HOW SPACE AFFECTS EMERGENT STRATEGY:

A STUDY OF THE ROLE PHYSICAL SPACE PLAYS IN THE GENERATION OF SOCIAL INTERACTIONS IN ORGANISATIONS

This thesis is submitted in partial fulfilment of the requirements of Lancaster University Management School for the degree of Doctor of Philosophy by Matthew Thomas

Declaration: This thesis is the work of Matthew Thomas only and has not been submitted for the award of a higher degree elsewhere

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Abstract

This thesis asks the research question: How does physical space influence emergent strategy? It is known from the strategy literature that emergent strategy is the unintended consequence of patterns of social interaction that vary with the internal contexts of organisations. It is also known from architectural literature that space has a powerful impact on the way people interact. Yet the impact of space on emergent strategy remains a gap in knowledge.

To address this gap, Space Syntax theory from architecture was used to analyse how spatial arrangements affected unplanned interactions in a single organisation and an immersive period of observations was used to understand how patterns of interaction affected emergent strategy as it occurred.

The findings showed that the patterns of interaction were complex and varied at individual, group and organisation levels and that these patterns affected the emergence of strategic matters of concern in the organisation studied. The complex profiles of interaction were explained by the concept of socio-spatial correspondence that describes the degree of overlap between an organisation's spatial and social arrangements. A quantitative measure for correspondence was developed specifically as part of this research. A typology is proposed that describes how an organisation's propensity for emergent strategy might vary with its socio-spatial structure based on the calculation of correspondence in four other organisations.

A discussion challenges whether managers really understand the impact of their socio-spatial structures on strategy emergence and questions some prevailing architectural practices. Contributions are suggested to the strategy-as-practice literature, the measure of correspondence is suggested as a methodological contribution to strategy and architectural literature and the socio-spatial perspective is suggested as having real-world consequences that contribute to architectural and management practice.

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In my second year of the research I discovered and was inspired by Space Syntax theory developed by Hillier and Hanson (1984). I eventually understood the potential value of Space Syntax theory to research on strategy but had to develop an expertise in its methods before my research could benefit. Kerstin Sailer, a Reader at The Bartlett School of Architecture at University College London took the time to debate with me the merits and shortcomings of Space Syntax theory, the Space Syntax methodology and the body of Space Syntax research. Kerstin introduced me to Blerta Dino, a PhD candidate at The Bartlett School of Architecture who taught me how to do Space Syntax analysis using the software packages AutoCAD and DepthmapX.

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Glossary of Terms[1]

Attractors: A term used in Space Syntax to describe facilities such as kitchens that are known to amplify the naturally integrated character of space by attracting further movement and usage

Average visual mean depth (AVMD): A system wide (or global) Space Syntax measure calculated as the average visual mean depth of every point in a spatial system to all other points in that system

Configuration of space: Defined by the Space Syntax community as the position of every space in relation to all the others in an overall system of some kind

Conservative spatial system: A term used in Space Syntax for a spatial system where the spatial conditions exist for all kinds of conservation – of roles and positions, of social praxes and rituals, of statuses and identities

Contextual ambidexterity: strategic ambidexterity achieved within a single business unit contemporaneously through internal contexts that support the ability to manage conflicting objectives at the same time

Correspondence: A term used in Space Syntax to describe the degree of overlap between spatial and social relations within a socio-spatial system. A system is considered correspondent when the overlap is large (see also non-correspondence)

Depthmap X: Software developed by the Space Syntax community to analyse spatial relationships in complex buildings and other spatial systems

Emergent strategy: The elements of an organisation's realised strategy that occur unintentionally

[1] This glossary is provided to make it easy for the reader to find definitions of the key terms used in this thesis. The sources and references are provided in the main text.

Generative spatial system: A term used in Space Syntax for a spatial system where the spatial conditions exist for all kinds of generation – new relationships, new ideas, new products and even knowledge

Graph theory: The mathematical models of the relationships between pairs of objects

Inhabitant: A term used in Space Syntax to describe an individual whose social existence is mapped into the spatial system being studied

Innovation: Innovation is the degree to which an idea (see invention) is able to usefully spread around a single domain or network to alter the system of which it is a part

Integration: A term used in Space Syntax to describe how well all the spaces in the system are connected to each other (see also segregation). When used at the global level (referring to the entire spatial system) integration is measured as the average visual mean depth (AVMD). When used at lower levels of analysis integration is measured as visual mean depth (VMD) of the space

Invention: Invention describes the process whereby ideas moves from one domain or network to be adopted by another

Isovist: A term used in Space Syntax to describe the set of points visible from a given vantage point or movement path. Isovists can be plotted within DepthmapX and in this thesis a 90-degree angle of vision is assumed

Meso and Micro levels of analysis: three levels of analysis are used in this thesis; organisation level; team level and individual level. The term meso is used for analysis at the level of the organisation and the term micro for analysis at the individual level

Methodological individualism: the problem of understanding macro and meso level phenomena as the simple aggregation of micro level phenomena

Non-correspondence: A term used in Space Syntax to describe the degree of overlap between spatial and social relations within a socio-spatial system. A system is considered non-correspondent when the overlap is small (see also correspondence)

Novelty: Novelty is something that does not exist in our current practice or imagination and is used to describe the most radical form of emergence in this thesis. Genuine novelty is made possible by the combined mechanisms of invention and innovation.

Practice theory: A broad family of theoretical approaches that foreground the importance of activity and work in the creation of all aspects of social life

Segregation: A term used in Space Syntax for the average visual mean depth (AVMD) of a socio-spatial system describing a lack of connection between all the spaces in the system (see also integration)

Social interaction: An exchange between two or more individuals

Social network: A bounded network of social interactions and relationships

Social network analysis (SNA): A technique used to investigate social structures through the analysis of networks using graph theory

Space: Space has a wide variety of definitions in organisation studies but in this thesis, space refers to physical space in strictly Euclidean terms. This follows the use of space as employed by the Space Syntax community

Space Syntax: A network theory of space developed in the late 1970s and early 1980s at the Bartlett School of Architecture at University College London by Bill Hillier and Julienne Hanson. Space Syntax uses sophisticated mathematical modelling to span levels of analysis in order to understand complex patterns in spatial systems

Step Depth: A Space Syntax measure. A point in a spatial system is a visual step depth of 1 from any other point to which it has a direct line of sight. Also known as visual step depth.

Strategy-as-practice (SaP): A field of strategy research with a focus on what actually takes place in strategy making with theoretical roots in practice theory

Strategic ambidexterity: the ability of an organisation to balance two potentially conflicting strategic goals, for example, the ability to be efficient in its management of today's business

and also adaptable when coping with tomorrow's uncertainty. In this thesis the term is used to describe the ability to balance deliberate and emergent approaches to strategy making

Strategic matters of concern: topics of discussion within an organisation that recurrently, routinely and persistently **animate** the participants

Structural ambidexterity: refers to the ability of an organisation to manage potentially conflicting strategic goals through the creation of separate business units

Temporal ambidexterity: refers to the ability of an organisation to manage potentially conflicting strategic goals by flex between strategy processes that achieve each goal over time

Transpatial: A term used in Space Syntax to describe relationships that form between people because they belong to the same conceptual category. For example, a father relates to other fathers and carpenters relate to other carpenters. In organisation studies these conceptual relationships are more commonly referred to as social relations. In Space Syntax these relationships are considered transpatial because their relationship to each other is independent of their spatial closeness: they traverse space.

Visitor: A term used in Space Syntax to describe persons who may enter a spatial system (building) temporarily, but may not control it. Examples of visitors are pupils in a school, patients in a hospital, guests in a house or prisoners in a prison.

Visual mean depth (VMD): A Space Syntax measure of a point in a spatial systems calculated as the average visual step depth to all other points in the spatial system

Visual step depth: see step depth

Yule's Q: is a measure of association used in social sciences which highlights the strength of relationship between two dichotomous variables

1 Introduction

"The world of strategy constitutes a genuinely social reality created and recreated in the interaction between various actors inside and outside the organisation." (Golsorkhi *et al.*, 2010, p. 7)

"The modern office is a network of places for interaction, where people are linked by physical infrastructures. These places for interaction construct the frame in which the social infrastructure of work enfolds." (Blakstad, 2015, p. 59)

The quotations above capture the logic that underpins this thesis. The first comes from the research field of strategy-as-practice (SaP) and expresses its key tenet that strategy making is fundamentally a social accomplishment (Whittington, 1996) made possible by the social interactions of individuals spread across many levels of the organisation (Golsorkhi *et al.*, 2010). The second comes from research on workplace design that has a focus on the way physical space influences social interaction (Ropo *et al.*, 2015). Combining the logic of these two research streams suggests that organisational strategy is affected by physical space. Despite this logic, an understanding of a relationship between strategy and space remains a gap in research into strategy (Vaara and Whittington, 2012).

The following sections discuss why this gap persists, describe the resulting focus of this thesis and highlight its importance to strategy research. This allows the research question to be specified and the methodology to be outlined. The chapter concludes by describing the structure of the thesis.

1.1 Explaining the research gap

This thesis proposes that there are two tendencies in strategy research that, in combination, explain why the relationship between strategy and space remains a research gap. The first is that strategy "*research has concentrated on formal planning and strategising activities*" (Vaara and Whittington, 2012, p. 313), the second is to treat strategy makers "*as abstracted from the material world of which they are a part*" (Vaara and Whittington, 2012, p. 315). To explain why these tendencies might lead to the research gap identified requires a specific definition for strategy.

The definition of strategy adopted by this thesis is the pattern of actions realised by an organisation in the long-term (Mintzberg, 1978). This is a definition that spans meso, or organisation, level phenomena and micro, or individual, level actions. The patterns of action are a meso level phenomenon that may be generated by micro level actions (Johnson *et al.*, 2017).

When strategy is defined this way, some element of the actual direction realised in practice is always unintentional (Mintzberg and Waters, 1985). The unintentional elements of an organisation's realised strategy are known as emergent strategy (Mintzberg and Waters, 1985). To SaP scholars, strategy is a social accomplishment, so to understand emergent strategy requires an understanding of unintentional social interactions across an organisation. It follows that, to understand emergent strategy, it is necessary to understand the antecedents of social interaction, why organisations have the profiles of interaction they do (Borgatti and Halgin, 2011), and "*why certain interactions exist and why others do not*" (Parkhe, Wasserman and Ralston, 2006, p. 561).

Research across a number of disciplines, including organisation studies and architectural theory, demonstrates that physical space has a strong influence on an organisation's profile of interaction (Hillier and Hanson, 1984) and its most powerful impact on unplanned social interaction (Fayard and Weeks, 2007). This logic leads to the specific proposition, that is the focus of this thesis, that emergent strategy is affected by physical space. That there is a tendency for both emergent strategy and the effects of physical space to be under researched explains why the relationship between strategy and space remains a gap in the literature.

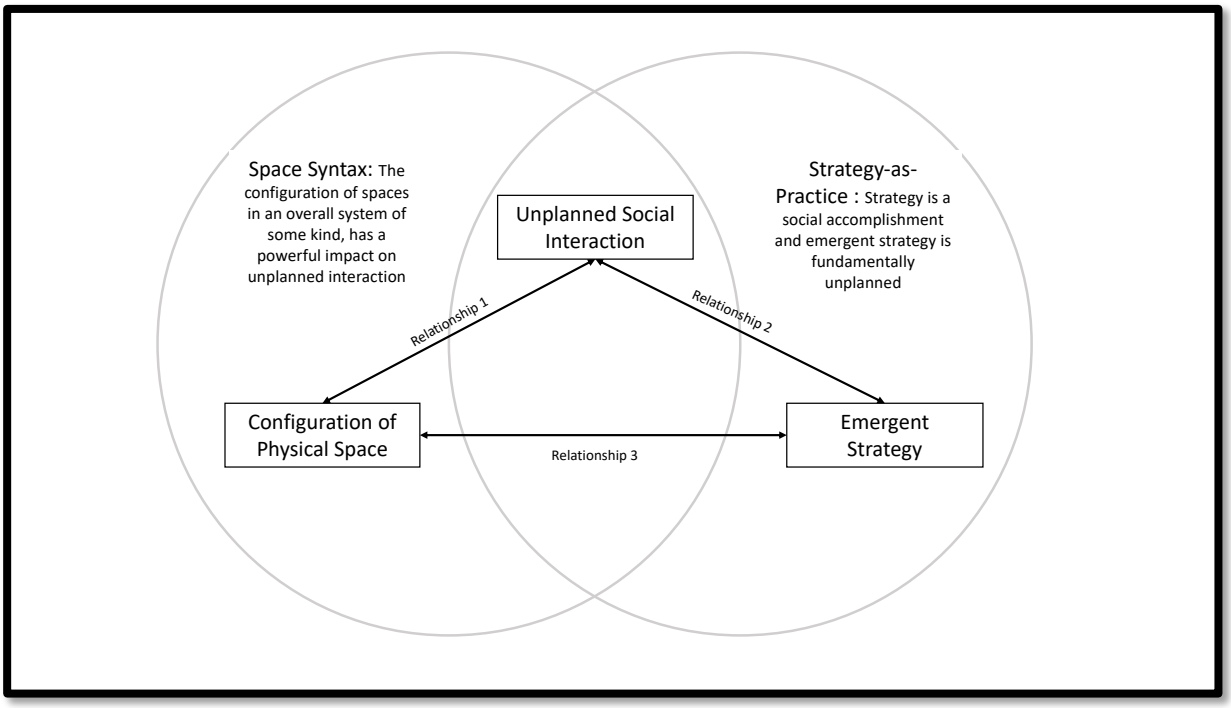
1.2 The focus of this thesis

The focus of this thesis is on emergent strategy and the configuration of physical space. It draws on theoretical pillars from two disparate literatures. The first from SaP which draws on practice theory to focus on the everyday practices of strategy makers and what "*actually takes place in strategy formulation*" (Golsorkhi *et al.*, 2015, p. 1). The second from the architectural theory of Space Syntax that provides the methods to understand the powerful effects of space on the social (Hillier and Hanson, 1984; Hillier, 1996). At the intersection of these two theories lies unplanned social interaction.

Combining the logic of these two theories suggests three relationships of interest, shown graphically in figure 1.1. Relationship 1 is that between the configuration of physical space and an organisation's profile of unplanned interaction, a known relationship that has been explored in architectural literature; relationship 2 is that between unplanned interaction and emergent strategy, a known relationship that has been explored in the SaP literature; relationship 3 is that between space and strategy. This thesis sets out to investigate the relationship between space and strategy.

The unintentional nature of emergent strategy makes it difficult to establish relationship 3 directly. This thesis breaks the problem down into a two-step process by investigating relationships 1 and 2 in a single detailed organisation in order to learn more about relationship 3.

Figure 1.1: The two theoretical pillars that underpin this thesis



In this thesis, space is analysed physically using Euclidean metrics but the relationship between these metrics and unplanned social interaction contributes to a socio-spatial understanding of the organisation and of emergent strategy. In this way, the scheme being used by this thesis, shown in figure 1.1, establishes a definition of space as socially produced (Lefebvre, 1991) and with a social logic (Hillier and Hanson, 1984).

1.3 The importance of emergent strategy

Emergent strategy is particularly important in dynamic environments because it enables an organisation to learn from, and adapt to, changing circumstances (Mintzberg and Waters, 1985). As a result, the effects of emergence on the strategy actually realised by an organisation can be thought of as sitting somewhere on a continuum from minor adaptations through to strategic outcomes that are quite radically different from those that were planned (Mintzberg and Waters, 1985). The more dynamic the external environment the more radical the characteristics of emergent strategy are observed to be (Mintzberg and Waters, 1985). In addition, the dynamism of external markets changes over time and there is a short term cost to the organisation of the more radical forms of strategy emergence because the benefits of emergence only become apparent over longer time periods (March, 1991).

As a result, the importance of strategy emergence to an organisation is a question of alignment between the prevailing environmental conditions and the characteristics of emergent strategy (Volberda, 1997). Those organisations that are able to optimise the alignment between the varying dynamics of the external market in which they compete and the characteristics of emergent strategy enjoy superior performance (Uotila *et al.*, 2009) and greater longevity (Burgelman and Grove, 2007).

However, considerations of the link between strategy emergence and the external environment tend to omit consideration of differences in internal organisational contexts. Empirically, we know little about what happens within an organisation to influence the alignment between the environment and the characteristics of emergent strategy (Vaara and Whittington, 2012; Chia and MacKay, 2007; Golsorkhi *et al.*, 2015; Chia and Rasche, 2015; Tsoukas, 2015; Chia and Holt, 2006). The relationship between physical space and unplanned social interaction suggests that an organisation's spatial contexts may play an important role in influencing its emergent strategy.

1.4 The research question

The research gap and the logic which explains it which have been discussed above lead to the main research question tackled by this thesis: How does physical space influence emergent strategy?

1.5 Hurdles to identifying a relationship between space and emergent strategy and the resulting research design

Through analysis of the literature, four hurdles have been identified that need to be overcome to establish a relationship between physical space and emergent strategy. These hurdles lead to the research design of this thesis and the decision to apply mixed methodologies to the research problem.

The four hurdles identified are: the problem of retrospective attribution, that argues emergent strategy can only be identified after it occurs in practice (Tsoukas, 2015); methodological individualism, which understands macro and meso level phenomena as the simple aggregation of micro level phenomena (Chia and MacKay, 2007); the absence of a good theory of networks that explains why the social interactions that make emergent strategy possible exist in the first place (Salancik, 1995); and the "*fetishism of space*" (Soja, 1980, p. 208) that separates the analysis of space from the analysis of the social.

Methods to overcome the problems of methodological individualism and the fetishization of space are proposed by this thesis but it is also acknowledged that the problem of retrospective attribution can never be fully resolved. Consequently, a research design based on the three relationships, shown in figure 1.1, is proposed to provide more confidence in the findings. Specifically, to establish a relationship between physical space and emergent strategy (relationship 3), a relationship between unplanned social interaction and emergent strategy is studied (relationship 2) and the spatial antecedents to those interactions investigated (relationship 1). These three relationships are investigated in a single case organisation in phase one of the research. A second phase of research compares the spatial structure of the organisation studied in phase one with that of four other organisations.

1.6 Theoretical foundations

This thesis adopts the research approach of SaP which has its theoretical foundation in practice theories (Golsorkhi *et al.*, 2015; Jarzabkowski, 2005). Practice theory distinguishes itself in its ability to span levels of analysis which helps recognise patterns in complex social relations (Nicolini, 2012), thereby avoiding methodological individualism (Chia and MacKay, 2007).

The research question: how does physical space influence emergent strategy, implies the bridging of micro and meso phenomena. Physical space is important because it has an impact on the micro level social interactions of strategy makers, and on emergent strategy defined as meso level patterns. As a result, methodological individualism is recognised as a particular danger of this research, and something SaP has been critiqued for (Chia and MacKay, 2007).

Space Syntax is a network theory of space developed in the late 1970s and early 1980s at the Bartlett School of Architecture at University College London by Bill Hillier and Julienne Hanson (Hillier and Hanson, 1984). Space Syntax uses sophisticated mathematical modelling to span levels of analysis in order to understand complex patterns in spatial systems (Sayed *et al.*, 2014). As a network theory, Space Syntax is considered to be compatible with the tenets of practice theory that informs the field of SaP and thus is suited to the aims of this thesis.

The use of theory developed in architecture also helps to define what is meant by the term 'space' in this thesis. 'Space' is used in *"a multitude of different ways, from the abstract and highly theoretical, through the symbolic, to the experientially concrete"* (Dale and Burrell, 2008, p. 4) which creates a problem for researchers. Although different academic disciplines employ different definitions for space (Crang and Thrift, 2000), the Space Syntax community in architecture define space and spatial relations in strictly Euclidean terms (Sayed *et al.*, 2014). As a result, when the term 'space' is used in this thesis, it refers to physical space as employed by the Space Syntax community.

1.7 Structure of the thesis

The relationship between space and emergent strategy will be developed in this thesis through the following structure: Chapter 2 reviews the relevant literature in the academic fields of strategy and architecture. The chapter develops two key arguments that, taken in combination, explain why a relationship between space and emergent strategy should be taken seriously. First, the chapter argues that a relationship exists between unplanned social interaction and the characteristics of emergent strategy. From the literature on social interaction, a continuum of increasingly radical forms of strategy emergence is developed and the profile of interaction described for each. Second, the chapter argues that space, and the configuration of space, influence an organisation's profile of interaction. In drawing together

the literature that argues that a relationship between space and emergent strategy exists, four hurdles to investigating this relationship, identified from within the literature, are drawn out by this thesis. The chapter then introduces Space Syntax theory from architecture as a possible solution to these problems.

Chapter 3 presents the use of mixed methodologies that enable the spanning of levels from micro level phenomena to organisational level patterns. The methodologies used are described in detail. The research design encompassed two phases, the first using a single case study, the second multiple organisations. In phase one quantitative data was collected on social interactions and on spatial configuration and qualitative data on the emergent strategy in action and the spaces in which this occurs. As emergent strategy is unintentional, the qualitative data gathered captured the *possibility* of emergent strategy making in action. The aim of phase one was to establish the empirical evidence for the relationship between space, unplanned interaction and emergent strategy in the single organisation studied. With an understanding of this relationship, phase two then compared the spatial structures of four organisations with that of the organisation studied in phase one. The aim of phase two was to understand how spatial systems vary across organisations. Chapter 3 concludes by describing the organisations studied and why they were selected.

Chapter 4 presents the findings of phase one of the research, focussing on a single, detailed case study. It follows the logic shown graphically in figure 1.1. Each of the three relationships are investigated in a separate section. Section 4.1 investigates relationship 1 between the configuration of physical space and an organisation's profile of interaction. The section starts by reporting on the profile of interaction found in the case study and progresses to explore spatial explanations for the profile found. Both the profile of interaction and spatial characteristics of the building studied are expressed quantitatively.

Section 4.2 investigates relationship 2, between the organisation's profile of social interaction and emergent strategy. The section starts by describing two issues that are considered to be both strategic and emergent in nature. The analysis that underpins the assessment that the issues are strategic and emergent is detailed. The relationship between the profile of interaction found described in section 4.1 and the emergent and strategic issues is explored.

Section 4.3 completes the triangle shown in figure 1.1 by investigating relationship 3 between the physical space and emergent strategy. The section highlights three ways in which emergent strategy is found to be affected by the spatial configuration of the organisation's offices: first by highlighting how individuals involved in emergent strategy making are affected differently by space on the basis of the strategic issue with which they are associated; second by demonstrating how emergent strategy making is best thought of as an accumulation of unplanned social interactions; and third by highlighting how the spatial position of individuals or groups within the organisation might matter to emergent strategy making in practice.

Chapter 5 presents the findings of phase two of the research and focuses on the comparative spatial analysis of four additional organisations. The chapter is presented in three sections: section 5.1 reports on the spatial configurations of the comparative organisations; section 5.2 reports on the socio-spatial correspondence of the comparative organisations; and section 5.3 develops a typology of emergent strategy based on the findings reported in the previous two sections.

Chapter 6 discusses the implications of the two findings chapters. Section 6.1 uses the typology to discuss how the socio-spatial perspective builds on Mintzberg's framework for emergent strategy. Section 6.2 discusses why the socio-spatial view of emergent strategy proposed by this thesis is important to SaP research. Section 6.3 places the socio-spatial perspective in the context of architectural literature and practice.

Finally, section 6.4 concludes by describing potential contributions to strategy literature, architecture literature, methodology and practice. In addition, limitations of the research are discussed, and a possible future research agenda suggested.

2 Literature review

With the research question asking how physical space influences emergent strategy, this chapter aims to describe why a relationship between space and emergent strategy should be taken seriously based on existing literature. The first section, 2.1, draws on strategy literature to define emergent strategy and explains why it is important to organisations. The following section, 2.2, draws on literature from the field of SaP to argue that emergent strategy is made possible by unplanned interaction. A table of increasingly radical forms of strategy emergence is developed and the profile of unplanned interaction that makes each form of emergence possible is described. Section 2.3 reviews the importance of physical space to patterns of unplanned interaction by reviewing the SaP literature on materiality. It is argued that the relationship between physical space and unplanned interaction implies that physical space may also have an impact on emergent strategy. Qualitative accounts of strategy emergence from the SaP literature are reviewed to show that space is ever present in the descriptions of organisation contexts and their importance implying a role for space, though rarely explicitly. Having established the possibility of a relationship between space and emergent strategy, section 2.4 reviews the strategy literature where such a relationship might have an impact. An analysis of the literature identifies four problems associated with research into the relationship between space and emergent strategy and these are reviewed in section 2.5. Section 2.6 introduces the socio-spatial theory of Space Syntax as a possible solution to some of the methodological hurdles highlighted. Section 2.7 describes the theoretical foundations of the thesis and explains why Space Syntax theory is considered compatible with a thesis in the field of SaP. Section 2.8 provides a summary of the chapter.

2.1 What is emergent strategy and why is it important?

Much of the research on strategy emphasizes planning and deliberate strategy making and yet this is not sufficient to understand how strategies are realised in organisations (Vaara and Whittington, 2012). An important insight in strategy research that contributes to both theory and practice, is the notion that strategy realised by an organisation is not exclusively the result of deliberate planning but can also be unintended or emergent (Blom and Alvesson, 2015; Mintzberg, 1978; Mintzberg and Waters, 1985). Yet little attention has been paid to the organisation 'in flight' (Chia and MacKay, 2007, p. 220) during periods of emergence, leaving

us with little knowledge of what gives an organisation its emergent characteristics (Vaara and Whittington, 2012).

Strategy has been defined in several ways. Some definitions emphasise the deliberate nature of strategy making and describe a logical path from setting goals and allocating the resources necessary through to meeting those goals (Chandler, 1963). Other definitions focus on deliberate choices that can differentiate organisations from competitors (Porter, 1996). The definition adopted by this thesis is the pattern of actions realised by an organisation in the long-term (Johnson *et al.*, 2017; Mintzberg, 1978). This definition is used because it incorporates the possibility that the strategy realised by an organisation may not always be what was intended. This definition is in line with Mintzberg who defined strategy as "*a pattern in a stream of decisions*" (Mintzberg, 1978, p. 935) and later refined the definition to a pattern in a stream on actions (Mintzberg, 2007). This definition incorporates the idea that all realised strategies have some element that was unintentional. The notion that all realised strategies consist of both deliberate and emergent elements has subsequently had "*high impact both on theoretical and practical understandings of strategy*" (Blom and Alvesson, 2015, p. 409).

Mintzberg's (1973; 1985; 1985; 1978; 1996) research into emergent strategy involved longitudinal studies of organisations in a variety of sectors. His methods established patterns of action realised by each organisation from historical documents and these were compared with what had been planned. The residual, that which could not be accounted for by deliberate plans, was labelled emergent strategy. He found that the extent to which emergence accounted for the actual strategy realised, varied across the organisations studied. Strategy was described as existing on a continuum with realised strategy entirely planned at one end and realised strategy entirely emergent at the other. Real-world organisations, he suggested, existed somewhere along this continuum (Mintzberg and Waters, 1985).

Mintzberg's explanation for an organisation's position along the continuum related to the external environment in which the organisation competed. In his longitudinal studies, the more dynamic the external environment, the more emergent strategy was evident. The methods and explanations developed by Mintzberg and his fellow authors help explain why some scholars describe emergence as a "*residual category that has to resort to mystical forces*

as a means of explanation" (Garud, Langley and Tsoukas, 2015, p. 20). Emergence is described as a "residual category" because it is identified by the absence of a planned strategy and the forces that lead to emergence are "mystical" because emergence is the unintended consequence of forces external to the organisation. Consequently, Mintzberg (1985) does not present emergent strategy as a choice but as an observed phenomenon: as something that happens to an organisation.

The emergence of new strategies is described in the literature in a variety of ways. Emergent strategy manifests itself in a range of characteristics, from modest adaptations to a slowly changing external environment (Mintzberg and Waters, 1985) through to radical changes to the organisation in response to disruptive changes to the competitive environment (Chesbrough, 2010).

According to Mintzberg (1978), emergent strategy is particularly important in dynamic environments (Mintzberg, 1978) because long-term planning is made difficult by rapidly changing circumstances. As a result, emergent strategy can be of great value to organisations in volatile and unpredictable situations but, given the unintentional nature of emergent strategy, not all emergent outcomes will be positive. Equally, not all organisations have the same need for emergent change, as competitive environments are not all equally dynamic.

Consequently, there is no suggestion that organisations should be involved in a race to become the most emergent in their sector or that somehow emergent strategy is always good. External environments are not all equally dynamic (Volberda, 1997) indeed, there is a cost to the organisation of maintaining contexts that encourage emergence (March, 1991; Volberda, 1997). The importance is more a question of balance between the characteristics and dominance of an organisation's emergent strategy and the prevailing environmental conditions. Research shows that there is an optimum position that varies depending on the dynamism of the environment (Uotila *et al.*, 2009). It has been argued that just the right amount of emergence, therefore, can be a source of competitive advantage (Porter, 1985) for an organisation.

There is also a temporal dimension to the question of balancing emergent and deliberate strategy making because the dynamism of the environment in which organisations compete

changes over time. There is thus a need to alter the mix of deliberate and emergent strategy formulation, that ultimately constitutes an organisation's realised strategy, to match the dynamism of the environment as it changes over time and the ability to alter this mix has been shown to relate to the longevity of the firm (Burgelman and Grove, 2007). It is also possible that a lack of emergent elements to realised strategy at times of great uncertainty explains why some organisations do not adapt their business model to changing environmental conditions (Govindarajan and Trimble, 2004). It follows that the ability to understand what it is about an organisation that explains its characteristics of emergence, should be central to many discussions on strategy.

The following section develops an argument that understanding the range of emergent characteristics displayed by different organisations requires an understanding of the patterns of unplanned interaction found in those organisations.

2.2 Emergent strategy and patterns of unplanned social interaction

The focus of this section is on the field of SaP that has developed a greater understanding of the everyday 'doing' of strategy making (Whittington, 1996). Section 2.2.1 reviews the argument that embodied social interaction lies at the heart of SaP research and that as a result understanding patterns of interaction is important to this research. Section 2.2.2 reviews the research that highlights the importance of understanding social interaction patterns to organisation. Section 2.2.3 focuses on the need for a greater focus on emergent strategy in SaP research and argues that to understand emergent strategy the focus should be on patterns of unplanned social interaction. Section 2.2.4 then draws on a wider literature to review what is known about the impact patterns of unplanned social interaction have on the characteristics of an organisation's emergent strategy.

2.2.1 Strategy-as-Practice and interaction

The field of SaP research has developed increasing evidence that strategy is created through embodied social interaction (Gylfe *et al.*, 2016). Social interactions are important to strategy because interactions potentially alter the way we view the world (Walsh, 1995). It is therefore through interaction that shared understandings that shape strategic direction form in organisations (Kaplan, 2008). Authors Knight, Paroutis and Heracleous (2018) found that, in

response to visual cues prompted by PowerPoint slides, organisation actors interact in a way that crystallises important aspects of strategy thereby developing a richer understanding of strategy. Developing a richer and shared understanding of strategy through interaction prompts actors to revise their activities based on their evolved understandings.

There is also growing evidence in SaP research that face-to-face interaction is important to strategy because strategy is embodied in people, their actions, what they say and the metaphors they use (Heracleous and Jacobs, 2008; Liu and Maitlis, 2014). As a result, the physical presence of face-to-face interaction enables actors to enact revised interpretations of strategy as they evolve (Knight, Paroutis and Heracleous, 2018) thereby helping the process of developing shared understandings. For these reasons, SaP scholars view strategy as an embodied social accomplishment (Whittington, 1996).

In addition, patterns of interaction are of great interest to strategy scholars as interactions of importance to strategy occur in multiple, repeated episodes (Hendry and Seidl, 2003) and from across multiple levels of the organisation (Regnér, 2003). This is because the shared understanding that shape strategy "*unfolds over multilevel conversations and repeated interactions*" (Knight, Paroutis and Heracleous, 2018, p. 897). To develop an understanding of the way that strategy unfolds, therefore, the strategy researcher needs an appreciation of the patterning of repeated behaviour across the length and breadth of an organisation (Gylfe *et al.*, 2016). As a result, it is in these patterns of social interaction that the strategy researcher has the potential to find instantiations of shared strategic meaning.

2.2.2 The importance of social interaction to organisations

For these interactions of the everyday to become strategic they must be repeated such that they lead to long-term patterns of action. Understanding patterns of social interaction and their effects on organisations is one of the aims of SNA.

SNA shows that "*established patterns of interaction become institutionalised and take on the qualities of socially shared, structural facts."* (Brass *et al.*, 2004, p. 797) and as a result, patterns of interaction emerge in organisations that become routine and constrain, facilitate and change attitudes and behaviour. These patterns can be researched in order to understand "*the consequences of network processes and structures*" for individuals, groups and

organisations (Borgatti and Halgin, 2011, p. 1177). Social networks are critical to organisations because research has shown that their consequences are wide ranging and potentially contribute to the emergence of strategies.

Research has shown that the consequences of social networks occur at three levels: individual; inter-unit; and inter-organisational. At any and all of these levels it is possible to see that the consequences described by the literature have the potential of impacting emergent strategy. For example, consequences at the inter-organisational level include; imitation (Ahuja, 2000); innovation (Powell and et al., 1996; Padgett and Powell, 2012); firm survival (Brüderl and Preisendörfer, 1998); and firm performance (Brüderl and Preisendörfer, 1998; Lee, Lee and Pennings, 2001; Rowley, Behrens and Krackhardt, 2000). Consequences of networks at the inter-unit level include; performance (Oh, Chung and Labianca, 2004; Reagans, Zuckerman and McEvily, 2004); and innovation (Kilduff, 2003; Tsai, 2001; Tsai and Ghoshal, 1998). Consequences of networks at the individual level include: attitude similarity (Erickson, 1988); job satisfaction (Roberts and O'Reilly, 1979); power (Brass, 1984; Burkhardt and Brass, 1990; Krackhardt, 1990); getting a job (Granovetter, 1983); getting ahead (Burt, 1995); performance (Mehra, Kilduff and Brass, 2001); and the quality of leadership (Sparrowe and Liden, 1997).

2.2.3 Emergent strategy in Strategy-as-Practice

The research in SaP to date has been focused on intended or deliberate strategy making (Vaara and Whittington, 2012). This means that the research reviewed in section 2.2.1 above, provides evidence that strategy is created through embodied social interaction, uses deliberate strategy making episodes as the focus for its empirical work, for example; strategy workshops (Paroutis, Franco and Papadopoulos, 2015; Heracleous and Jacobs, 2008); engagement with strategy consultants (Knight, Paroutis and Heracleous, 2018); and strategy briefings to employees (Gylfe *et al.*, 2016).

Yet, as was discussed in section 2.1, not all strategy making is deliberate as strategy making can occur in everyday activities without the participants being consciously strategic (Tsoukas, 2015; Chia and Holt, 2006). Emergent strategy is immanent in everyday unplanned interaction that "*for the most part, …. takes place unreflectively, on-the-spot and in the twinkle-of-an-*

eye" (Chia and MacKay, 2007, p. 238). Consequently, unplanned interaction creates the possibility of emergent strategy making *in action* (Chia and MacKay, 2007). These interactions are not deliberately strategic but result "*from coherent coping of actors with developing practical situations*" (Tsoukas, 2015, p. 71)*, "via a modus operandi: an internalized disposition to act*" (Chia and Holt, 2006, p. 635). These are interactions of the everyday: informal, unplanned, random encounters that are potentially fleeting in nature (Cooren *et al.*, 2015) and seemingly insignificant (Rasche and Chia, 2009).

As a result, understanding emergent strategy requires an appreciation of patterns of unplanned social interactions because repeated interactions prompt organisational actors to revise their shared understanding of strategy and the patterns reveal instantiations of those shared understandings(Knight, Paroutis and Heracleous, 2018, p. 916).

The following section draws on a wider literature in order to understand what is known about patterns of unplanned interaction and the emergence of strategy.

2.2.4 Characteristics of emergent strategy and patterns of social interaction

Schein (1993) found that the number and intensity of unplanned 'coping experiences' in an organisation were critical to their ability to learn. Theories of social interaction and change, such as social exchange theory (Homans, 1961), team diversity (Williams and O'Reilly III, 1997) and social networks (Wasserman and Faust, 1994) support the idea that the profile of unplanned social interactions (who interacts, how often and for how long) has an impact on the nature of strategies that emerge. By combining this literature, a table listing five distinct characteristics of strategy emergence is proposed by this thesis and summarised in table 2.1. Moving from left (position 1) to right (position 5) on table 2.1, the characteristics of emergent strategy become increasingly radical as unplanned interactions become more frequent and diversely spread.

The most radical form of emergence is genuine novelty (position 5) as it is something that does not exist "*in our current practice or imagination*" (Padgett and Powell, 2012, p. 1). Research using SNA has shown that the emergence of genuine novelty occurs when unplanned interactions accumulate not just in the social system that experiences the novelty but also span multiple, intertwined social networks (Padgett, 2012b). The emergence of

genuine novelty is made possible by the combined mechanisms of invention and innovation. Invention moves ideas from one network to another and innovation is the degree to which the idea "*reverberates out to alter the interacting system of which it is a part*" (Padgett and Powell, 2012, p. 5). [2]

The absence of unplanned interaction across multiple social networks results in a loss of invention but can still result in the emergence of innovation. Innovation (position 4) is encouraged by unplanned interaction across teams (inter-team) within the organisation (Allen, 1977; Ambrosini, Bowman and Burton-Taylor, 2007). In periods of environmental change, such as that created by new technologies, innovations that respond to the change require far greater inter-team interaction because real innovations demand a reconfiguration of the whole organisation system: changes in one part of the organisation have implications for other parts (Henderson and Clark, 1990).

[2] The definitions for innovation and invention used here are in line with those used by Schumpeter and those commonly used in organisation and strategy research, however, these definitions are inverted by Padgett and Powell.

Table 2.1: Characteristics of emerging strategies and their relation to a profile of unplanned social interaction: table derived from a range of literature for this thesis

	1	2	3	4	5
Characteristics of emerging organisational strategies	Little Emergence Evident	Adaptive	Innovative Pockets	Innovative	Genuinely Novel (invention plus innovation)
Profile of unplanned social interaction evident in the organisation	Infrequent	Frequent intra-team: narrowly weighted towards team structures	Frequent intra and inter-team: individuals hold privileged positions	Frequent intra and inter-team: not restricted to individuals but broadly spread within the organisation	Frequent interaction inside and outside of the organisation: broadly spread across multiple networks
References	(Schein, 1993)	(Keck and Tushman, 1993) (O'Reilly III, Snyder and Boothe, 1993)	(Chia and Rasche, 2015) (Mintzberg and McHugh, 1985)	(Allen, 1977) (Ambrosini, Bowman and Burton-Taylor, 2007) (Henderson and Clark, 1990) (Tsai, 2001)	(Padgett and Powell, 2012) (Garud, Langley and Tsoukas, 2015) (Bouty and Gomez, 2016)

Within these studies, the interactions that make invention and innovation possible occur in 'coherent' social systems (Owen-Smith and Powell, 2004), where interactions are evenly distributed amongst the population and do not favour one group over another. However, social systems are not always so coherent: individual agents can derive great advantage from

differential positions within networks giving them a greater probability of generating the 'good ideas' (Burt, 2004). As a result, skewed profiles of interaction can constrain the possibility of emergence, restrict it to pockets of the organisation or to specific individuals (position 3). It is the view of the author of this thesis that a skewed profile of interaction explains why several accounts of strategy emergence credit heroic individuals (see for examples (Chia and Rasche, 2015, p. 53; Mintzberg and McHugh, 1985, p. 188).

An organisation that lacks inter-team interaction is still able to adapt to changing conditions in its environment (position 2) through an accumulation of unplanned interaction within teams (intra-team). Adaptive change is encouraged by more dynamic patterns of interaction within well balanced teams (O'Reilly III, Snyder and Boothe, 1993). These teams are more likely to change their members during periods of external environmental change that demand adaptation, as this introduces more opportunities for unexpected intra-team interaction (Keck and Tushman, 1993).

Ultimately, an absence of unplanned interaction reduces the possibility for new strategies to emerge (position 1). A profile of interaction with low frequencies of unplanned interaction has stabilising effects on the organisation (Keck and Tushman, 1993) which can be beneficial in environments subject to little external change (Siebert, Wilson and Hamilton, 2017).

In conclusion, emergent strategy does not have a single characteristic but varies in nature with the frequency and diversity of unplanned social interaction. Profiles of unplanned interaction that span intra-team, inter-team and cross multiple social networks make innovation and invention possible which together constitute the most radical forms of strategy emergence.

Having established the centrality of unplanned social interactions to an explanation of emergent strategy, the following section examines the reasons space is implicated in understanding profiles of interaction.

2.3 The influence of space on emergent strategy

The section develops the idea that space may have an important influence on emergent strategy because of its impact on unplanned interaction. Section 2.3.1 reviews the SaP

literature that has shown that materiality is important to patterns of social interaction. Section 2.3.2 reviews literature that shows that space has a particularly important influence on unplanned interaction. Section 2.3.3 reviews evidence that space is implicated in descriptive accounts of emergent strategy in action without its influence always being explicitly recognised.

2.3.1 Materiality and social interaction

Increasingly, the material aspects of organisational surroundings are being shown to be important to strategy (Dameron, Lê and LeBaron, 2015; Le and Spee, 2015). Something is defined as being material to strategy in two ways: material in terms of its physicality or material in terms of its significance (Dameron, Lê and LeBaron, 2015). As such, materiality in strategy typically is referred to in four categories. The first category is strategy tools such as scenario planning, SWOT or the BCG matrix (Jarzabkowski, Paul Spee and Smets, 2013; Wright, Paroutis and Blettner, 2013; Suddaby, Seidl and Lê, 2013). The second category is strategy objects and artefacts such as the strategic planning documents (Spee and Jarzabkowski, 2011), presentations, sketches, photos, pens and flipcharts (Werle and Seidl, 2015) or projectors (Gylfe *et al.*, 2016). The third category is strategy technologies such as computer software such as PowerPoint (Kaplan, 2011; Knight, Paroutis and Heracleous, 2018). The fourth category is built spaces such as the physical spaces in which strategy work takes place (Jarzabkowski, Burke and Spee, 2015; de Vaujany and Vaast, 2013).

Materiality is important to strategy making because it affects the way we interact (Jarzabkowski, Paul Spee and Smets, 2013). As a result, this body of research has shown that material aspects of organisational life enable, constrain and change the way strategy is shaped in organisations (Knight, Paroutis and Heracleous, 2018).

However, of the four categories of materiality defined by Dameron, Lê and LeBaron (2015) it is recognised that the fourth, physical space, has received the least attention (Gylfe *et al.*, 2016; Kornberger and Clegg, 2004; Vaara and Whittington, 2012).

This is possibly because the focus of SaP research has been on deliberate strategy making episodes and the following section reviews why physical space might be particularly important to unplanned interaction and hence emergent strategy.

2.3.2 Space and unplanned interaction

When we think about physical space there is a tendency to think about individual spaces. When we think about rooms in buildings we tend to think about their size, shape, furnishing or decor. The trouble with thinking of space in this way is that it suggests that any "*relationship between space and human activity is pretty well indeterminate: you can do most things in most spaces*" (Hillier, 2014, p. 4). However, there is considerable evidence that when unplanned interaction is considered, physical space plays a vital role (Fayard and Weeks, 2007; Hillier and Hanson, 1984).

Unplanned face-to-face interaction takes place in a two-step process known as meeting and mating (Small and Adler, 2019), first coming into contact with another and second deciding to associate. Physical space is important because it has an impact on the first. Chance encounters can be encouraged or constrained by space because of effects on proximity, movement flows and lines of sight (Sailer and McCulloh, 2012; Kabo *et al.*, 2015). Research in a number of academic disciplines such as architecture, sociology, geography and management studies have shown that physical space plays an important role in patterns of unplanned social interaction. For a recent cross-disciplinary review see Small and Adler (2019).

Because physical space has been shown to have an impact on unplanned interaction, this thesis considers it is possible that physical space is playing a particularly important role in emergent strategy. The following section reviews strategy literature that either implicitly or explicitly recognises the role of physical space. It starts with a review of descriptive accounts of emergent strategy where the influence of physical space is evident but implicit. This is followed by a review of strategy literature that explicitly recognises the role of physical space.

2.3.3 Space and emergent strategy

The importance of space to the social interactions that make emergent strategy possible is evident in micro level accounts of strategy emergence (Beunza and Stark, 2004; Canales, 2014; Michel, 2014; Pinch, 2016; Bouty and Gomez, 2016). It is notable that descriptions of the organisational contexts that make emergent strategy possible explicitly discuss both spatial and social structures as being critical. Social structures in organisations are typically

described in terms of reporting lines, team structures or job specifications and are captured in organisation charts. Spatial structures are described as physical spaces in which the interactions that make emergent strategy possible typically occur. For example, emergence from an investment bank is described as resulting from chance encounters "*among disparate communities of practice: the room not only accommodates traders and their assistants, but a diversity of employees, including salesmen, analysts, operation officers and computer programmers*" (Beunza and Stark, 2004, pp. 378-379). In this account of emergence, the authors afford great agency to the spatial arrangements of the trading room, described as "*a huge open plan space occupying almost the entire twentieth floor of a skyscraper".* The layout of the trading room has a direct effect on emergence because it creates an *"atmosphere conducive to association*" (Beunza and Stark, 2004, p. 378) between people. 'Association' is encouraged spatially through a system of rotating traders around the desks in the room "*because sitting near each other is the best rule of thumb to predict that they will talk to each other*" (2004, p. 380).

