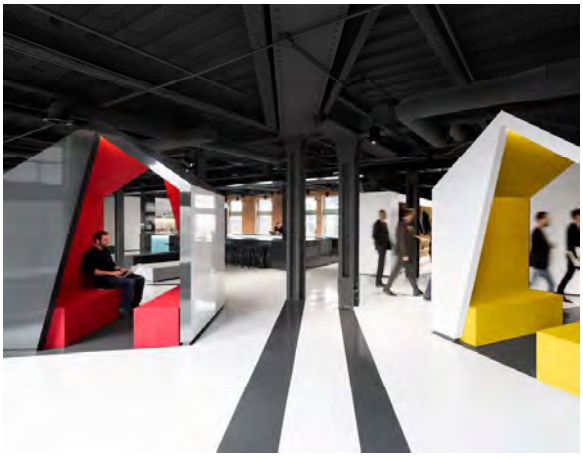
Barclaycard CoLabs, Northampton, APA Architects

Bloomberg, Hong Kong, Neri & Hu

De Alliantie, Hilversum, Studioonedots

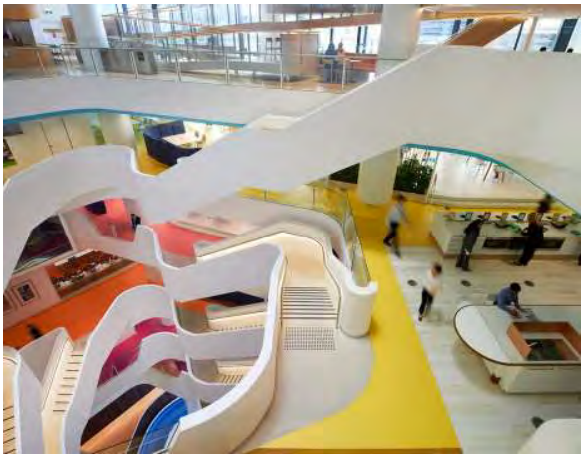
GLG, Austin TX, Clive Wilkinson Architects

Houtloods, Tilburg, Bedaux de Brouwer Architecten



Lightspeed, Montreal, ACDF Architecture

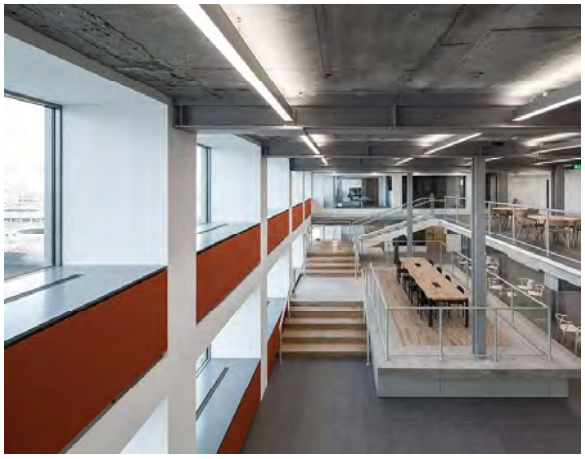
Masquespace Studio, Valencia, Internal



Medibank, Melbourne, Hassell

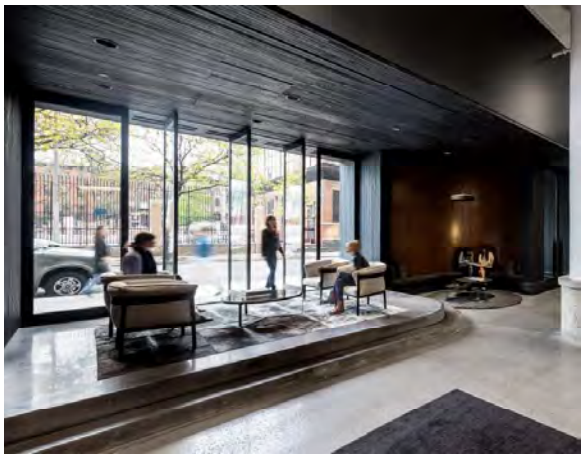
Muxin, Shanghai, Internal

MVRDV, Rotterdam, Internal



Sea Containers Offices, London, BDG Architecture + Design and Matheson Whiteley

Square, New York NY, Magdalena Keck



Squarespace, New York NY, A+I

OnOffice

Berghaus, Sunderland, Rock Townsend

Boys and Girls, Dublin, Marc Kilkenny Architects

Challenger, Sydney, Woods Bagot

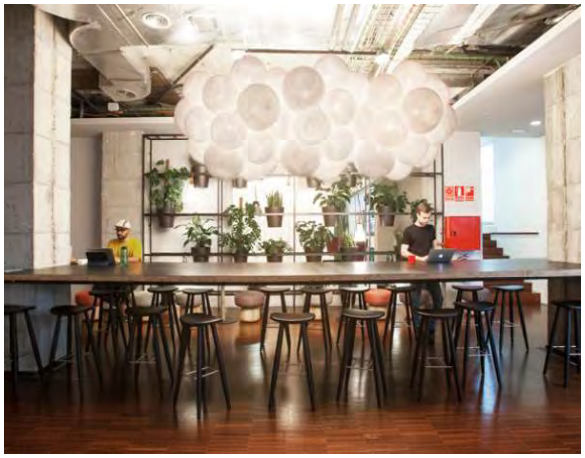
Citizen Relations, London, Your Studio

Lookup, Bangalore, Bhumiputra Architecture

Mendeley, London, Align

MullenLowe, London, Studio Octopi

Rubik Financial, Sydney, Jonathan Clark Architects



Typeform, Barcelona, Lagrania Design Studio

Vice, Toronto, DesignAgency

Vics Meat, Sydney, Those Architects

We Are Social, London, YourStudio

William Morris, New York NY, Rockwell Group

Appendix 4: Forms and guides relating to the ethnographic research at Birmingham Impact Hub and Second Home

Participant Information Form

Royal College of Art
RESEARCHRCA

The effects of new workplace typologies on wider workplace design practice

Participant Information Sheet

You are invited to take part in a research study. The study is being carried out by Imogen Privett, PhD candidate at the Royal College of Art in London, and supervised by Prof. Jeremy Myerson and Dr. Roberto Bottazzi of the Royal College of Art. Please take time to read the following information carefully.

Purpose of the Research

The study is interrogating the architectural and spatial implications of the shift towards cloud-based, distributed and collaborative work in the knowledge economy by investigating the emerging outliers of workspace provision. It asks what kind of architectural responses are triggered by particular organisational needs and how our interactions and experiences are shaped by the spaces around us.

The research will be investigating the relationships between people, behaviour and space at Impact Hub Birmingham. This part of the research involves in-depth interviews with selected members, focusing on their reasons for coming to the Hub, the ways in which they use the space, their interactions with other members and their overall experience.

Why have I been chosen?

A random sample of members was taken to include a range of ages, genders and lengths of membership.

What will happen if I take part?

You will be asked to participate in an interview that will take up to forty-five minutes. The discussion will be based around a series of open-ended questions about your time at the Birmingham Hub. Interviews will be recorded as long as the participant agrees, and a separate consent form will give the participant the chance to declare his or her wishes concerning the further use of the recordings.

All data will be treated as confidential and anonymous and data on individuals will be anonymised

Royal College of Art, Kensington Gore, London SW7 2EU, UK T: +44 (0)20 7590 4214 E: research@rca.ac.uk www.rca.ac.uk

or pseudonymised so that no individual can be identified if referred to in the text/data used in this study. The results of the study will be used in the PhD thesis of Imogen Privett as well as in potential further publications.

Do I have to participate?

No. Participation is voluntary and participants can withdraw from the research at any time for any or no reason with no disadvantage.

If you have any concerns or would like to know the outcome of this project, please contact my supervisor Prof. Jeremy Myerson at the following address:

Royal College of Art
Kensington Gore
London
SW7 2EU

Compliants clause

This project follows the guidelines laid out by the Research Ethics Code of the Royal College of Art.

If you should have any concerns about your rights as a participant in this research, or you have a complaint about the manner in which this research is conducted, it may be given to the researcher or, if an independent person is preferred, addressed to the Research Ethics Committee of the Royal College of Art at the above address.

Participant Consent Form

Royal College of Art
RESEARCHRCA

For further information
Supervisor: Prof. Jeremy Myerson
jeremy.myerson@rca.ac.uk

11 November 2015

The effects of new workplace typologies on wider workplace design practice
Participant Consent Form

I *(please print)*.....have read the information on the research project ***The effect of new workplace typologies…*** which is to be conducted by Imogen Privett from the Royal College of Art, and all queries have been answered to my satisfaction.

I agree to voluntarily participate in this research and give my consent freely. I understand that the project will be conducted in accordance with the Information Sheet, a copy of which I have retained.

I understand that I can withdraw from the project at any time, without penalty, and do not have to give any reason for withdrawing.

I consent to:

- Participate in a semi-structured interview lasting up to forty-five minutes
- Give personal information if required

I understand that all information gathered from the interviews will be stored securely, and my opinions will be accurately represented. Any images in which I can be clearly identified will be used in the public domain only with my consent.

Print Name:.....

Signature.....

Date: .....

This project will be conducted in compliance with the Research Ethics Code of the Royal College of Art.

Data Handling Form

Royal College of Art
RESEARCHRCA

The effects of new workplace typologies on wider workplace design practice

Data handling form

	YES	NO
Do you agree to the tape recording of your interview in general?		
May I use your anonymised interview material in my PhD thesis?		
May I use your anonymised interview material in future publications?		
May I use your anonymised interview material in public presentations (eg. lectures)?		
May I use your anonymised interview material for public broadcast (eg. radio)?		
Are you willing for me to hold the copyright of your recorded interview? (This means that I may use the recorded material even if I am unable to contact you at a later date).		

Print Name:.....

Signature.....

Date: .....

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Birmingham Impact Hub and Second Home Interview Guide

1. Introduction

Introduce researcher and research purpose.

2. Overview

2.1 Can you tell me a little bit about yourself and what you do?

2.2 How long have you been a member of *(the Hub/Second Home)*?

2.3 What brought you here?

3. Use of the space

3.1 How often do you come here, and how long do you typically stay?

3.2 Which spaces do you tend to use? Why do you choose these?

3.3 Do you tend to return to the same place, or are you fairly mobile?

3.4 Are there any spaces that you don't use? If so, why?

3.5 How well do you feel the space supports the work that you need to do?

3.6 Where do you work when you're not at *(the Hub/Second Home)*? Why do you choose these locations?

4. Interactions and relationships

4.1 How frequently do you interact with other members when you're here?

4.2 Do you attend any of the events? Which ones and why?

4.3 Would you say that you've formed any new relationships since joining? Who with? What does this relationship mean to you?

4.4 How have these relationships come about?

4.5 Do you think there have been any personal or work related benefits as a result of your interactions at *(the Hub/Second Home)*?

4.6 Do you feel like you can freely interact with other members?

4.7 Do you interact with other members when you're not physically in the space?

5. Experience

5.1 Can you tell me about your first impressions of the space? Do you feel like these have held up over time?

5.2 Having joined *(the Hub/Second Home)*, what has made you stay?

5.3 What would you tell someone else about *(the Hub/Second Home)*?

5.4 How would you describe the culture here? What do you think supports this?

Appendix 5: Forms and guides relating to the ethnographic research at Sony PlayStation

Participant Information Form

Royal College of Art
RESEARCHRCA

The effects of new workplace typologies on wider workplace design practice

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The research will be investigating the relationships between people, behaviour and space at Impact Hub Birmingham. This part of the research involves in-depth interviews with selected members, focusing on their reasons for coming to the Hub, the ways in which they use the space, their interactions with other members and their overall experience.

Why have I been chosen?

A random sample of members was taken to include a range of ages, genders and lengths of membership.

What will happen if I take part?

You will be asked to participate in an interview that will take up to forty-five minutes. The discussion will be based around a series of open-ended questions about your time at the Birmingham Hub. Interviews will be recorded as long as the participant agrees, and a separate consent form will give the participant the chance to declare his or her wishes concerning the further use of the recordings.

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Participant Consent Form

Royal College of Art
RESEARCHRCA

For further information
Supervisor: Prof. Jeremy Myerson
jeremy.myerson@rca.ac.uk

11 November 2015

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Signature.....

Date: .....

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Data Handling Form

Royal College of Art
RESEARCHRCA

The effects of new workplace typologies on wider workplace design practice

Data handling form

	YES	NO
Do you agree to the tape recording of your interview in general?		
May I use your anonymised interview material in my PhD thesis?		
May I use your anonymised interview material in future publications?		
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Are you willing for me to hold the copyright of your recorded interview? (This means that I may use the recorded material even if I am unable to contact you at a later date).		

Print Name:.....

Signature.....

Date: .....

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Sony PlayStation Interview Guide

1. Introduction

We are researchers from the Helen Hamlyn Centre for Design at the Royal College of Art, and have been asked to develop a brief for the proposed office redesign. The aim of the interviews is to gain an understanding of your workflow, the interactions that take places and the relationships between groups, and your spatial requirements.

2. Overview of group

2.1 Can you summarise what your group does?

v 2.2 Thinking about your own work, how much of it involves creative thinking or generation of new ideas, and how much of it is process based?

2.3 Thinking about your own work, how much of it requires face-to-face communication, and how much is concentrated individual work?

2.4 Do these differ from your group members or would you say that they're fairly typical?

3. Mapping interactions and use of spaces and equipment (referring to asset map).

3.1 Who are the people or groups that you have the most contact with?

3.2 How do these interactions take place? (e.g. planned meeting, impromptu meeting, at desk, digital communication, over the phone)

3.3 Who else do you interact with but less often? Where do these interactions happen? How important are they?

3.4 Are there people you would like to have more contact with?

3.5 What would make it easier to work with these people or groups?

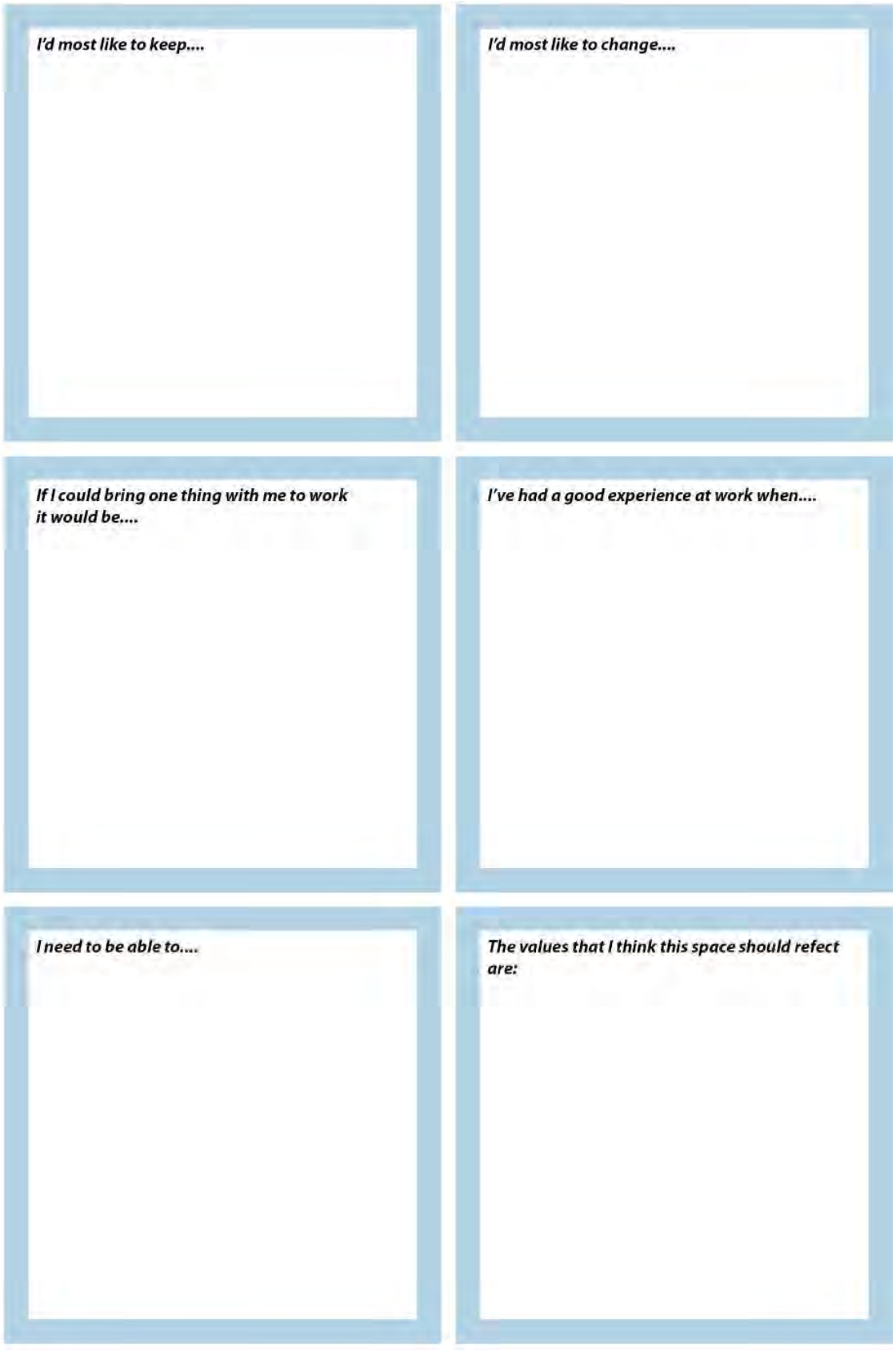
3.6 Other than the spaces we have already discussed, are there others that you use? Where? Why?