The attribution of agency to a specific space is also evident in Pinch's account of emergence at the music technology firm Moog. At Moog, the layout of the factory was seen as providing opportunities for important chance encounters: "*the architectural 'funky' layout of the factory also combined with the social arrangements in interesting and unexpected ways*" (Pinch, 2016, p. 142). Pinch attributes agency to neutral spaces away from work of the everyday "*where social worlds and the concomitant identities become less important*" (2016, p. 150). Rather than invoke specific spaces as being important, an account of emergence in Michelin starred restaurants suggests that several spaces are at work (Bouty and Gomez, 2016). "*Chefs work on ideas outside the restaurant; creative teamwork happens in the kitchen; naming is related to then chef's office*" (Bouty and Gomez, 2016, p. 237) and all these spaces have a role to play in the emergence of new recipes and menus at some points in time but not at others. The salient aspect of the spatial dimension to Bouty and Gomez (2016) in their study of restaurants is the combination of multiple spaces in a spatial system. It is the diversity of interaction in a combination of spaces that encourages new ideas to emerge.

Strategy research with an explicit spatial focus also describes the major impact of space as its influence on the way people interact (Jarzabkowski, Burke and Spee, 2015; Bucher and Langley, 2016; Siebert, Wilson and Hamilton, 2017). In this way, space plays an important role

in strategic work and helps account for a variety of strategic outcomes. A study of the trading floor of an insurance broker was found to be instrumental in shaping strategic work such as collaboration and negotiation (Jarzabkowski, Burke and Spee, 2015). The specific characteristics of the space studied, such as its open plan layout and the positions of chairs, desks and computer screens, were shown to be instrumental in enabling and constraining the nature of social interaction performed within the space. This had an impact on the specific strategic outcome of selecting the best deals available to the firm studied. Siebert et. al. (2017) showed that the physical characteristics of a specific space accounted for the longevity of the organisation studied by reproducing the interactions of institutional actors and reinforcing existing relationships and statuses. Research by Bucher and Langley (2016) demonstrated the role of space in radical organisational change. The authors describe how the interplay of two different types of space, labelled reflective and experimental, made change possible. Experimental spaces were those in which the normal routines of the organisation took place, where new actions could be tried and potentially integrated into the original routine. Reflective spaces, set apart from experimental spaces by both social and physical boundaries, allowed new conceptualisations of existing routines. It was only the repeated interplay of social interaction between each of these spatial types that enabled change to occur.

In different ways, each of these accounts describe the importance of space to strategy in terms of its influence on social interaction. From this it is possible to conclude that physical space influences the profile of unplanned social interaction and hence the characteristics of emergent strategy described in table 2.1.

The possibility that physical space might influence emergent strategy suggests that space should be more explicitly recognised in strategy literature. The following section highlights some areas of existing strategy literature that might be impacted in this way.

2.4 How the relationship between space and emergent strategy might have an impact on strategy literature

This section highlights areas of strategy literature that might be impacted by this thesis. It argues that in strategy research organisations are often described solely in terms of social

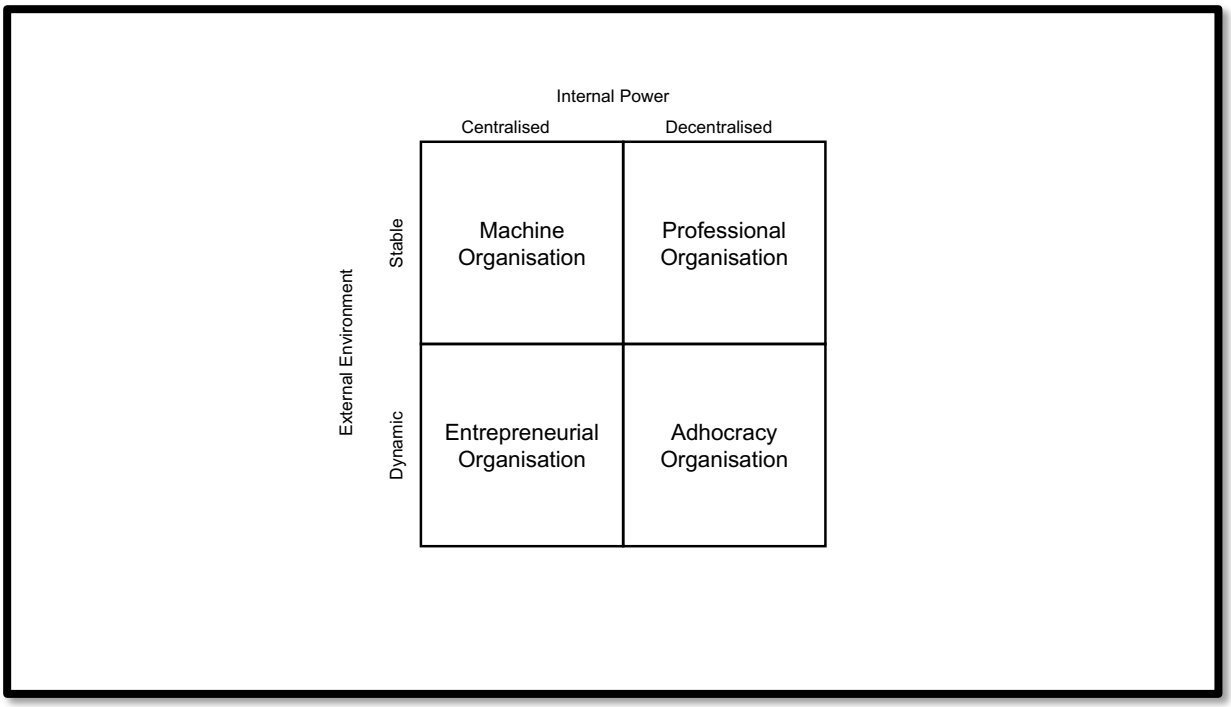
abstractions and that the inclusion of physical space would encourage a view that understands organisations as "*material, spatial ensembles*" (Kornberger and Clegg, 2004, p. 1095).

The related fields of strategy process and SaP research are concerned with the way strategies are formed and enacted in organisations (Sminia, 2009) and recognise that strategy should be considered a social process. As social processes are often irrational and messy (Powell, Lovallo and Fox, 2011) the achievement of long term patterns of action in organisations is considered a social accomplishment and SaP scholars are interested in what contributes to that social accomplishment day-to-day (Whittington, 1996).

This thesis aims to introduce a spatial dimension to the field of SaP research by investigating the possibility that an organisation's internal spatial contexts contribute to the characteristics of an organisation's emergent strategy.

Henry Mintzberg, an academic in the process tradition of strategy research and responsible for developing the notion of emergent strategy, developed a conceptual scheme that identified four basic organisational designs (Mintzberg, 1989), shown in figure 2.1.

Figure 2.1: Four basic forms of organisations from Mintzberg



Source: (Mintzberg, 1989)

In Mintzberg's (1989) scheme, two contextual dimensions are used to categorise the basic forms of organisation, the dynamism of the external environment and the way that power is exerted internally within the organisation. An organisation in a stable external environment with centralised power is labelled a 'machine organisation'. A machine organisation typically "*produces mass, standardised products or services with rather unskilled labour, subject to many technocratic controls; generally but not necessarily large and usually mature*" (Mintzberg, 2007, p. 342).

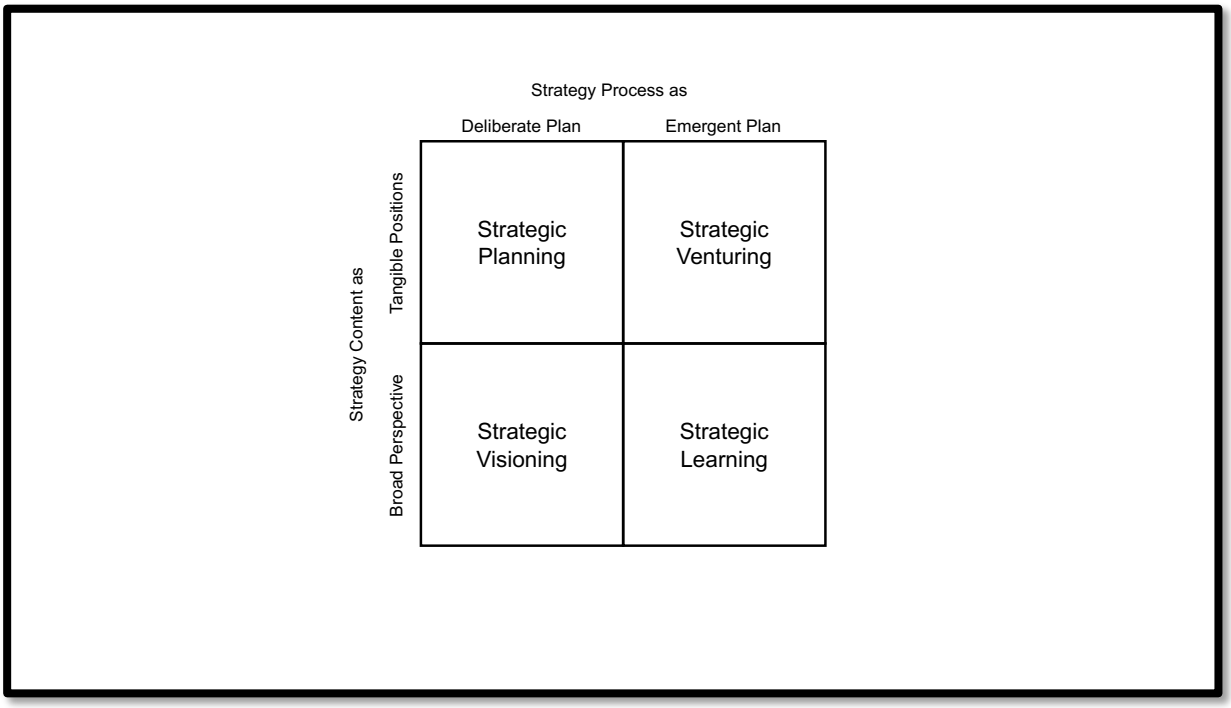
An organisation in a stable environment but with decentralised power is labelled a 'professional organisation'. A professional organisation is described as being "*dependent on highly skilled workers who work rather autonomously, subject to professional norms; mostly provides standardised services*" (Mintzberg, 2007, p. 342).

An organisation in a dynamic environment with centralised power is labelled an 'entrepreneurial organisation'. An Entrepreneurial organisation is described as being "*organised around teams of experts working on projects to produce novel outputs*" (Mintzberg, 2007, p. 342).

An organisation in a dynamic environment with decentralised power is labelled an 'adhocracy organisation'. An adhocracy organisation is described as having broad visions rather than specific plans leaving considerable scope for experimentation and learning (Mintzberg, 2007, p. 347).

Mintzberg (1989) also claims that each organisational form tends towards a certain type of strategy making process. Two dimensions are used to categorise the four types of strategy processes that map onto the organisational forms in figure 2.1, the degree to which strategy is observed to be deliberate or emergent and the degree to which the strategy is made explicit and tangible (Mintzberg, 1989), shown in figure 2.2.

Figure 2.2: Four processes of strategy formation from Mintzberg



Source: (Mintzberg, 1989)

Mintzberg's scheme makes the important contribution that strategy formation depends on the context. He makes explicit in his scheme the external strategic context in the form of competitive market dynamism and internal social context, in the way that power is exerted. However, no reference is made to the physical or spatial context of each organisation which may be important.

The combination of the conceptual schemes shown in figures 2.1 and 2.2 means that Mintzberg has made an explicit link between the strategic context of each organisation (in figure 2.1) and with the strategy process they are likely to employ (in figure 2.2). For example, organisations in rather stable external environments and with centralised internal controls tend to develop strategies rather deliberately and can articulate the content of those plans as tangible positions and actions. Although Mintzberg's mapping of the process of strategy formation onto the organisation form and external contexts is by no means precise, Mintzberg did suggest that "*some kind of convergence, around these four configurations was rather marked*" (Mintzberg, 2007, p. 340).

This gives rise to the idea that an organisation's internal contexts have an impact on strategy processes that need to align with the organisation's external contexts (Chandler, 1963; Volberda, 1997; Ansoff, 1979). As the physical layout of an organisation has an impact on the way people interact, it is possible that spatial arrangements are an important part of the internal organisational contexts and in this way may also be an important contextual factor in understanding the strategic alignment of an organisation with the external competitive environment.

This also gives rise to the need for ambidexterity which is the organisation's ability to manage potentially conflicting strategic goals, for example, the ability to be efficient in its management of today's business and also adaptable when coping with tomorrow's uncertainty. Organisation ambidexterity is referred to in the literature when considering strategy making processes as the need to balance deliberate strategy making processes typical of the machine organisation to exploit current commercial opportunities and to pursue more emergent strategy processes typical of the entrepreneurial organisation to explore future opportunities (Bodwell and Chermack, 2010; O'Reilly Iii and Tushman, 2013; Burgelman and Grove, 2007).

Ambidexterity has garnered a great deal of interest amongst strategy scholars because achieving this balance is difficult to do in practice (O'Reilly Iii and Tushman, 2013). Typically, organisations achieve ambidexterity in two ways, through structural ambidexterity or temporal ambidexterity. Structural ambidexterity (Gibson and Birkinshaw, 2004) refers to the creation of separate business units to focus on the exploration associated with emergent

strategy and others on the exploitation associated with deliberate strategy. Temporal ambidexterity refers to organisations that flex between deliberate strategy processes and emergent strategy processes over time (Junni *et al.*, 2013; Burgelman and Grove, 2007). However, it is also recognised that ambidexterity can be achieved within a single business unit contemporaneously if the right internal contexts are present. This is known as contextual ambidexterity (Gibson and Birkinshaw, 2004) where the contexts are defined as discipline, stretch, support and trust (Ghoshal and Bartlett, 1994).

Although Mintzberg's research is widely recognised as making a substantial impact on strategic thinking (Blom and Alvesson, 2015) it has also been critiqued for defining contexts too narrowly (Ansoff, 1991) with the result that the conceptual schemes presented here may be incomplete. Including a more granular spatial perspective into the analysis of organisational contexts has the potential to deepen our understanding of emergent strategy making in practice and organisational ambidexterity.

2.5 Problems associated with research into the relationship between space and emergent strategy

This section argues that the existing strategy literature identifies four hurdles that need to be overcome to establish a relationship between physical space and emergent strategy. The first is the problem of retrospective attribution, which argues that emergent strategy can only be identified sometime after it occurs in practice. The second is methodological individualism which has been identified as a specific barrier to studying emergence. The third is the absence of a robust theory of networks that might explain why the social interactions that make emergent strategy possible exist. The fourth is the "*fetishism of space*" (Soja, 1980, p. 208) that separates the analysis of space from the analysis of the social. Each of these problems is discussed in turn together with possible solutions suggested by the literature.

2.5.1 Retrospective attribution

The first problem is that emergent strategy making cannot be identified in real time, only retrospectively (Tsoukas, 2015). The unintentional nature of the social interactions that generate the possibility of emergent strategy making means that the attribution of 'strategic' to that interaction can only be made sometime later, once the realised patterns of action of

the organisation become clear. Even those involved in the relevant social interactions would not identify the encounters as strategic at the time (Tsoukas, 2015, p. 71).

The task of identifying specific interactions that contribute to the emergence of new strategies is made more difficult by their fleeting nature (Cooren *et al.*, 2015). These are interactions of the everyday: informal, unplanned, random encounters that are potentially fleeting in nature and seemingly insignificant (Rasche and Chia, 2009). Strategy is immanent in every fleeting interaction (Chia and MacKay, 2007) but their insignificance makes them difficult to observe. Such is the scale of this problem that it has been called intractable by some scholars (Chia and MacKay, 2007), the "*constant and unfinished task for social theory*" (Lynch, 2001, p. 146). However, others suggest that progress towards understanding the unplanned social interactions that make emergent strategy possible can be made through an immersion of the researcher into the organisation being studied (Cooren *et al.*, 2015; Rasche and Chia, 2009). By spending extended periods of time within an organisation, the strategy researcher is able to "*access beneath surface appearances and uncover the hidden realities shaping strategy practices*" (Tamboukou and Ball, 2003, p. 14) and develop a sensitivity to what is and what is not potentially strategic (Cooren *et al.*, 2015). Researching emergent strategy requires attention be paid to potential strategy makers across the organisation at all levels (Regnér, 2003) and in-depth observation allows the researcher to note *"even the smallest and seemingly insignificant goings-on, including the suppressed, the marginalised and the unacknowledged"* (Tamboukou and Ball, 2003, p. 6). For this reason, it was decided that this research, with its focus on emergent strategy making, required an extended period of time in one organisation. This immersion allowed the author to build a sensitivity to emergent strategic themes evident in the organisation being studied.

Although total immersion within the organisation does not solve the problem of retrospective attribution it is the view of the author of this thesis that it does give this research an equivalence to other research in the field of SaP. This is because retrospective attribution is not a problem unique to emergent strategy but also applies to deliberate strategy making (Tsoukas, 2015). According to Tsoukas, circular definitions of strategy "*beset the field*" (Tsoukas, 2015, p. 73) of SaP, for example, some activities, such as strategic planning sessions and strategy away-days, are considered strategic just because participants define them as such and "*not because they are necessarily consequential for the organisation*" (Tsoukas,

2015, p. 73). When researching strategy making in real time, 'strategy' is always a second-order label attributed by the researcher retrospectively.

For this reason, rather than label the emergent strategic themes as emergent strategy, this thesis has adopted the rather more cautious formulation for studying strategy proposed by Cooren et. al. and labelled these themes strategic *"matters of concern*" (Cooren *et al.*, 2015, p. 365). This caution is exercised because it is recognised that this approach does not fully overcome the problem of retrospective attribution but at the same time, it is argued that it gives this research an equivalence to any research that observes strategy-making in real time. The methodology for identifying 'matters of concern' is described more fully in chapter 3.

2.5.2 Methodological individualism

The micro accounts of strategy emergence described in the previous section make no general claims about the spatial contexts that might encourage strategy emergence. Their conclusions remain within the specific contexts of the organisations studied. This is because micro level accounts that make meso level claims potentially suffer from the presumption of methodological individualism - where meso outcomes are simply understood as aggregations of micro activities (Chia and MacKay, 2007). As a result, focusing on the micro-activities of individual actors (and the spaces within which they operate) creates a distinction between micro level activities and meso level outcomes (Chia and MacKay, 2007).

The problem of methodological individualism is therefore the second hurdle that needs to be overcome in understanding how space influences emergent strategy. In their work on social networks, authors Pagett and Powell specifically identify methodological individualism as a barrier that "*inhibits social science investigation into processes of emergence*" (Padgett and Powell, 2012, p. 2). They describe the problem this way: "*The problem is that the atomic conception of actor precludes investigation into the construction and emergence of the real people and organizations that we refer to by that abstraction. (...) In this book, we take the following as our mantra: In the short run, actors create relations; in the long run, relations create actors. (...) In the short run, all objects - physical, biological, or social - appear fixed, atomic. But in the long run, all objects evolve, that is, emerge, transform, and disappear. To understand the genesis of objects, we argue, requires a relational and historical turn of mind.*"

(Padgett and Powell, 2012, pp. 2,3). The relational and historical turn of mind to which these authors refer is the analysis of networks. So, to overcome the problem of methodological individualism in SNA it is necessary to move the analysis away from a focus on individual agents to their position in a social system (Wasserman and Faust, 1994), to the social network. The focus is not on single actors but on how resources flow through the network as a whole. The position of an actor in the overall system is indicative of the possibilities afforded to them by the network (Burt, 2004). As a result, actors can gain advantage purely on the basis of their position in a social network through the repeated access to superior resources, such as new information.

For SNA you need data of the system as a whole. You cannot just ask who an individual interacts with but also who their contacts interact with and the contacts of their contacts, and so on. The question in SNA becomes how an individual is structurally embedded, and how the network as a whole is shaped for advantage. SNA achieves this by using three levels of analysis; level 1, a node, typically a human actor; level 2, a tie, for example, the relation between human actors and level 3, network structure, the overall characteristics of the network. By providing a global knowledge, SNA gives us an understanding of the *"patterned consistency"* of the social networks (Brown, 1986) from which emergence has been evident *"rather than on the micro-activities of individual strategy agents*" (Chia and MacKay, 2007).

It is the ability of network theory to overcome methodological individualism and bridge the divide between micro level observations and macro and meso level phenomena that means the emergence has been shown to be the result of social networks with specific structures (Padgett and Powell, 2012). However, SNA does not explain "*why networks have the structures they do*" (Borgatti and Halgin, 2011, p. 1168). Social interactions are the focus of SNA (Salancik, 1995; Brass *et al.*, 2004; Parkhe, Wasserman and Ralston, 2006) and it is important "*to understand why certain interactions exist and why others do not*" (Parkhe, Wasserman and Ralston, 2006, p. 561).

This thesis has the objective of understanding not only how patterns of social interaction impact emergent strategy but also why those interactions exist in the first place and linking these to spatial characteristics of organisational arrangements.

2.5.3 The absence of a spatial theory of networks

The third problem identified is the absence of a spatial theory for the antecedents of social networks. Social network theory encompasses two analytically distinct domains referred to as "*network theory*" proper and the "*theory of networks*" (Borgatti and Halgin, 2011, p. 1168). Network theory is focused on "*the consequences of network processes and structures*" for individuals and groups (Borgatti and Halgin, 2011, p. 1177). The theory of networks deals with the antecedents of social networks, or "*why networks have the structures they do*" (Borgatti and Halgin, 2011, p. 1168).

One of the main proposals of this thesis is that there is good reason to think that space may be an important antecedent to the structure of social networks. Section 2.3 highlighted the ways in which physical space was implicated in the interactions that made emergent strategy a possibility. In addition, it is evident that physical space is ever present in SNA but the impacts are left implicit in the analysis (Adams, Faust and Lovasi, 2011; Doreian and Conti, 2012). For example, the historical case examples used are virtually always spatially bound in some way, to the extent that the geographical boundaries often appear in the titles of journal articles. Merchant banks emerge in Tuscany (Padgett, 2012b), partnerships emerge in Renaissance Florence (Padgett and McLean, 2006), joint stock companies emerge in the Netherlands (Padgett, 2012a).

The socio-spatial perspective, so evident in the micro accounts of emergence, would suggest that the social ties and interactions analysed in SNA might be explained through a consideration of spatial contexts in which they occur. SNA is therefore helpful in highlighting that network theory is necessary to overcome methodological individualism but insufficient to answer the research question addressed by this thesis: how does physical space influence emergent strategy? To answer this research question, a theory and methodology capable of analysing space on multiple levels in order to understand the impact of space on social interaction at multiple levels is required. In other words, a spatial network theory is needed.

A network treatment of space is advocated in the cross disciplinary work of a management scholar and an architect who suggest that "*the configuration of space can initiate and influence social behaviour*" (Allen and Henn, 2007, p. 3). However, this work reduces the

analysis of space to the distance between two people. The treatment of space is based on research conducted by Allen in science and engineering organisations that demonstrated that the frequency of unplanned interaction between two people reduces as the distance between them increases (Allen, 1977). The result is that the analysis of space is reduced to the distance between desks. Whereas this method does describe the spatial relationship between person A and person B, it excludes the positional advantages arising from the location of person A versus person B in a spatial system. The same treatment of space, as distance between two points, is also found in a study that examines why biotechnology communities emerge in geographic clusters. It concludes that "*network connections and geographic propinquity are crucial to organisation performance*" (Owen-Smith and Powell, 2004, p. 6). Propinquity – the spatial distance between two points – is so crucial because it fundamentally alters the flow of information through a (social) network (2004, p. 1). Propinquity reduces the analysis of space to a simple relationship of distance between one space and another. The equivalent in social terms is to reduce relationships to who interacts with whom rather than consider where they are positioned in an overall social network. To treat spatial relationships simply as distance between two points is therefore to suffer from the same methodological individualism that SNA claims to overcome. The problem of methodological individualism applies to space as much as it does to the individual agent. A spatial system does not necessarily work as an aggregation of its individual parts. For example, the layout of the trading floor of an insurance broker was found to be instrumental in shaping strategic work (Jarzabkowski, Burke and Spee, 2015). However, a network perspective would argue that the location of the trading floor in the overall spatial system is of as much interest as the specific layout of the room itself. Was the trading room located on a ground floor near a common entrance to encourage traffic through the trading room or tucked away on a top floor accessible only to those that worked there?

It is widely recognised that network theory is in need of a good theory of networks (Parkhe, Wasserman and Ralston, 2006; Klein *et al.*, 2004; Borgatti and Foster, 2003; Mehra, Kilduff and Brass, 2001; Salancik, 1995). A spatial network methodology has the potential to contribute to such a theory. However, a theory and methodology that focuses entirely on space to the exclusion of social effects runs the risk of over emphasising the importance of space. This is the basis of the fourth problem identified by the literature.

2.5.4 Fetishism of space

The fourth problem is that the analysis of space is too often separated from analysis of the social. This is evident in the work of Allen and Henn who argue that both organisation structure (the social) and physical space are distinct management tools that can be used to manage innovation (Allen and Henn, 2007, p. 81). What is offered by this approach is not a theory where both aspects (social world and spatial world) have equal importance and inform each other. The result is that their conclusions focus either on space or on organisation structure, but not on the two together. For example, they describe a workplace refurbishment project (Allen and Henn, 2007, pp. 14-16) where senior management were moved from a dingy corridor with single cellular offices to a more transparent design where each manager still had their own office, but now there was a coffee bar in the centre and offices had glazing to enable visibility. This is a valid spatial perspective but ignores social relationships between the senior managers that will also have an impact on which of the senior managers will interact.

It is notable that the micro accounts of emergent strategy reviewed above do not suffer from this problem in their detailed descriptions of strategy emergence. They are resolutely socio-spatial in nature; there is no hint of separation between the effects of social context from that of spatial context. Profiles of interaction result from an interweaving of an organisation's social and spatial networks; social processes and structures and spatial processes and structures are described as mutually enacting (Dale, 2005). The danger of separating spatial analysis from social analysis was highlighted by Soja (1980) who suggested that to focus too much on the impact of space ran the risk of what he called the 'fetishisation of space' which raises "*the spatial problematic to an intolerably central and autonomous positio*n" (Soja, 1980, p. 207). This separation has two potential outcomes, either space is given an intolerably central position, or alternatively space is side-lined in the analysis and afforded little or no agency. To overcome this problem, a mechanism that integrates the social with the spatial is required.

2.5.5 Summary of the four problems associated with establishing a relationship between space and emergent strategy

To conclude, four problems have been identified from a reading of the existing relevant literatures that need to be overcome to establish a possible relationship between space and emergent strategy. The first is retrospective attribution of the label 'strategic' to interactions that may contribute to the emergence of new strategies. The immersion for an extended period of the researcher into the organisation is suggested as a partial solution to this problem. The methods used in this thesis are described in the following methodology chapter.

The second is methodological individualism where macro and meso level outcomes are simply understood as aggregations of micro activities. Network analysis is identified as a possible solution. The third is the absence of a good theory of networks that is capable of explaining the antecedents to social networks. To overcome this problem the use of a spatial network theory is proposed. The fourth problem identified is the fetishism of space that separates the analysis of space from analysis of the social. The solution to this suggests that an integrating socio-spatial mechanism is required in whatever method is selected, to ensure that primacy is not given to either spatial or social analysis implying a deterministic relationship.

The qualitative methods most commonly used in strategy research of observation and interview do not provide theoretical solutions to the second, third and fourth problems. To fill this gap this thesis uses cross-disciplinary theorising (Shaw, Bansal and Gruber, 2017) by drawing on the theory of Space Syntax from architecture. Space Syntax meets the criteria for solving the second and third problems identified in this section through a network understanding of space with an integrating socio-spatial mechanism. As a pertinent distal theory, applied to an under-researched phenomenon, Space Syntax has the potential for "*evocative theoretical boundary spanning*" (Nadkarni *et al.*, 2018, p. 373).

The following section introduces the theory of Space Syntax and its potential applicability for the study of emergent strategy.

2.6 Space Syntax: The social logic of spatial configuration

Space Syntax is a social theory of space developed in the late 1970s and early 1980s at the Bartlett School of Architecture at University College London by Bill Hillier and Julienne Hanson. The theory was published in the book titled "The Social Logic of Space" (Hillier and Hanson, 1984). It is a socio-spatial theory (Netto, 2016) described as "*a theoretical model of human space: how it is structured, how it works, how it is understood, and how it is part of the thing we call society*" (Hillier, 2014, p. 2). At its heart, the theory claims that space relates to society in two fundamentally different ways: on the one hand the relationship is considered 'conservative' or 'reproductive', and on the other, 'generative' or 'morphogenetic'. A conservative use of space is one that reflects and embodies existing social patterns. In such arrangements "*the spatial conditions exist for all kinds of conservation – of roles and positions, of social praxes and rituals, of statuses and identities*" (Hillier and Penn, 1991, p. 29). By contrast, a generative use of space shapes social patterns since, by shaping movement, space also creates patterns of co-presence in space, and new possibilities of social interaction. In such arrangements "*the spatial conditions exist for all kinds of generation – new relationships, new ideas, new products and even knowledge*" (Hillier and Penn, 1991, p. 29).

Space Syntax, like SNA, is a theory of *configuration* – that is the position of each space in relation to all the others in an overall system of some kind, such as a building (Hillier, 1996). There is a tendency when considering space to think about individual spaces. When we think about rooms in buildings we tend to think about their size, shape, furnishing or decor. The trouble with thinking of space in this way is that it suggests that any "*relationship between space and human activity is pretty well indeterminate: you can do most things in most spaces*" (Hillier, 2014, p. 4). What is missing from descriptions of space in terms of size and shape is any form of configurational description. As a result, a central claim of Space Syntax theory is that *"it is as configuration that [space] has its most powerful and independent effects"* (Hillier, 1996, p. 18).

In addition, as is evident from the descriptions of conservative and generative systems, *social encounter* is central to the theory of Space Syntax; the degree to which face-to-face interactions are controlled and the nature of those encounters are what define different societies. "*Different types of society require different kinds of control on encounters in order*

to be that type of society" (Hillier and Hanson, 1984, p. 18). The focus of the theory on face-to-face interactions rather than mediated interactions via other communication channels (email, telephone, videoconferencing, messaging services) is grounded in the media richness of physical presence (Lengel and Daft, 1988). Face-to-face interactions are considered the richest type of media, allowing for rapid feedback and high frequency of communication, the building of trust in relationships, the development of shared values and making judgements (Storper and Venables, 2004). The emphasis on face-to-face interaction, co-presence, movement and the embodiment of practice is most responsible for the theory's widespread use and longevity as it builds on the "*attention paid to the sociological importance of the encounter*" and the idea of the encounter in space as a key aspect of practice (Netto, 2016, p. 4).

To develop an understanding of what influences patterns of social encounter, Space Syntax argues that relations between people can be explained in two ways: either by means of spatial closeness (*spatially*) or by means of conceptual closeness (*transpatially*) (Sailer and Penn, 2009, p. 95:6). Essentially, people relate spatially because they are in close proximity to each other. Alternatively, people relate transpatially because they belong to the same conceptual category; a father relates to other fathers; carpenters relate to other carpenters. When people belong to a *transpatial category*, their relationship to each other is independent of their spatial closeness: they are traversing space. The importance of both spatial and transpatial relations is that each creates the possibility of encounter between people in fundamentally different ways. *Spatial closeness* creates the possibility of a social encounter by placing two or more people in the same place at the same time; co-presence creates the opportunity for encounter. Spatial encounters are encounters of the everyday, they are fluid and do not rely on any formal social mechanism to occur. As such they are typically random, unplanned and probabilistic in nature. *Transpatial closeness* also creates the possibility of encounter but for the encounter to take place effort is required. Some sort of social mechanism is required that will overcome the lack of spatial proximity. Such mechanisms might be as formal and ritualistic as a religious gathering; "*a set of behaviours in which all relations are specified by rules*" (Hillier, 1996, p. 193) or as informal as a party for like-minded people where "*rules are minimised*" and new relationships are made possible (Hillier, 1996, p. 5). All such mechanisms are known as *transpatial mixing mechanisms*. Transpatial

encounters are more deliberate and deterministic in nature when compared to spatial encounters as they always require effort to happen.

Using the conceptual building blocks of spatial and transpatial encounter, it is possible to develop an understanding of the socio-spatial conditions necessary for conservative and generative socio-spatial systems. Central to this understanding is the concept of *correspondence (Hillier and Hanson, 1984, pp. 255-261)* where correspondence is defined as the degree of overlap between spatial and social relations.

Hillier and Hanson (1984) provide an example of a correspondence system drawing from historical ethnographic descriptions of the Tallensi of Northern Ghana. The Tallensi lived in compounds, each with a strict hierarchical social structure following strong patrilineal lines so when sons set up their own compounds they were in close proximity to their fathers. In this way clusters of compounds appeared in the Tallensi landscape with a lineage to a common grandfather. The transpatial categories most evident in the Tallensi were also patrilineal, for example; the entrance to each compound was marked by a shaded tree with ancestor fetishes; the headman's personal hut was also said to be the dwelling place of the headman's male ancestors and both these spaces, as well as additional shrines, were used in ritual gatherings for members of each compound. There was little to encourage interaction between the dispersed clusters of the Tallensi landscape. Because the spatial structures of the Tallensi landscape and the transpatial rituals overlapped closely, this socio-spatial system was said to have a strong correspondence (Hillier and Hanson, 1984). This correspondence resulted in a '*conservative'* use of space and an extreme 'staticness' of the population (Hillier and Hanson, 1984, p. 247), where boundaries of the spatial group were as strong as the internal structures of the group (Hillier and Hanson, 1984, p. 256). This resulted in a conservation of the "*roles and positions, of social praxes and rituals, of statuses and identities*" in the Tallensi socio-spatial system (Hillier, 1996, p. 196). Such socio-spatial systems were labelled conservative.

By contrast, non-correspondence between transpatial categories and spatial arrangements create a '*generative'* use of space, illustrated by drawing from historical ethnographic descriptions of the Native American Hopi society (Hillier and Hanson, 1984) . A typical Hopi settlement consisted of several clans, each of which gathered three or four households based

on matrilineage. Each clan's households were dispersed across the settlement (and indeed into neighbouring settlements). There was no fixed association between the clans and a position in the settlement, the configuration of the settlement changed as the matrilineages grew. The spatial arrangements therefore encouraged interaction between clans. The transpatial mixing mechanism most in evidence multiplied the number and range of encounters created spatially. As the clans were spread across the settlement mothers, brothers and sisters were in all parts of the system. It required effort (a transpatial mixing mechanism) in order for a family to have a meal or ceremony. Family meals tended to be held by open doorways, so that passing people could take part in the meal. Ceremonies took place in public places. In the case of the Hopi, spatial arrangements did not correspond to transpatial categories. The result of this non-correspondence was a socio-spatial system where local groups were not strongly structured, nor did they maintain strong boundaries. Members of spatial groups were linked with others across the landscape by categoric mixing mechanisms (Hillier and Hanson, 1984). Such socio-spatial systems were labelled generative.

Correspondence, therefore, sits at the heart of the way Space Syntax is able to describe the social logic of space (Hillier and Hanson, 1984) by explaining why some socio-spatial systems create social structures with strong boundaries between groups and others do not. However, it is believed by this author that this essential description of socio-spatial relations has received little attention from the Space Syntax research community. This is evidenced by the methodologies developed by this community where sophisticated quantitative measures have been developed for relations of spatial configuration but not for socio-spatial relations of correspondence. These measures are described in detail in the following methodology chapter. Given the importance of correspondence to the research question, and its absence from the Space Syntax methodology, a measure for correspondence is developed specifically for this thesis. The measure for correspondence is also described in the methodology chapter.

The fact that Space Syntax measures, analyses and compares configurations of space does not assume any sort of deterministic relationship with social interaction. The arrangements of space in conservative and generative socio-spatial systems highlight the ambivalence of Space Syntax to determinism. In a conservative arrangement of space, the configuration of space reflects or embodies the more abstract social structures, hence spatial form follows social function. By contrast, in a generative arrangement of space, the configuration of space

has a role in the continuous generation of new encounters, hence social function follows spatial form.

Therefore, Space Syntax is necessary for spatial patterns to be analysed in their own terms (Hillier and Hanson, 1984, p. 5) before any assumptions about deterministic relationships are made. This is critical to an understanding of the use of socio-spatial theory and *"leads to a research programme in which the object of investigation is how the two morphologies of space and encounter are patterned. Research can thus proceed without any presumption of determinism*" (Hillier, 1996, p. 194).

So far, conservative and generative socio-spatial systems have been presented as something of a dichotomy. The reality is that they represent two ends of a continuum of spatial systems that are more or less generative, more or less conservative. Correspondence or non-correspondence are never absolute but vary by degrees, transpatial mixing mechanisms can be more or less ritualistic, more or less open. Socio-spatial theory therefore claims that patterns of spatial configuration have an impact on patterns of social interaction in a way that produces a wide spectrum of social outcomes.

Although the correspondence socio-spatial system of the Tallensi and the non-correspondence socio-spatial system of the Hopi may appear remote from management theory, echoes of such analysis are evident. When the consultant Tom Peters said "*there is one element that deserves special mention, even in this brief treatment. I've said many times, to the surprise of many people: physical location - in particular, jamming people from disparate functions together in the same room or workspace or cubby hole - is the number one culture change tool that I've discovered! Move the accountants to the manufacturing floor: within six weeks the accountants will appreciate the manufacturers, the manufacturers will appreciate the accountants. Put the designers, engineers, manufacturers, and marketers in one location working on a joint product development process: something close to a miracle will invariably occur*" (Peters, 1990, pp. 23-24), Peters was of course talking about moving from a correspondence to a non-correspondence system.

This quote by Peters (1990) emphasises the importance of who it is that interacts. In the quote above, the focus is on employees of the organisation only, or those that inhabit the spatial

system being considered. Space Syntax theory suggests that interaction is between inhabitants of the spatial system and visitors to that system is equally important. An inhabitant is defined as "*an individual whose social existence is mapped into the category of space*" (Hillier and Hanson, 1984, p. 146) and in an organisational context are typically understood to be employees. Visitors are defined as "*persons who may enter the building temporarily, but may not control it. Pupils in a school, patients in a hospital, guests in a house and prisoners in a prison all fall within this category*" (Hillier and Hanson, 1984, p. 146).

It is acknowledged by this thesis that the categorisation of social groups into inhabitants and visitors is particularly broad for the purposes of understanding patterns of social interaction and that some further sub-categorisation may be necessary. The actual categorisation selected is described in the methodology chapter 3. However, for consistency with the theory this thesis uses the terminology of inhabitants and visitors throughout.

Space Syntax provides this research with the theoretical basis from which to explore the way physical space influences social interaction and emergent strategy because it provides the tools to quantify patterns of spatial configuration (spatial networks) in a way that is compatible with SNA. Space Syntax matches the multi-level complexity of SNA and its relational method for understanding social embeddedness with an equally complex relational way of understanding locational embeddedness. That is, not as a fixed location in space, with fixed ideas about distance and propinquity, but as a means to understand and unpack the multitude of social relations that result from bodily co-presence. Like SNA, Space Syntax uses three levels of analysis, these are shown in table 2.2 and compared with those used in SNA that have been described above.

Table 2.2: The components of social and spatial network analysis compared

Level of Analysis	Social Network		Spatial Network
Node	Human Actor, e.g. their network centrality or position as broker		Spatial elements and their network position, e.g. integration
Ties	Connections between human actors		Connections between spaces, e.g. metric distance between nodes, shortest paths
Network Structure	Overall characteristics of a social network, e.g. density, clustering, coherence		Overall characteristics of a spatial network, e.g. average mean depth of a building

Source: SNA and Space Syntax literature

In conclusion, Space Syntax has been introduced to this thesis as a cross-disciplinary, boundary spanning theory. The research objective is to develop a socio-spatial understanding for the characteristics of an organisation's emergent strategy via social interaction.

A need was identified to find a theory that overcame methodological individualism by employing multi-level analysis, potentially explained why some social interactions exist and others do not and integrated the effects of physical space with social structure into the explanation. The review of Space Syntax theory shows that these needs were met and that the theory has already been associated with the phenomenon of emergence through the concept of the generative system. Generative socio-spatial systems are defined as emergent and are described by mutually enacting social and spatial structures through the concept of non-correspondence. When applied to an organisational context, Space Syntax potentially provides a method for developing a deeper understanding of the role of physical space in emergent strategy.

Having introduced the theory of Space Syntax from architecture, the following section returns to the field of SaP to explain why such theory integration is appropriate.

2.7 Theory integration and compatibility

This thesis is framed within the research field of SaP because of its "*emphasis on strategy-making as social practice*" (Grand, Von Arx and Ruegg-Sturm, 2015) and proposes the use of theory from the field of architecture to answer the research question; how does physical space influence emergent strategy? What is proposed, therefore, is cross-disciplinary theorising and this section describes the motivation for such theory integration and articulates why the theory integration proposed is considered to be appropriate.

It is recognised that research on emergent strategy has been neglected (Vaara and Whittington, 2012) a gap that provides SaP researchers a significant opportunity because "*the practice perspective's ability to pay close attention to what is actually happening in organisations gives SaP researchers a special sensitivity to the informal, unscripted activities through which strategies often emerge*" (Vaara and Whittington, 2012, p. 313). However, SaP has been critiqued for too great a focus on micro activities and hence suffering from methodological individualism (Chia and MacKay, 2007).

In the social sciences network theories have successfully overcome the problem of methodological individualism (Padgett and Powell, 2012) by spanning levels and recognising patterns in complex relations. For example, SNA describes a social network mathematically in a way that spans levels from the micro interactions of individuals to macro and meso levels that reveal structural patterns beneath the complexity of social relations (Kilduff and Brass, 2010). An understanding of the structural patterning enables researchers to examine how different social structures might facilitate or constrain outcomes of importance to organisations (Kilduff and Brass, 2010).

What is needed for the research question how does physical space influence emergent strategy, is a spatial network theory that is absent from current strategy and organisation literature. Space Syntax theory is able to span levels and recognise complex patterns in space.

Integrating Space Syntax theory from architecture into a study framed by practice theory potentially increases the likelihood of generating novel frameworks that provide insights into real business problems (Agarwal and Hoetker, 2007) but also requires that the two theories be checked for compatibility (Shaw *et al.*, 2018). Like Space Syntax, the spanning of micro,

meso and macro levels to understand complex patterns is one of the features that defines and differentiates practice theory (Nicolini, 2012). Unplanned social interactions create the possibility for emergent strategy making and the "*turn to practice in ….social theory is to encourage focussing on the patterned consistency of actions emerging from such interaction rather than on the micro activities of individual agents*" (Chia and MacKay, 2007, p. 224). As a result, integrating Space Syntax into SaP research has the potential to lead to *"a research programme in which the object of investigation is how the two morphologies of space and encounter are patterned*" (Hillier, 1996, p. 194).

The methodology used to integrate Space Syntax into research on emergent strategy is described in the following chapter.

2.8 Summary of literature review

Emergent strategy is important to an organisation's competitive advantage and longevity. The characteristics of emergent strategies have been observed to vary widely across organisations reviewed in the strategy literature. However, an understanding of what it is about an organisation that means the characteristics of emergence vary is a gap in the strategy literature. There is growing evidence from the SaP research that strategy is created through embodied social interaction. Emergent strategy is unintentional by definition and is made possible by unplanned social interactions. Consequently, an organisation's profile of unplanned interaction is important to understanding the characteristics of emergent strategy an organisation is likely to display. SaP research has also shown the importance of materiality to interaction and research in architecture has shown that physical space is particularly important in understanding profiles of unplanned interaction. As a result, the spatial structure of an organisation has the potential to help explain emergent strategy. However, four problems have been identified in the literature that have prevented such an enquiry: retrospective attribution, methodological individualism, the absence of a robust theory of networks and the fetishism of space. To investigate a relationship between physical space and emergent strategy these four problems need to be overcome.

Possible solutions to these problems were identified in the combination of an immersive approach to the gathering of data in the field and the theory of Space Syntax borrowed from

architecture. The following chapter describes the approach used to bind these solutions together into a research design capable of answering the research question: How does physical space influence emergent strategy?

3 Research design and mixed methodologies used

The research for this thesis was divided into two phases. The first phase investigated the relationship between space and emergent strategy in a single organisation. The second phase compared the spatial configuration of four additional organisations with the organisation studied in phase one. Both quantitative and qualitative methods were combined in both phases of the research.

This chapter describes the reasons for these choices and is organised as follows: Section 3.1 provides a statement of research ethics. Section 3.2 provides an overview of the purpose and methods of data collection and analysis used in phase one; section 3.3 provides an overview of the purpose and methodologies used in phase two; section 3.4 describes why mixed methods were considered appropriate in the context of the research aims; section 3.5 identifies the criteria used to select the single organisation studied in phase one and details of the organisation are described; section 3.6 provides details of the qualitative and quantitative methods of data collection and analysis used; section 3.7 identifies the criteria used to select the organisations studied in phase two of the research which compares the spatial configuration of four organisations; section 3.8 provides a detailed description of each of the organisations studied in phase two; and finally, section 3.9 summarises the research design and methodologies used in this thesis.

3.1 Research ethics

The methods used to gather data in this thesis were examined by, and have been approved by, the ethics committee of Oxford Brookes University[3] in January 2015. All participants did so voluntarily. Informed consent was gained from all individuals who were interviewed for the research. Confidentiality and anonymity are maintained throughout the thesis by using pseudonyms for both organisations and individuals.

[3] The author of this thesis transferred from Oxford Brookes University two years into the PhD, to Lancaster University.

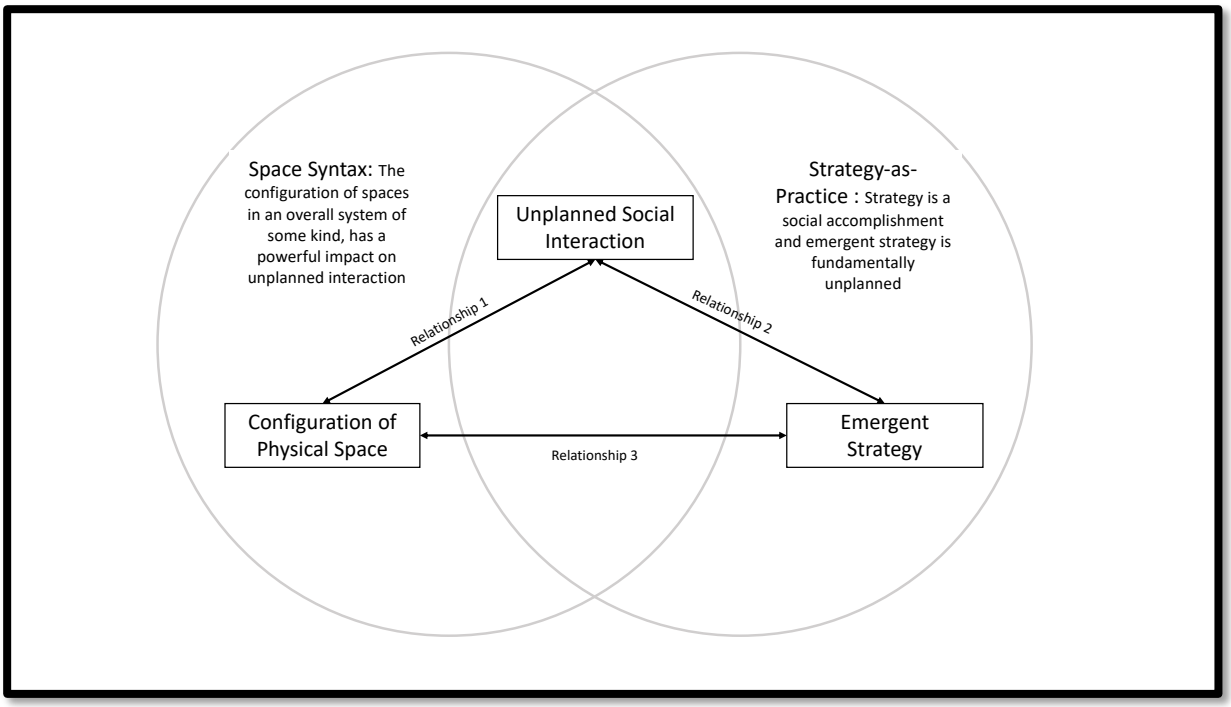
3.2 Phase one: investigating the relationship between physical space and emergent strategy in a single organisation

The purpose of phase one of the research was to investigate the research question, how does physical space influence emergent strategy, in detail, in a single organisation.

The approach taken was to investigate the three relationships of relevance to the research question that are illustrated graphically in figure 3.1[4]. Relationship 1 is between space and unplanned interaction, one that has been established using specialist techniques in the architecture literature. Relationship 2 is between unplanned social interaction and emergent strategy, one that has been established in organisation literature focused on social interaction, social exchange, team diversity and social networks and is summarised in table 2.1 above. Relationship 3 is between space and emergent strategy and forms the basis of the research question for this thesis. Although relationships 1 and 2 are already established in the literature, by exploring all three relationships in a single organisation the aim was to give added confidence in, and inform a discussion on, an understanding of relationship 3.

[4] Figure 3.1 is a reproduction of figure 1.1 used in the introduction to this thesis. It is reproduced here for the convenience of the reader.

Figure 3.1: The logic of the research design employed



This approach meant that the research programme started by collecting and analysing data on the three constituent elements, physical space, social interaction and emergent strategy. The analysed data was then used to explore the three relationships described. In what follows of this section the methods of data collection and analysis are summarised. These methods are described in more detail later in this chapter.

3.2.1 Patterns of physical space: data collection and analysis

The methods used to establish and quantify patterns of physical space are those developed by the Space Syntax community in the field of architecture. Data is gathered using detailed scale plans of the spatial systems analysed. These scale plans are recreated precisely in architectural CadCam software including all internal and external walls, windows, doors, desks and other physical features.

This data is analysed using software developed specifically for Space Syntax calculations, called 'depthmapX'. DepthmapX uses graph theory to calculate a range of measures that describe the physical and visual relationships between all spaces with all other spaces in the spatial system. The analysis relevant to this thesis is described in more detail in section 3.6.1.

3.2.2 Patterns of unplanned social interaction: data collection and analysis

The method used to establish and quantify patterns of unplanned social interaction was direct observation. Fifty-four observation sessions of four to five hours each were conducted by the researcher in a representative sample of spaces. Each social interaction observed was recorded manually in detailed field notes where the time of day, the duration of the interaction and the people involved in the interaction were all recorded. A description of the nature of the interaction was also recorded allowing each to be classified as either planned or unplanned. In total, 453 unique interactions were observed.

This data was analysed by entering all the observation data into an excel spreadsheet. Data gathered through observation was extrapolated to establish patterns of interaction across the firm. These patterns were analysed by individual, team, or at a firm level and by spatial type such as desk clusters of breakout area. A more detailed description of the analysis conducted is provided in section 3.6.2.

3.2.3 Patterns of emergent strategy: data collection and analysis

The method used to identify patterns of emergent strategy was direct observation of potential strategy makers engaged in their everyday activities. This "*direct immersion in the life-worlds of practitioners*" (Rasche and Chia, 2009, p. 725) provides the researcher the potential to build a sensitivity to emerging strategy. Specifically, the approach of identifying strategic matters of concern through what is invoked in everyday communications was used (Cooren *et al.*, 2015). Data was collected by taking detailed field notes of everyday communications.

The data was analysed by reviewing the field notes for matters that were repeatedly invoked by the participants in their conversations and lead them to action of some sort. Each potential matter of concern was recorded and coded within an excel spreadsheet which was subsequently analysed to identify matters of concern animating multiple conversations across the organisation studied.

Examples of everyday conversations used to identify strategic matters of concern are given in sections 4.2.2.2 and 4.2.3.2 of the findings chapter on pages 164 - 167 and pages 170 - 174. A

more detailed description of the method used to analyse transcripts of everyday conversations for potential strategic matters of concern is provided in section 3.6.3.

3.3 Phase 2: comparing the spatial patterns found across organisations

The purpose of phase 2 was to understand the ways that spatial patterns vary across organisations along the dimensions that were found to be of relevance to emergent strategy in phase 1.

The spatial structure of four organisations were selected to compare with that of the organisation studied in phase 1. These organisations were selected on the basis that the strategy literature would predict very different characteristics of emergent strategy. The selection criteria used is described in detail in section 3.7.

The methods used to collect and analyse data on the spatial structures of the comparative organisations were those used in phase 1 and summarised in section 3.2.1 above.

3.4 Use of mixed methodologies

Mixed method research combines quantitative and qualitative research methods (Bryman, 2012). This section describes the rationale for such an approach in this research and section 3.4 describes the methods used.

The spanning of micro, meso and macro levels is one of the features that defines and differentiates practice theory (Nicolini, 2012); *"Understanding and representing practice requires a reiteration of two basic movements: zooming in on the accomplishments of practice, and zooming out of their relationships in space and time."* (Nicolini, 2012, p. 213).

The spanning of levels has the potential to explain macro and meso level phenomena, such as the emergence of new strategies, via the observation of micro level activities, such as the unplanned social interactions between unintentionally strategic agents. However, the previous chapter highlighted that the attempt to span levels of analysis also comes with the danger of methodological individualism where macro and meso outcomes are simply understood as aggregations of micro activities. The selection of methodologies that enable

the spanning of levels, without suffering the problems of methodological individualism is one of the main challenges for this research.

There are three fundamental units of analysis: space, social interaction and emergent strategy. All three are of interest at both a meso and micro level as described in table 3.1. In general, the methods typically used in SaP research, of observation, interview and participation, have been qualitative in nature (Laamanen *et al.*, 2015). Qualitative methods are particularly good at 'zooming in' to micro details such as the fleeting moments of social interaction that make emergent strategy possible (Chia and MacKay, 2007). It is qualitative methods that have the potential to identify emergent strategy making in action and thereby overcome the problem of retrospective attribution (Rasche and Chia, 2009).

The use of quantitative methods in SaP research is far less common but has great potential to generate novel insights in the field (Laamanen *et al.*, 2015). Quantitative methods are particularly good at 'zooming out' to establish patterns of practice (Browne *et al.*, 2014). Laamanen et. al. (2015) identify the quantitative methods of network analysis as being of specific interest to SaP research: "*network analysis constitutes a fascinating avenue for future strategy-as-practice research. It offers several important advantages that can help scholars push the boundaries of our understanding of strategy formation in organisations*" (Laamanen *et al.*, 2015, p. 529). For the purposes of this research, two of the key advantages of a network analysis are: first, that it overcomes the problem of methodological individualism (Padgett and Powell, 2012) and second that network analysis provides the potential to understand strategy making in a socio-spatial context without either social analysis or spatial analysis dominating. Laamanen et.al. express the potential of network analysis in supporting research that does not over emphasise the social aspects of strategy making in the following way: "*network analysis constitutes one important way for conceptualising the possibilities of strategic influence and agency, thereby mediating between both over-socialised and under-socialised accounts of actorhood*" (Laamanen *et al.*, 2015, p. 528). The problem of placing too much emphasis on either space or social analysis has already been highlighted in the literature review.

Table 3.1: Zooming in and zooming out

	Emergent Strategy	**Social Interaction**	**Physical Space**
Meso ***'Zooming Out'***	Changing patterns of action in matters of strategic importance to the organisation. Successes and failures important to strategic outcomes for the organisation. Trends in financial performance.	Profile of interaction at an organisational level: cumulative frequency and duration of planned and unplanned interactions, intra-departmental, inter-departmental and with visitors.	Patterns of spatial configuration in use by an organisation (i.e. the degree to which desks or breakout areas are integrated or segregated in the building as a whole)
Micro ***'Zooming In'***	Emergent strategy in action: the decisions and actions that contribute to organisational level patterns of action	The fleeting, seemingly inconsequential, unintentionally strategic social interactions that make emergent strategy possible	The locations of everyday organisational activity (i.e. desks, kitchens, corridors, breakout areas and meeting rooms)

A hybrid methodology that combines quantitative data that 'zooms out' to help understand complex patterns in socio-spatial structures and qualitative data to 'zoom in' to micro level practices of emergent strategy making is considered to *"hold major potential in the field of SaP research"* (Laamanen *et al.*, 2015, p. 521).

Specifically, the adoption of mixed methods in this research programme has two specific objectives. The first is that mixed methods have the potential to provide a more complete

answer to the research question, the second is to maintain the sense of process to the practice of strategy making (Bryman, 2012).

Quantitative methods are good at helping understand the complex relationships between socio-spatial structure and interaction but will leave a gap in understanding the emergence of strategy. The qualitative methods will help fill that gap and thereby provide a more complete answer to the question 'how does physical space influence emergent strategy?'

In addition, the quantification of socio-spatial structures will represent a snap-shot of the social life in the organisation studied at a point in time. The danger is that this will tend to represent relationships as static whereas strategy making is necessarily dynamic in nature. Adding qualitative descriptions of strategy making in action aims to maintain a processual perspective to an investigation into strategy making.

3.5 Selection and description of single case study used in phase one

Phase one of the research aims to establish how space influences emergent strategy in a single organisation. Data was gathered on the three variables described in table 3.1; emergent strategy, social interaction and physical space using a combination of observation and semi-structured interview. The methods used to gather the data for each variable are described in section 3.5 and are best illustrated in the context of the organisation studied. Therefore, this section introduces the organisation studied in phase one, describes how the organisation was selected in line with research aims and then continues to describe the organisation in detail.

3.5.1 Selection of the 'in-detail' case study 'Law' for phase one of the research

The main selection criteria for the organisation to be studied in phase one of the research was the probability that emergent strategy making would be evident during the nine-month period of field research. Emergent strategy is most evident in uncertain and dynamic environments (Mintzberg and Waters, 1985). At the time of the study, the market for legal services in the UK was considered particularly dynamic and so a law firm was selected as a context where emergent strategy was likely to be present.

Legal firms can be divided into three segments: the global elite that provide a wide range of legal services of the highest quality and price to large banks and other international

organisations; second tier firms, which also provide a wide range of legal services to organisations of all sizes, where the prestige of the global elite offers no real advantage; niche firms tending to offer a narrow range of specialist legal services (SRA, 2016, p. 12). In the second tier, hundreds of legal firms compete but their number is forecast to reduce by 75% over five years due to changing buying habits of their customers (Lawyer.com, 2016). The consolidation of second tier firms is primarily driven by clients demanding ever better value from their legal service providers. Limiting the number of legal providers reduces the client's transaction costs and, by promising higher volumes of work to fewer firms, the clients expect legal firms to deliver the work more efficiently (e.g. through use of technology, spreading of support costs and use of lower paid staff such as paralegals) and to pass on some of those savings in lower prices. A second tier firm was selected as they face a particularly dynamic environment, increasing the probability that some emergent strategy making would be ongoing during the period of study. The law firm ('Law'), chosen as the subject of this study, competes in this dynamic environment.

3.5.2 Detailed description of 'Law'

'Law' is a rapidly growing second tier firm that has been established for more than two hundred years. It had 215 employees in four regional offices, with 151 located in the single building of their head office. 'Law' offers a broad range of legal services structured into four specialist legal departments plus firmwide support staff. The four legal departments are Corporate, Litigation, Real Estate and Private Clients and their respective sizes are shown in table 3.2. Each department is further subdivided into a total of eighteen specialist units.

The analysis of 'Law' was conducted at the firmwide level and at the level of the department. The head office was selected as the focus of this study as all five departments were located in this office and it was therefore considered representative of the firm as a whole.

Table 3.2: Number of employees in each departments of 'Law'

Departments	Employees
Corporate	18
Litigation	28
Real Estate	48
Private Clients	30
Firmwide Support	27

'Law' is situated in a detached building within landscaped gardens on the outskirts of a regional city of the UK. The firm is the sole occupant of a three-storey building. It does not occupy the whole of the floor space and the areas that are not used are empty and blocked off from use. The floor plans of the building are shown in figures 3.2 and 3.6. In figure 3.2 the ground floor is shown with labels indicating the use for each area. Areas with no labels are currently not used and are blocked from access. The basement shown to the right of figure 3.2 is used for document storage and is not included in this analysis.

Visitors to 'Law' enter through sliding glass doors at the front of the building into a large entrance hall. A reception desk is placed in the centre of the entrance hall facing the visitors as they enter. The reception desk is permanently staffed in office hours. Comfortable seating is dotted around the entrance hall for visitors to use whilst waiting for the people they come to see.

Figure 3.2: Spatial configuration of 'Law', ground floor[5]

Source: Supplied by 'Law' to researcher

Three doors leave the entrance hall, each of which automatically closes when not in use. Each door has a slim glass panel just off-centre of the door providing the slightest of glimpses of what lies beyond. The first of these doors is situated behind the reception desk and leads into the dining/seating area, shown in figure 3.3. This area is known by staff as the Atrium.

[5] Figure 3.2 and 3.6 are reproduced directly from a pdf file supplied by 'Law' to the researcher. The resolution of the file means that it is not possible to reproduce any more clearly in this document. The diagram is provided to give an overall impression of the layout of the ground floor and to illustrate the material from which space syntax calculations can be made.

Figure 3.3: The dining/seating area in ‘Law’, also known as the Atrium

Source: Photograph taken by researcher on site in ‘Law’

There is no direct line of sight from the entrance hall into the Atrium and visitors are typically not permitted into this area. The Atrium contains a variety of seating and small circular tables. The furniture is easy to move so can accommodate small or large groups. To one side is a kitchen and servery that serves hot and cold food over the lunch period. At other times of day this area can be used for meetings away from workstations without the need to book the facility.

The other two doors leaving the entrance hall, one to the right, the other to the left, lead to corridors containing a total of eleven client meeting rooms. The client meeting rooms vary in size, but each has very similar décor, shown in figure 3.4. Each room contains a conference room style table surrounded by chairs, its own hot drinks making facility and a fridge

containing cold drinks. Once in the room, occupants have little reason to leave until the meeting has finished.

Figure 3.4: A typical client meeting room in ‘Law’

Source: Photograph taken by researcher on site in ‘Law’

The client meeting rooms are clearly labelled with their number when viewed from the corridor, shown in figure 3.5. The doors leading into each room are either solid or have a small glass panel. Even in those that have a glass panel, it is not possible to see the occupants from the corridor if the door is closed. The doors to client meeting rooms are typically kept closed at all times resulting in a private space for lawyers to meet with clients.

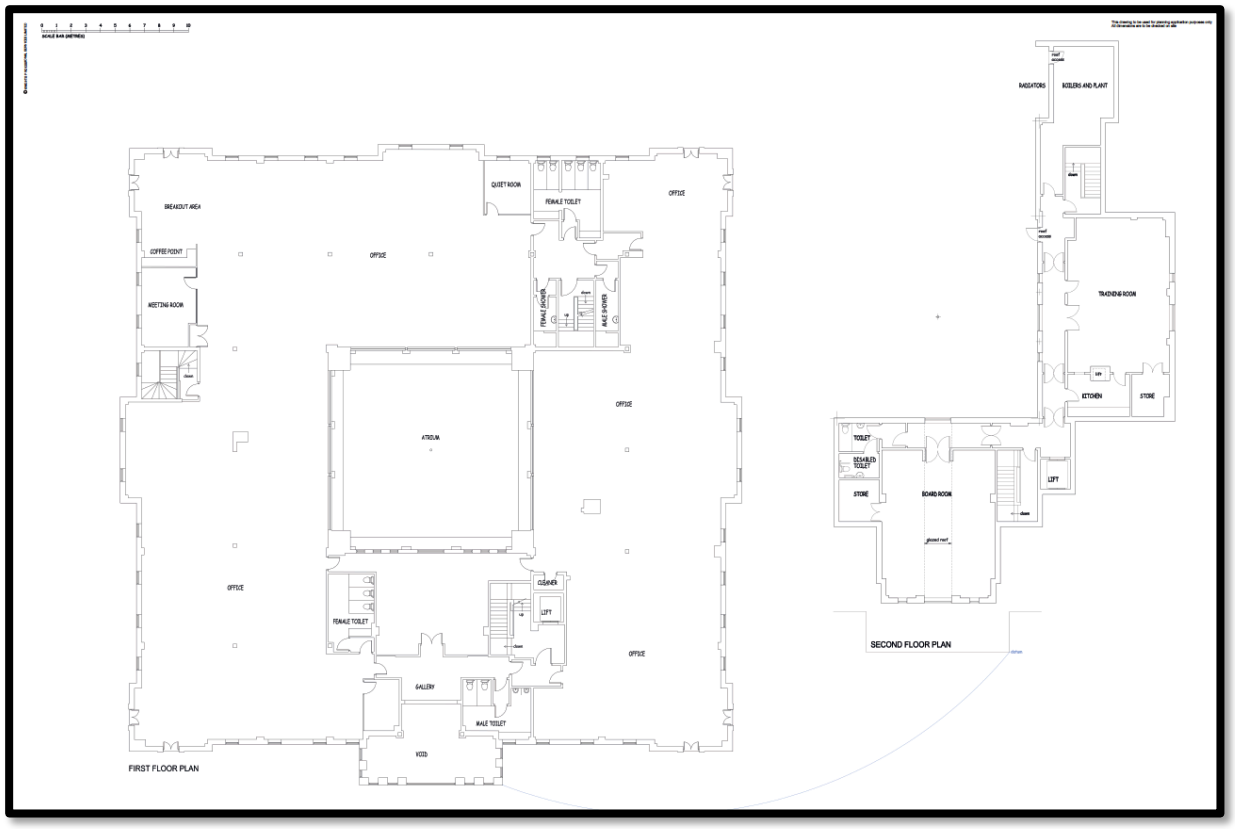
Figure 3.5: The corridor leading to the client meeting rooms in ‘Law’

Source: Photograph taken by researcher on site in ‘Law’

With very few exceptions, the entrance hall and client meeting rooms are the only areas of the offices that client visitors to ‘Law’ experience. Staff typically enter through a separate entrance to the rear of the building, shown to the left of the ‘accounts office’ in figure 3.2. The workstations for all the lawyers are on the first floor of the building. Access to the first floor is gained via lift or stairs. There are two of each, one located near the rear entrance, the second located just off the main entrance hall.

The first floor contains all the workstations for the lawyers. These workstations are located in an open plan office that essentially splits into two sides of the building, shown in figure 3.6.

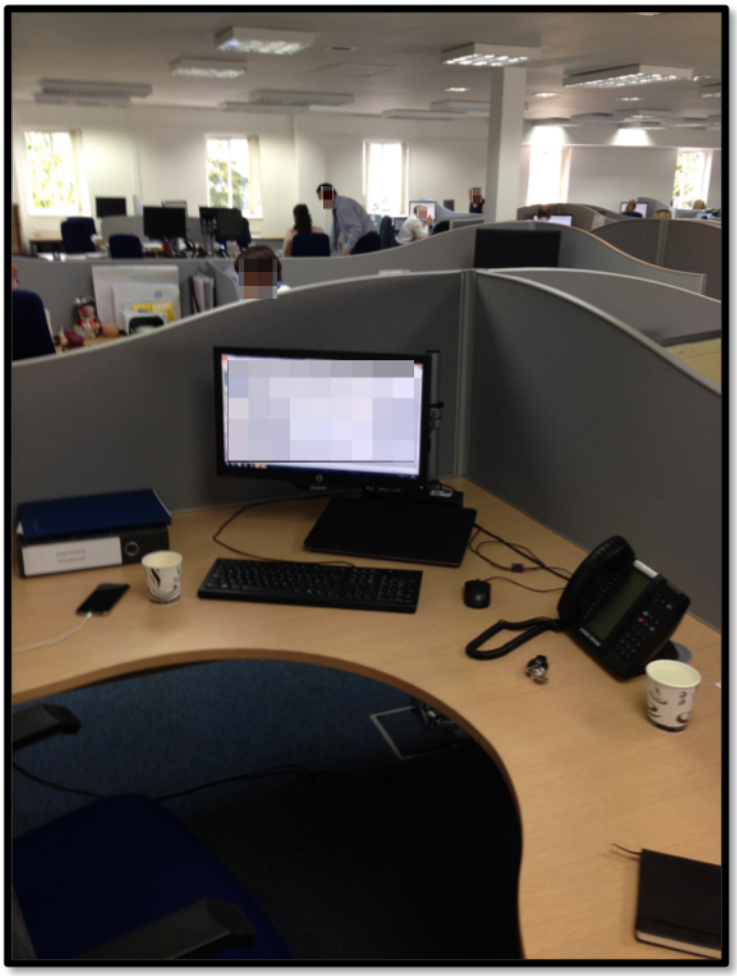
Figure 3.6: Spatial configuration of ‘Law’, first and second floors



Source: Supplied by ‘Law’ to researcher

The workstations are organised into clusters of between four and eight desks. Each of the desks in a cluster is separated by a grey screen that varies in height, shown in figure 3.7. The dividing screen is at its highest around the computer screen and telephone, affording some privacy whilst working. The screen is at its lowest at either end of the desk making it easier to communicate with a colleague on an adjacent desk. In total there are twenty-five desk clusters in the open plan offices and the occupants of two of these had chosen to remove the dividing screens to further aid communication with their immediate colleagues whilst at their desks. One of these can just be seen in the background of figure 3.7, where two people are in conversation, one standing the other seated.

Figure 3.7: A typical desk cluster located in the open plan office in ‘Law’



Source: Photograph taken by researcher on site in ‘Law’

In addition to the open plan offices, the first floor also accommodates three other areas. A training room, the ‘glass room’, and a breakout area. The training room is located off the ‘gallery’ on figure 3.6. The training room contains classroom style seating for up to twelve people with audio visual equipment suitable for a wide range of training needs. The occupants of the room cannot be seen from the open plan office or the corridor that contains the door used to enter the room. The ‘glass room’ is a meeting room with floor to ceiling glass walls within the open plan office. Both the training room and the glass room are used via a booking system run by the staff on reception. The breakout area adjoins the open plan office, shown in figure 3.8. It contains a small kitchen with facilities for making hot drinks and four round tables each with three or four seats. The breakout area can be used at any time without the need for booking.

Figure 3.8: The breakout area in ‘Law’

Source: Photograph taken by researcher on site in ‘Law’

Having described the organisation studied in phase one of the research, the following section describes the methods used to gather data.

3.5.3 A brief history of the office layout in ‘Law’

In December 2013, ‘Law’ underwent a transformation of its offices. The old cellular style, where each lawyer had their own office, was replaced by the open plan design described above. Every desk was replaced such that all members of staff had identical facilities. Everyone from the Managing Partner to the newest recruit sat in an open plan space. Every part of the office was affected and the cost of the transformation represented the largest single investment ‘Law’ had ever made. The change was not just a physical one, the move from cellular to open plan required a significant change in attitudes, working processes and culture. Not all employees liked the idea of the move; one senior litigation partner admitted

in an interview that he remained opposed to the loss of his own office right up to the date that the physical transformation started. The planning for this project was two years in the making. An Operations Director was recruited in February 2012 and the communication to employees started in January 2013. The planning was detailed and comprehensive; alternative desk designs were investigated, colour schemes debated, and great care was taken over the location of desks and the seating plan to be adopted. Nothing about the spatial structure and the position of individuals and groups within the new space was accidental.

The decision to move to open plan offices was described as being based on four objectives. First, to change the culture from one of a firm of sole practitioners to a team culture – "*one where everyone had an open-door policy*". Second, there was an aim to raise quality standards across the firm. According to the Operations Director, this meant becoming a firm that was manifestly based on merit and more open about the processes used in each specialist area of law. To achieve this the Operations Director believed "*every desk needed to be identical*". Third, there was a desire that the office became "*less political*". Fourth, it was considered that all these objectives would be easier to accomplish if employees talked and worked together more.

The client meeting rooms were designed largely with operational issues in mind. They were located as close as possible to the main entrance to minimise the distance clients needed to travel, made private to retain client confidentiality and furnished with drinks facilities so that meetings would not be interrupted to get drinks.

The desk cluster size and seating positions were also designed with operational issues in mind. Specialist units were located on the same desk clusters wherever possible. Units within the same legal departments were also located as close to each other as possible. This was to ensure communication between team members was made as easy as possible. Being located on the same desk cluster made it easier for a paralegal to ask a partner for help at the moment a problem arose. Similarly, a partner could ask a colleague for assistance in the same way.

Therefore, the spatial layout of 'Law' was meticulously planned, largely on the basis of operational priorities.

3.6 Detailed description of the data collection and analysis methodologies employed in this thesis

Three basic units of analysis are used in this thesis: space, social interaction, and emergent strategy. For each unit of analysis data is gathered at both a meso level to establish patterns and at a micro level to establish detail (as described in table 3.1 above). Quantitative methods are used to gather data on meso level patterns and qualitative methods to understand micro level details. The methods used to gather this data are described in this section which is organised as follows: the first three sections 3.5.1 to 3.5.3 describe the quantitative methods to establish meso level patterns for space, social interaction and emergent strategy respectively. Because the qualitative methods used to gather micro level details of all three units of analysis were the same, these are all described in the same section 3.5.4.

3.6.1 Patterns of physical space – data collection and analysis

The methods used to establish meso level patterns of space are those developed by the Space Syntax community in the field of architecture. Two key concepts are used, that of configuration, defined on page 31, and correspondence, defined on page 32.

3.6.1.1 Spatial configuration

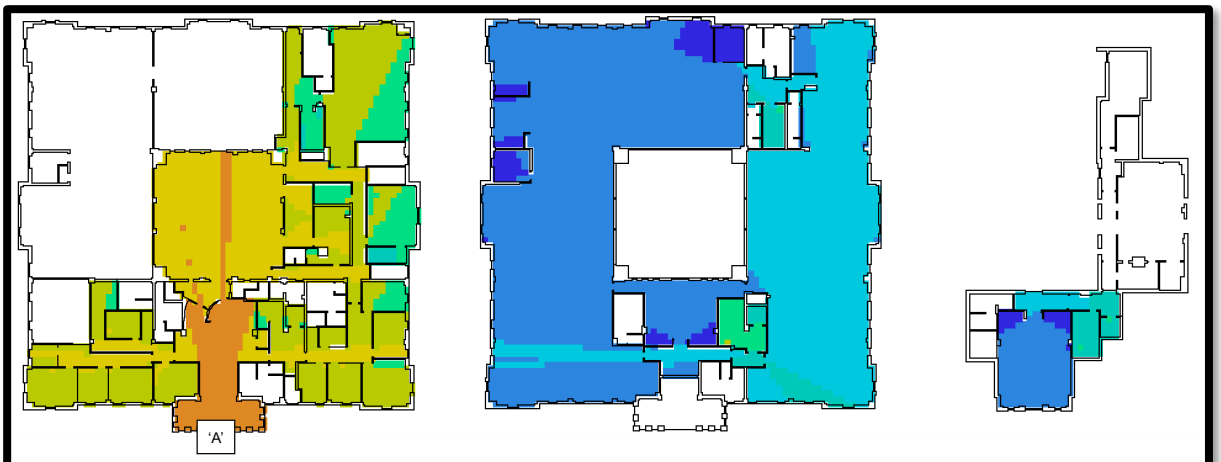
Configuration of space is the relationship of all spaces in a spatial system to all others. The methods developed by the Space Syntax community are used to quantify patterns in the configuration of the spatial systems studied. Space Syntax is a network theory of space and hence the methods used avoid the problem of methodological individualism in the analysis of space.

Space Syntax researchers use software called 'depthmapX' to analyse spatial relationships in complex buildings. The software calculates lines of sight, movement paths and distances from all positions to all other positions across spatial systems of any size and complexity. These basic measures are then manipulated using graph theory to calculate the range of measures developed by Space Syntax to describe spatial configuration in a wide variety of ways.

The analysis starts with a detailed scale plan of the office layout used by the organisation with each of the rooms used labelled according to the descriptions used in practice. In

'depthmapX', the spatial system is divided into a grid of 60cm squares, roughly the width of a person's shoulders, placing the analysis on an intuitively understandable human scale. Patterns of configuration are established by calculating lines of sight for every square on the grid. This is done by connecting the centre of each square, known as the node, to every other node in the spatial system with which it has a direct line of sight. A visibility relationship between every node in the grid with every other node in the grid can then be calculated using graph theory. The spatial system in 'Law' contains 6,300 nodes. At its core, Space Syntax uses the idea of depth, usually referred to as 'visual step depth', in its analysis of spatial configuration. A node is a visual step depth of 1 from every other node to which it has a direct line of sight. A node in the spatial system that cannot be seen directly from the first node but can be seen from a node that is a step depth of 1 away, is a step depth of 2 from the first. In other words, if a person needs to turn once, from a direct visible path, to a second visible path in order to reach a second point, the starting point is a step depth of 2 from the finishing point. Visual step depth, therefore, describes the relationship between any two points in a spatial system. In this way, the depth of any point from all other points in the system can be calculated and shown graphically. Figure 3.9 shows visual step depth to all points in a spatial system from the main entrance of the building marked as A.

Figure 3.9: ‘Heatmap’ showing step depth from entrance point A in ‘Law’



The main entrance to the building is marked ‘A’. The map is colour coded to represent step depth from 'A’. Orange represent all the points in the office that are a step depth of 1 from the main entrance. Yellow, a step depth of 2 and dark blue a step depth of 8. All three floors of the building are shown and these are connected via a staircase and lift.

Source: Output from depthmapX software

Figure 3.10: ‘Heatmap’ showing visual mean depth on ground floor of ‘Law’

The numerical value for visual mean depth of every point are shown, each colour represents a band of values. More integrated points, those with a lower step depth to every other point, are shown in the warmest colours. In this case, the red areas are the most integrated in the building with a visual step depth on average to all other points of approximately 3.8. The blue areas are the most segregated, they have a visual step depth of approximately 7.2.

Source: Output from depthmapX software

The measure of visual step depth forms the basis of the Space Syntax measure which highlights how integrated or segregated any space is in the wider system. The integration of any space in a spatial system is calculated as the average step depth to all other points and is known as visual mean depth (VMD). A point that has a low VMD is well integrated within the spatial system, so is a low average step depth to all other points. Whereas a point with a high VMD is considered segregated (see figure 3.10) because the average step depth to all other points is high. The average of the visual mean depths for all points in the system, that is the average visual step depth of all points to all other points, provides a system level value labelled the average visual mean depth (AVMD). This system level value provides a measure for how well connected are all spaces and is commonly referred to as the level of *integration* of a spatial system.

In the system shown in figure 3.10, the AVMD is 4.6, but this varies for each point in the spatial system and ranges from the most integrated space with an VMD of 3.8 to the most segregated space of 7.2. The AVMD gives a sense of the degree of integration of the entire system and can be compared with other spatial systems. This measure has been related to the notion of a 'generative' building. Buildings with more integrated spatial systems overall (lower than AVMD's) were considered 'generative' because they have been shown to generate more unplanned interaction than more segregated spatial systems (all other things being equal) (Sailer *et al.*, 2012).

The areas allocated to each type of space were also measured. Spaces were divided into four categories in the spatial system studied: 1) Workspaces: typically, the areas where desks for use of inhabitants or employees are placed; 2) Areas of transit: any space whose primary use is to move people from one area of the office to another; 3) Flexible facilities: any space that was not allocated to either desks or transit, and does not require booking for its use (such as breakout areas); 4) Bookable facilities: any facility that does require booking for its use (such as meeting rooms). These four categories of space are mutually exclusive and in combination account for the entire spatial system.

3.6.1.2 A quantitative measure for correspondence/non-correspondence

Correspondence is a socio-spatial concept central to Space Syntax theory. However, a quantitative measure for correspondence has not been developed by the Space Syntax community and is therefore not possible in depthmapX.

This is an important omission because quantifying the spatial structure alone is insufficient to meet the objectives of this research. The literature chapter identified the potential problem of placing too great an emphasis on spatial analysis and relegating the importance of social analysis. Therefore, this research also needs a measure for the relationship between the social structure and spatial structure, known as correspondence. This section develops a measure for correspondence specifically for this research.

On page 34 of the literature chapter, the examples of Tallensi and Hopi societies were described as examples of correspondent and non-correspondent socio-spatial systems respectively. A quote by Tom Peters was used to illustrate non-correspondence in an organisational context; "*jamming people from disparate functions together in the same room*" (Peters, 1990, p. 23), takes people who are socially distant and places them close spatially. Non-correspondence socio-spatial systems are of particular interest to this thesis because they describe systems with weak boundaries between groups and thereby encourage broader social interaction that leads to generative or emergent social relationships (Sailer *et al.*, 2012; Hillier and Hanson, 1984; Hillier, 1996; Kornberger and Clegg, 2004).

Conceptually, correspondence is the degree of overlap between transpatial (social) affiliations between people and their position within a spatial structure. Correspondence represents a high degree of overlap between transpatial and spatial relationships and non-correspondence a low overlap. A measure of association between transpatial affiliations and positions within spatial structure that shows the strength of the relationship between the two will give an indication of the level of correspondence in a socio-spatial system. For this, a measure of association between two dichotomous variables was required.

Yule's Q is a measure of association used in social sciences (Bryman, Liao and Lewis-Beck, 2004) which highlights the strength of relationship between two dichotomous variables. Yule's Q is expressed as a single ratio of association that falls between -1 and 1. 1 represents

a perfect positive association between the two variables, -1 a perfect negative association and 0 (zero) no association.

The two variables required for a measure of correspondence in an organisation's socio-spatial system are spatial closeness/separation and transpatial (or social) closeness/separation. For example, people who work at the same desk cluster might be considered spatially close and people working at different desk clusters to be spatially separated and people who work for the same department might be considered transpatially close. However, this thesis uses a dynamic definition of spatial closeness developed by Kabo et. al. (2015) that includes movement to capture the possibilities of encounter, thereby avoiding the limitations of simple distance between desks. This means that spatial closeness is defined as the total number of people each individual is spatially close to at some point during a typical day, not just those that are close by virtue of the position of a desk.

One of the transpatial bonds between individuals in an organisation tends to reflect reporting structures in the organisation chart, for example the department they work for. In that case members of the same department would be considered to be transpatially close and members from different departments transpatially separated.

The figures for spatial closeness/separation and transpatial closeness/separation are calculated for each individual. To calculate correspondence for groups the scores for the individuals within that group are averaged.

The formula for calculating Yule's Q using the variables for correspondence is as follows;

$Q = (ad-bc)/(ad+bc)$.

The variables a,b,c and d are described in table 3.3 below. In table 3.3, each variable represents the average of all individual scores: a represents the number of individuals who are both spatially close and transpatially close; b represents the number of individuals who are spatially separated but transpatially close; c represents the number of individuals that are spatially close but transpatially separated; and d represents the number of individuals that

are both spatially and transpatially separated. Table 3.4 defines each of these variables from the perspective of the individual.

Table 3.3: Variables used in Yule's Q for the measure of correspondence

	Spatially Close	**Spatially Separated**
Transpatially Close	a	b
Transpatially Separated	c	d

Defined this way the correspondence being measured is an intra/inter departmental correspondence between people within the same social network – in this case the organisation. It is also possible to calculate correspondence for multiple social networks by including data for visitors to the organisation. In this case, rather than define the main transpatial relation as the department, in this broader definition, the main transpatial relationship is classified as working for the organisation. People would be considered transpatially close if they worked for the organisation being studied (an inhabitant in Space Syntax terms) and transpatially separated if not working for that organisation (a visitor in Space Syntax terms). Defined this way, the correspondence being measured is between inhabitants and visitors. In this thesis these two types of correspondence are labelled $Q_{(intra/inter)}$ and $Q_{(inhabitant/visitor)}$ respectively.

Table 3.4: Calculation of correspondence: Q(intra/inter)

Q(intra/inter)	**Spatial Closeness**	**Spatial Separation**	**Totals**
Transpatial Closeness	Number of people in my department that I am spatially close to at some point in a typical day	Number of people in my department that I am not spatially close in a typical day	Total number of people in my department (minus one because excludes the individual responding)
Transpatial Separation	Number of people not in my department that I am spatially close to at some point during the day	Number of people not in my department that I am not spatially close to in a typical day	Total number of people not in my department
Totals	Total number of people I am spatially close to at some point during a typical day	Total number of people that I am not spatially close to at some point in a typical day	Total number of people in the organisation (minus one)

Table 3.5 defines each of the variables for correspondence in Q(inhabitant/visitor) from the individual's perspective.

Table 3.5: Calculation of correspondence: Q(inhabitant/visitor)

Q(inhabitant/visitor)	**Spatial Closeness**	**Spatial Separation**	**Totals**
Transpatial Closeness	Number of people in my organisation that I am spatially close to at some point in a typical day	Number of people in my organisation that I am not spatially close to in a typical day	Total number of people in my organisation (minus one because excludes person responding)
Transpatial Separation	Number of visitors that I am spatially close to at some point during the day	Number of visitors that I am not spatially close to in a typical day	Total number of visitors
Totals	Total number of people I am spatially close to at some point during a typical day	Total number of people that I am not spatially close to at some point in a typical day	Total number of people in the organisation (minus one) plus the number of visitors in a typical day

The two measures for correspondence, Q(intra/inter) and Q(inhabitant/visitor) represent a measure internal to the organisation and external respectively. An internal Yule's Q(intra/inter) of 1 represents perfect correspondence between the spatial structure of the organisation and the transpatial structure and means that the only people that interact are in the same department. In an organisation with a Yule's Q(intra/inter) of close to 1 we would expect to find a profile of interaction weighted towards intra-departmental and away from inter-departmental. A Yule's Q(intra/inter) of -1 represents a perfect negative correspondence. In other words, the only people that interact are from different departments. In an organisation with a Yule's Q(intra/inter) tending towards -1, we would expect to find a profile of interaction weighted towards inter-departmental and away from intra-departmental. A Yule's Q(intra/inter) of 0 (zero) represents non-correspondence which means the odds of interacting with people from your own department are the same as the odds of interacting with people from other departments. In an organisation with a Yule's Q that tends towards 0 (zero) we

would expect to find an interaction profile that is well balanced between intra and inter-departmental.

The external measure of correspondence has been labelled $Q_{(inhabitant/visitor)}$. An external Yule's $Q_{(inhabitant/visitor)}$ of 1 means that inhabitants only ever interact with each other and never with visitors. An external $Q_{(inhabitant/visitor)}$ of -1 means that inhabitants only ever interact with visitors and never with each other. Both 1 and -1 are forms of socio-spatial correspondence. An external $Q_{(inhabitant/visitor)}$ of 0 means that the odds of interacting with a visitor are the same as the odds of interacting with someone from your own organisation.

Relating these calculations for correspondence back to the theory, scores for Yule's Q tending towards -1 and 1 represent high levels of correspondence that suggest a conservative socio-spatial system. Scores for Yule's Q tending towards 0 (zero) represent non-correspondence that suggest a generative socio-spatial system, one where new and unexpected social interactions are likely to be generated and the characteristics of strategy emergence are evident. The profile of interaction for socio-spatial systems with Yule's Q closer to 0 (zero) reflects a greater diversity and more even spread of unplanned interaction across the population.

3.6.1.3 Gathering data required to calculate correspondence

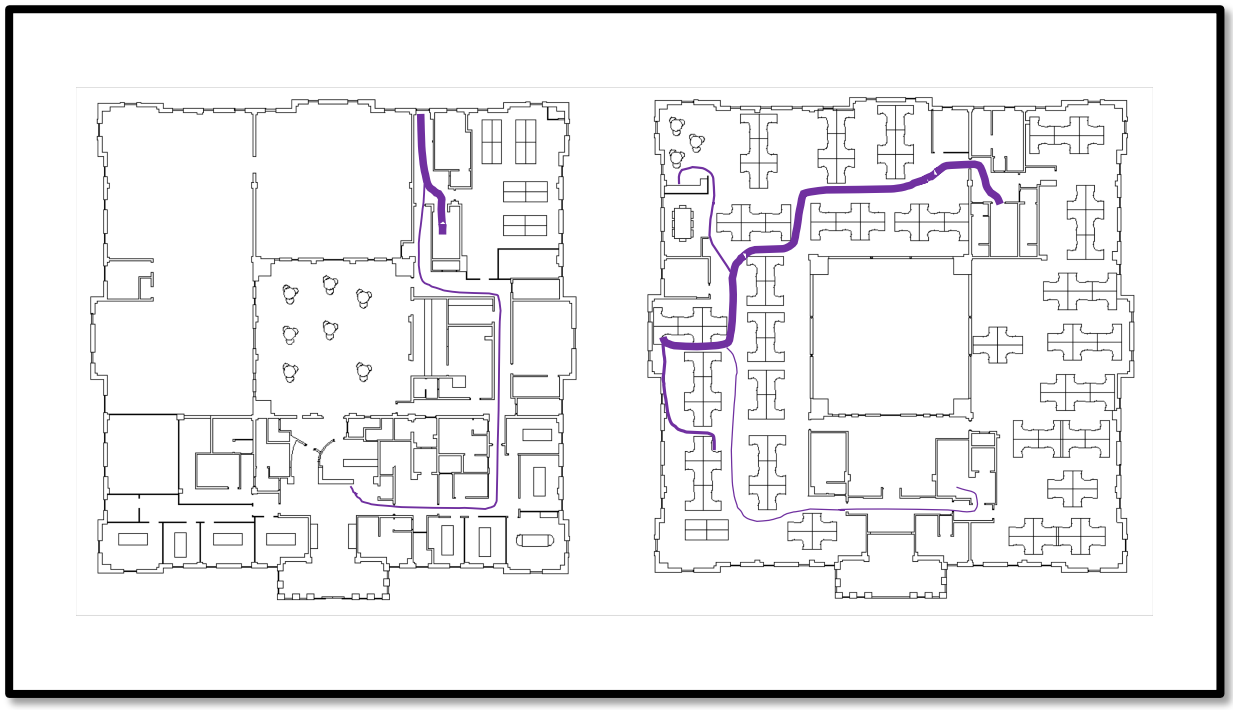
To gather the data required to calculate spatial closeness in the case of 'Law', typical movement paths of people using the spatial system were observed. These were plotted in real time onto representations of the office space and transposed into the depthmapX software. An example is shown in figure 3.11 of the most common movement paths of an individual in 'Law' where the thickness of each line represents the frequency of movement along that path. For example, the most common movement path for the individual represented in figure 3.11 was from the rear staff entrance of the building, up the rear stairwell and across the open plan office to their desk.

The definition of spatial proximity used in this thesis is that proposed by Kabo et. al. (Kabo *et al.*, 2015) where two people are considered to be spatially proximal if their paths overlap. To calculate the number of people this individual was in spatial proximity to this path was with

those of the others using of the building. The chance of overlap was reduced as the frequency of movement along a path reduced.