3.7 Other than your desk based kit what equipment do you use regularly?

3.8 Is what we have mapped here capturing how you currently work? Is there

Appendix 6: Design game cards and instruction sheets

Stage 1 cards: Individual needs, values and preferences



..... *makes me feel like I want to be in a space.*	..... *makes me feel like I'm part of a community.*
When I come into the building I feel..... because....	*.... is where I feel like I'm most productive*
.... is where I feel most content	*If I could build an inspiration room it would have....*

Stage 2 cards: Experience map of local settings

Instructions and guide sheet

We want this space to be.....

Object:
Create a collective map of your desired experience based upon a set of suggested space types.

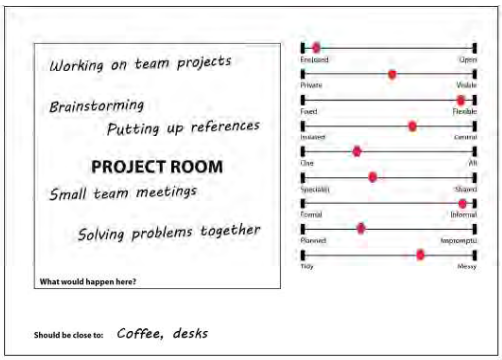
How to play:
As a group, place the colour coded icons to build up a visual map around each type of space.

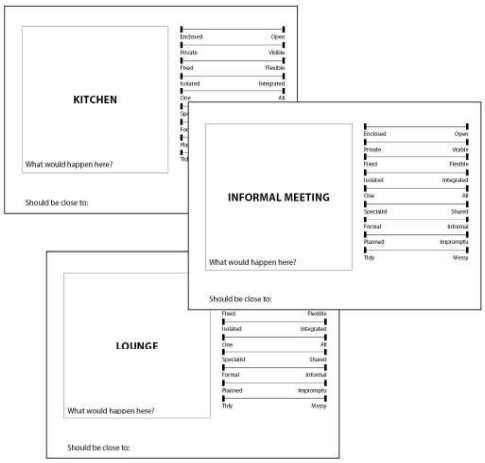
Guidelines:
YOU CAN challenge existing proposals
YOU CAN make your own cards if there's anything missing
YOU CAN draw on or modify existing cards
YOU CAN annotate/add additional information

1. Select a 'Space type' card

You might choose to work on several, or only on the one that's most important to your group (e.g. a space that is team specific).

If there are multiple cards that you think need to be considered together (e.g. kitchen, informal meeting, library) that you think need to be considered jointly, then place them together.





2. Filling in the card

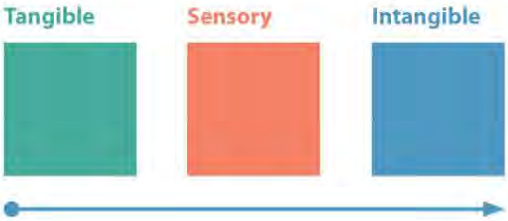
- **What would happen here?** In addition to work tasks, think about any other activities that are an important part of your daily experience.

- **Should be close to?** Are there other areas that should be located close by? (e.g. individual working areas close to a cafe or informal meeting space).

- **Fill in the sliding scales** (definitions can be found on the guide sheet).

3. Adding detail

Once completed, use the coloured experience cards to describe the space in more detail. There are three categories:



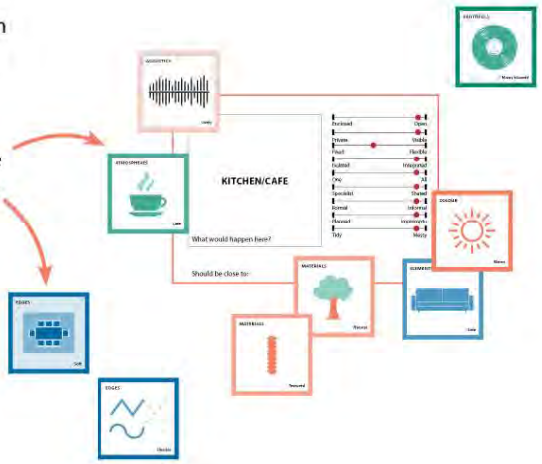
You can refer to the Guide sheet for more detailed explanations of the icon categories and there is a definition on the back of each one.

If they are available, having your individual cards from the first exercise out can help to understand the priorities of the group and give you something to refer back to.

Take the experience cards and start to place them around the space types card. While the aim is to reach consensus as far as possible, you don't all have to agree.

If you're all in agreement, then place the icon close to the centre. If not, then place these icons further out.

Use as many cards from each category as you need.



Think about how experience cards can be combined to describe the desired experience. For example, 'seating' on its own is non-descriptive, but combining it with 'lounge', 'cafe', 'soft materials' and 'music' starts to describe the experience of being in that space.

Do it yourself. If there are things that are missing, then you can annotate cards, or use blank ones to fill in the gaps.

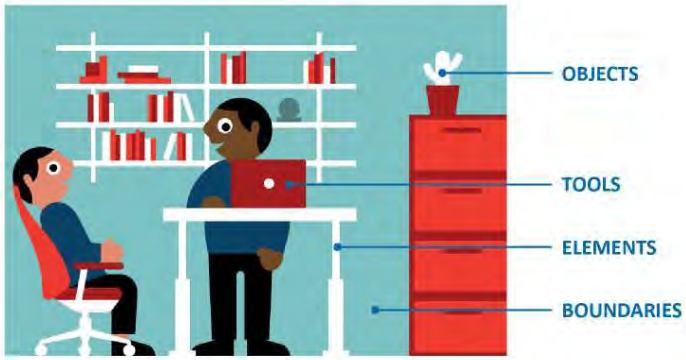
4. Reflect and prioritise.

Once you've finished, take a final look - does it reflect the qualities that you want the space to have?

Guide to Card Types

Tangible

Describes the physical components and characteristics



Boundaries: Physical boundaries and surfaces surrounding the space.

Elements: Furniture/non-structural elements of the space.

Tools: Things that are required to get work done.

Objects: Things which may be work related, express identity or give pleasure.

Sensory

Descibes the lighting acoustics, colour and materiality

Lighting: What types of lighting should there be in terms of fittings and qualities?

Colour: What qualities of colour should the space have?

Materials: What should surfaces and objects within the space look and feel like?

Acoustics: What are the desired acoustic qualities of the space?

Intangible

Describes how the space feels and whether there are any agreed protocols for using it

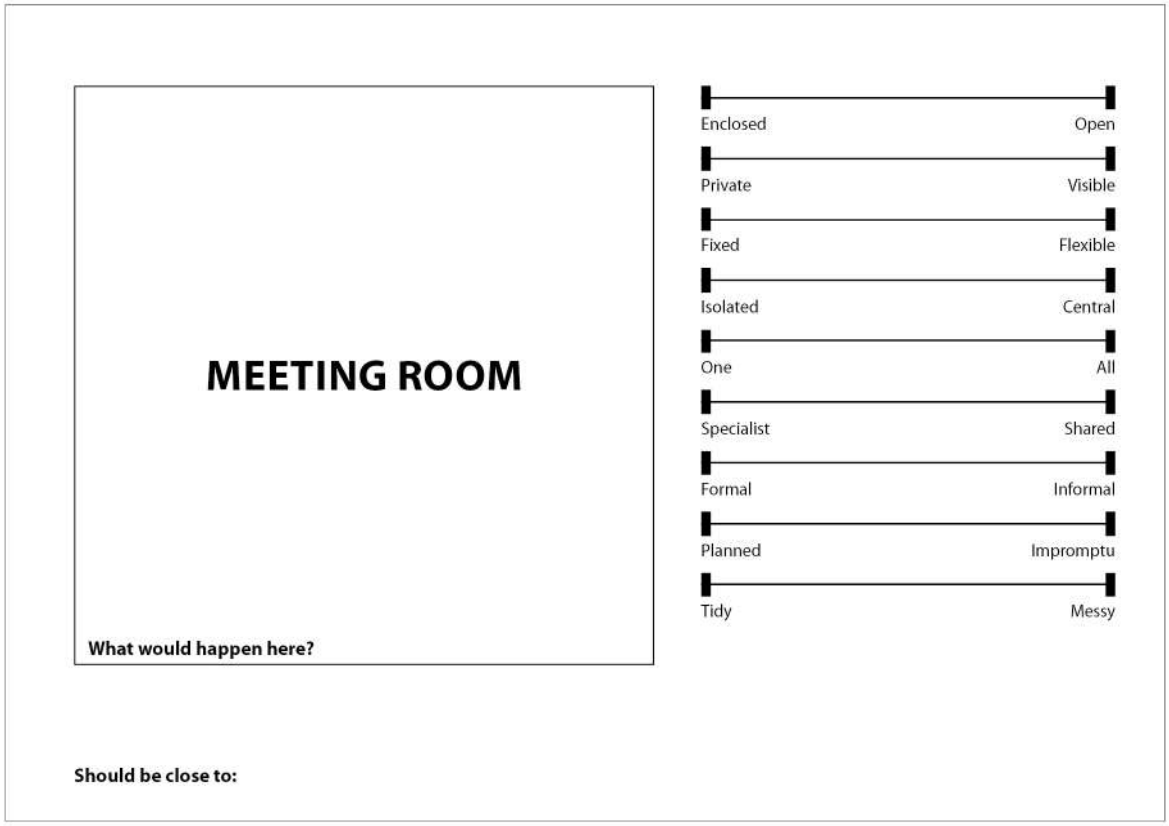
Protocols: Should there be any specific guidelines about how the space is used?

Atmospheres: Are there other types of environment that it should be like?

Postures: How do people occupy the space?

Affect: How do you want to feel? What values should the space express?

Example of space type cards



Definitions:

Enclosed-Open: From enclosed on all four sides to completely open.

Private-Visible: Is there visual privacy within the space, or can people passing by see into it?

Fixed-Flexible: Is the space set as it is, or can things be moved around? Can it accommodate multiple activities?

Isolated-Central: Is it tucked out of the way/at the edge, or is it centrally located?

One-All: Is it for individual occupation, small or large groups?

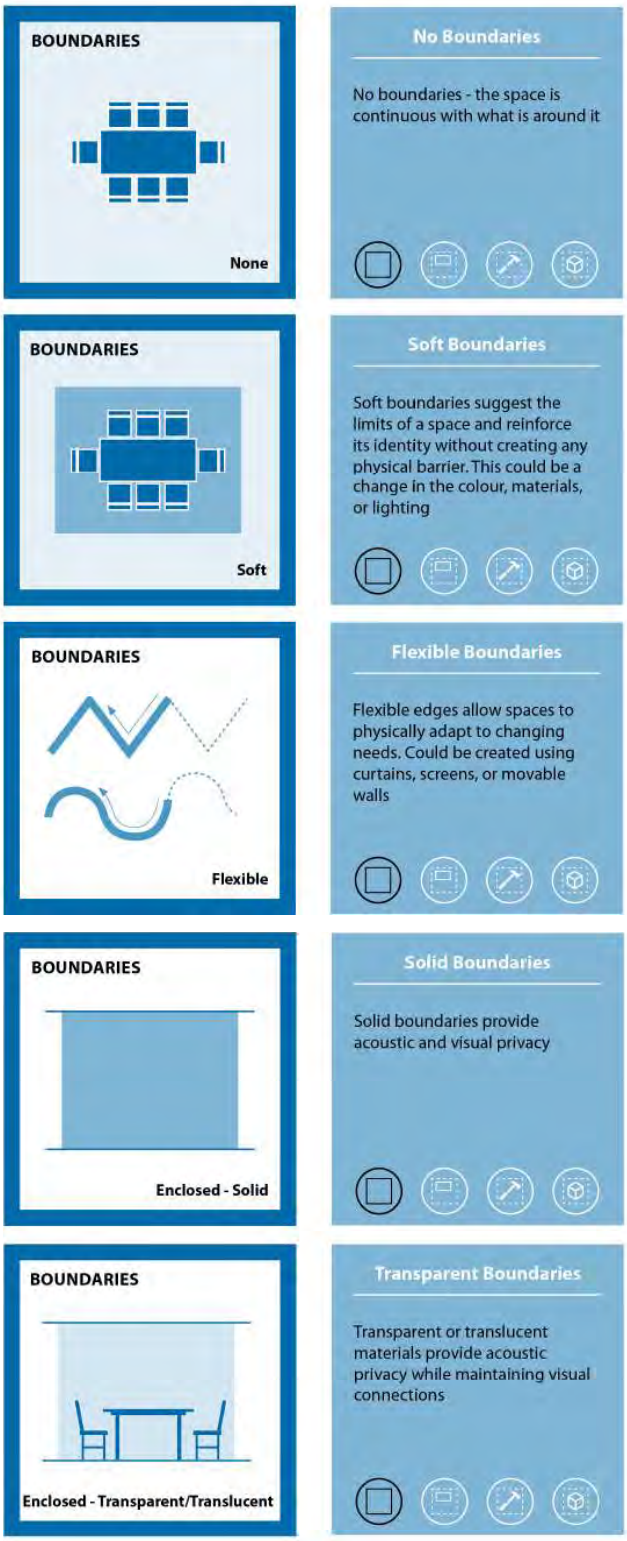
Specialist-Shared: Is this a space that serves a very specific purpose or 'belongs' to a particular group, or is it a resource that is shared by everyone?

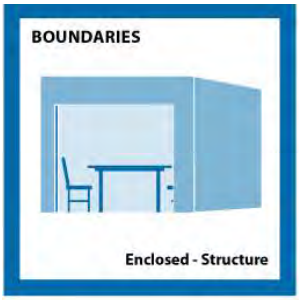
Formal-Informal: Is this a formal (eg. client focused) or informal (eg. social/relaxation) space?

Planned-Impromptu: Is this space bookable/for use during particular times, or can anyone drop in?

Tidy-Messy: Is this a clean, simple space for focused work, or does it allow for messy thinking (eg. ongoing project work can be left out, or post-it notes put up on the walls?

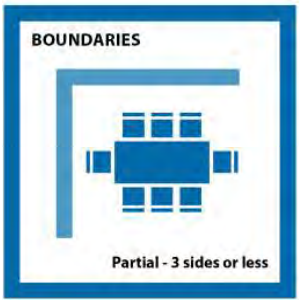
Experience building blocks





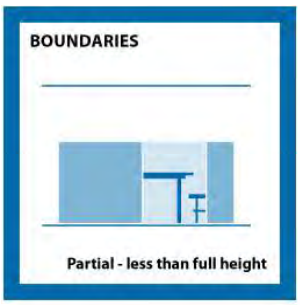
Structural Boundaries

For example, meeting pods that provide enclosure but are not part of the architectural structure of a space



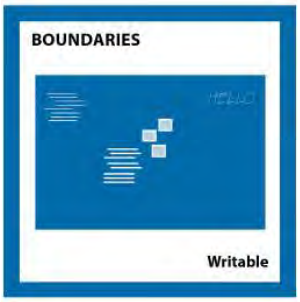
Partial Boundaries

Partial enclosure can provide useful working surfaces while maintaining visibility and access, or reinforce the distinctiveness of a space without closing it off



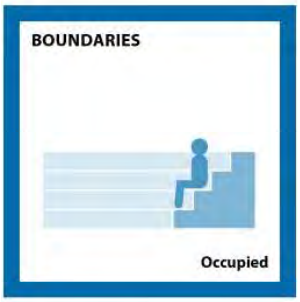
Partial Boundaries

Boundaries that provide some privacy while maintaining visual connections across the wider space



Writable Boundaries

Writable surfaces that could be used for collaborative work or for social communications

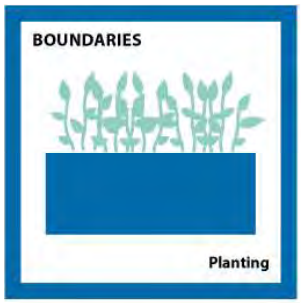


Occupied Boundaries

Boundaries can be defined by built-in furniture. Among other options, this could include bleacher style seating, meeting booths, or touchdown spaces

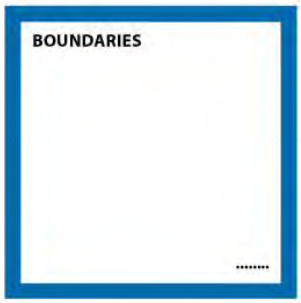
Ceiling Boundaries

Changes in ceiling height can increase the feeling of enclosure or intimacy, and help to reinforce the identity of a space