In total fifty-four observation sessions of four to five hours each were conducted, totaling two-hundred and thirty hours of observation over the nine-month period. These observation sessions were used to gather interaction data as well as data on movement paths.

Figure 3.11: Typical movement path for an individual in 'Law'



Source: Output from depthmapX software

The calculations of spatial proximity using the method described above were verified by observing the actual spatial proximity of fifteen individuals for a total of eight hours each (a typical day), a total of 120 hours of observation. Field notes were made of the number of people with whom each individual was spatially proximate at some point and these actual results were compared with those obtained by the path overlap calculation described above. This allowed for refinements to be made to the path overlap calculation such that it reflected the spatial proximity observed in practice.

In the calculations for correspondence, two measures were used for transpatial closeness. For internal correspondence someone was considered transpatially close if a member of the

same department and any member of a different department (or a visitor to 'Law') was considered transpatially separated. For inhabitant/visitor correspondence, someone was considered transpatially close if employed by 'Law' and transpatially separated if a visitor to 'Law'. In combination, this data was used to calculate internal and inhabitant/visitor correspondence and is reported in the findings chapter 4.

In phase two of the research, calculations of correspondence were made in comparative organisations. In these cases, correspondence was calculated using the path overlap calculation developed in phase one in 'Law'. Typical movement paths were modelled using a knowledge of the organisation's floor plan, the location of facilities such as kitchens, meeting rooms and break out spaces and the typical number of visitors to each organisation each day. Using this data, internal (departmental) and external (inhabitant/visitor) correspondence could be calculated for each of the organisations studied in phase two and is reported in findings chapter 5.

3.6.2 Patterns of unplanned social interaction – data collection and analysis

This section describes the method used to establish the profile of social interaction for 'Law'. Unplanned social interaction sits at the intersection of the two theories that drive the logic of the investigation being conducted by this thesis. An understanding of meso level patterns of social interaction is necessary to develop empirical evidence of the relationships between space and interaction and between interaction and emergent strategy; relationships 1 and 2 in figure 3.1.

Patterns of interaction were quantified through direct observation of the interactions that occurred in a representative sample of spaces and extrapolated to get firm-wide interaction data. Interaction was classified into six categories and summarised in table 3.6.

Table 3.6: Types of interaction studied in 'Law'

Type of Interaction	Who Interacts	Coding used for type of interaction
Planned	Intra-departmental	PIA
	Inter-departmental	PIR
	Visitor	PV
Unplanned	Intra-departmental	UIA
	Inter-departmental	UIR
	Visitor	UV

Each interaction was classified as taking place between inhabitants in two ways: within a department (intra-departmental); and across two or more departments (inter-departmental). Interaction can also take place between inhabitants and at least one visitor to the organisation. These three categories of interaction aim to capture the breadth of interaction within the organisation studied. Intra-departmental interaction is the most narrowly defined form of interaction where individuals interact with their immediate departments only. Inter-departmental interaction describes a broader form of interaction but still within the organisation. For the purposes of this research, the organisation was considered a single social network so both intra and inter-departmental were considered interaction within a single network. Visitor interaction describes the broadest form of interaction and, because it involves people outside of the organisation, is considered to be interaction that spans more than one network. For example, interactions with clients, consultants or even researchers constitute visitor interaction across multiple networks. In addition, all interactions were identified as being either planned or unplanned. Planned interaction was defined as any interaction that was agreed in advance of it taking place. For example, any meeting for which attendees were invited and a venue booked. Unplanned interaction was defined as any interaction that occurred without an agreement for it to take place before it occurred. For

example, bumping into someone in a corridor or an impromptu discussion at a desk cluster. Very short duration interaction of under ten seconds, such as a simple exchange of pleasantries, were excluded. An interaction that started as unplanned would be classified as unplanned for the duration of the interaction even if the participants decided to move to a different space to continue with the interaction. However, if there was a gap in time between agreeing to move a discussion to another space and the continuance of that interaction, the second interaction would be classified as planned. For each interaction, data was also recorded for frequency and duration.

The interaction data was gathered in the same observation sessions described in the previous section. This resulted in a data set of 453 unique interactions. With three items of data recorded for each interaction observed (who interacted, the frequency of interaction and the duration of interaction), this produced a unique set of 1,359 data points that is used to describe the profile of interaction across the organization.

Each observation session focussed on a specific type of space. To do this the organisation was divided into nine spatial categories listed in table 3.7. For each spatial category it was necessary to gather representative interaction data. To ensure the data gathered was representative each spatial category was observed, and data gathered, multiple times. Each observation session would typically last four to five hours and tended to be in either the morning or the afternoon.

Table 3.7: The nine spatial categories in 'Law'

Spatial Category	Coding used for each spatial category	Type of Space
Workstation	WS	Workspace
Breakout Area	BO	Flexible Facility
Atrium	AT	Flexible Facility
Client Meeting Room	CMR	Bookable Facility
Area of Transit	TR	Area of Transit
Glass Room	GR	Bookable Facility
Training Room	TRAIN	Bookable Facility
Boardroom	BR	Bookable Facility
Kitchen	KI	Flexible Facility

Where a spatial category consisted of just one space, such as the breakout area or the Atrium the space was observed a sufficient number of times for the data gathered to be representative. For example, the interaction patterns in the breakout space showed more consistency than the Atrium. As a result, the Atrium was observed in seven separate sessions and the breakout area on five separate occasions. For spatial categories that had multiple locations, such as the workstations or areas of transit, the spatial category was split into representative spatial groups and each observed separately. For example, areas of transit were subdivided into nine separate, but observable, areas such as 'back door entrance' or 'top stair front'. The fifty-four separate observation sessions conducted are listed in table 3.8.

Table 3.8: List of observation sessions conducted in 'Law'

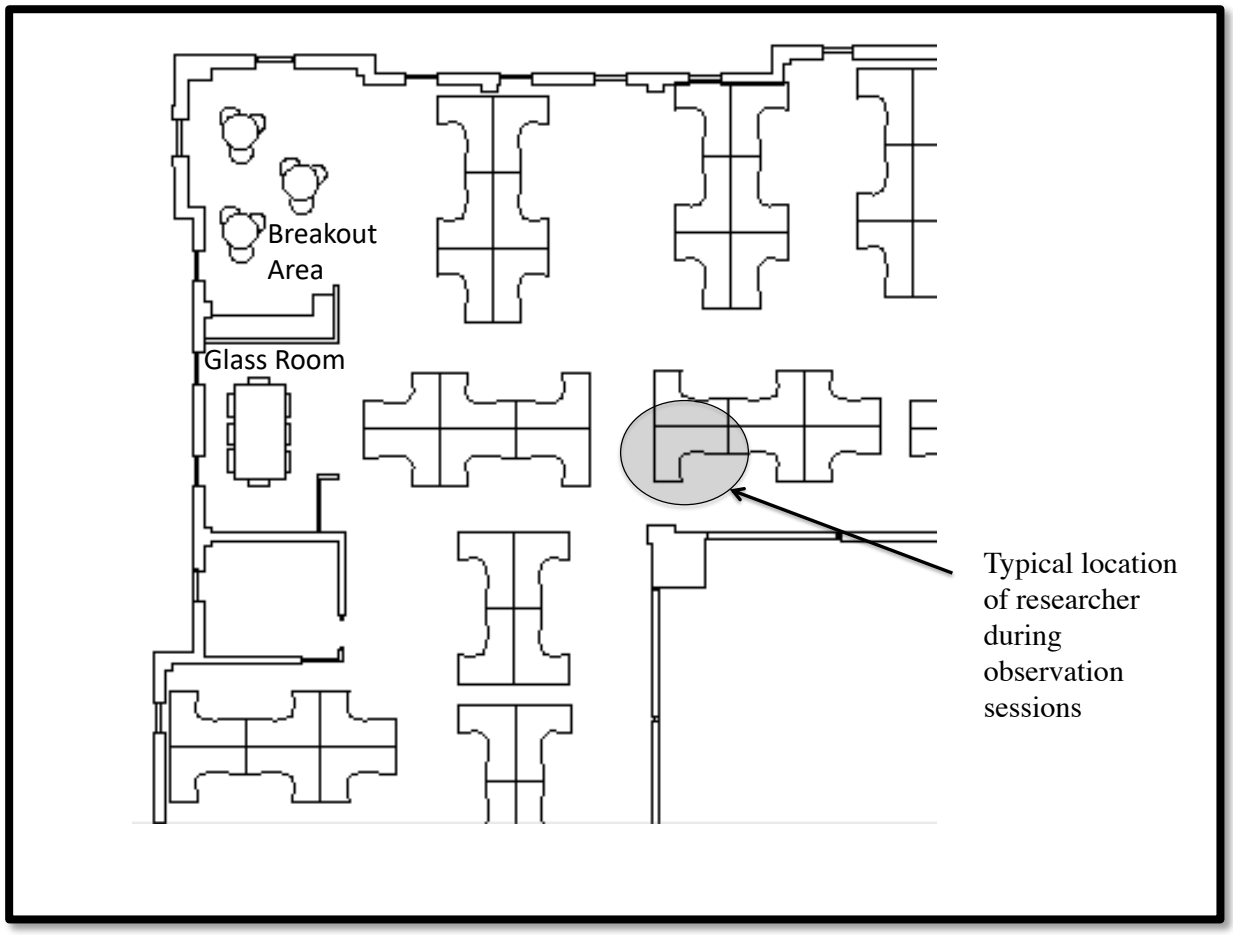
Spatial Category	Group Observed	No. of observation sessions
Atrium	Atrium	7
Breakout Area	Breakout Area	5
Boardroom	Boardroom	2
Client Meeting Rooms	*Client Meeting Rooms Left*	*5*
	Client Meeting Rooms Right	*6*
	Sub-total: Client Meeting Rooms	11
Glass Room	Glass Room	3
Kitchens	*Kitchen by CMR's*	*1*
	Kitchen by accounts	*1*
	Sub-total Kitchens	2
Areas of Transit	*DC Cluster*	*1*
	Farside Cluster	*1*
	HMV Cluster	*2*
	Management Cluster	*2*
	Reception	*3*

	Top floor transit	*1*
	Back door entrance	*1*
	Top stair front	*1*
	Top stair rear	*1*
	Sub-total areas of transit	13
Training Room	Training Room	3
Workstations	*DC Cluster*	*1*
	Far side Cluster	*1*
	HMV Cluster	*2*
	Management Cluster	*2*
	Temporary project team	*2*
	Sub-total Workstations	8
Total No. of Observation Sessions		54

The observation of these spaces was made possible by the open and free access to the entire organisation granted to the researcher. The researcher was able to occupy any desk in the office that was not actively being used. Typically, during observation sessions the researcher would open a laptop on the desk and have the observation sheets used to record the data next to the laptop. Within a few weeks of arrival at the firm employees became used to the presence of the researcher who was able to move around the office freely and occupy different desks. Figure 3.12 shows a typical location used during the observation sessions.

This position allowed the researcher to observe several separate spaces so could be used repeatedly. In the example shown in figure 3.12, the breakout area, several desk clusters, the glass room and some areas of transit could be observed. Only one space was observed at a time because the interaction data collected, and the interaction frequency, was too dense to allow multiple spaces to be observed at the same time.

Figure 3.12: Typical position of researcher during observation sessions



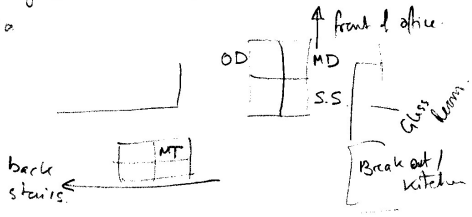
Source: Annotated detail of the floor plan of 'Law' from depthmapX software

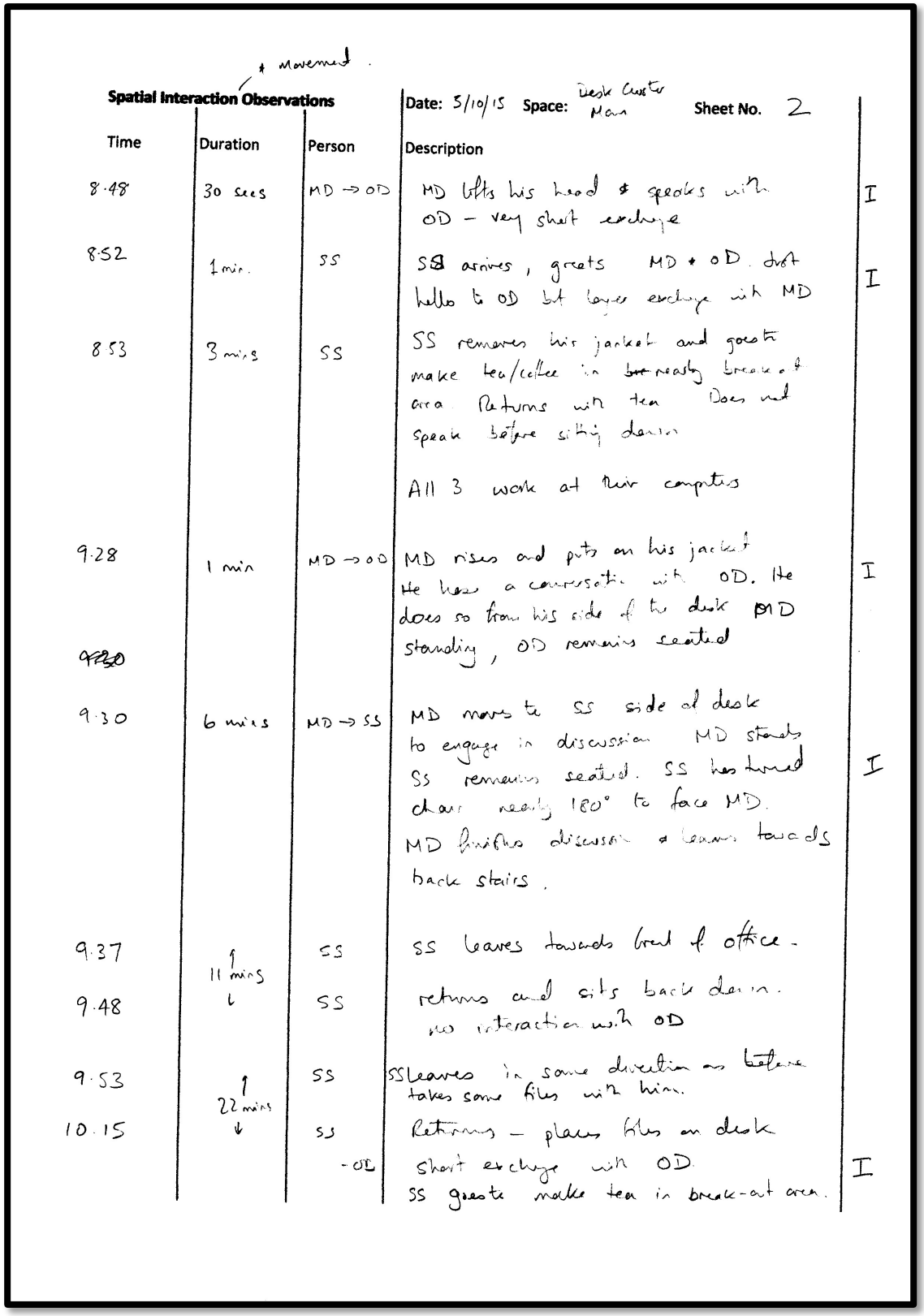
The interaction data was recorded on pre-printed sheets designed to capture the data required, a sample is shown in figure 3.13.

Figure 3.13: Sample of notes from observations of interaction in 'Law'

Spatial Interaction Observations

Date: 5/10/15 Space: Desk Cluster Management Sheet No. 1

Time	Duration	Person	Description
			Observation of the space occupied by 2 of the 3 management team, the MD and the Ops director, plus [redacted] a new partner recruited to expand business services beyond [illegible].
			They occupy a cluster of 4 desks at the centre of open plan offices, next to the 'glass room' and near the 'break out' area.
			
			MD = Managing Director, [redacted] OD = Ops director, [redacted]
			The management team also includes [redacted] the Finance Director who sits downstairs
08.35			I arrive at the office at sit at a nearby desk to observe the interactions of the above desk cluster. On arrival MD & OD are already seated with jackets on back of ~~desks~~ chairs working on computers. Their desk cluster has screens so you cannot see your neighbour without lifting your head from the screen or leaning slightly.



* movement.

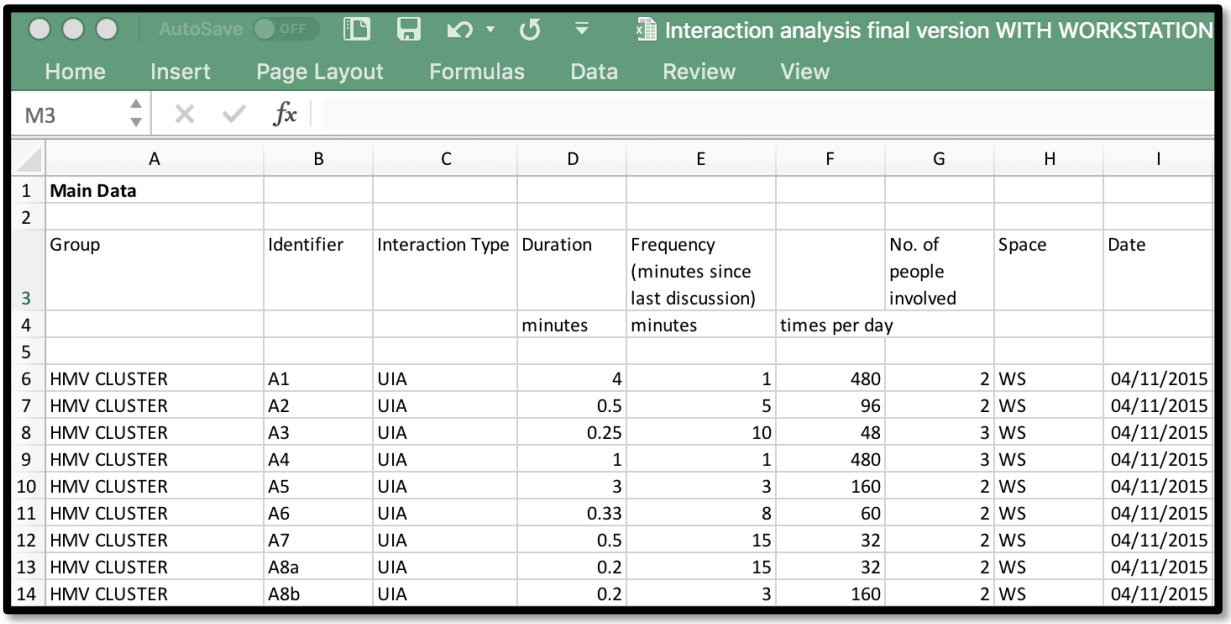
Spatial Interaction Observations Date: 5/10/15 Space: Desk Cluster Main Sheet No. 2

Time	Duration	Person	Description	
8.48	30 secs	MD → OD	MD lifts his head * speaks with OD – very short exchange	I
8.52	1 min.	SS	SS arrives, greets MD * OD. Just hello to OD but longer exchange with MD	I
8.53	3 mins	SS	SS removes his jacket and goes to make tea/coffee in ~~but~~ nearby break-out area. Returns with tea. Does not speak before sitting down. All 3 work at their computers	
9.28	1 min	MD → OD	MD rises and puts on his jacket. He has a conversation with OD. He does so from his side of the desk. MD standing, OD remains seated	I
~~9.30~~				
9.30	6 mins	MD → SS	MD moves to SS side of desk to engage in discussion. MD stands. SS remains seated. SS has turned chair nearly 180° to face MD. MD finishes discussion * leaves towards back stairs.	I
9.37	↑ 11 mins ↓	SS	SS leaves towards front of office.	
9.48		SS	returns and sits back down. No interaction with OD	
9.53	↑ 22 mins ↓	SS	SS leaves in same direction as before takes some files with him.	
10.15		SS	Returns – places files on desk	
		-OD	short exchange with OD. SS goes to make tea in break-out area.	I

Note: Actual names and other descriptions that might identify the organisation have been redacted.

Once gathered, the data from the observation sessions was transcribed into a spreadsheet in preparation for further analysis. A sample of the transcribed data is shown in figure 3.14.

Figure 3.14: Raw quantitative data on interaction from 'Law'



	A	B	C	D	E	F	G	H	I
1	**Main Data**								
2									
3	Group	Identifier	Interaction Type	Duration	Frequency (minutes since last discussion)		No. of people involved	Space	Date
4				minutes	minutes	times per day			
5									
6	HMV CLUSTER	A1	UIA	4	1	480	2	WS	04/11/2015
7	HMV CLUSTER	A2	UIA	0.5	5	96	2	WS	04/11/2015
8	HMV CLUSTER	A3	UIA	0.25	10	48	3	WS	04/11/2015
9	HMV CLUSTER	A4	UIA	1	1	480	3	WS	04/11/2015
10	HMV CLUSTER	A5	UIA	3	3	160	2	WS	04/11/2015
11	HMV CLUSTER	A6	UIA	0.33	8	60	2	WS	04/11/2015
12	HMV CLUSTER	A7	UIA	0.5	15	32	2	WS	04/11/2015
13	HMV CLUSTER	A8a	UIA	0.2	15	32	2	WS	04/11/2015
14	HMV CLUSTER	A8b	UIA	0.2	3	160	2	WS	04/11/2015

In total, there were twenty-seven desk clusters in the offices of 'Law'. To arrive at a total figure for interaction at workstations the data collected needed to be extrapolated. It was not assumed that all desk clusters would encourage interaction in exactly the same way because the physical set up of the desk clusters varied to some degree. There were three key differences that needed to be observed separately. The first was that some workstations had dividing screens whilst others did not. The second related to their position within the office. The first floor of the office was split into two by the stairs, landing and lifts used to access the floor. One side of this divide contained three spaces that could be used for interaction away from the desk, the breakout area, the glass room and the training room. The other side had no such facilities. Thirdly, two of the desk clusters had different make-ups to the others, one contained three members of the senior management team, the other a temporary project team. As a result, five desk cluster types were observed in order to gain a representative sample of interaction at desks that could be extrapolated across the organisation. These desk cluster types were listed in table 3.8 and described in more detail in table 3.9.

Table 3.9: Types of desk cluster used for extrapolation across the office

Desk Cluster Type	**Desk Cluster Observed**	**No of desk clusters of this type in the firm**
Desk clusters with dividing screen in larger section of the open plan office located near the glass room and breakout space	DC Cluster	10
Desk clusters without dividing screen	HMV Cluster	7
Management Cluster	Management Cluster	1
Desk clusters with dividing screen in smaller section of the open plan office with no glass room or breakout space	Far side Cluster	9
Desk cluster used by a temporary project team	Temporary project team	1

Table 3.9 also shows the number of each type of desk cluster that existed in the firm as a whole. The observations of each type were multiplied up by this factor to get a cumulative interaction profile for the whole firm. The same process was used for areas of transit with the nine 'types' listed in table 3.8.

This method provided data representative of interaction across the whole firm that has been called the profile of interaction in this thesis. For each of the nine spatial categories (table 3.7), data was gathered for the frequency and duration of all six interaction types (table 3.6).

The raw data also allowed an analysis of differences in interaction profiles between spaces of the same type. For example, between a desk cluster positioned close to the breakout space and one positioned further away.

3.6.3 Patterns of emergent strategy – data collection and analysis

The literature chapter identified the methodological problem of identifying patterns of emergent strategy in real time – that of retrospective attribution. The unintentional nature of emergent strategy means that patterns of emergent strategy can only be identified after the event. This problem is recognised by this thesis and is one of the main motivators behind investigating the three relationships shown in figure 3.1, which aims to provide more confidence in the results. Nevertheless, an attempt is made at identifying patterns of emergent strategy, but the limitation of this method is acknowledged.

A specific method for identifying emergent strategy in real time has been proposed by authors Cooren, Bencherki, Chaput and Vasquez (2015). The method is described in detail in the following section 3.6.3.1, where examples of the method's application are also provided. It is the view of this thesis that what is identified using these methods is the possibility of emergent strategy making. The authors Cooren et. al. (2015) use the term 'strategic matters of concern' to identify matters that have the potential of becoming strategic for the organisation.

To supplement the method of identifying strategic matters of concern, this research also gathers data on those specific matters of concern to understand any trends or changes that might be occurring. For example, financial data was used to establish trends up to the time of the field research. This helped understand historic trends for the strategic issues identified but not future trends based on the activity being observed. In addition to using financial information, targeted interviews were conducted with those likely to be most sensitive to trends and changes in the strategic matters of concern identified, to understand their views of meso patterns of emerging strategy. For example, the managing partner of 'Law' was interviewed to gain such a perspective.

The results of these attempts to understand meso level patterns of emergent strategy are reported in the findings chapter.

Section 3.6.3.1 describes the method proposed by Cooren et. al. (2015) and provides an example of the way that method was applied in this thesis. The observation methods used to identify these matters of concern are then described in section 3.6.3.2. the observation method used.

3.6.3.1 Identifying strategic matters of concern

The approach proposed by Cooren et. al. (2015), is specifically designed to "*engage with this idea of 'the emergence of organisational strategies' "*.. and for "*understanding how strategy is constituted through the lived experience and day-to-day efforts of organisational actors*" (Cooren *et al.*, 2015, p. 366).

The method proposed does not rely on practitioners to identify what is strategic and what is not. Rather, the approach involves identifying matters of concern from communication. Matters of concern are defined as topics of discussion that *"recurrently, routinely and persistently **animate** the participants"* (Cooren *et al.*, 2015, p. 368). The authors of this approach are communication scholars and have applied the principles of organisational communication studies to a strategic problem. Consequently, matters of concern are identified through what people invoke when communicating in everyday social interactions. A topic is considered a matter of concern when it can explain/justify/legitimise/account for the positions and actions of potentially strategic actors (Cooren *et al.*, 2015, pp. 368, table 21.1).

In this thesis, transcripts of conversations held between actors in the organisation studied, were analysed for topics that animated the participants. The following transcript provides an example of the analysis used to identify strategic matters of concern in this thesis.

The conversation occurred as a partner in the firm studied returned to returned to her desk cluster following a meeting with a client elsewhere within the building.

Paula: "*That was client Z, do you remember we quoted him just under a year ago for that development near the racecourse? As I recall we lost out to competitor B, but he wants a price for some work on a new development. He has sent me the details, if I forward them to you, could you put some figures together for me please?"*

Chris: *"Is it a genuine enquiry do you think?"*

Paula: *"I think so, he says that he was not entirely happy with the service he got from competitor B, I think it's worth taking seriously."*

Chris: *"When do you need the numbers?"*

Paula: *"Let's turn it round quickly; show him what a real response time looks like."*

This interaction lasted less than a minute but was typical of conversations held across the desk clusters in the firm studied. Three potential matters of concern were identified and coded from this short conversation; winning/losing clients, pricing work and service levels. The first step in identifying these strategic matters of concern was to acknowledge what appeared to "*count or matter*" (Cooren *et al.*, 2015, p. 371).

The opening sentence established winning or losing clients as a topic that animated Paula when she said, "*as I recall we lost out to competitor B*". In addition, the response from Chris, "is it a genuine enquiry do you think", shows a concern that with this enquiry they might be being used by client Z simply to make sure that their preferred supplier of legal services, competitor B, is not charging them too much. As such, Chris is also animated by the topic of winning or losing the piece of work they have been asked to quote for. As a result, winning or losing clients is coded as a possible strategic matter of interest and linked to this quote.

It becomes clear in the conversation that follows that neither Paula nor Chris are clear on whether price or service is most important to this particular customer in selecting suppliers. Price is mentioned specifically as a topic of interest when Paula states that client Z "wants a *a price for some work on a new development".* Client service is also mentioned specifically when Paula reports to Chris that client Z "*was not entirely happy with the service he got from competitor B".* In this case Paula was explicit about this topic of client service mattered by stating "*I think it's worth taking seriously".*

As a result, pricing and client service were also coded as possible strategic matters of concern and linked to this quote.

The next stage in identifying these strategic matters of concern was to code other conversations that took place in the everyday activities of the actors in the same way in order to identify those topics that recurrently, routinely and persistently **animated** the participants (Cooren *et al.*, 2015). Conversations from the first six weeks of field study were used to identify strategic matters of concern.

The strategic matters of concern that became the focus of further study were those that had the highest tally of links to conversations as this provided evidence that these topics were animating participants across the firm. In total six strategic matters of concern were selected for further study; pricing, introduction of new service lines, cross selling, the acquisition and integration of new partners, growth of the firm through acquisition and maintaining a supportive family culture. Two of these, pricing and the introduction of new service lines, are used to describe emergent strategy in the findings chapter. The reason these two topics were selected for this thesis is described in section 4.2.1.1.

To get close enough to the interactions that helped identify strategic matters of concern and the spaces in which they occur meant *"living amongst strategists, learning their language, tendencies and dispositions and participating in their practices and rituals"* (Rasche and Chia, 2009, p. 729). The focus on face-to-face interaction was considered particularly relevant in the context of emergent strategy, since "*face-to-face is particularly important in environments where information is imperfect, rapidly changing, and not easily codified*" (Storper and Venables, 2004, p. 351). This focus meant that specific observation methods were used, and these are described in the following section.

3.6.3.2 Observation methods

The methodology proposed by Cooren et.al. (2015) has a focus on verbal communication, consequently observation of everyday dialogue was used to identify emergent matters of concern. At the same time, the spaces in which these discussions took place and the nature of the social interaction were also observed. In this way, by observing the dialogue of potentially strategic actors, field notes on the spaces and the day-to-day social interactions were also gathered. Six different observation methodologies were considered to gather this data and summarised in table 3.10.

Table 3.10: Range of observation methodologies considered

Method	Main Aims of Method	Description of Method
Gate Counts	Used to observe the density of movement flow.	A number of locations are selected that cover a range of movement densities; well-used, moderately-used and poorly-used. Each gate is observed for 5 minutes, five times on different days and at different times. The researcher counts people crossing an imaginary line at the gate being observed. A simple count is recorded on pre-printed tables.
Static Analysis	Used to record the pattern of use of specific spaces.	An area is pre-defined that can be easily observed. The researcher is positioned to maximise the visual exposure to the area defined. Categories of activity (sitting, standing, moving, interacting) are recorded for five minutes over regular intervals during the day. Observation sheets are used to record data as descriptions or maps in real time.
Movement Traces	Used to map collective flow dynamics through a predefined area.	Researchers position themselves in locations that maximise their visibility of a pre-defined area and record movement flows on a pre-printed map of the area for five minutes at several time intervals each day.
Traces (people following)	Used to observe movement flows that are 'dispersed' from a specific space.	People are picked up randomly and followed on a journey from a predefined point until they reach a predefined destination. Data is recorded as lines on maps.

Ethnographic Observation	Used to understand qualitative issues of space usage (in line with methods commonly used in SaP)	"*An observer needs to take part in the life of the observation field as discreetly and unobtrusively as possible – behave like one of the observed subjects*" (Sayed *et al.*, 2014, p. 46). Data is recorded in the form of detailed field notes.
Observation Technologies	Used to automatically record movement or interaction without the need for the presence of the researcher.	Example; sociometric badges can record the interactions of those that wear them.

Source: (Sayed *et al.*, 2014)

The method selected to gather data on micro level phenomena in 'Law' was adapted from a combination of static analysis and ethnographic observation. The time periods for observation were extended to four to five hours per session and both interaction data and ethnographic observations were recorded simultaneously. Using this method, it was possible to get close enough to the 'life' of those being observed to be able to understand what emergent matters of concern were evident, the nature of each social interaction and to observe the spaces in which they took place. Each observation of an interaction in space held the possibility of emergent strategy making in action.

In total, nine months were spent in the organisation being researched, observing and participating in the everyday life of the firm. With an employee pass to enter the building, and the permission to use any available desk from which to conduct observations, a sustained period of privileged access was granted, affording the possibility of "living amongst the strategists". As a former senior executive with twenty-five years' experience of strategy development as a practitioner the researcher had a particular sensitivity to the potential of emergent strategy making in action as an informed observer. As emergent strategy is unintentional and even those involved would not identify the encounters as strategic at the time (Tsoukas, 2015), matters of concern were not identified immediately in the period of

field research. Six weeks of immersion in the organisation were completed before matters of concern were identified for closer study. In addition to the nine months of on-site observation the researcher was also regularly invited to participate in meetings and conducted semi-structured interviews with participants when clarification of observation data was required. In total, thirty-two meetings that varied from informal get-togethers between colleagues at lunch through to formal meetings for twenty held in the boardroom were attended and thirteen semi-structured interviews were conducted as listed in table 3.11.

Table 3.11: List of semi-structured interviews conducted in 'Law'

Interviewee	**Number of Interviews**
CEO	1
Operations Director	2
Finance Director	1
Partner in Corporate Division: James	2
Partner (Paula) with a Paralegal in Real Estate Division	1
Partner in Real Estate Division: Paula	1
Partner in Litigation Division	1
Marketing Manager	1
IT Manager	1

Staff and Training Partner with the IT Trainer	1
Consultant to 'Law'	1

Note: Names are only given when used in the findings chapters of this thesis and are pseudonyms

Although the method of identifying matters of concern proposed by Cooren et. al. (2015) is specifically designed to understand the emergence of organisational strategies, and the immersion of the researcher into the organisation studied is advocated by other authors as the best way to get to emergent strategy making in action (Rasche and Chia, 2009), it is the view of the author that the problem of retrospective attribution can never fully be overcome. The method used to identify emergent strategic matters of concern, described above, is no guarantee that such matters will end up materially impacting on the future direction of the organisation. For this reason, the matters of concern found in 'Law' and the descriptions of emergent strategy making in action presented in the findings chapter, are treated with appropriate caution in this thesis because what has been observed is the possibility of emergent strategy making in action. However, the methodology used does clearly identify matters of concern that occupy people's conversations and are therefore emergent and strategically important (Cooren *et al.*, 2015). As has already been argued, this gives these matters of concern an equivalence to the topics discussed at strategy workshops, planning meetings and away-days commonly studied by SaP scholars.

The method of investigating the three relationships described in figure 3.1 is designed to give greater confidence when describing the relationship between space and emergent strategy. These are described in the findings for phase one of the research in chapter 4. The findings from phase one will establish the most important characteristics of space in terms of their impact on emergent strategy in 'Law'. This thesis also explores how the salient spatial characteristics vary across comparative organisations. The following section describes how these comparative organisations were selected.

3.7 Selection of case studies used in phase two

Two possibilities presented themselves in selecting the organisations for the second phase of study. The first was to study organisations that the strategy literature would predict had very different characteristics of emergent strategy. If the configurations of space in these organisations were having a substantial impact on the emergence of strategy we would expect to find very different spatial systems. A significant unknown for this research was the extent to which the spatial configurations of different organisations vary in Space Syntax terms. For example, even if the layouts of offices appear qualitatively different, do they actually differ objectively in terms of the measures developed for configuration and correspondence? In addition, phase 1 of the research was expected to develop an understanding of the impact of specific spatial characteristics on emergent strategy. This understanding would enable the interpretation of the spatial configurations in other organisations in terms of their potential impact on interaction profiles and hence emergent strategy.

The second possibility was to study several organisations within the same industry sector where emergent strategy is considered to be important by the strategy literature. If the configurations of space were having an impact on the emergence of new strategies, we might expect differences in spatial configuration to explain differences in the extent to which each organisation displayed emergence. In an industry where emergent strategy is important the differences in spatial configuration might also explain difference in performance.

Although both these questions are of interest, experience suggested that organisations competing in the same industry tended to design their offices in similar ways, for example, one legal firm would employ similar principles of office layout to most other legal firms. This being the case the second research design was likely to find relatively small differences in spatial configuration between firms. However, the question of a relationship between physical space and emergent strategy is new to strategy literature, therefore it was felt that it was important to establish whether the spatial configurations of offices varied to the same extent that the characteristics of emergent strategy are known to vary across organisations. As a result, the first research design, of selecting organisations that were likely to have different characteristics of emergent strategy, was chosen. Using this research design, if the

configurational differences started to suggest the characteristics of emergence that had been observed by strategy research, then this would add extra weight to the argument that space was having an impact on the emergence of strategy.

To select organisations that the strategy literature would predict had very different propensities for emergent strategy, the conceptual scheme developed by Henry Mintzberg (1989) described in section 2.4 of this thesis was used.

Although Mintzberg's scheme of basic organisation forms, shown in figure 2.1, is not considered to be comprehensive because other forms of organisation have been identified by the literature, the framework is nevertheless useful for selecting four organisations that the literature would predict had very different propensities for emergent strategy making.

The firm 'Law' would be considered to be an adhocracy[6] in Mintzberg's scheme. Mintzberg studied two organisations that meet the criteria for an adhocracy. The National Film Board of Canada (Mintzberg and McHugh, 1985) and a company of architects (Mintzberg *et al.*, 2007). Adhocracies tend to be decentralised forms of organisation in that a great deal of influence rests with teams of experts: adhocracies are "*organised around teams of experts working on projects to produce novel outputs, generally in highly dynamic settings*" (Mintzberg, 2007, p. 342). The environments they work in tend to be dynamic.

According to Mintzberg, the realised strategy of an adhocracy is characterised as cycling in and out of focus. This is explained by reference to the teams of experts that hold "*a great deal of influence*" (Mintzberg, 2007, p. 352) (teams of film makers, teams of architects or teams of lawyers) as they undertake essentially discrete projects that can take any direction the team chooses. Intermittently these single projects set precedents within the firm that become patterns of action and recognisable as strategy. The direction that each project takes is shaped to respond to changes in the external environment. In this way, Mintzberg describes

[6] Law firms are often referred to in common parlance as professional service firms. This has the potential of confusion with the organisations types described by Mintzberg because one of the categories is labelled 'professional organisation' (see figure 2.1). However, law firms clearly meet the criteria by Mintzberg for organisations labelled an adhocracy organisation.

the strategy of an adhocracy as being shaped by the external environment and the organisation as being porous (responsive to the environment).

The characterisation of an adhocracy provided by Mintzberg are found in 'Law'; the 'teams of experts' (2007, p. 342) are the specialist departments of lawyers and the novel 'projects they produce' (2007, p. 342) the legal advice given to clients. The environment in which 'Law' competes was specifically selected for its dynamism. The process of strategy formation most likely to be found in an adhocracy is one of 'strategic learning'. Strategic learning is defined by emergent aspects of strategy being especially evident where new strategies can grow spontaneously out of single projects and set precedents that create new patterns of action (Mintzberg, 2007, p. 353).

In addition to 'Law', three other organisations were originally selected to study the extent to which their spatial configurations varied. For this purpose, the basic organisational types proposed by Mintzberg became the primary mechanism used for selection. These are described in turn in the following section 3.7 below and summarised in table 3.12. To select a single organisation of the remaining three organisational types a number of secondary criteria were applied. Each needed to have available full-scale spatial plans, with labels for every separate space in the building, so that spatial analysis could be conducted. The organisations also had to be primarily contained within a single building where there was a full and representative range of functions for the organisation. The spatial system needed to be large enough for an analysis of spatial configuration to be meaningful, (for example, an organisation with few employees and located in a single room would provide insufficient data for a meaningful analysis). All four organisations should be within a reasonable range of sizes to allow comparative analysis, a size range from 100 to 1,000 employees was selected, and each organisation was considered by its peers to be successful within its sector.

Table 3.12: Summary of the five organisations studied

	'LAW'	**'TECH1'**	**'TECH2'**	**'UNI'**	**'MFTG'**
Description	Head office of a regional law firm based in Europe	Head office of a US based technology firm specialising in mobile payment solutions	Head office of a global music streaming business based in Europe	Academic department of a European university	Regional headquarters of a European owned, global manufacturing business based in Europe
Strategic Type	Adhocracy	Entrepreneurial	Entrepreneurial	Professional	Machine
Number of employees	151	750	660	250	205
Total office area (sq. m)	2,250	12,600	8,045	10,850	2,750
No. of floors	3	3	5	4	1

In the early stages of the research programme a firm was chosen as the entrepreneurial organisation for comparative analysis. However, after three months of study it became apparent that it would not be possible to obtain detailed floor plans of the head offices in order to conduct the Space Syntax analysis. The efforts to secure these floor plans included a personal visit to the head office and a visit to the architect of those offices. During the three months spent researching this organisation data was collected on the social structures of the firm and on the transpatial mechanisms employed. This included the analysis of publicly available information including videos of conference speeches posted online, reports published on the way the organisation worked and study of photographs of the offices that

were made available to the researcher by the organisation. In addition, two skype interviews were conducted with employees. The information gathered is so rich that it has been used in the findings under the section that explores the divergence in correspondence found in the comparative case studies. However, without the floor plans this entrepreneurial organisation could not be used for the comparative analysis of spatial systems. For this reason, a second entrepreneurial organisation was selected where detailed floor plans could be obtained.

The entrepreneurial organisation used for detailed Space Syntax analysis is labelled 'Tech1' and the organisation for which detailed spatial information was not available is labelled 'Tech2'. Both are described in table 3.12 that summarises the five organisations studied.

3.8 Description of case studies used in phase two

3.8.1 Selection and description of the entrepreneurial organisation ('Tech1')

An Entrepreneurial organisation is described as "*controlled personally by a single leader; in environments that are competitive, or dynamic*" (Mintzberg, 2007, p. 342).

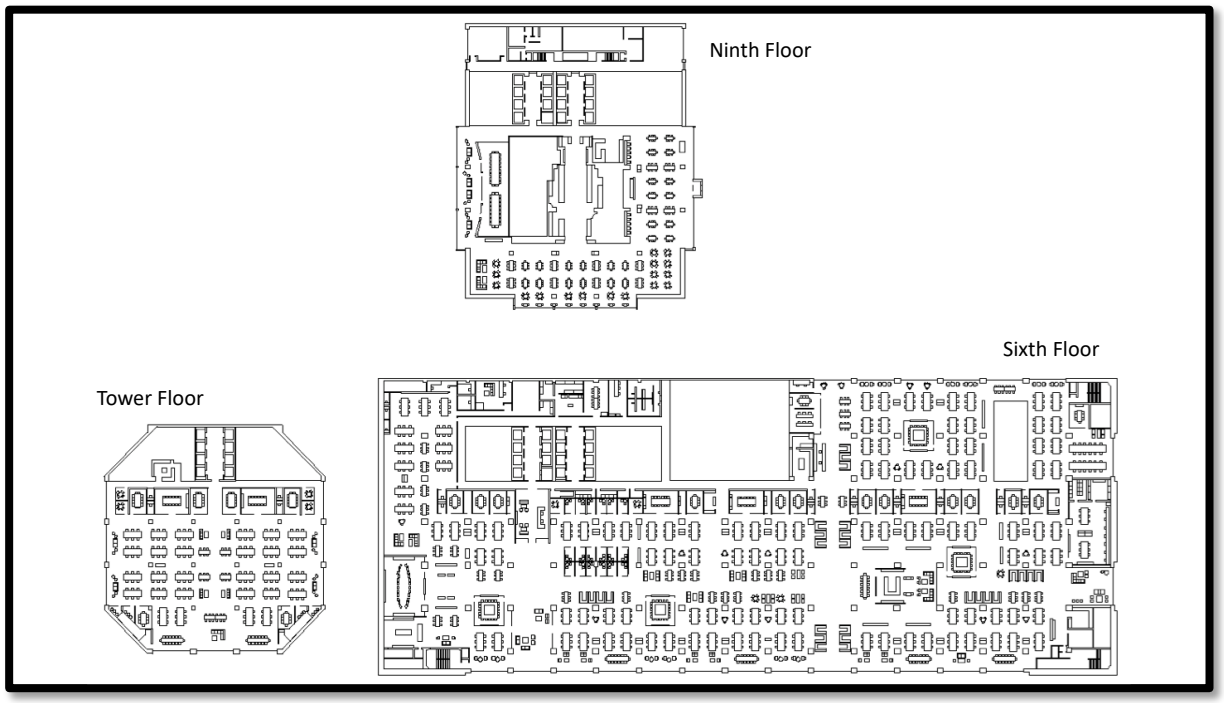
The technology organisation selected for the comparative spatial analysis ('Tech1') designs a wide range of mobile payment solutions. It competes in a dynamic market driven by rapid advances in technology.

The offices of 'Tech1' are in a multi occupancy building. The firm occupies three floors, shown in Figure 3.15[7]. The sixth floor represents more than 75% of the total floor area and contained all the 'engineers' in this technology company. Floor nine consists of a large dining facility and a conference room. The Tower floor accommodates the administrative and support staff for the firm. The three floors were connected by a bank of sixteen lifts. On exiting the lifts, a visitor enters a reception area, shown in figure 3.16.

[7] The spatial analysis of 'Tech1' is based on the floor plans in use in 2015. The firm is currently (at time of writing) based in the same building but the offices have expanded to cover four floors.

On leaving the reception area you enter a very large open plan office. In total the floor plan of the sixth floor is 9,500 sq. m and runs the length of a city block. Running the length of this floor is a single broad walkway known as the 'boulevard', shown in figure 3.17. Off the boulevard are a wide range of areas designed for meetings and less formal interaction. These include meeting rooms with glass walls that require booking (on the left of figure 3.17), high tables with stools for individual or group work (on the right of figure 3.17), small open-ended booths (shown in figure 3.18) and low-level couches (shown in figure 3.19). At one end of the boulevard is located a coffee bar, shown in figure 3.20. At the other end is a conference room, shown in figure 3.21.