Planted Boundaries

Planted edges could be either green walls or planters at varying heights



Boundaries

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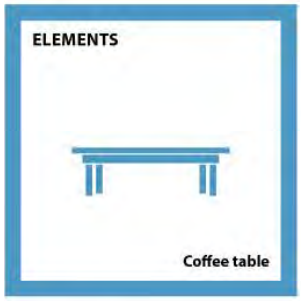
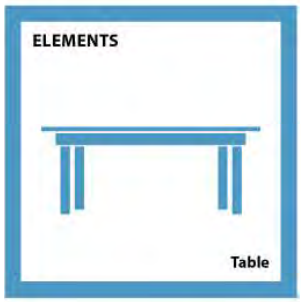


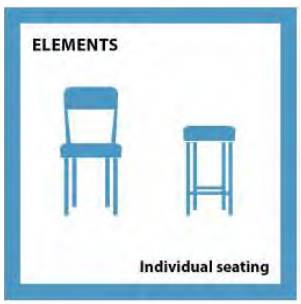
Coffee table

Informal side tables



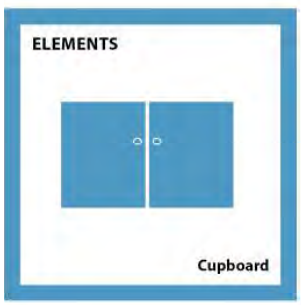
Table

Tables for individuals/small groups up to long, shared kitchen style tables depending on need and context



Individual seating

Individual seating, from task chairs or stools to comfortable, informal armchairs depending on need and context



Cupboards

Storage, can also be used to define edges. For filing/tools or display of team or personal objects

ELEMENTS

Booth

Booths

Built-in booths with seating and tables for informal meetings, working or socialising. Could be either open or enclosed at the top

ELEMENTS

Desk

Desk

Inidividual work surfaces, either hot desking or assigned to specific people

ELEMENTS

Games

Games

Games such as table football, pool tables, or ping-pong

ELEMENTS

Shelves

Shelves

Storage, can also be used to define edges

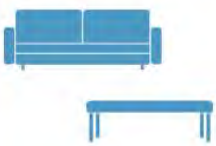
ELEMENTS

Screen

Screen

Lightweight screens can be used to subdivide space on a flexible basis, and could include working wall elements

ELEMENTS



Shared seating

Shared seating

Shared seating - this could be either bench style seating or comfortable lounge furniture depending on need and context

ELEMENTS

.....

Elements

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TOOLS

Screen

Screen

TV screens or computer monitors for work, display, or information sharing

TOOLS

Digital Whiteboard

Digital Whiteboard

Digital whiteboards allow work in progress to be captured and shared

TOOLS

Projector

Projector

Projector

TOOLS

Flipchart

Flipchart

For sharing/mapping out ideas, project planning or displaying information

TOOLS

Working wall

Working wall

Large scale surfaces that can be used for physical mapping out of ideas or laying out material in a collaborative setting

Whiteboard

Physical resource for mapping out ideas, workshops, visual thinking

Printing

Printing facilities are readily available - either in the same space or closely accessible

Telephone

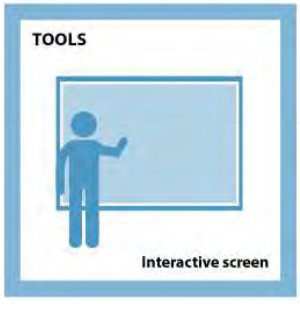
Access to telephone

Video Conference

Video conference facilities

VR meeting facilities

Virtual reality meeting tools



Interactive screen

Larger scale screens with interactive capabilities which allow work to be planned, shared and analysed

TOOLS

Coffee

Coffee

Provision of tea, coffee or other refreshments

TOOLS

Prototypes/Work in progress

Work in progress

Ready access to project related work such as work in progress or prototypes

TOOLS

Stationery

Stationery

Paper, post-it notes, pens and other physical resources are readily on hand

TOOLS

Recording equipment

Recording equipment

Access to recording equipment such as cameras, video cameras, or dictaphones

TOOLS

Reference materials

Reference materials

Reference materials such as books, physical artefacts and other library materials

TOOLS

.....

Tools

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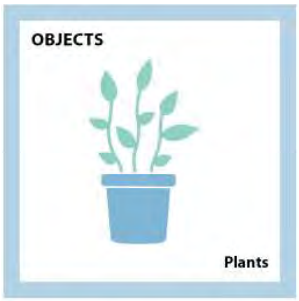
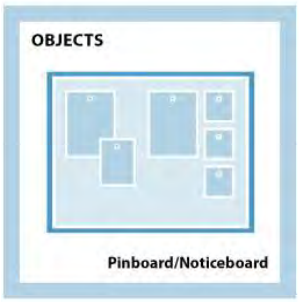


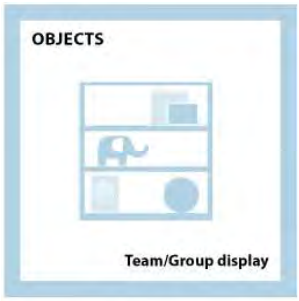
Plants

Table-top or larger scale plants



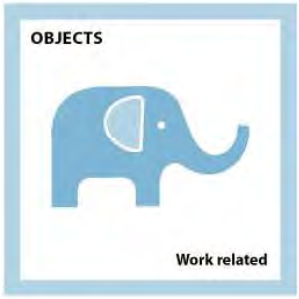
Pinboard/Noticeboard

Boards for sharing information or group display



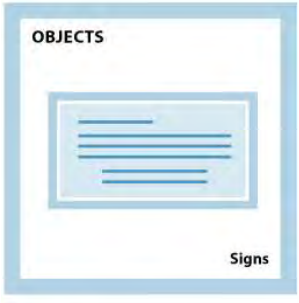
Team/group display

Objects that have significance for the team or group



Work related

For example, objects that serve as an inspirational record of completed work



Signs

Signs, personal/group related rather than fucntional signage

Awards & Achievements

Display of group or individual awards and achievements

OBJECTS

Individual display

Individual display

Space for personal objects such as photographs, collectables or other items of personal significance

OBJECTS

.....

Objects

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LIGHTING

Pendant

Pendant lighting

Hanging pendant lights, typically associated with domestic, hospitality or industrial spaces depending on the style

LIGHTING

Luminaires

Luminaires

Ceiling tile or ceiling mounted lighting, usually arranged in a grid pattern

LIGHTING

Backlit

Backlit lighting

Signs, screens or objects lit from behind; creates a soft atmospheric glow

LIGHTING

Adjustable

Adjustable lighting

Ambient lighting that can be controlled by the people using a space or setting

Task lights

Lighting focused on a specific area to make work easier. Could be individually controlled

Signage

Can help to visually define different spaces. Makes a statement about the identity or purpose of a space or company, rather than being task oriented

Bright light

Bright light

Cool light

Light with a cool blueish tone

Lighting

Light with a warm yellow tint

Soft light

Soft ambient light

LIGHTING

Feature

Feature lighting

Statement lighting that is limited to a particular area. Feature lighting can be sculptural, or could introduce more variety into the lighting colour and intensity with the wider space

LIGHTING

.....

Lighting

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COLOUR

Warm

Warm colour

Colours with a warm tone

COLOUR

Cool

Cool colour

Colours with a cool tone

COLOUR

Single tone

Single tone colour

Simple colour schemes that use one predominant colour

COLOUR

Varied

Varied colours

Varied colour schemes that use a combination of colours and tones


COLOUR
Bright
Bright colour
Bright, vibrant colours
COLOUR
Subtle
Subtle colour
Soft, muted colour scheme
COLOUR
Rich
Rich colour
Jewel-toned colours
COLOUR
Light
Light colour
Light colours or hues
COLOUR
Dark
Dark colour
Dark colours or hues
COLOUR
THIS
IS US
Brand colours
Brand colours
Use of organisational/branding colours on surfaces, furniture or objects

COLOUR

Mid

Lighting

Mid range hues

COLOUR

.....

Lighting

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MATERIALS

Natural

Natural materials

Natural materials such as wood or cork

MATERIALS

Hard

Hard materials

Hard materials include laminates, glass, tile, metal or plastic

MATERIALS

Soft

Soft materials

Soft materials include textiles

MATERIALS

Smooth

Smooth materials

Smooth surfaces and elements

MATERIALS

Textured

Textured materials

Introduce varying textures into the space

MATERIALS

Opaque

Opaque materials

Opaque materials provide visual privacy within a space

MATERIALS

Translucent

Translucent materials

Translucent materials can create layers of visibility

MATERIALS

Industrial

Industrial materials

Industrial materials include metal, tile or brick - think of old factories or manufacturing spaces

MATERIALS

Formal

Formal materials

Formal materials might include marble, leather or stone, or other materials that have traditionally been seen as indicating status. Think about corporate offices or private members clubs

MATERIALS

Informal

Informal materials

Materials that convey a lack of formality and visually move the space away from traditional corporate workplace design. Think about cafe culture or loft spaces

MATERIALS

Reclaimed

Reclaimed materials

Reclaimed materials might include timber, tile or brick - think about loft spaces that have been repurposed as workspace

MATERIALS

.....