Figure 3.15: Plan of 'Tech1' offices



Source: archdaily.com

Figure 3.16: The reception area on the sixth floor of ‘Tech1’

Source: Bohlin Cywinski Jackson

Figure 3.17: The ‘boulevard’ in ‘Tech1’ running the length of the sixth floor

Source: Bohlin Cywinski Jackson

Figure 3.18: Open ended booths off the boulevard in ‘Tech1’

Source: Bohlin Cywinski Jackson

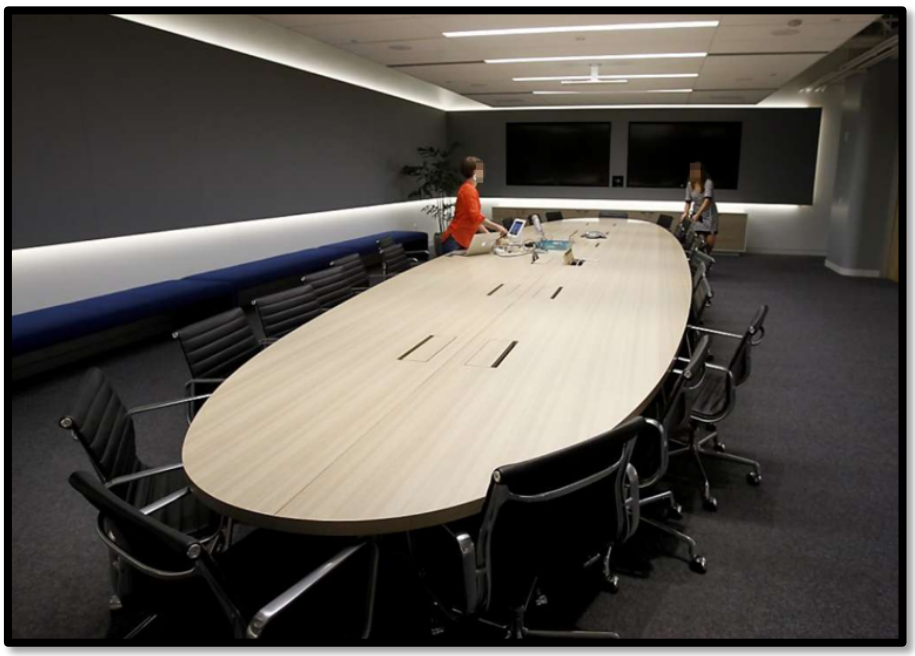
Figure 3.19: Low level couches on the boulevard of ‘Tech1’

Source: Bohlin Cywinski Jackson

Figure 3.20: The coffee bar located at one end of the boulevard in ‘Tech1’

Source: Bohlin Cywinski Jackson

Figure 3.21: Conference room located at one end of the boulevard in ‘Tech1’



Source: Bohlin Cywinski Jackson

Workstations at ‘Tech1’ are clusters of six desks located the breadth of the entire open plan floor area on the sixth floor. The desks do not have separating screens making communication between colleagues as easy as possible. The desk clusters sit amongst the varying types of

meeting space giving quick and easy access, an example of a typical desk cluster is shown in figure 3.22. This means that it is possible for people to see if a facility is free to use without leaving their desk. An example of the proximity of desk clusters and meeting space is shown in figure 3.23.

Other facilities are provided on the sixth floor such as a library, shown in figure 3.24 and open meeting or presentation facilities, shown in figure 3.25.

The ninth floor of 'Tech1' consists mainly of a large dining area. It also includes the board room. The Tower floor is reserved for administrative staff and includes the same desk clusters that are used on the main sixth floor and a full range of meeting rooms and other more flexible interaction facilities.

Figure 3.22: A typical desk cluster in the open plan office of 'Tech1'

Source: Bohlin Cywinski Jackson

Figure 3.23: Workstations and meeting facilities intermingle at ‘Tech1’

Source: Bohlin Cywinski Jackson

Figure 3.24: The library on the sixth floor at ‘Tech1’

Source: Bohlin Cywinski Jackson

Figure 3.25: Open meeting areas on the sixth floor at ‘Tech1’

Source: Bohlin Cywinski Jackson

3.8.2 Selection and description of the entrepreneurial organisation (‘Tech2’)

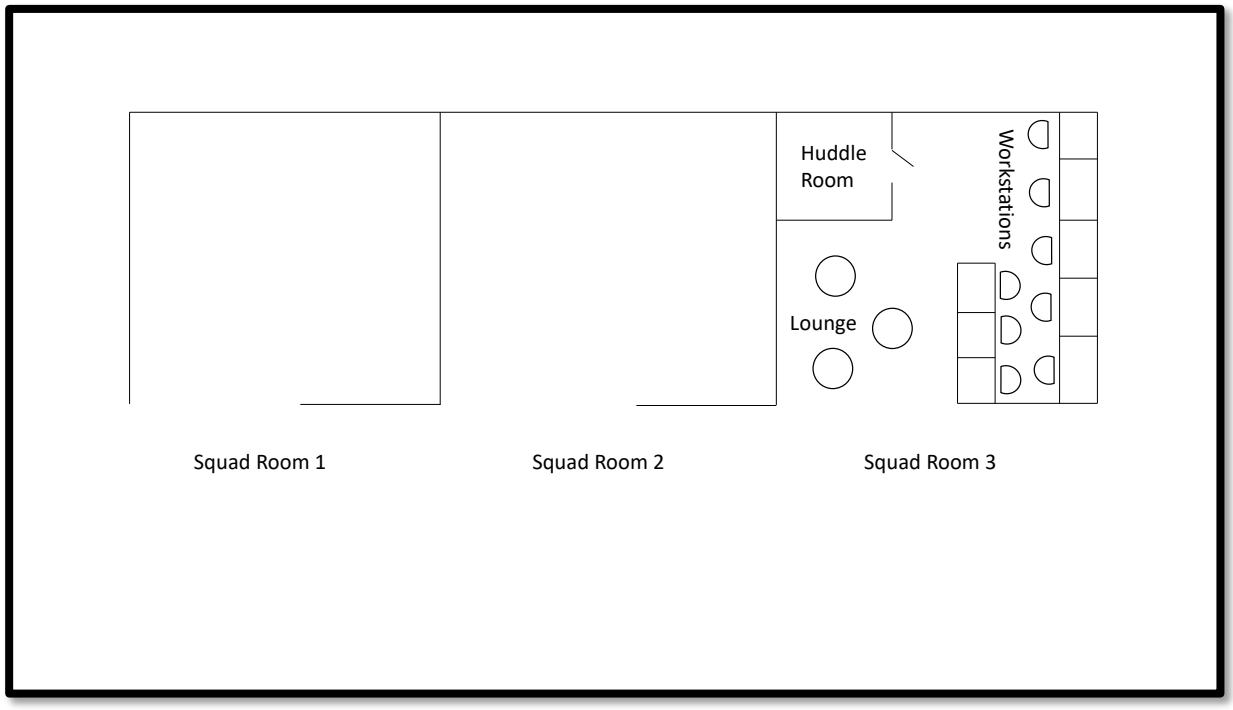
‘Tech2’ is a global music streaming business based in Europe. The offices were designed to a specification driven by the founder and the firm moved into the offices in 2012 but moved to new premises in 2017 as it had outgrown the offices described in this case study. The specification for the offices was specifically designed to enable the way the organisation worked from day-to-day. The design of the office analysed in this thesis has subsequently been used in other offices occupied by the firm as it expanded internationally.

The basic team in ‘Tech2’ is called a ‘squad’. A squad is an autonomous, cross functional team. Each squad has sole responsibility for developing a particular aspect of the product such as an Android client, the radio experience or providing payment solutions. They are autonomous in that they have all the skills required to produce all elements of the product for which they are responsible. Each member, therefore, brings a different expertise to the squad. For example, an expert in testing, a web developer or an expert in the backend systems. A squad has up to eight members and each squad has a dedicated workspace. Every squad workspace

contains three interconnected areas; a desk area, a lounge area and a personal 'huddle' room. A typical plan for a squad room is shown in figure 3.26 and a photograph in figure 3.27.

The workstations in each squad room are placed such that the chairs have their backs to each other. The chairs are on wheels and can turn easily. This arrangement is designed to make it as easy as possible for the team members to collaborate with each other by simply swivelling in their chairs. The lounge is located immediately adjacent to the workstations and contains a variety of less formal seating. The walls are covered in whiteboards. Both planned and impromptu interactions take place in the lounge. The huddle room provides a more private area for the use of squad members, as shown in figure 3.28. It accommodates up to six people, has a screen and a telephone. It can be used by small groups or by individuals that need a quieter space to concentrate.

Figure 3.26: Spatial configuration of squad rooms in 'Tech2'

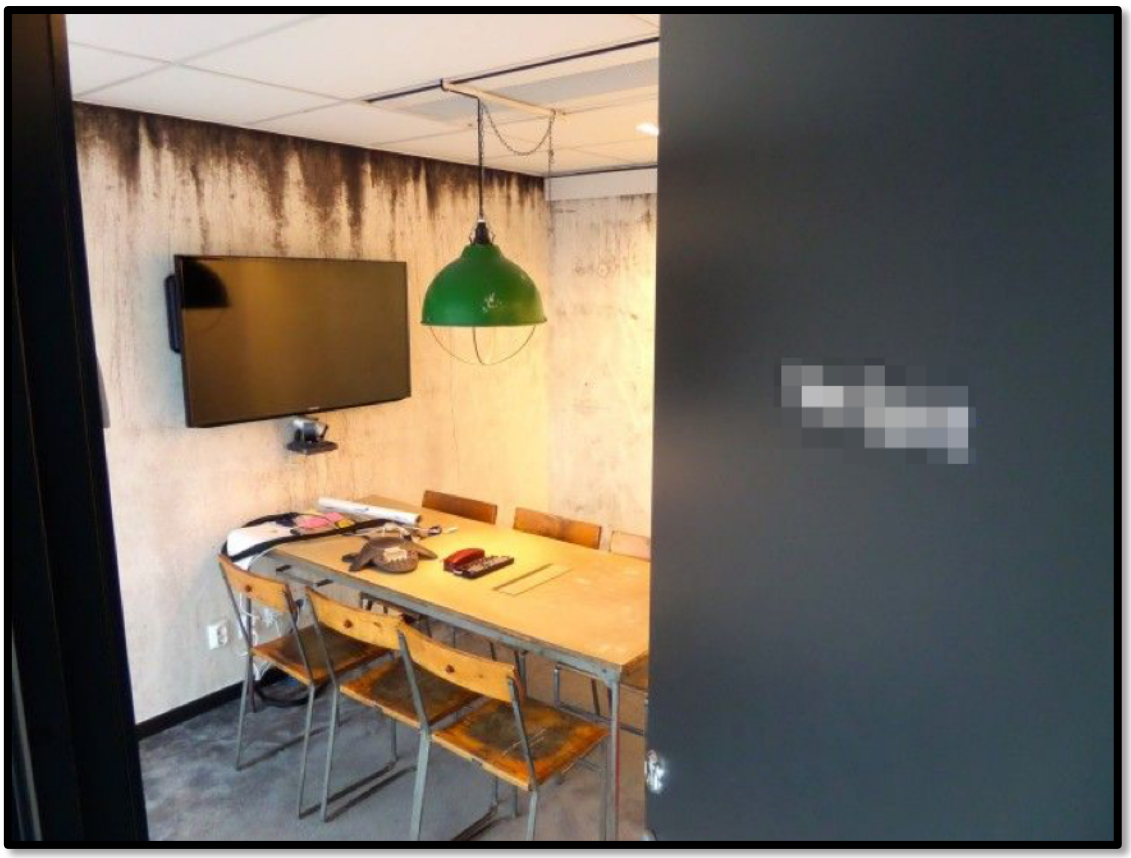


Source: Adapted from information supplied by 'Tech2'

Figure 3.27: A squad room in ‘Tech2’

Source: Supplied direct by ‘Tech2’

Figure 3.28: A ‘Huddle Room’ in ‘Tech2’



Source: Supplied direct by ‘Tech2’

The squad rooms are placed in groups, side-by-side, as shown in figure 3.26. A corridor runs alongside the groups of squad rooms. The wall of the squad room that faces the corridor is made of string to allow clear visibility in and out. This is designed to encourage interaction beyond the confines of the squad. The lounge in each squad room is left open to the corridor and, when a meeting of any description is taking place in the lounge, employees that are not a member of the squad are encouraged to stop, listen and take part, as shown in figure 3.29.

In the corridor running alongside the squad rooms, more informal seating is arranged that is designed to encourage interaction between squads. An example is shown in figure 3.30.

Beyond the areas where the squad rooms are located there are many other areas providing space for groups to meet and intermingle, shown in figures 3.31 to 3.33.

Figure 3.29: A squad room in use with members from other squads standing in the corridor listening in

Source: Supplied direct by 'Tech2'

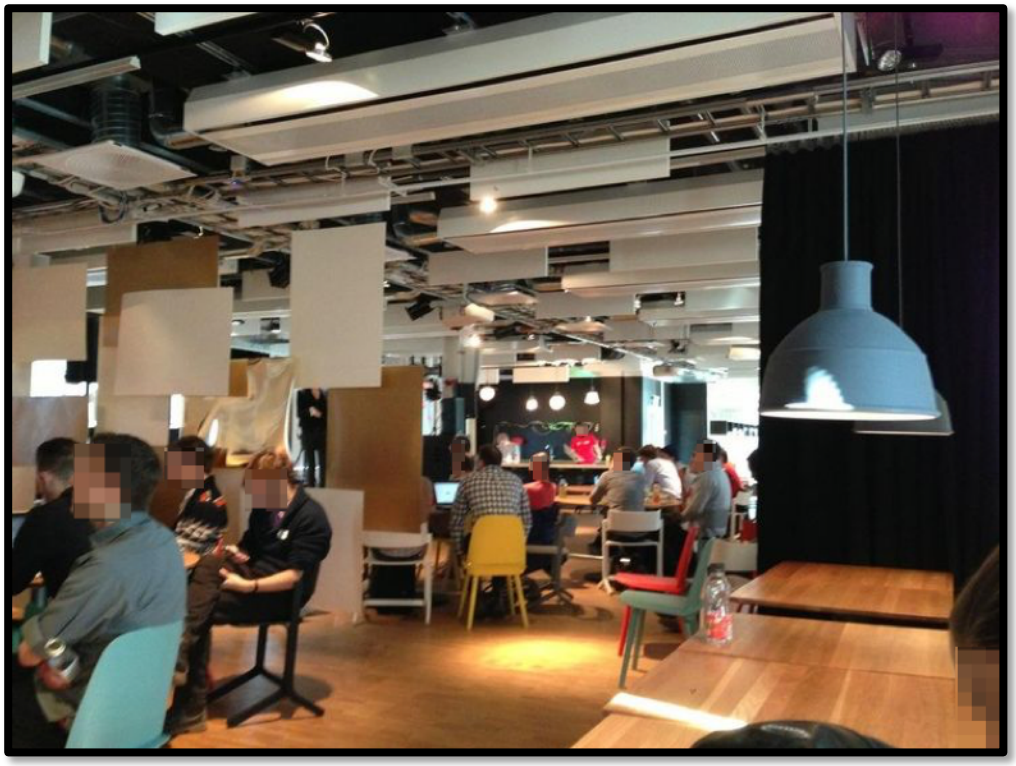
Figure 3.30: Informal seating in the corridor outside a squad rooms in ‘Tech2’

Source: Supplied direct by ‘Tech2’

Figures 3.31-3.33: Examples in ‘Tech2’ of spaces beyond the squad rooms for wider interaction

Source: Supplied direct by ‘Tech2’

Source: Supplied direct by ‘Tech2’



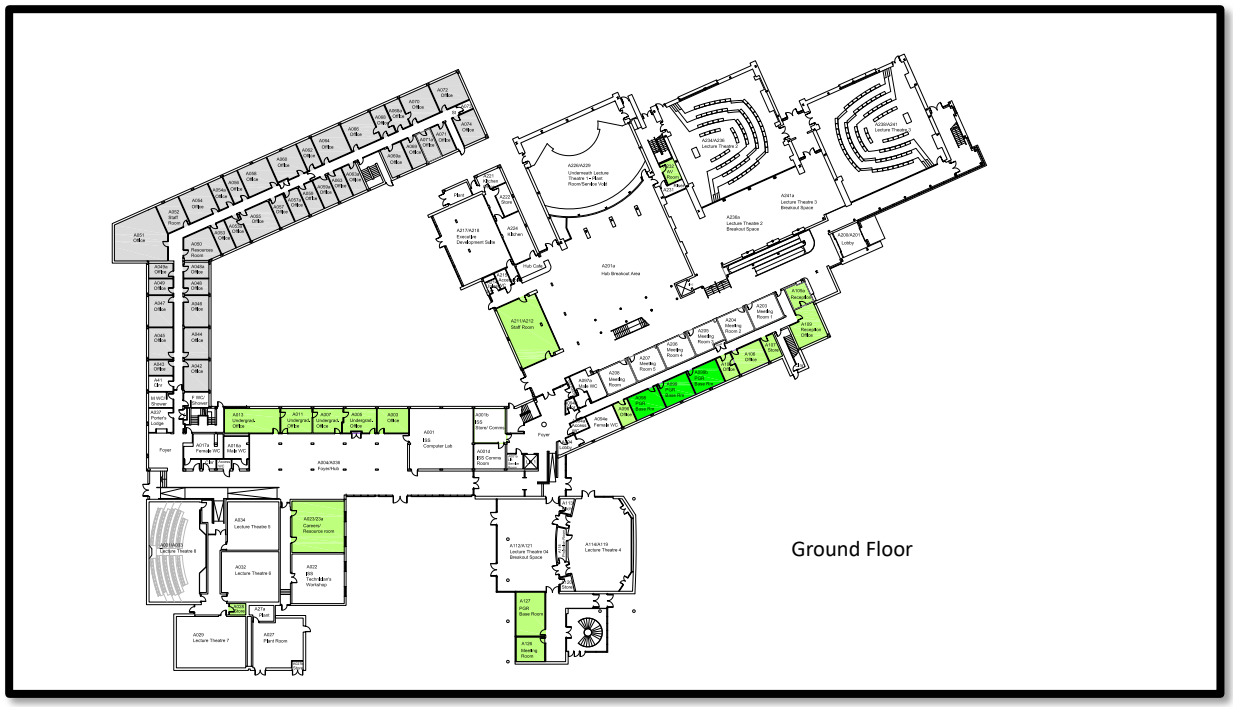
Source: Supplied direct by ‘Tech2’

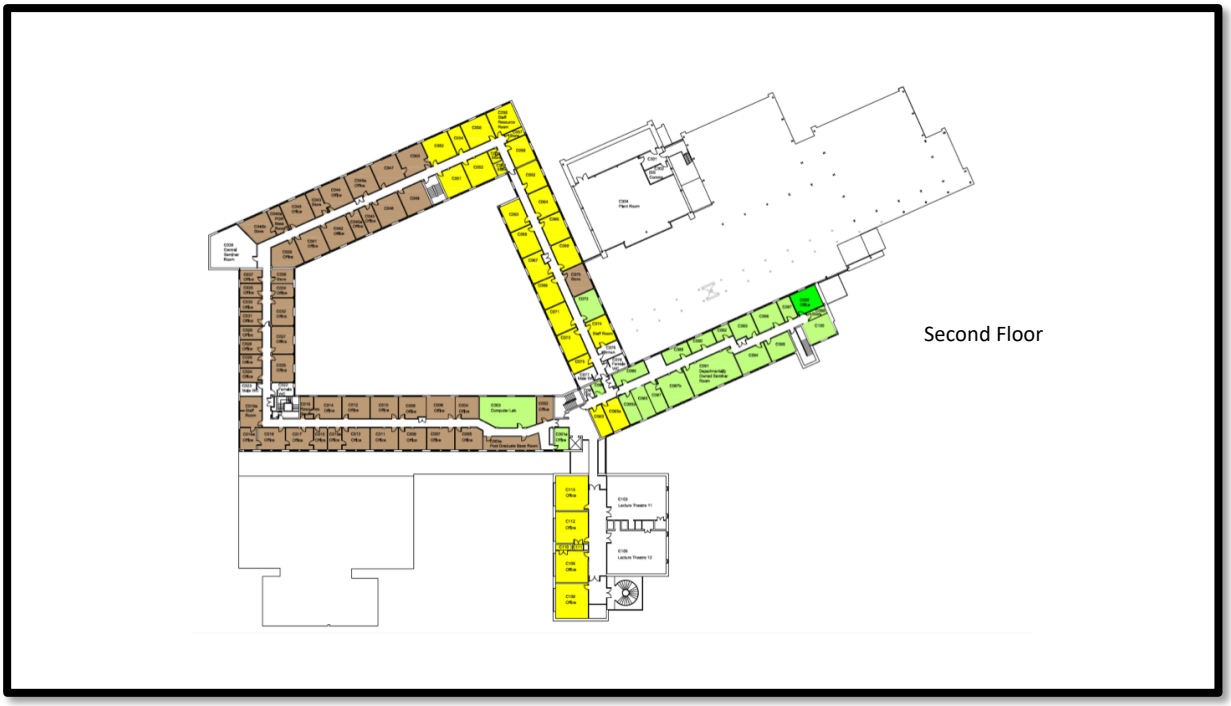
3.8.3 Selection and description of the professional organisation ('UNI')

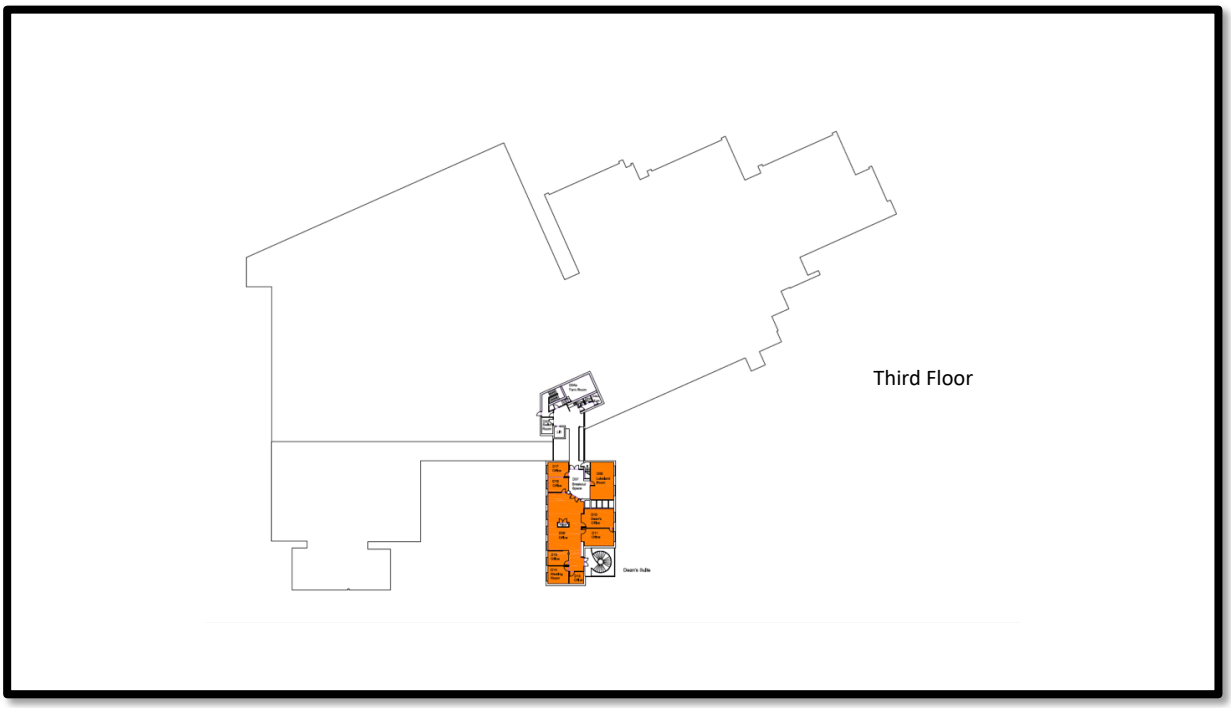
A professional organisation is described as being "*dependent on highly skilled workers who work rather autonomously, subject to professional norms; mostly provides standardised services in stable settings*" (Mintzberg, 2007, p. 342). A university was selected as an example of a professional organisation for this research. Mintzberg himself used studies of a university, his own, McGill University in Montreal, Canada, to inform his findings on professional organisations. Academics in universities engage in two quite different activities, teaching and research. However, in both, high levels of skill are required, and in both, academics tend to work rather autonomously. Traditionally, the environment in which the university competes has been considered to be relatively stable, however, those within the sector suggest that this is no longer the case. A university, or university faculty, is therefore considered for the purposes of this study as an professional organisation.

The organisation selected ('Uni') is one of the four main faculties of a European University. It has eight departments (six academic) and is located in two separate buildings immediately adjacent to each other on campus. The larger of these two buildings was used in the comparative spatial analysis as it contains all the functions present in 'Uni' and is therefore representative of an academic faculty. The offices of 'Uni' are situated on the site of an out-of-town campus and are spread over four floors, shown in figure 3.34.

Figure 3.34: Plan of ‘Uni’ offices







Source: Supplied direct to the researcher by 'Uni'

The building is modern in appearance, constructed of glass and brick. A sign with the name of the faculty clearly identifies the building, shown figure 3.35.

Figure 3.35: Entrance to the building used by the university faculty 'Uni'

Source: Photograph taken by researcher on site in 'Uni'

The main entrance to the building is located at the end of a footpath that funnels towards sliding glass doors, shown in figure 3.36. The footpath and main sign are clearly visible from the main road and thoroughfare that runs the length of the campus. The faculty accreditations and rankings are shown on signs alongside the entrance footpath.

Figure 3.36: The main entrance to 'Uni'

Source: Photograph taken by researcher on site in 'Uni'

Figure 3.37: The pedestrian thoroughfare leading into 'Uni' from the main entrance

Source: Photograph taken by researcher on site in 'Uni'

Figure 3.38: The reception desk and seating area of 'Uni'

Source: Photograph taken by researcher on site in 'Uni'

On entering the building through the main entrance, a wide pedestrian thoroughfare leads into the heart of the building, shown in figure 3.37. Immediately to the left of this pedestrian

thoroughfare is located a reception desk, shown in figure 3.38. The location of the reception desk, to one side of the pedestrian thoroughfare, means that staff and visitors to the building are not visually confronted by this facility when entering the building. Regular users of the building such as staff and students walk straight past the reception area. Reception, therefore, tends to be used by infrequent visitors, such as visiting academics or delivery drivers. Unlike 'Law', 'Tech1' and 'Tech2', there is no requirement for the most frequent visitors to the building (the students) to sign in before moving further into the building. Rather their access is open. A little further down the pedestrian thoroughfare past reception the building opens out into a large open plan area. This open plan area, known as the 'Hub' contains a café, and a wide range of seating with casual tables shown in figures 3.39 and 3.40. Immediately off the Hub are the entrances to three of the main lecture theatres, meeting rooms that can be booked and a staff only lounge area. In total there are twelve lecture theatres. A typical lecture theatre is shown in figure 3.41.

Beyond the Hub area on the ground floor there are a number of administrative offices and a number of academic offices. The faculty is split into eight departments, six of which are located in the building studied. Each of the academic departments is colour coded on figure 3.34. One is located on the ground floor, the others on floors one and two.

Floors one and two mainly consist of academic offices. The academics occupy cellular offices, a typical office is shown in figure 3.42. The academics' offices are located off narrow corridors, shown in figure 3.43. The doors into the academic offices are typically kept closed even when occupied. Even if a door is kept ajar when the office is occupied, the occupant can typically not be seen from the corridor by someone passing, as shown in figure 3.44. The offices are therefore considered private spaces. Mixed in with the academic offices on floors two and three are staff rooms (an example shown in figure 3.45), photocopying rooms and seminar rooms. Students use the areas of the building that have the academics' offices when using the seminar rooms or when visiting an academic for a one-on-one tutorial.

The third floor of the building is reserved for the use of the Dean and referred to as the Dean's suite.

Figure 3.39: The open plan Hub in ‘Uni’

Source: Photograph taken by researcher on site in ‘Uni’

Figure 3.40: The open plan Hub in ‘Uni’

Source: Photograph taken by researcher on site in ‘Uni’

Figure 3.41: A typical lecture theatre in ‘Uni’

Source: Photograph taken by researcher on site in ‘Uni’

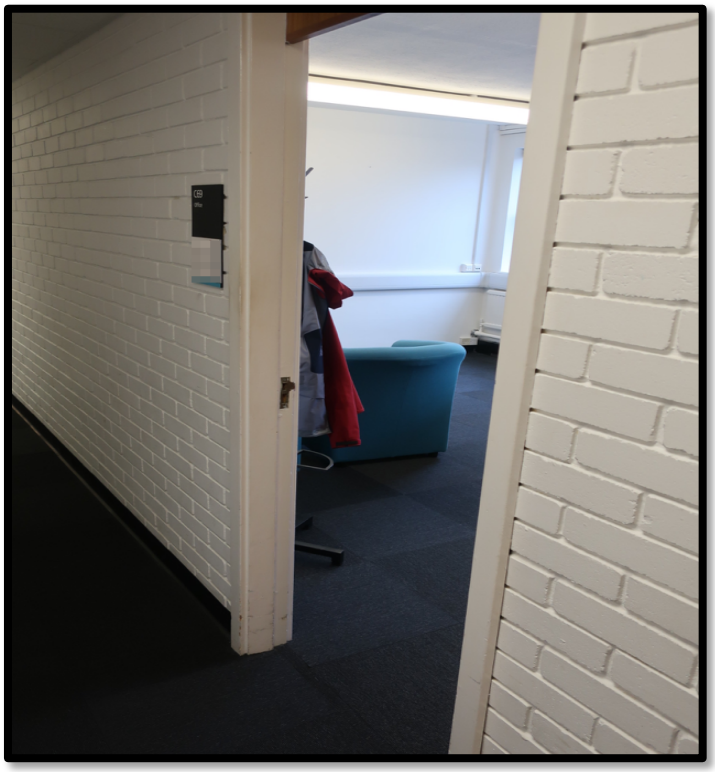
Figure 3.42: A typical academic’s office in ‘Uni’

Source: Photograph taken by researcher on site in ‘Uni’

Figure 3.43: The corridor off which academic offices are located in 'Uni'

Source: Photograph taken by researcher on site in 'Uni'

Figure 3.44: The view into an occupied academic's office from the corridor



Source: Photograph taken by researcher on site in 'Uni'

Figure 3.45: An example of a staff room in ‘Uni’

Source: Photograph taken by researcher on site in ‘Uni’

3.8.4 Selection and description of the machine organisation (‘Mftg’)

Mintzberg studied four organisations that met the criteria for being a machine organisation; the US government (Mintzberg, 1978), a car manufacturer (Mintzberg, 1978), an airline (Brunet, Mintzberg and Waters, 1986) and a textiles manufacturer (Austin and Mintzberg, 1996).

A machine organisation typically “*produces mass, standardised products or services with rather unskilled labour, subject to many technocratic controls; generally but not necessarily large and usually mature; found in rather stable environme*nts” (Mintzberg, 2007, p. 342).

The characteristics of realised strategy in machine organisation’s are described as cycling from stability to intermittent periods of change. For example:

“*The description of the soldier’s lot – months of boredom interrupted by moments of terror – applies more or less to the machine organisation*” (Mintzberg, 2007, p. 350)

Of the car manufacturer Mintzberg says; "*the new strategy emerged out of the learning of the dispersed groping and grafting. Then the company settled down with its new direction*" (Mintzberg, 2007, p. 350)

Of the US government Mintzberg says; "*The US strategy in Vietnam mostly followed a similar pattern of stability interrupted by periodic change, except that here the major shifts took place more frequently, almost like an adhocracy cycling in and out of focus*" (Mintzberg, 2007, p. 350).

The organisation selected for the comparative spatial study is a global manufacturer. The site selected is the regional headquarters of the group based Europe. The site houses the offices of four strategic business units and a large manufacturing facility. As such it contains all the key functions of a machine organisation including purchasing, marketing, sales, engineering design, sales order processing, after sales customer service and the full range of administrative functions. The spatial analysis focussed on the offices and not the manufacturing area as it was in the offices that the social interactions that might have an impact on strategy were most likely to take place. The researcher worked in these offices for five years as a Managing Director of the firm and as a result has good knowledge of its use.

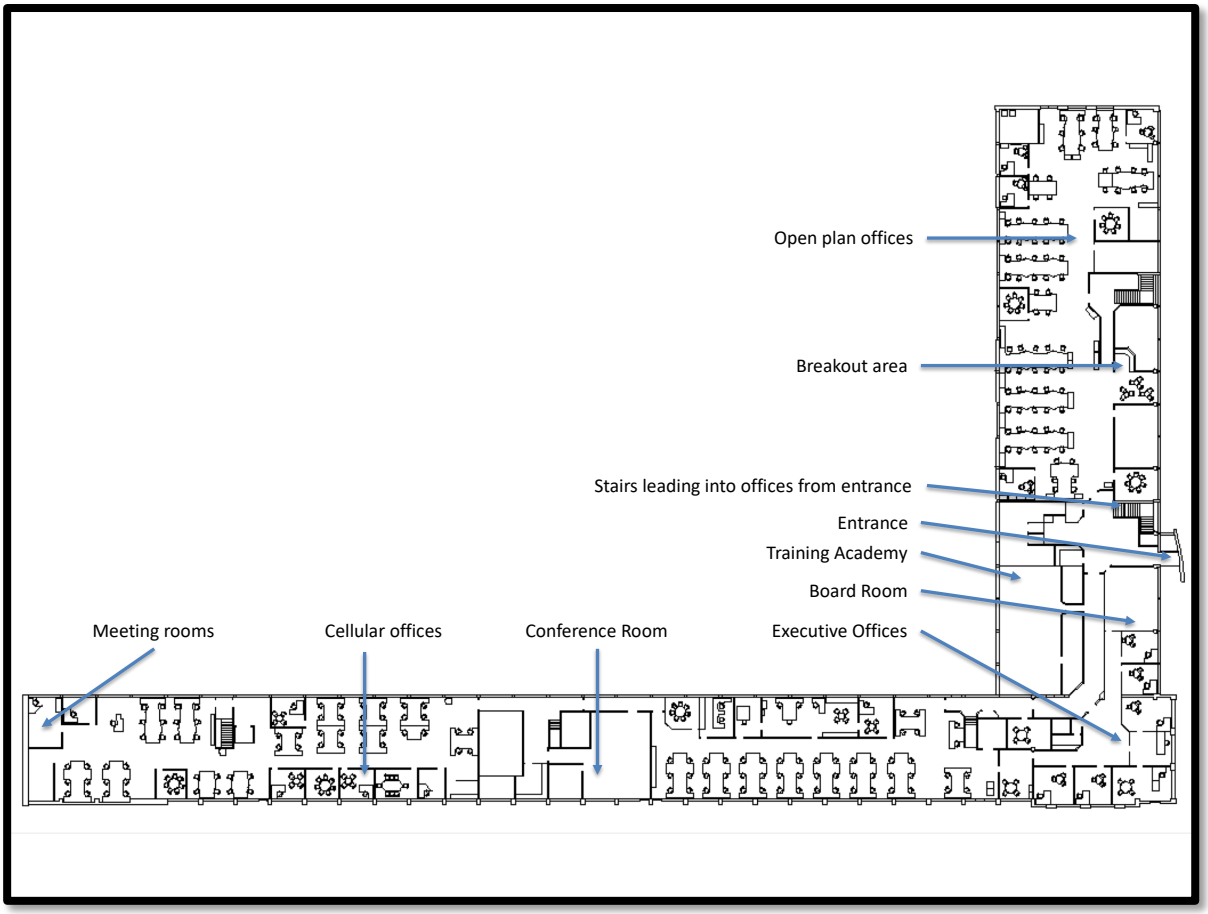
The site is located in an industrial area and had a large car park for staff immediately outside, shown in figure 3.46. The whole of the ground floor was occupied by the manufacturing and assembly operations. The offices were located on the second floor. The offices were entered via a large white sail shaped structure that formed a glass atrium in front of the building. On the inside of sliding glass doors that marked the entrance to the building was an unmanned desk with a telephone and a flight of stairs. A visitor to the site was asked to use the telephone to contact someone within the building. They would then be collected by that person and shown into the office. Entrance to the office was up the flight of stairs and through an access-controlled door. Staff could enter freely but visitors would not be able to gain access without being accompanied.

At the top of the stairs was a small reception area with seats and two more access-controlled doors lead to two sides of the offices. The offices were organised in an L-shape, shown in figure 3.47, that sat on top of a large rectangular footprint of the manufacturing facility below.

Figure 3.46: The entrance and two-storey structure of ‘Mftg’

Source: Supplied direct to researcher by ‘Mftg’

Figure 3.47: Floor plan of ‘Mftg’ offices



Source: Supplied direct to researcher by ‘Mftg’

The workspaces in ‘Mftg’ are a mixture of open plan offices and cellular offices. Senior staff, including the regional board, occupy cellular offices. The regional board members are in offices next to each other in the corner of the L-shape. Other senior managers occupy cellular offices dispersed across the rest of the office. All other staff are located at desk clusters of four to ten seats, in an open plan office. Other facilities include a board room, a large training academy for staff and customers, a conference room and meeting rooms. Each of these facilities need to be booked. In addition, there was one small breakout area containing three tables with three metal chairs at each.

3.9 Summary of research design and methodologies used

In summary, quantitative methods were used to find patterns in complex socio-spatial arrangements and qualitative methods were used to understand the nuances of emergent strategy in action. The research design followed two phases. The first investigated the relationship between space and emergent strategy in a single organisation (‘Law’), the second compared the socio-spatial arrangements of four other organisations with that of ‘Law’.

The following two chapters present the findings for this thesis. The findings are organised into the two phases of research. Chapter 4 presents the findings of phase one that focuses on the single case organisation (‘Law’) to investigate the relationship between space and emergent strategy. Chapter 5 then compares the structures of ‘Tech1’, ‘Tech2’, ‘Uni’ and ‘Mftg’ on the spatial characteristics found to be important to emergent strategy in ‘Law’.

4 Findings for phase one: The influence of physical space on emergent strategy in the single case study 'Law'

The aim of this chapter is to understand how physical space influences the emergent strategy in the single case study, 'Law'.

In this chapter, two examples of emergent strategy are identified and described. Emergent strategy is described in terms of the topics of strategic concern, the patterns of action that appear to be emerging, and the agents involved in the process of emergence.

The chapter focuses on two topics of strategic concern, pricing and the introduction of new service lines. In the case of pricing, a pattern of steadily increasing prices and the resulting improved margins is observed to emerge. Whilst in the case of the introduction of new service lines, an intentional strategy, the absence of emerging patterns of action that support this topic of strategic concern are identified.

In both cases, the emerging patterns of hardening prices and the absence of actions supporting the introduction of new service lines are observed to be not consciously strategic. However, an analysis of interaction profiles shows that these examples of emergent strategy can be explained by patterns of everyday unplanned interactions across the firm.

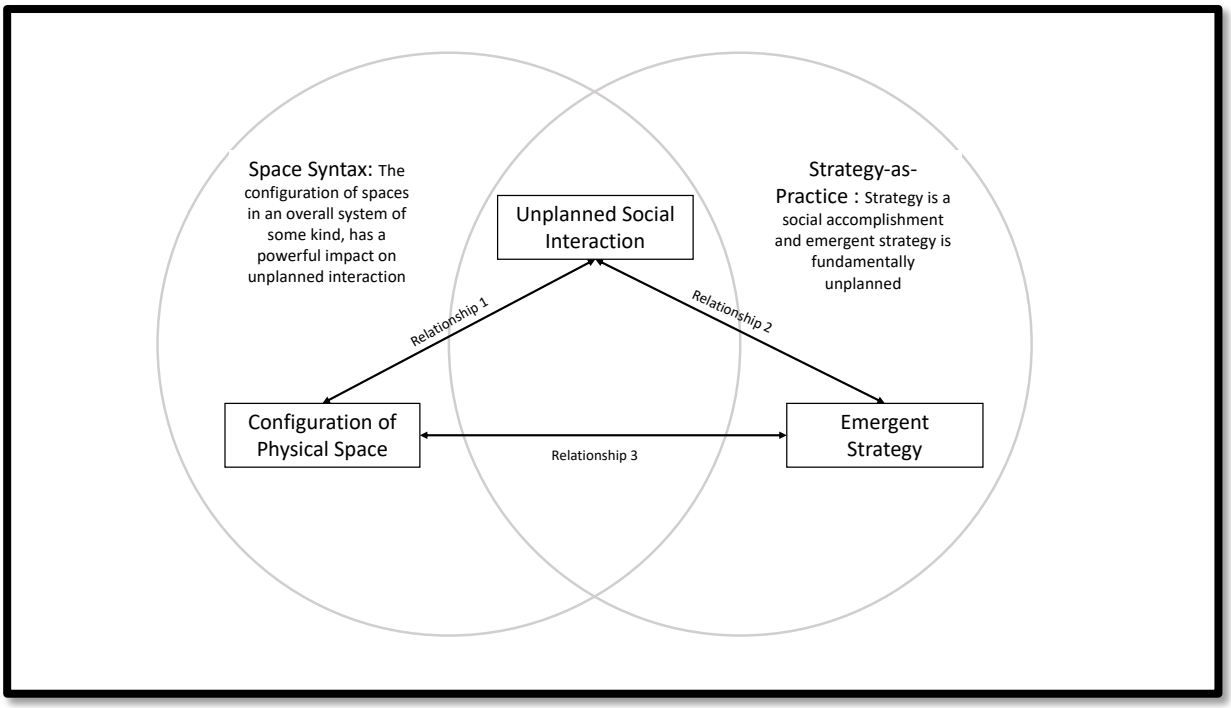
Further, analysis shows that patterns of physical space have an important influence on the patterns of social interaction impacting emergent strategy.

As a result, this chapter presents the findings in line with the three relationships depicted in figure 1.1 and repeated here in figure 4.1 for the convenience of the reader. The analysis of the relationships between emergent strategy and social interaction and the relationship between social interaction and physical space inform the analysis of the relationship between physical space and emergent strategy.

The chapter is organised in the following way; section 4.1 explores the relationship (1) between physical space and unplanned social interaction in 'Law'; section 4.2 articulates the two emerging topics of strategic interest and explores the relationship (2) between unplanned social interaction and emergent strategy; section 4.3 draws on the findings of the

first two sections to explore the relationship (3) between space and emergent strategy; finally, section 4.4 summarises the findings in chapter 4 and links these to the findings of the analysis of spatial patterns in other organisations presented in chapter 5.

Figure 4.1: Logic for the organisation of findings in chapter 4



4.1 Investigation of relationship 1 between the configuration of physical space and an organisation's profile of social interaction

Before an investigation of the relationship between space and social interaction can proceed, first the actual profile of interaction needs to be established. In this thesis the profile of interaction is described using four variables: who it is that interacts, the frequency of interaction, the duration of interaction, and whether the interaction was planned or unplanned. The following section (4.1.1) reports on the profile of interaction found in 'Law'. Section 4.1.2 then examines the influence of space on the interaction profile found. Three spatial measures are found to have significant influence on interaction: integration, allocation of space, and correspondence. Section 4.1.3 summarises the findings of the relationship between space and social interaction in 'Law'.

4.1.1 Profile of interaction in 'Law'

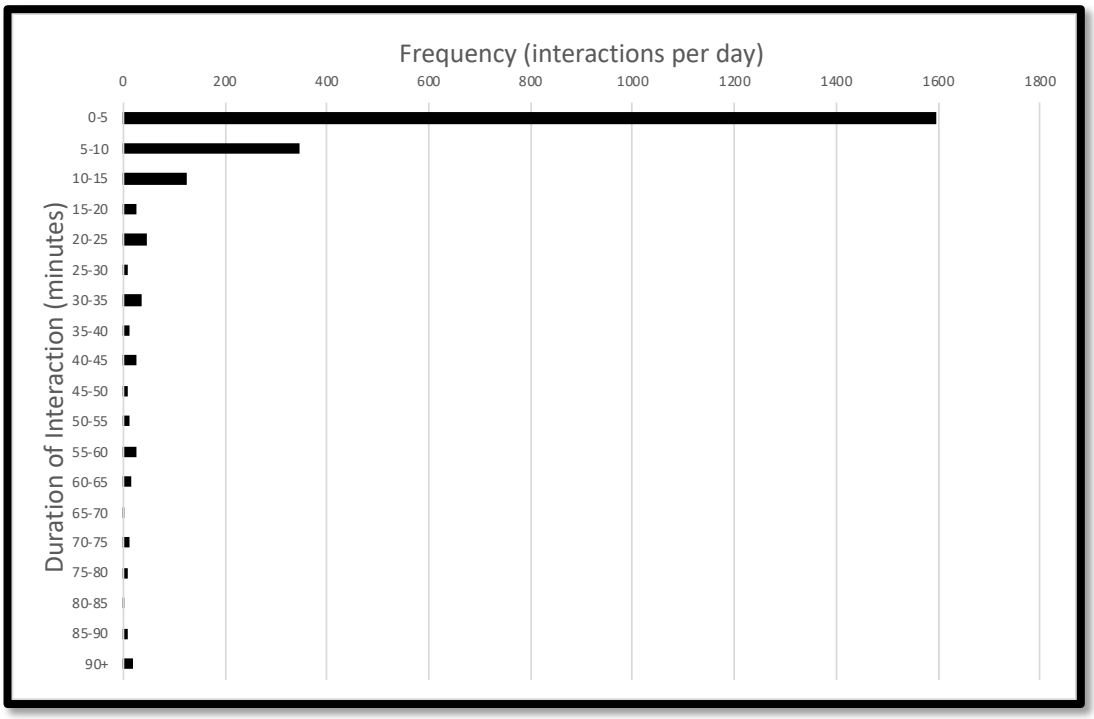
"*Strategy emerges from the interactions between actors*" (Jarzabkowski, 2003, p. 49)

It follows from this quote that to understand how strategy might emerge from an organisation we first need to understand which actors interact and something about those interactions. In this section, who interacts is defined by intra-departmental, inter-departmental and interaction with visitors. A profile is built for each in terms of how much of that interaction is unplanned, how long the interactions last and how frequently the interactions occur.