Materials

Card left blank for your input

ACOUSTICS

Ambient/background noise

Background noise

A low level of background noise, such as ambient chat in which words can't always be clearly distinguished

ACOUSTICS

Silent

Silent

Quiet space

ACOUSTICS

Lively

Lively noise

A level of background noise that might be found in a busy restaurant or well-populated social space

ACOUSTICS

Sound masking

White noise

Broad band noise introduced to reduce distractions or increase confidentiality where needed


ACOUSTICS
Music


Music
Music can be played in this space


ACOUSTICS
.....


Acoustics
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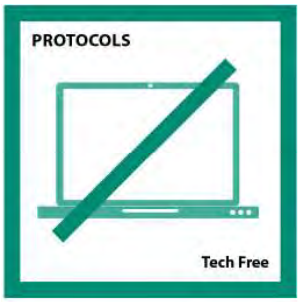
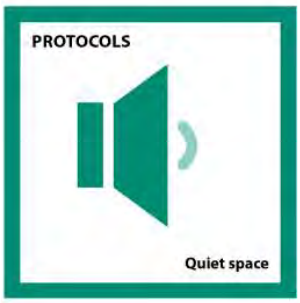

PROTOCOLS
Tech Free


Tech free protocol
Technology free space


PROTOCOLS
Quiet space

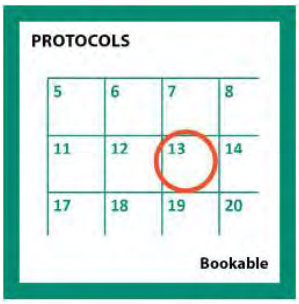

Quiet space
Space for quiet work


PROTOCOLS
Please don't eat here


Don't eat here
No food to be consumed


PROTOCOLS
Phone free


No phone calls
No phone calls in this space



Bookable space

This space can or should be booked

Tidy up

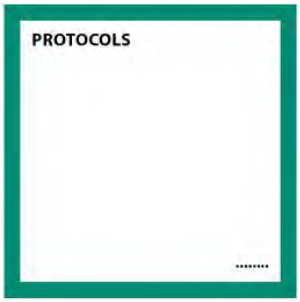
Please tidy up/reset after use

Music

Music can be played here

Space controls

This space can be controlled locally through an app or control panel



Protocols

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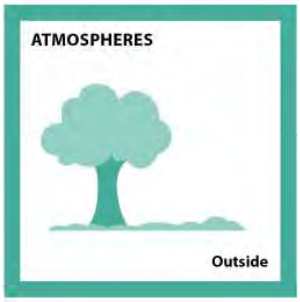
Cafe

A cafe-life atmosphere - for example, informal and social

Home

Introduce comfortable, domestic elements



Outside

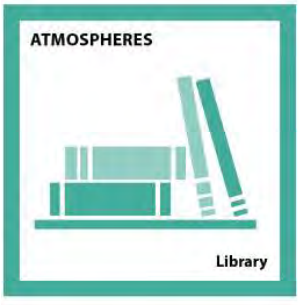
Bring the outside in - for example, daylight, natural materials or plants

Hotel

For example, a space with a high level of service, or one where you can just turn up and work with minimal setup

Restaurant

For example, spaces that provide a high level of hospitality

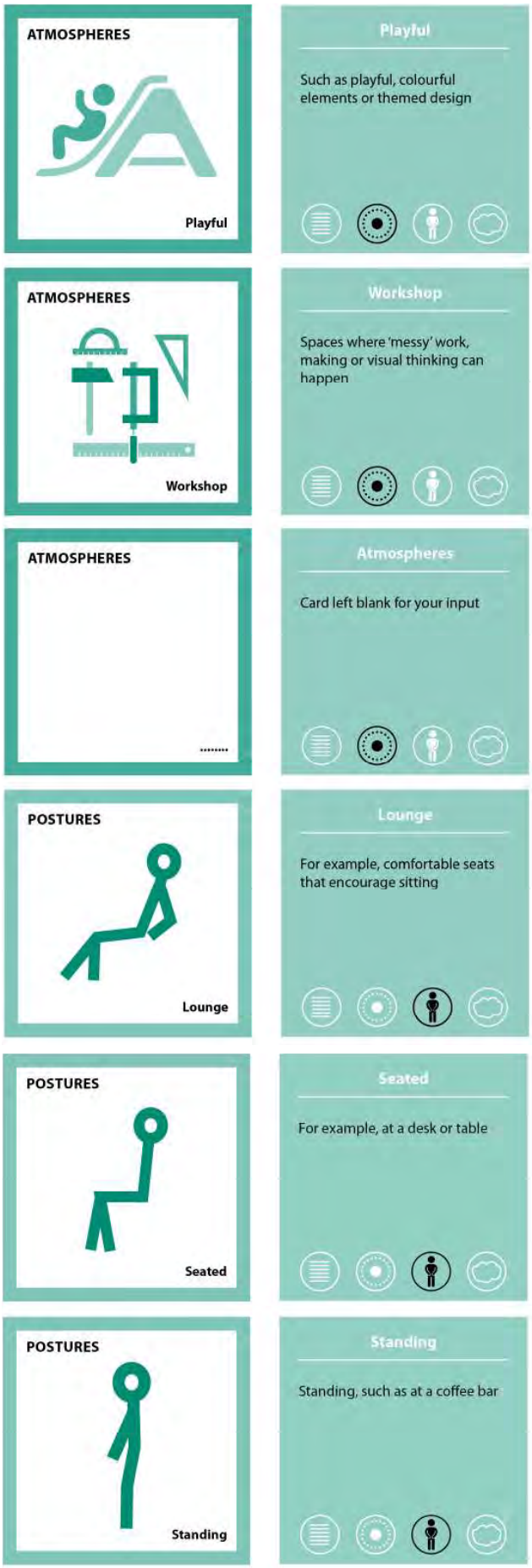


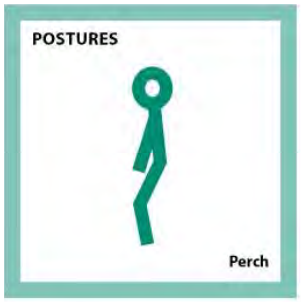
Library

For example, quiet space that encourages focused individual work

Bar

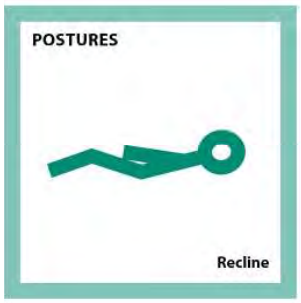
Space which are focused on social activity and might include provision for after-work events, music, or hospitality


ATMOSPHERES
Playful
Playful
Such as playful, colourful elements or themed design
ATMOSPHERES
Workshop
Workshop
Spaces where 'messy' work, making or visual thinking can happen
ATMOSPHERES
.....
Atmospheres
Card left blank for your input
POSTURES
Lounge
Lounge
For example, comfortable seats that encourage sitting
POSTURES
Seated
Seated
For example, at a desk or table
POSTURES
Standing
Standing
Standing, such as at a coffee bar



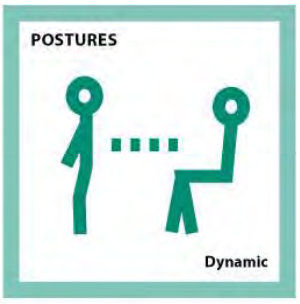
Perch

For example, on stools at a high bench or in a short-term touchdown area



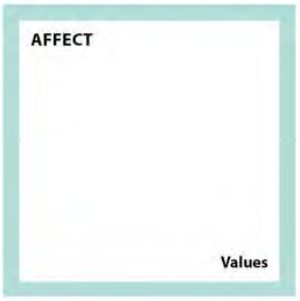
Recline

Reclining/rest space



Dynamic

Changing postures - for example moving between sitting and standing



Affect - Values

What values should be expressed in this space?

Affect - Feeling

How do you want to feel in this space?

Stage 3 cards: Floorplate map

Instructions

Our workplace should have.....

Object:
Generate a collective map of desired space, services, infrastructures and aesthetic.

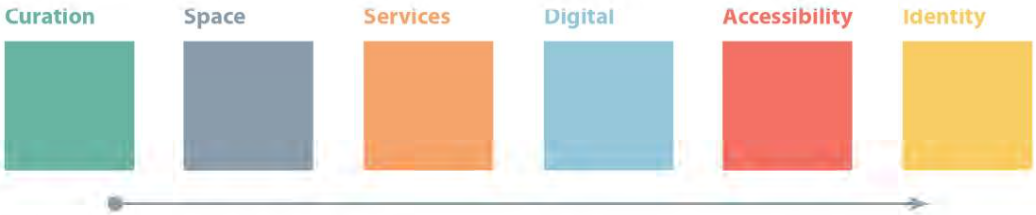
How to play:
As a group, place the colour coded icons to build up a visual map around the floorplan.