An average employee in 'Law' spent one third of their time in the office in some sort of interaction with others. That is two hours and forty one minutes of unplanned interaction per day for each employee. This consisted of an average of forty separate interactions per day for every employee, or roughly five per hour. Although this, at first, appears to be a lot of interaction it must be remembered that this includes chance encounters in the corridor, conversations whilst making a cup of tea and fleeting discussions with colleagues across the desk, all of which have the potential to become strategic.

From these figures it can be seen that each interaction does not tend to last for long. In fact the average duration of each is just under four minutes however, they vary in duration from as little as thirty seconds to over one and a half hours. Figure 4.2 shows the distribution of interaction durations in five-minute intervals. This shows a great weighting towards interactions of short duration, typically less than five minutes each.

Figure 4.2: Distribution of interaction durations across ‘Law’ per day

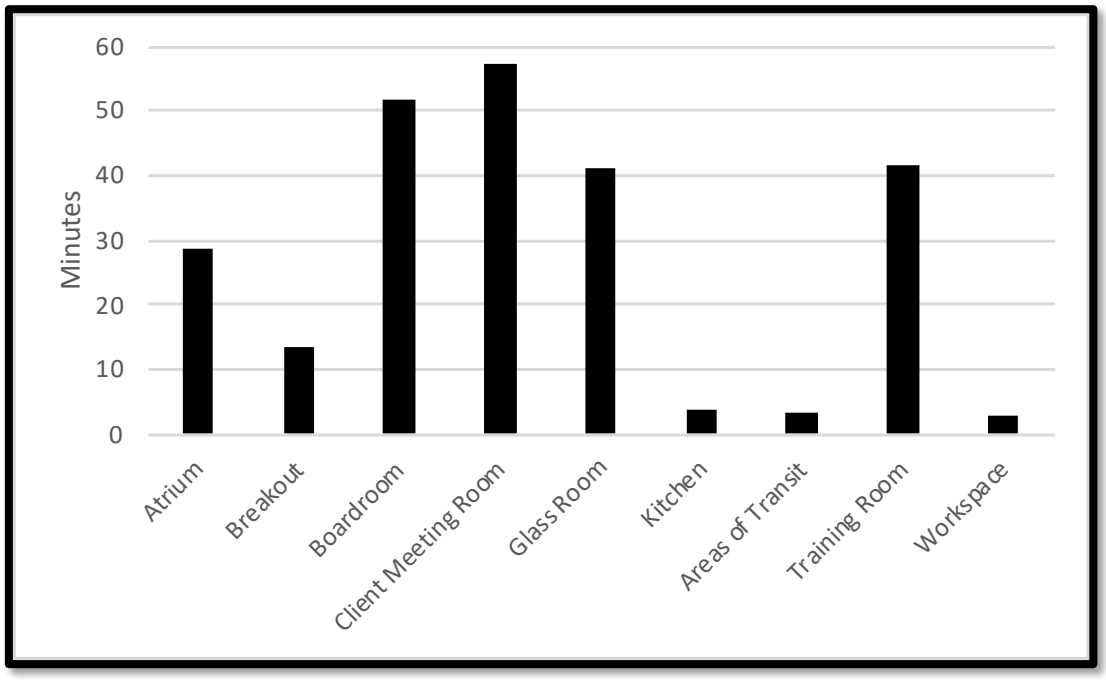


Source: Extrapolated from the database of 453 interactions observed in ‘Law’

The average duration of each interaction varied depending on where it was conducted. At desks, an average interaction lasted under three minutes and in areas of transit three and a half minutes. By contrast, an average interaction in a client meeting room lasted fifty-seven minutes. Figure 4.3 shows how the average duration of interaction varied by space.

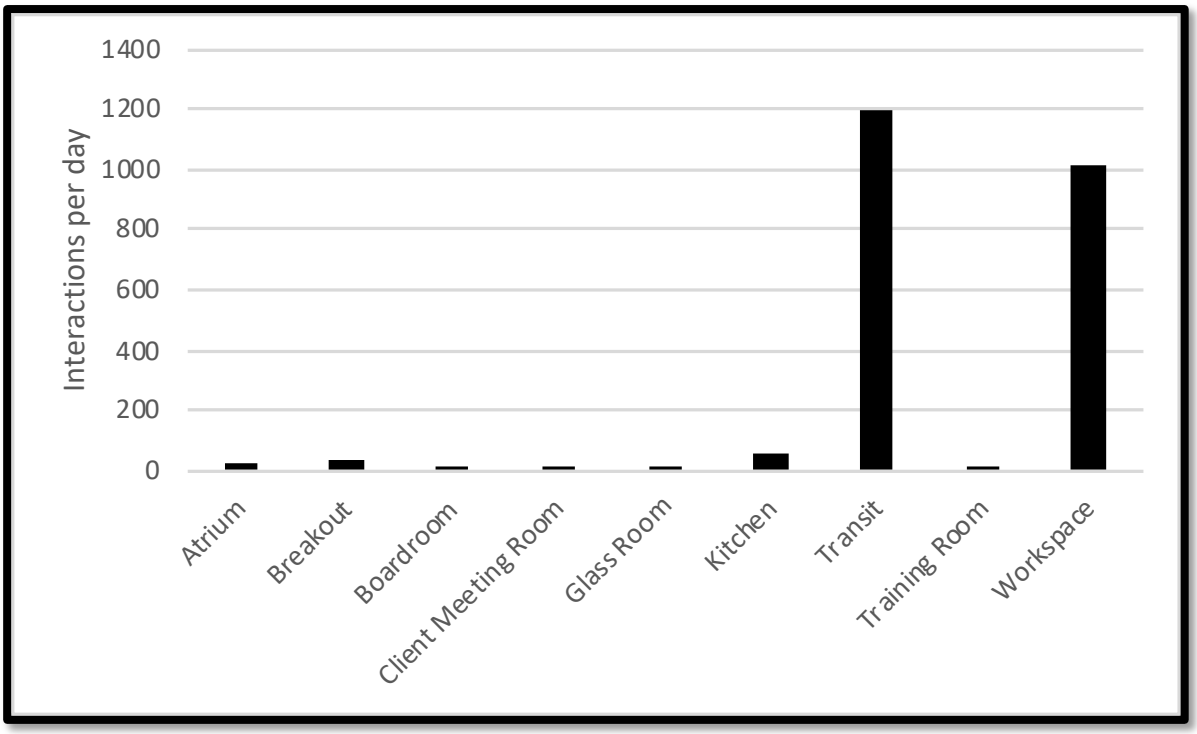
The frequency of the interactions also varied depending on the spaces in which they took place. For example, the client meeting rooms were used on average twelve times each day whereas there were over one thousand interactions at desks across the firm every day. Figure 4.4 shows the average number of interactions that took place in each type of space every day.

Figure 4.3: Average duration of interaction by space



Source: Extrapolated from the database of 453 interactions observed in 'Law'

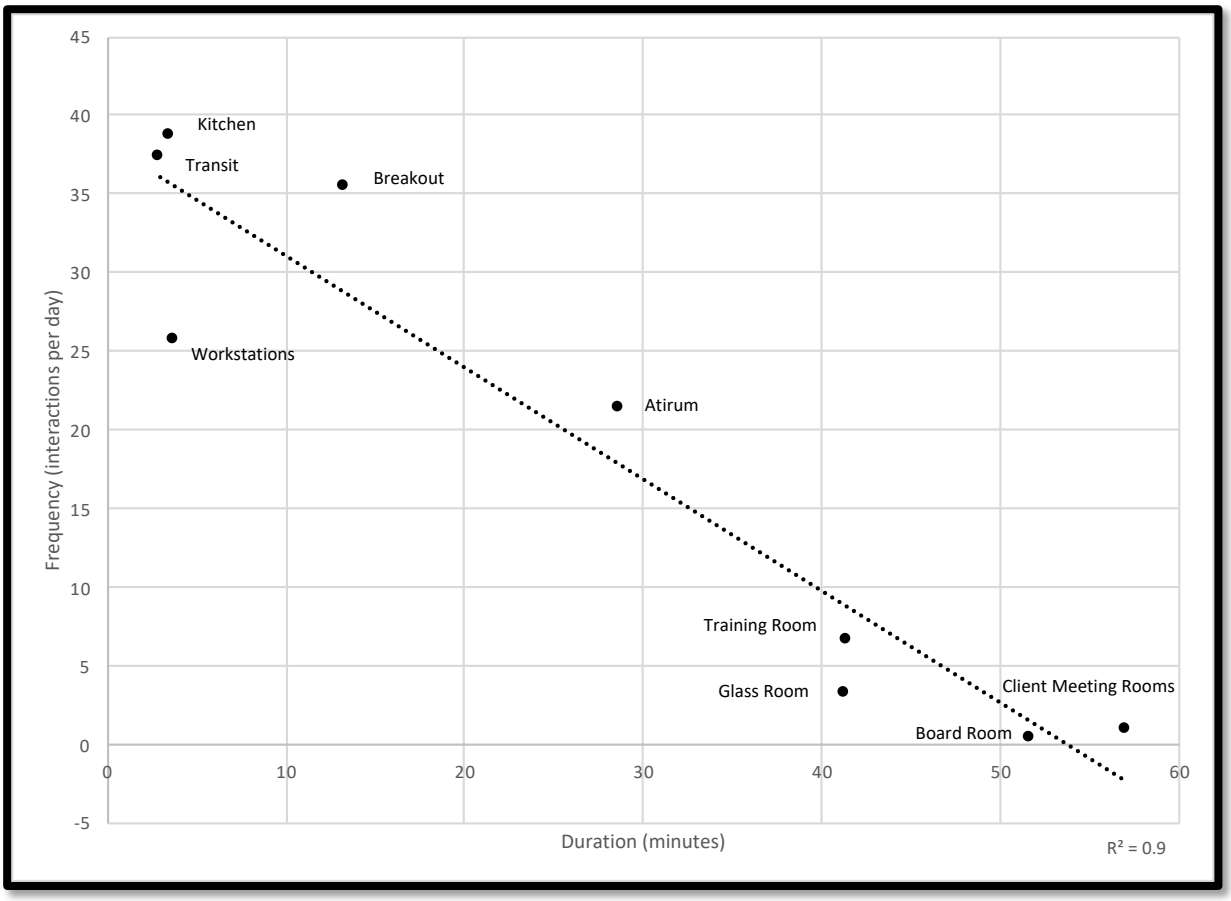
Figure 4.4: Average number of interactions in each type of space per day



Source: Extrapolated from the database of 453 interactions observed in 'Law'

The spaces with the greatest frequency of interaction, such as the workspaces and the areas of transit, also had the lowest duration interactions. The reverse was also true as the spaces with the lowest frequency of interaction had the longest lasting interactions. The relationship between frequency and duration of interaction is shown in figure 4.5. Explanations for this relationship are explored in the following section.

Figure 4.5: Frequency and duration of interaction by space



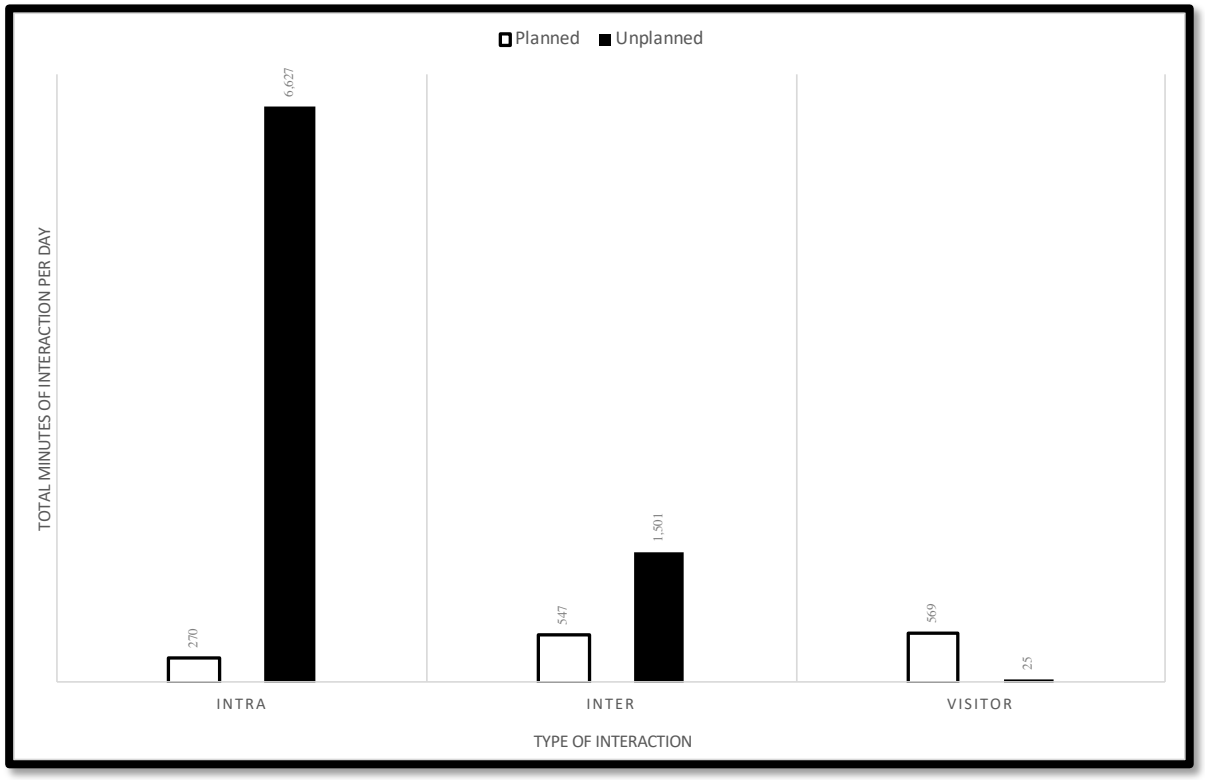
Source: Extrapolated from the database of 453 interactions observed in 'Law'

Of the two and a half hours of interaction an average employee of 'Law' participated in each day, some eighty five percent was unplanned. On average, each person was involved in fewer than one planned meeting each day so, in terms of frequency, thirty nine of the forty interactions each day were unplanned.

Figure 4.6 shows who the interactions were with and breaks each category down between those that were planned and those that were unplanned. Over seventy-two percent were interactions between members of the same department (intra-department), twenty-one

percent with members of other departments in the firm (inter-department) and under seven percent were with visitors to the firm.

Figure 4.6: Firm wide interaction by type



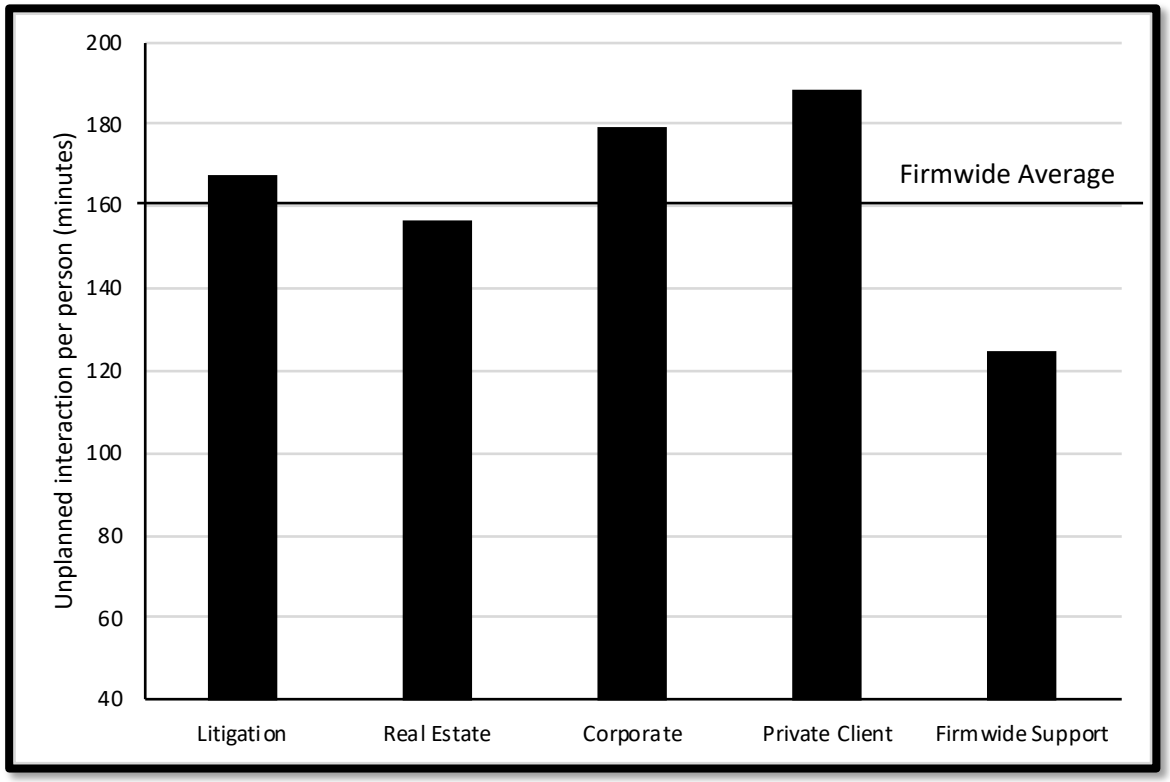
Source: Extrapolated from the database of 453 interactions observed in 'Law'

An average person in 'Law' engaged in interactions with their own department thirty-three times each day, and with members of other departments seven times each day, a ratio of 4.41 intra-departmental interactions to every 1 inter-departmental interaction. As described above, most of these were unplanned encounters.

Chance encounters with visitors were far rarer. Across the whole firm, an unplanned interaction with a visitor took place four times each day, lasting on average five minutes. For each person in 'Law', this represented an unplanned encounter with a visitor once every two months. These unplanned interactions with visitors can be compared with those that were planned. Across the firm as a whole, seventeen planned meetings with visitors took place each day, lasting on average thirty-two minutes each. This meant that each employee met with a visitor on average once or twice per week, in fact, planned interactions with visitors were more frequent than planned interactions with colleagues.

The distribution of unplanned interaction around these averages for the firm was not even. When comparing the interaction within each department some significant differences became apparent and are shown in figure 4.7. Relative to a firmwide average of one hundred and sixty one minutes interaction per day per person, at the departmental level this ranged from just over two hours per day for an average person in firmwide support to over three hours per day in the Private Client department.

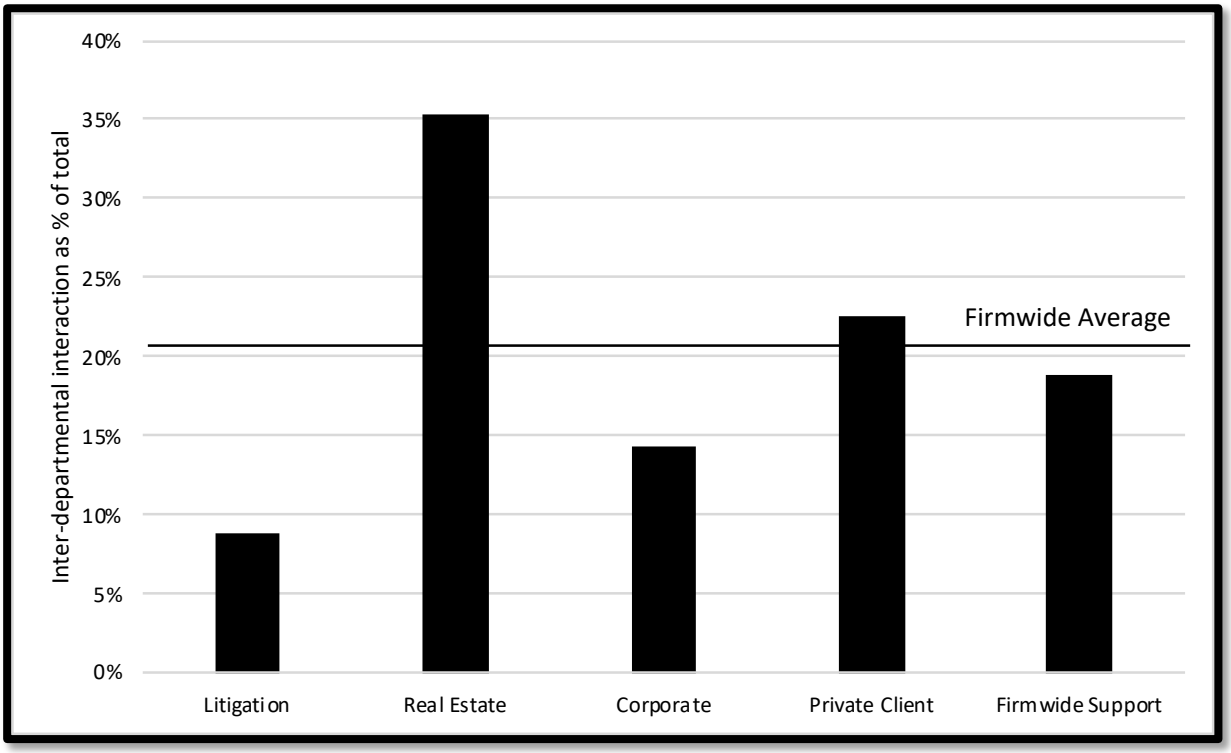
Figure 4.7: Unplanned interaction per person broken down by department



Source: Extrapolated from the database of 453 interactions observed in 'Law'

The differences were even more significant within each department when considering how much of the interaction shown in figure 4.7 was intra-departmental and how much was inter-departmental. Figure 4.8 shows the percentage of all unplanned interaction for each department that was inter-departmental. For example, within the Litigation department just nine percent of all unplanned interaction was with other departments yet for the Real Estate department this was thirty five percent. This compared with a firmwide average of twenty one percent as represented in figure 4.6 above.

Figure 4.8: Inter-departmental interaction as a percentage of the total by department



Source: Extrapolated from the database of 453 interactions observed in 'Law'

In summary, there are three aspects of the profile of interaction for 'Law' that are of particular interest to this study. First, when considering who it is that interacts, the social circles of unplanned interaction appear to be narrowly spread. Within the firm employees interact with members of their own department four times as much as with members of other departments and unplanned interaction with visitors to the firm are rare. This is important because the diversity of interaction within social networks and across multiple social networks has been shown to have an impact on the characteristics of emergent strategy. The less diversely spread the interaction profile is, the less radical the strategies that emerge are likely to be.

Second, although unplanned interactions are clearly encouraged to some extent, particularly at desks, these tend to be of short duration (less than five minutes). Away from the desks there appears to be a constraint on longer duration unplanned interaction as there is a heavy weighting towards interactions of short duration. This is important because the longer duration interactions away from desks allow reflection on the ideas generated in the more

frequent interactions at desks and it is the combination that encourages strategic change (Bucher and Langley, 2016).

Third, not all departments interact in the same way. Some departments interact more than others and some interact with other departments far more than others. This is important because different profiles of interaction suggest different characteristics of, and opportunities for, emergent strategy making. The disparity potentially affords some departments strategic advantage/disadvantage based on their respective interaction profiles.

With an understanding of the profile of interaction found in 'Law' and an appreciation of why this might be important strategically, the following section explores whether the spatial configuration of 'Law' can explain the interaction profile.

4.1.2 Can a spatial analysis explain the social interaction profile found in 'Law'?

This section explores the possibility that the spatial configuration of 'Law' can explain the organisation's profile of interaction. The findings show a relationship between space and interaction and highlights three spatial characteristics to be significant: 1) the degree of integration and segregation of spaces within the spatial system; 2) the way space is allocated to different functions; 3) the degree of correspondence between spatial and transpatial systems. Each of these spatial characteristics are described in turn together with an analysis of the way they impact on social interaction.

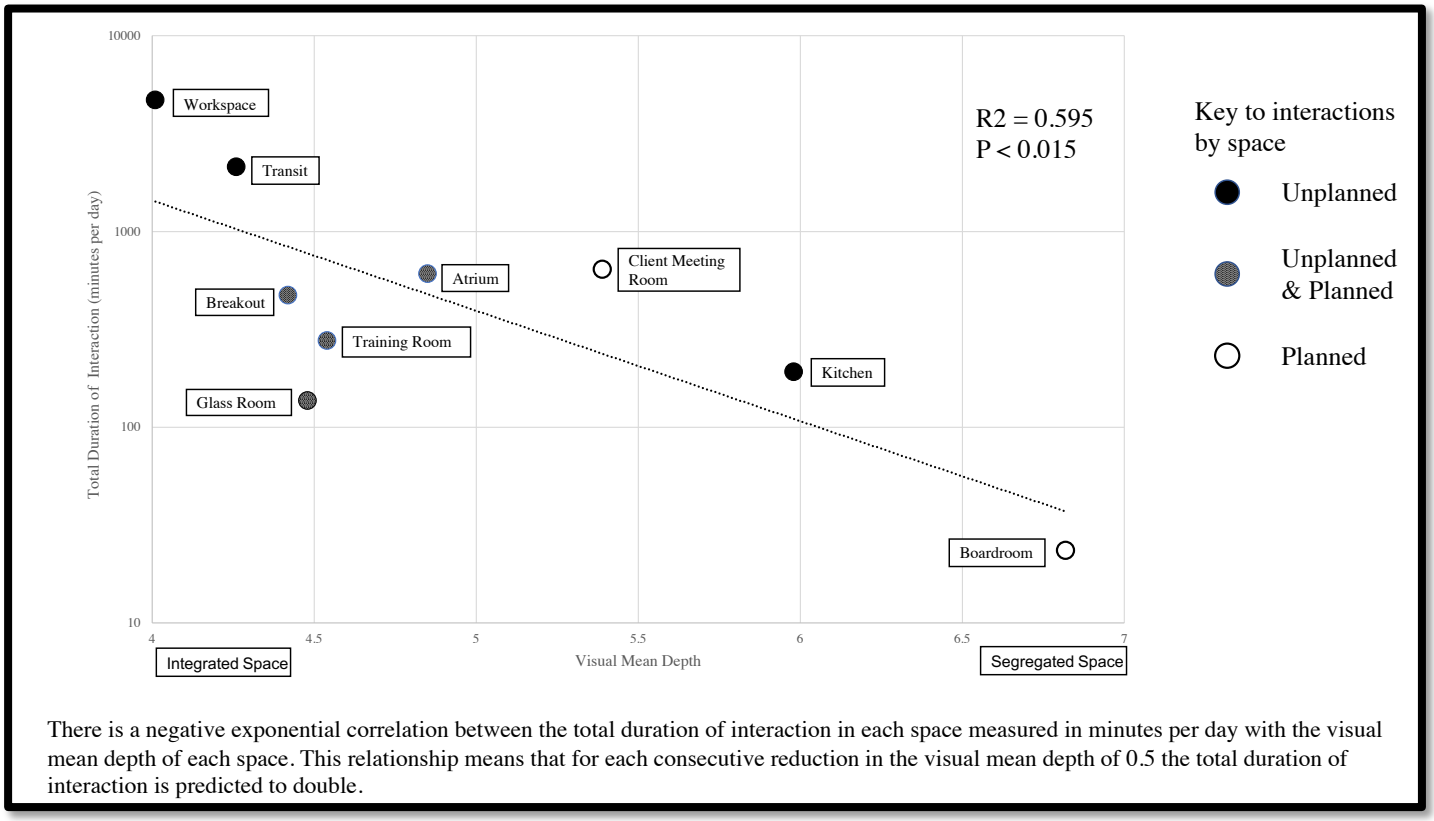
4.1.2.1 Integration and segregation

In this section, the findings show that the spatial integration profile of 'Law' provides a good explanation for the variations in unplanned interaction found by space and by department but does not explain variations in interaction between departments nor the low levels of unplanned interaction with visitors.

Spatial theory predicts that incidents of unplanned social interaction are highest in spaces that are well integrated and lowest in the most segregated spaces. Integration or segregation of a space is measured as low or high visual mean depth respectively - the number of turns required from a single space until all spaces are reached. Calculations of visual mean depth for the offices of 'Law' are shown on the x axis in figure 4.9.

The y axis plots the total number of minutes spent interacting in each space on an exponential scale. Although unplanned interactions are of specific interest to this thesis, these need to be placed in the context of all interactions, including those that are planned, to get a full appreciation of the relative weighting of each in everyday life of the firm. To differentiate spaces where planned interactions took place from those where unplanned interactions took place, each data point in figure 4.9 is shaded according to the type of interaction that occurred within each space.

Figure 4.9: Correlation between duration of interaction and the integration value of each space



There is a negative exponential correlation between the total duration of interaction in each space measured in minutes per day with the visual mean depth of each space. This relationship means that for each consecutive reduction in the visual mean depth of 0.5 the total duration of interaction is predicted to double.

Source: Extrapolated from the database of 453 interactions observed in 'Law'

A regression analysis of visual mean depth against duration of interaction, shown as a line of best fit in figure 4.9, demonstrates the strength of relationship (R2 = 0.595) between spatial configuration and social interaction. Two key findings can be drawn from this relationship that support the theory that more integrated spaces encourage the most unplanned interaction. The first is that the line of best fit slopes down from the most integrated spaces to the most segregated spaces confirming that the most integrated spaces attract more

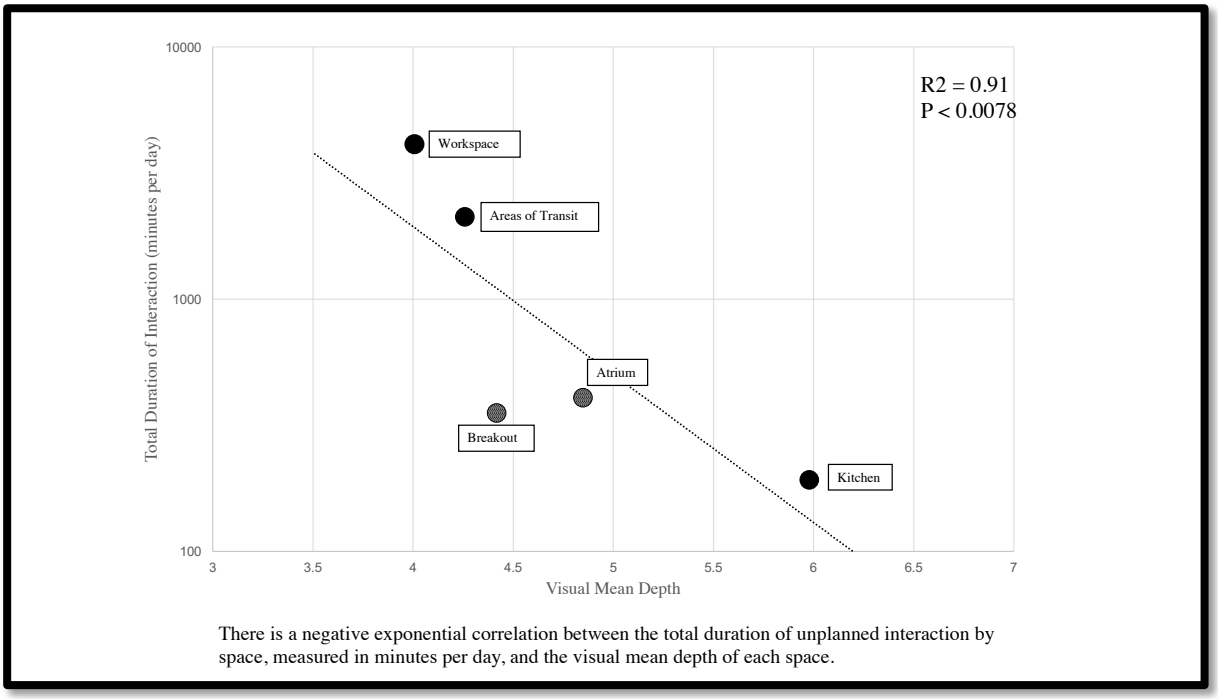
interaction than the most segregated spaces. Figure 4.10 shows the correlation between the number of minutes spent in *unplanned* interaction and visual mean depth of each space. It shows that the same relationship holds, reinforcing the finding that the most integrated spaces encourage the most unplanned interaction.

The exception to this is the client meeting rooms where the relationship between integration and interaction found appears to break down because no unplanned interaction was observed to take place in the client meeting rooms. For this reason, the client meeting rooms do not appear in figure 4.10. Overall, the only unplanned interaction observed between inhabitants and visitors occurred in the Atrium and the area of transit near reception. As a result, in 'Law', the integration or segregation of the client meeting rooms cannot explain the absence of unplanned interaction between inhabitants and visitors.

The second finding from figure 4.9 is that the data points form three clusters: 1) unplanned interactions occur in the most integrated spaces; 2) the most segregated spaces are used almost exclusively for planned interactions; 3) four 'flexible' spaces that see a mixture of both planned and unplanned interaction, have visual mean depth scores lying between the most integrated and most segregated spaces. The exact split between planned and unplanned interaction in the flexible spaces is shown in figure 4.11.

The exception to these data clusters is a segregated kitchen that attracted a significant amount of unplanned interaction. Facilities such as kitchens are known in Space Syntax analysis as 'attractors' that are known to "*amplify the naturally integrated character of space by attracting further movement and usage*" (Sailer *et al.*, 2012, p. 22).

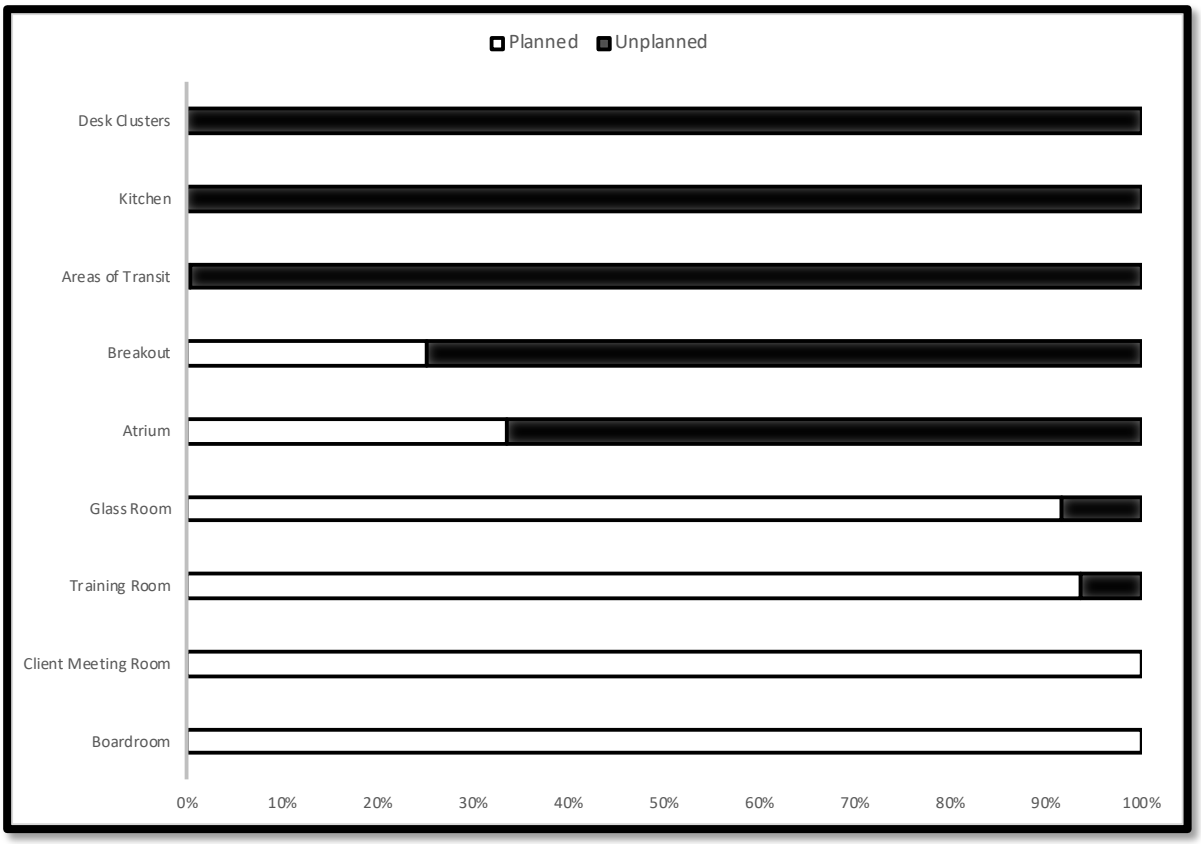
Figure 4.10: Correlation between duration of unplanned interaction and integration value of each space



Source: Extrapolated from the database of 453 interactions observed in 'Law'

The most integrated spaces in 'Law' were the workspaces and areas of transit. The workspaces contain the desk clusters occupied by the inhabitants of the building, the lawyers, and each desk cluster was surrounded by areas of transit. The desk clusters were located in an open plan office ensuring long lines of sight for occupants. This means that lawyers were able to see many of their colleagues whilst at their desks and could easily judge who could and could not be interrupted. In addition, the areas of transit that pass between the desk clusters allowed those on the move to be seen by others as they passed. These characteristics encouraged unplanned interaction which resulted in a real concentration of unplanned interactions in the highly integrated workspaces and areas of transit. In total, 75% of all unplanned interactions occurred at or between the desk clusters and it has already been noted that unplanned interactions accounted for 85% of all interactions across the firm.

Figure 4.11: Planned vs unplanned interaction by space

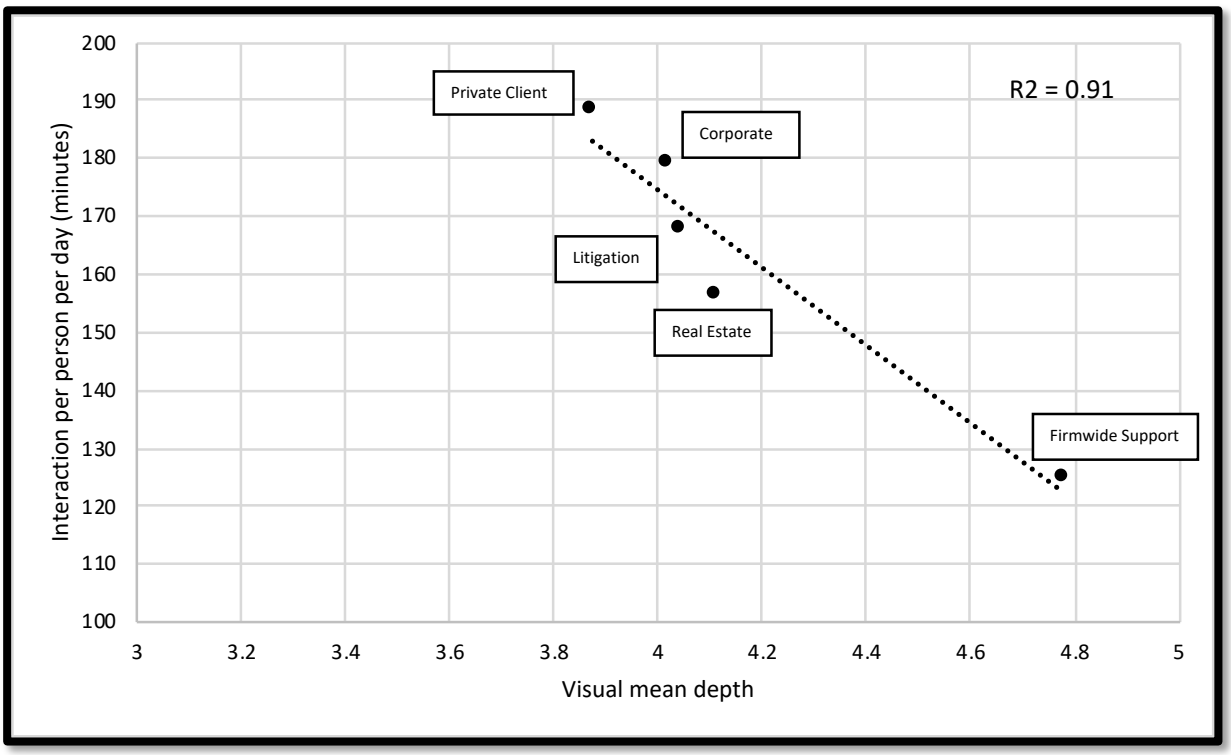


Source: Extrapolated from the database of 453 interactions observed in 'Law'

The highly integrated spatial arrangements of the open plan office can be contrasted with the segregation of the spaces used for meeting with clients. There were nine self-contained client meeting rooms situated along a corridor that ran either side of reception at the building's main entrance. Each room had a door and blinds that ensured complete privacy for the occupants when needed. The degree of segregation of these rooms is reflected in the visual mean depth which is significantly higher than locations in the open plan office. One consequence of the degree of segregation of the client meeting rooms was that all the interactions that took place within them were planned. In addition, the client meeting rooms could not be more segregated from the workspaces occupied by the lawyers. The workspaces were located at the deepest point in the office from the entrance in contrast to the client meeting rooms that were located at the shallowest point. This creates a clear separation between inhabitants and visitors who were typically shown directly to the client meeting rooms where they remained. The chances of a lawyer bumping into a visitor to the building has virtually been eliminated by these spatial arrangements.

Measures of integration also explain why some departments interacted far more than others. Figure 4.12 shows the correlation between the unplanned interaction for an average person in each department with the average visual mean depth for each department. The R2 of 0.91 suggests that the integration values for the location of each department does explain how much each department interacts overall.

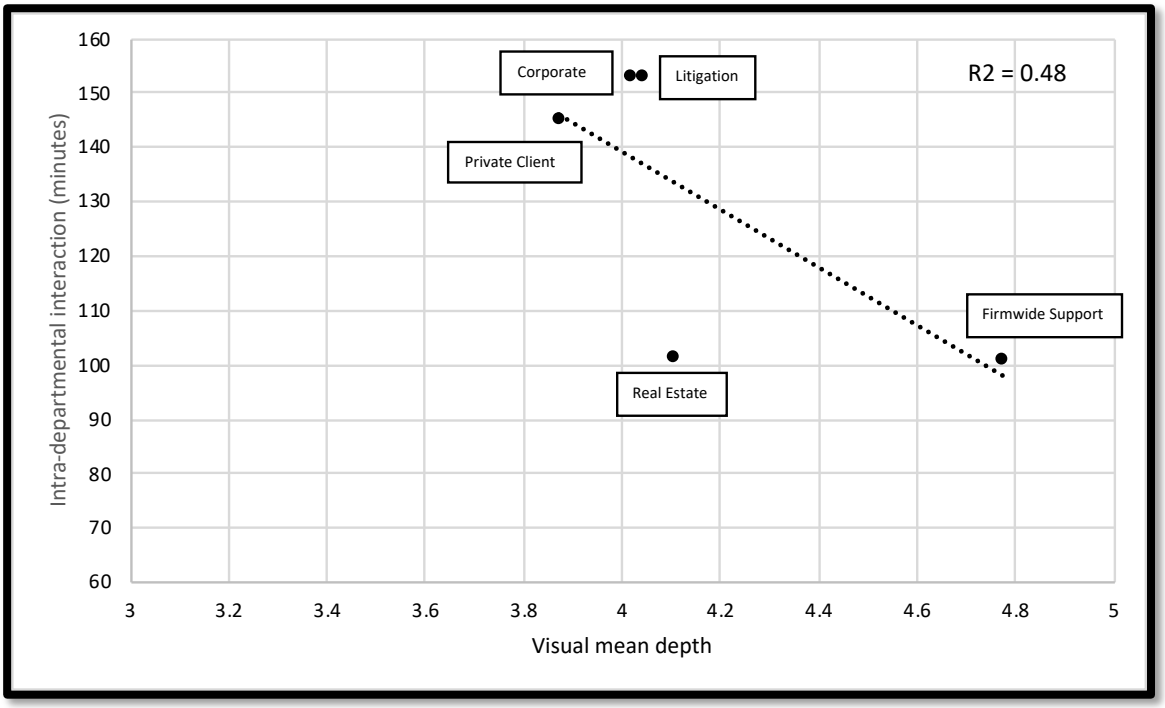
Figure 4.12: Correlation between unplanned interaction per person and integration value by department

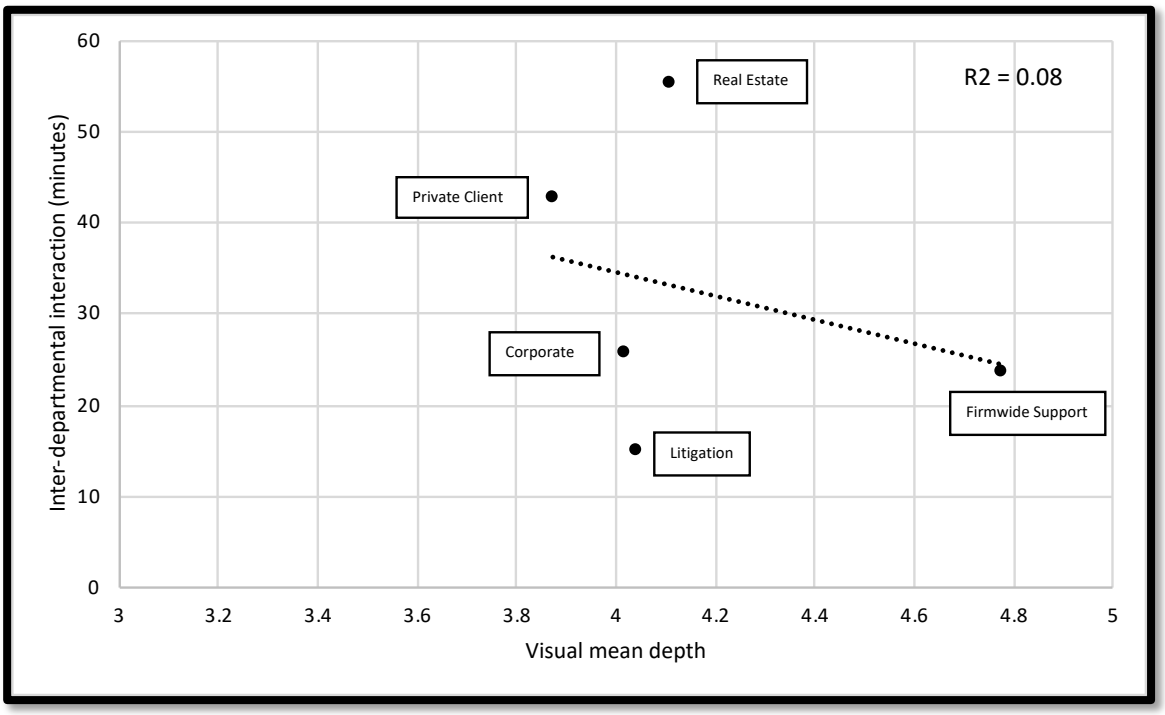


Source: Extrapolated from the database of 453 interactions observed in 'Law'

However, the measure for integration could not explain the differences within each department between intra and inter-departmental interaction. Figures 4.13 and 4.14 show the correlation between intra and inter-departmental interaction and average visual mean depth. The R2's of 0.48 (intra) and 0.08 (inter) suggest that integration values do not explain the way that overall interaction breaks down within and between departments.