Guidelines:
YOU CAN challenge existing proposals
YOU CAN make your own cards if there's anything missing
YOU CAN draw on or modify existing cards
YOU CAN annotate/add additional information

Note: The cards need to be supplemented by either a printed floor plan or large sheet of blank paper. Ideally this should be A1 in size. A printed plan encourages the group to think about existing constraints, whereas a blank sheet will allow an 'anything is possible' approach.

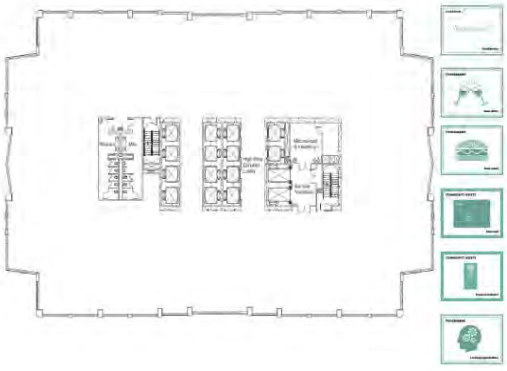
1. This game has six categories.

The cards include tangible (solid border) and intangible (double line border) aspects. You will be working in the following order:



2. Start with the 'Curation' cards.

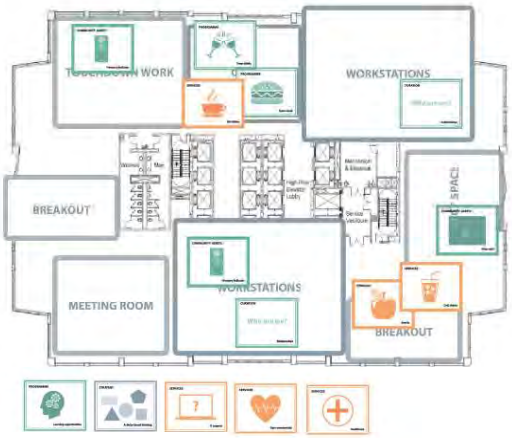
Using the questions as a starting point, identify the relevant cards and place them to one side of the floor plan (or sheet of paper).



3. From the 'Space' category, identify the relevant 'Strategies' and 'Settings' cards.

Start to place these on the floor plan, thinking about key adjacencies and the links between spaces. Use the selected 'Curation' cards to guide decisions where necessary.

For example, do the selected settings support the identified programmes? Are there key team adjacencies that need to be considered?



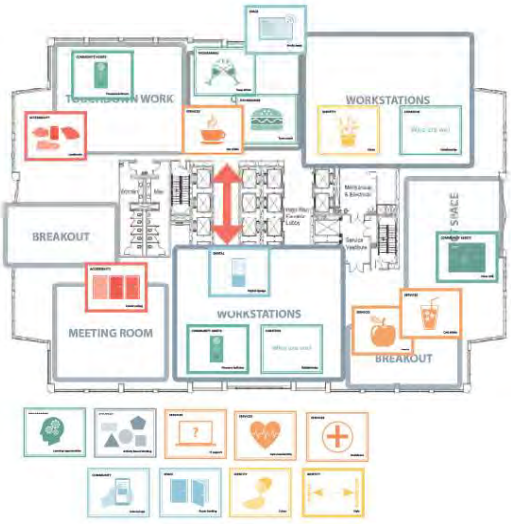
4. Pick out the relevant services cards

Using the Question as a starting point, pick out the relevant services cards. The existing set can be supplemented by using the blank cards provided.

Place these on the plan if they can be physically located, or to the side if they are intangible or building wide elements.

5. Work through the remaining categories in the same way.

When it comes to 'Accessibility', start by marking the entry point to the floor and use that as a starting point for considering wider issues around access and legibility.



Curation - Question 1

Are there key relationships or team adjacencies?

If so, use the 'Who I am' or 'Who we are' cards to identify them.

Curation - Question 2

What will happen here?

What activities or events are relevant or desirable to the community here? Use the rest of the Curation cards to identify them.

CURATION

Who am I?

Relationships

Curating Relationships

Individuals who need to be located in specific spaces

CURATION

Who are we?

Relationships

Curating Relationships

Key adjacencies between teams or departments

PROGRAMME

External speakers

Programme

External speakers or presentations

PROGRAMME

Team drinks

Programme

Either regular or one-off social drinks events after work

PROGRAMME

Wellbeing

Programme

Wellbeing provision such as yoga classes, meditation sessions and running clubs

PROGRAMME

Team meals

Programme

Breakfasts or lunches shared by specific groups. These could be fully catered or Pot Luck style.

PROGRAMME

Movie nights

Programme

Film screenings for teams, departments, or open to all. Consider setting up a poll to choose the film or theme.

PROGRAMME

Learning opportunities

Programme

These could be work-related or revolve around areas of interest to employees - for example, life drawing.

PROGRAMME

Project sharing

Programme

Regular or semi-regular events to share project updates or key findings. They could be Pecha Kucha style or an in-depth look at a single project.

PROGRAMME

Standups

Programme

Short, regular standups to update on work progress.

PROGRAMME

Games club

Programme

Games clubs can be either physical - such as board games - or involve multiplayer online games.

PROGRAMME

Celebrations

Programme

Irregular events to celebrate seasonal holidays or key achievements.

PROGRAMME

.....

Programme

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COMMUNITY ASSETS

Community wall

Programme

A shared asset where anyone can put up information, images or references that they find inspirational or useful. Alternatively, it may be a wall of photographs of all of the community members.

COMMUNITY ASSETS

Community noticeboard

Programme

A locally shared board for notices, events and information sharing.

COMMUNITY ASSETS

Presence indicator

Programme

Presence indicators can be physical or virtual, used to identify firstly whether someone is at a particular location, and whether they are available at that time.

COMMUNITY ASSETS

Lending library

Programme

A shared lending library which could consist of books, games or reference material.

COMMUNITY ASSETS

5	6	7	8
11	12	13	14
17	18	19	20

Community calendar

Programme

A physically located calendar that anyone can add information to.

COMMUNITY ASSETS

Games area

Programme

An area for game play.

COMMUNITY ASSETS

Ideas wall

Programme

A shared ideas wall to ask for help, make suggestions, or comment on current issues and developments.

COMMUNITY ASSETS

.....

Programme

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Space - Question 1

What is the overall spatial strategy?

Note: If making a significant change from existing procedures - such as dedicated desks to hot desking - then think about how the community is involved in the process.

Space - Question 2

What settings will be needed?

A suite of settings may have been suggested by the design team in which case these can be used as a starting point. However, they can be challenged or added to if needed.

STRATEGY

Activity Based Working

Spatial strategies

Providing a range of work settings to accommodate different work activities.

STRATEGY

Hot desking

Spatial strategies

No fixed workstations, but the majority of work may still be carried out at desks.

STRATEGY

Dedicated workstations

Spatial strategies

Each team member has their own workstation. These may be supplemented by a number of additional settings.

STRATEGY

Acoustic zoning

Spatial strategies

Space zoned into areas for quiet or collaborative working and acoustically conditioned to suit.

Note: These are provided in three sizes. The full range of spaces in the standard set is as below, blanks are provided for additional suggestions.

Meeting room
Kitchen
Informal meeting
Lounge/breakout
Workstations
Multipurpose
Office
Training room
Event space
Printing
Storage

Services - Question

What services will be included in the offer?

Note: Providing food and drinks can be an effective means of bringing people together. Other services might be aimed at facilitating work tasks or adding value for the community.

SERVICES

IT support

Services

SERVICES

Childcare

Services

Either an onsite creche or subsidised childcare offsite.

SERVICES

Healthcare

Services

This could be an onsite facility, or access to discounted medical insurance or private healthcare.

SERVICES

Hospitality provision

Services

Catering facilities that are available to the community, typically for specific meetings.

SERVICES

Concierge services

Services

A concierge service is analogous to those found in hotels and might help with a variety of things including booking tickets, drycleaning and post.

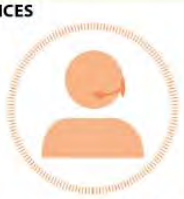
SERVICES

Gym membership

Services

Subsidised or onsite gym membership.

SERVICES



Virtual assistant

Services

A virtual PA service for those who don't have their own assistant.

SERVICES

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Services

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SERVICES

Meals

Services

Hot or cold food provision. Food can act as an attractor to bring people together.

SERVICES

Snacks

Services

Provision of fruit or other snacks, typically free to the community.

SERVICES

Hot drinks

Services

Cafe service or vending machine.

SERVICES

Cold drinks

Services

Cafe service or vending machine.

SERVICES

.....

Services

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Digital - Question

How can digital tools be used to support:

a. work processes?

b. social relationships

Use the 'Digital' cards to identify them.

COMMUNITY

Team communication platform

Digital

Dedicated internal team communication channels or software.

COMMUNITY

Internal app

Digital

An internal app which might include a range of information such as events, key dates, room booking, and guest registration.

COMMUNITY

Blog

Digital

An internal or external resource which the community can post to as well as the organisation.

COMMUNITY

Online calendar

Digital

A shared online calendar for events.

COMMUNITY

Social media presence

Digital

A social media presence that serves as an online hub for the community in terms of the outward facing presentation of the organisation.

SPACE

Room booking

Digital

Online room booking, ideally linked up with a means of quickly identifying which rooms are available when seeking out space for impromptu meetings.

SPACE

Presence app

Digital

A presence app locates people within the building and signals their availability.

SPACE

Guest registration

Digital

Guest registration which automatically sets up access and WiFi protocols.

SPACE

Building guide

Digital

Key information as to services, facilities and access across the building.

SPACE

Technical assistance

Digital

Assistance with technical issues.

SPACE

Travel booking

Digital

Assistance with booking travel and accommodation.

SPACE/COMMUNITY

.....

Digital

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SPACE

Digital noticeboards

Digital

Digital noticeboards to display information of relevance to specific groups.

SPACE

Media feeds

Digital

News or media feeds might be organisationally relevant, regularly updating with key information.

DIGITAL

Interactive walls

Digital

Interactive walls that can be used for collaborative, creative work.

DIGITAL

Digital signage

Digital

Digital signage systems, either across a whole floor or at meeting room doors so that calendars can be accessed.

DIGITAL

.....

Digital

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Accessibility - Question

How will people orient themselves and access what they need?

Consider:
How will workers find the spaces that are appropriate for them?
How will visitors navigate to their desired location?

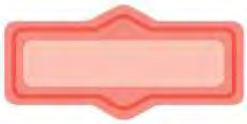
ACCESSIBILITY

Zoning

Curating Relationships

Zoning can be organised in a number of ways (e.g. materiality, colour, lighting), and helps to quickly differentiate between areas that serve different functions.

ACCESSIBILITY



Naming

Curating Relationships

Naming spaces can help to give them a clear and consistent identity.

ACCESSIBILITY

Sightlines

Curating Relationships

Making spaces visually accessible by planning key sightlines across the space.

ACCESSIBILITY

Pathways

Curating Relationships

Pathways to link key areas or settings.

ACCESSIBILITY

.....

Curating Relationships

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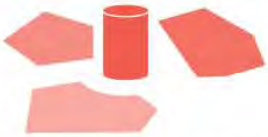
ACCESSIBILITY



Landmarks

Curating Relationships

Landmarks should stand out in the wider office landscape, acting as visual reference points to aid orientation.

ACCESSIBILITY

GRAPHICS

Graphics

Curating Relationships

Graphics can be brand related or artwork-based and should be large enough to be clearly visible at a distance (when used for orientation).

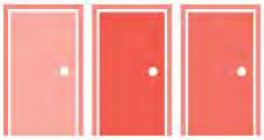
ACCESSIBILITY

Signage

Curating Relationships

Signage helps to navigate the space, although should be used in combination with thoughtful planning, not to replace it.

ACCESSIBILITY



Colour coding

Curating Relationships

Colour can be a quick and simple way to differentiate between spaces - for example, on meeting room doors.

Identity - Question

Who are we? How is our identity expressed in the space?

Note: 'Identity' cards can be attached to a setting or located inbetween.

IDENTITY

Logos/branding

Identity

Brand colours or logos can be used in a number of ways to signal organisational or group identity.

IDENTITY

Plants

Identity

Plants used to help give spaces character and inject a natural element.

IDENTITY

Artworks/graphics

Identity

Smaller scale artworks that give a sense of character.

IDENTITY

Colour

Identity

The use of colour has a significant impact on the character of the space.

IDENTITY

Quotes

Identity

Quotes applied as graphics - these should be relevant to the area or community rather than randomly chosen sayings.

IDENTITY

Objects

Identity

Objects act as artefacts that help to signal individual, group or organisational identity.

IDENTITY

.....

Identity

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IDENTITY

PLAYFUL

BUSINESSLIKE

Style

Identity

Style

IDENTITY

FORMAL

INFORMAL

Style

Identity

Zoning can be organised in a number of ways (e.g. materiality, colour, lighting), and helps to quickly differentiate between areas that serve different functions.

IDENTITY

CONTEMPORARY

TRADITIONAL

Style

Identity

Zoning can be organised in a number of ways (e.g. materiality, colour, lighting), and helps to quickly differentiate between areas that serve different functions.

IDENTITY

INDUSTRIAL

REFINED

Style

Identity

Zoning can be organised in a number of ways (e.g. materiality, colour, lighting), and helps to quickly differentiate between areas that serve different functions.


IDENTITY
HOME
HOSPITALITY
Style
Identity
Zoning can be organised in a number of ways (e.g. materiality, colour, lighting), and helps to quickly differentiate between areas that serve different functions.
IDENTITY
.....
Identity
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Appendix 7: Forms and guides relating to the Sony PlayStation evaluation

Participant Information Form

Royal College of Art

RESEARCHRCA

Workplace Post-Occupancy Evaluation

Participant Information Sheet

You have agreed to take part in an interview. These will be held with Imogen Privett, a design research and PhD candidate from the Royal College of Art who was part of the team who wrote the brief for the redesign of the office. These interviews will form part of a post-occupancy evaluation study in addition to being written up as part of Imogen's thesis. The study is being supervised by Prof. Jeremy Myerson and Dr. Harriet Harriss of the Royal College of Art. Please take time to read the following information carefully.

Purpose of the Research

The aim of the interviews is to understand how the new space is used, how well it meets your needs, and where there might be opportunities for further improvement.

Why have I been chosen?

A member of each discipline group with London Studio and the Creative Services Group has been asked to take part.

What will happen if I take part?

You will be asked to participate in an interview that will take up to thirty minutes. The discussion will be based around a visual mapping exercise, asking you to talk about your typical working day, the people that you have most contact with and how well you feel that these interactions are supported, and your overall experience of the spaces that you use day-to-day. Interviews will be recorded as long as you agree.

All data will be treated as confidential and anonymous and data on individuals will be anonymised or pseudonymised so that no individual can be identified if referred to in the text/data used in this study. The results of the study will be used in the PhD thesis of Imogen Privett as well as in potential further publications.

Royal College of Art, Kensington Gore, London SW7 2EU, UK T: +44 (0)20 7590 4214 E: research@rca.ac.uk www.rca.ac.uk

Do I have to participate?

No. Participation is voluntary and participants can withdraw from the research at any time for any or no reason with no disadvantage.

If you have any concerns or would like to know the outcome of this project, please contact Imogen's supervisor Prof. Jeremy Myerson at the following address:

Royal College of Art
Kensington Gore
London
SW7 2EU

Compliants clause

This project follows the guidelines laid out by the Research Ethics Code of the Royal College of Art.

If you should have any concerns about your rights as a participant in this research, or you have a complaint about the manner in which this research is conducted, it may be given to the researcher or, if an independent person is preferred, addressed to the Research Ethics Committee of the Royal College of Art at the above address.

Participant Consent Form

Royal College of Art
RESEARCHRCA

For further information
Supervisor: Prof. Jeremy Myerson
jeremy.myerson@rca.ac.uk

04 October 2017

Experience Unbound: The effects of coworking on workplace design practice
Participant Consent Form

I *(please print)*.....have read the information on the research project ***Experience Unbound*** which is to be conducted by Imogen Privett from the Royal College of Art, and all queries have been answered to my satisfaction.

I agree to voluntarily participate in this research and give my consent freely. I understand that the project will be conducted in accordance with the Information Sheet, a copy of which I have retained.

I understand that I can withdraw from the project at any time, without penalty, and do not have to give any reason for withdrawing.

I consent to:

- Participate in a structured interview lasting up to thirty minutes

I understand that all information gathered from the interviews will be stored securely, and my opinions will be accurately represented. Any images in which I can be clearly identified will be used in the public domain only with my consent.

Print Name:.....

Signature.....

Date: .....

This project will be conducted in compliance with the Research Ethics Code of the Royal College of Art.

Royal College of Art, Kensington Gore, London SW7 2EU, UK T: +44 (0)20 7590 4214 E: research@rca.ac.uk www.rca.ac.uk

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