Figure 4.13 and 4.14: Correlation between intra and inter-departmental interaction and integration by department





Source: Extrapolated from the database of 453 interactions observed in 'Law'

In summary, the integration and segregation of the spatial system in 'Law' provides a good explanation for the variations in unplanned interaction found by space and by department. However, this relationship breaks down in two specific cases of unplanned interaction:

between intra and inter-departmental interaction and between inhabitant and visitor interaction. It is important to understand these variations because variations in intra and inter-departmental interaction suggests differences in the propensity for emergence by department and the absence of unplanned interaction with visitors will impact the propensity for emergence for the firm as a whole. Further explanations are sought for these variations in section 4.1.2.3 below, however first, the impact of space allocation is considered.

4.1.2.2 Allocation of space

In this section the findings show that the allocation of space within 'Law' constrains the duration of unplanned interactions.

Although 75% of all unplanned interactions took place at or around the desk clusters in the open plan offices, they were short in duration. On average, these interactions lasted a little over three minutes. Given the open plan nature of the offices the short duration of these interactions can be explained by a consideration for colleagues and the desire not to disturb them. This was enshrined in an 'Open Plan Etiquette' for the firm that stated: *"We would ask that due consideration is given to other people in the open plan area. Inevitably, discussions will take place and we would ask that you consider whether you are disturbing anyone in close proximity. If you think you will do consider moving to a different location, for example the breakout area."*

Four options were available to continue unplanned discussions away from the desks: 1) the breakout area that adjoined the open plan office and had tea making facilities and four circular tables each with four chairs; 2) the Atrium, a large area with flexible seating and a canteen open at lunch times, situated on the ground floor of the building; 3) a training room and 4) a glass room, both of which needed to be booked to be used but on occasion were used for unplanned meetings when they were empty. On average, unplanned interactions in these spaces lasted 5 minutes in the training room, 13 minutes in the breakout area, 17 minutes in the glass room, and 25 minutes in the Atrium.

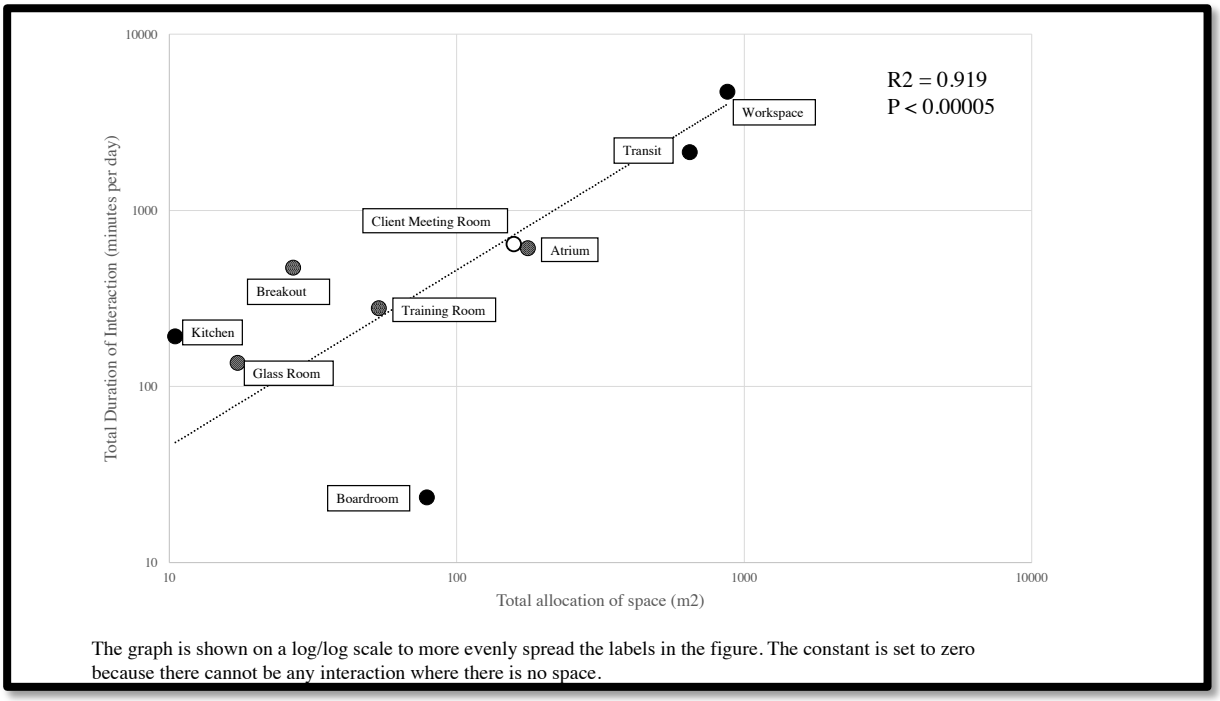
Of these spaces, it is noticeable that three, the breakout area, the glass room and the training room, lie below the line of best fit on figure 4.9. This shows that less interaction occurred in these spaces than their values for integration would predict. In the case of the training room

and glass room the booking procedure acted as a constraint, in particular to unplanned interactions that represented less than 10% of the activity in both, shown in figure 4.11. The position of the breakout area is harder to explain, particularly as it is specifically mentioned in the open plan etiquette for the firm. There appeared to be some other constraint on interaction in the breakout area.

This can be explained by the amount of space allocated. Figure 4.15 shows that there is a strong correlation (R2 = 0.919) between the total amount of interaction and the amount of space allocated. The breakout area sits significantly above the line of best fit in figure 4.15. This means that more interaction was observed in the breakout space in proportion to the space allocated, suggesting that breakout space was in short supply thereby constraining the latent demand for interaction that might potentially take place there. In an interview with one of the senior partners in 'Law', it was confirmed that it was their habit to use the client meeting rooms rather than the breakout area for meetings with colleagues because the availability of the breakout room could not be guaranteed when it was needed. The constraints of space allocation and the need to book appear to have contributed to the reduced amount of longer duration unplanned interaction that was possible within 'Law'.

The reason there is the strong relationship between frequency and duration appears to be one of legitimacy. It is known that spaces project claims of legitimacy (de Vaujany and Vaast, 2013) and the open plan etiquette document clearly describes a lack of legitimacy for longer duration interactions at the desk clusters. Longer discussions gain greater legitimacy in other spaces that are physically removed from the desks such as the breakout area. The breakout area cannot be booked, but when space allows, can be used impromptu to extend the length of discussions started elsewhere. However, the legitimacy of longer interactions in the breakout area also had its limits. It was not considered appropriate to spend several hours in this area, it was considered more of a quick stop off point. For even longer duration interactions it was expected that you would book a room such as the glass room. As a result, the legitimacy claims projected by spaces appears to help explain the relationship between the frequency and duration of interaction by space shown in figure 4.5.

Figure 4.15: Correlation between the allocation of space and the total duration of interaction in each space



Source: Extrapolated from the database of 453 interactions observed in 'Law'

In summary, insufficient space allocated to flexible spaces away from workstations has restricted the duration of unplanned encounters.

In combination, spatial integration and space allocation help explain the frequency of interaction across spaces and departments and why the duration of some interactions is constrained. However, they are insufficient to explain the variation in intra and inter-departmental interaction or to explain the very low levels of interaction between inhabitants and visitors.

In the following section, the impact of the socio-spatial concept of correspondence on the interaction profile is considered.

4.1.2.3 Correspondence and non-correspondence

In this section the findings show that socio-spatial correspondence explains the variation in intra and inter-departmental interaction and the very low levels of interaction between inhabitants and visitors

Correspondence is the degree of overlap between social (or transpatial) structures and spatial structures. Correspondence represents a high degree of overlap and non-correspondence low overlap. The concept is important because non-correspondence encourages emergence and correspondence constrains emergence.

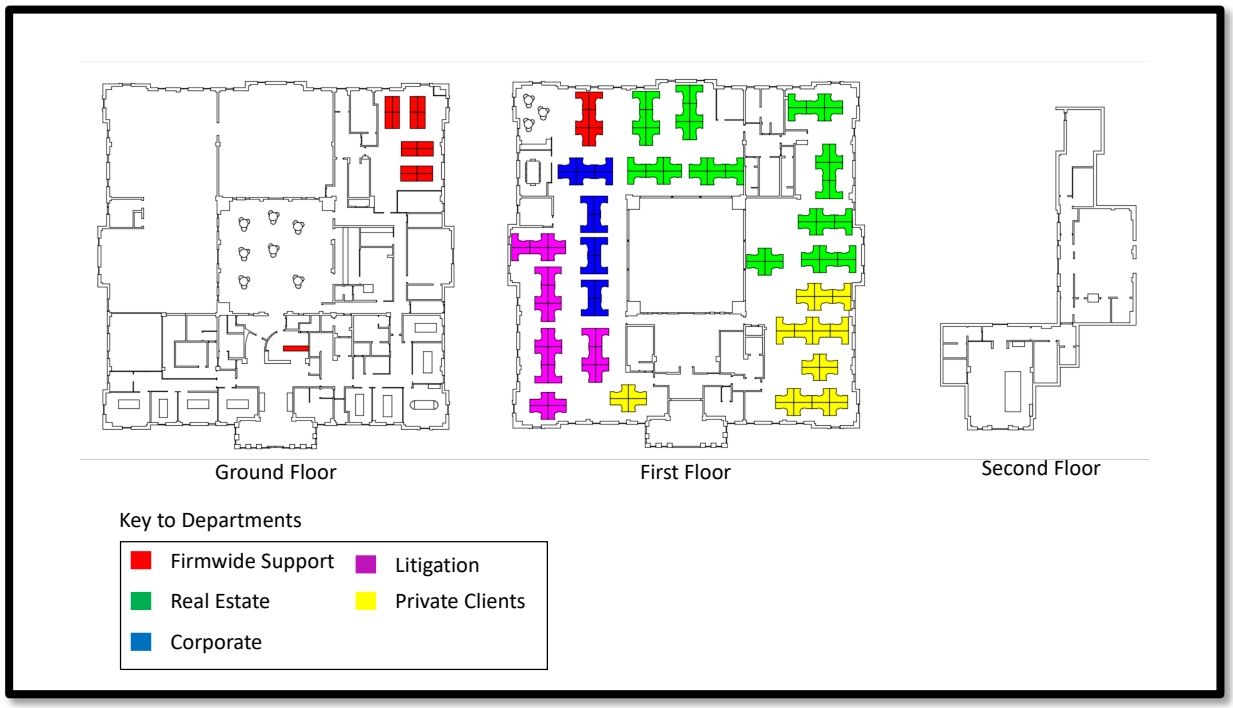
Two transpatial relations, that is the relationships that do not depend on spatial location, are investigated. The first concerns inhabitants only and considers someone transpatially close if they are a member of the same department and transpatially separated if a member of a different department. Interaction with someone with whom you are transpatially close is considered intra-departmental and interaction with someone with who you are transpatially separated is inter-departmental. The second concerns inhabitants and visitors. An inhabitant (that is an employee of 'Law') is considered transpatially close to all other inhabitants and transpatially separated from all visitors.

The importance of these transpatial categories were reinforced by the transpatial mixing mechanisms (the way transpatially related groups organise in order to interact) in evidence within 'Law'. By far the most common transpatial mixing mechanisms observed were organised within departments. For example, each department met monthly to discuss management accounts when they were released. In-service training, which occurred in some form two or three times a month, would typically be done within departments because the training needs across departments were just too different. Transpatial mechanisms spanning departments that might have created opportunities for unplanned inter-departmental interaction were far fewer. Just three examples were observed in the nine months of field study. The first was an ad hoc meeting called by the Managing Partner, held in the boardroom where a large group of lawyers from across departments were invited to discuss client management skills and standards. The second, an 'open morning' invited clients to 'Law's' premises to learn about latest legislation affecting their businesses. Held in the Atrium, twenty clients from a cross-section of legal departments attended with the partners responsible for their account. 'Law' aimed to hold two of these each year. The third was a partner's conference, held for the first time during the research period and designed to share best practice and celebrate successes of the year. The plan was to hold this conference annually thereafter. The other common transpatial mixing mechanism was the client meeting. Across the firm eight of these occurred on average every day.

Correspondence was calculated for each of these two transpatial categories. These are considered in turn, starting with departmental affiliations.

Spatially, 'Law' had chosen to co-locate the specialist legal departments, this can be seen graphically in figure 4.16 where each department is colour coded. The departments varied in number of employees from eighteen in the Corporate department to forty-eight in Real Estate. The average size of a department was thirty people and all department sizes are shown in table 3.2. Each department spanned several desk clusters, but these were also located as near to each other as possible within the office.

Figure 4.16: Socio-spatial arrangements by department in 'Law'



Source: Output from depthmapX software

The degree of departmental correspondence within 'Law' can be calculated using the two measures described in section 3.5.1.2. Table 4.1 shows the data collected to calculate departmental correspondence at the level of the firm labelled Q(intra/inter)'Law'. The definitions for each data point are summarised in table 3.3.

For illustration, the data shown in table 4.1 shows that on average each department contained 30 people meaning that on average each person had 121 colleagues in other

departments. On average each person was co-located with 25 out of the 30 members of their own department on a typical day. On average each person was not co-located with 5 out of the 30 members of their own department on a typical day. On average each person was co-located with 33 members of different departments each day and not co-located with 88 members of different departments. The total number of people in the study was 151. In total each person was co-located with 58 other people during a typical day and not co-located with 93.

Table 4.1: Yule's Q data for intra/inter correspondence in 'Law' using social and spatial data

Q(intra/inter)'Law'	**Spatially Close**	**Spatially Separated**	**Totals**
Transpatially Close	a = 25	b = 5	a + b = 30
Transpatially Separated	c = 33	d = 88	c + d = 121
Totals	a + c = 58	b + d = 93	a + b + c + d = 151

Using these figures in the formula for Yule's Q departmental correspondence of 'Law' at the firm level is calculated as;

$$Q_{(intra/inter)}\text{'Law'} = (a \times d - b \times c)/(a \times d + b \times c) = (2{,}200 - 165)/(2{,}200 + 165) = \mathbf{0.86}$$

Q is a ratio where 0 represents total non-correspondence and 1 or -1 represents total positive or negative correspondence. This calculation suggests that there was a reasonably high level of correspondence between spatial and transpatial categories within 'Law'. This is visually apparent in figure 4.16. In other words, lawyers are generally organised spatially in the same way that they are organised on the organisation chart.

We know that people interact more frequently with those with whom they are closest spatially so the high level of internal correspondence explains why unplanned interaction is

weighted towards intra-department in 'Law' at the firm level (see figure 4.6). The impact of correspondence on interaction at the level of the firm is therefore significant as it meant that the people within each department interact far more with each other than with members of other departments.

It is also possible to calculate departmental correspondence for each department and each individual as well as the aggregate for the firm as a whole. This provides measures of correspondence for departmental affiliation at three levels: firm, department and individual. For example, the correspondence for the Litigation department might not be the same as that for the Real Estate department because their socio-spatial arrangements, including their movement paths, are different. In addition, the correspondence of one individual within the Litigation department might not be the same as another for the same reason.

The data collected permitted departmental correspondence to be calculated for each of the five departments and for the two individuals, Paula and James, that are the focus of observations of emergent strategy making. These are shown in table 4.2.

Correspondence scores for each of the departments are shown in table 4.2 and range from Yule's $Q_{(intra/inter)}$Litigation = 0.97 to Yule's $Q_{(intra/inter)}$Real Estate = 0.46 for Real Estate. This means that the socio-spatial system experienced by Litigation is highly correspondent but for Real Estate is slightly non-correspondent. This is because the movement paths for members of the Litigation department overlap little with the movement paths of people from other departments. Their desks were clustered on one side of the office close to the break out area where hot drinks could be made. Their most frequent movement paths were from the rear staff entrance to their desks and to and from the break out area. These paths kept them in one corner of the office with little reason to move elsewhere. By contrast, the movement paths for members of the Real Estate department overlap with other departments significantly more. Their department spanned both sides of the office, encouraging them to move through the whole of the open plan office on the first floor. In addition, their desks were clustered around the staff entrance to the first floor which meant that members of all the other legal departments passed Real Estate to reach their own desks.

The socio-spatial arrangements of each of the departments is reflected in the ratio of intra to inter-departmental interaction experienced by each. Members of the Litigation department were found to interact with each other ten times more often than with other departments. Members of the Real Estate department interacted with each other just 1.8 times more often than with members of other departments. The ratios for all departments are also shown in table 4.2.

Table 4.2: Yule's Q data for intra/inter interaction for each department

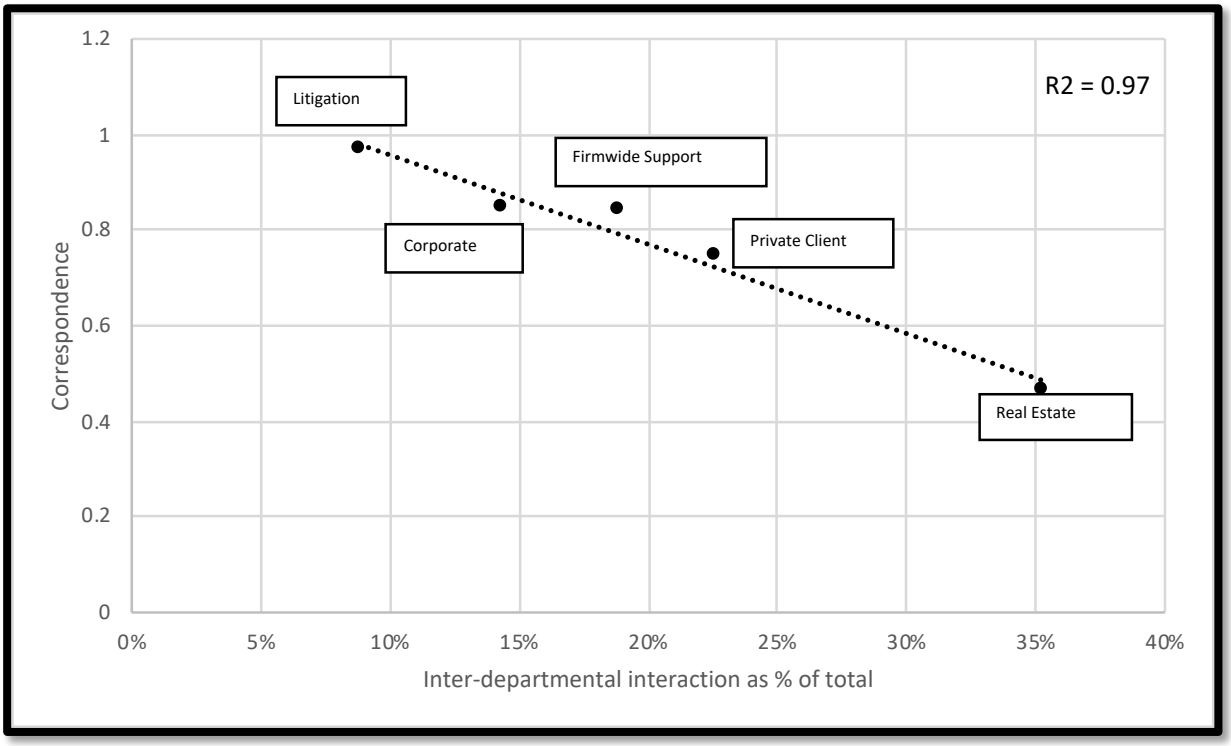
Level	**Yule's Q for each Department**	**Correspondence Score**	**Ratio of intra to inter-departmental interaction**
Department	Yule's $Q_{(intra/inter)}$Corporate	0.84	5.96 to 1
	Yule's $Q_{(intra/inter)}$RealEstate	0.46	1.83 to 1
	Yule's $Q_{(intra/inter)}$Litigation	0.97	10.3 to 1
	Yule's $Q_{(intra/inter)}$Private Client	0.74	3.40 to 1
	Yule's $Q_{(intra/inter)}$FWSupport	0.84	4.27 to 1
Individual	Yule's $Q_{(intra/inter)}$James	0.71	3.48 to 1
	Yule's $Q_{(intra/inter)}$Paula	0.28	1.92 to 1

It is clear from table 4.2 that as the correspondence score tends towards 0, so does the ratio of intra to inter-departmental interaction. This is what we would expect from Space Syntax theory because the more correspondent a socio-spatial system (Yule's Q of 1 or -1) the

stronger the boundaries between groups, and as socio-spatial systems tend towards non-correspondence (Yule's Q of 0), so the boundaries grow weaker.

This suggests that the correspondence scores for each of the departments might help explain the variation in inter-departmental interaction found in 'Law'. Figure 4.17 shows that this is the case with a strong correlation between these two variables with an R2 of 0.97

Figure 4.17: Correlation between inter-departmental interaction and correspondence



The difference between the correspondence scores for Litigation and Real Estate is significant because it shows a non-correspondent system in Real Estate ($Q_{(Real\ Estate)}$ = 0.46) nested inside an organisation with a socio-spatial structure that is strongly correspondent overall (Yule's $Q_{(department)}$ = 0.86). This explains why the experience of interaction within the firm varies considerably and suggests that the propensity for emergent strategy of each department might also be different.

At the individual level, both Paula (0.28) and James (0.71) had correspondence scores less than their departments as a whole. For both, this meant that the ratio of intra to inter-departmental interaction was lower for them as individuals than it was for their departments

on average. Or, in other words, they were more likely to interact with members of other departments than an average member of their department. However, the difference in correspondence scores between Paula and James is significant. At 0.71, James, at an individual level, was in a socio-spatial system in correspondence, making it much more likely that he will interact intra-departmentally than inter-departmentally. This was confirmed by his observed interactions which showed a ratio of 3.48 intra-departmental interactions to every 1 inter-departmental interaction. By contrast, Paula, at an individual level was in a socio-spatial system in non-correspondence, making intra and inter-departmental interactions more evenly spread. This was also confirmed by observed interaction data which showed a ratio of 1.92 intra-departmental interactions to every 1 inter-departmental interaction.

Like the differences in correspondence at the department level, the difference in correspondence between James and Paula show that it is possible for individuals to experience the socio-spatial system in which they work quite differently.

The second transpatial relationship for which correspondence can be calculated concerns inhabitants and visitors, where all inhabitants are considered transpatially close to each other and transpatially separated from all visitors. This transpatial category is important because we found that the observed interaction between inhabitants and visitors was lower than could be explained by spatial integration of the areas of the office used by visitors.

Table 4.3 shows the data collected to calculate inhabitant/visitor correspondence labelled $Q_{(inhabitant/visitor)}$. The definitions for each data point were summarised in table 3.4.

Table 4.3: Yule's Q data for inhabitant/visitor correspondence in 'Law' using social and spatial data

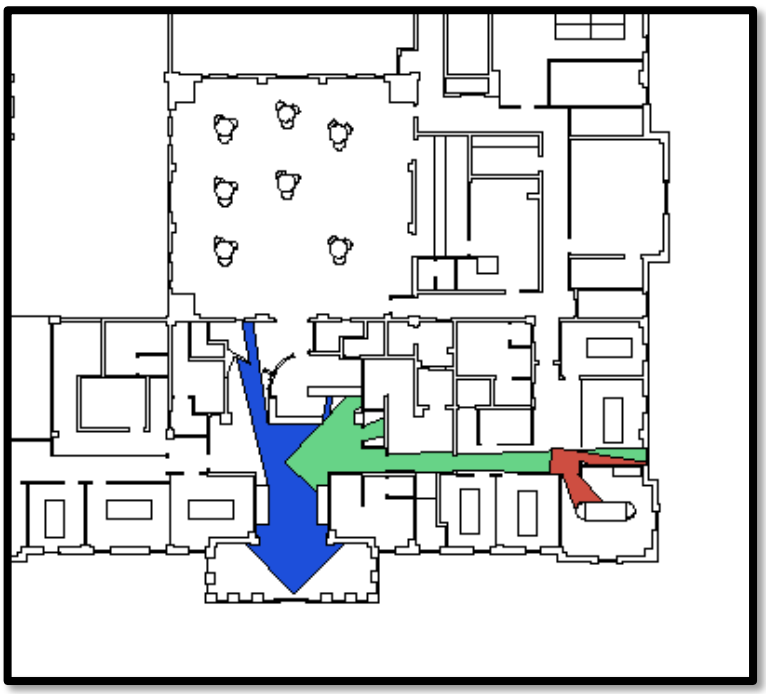
Q(inhabitant/visitor)'Law'	**Spatial Closeness**	**Spatial Separation**	**Totals**
Transpatial Closeness	**a = 58**	**b = 93**	**a + b = 151**
Transpatial Separation	**c = 0.25**	**d = 17.75**	**a + b = 18**
Totals	**a + c = 60.25**	**b + d = 108.75**	**a + b + c + d = 169**

For illustration, this means that on average 18 people visited 'Law' each day. On average each person would be spatially close with a visitor once every 4 days (c=0.25). Also, on average each employee of the firm was spatially close with 58 of their colleagues on a typical day (a=58). This can be reconciled with a + c in table 4.1. Using these figures, the inhabitant/visitor correspondence for 'Law' is calculated as;

$$\mathbf{Q_{(inhabitant/visitor)}} = (a \times d - b \times c)/(a \times d + b \times c) = (1{,}029 - 23)/(1{,}029 + 23) = \mathbf{0.96}$$

This calculation suggests that there was a very high level of correspondence between spatial and transpatial categories in 'Law' when considering the relationships between inhabitants and visitors. This means that the movement paths of inhabitants and visitors rarely overlap. This is illustrated in figure 4.18 which shows the typical movement path for a visitor to 'Law'. A visitor typically enters through the entrance at the front of the building (blue path on figure 4.18), whereas inhabitants enter through a separate entrance at the rear. The visitors will wait in the reception area until the lawyer they plan to meet escorts them a short distance to a client meeting room (represented by the green and red paths on figure 4.18). Once in the client meeting room, doors are typically kept closed excluding any opportunity for unplanned interaction.

Figure 4.18: Typical movement path for a visitor to 'Law' from entrance to client meeting room



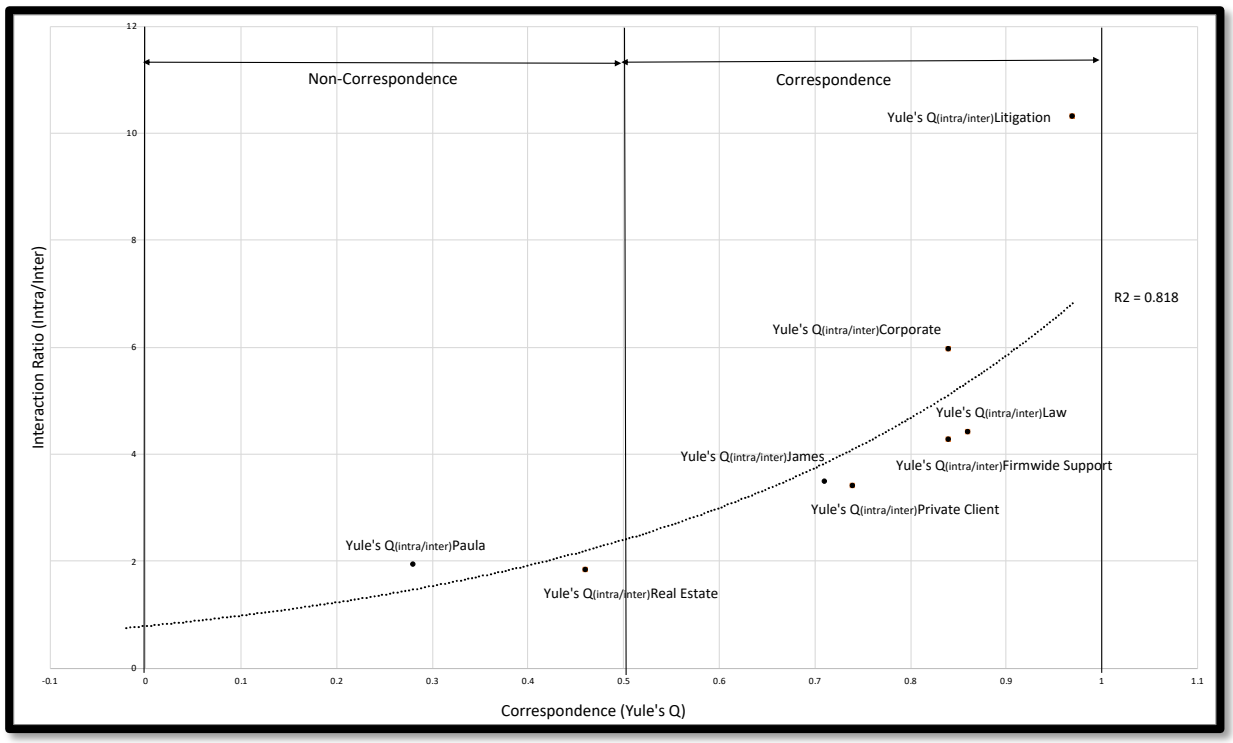
Source: Output from depthmapX software

The impact of this correspondence on interaction is that strong boundaries between the two social categories are conserved; unplanned interaction occurs between lawyers but rarely with visitors.

The absence of overlap between visitors' paths and inhabitants' paths reflected by the correspondence score of 0.96 is confirmed by the unplanned interactions between inhabitants and visitors observed where on aggregate just over four of such interactions were observed each day.

Overall, correspondence appears to provide a good explanation of the variations in interaction within (intra) and across (inter) transpatial groups. This was true at the firm level, at the department level and for the two transpatial groupings studied. To understand the relationship between correspondence and intra/inter group interaction it is possible to combine the results reported above onto a single chart.

Figure 4.19: Relationship between correspondence and the ratio between intra and inter-departmental interaction



The chart shows an exponential relationship where, as correspondence increases so does the ratio between intra and inter-departmental interaction observed. This curve supports Space Syntax theory because it shows that at high levels of correspondence (tending towards 1) intra-departmental interaction far outweighs inter-departmental interaction. In other words, the boundaries between the transpatial groups measured are strong and interaction between groups is discouraged. At low levels of correspondence (tending towards 0) intra-departmental and inter-departmental interaction are much more evenly distributed. In these cases, boundaries between groups are weaker such that it is almost as likely to interact with members of other departments as members of one's own.

There are limitations to the data shown in figure 4.19 that need to be noted. First, the data shown only includes results for departmental transpatial relations and excludes the calculation for inhabitant/visitor transpatial relations. In this case, Yule's Q was calculated as 0.96 and the ratio of intra/inter group interaction was in excess of 100. Although this supports the general relationship because it shows a very high ratio of intra/inter group interaction as correspondence approaches 1, only one data point could be calculated from the data

gathered. It is therefore not possible to say whether a different transpatial relationship would follow the same curve as the one shown for departmental affiliations. In addition, the nature of the socio-spatial system in 'Law' was such that there were just two correspondence scores below 0.5, that would be considered non-correspondent (just), there are too few data points in the non-correspondence range to verify the relationship at these lower scores.

Nevertheless, the data collected does support the theory for correspondence put forward by Space Syntax and does appear to explain the variations in interaction found in 'Law' that could not be explained by spatial integration alone. In addition, it is an important finding that a non-correspondence system was found nested within a socio-spatial system that is overall quite strongly correspondent.

In summary, in the previous two sections we found that spatial integration and space allocation helped explain the frequency of interaction across spaces and departments in 'Law'. However, it was also found that they were insufficient to explain the variation in intra and inter-departmental interaction or to explain the very low levels of interaction between inhabitants and visitors. In this section it has been found that socio-spatial correspondence provides a good explanation for both of these variations in the observed interactions found in 'Law'.

4.1.3 Summary of the findings into relationship 1 within 'Law'

The first relationship investigated in the research design was the relationship between physical space and social interaction. The aim was to establish a credible antecedent to the interactions that constitute social networks, specifically to investigate whether configurations of physical space might explain which interactions exist and which do not. The focus of the investigation was the firm 'Law'. The findings have shown that a strong relationship exists based on three conditions of the socio-spatial system found in the organisation. The three conditions found to be most significant are: 1) Spatial Integration, where highly integrated spaces encourage a greater frequency of unplanned interaction; 2) Spatial Allocation, where insufficient space allocated to flexible spaces away from workstations restricts the duration of unplanned encounters, and 3) Correspondence, where a correspondence between spatial

and transpatial (social) categories explains the variations of intra and inter-group interaction at multiple levels and for multiple transpatial affiliations.

The combination of the three spatial conditions in 'Law' explain why unplanned interaction was encouraged but were weighted towards intra-departmental, why the duration of unplanned interaction was restricted, why unplanned interaction between inhabitants and visitors was low, and why some departments interacted with other departments more than others.

The nesting of socio-spatial systems with different characteristics within an overall system leading to an uneven distribution of unplanned interaction across 'Law' matters a great deal because it potentially affects the characteristics of strategy emergence at departmental and the firm level. The narrowness of the interaction profile and the constraints on the duration of interaction means that the propensity for strategy emergence is likely to be low in 'Law' overall. However, the unevenness of interaction between departments across 'Law' and the nesting of the non-correspondence system found for Real Estate suggests pockets of emergence might be possible.

In conclusion, the configuration of physical space, in combination with the social system evident in 'Law', in other words, the socio-spatial arrangements of 'Law', have been shown to provide a good explanation for the interactions that constitute an organisation's profile of social interaction.

The following section investigates the relationship between the profile of social interaction and emergent strategy in 'Law'.

4.2 Investigation of relationship 2 between an organisation's profile of social interaction and emergent strategy

Having described the profile of interaction within 'Law' this section uses qualitative data to examine the impact this has on the emergence of new strategies. The section is presented in three parts, the first (section 4.2.1) establishes two strategic matters of concern that become the focus of investigation into emergent strategy. The thesis applies two tests, one micro the other meso level, in order to assign the label 'strategic' to these matters of concern and both

are described in this section. The section also reflects on how well the methods used overcome the problem of retrospective attribution (or how something that is inherently unintended can be observed). The second section (4.2.2) reports in more detail on the interaction profiles for Paula and James[8], partners with some involvement in each of the emergent strategic matters of concern identified and compares these with the averages for 'Law' reported above.

The third section (4.2.3) describes in detail how the interactions of Paula and James impact on the possible emergence of the strategic matters of concern with which they are associated.

The section finds that Paula appeared to be making better progress on the strategic matter of concern with which she was most closely associated when compared with the progress being made by James. Two factors appeared to affect this progress, the different interaction profiles experienced by Paula and James and the different demands placed on interaction of each of the two strategic matters of concern.

4.2.1 Emergent matters of concern in 'Law'

During the period of observation, two emergent matters of concern, as defined by Cooren et. al. (2015) became evident. The methodological purpose of identifying these was to enable the observations to focus on specific interactions, no matter how fleeting, that had the possibility of contributing to the emergence of strategy. In this way it would be possible to describe specific interactions that held the possibility of emergence in action.

The strategic issues identified were *pricing* and the *introduction of new professional services* beyond legal advice alone. For each strategic issue, a partner was identified as a focus of the observations. Paula was observed in relation to pricing issues and James was observed in relation to the introduction of new services.

As the identification of these two issues as strategic forms the basis on which this thesis observes emergent strategy, the following three sections explain why each is considered

[8] Names changed to preserve anonymity

strategic in the specific context of the case study. The first two sections use two different definitions for strategy that explicitly incorporate emergent strategy: the first (4.2.1.1) uses the Cooren et. al. (2015) definition of strategic, the second section (4.2.1.2) uses the definition proposed by Mintzberg (1985). The third section describes the extent to which the interactions being observed can be considered strategic and describes the meso level data gathered on each issue.

4.2.1.1 What makes the specific matters of concern identified strategic?

Matters of concern are topics that occur in everyday communication that are strategic in nature. They are identified in conversations and not by asking practitioners what is strategic. As such, identifying matters of concern from dialogue is a methodology specifically designed to identify emergent strategic issues.

Matters of concern can be recognised in conversations as the topics which "*recurrently, routinely and persistently **animate** the participants*" (Cooren *et al.*, 2015, p. 368). Matters of concern can be identified because they repeatedly lead participants to do what they do (Cooren *et al.*, 2015). In addition, matters of concern "*bring with them their own weight or value to define or dictate what should or should not be strategically done*" (Cooren *et al.*, 2015, p. 368).

In total six strategic matters of concern were identified in 'Law' of which two were selected as a focus for this thesis. The two selected were pricing and the introduction of new lines of professional service to the firm, these are described in more detail below. The four others identified were: cross selling, the acquisition and integration of new partners from competitors, growth of the firm through acquisition and the importance of having and maintaining a supportive 'family' culture. Pricing and the introduction of new lines of professional service were selected on the basis that they were most broadly discussed at all levels of the firm and that it might be possible for the researcher to identify trends. For example, the issue of growth through acquisition tended to be restricted to the most senior partners in the firm and the issue of supportive culture was widely discussed at all levels but the researcher believed it might be difficult to identify trends in regards to this matter.

The first strategic matter of concern selected as a focus for this thesis was pricing. At every desk cluster observed pricing was mentioned in everyday conversations in some form. Often pricing was referred to explicitly, but it was also referred to more obliquely in many ways, for example, when talking about losing work to competitors or when departments reviewed the financial measures used to track their performance in the firm. Examples of actual conversations are reported in section 4.2.2.2 below. The nature of these discussion highlighted the fundamentally strategic nature of pricing because they made it clear that future profitability of the firm was at stake.

Typically, pricing of legal work was done by estimating the number of hours required to complete the work specified by the client and using the hourly rates for those involved to calculate the total price. Profitability for the firm depended on pricing and was determined by the number of billable hours charged to clients and the rate (price) that was charged for each hour. The profitability of the firm was reported through two key figures: utilisation and recovery. Utilisation measures the number of hours billed to clients versus what has been budgeted. Recovery measures the percentage of what is actually collected over what was billed to clients.

For these reasons, the researcher considered pricing a strategic matter of concern in accordance with the provided by Cooren et. al. (2015)

The focus of direct observations related to pricing was Paula, a partner leading a unit in the Real Estate department. The decision to focus on Paula was based on the practicality of observing Paula and her unit and not on the finding reported above that the Real Estate department had the least correspondent socio-spatial system in 'Law'. The calculations for correspondence were completed after the field work was completed.

The second matter of concern selected to be a focus for this thesis was that of introducing new lines of professional service to the firm's portfolio. Early in the field study, the researcher was introduced to a recently recruited partner, James, a non-lawyer with expertise in family firm finance. James had been recruited to introduce his expertise in finance to the existing client base. He explained that 'Law' had a strong core client base in family owned firms many of whom had a need for general advice (non-legal) on raising finance, mergers and

acquisitions. If successful, the firm would be able to charge for this advice and this would develop into a new, non-legal, service.

To develop this service James needed to understand more about clients of the firm and was observed to spend a significant amount of time introducing himself, and the services he could offer, to other partners. To do this James used relatively formal meetings, an example of which is described in detail in section 4.2.3.2 below, in which James asked for help in identifying companies from the existing client base that might benefit from the services he could offer. In turn, the partners were observed to return to their departments to discuss these requirements.

The emergent nature of the strategic task James was undertaking became clear during observations in the first six weeks of field study because although the broad terms of James' objectives were clear, the specifics were not. The firm had never done this before and neither had any of their second-tier competitors. His competitors were not other law firms but firms of accountants and specialist financial advisors. In this context, everything James might try would be new to 'Law'. Potential clients would not be familiar with 'Law' as a potential supplier of such services and James needed to find a way of informing them of this possibility, at the same time convincing them that the quality of the service would match the more traditional providers. His colleagues within the firm were equally unaware of the potential for offering this service to their clients, or of its possible implications to them. They needed to be convinced that the service would be delivered to a high standard so as not to risk existing client relationships. In addition, the extent to which his colleagues were trained to spot the signs that such services were needed varied a great deal.

The extent to which the topic became recurrently and routinely discussed did vary between departments but was sufficiently widespread for the researcher to consider the introduction of a new service line to meet the criteria for a strategic matter of concern. For example, when the topic was discussed it would often lead to action in the form of further discussions with James or making an appointment for James to meet a client. In addition, these discussions were outside of the ordinary day-to-day discussions that teams would have amongst themselves which gave the topic a certain weight.

The approach to identifying emergent strategy in action proposed by Cooren et. al. (2015) focuses on micro details of strategy making. It is a bottom up approach to identifying matters of concern in day-to-day conversation that may become strategic. Although both pricing and the introduction of new service lines met the criteria for matters of concern, a second meso level test, that these issues were strategic in nature was also applied. Using the definition for strategy proposed by Mintzberg (1985), this second test is described in the following section.

4.2.1.2 Meso patterns of emergent strategy for each matter of concern

The definition for strategy proposed by Mintzberg, "*a pattern in a stream of actions*" (Mintzberg and Waters, 1985). This section describes what was found in terms of patterns of action for pricing and the introduction of new service lines.

According to theory on the competitive advantage of organisations, price is central to the choice of a generic strategy for all firms (Porter, 1985). Pricing is considered a strategic issue at a meso level because it has a direct impact on the future growth and profitability of the firm. Growth is impacted by price because it affects a client's choice of, in this case, legal firm. A survey published during the field study reported price as the most important factor in choosing a legal services provider with 75% citing price as a factor in their decision (YouGov.co.uk, 2015). Profitability of 'Law' and of each of its units was reported in the management accounts prepared by the firm. A study of the management accounts over time had the potential for establishing meso trends or patterns of action relating to pricing. The focus of the research on pricing was the partner Paula and her unit. The management accounts provided the opportunity to understand the impact of pricing on Paula's unit and how her unit compared with others in the firm.

The growth and profitability of the firm was reported through two key figures: utilisation and recovery. Utilisation measured the number of hours billed to clients versus what had been budgeted. A budgeted utilisation of 90% represented the growth targeted by the firm. In the period of study, the firm as a whole, achieved a utilisation of 85%. Paula and her unit achieved utilisation of 89% in the same period.

Recovery measured the percentage of what was actually collected over what was billed to clients. One common reason recovery might drop is related to pricing. If the number of hours

required to complete work exceeded that estimated in the pricing calculations the client would often refuse to pay for the excess billed hours. The firm budgeted a recovery of 90%, was running at 87% and Paula's unit were achieving 95%.

In studying a time series of this data, it was also evident that Paula's unit's approach to pricing was hardening as the recovery figure[9] improved from a 94% to 96%[10] during the period of study. In comparison with the other seventeen specialist legal units in 'Law' the performance of Paula's unit was amongst the best across the firm both in absolute terms and in terms of the trend over the previous year.

There were also indications of the emergent nature of pricing with 'Law' as the process of pricing was both complex and uncertain. Each specialist unit had a great deal of autonomy in pricing, essential because they are the most sensitive to dynamic market trends and because they understand the complexities of their own specialist area of law. Evidence of the complex nature of pricing was found in the range of pricing mechanisms found in the firm studied.

To understand patterns of action at a meso level for the strategic issue of introducing new service lines, a more qualitative approach was taken. It was too early in the tenure of James in the firm for financial data to reveal any trends. James was interviewed at regular intervals throughout the nine months of field study to understand what progress was being made. He was asked by the researcher about the types of evidence he may have about the success or otherwise of the services he was offering. Such evidence included the number of leads with potential clients he had active, the number of requests to quote he had received, the number of times partners of 'Law' had approached him with potential leads, etc. From this evidence, the researcher gained a growing sense that the development of new services was progressing slowly. However, one incident crystallised this sense clearly.

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[9] Given the lag between pricing work and billing it to clients on completion, the improvement in recovery for Paula and her unit is an indication that the hardening in price observed in the unit's discussions was already underway before the start of the research period.

[10] Recovery figures are volatile month to month because billing does not always match work completed. A 12-month rolling average was used for these figures to smooth out the monthly fluctuations.

Four months into the field research, the researcher received a telephone call from James. He was concerned with the progress of his work and wanted a trusted and independent sounding board to talk through the problems. Three days later the researcher met with James for nearly three hours and listened to a story of a strategic initiative that was running into trouble.

When asked what had prompted him to call the researcher to ask for help, James responded that he sensed that the Managing Partner was getting impatient with progress. The Managing Partner expressed this impatience by increasingly encouraging James to "*get amongst it*". This James took as evidence that progress was slower than anticipated. James did not survive. Within a year of the completion of field research, James was no longer employed by 'Law'.

For James, the evidence that the issue of introducing new services to the firm was strategic in nature came in the absence of meso patterns of action where these patterns had been expected. The importance to the firm of the issue was emphasised by James' removal from the firm.

The result of the field work was that six weeks into the field study it was clear that both James and Paula were involved in activities that might contribute to emergent new strategies. Four months in, it became apparent that the outcomes for each appeared to be different. For Paula, there was evidence that her position on pricing was hardening and this was reflected in the improving financial performance of her unit. By contrast, for James, developing a new service was proving a real struggle and sales leads were not developing quickly enough.

4.2.1.3 Rationale for selecting pricing and the introduction of new service lines as the focus of observations of emergent strategy in action

On the basis of the analysis presented in the previous two sections, the issues of pricing and introducing new service lines were identified as strategic and emergent. They both met micro and meso tests for being strategic matters of concern. However, the strategic nature of the two matters of concern selected appeared somewhat different.

The nature of strategic change for pricing appeared to be one that required modest but continuous adaptations to changes in the external environment. Those involved might not recognise the decisions relating to pricing as strategic, rather it would be considered either

an operational issue or just part of the day-to day job. As was described in the literature review, this does not mean that the issue of pricing is not fundamentally strategic, just that the strategic decisions are made through the individuals "*internalised dispositions to act*" (Chia and Holt, 2006, p. 635). New patterns of action may arise from these decisions, but these patterns will appear gradually over time.

By contrast, the nature of strategic change for the introduction of new service lines to 'Law' appeared to be one where the change would be discontinuous. The firm would move from being one that offered legal services only to one that offered a broader palette of professional services. As has been argued above, the precise direction taken by the firm is one that would be determined by emergent processes, but the fundamental nature of the strategic change appeared to be quite different to that of pricing.

Although the apparent differences in the strategic nature of the matters of concern and the differences in outcome experienced by James and Paula were not the criteria used for their selection (see section 4.2.1.1 above) it was considered possible they both had the potential to reveal something interesting about the relationship between space and emergent strategy.

4.2.1.4 Reflection on the problem of retrospective attribution for emergent strategy

Having established the reasons for selecting the two emergent strategic issues for the focus of the study, this section reflects on the problem of retrospective attribution in relation to these two issues.

This thesis has argued (in sections 2.5.1 and 3.5.4.2) that the problem of retrospective attribution cannot be fully overcome in any real-time study of strategy making in practice and that this study has an equivalence to studies of deliberate strategy making common in SaP research.

The chances of the researcher observing emergent strategy making in practice are improved by the multi-level methods employed by this thesis for two reasons. First, the immersion of the researcher in the organisation studied combined with the use of the Cooren et. al. (2015) approach to identifying matters of concern identifies issues that have the potential of becoming strategic because of their prominence in every day conversation. Second, the

Mintzberg approach of examining meso level patterns, through the use of historic data and of views based on past performance, identifies issues that have been strategic in the past. Both tests improve the chances that the issues identified will become strategic but the discontinuity in time frames between the two tests means that this is not guaranteed.

What can be said of the observations is that the social interactions studied that relate to each of the matters of concern identified have the *potential* to become strategic and, as such, should be a fair reflection of the types of interaction that make emergent strategy possible, regardless of the eventual outcome.

With this qualification about what is being observed, the following section (4.2.2) describes the relationship between interaction and emergent strategy making for Paula. This is followed by a description of the relationship between interaction and emergent strategy for James in section 4.2.3.

4.2.2 Paula's interaction profile and its relationship with the emergent strategic issue of pricing

This section investigates the relationship (2) between the profile of interaction and emergent strategy for Paula. In section 4.2.2.1 Paula's profile of interaction is compared with the average for the firm. Section 4.2.2.2 describes specific unplanned interactions in which Paula discussed pricing related issues with colleagues. Section 4.2.2.3 describes the relationship between Paula's typical interaction profile and her emergent strategy making in action.

4.2.2.1 Interaction profile for Paula in comparison with the average for the firm

Paula was a long-standing partner of the firm who now headed a specialist unit of lawyers in the Real Estate department. She shared a desk cluster with two members of her own unit and regularly left her own desk to consult with other members of her department located on both sides of the office. Paula had decided, with the members of her own unit, that they would remove the screens that divided the desks in their cluster in order to make communication between them that little bit easier. This arrangement is shown in figure 4.20.

Observations showed that, on average, Paula interacted forty-five times a day for an average of four minutes per interaction. This meant that Paula was interacting for three hours every

day, slightly above the average for the firm. Thirty-one of these interactions were with members of her own department, Real Estate, and fifteen with other departments.

The screens were designed to provide some privacy and some protection from noise and other distractions. The downside of the screens was that it made seeing colleagues slightly more difficult. An impromptu conversation often started with a quick glance to know whether the other person could be disturbed. Paula and her unit had decided that the benefits of easier, impromptu discussions outweighed any possible downside of a greater number of distractions. They were one of only two desk clusters across the firm that had decided to remove the screens. Other than the removal of the desk dividing screens, Paula and her immediate unit were typical of most other desk clusters in the firm as most desk clusters were populated by a legal partner and more junior members of the same specialist legal unit.

Overall, this meant that Paula's intra-departmental interaction was above the average for the firm, whereas her inter-departmental interaction far exceeded the average.

Figure 4.20: Paula and her unit at desk cluster with no screens

Source: Photograph taken by researcher on site in 'Law'

Paula's planned interaction with visitors exceeded the average with the firm. She was observed to interact with visitors in formal meetings on average five times per week, whilst

the average for the firm was twice. As a partner in 'Law', Paula had a responsibility to develop and cultivate relationships with clients. The average figure for planned interaction for the firm includes all staff including the most junior paralegals and administrative staff who would not be expected to interact with clients as often as partners. Paula's planned interaction with visitors was in line with other partners of the firm.

In the period of field work, Paula was not observed to have any unplanned interactions with visitors to the firm, however, given the constraints on the researcher of observing across the firm and the low number of unplanned interactions with visitors in the firm as a whole, this does not mean that Paula did not have any unplanned interaction with visitors but does suggest that these were not a significant deviation from the average.

4.2.2.2 Typical interactions for Paula relating to pricing

For Paula, more than two thirds of all social interactions were with her own department and most of these were informal, unplanned discussions. Many of these occurred at the desk clusters with members of her own unit, others involved members of her department on other desk clusters. These were spread across both sides of the office (see figure 4.16) and required Paula to leave her desk.

Many of the interactions with her own unit and within her department referred explicitly or implicitly to price. A typical example occurred when Paula returned to her desk following a meeting with a client. Paula occupied a cluster of four desks (figure 4.20) with two other members of her unit in the open plan office close to the breakout area on the first floor of 'Law' (figure 3.8). She interrupted her colleague, Chris, who was working at her computer screen to say;

Paula: "*That was client Z, do you remember we quoted him just under a year ago for that development near the racecourse? As I recall we lost out to competitor B, but he wants a price for some work on a new development. He has sent me the details, if I forward them to you, could you put some figures together for me please?"*

Chris: *"Is it a genuine enquiry do you think?"*

Paula: *"I think so, he says that he was not entirely happy with the service he got from competitor B, I think it's worth taking seriously."*

Chris: *"When do you need the numbers?"*

Paula: *"Let's turn it round quickly; show him what a real response time looks like."*

The interaction lasted less than a minute but was one that clearly addressed the issue of pricing. In this fleeting interaction three pricing related problems were highlighted with which they had to cope. The first was that they had quoted this client before, but they had lost the previous piece of work. In the interaction, it is not clear that they had necessarily lost the previous piece of work on price, indeed they may not have known, but that possibility was implied by the statement: "*as I recall we lost out to competitor B, but he wants a price for some work on a new development".* In this short recollection Paula suggested by implication that Chris dig out the details of the previous quotation in order that they can remind themselves how it was priced. However, the client's previous decision to use an alternative firm may not have been just about price, since level of service seemed important to him: "*he says that he was not entirely happy with the service he got from competitor B"*. The suggestion is that the client will judge a proposal on at least two criteria, price and quality of service.

There is one further problem that this unit needs to deal with, specifically, are they being used by client Z simply to make sure their preferred supplier of legal services, competitor B, is not charging them too much? Chris suggests this in the question; "*Is it a genuine enquiry do you think?"*.

In the afternoon following the brief discussion described above, Paula and Chris had another discussion about 'client Z'. They reviewed the pricing assumptions they had used on the previous quote that was lost to competitor B, they agreed that they had priced on the low side to try to break into an important new client. As this had not worked before and the potential client had returned with questions about the service levels of their main competitor, they agreed they would price this new work based on a full calculation of the number of billable hours required to complete it and that no discount would be applied.

For Paula, her discussions relating to pricing were not restricted to members of her own unit but were also pursued with other members of her department who sat at different desk clusters, and with members of other departments. The breadth of these interactions for Paula, in terms of who she interacted with, reinforced the finding that this was a strategic matter of concern. Paula was observed to seek the advice of her departmental colleagues on pricing on several occasions where she would leave her desk specifically to ask a question about pricing of one of them. However, Paula also took the opportunity to discuss some pricing related issues with colleagues from other departments when the occasion arose. In one such case, Paula was observed to have an exchange with a colleague from the Corporate department in the break out area whilst making a hot drink when she asked;

Paula: *"Do you have any framework agreements in place with any of your clients?"*

Colleague: *"We do, why do you ask?"*

Paula: *"We have a few but with one client in particular the work seems to be getting more complex and this affects our recovery"*

Colleague: *"Is it an exclusive agreement – could they be giving you the complex work and putting the rest with someone cheaper?"*

Paula: *"I think so, but now you mention it, I don't think that exclusivity is a requirement so I'm not sure"*

As with the previous interaction described, this was a short interaction that related clearly to the matter of pricing. It addressed a type of pricing that allowed multiple pieces of legal work to be submitted by a client under a single, typically annually negotiated, pricing agreement.

Both the conversations described above suggested an approach to pricing was hardening. They referred to the volumes of work they were winning and there was a clear suggestion that they did not need to discount to win work due to their growing reputation as a unit and a general sense that the market was buoyant.

Although both interactions reported above referenced pricing the nature of each interaction was somewhat different in terms of the degree to which it challenged the status quo. The

interaction between Paula and Chris, both members of the same department, called into question the pricing of a single piece of client work. This had the potential to change the way that they might price a future to job to that same client. By contrast, the interaction with a colleague from a different team, called into question the nature of the pricing mechanism used by Paula and her team.

In general, it was observed that the interactions Paula engaged in that were more diverse socially (i.e. beyond her own team) prompted questions that were more radical in nature.

4.2.2.3 Interaction and emergent strategy making for Paula

For Paula, interactions about pricing were common, the topic was either explicitly or implicitly raised amongst with colleagues many times each day.

Interactions with her own department appeared to be of particular importance to Paula because they could provide answers to immediate problems. These intra-departmental interactions tended to be quite specific, relating to specific problems with specific clients that her colleagues knew and could help with the technicalities and nuances involved. With members of other departments, the interactions tended to tackle more general principles of pricing from which Paula might learn and be able to adapt her own practice. As a result, both types of interaction, intra-departmental and inter-departmental, were important to her but contributed to her approach to pricing in different ways.

In their own right, each of these interactions appeared inconsequential to anything that might be considered strategic. However, over time the accumulation of ideas discussed in these interactions appeared to have the impact of changing the pricing policy for Paula and her unit. There was a noticeable hardening in attitude to pricing as the unit seemed less willing to discount their services. In this way, each one of these interactions had the potential to shift Paula's position on pricing, strategy was immanent in every interaction (Chia and MacKay, 2007) and through accumulation the seemingly inconsequential intra-team interactions had an impact on meso patterns of pricing activity.

The observations of Paula and her unit appeared to suggest that an accumulation of unplanned interactions was particularly important to the way pricing policy developed within 'Law'.

In the following section, these observations are compared with the emergent strategy making of James, as it related to the issue of introducing a new service lines.

4.2.3 James' interaction profile and its relationship with the emergent strategic issue of introducing a new service line to 'Law'

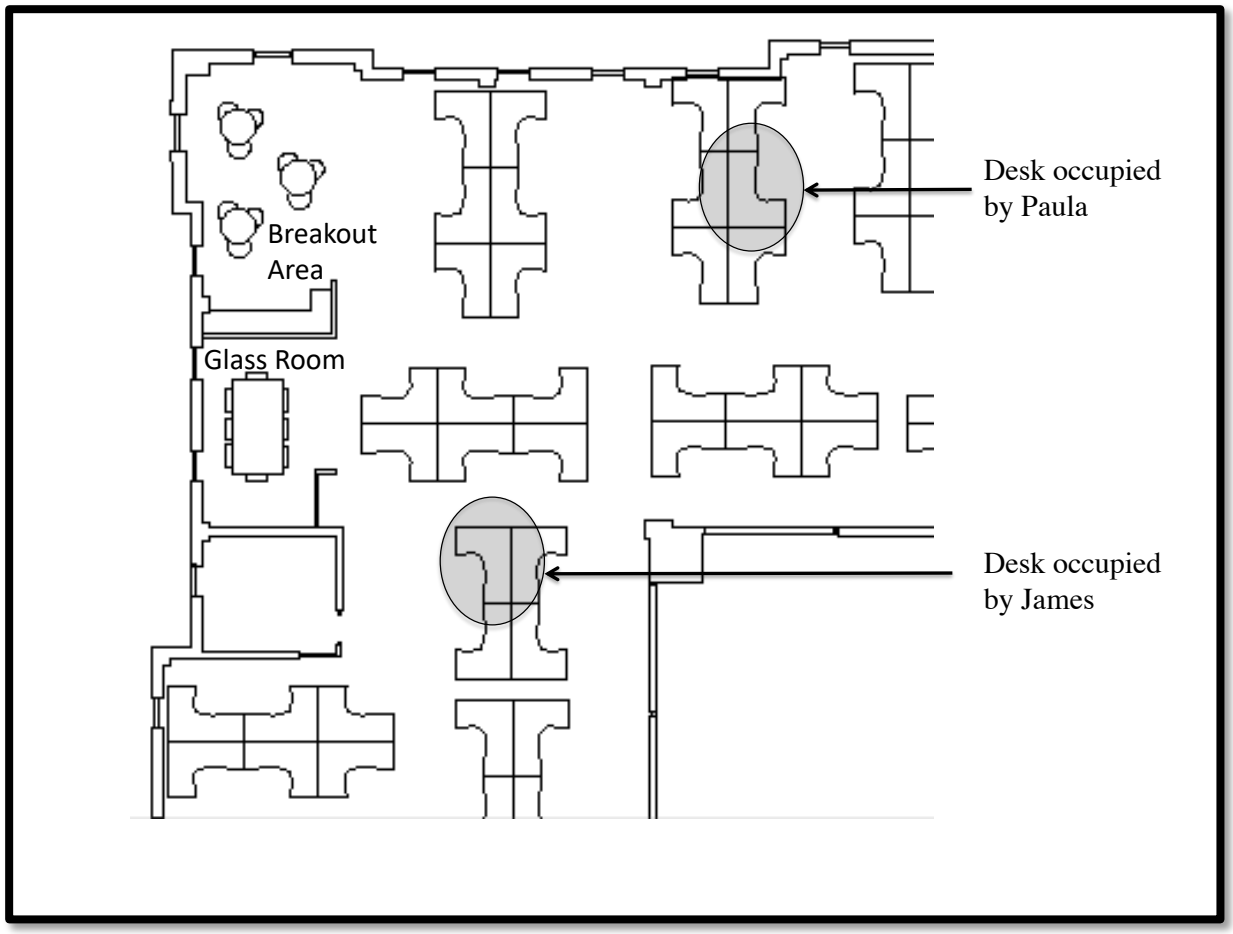
This section investigates the relationship (2) between profile of interaction and emergent strategy for James. In section 4.2.3.1 James' profile of interaction is compared with the average for the firm. Section 4.2.3.2 describes specific unplanned interactions in which James discussed issues relating to the introduction of a new service line to 'Law' with colleagues. Section 4.2.3.3 describes the relationship between James' typical interaction profile and his emergent strategy making in action.

4.2.3.1 Interaction profile for James in comparison with the average for the firm

In most respects, the profile of interaction for James was much like the average for the firm, with the exception of planned meetings with colleagues from different departments and a period of two weeks, in the middle of the observation period, when James moved desks to the opposite side of the office.

James was a partner in the Corporate department and shared a desk cluster in the main open plan office in close proximity to that occupied by Paula, shown in figure 4.21.

Figure 4.21: Office location of Paula and James



James was a relatively new employee in 'Law' and as such was relatively unknown to the other partners. He wanted to develop the new financial services he could offer through the existing client base so his relationships with other departments and other partners were important.

For most of the period of study, observations of James showed that his unplanned intra and inter-departmental interactions were similar to the average for the firm as a whole. He was involved with thirty-one unplanned intra-departmental interactions each day and eight inter-departmental interactions, a ratio of 3.48 to 1 compared with a firm average of 4.41 to 1. However, this changed dramatically for just two weeks in the middle of the study. Following one of his formal meetings with a partner from the Private Client department of the firm, James was invited to sit with that unit so that he might understand first-hand the nature of work they did for their clients and to discuss how their existing clients might be developed in a way that encouraged them to use the new services he offered. James took up a seat on a desk cluster of six desks with five members of the Private Client department. Although James

continued with his other activities, and still used his desk within the Corporate department on occasion, he spent the rest of his day at this desk cluster with the Private Client department. During this two week period, his unplanned inter-departmental interactions jumped to more than thirty per day (from eight per day) because he was sharing a desk with a department not considered his own. Correspondingly, his intra-departmental interaction dropped to twenty-four per day (from thirty-one). The ratio of intra to inter-departmental interaction had reversed to 1 intra-departmental interaction to every 1.34 inter-departmental interactions.

With respect to interactions with clients, James was without any clients he could call his own. As a consequence, he planned meetings with potential clients as often as he could and these averaged eight per week, well above the average for the firm. Like Paula, James' responsibility for bringing in clients appeared to drive up this planned activity relative to the average. However, his unplanned encounters with visitors to the firm was not observed to be any different to the average. In the entire study period just one such encounter, involving James, was observed first hand.

Having established the profiles of interaction for James, the following section describes typical interactions that related to the strategic issue of introducing a new service line to the firm.

4.2.3.2 Typical interactions for James relating to the introduction of new service lines

The emergent strategic issue for James was that of introducing new and unique professional services to 'Law's' portfolio beyond legal advice alone. For James to develop a new service line for the firm he needed to understand the needs of existing and potential clients and of senior colleagues within the business. Planned interactions with both partners of 'Law' and with clients would help him develop ideas about the services that clients would find attractive and could be delivered by the firm. These ideas would develop over time and be shaped by an accumulation of unplanned interactions with the same people.

When James started, he pursued a formal approach to developing potential clients. He would book meetings with partners of the firm, a minimum of three days in advance, and in these meetings, he would explain his objectives, the services he could offer and try to agree clients

that they could introduce him to. Once introductions had been made, James would visit those clients with the relevant partner and conduct a discovery style interview with the client to understand the likelihood of them requiring his services. He hoped that he would then be able to develop clients without taking up more of the partner's valuable time.

The formal meetings were run using agendas designed and run by James and the primary purpose of the meetings would be hard wired into the agenda he presented. Initially, the agenda was designed to communicate the new skills 'Law' had in James that could now be offered to their clients and to discover which clients might be in the market for such services. The formal nature of the meeting appeared to preclude any real debate about whether the services being presented were appropriate and the content of the agenda would easily fill the time allotted to each meeting, leaving little slack for such debates.

In these formal meetings, James had discovered a significant latent demand for the type of service he could deliver, however, he was getting far fewer introductions to potential clients from his colleagues than he had expected. James was presented with a number of unanticipated hurdles and he had to adapt his approach as they occurred. Legal partners were not necessarily attuned to the sort of signals that potential clients might give when the need for the financial services arose; partners tended to guard their relationships with clients closely and he may have underestimated the level of trust required for those relationships to be offered up to him; he may not have refined the messages he was giving sufficiently for clients or partners to understand the value he might bring.

James made more progress in developing new service lines that would meet these emerging challenges as the result of chance encounters with colleagues around the office. On one such occasion, James, with an arm raised in the foreground of figure 4.22, was in the process of leaving the office when he was stopped by the Marketing Director, who was seated, his head just visible above a desk screen. The Marketing Director had been asked by James to produce a brochure listing the services he offered that he could leave with potential clients. He stopped James to say that he was struggling with this task; he did not feel like the messages were sufficiently refined or differentiated to be of any real value. He suggested that rather than spend time on the brochure, they instead organised some client focus groups to explore the types of messages that they would respond to. As this brief discussion progressed they

were joined by a third party; a newly appointed partner, David, who had overheard the conversation, who offered his help in setting up a face-to-face client meeting. The client he had in mind ran an engineering business but had a valuable parcel of land to be developed. This client needed to raise finance for the property development project. The following discussion ensued:

James: "*My background is really on finance for mergers, acquisitions and business expansions. Financing property is really something different."*

David: "*I'm not sure that really matters. He has no experience in property development at all and at this stage just needs someone to talk through what he needs to consider."*

James: "*I would need to know more about what they are aiming to do but I'm sure I could point them in the right direction."*

David: "*That's all he needs at the moment and the engineering business is big, there must be all sorts of opportunities for you to work with them. You might just give him some consulting advice at this stage – no reason why you couldn't charge for it."*

In an interview with James sometime after this encounter, the researcher asked him to reflect on the significance of this encounter. Ten weeks had elapsed and at first James struggled to remember the encounter as it had not struck him as significant at the time. However, with prompting, the interaction was recalled, and James was able to describe how it had contributed to a shift in his thinking and his actions. This, and other similar encounters, meant that he had instinctively shifted away from the idea that a glossy brochure was needed to promote his services and this idea had been quietly dropped. He had started to explore the sort of messages that might be effective with the help of the Marketing Director in less formal meetings with small client groups. In addition, his ideas about how he could personally get the attention of potential clients had changed as the result of this encounter. He became more willing to discuss broader issues with clients beyond the services he had anticipated offering and realised that these were potentially of value. Chance encounters with partners and clients, such as this one, proved to be important to James in the emerging nature the strategy concern he pursued.

Figure 4.22: James in an unplanned interaction

Source: Photograph taken by researcher on site in 'Law'

Unplanned inter-departmental interactions were far more common for the two-week period that James moved into the Private Client department. Many of these referenced the development of services James might be able to offer. For example, the following interaction occurred immediately after a Private Client partner was overheard by James talking to a client on the phone:

James: "*That sounded like a complicated will – does that client own a lot of business assets?"*

PC partner: *"She does. I've worked with her for years, she has been very successful with her businesses so her will gets more complex"*

James: *"How many businesses does she have?"*

PC partner: *"I think it was six at last count, but she does not have a majority shareholding in all of them. There is a lot of property across the businesses and I help her with maximising business property relief"*

James: *"Do you get involved with any of the businesses beyond inheritance (tax) planning and wills?"*

PC partner: *"Not really, I get to know quite a lot about them but beyond the wills I'm not really involved"*

James: *"You obviously know her well – is it worth us meeting her together?"*

PC partner: *"Of course. When I go back to her with the answers to these questions, I will suggest a meeting."*

Through this sort of unplanned interaction James was able to develop and deepen his knowledge of clients of 'Law' and the type of work the firm did for them. This enabled him to refine the way he introduced himself and the services he could offer whilst respecting the close relationships partners of 'Law' had with their clients. As with Paula, James was encouraged to question his own approach more radically in interactions with people from outside his own team, such as the one described above.

4.2.3.3 Interaction and strategy making for James

For James, interaction with colleagues from other departments (inter-departmental interaction) appeared to be instrumental in the way decisions relating to the introduction of new service lines was shaped. New services would be offered to the existing client base and it was his colleagues that understood these clients best.

James developed a view of what services would suit the existing client base of the firm and how these services might be communicated. In inter-departmental interactions these assumptions were often challenged in ways James had not anticipated. For James, these interactions only occurred intermittently, they were not continuous, daily events. But when they did occur the inter-departmental interactions were observed to be challenging and animated. On several occasions the researcher made field notes that indicated that an unplanned inter-departmental interaction involving James appeared to be of strategic significance. This was because it was clear to the researcher that, through the challenge of colleagues, James' position on introducing new service lines was shifting. The relative infrequency of inter-departmental interactions appeared to constrain James in making

progress with his ideas in a way that gained widespread acceptance with his colleagues or potential clients.

Importantly, this changed when James moved onto a desk cluster in the heart of the Private Client department. He had moved to develop ideas with one particular client in mind, but it was clear from observations during this period that the day-to-day interactions incorporated far wider topics that that one client.

During the period of study, James did not repeat this change of location with the Private Client department or with any other. In an interview with James towards the end of the research period, he suggested that he had felt a clear "surge" in progress during this period but had not repeated it for two reasons. The first was a question of space allocation because not all departments had conveniently located empty desks. The second was a question of the perceived legitimacy of the move. James felt that the benefit of his presence was not always mutual in that he had the benefit of gaining leads for new work whereas he felt that he might be perceived as disrupting the day-to-day work of his colleagues. He argued that such a move was very unusual and that the reason the office departments were located together (spatially) was to do with their efficiency that he would not be thanked for disrupting. As a result, James felt like he needed to be somewhat circumspect in his requests to join other departments.

4.2.4 Summary of findings into relationship 2 within 'Law'

With respect to the strategic matters of concern studied, pricing and new service line introduction, the requirements for progress appeared to be different. In pricing, frequent intra and inter-departmental interaction appeared to be important in shaping long term strategic patterns whereas, for the introduction of new service lines, inter-departmental interaction appeared to be most important.

The effect of this on emergent strategy in 'Law' was that the profile of interaction, which was weighted towards intra-departmental interaction, appeared to encourage progress on the strategic issue of pricing but constrain progress on the strategic issue of new service line introduction.

However, this firm level perspective did not tell the whole story. At both departmental and individual levels, significant differences in interaction profile were found and the example of James highlighted that they were also not fixed. Despite the relative proximity of Paula's and James' desks (see figure 4.21) the interaction profiles for each were dissimilar. Generally, Paula interacted more with members of other departments than James, but an important exception was observed when James was invited to join a desk cluster occupied by one of the specialist legal departments and this reversed.

This means that, in 'Law', there is potentially a complex web of strategic needs for interaction, that vary by strategic issue and interaction profiles that vary according to specific socio-spatial arrangements at multiple levels.

This appeared to matter for the two partners that were the focus of the observations of emergent strategy making in action. The infrequency of inter-departmental interaction observed for James appeared to constrain his progress and limit the extent to which new patterns of action might emerge for the strategic matter of concern with which he was closely associated. Whilst for Paula the balance between intra and inter-departmental interaction appeared to encourage progress with the strategic matter of concern with which she was most closely associated.

This complex web of nested socio-spatial structures and differing demands on interaction for each strategic matter of concern is considered in more detail in the following section.

4.3 Completing the triangle: Investigation of relationship 3 between the configuration of space and emergent strategy

In this section the findings for the relationship (1) between space and interaction and the relationship (2) between interaction and emergent strategy are brought together to describe the relationship (3) between space and emergent strategy in 'Law'.

In section 4.1 the findings showed that socio-spatial arrangements in 'Law' have a powerful impact on the profile of interaction. In section 4.2 the findings showed how profiles of interaction at the firm, departmental and individual levels might impact the emergence of two strategic matters of interest. The socio-spatial positions of Paula, James and their

respective departments meant that they experienced quite different profiles of interaction and the strategic matters of interest with which they were each associated appeared to demand different profiles of interaction for their success.

The net result was that the strategic outcomes for each appeared to be different. Paula appeared to be progressing well and performing better than most of her colleagues in the strategic issue with which she was associated: pricing. James was struggling to progress with the strategic issue with which he was associated: the introduction of new service lines.

A relationship between space and emergent strategy needs to be able to explain why these differences in interaction and the differences in strategic outcomes might occur. This section aims to provide these explanations and is organised as follows: section 4.3.1 shows how a propensity for emergent strategy accumulates based on socio-spatial arrangements; section 4.3.2 highlights how both spatial arrangements and social affiliations are used as levers for emergent strategy making in 'Law'; section 4.3.3 highlights the interdependence of spatial and social arrangements in 'Law' and thereby demonstrates the link between socio-spatial correspondence and emergent strategy; and section 4.3.4 explains why multi-level social and spatial analysis is important in understanding the emergence of new strategies in 'Law'.

The chapter concludes with section 4.3.5 which summarises the findings into the relationship between space and emergent strategy in 'Law'.

4.3.1 A propensity for emergent strategy

Although Paula and James were associated with two different emergent strategic matters of concern, what mattered to both of them was the frequency of their interaction with key social groupings.

For Paula, pricing issues to which she needed to react, arose several times each day. Pricing issues arose after formal meetings with clients, when tenders for work were rejected or accepted, when invoices were not paid on time, when growth in revenue for the unit was too slow or too quick, and so on. For the most part these were day-to-day problems that demanded a quick and intuitive response.

Paula and members of her immediate unit were able to interact immediately and frequently to clarify the problems and deal with them. For problems not resolved in this way, Paula interacted with other members of her department and with colleagues from other departments. The interaction data for Paula showed that these too were frequent daily events.

Each intuitive reaction to a pricing problem resulted in some sort of decision or action. Each of these decisions seen in isolation appeared modest and incremental in nature. A study focussed exclusively on these micro level interactions and micro level decisions would be hard pressed to recognise them as strategic in nature. However, such was their frequency that they appeared to accumulate to create meso level patterns in pricing. For Paula's unit this meant a slow hardening in their approach to pricing over time that improved the financial returns.

For James it was different. James needed to interact with colleagues from other departments and with potential clients. The interaction data for James showed that these interactions were not daily events. Potentially, interactions were going on across 'Law' from which he could have benefitted in the emergent strategic matter of concern of introducing new service lines. However, James was rarely there when these interactions were in progress which meant many of the opportunities for him to get involved, solve a problem, or suggest a new direction, must have gone unrecognised. The accumulation of opprtunites for emergent strategy making were far less evident for James than they were for Paula.

As a result, the key difference between the strategic outcomes in pricing and the introduction of new service lines appeared to be the rate of accumulation of unplanned social interactions, that might benefit the emergent strategy making. This finding is quite different from a common view that the emergence of new strategies has an identifiable source; a single serendipitous moment of inspiration.

The findings of this research suggest that what is important to emergent strategy making is the frequency and distribution of unplanned interactions.

4.3.2 Spatial arrangements and social affiliations as levers on emergent strategy making

The organisation structure in 'Law' created social affiliations described in this thesis in various ways. Each lawyer has a social affiliation with a specialist legal unit and a broader affiliation with a specialist legal department. In addition, this thesis has observed that all members of staff in 'Law' have an affiliation with each other that distinguishes them from people, such as clients, who are not employees of 'Law'. Although this may be self-apparent to management, organisation and strategy scholars, these social affiliations are unconsciously leveraged in the process of emergent strategy making. For example, Paula leverages the social affiliation described by the specialist legal unit every time a problem relating to pricing arises. She also leverages the social affiliation with her specialist legal department and the broader affiliation with her colleagues in 'Law'. By leveraging these social affiliations regularly, Paula was observed to make progress on pricing, the emergent strategic matter of concern with which she was most associated.

Social affiliations were also found to be important to James in emergent strategy making. It was found that his social affiliation with other employees of 'Law' were particularly important but that this affiliation was not naturally leveraged by the socio-spatial arrangements in 'Law'. What James was observed to do about the absence of the opportunity to naturally leverage social affiliations of importance to him highlights the role of spatial arrangements as a lever to emergent strategy making. James changed his spatial location within 'Law's' offices to make sure that interactions of value to his emergent strategy making did occur naturally.

In this way, both social affiliations and spatial arrangements in 'Law' have been shown to be levers in the process of emergent strategy making.

4.3.3 The interdependence of social affiliations and spatial arrangements in emergent strategy making

Although both social affiliations and spatial arrangements have been shown to be important levers to emergent strategy making in 'Law', the findings also demonstrate why these two levers are interdependent and cannot be thought of isolation.

When James moved into the Private Client department, he changed the spatial arrangements in 'Law'. The findings showed that one of the results of this spatial change was to change his interaction profile. James sought more frequent, naturally occurring, interaction with colleagues in the Private Client department and the observed interaction data showed that this was achieved.

At the same time, James was conscious that this spatial change had an impact on the naturally occurring interaction patterns of those he had joined. James' perception was that the change to the natural interactions of the department he had physically joined were not beneficial to them. As was reported in section 4.2.3, such was the level of his concern about the detrimental effects that James did not repeat the move despite an understanding that it was beneficial to his strategic work.

As a result, it can be seen that the spatial change initiated by James' move into the Private Client department started to have an impact on social affiliations. James started to enjoy a closer social affiliation with people that according to the organisation structure were not those with which he was most closely socially associated. At the same time, the move appeared to have an impact on the closeness of social affiliation felt within the Private Client department which James felt he had disrupted. These changes happened quickly over a two-week period, and reverted once James moved back to his original spatial position in the firm. This shows that organisation structure need not be the only determinant of social affiliations because these affiliations are somewhat plastic in nature. It also shows the way that social affiliations and spatial arrangements were intertwined.

The interdependence of social and spatial arrangements manifests itself in the interaction profiles found in 'Law'. In section 4.1.2.3 and figure 4.19 it was demonstrated that correspondence could explain who interacted with whom at the individual, group and firm levels. It was shown that these interaction profiles mattered to both Paula and James in the emergent strategy making because it mattered to both of them how their unplanned interactions split down between intra-departmental, inter-departmental and with visitors.

In this way, the findings make an explicit link between the socio-spatial arrangements in 'Law', as measured by correspondence, and emergent strategy.

4.3.4 The importance of multi-level social and spatial analysis to emergent strategy

The impact of James moving into a space occupied by the Private Client department also provides the evidence that multi-level socio-spatial analysis is necessary to understand the impact of socio-spatial arrangements on emergent strategy.

The motivation for James' spatial move can be understood at the individual level. He was not satisfied with the frequency of his interactions with other departments because he believed that this was having a detrimental effect on his strategy making. So, James moved, and observations of the ratio of James' intra to inter-departmental interactions of 3.48 to 1 whilst at his desk in the Corporate department, changed to 1 to 1.34 when at the desk in the Private Client department. This represented a shift in individual level departmental correspondence for James from 0.71 to -0.37, a change from positive correspondence to negative non-correspondence. At the individual level of analysis these changes had a beneficial effect on interaction experienced by James.

However, this change to the spatial arrangements in 'Law' had knock on effects. Observations showed that changes in interaction also occurred for other individuals. Individual profiles of interaction for members of the Private Client department also changed during this two-week period. With James in closer spatial proximity, and a member of a different department, their inter-departmental interaction increased. However, not all members of the Private Client department were affected in the same way, the frequency of inter-departmental interaction increased more for those that shared a desk cluster with James, for those two weeks, than those that did not.

It was also clear that James' move had an impact at the departmental level as well. The frequency of interaction with James decreased for members of his own department such that for the two-week period the ratio of intra to inter-departmental interaction changed for the Corporate department. It was found that these interaction ratios varied considerably for each of the departments in 'Law' based on their socio-spatial correspondence. For example, the Real Estate department had a non-correspondence system, with a Yule's Q score of 0.48, nested within an overall system in correspondence. In comparison, the correspondence score for the Corporate department was found to be 0.84 but the absence of James would have

reduced the extent to which social and spatial arrangements for the Corporate department overlapped and hence lowered the value of Yule's Q for the department. Likewise, the presence of James in the Private Client department would have reduced the social and spatial departmental overlap also reducing their Yule's Q. It is not known whether these changes were beneficial or not to the departments involved but it is known that James was concerned about the impact the move had on others

Although not measured directly, the changes in Yule's Q for the Corporate and Private Client departments would have also reduced the Yule's Q for the firm as a whole, albeit by a relatively small amount.

In this way, it can be seen that a relatively small spatial change, involving one individual, affects interaction profiles at individual, group and firm levels.

The interrelated nature of social and spatial arrangements at multiple levels of analysis demonstrates the complexity of the relationship between socio-spatial structures and emergent strategy making. However, correspondence provides a tool for making sense of this complexity.

4.4 Summary of findings into the relationship between physical space and emergent strategy within 'Law'

Chapter 4 of this thesis has presented findings that demonstrate a relationship between socio-spatial arrangements and two emergent strategic matters of concern in a single organisation, 'Law'.

The socio-spatial arrangements matter because of the effect they have on the unplanned social interaction profiles evident within the organisation.

Each unplanned interaction had little consequence to the emergence of strategy, however, as interactions relevant to strategic topics of concern accumulated, the unconsciously strategic dispositions of the actors were observed to change. In this way, who interacted with whom, the frequency and duration of those interactions – what has been called the profile of interaction in this thesis – was shown to influence the emergence of strategy in 'Law'.

The socio-spatial correspondence in ‘Law’ - a measure that quantifies the overlap between spatial structures and social structures - was shown to provide a good explanation for the profile of interactions found at individual, group and firm levels. In this way, socio-spatial patterns were shown to influence emergent strategy.

Two calculations of socio-spatial correspondence were found to be of particular importance to emergent strategy. The first measured internally between the inhabitants of the firm, the second measured externally between inhabitants and visitors to the firm.

These findings apply to the organisation of ‘Law’ only and because the measure of socio-spatial correspondence was developed specifically for this thesis, it is not known how socio-spatial correspondence varies across other organisations. Given the relationship between this measure and the organisations profile of interaction it was of interest to this thesis to analyse how socio-spatial correspondence varied across organisations that the strategy literature predicts would have very different characteristics of emergent strategy.

The following chapter analyses the socio-spatial structures found in four other organisations in order to develop an understanding of how departmental and inhabitant/visitor correspondence might vary across organisations.

5 Findings for phase two: A comparison of socio-spatial structures and typology for emergent strategy

This chapter investigates variety in spatial configuration and socio-spatial correspondence across four organisations. This is important because of the link between socio-spatial structure and emergent strategic matters of concern. At this point in the thesis an appreciation of the extent to which socio-spatial structures can vary within a single organisation is understood from the single case study described in chapter four. This chapter aims to gain an appreciation of the extent to which socio-spatial systems might vary at the organisational level.

The chapter is organised as follows: Section 5.1 focuses on the spatial configurations of the comparative organisations and section 5.2 focuses on their socio-spatial correspondence. Section 5.3 proposes a typology of emergent strategy and places each of the comparative organisations on the typology based on the findings from sections 5.1 and 5.2. The chapter concludes with a summary of the findings in section 5.4.

Substantial differences in the socio-spatial systems studied suggest very different profiles of interaction and the possibility for very different propensities for emergent strategy making.

5.1 A comparison of spatial configurations

This section explores the variation in spatial configuration across four of the five organisations (including 'Law') studied. The four spatial systems compared are 'Law', the university ('Uni'), the manufacturing organisation ('Mftg') and the first of the two technology firms studied ('Tech1'). Insufficient data was obtained to include an analysis of the spatial structure of 'Tech2'.

Aspects of the socio-spatial arrangements found to be of influence on social interaction in chapter 4 are the focus of the analysis.

This section is organised in two parts. The first, in section 5.1.1, focuses on the aspects of spatial configuration that have been shown to affect the inhabitants of the building, the second, in section 5.1.2 on aspects affecting visitors.

5.1.1 Spatial configuration affecting inhabitants

This section focuses on aspects of spatial configuration that affect inhabitants of the building. Four measures of spatial configuration are highlighted, and their impact described: global integration; integration of workspaces and areas of transit; placement and use of attractors; and the allocation of space to facilities.

5.1.1.1 Global integration[11]

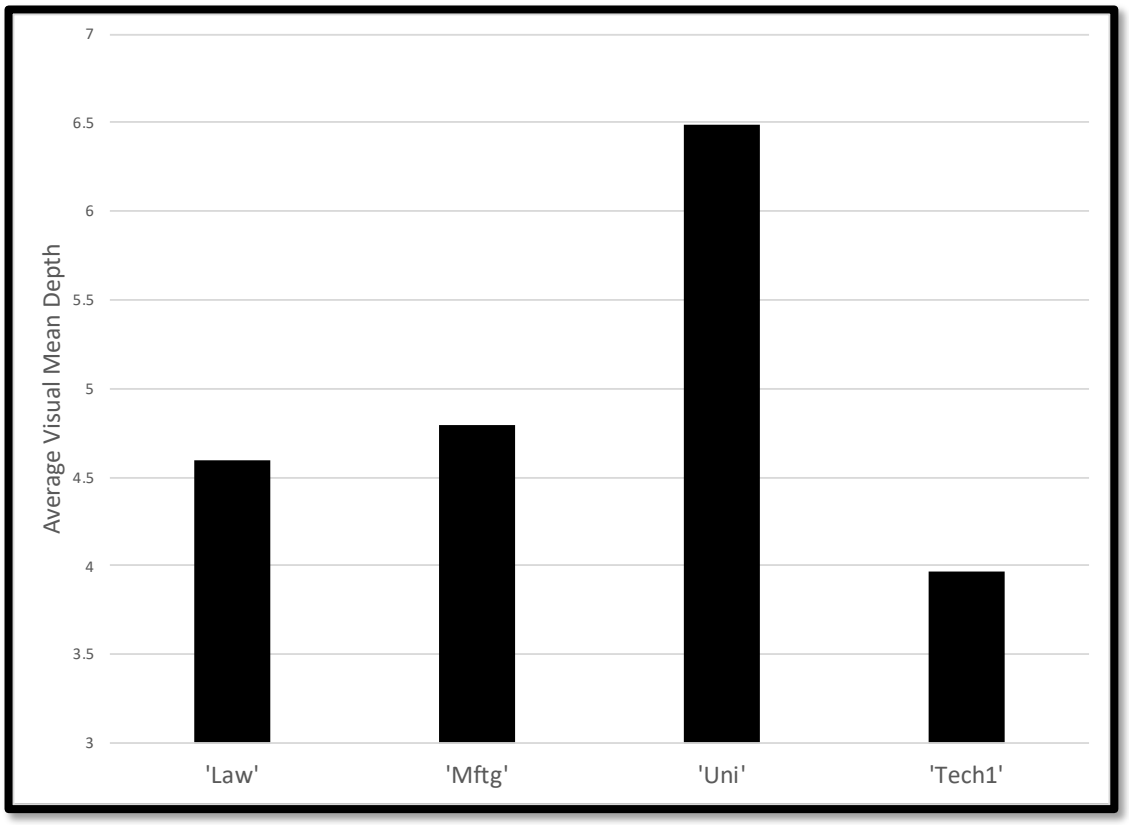
The Space Syntax measure of average visual mean depth (AVMD) for an entire building describes how well all the spaces in the building are integrated with each other and is commonly used in Space Syntax research as an objective measure to compare the configurations of space across buildings and organisations (Sailer *et al.*, 2012; Penn, Desyllas and Vaughan, 1999; Sailer and Penn, 2009; Wineman *et al.*, 2014; Hillier, 1996). Buildings with low AVMD have the most integrated spaces overall and those with the highest AVMD the most segregated spaces. Space Syntax research consistently demonstrates that that the most integrated buildings see the highest frequency of unplanned interaction (Sailer and McCulloh, 2012; Steen, 2009). The previous chapter established that this relationship is important because a higher frequency of unplanned interaction increases the probability of some of those interactions becoming strategic.

Figure 5.1 compares the AVMD values for the four organisations analysed by this research. It shows the AVMD for 'Law' of 4.6, as previously reported and shown graphically in the heatmap in figure 3.3. The integration of the offices in the manufacturing firm ('Mftg') is similar to that of 'Law' with a value of 4.79, suggesting a slightly less integrated spatial system. However, the values for the University ('Uni') and the Technology firm ('Tech1') suggest very different levels of integration overall. 'Uni' shows the highest AVMD and hence the most segregated building overall whereas 'Tech1' has the lowest AVMD and hence the most integrated building overall. The range of AVMD values from 3.9 to 6.5 in the four organisations

[11] Note: Global integration refers to the average visual mean depth figures for the entire socio-spatial system. The dispersion around this average for specific spaces is shown in subsequent sections

studied here, compares with a range from 1.7 to 7.4 in a study of 62 organisations of varying size and from different industry sectors (Sailer *et al.*, 2012).

Figure 5.1: Comparison of average visual mean depth (AVMD) in four organisations



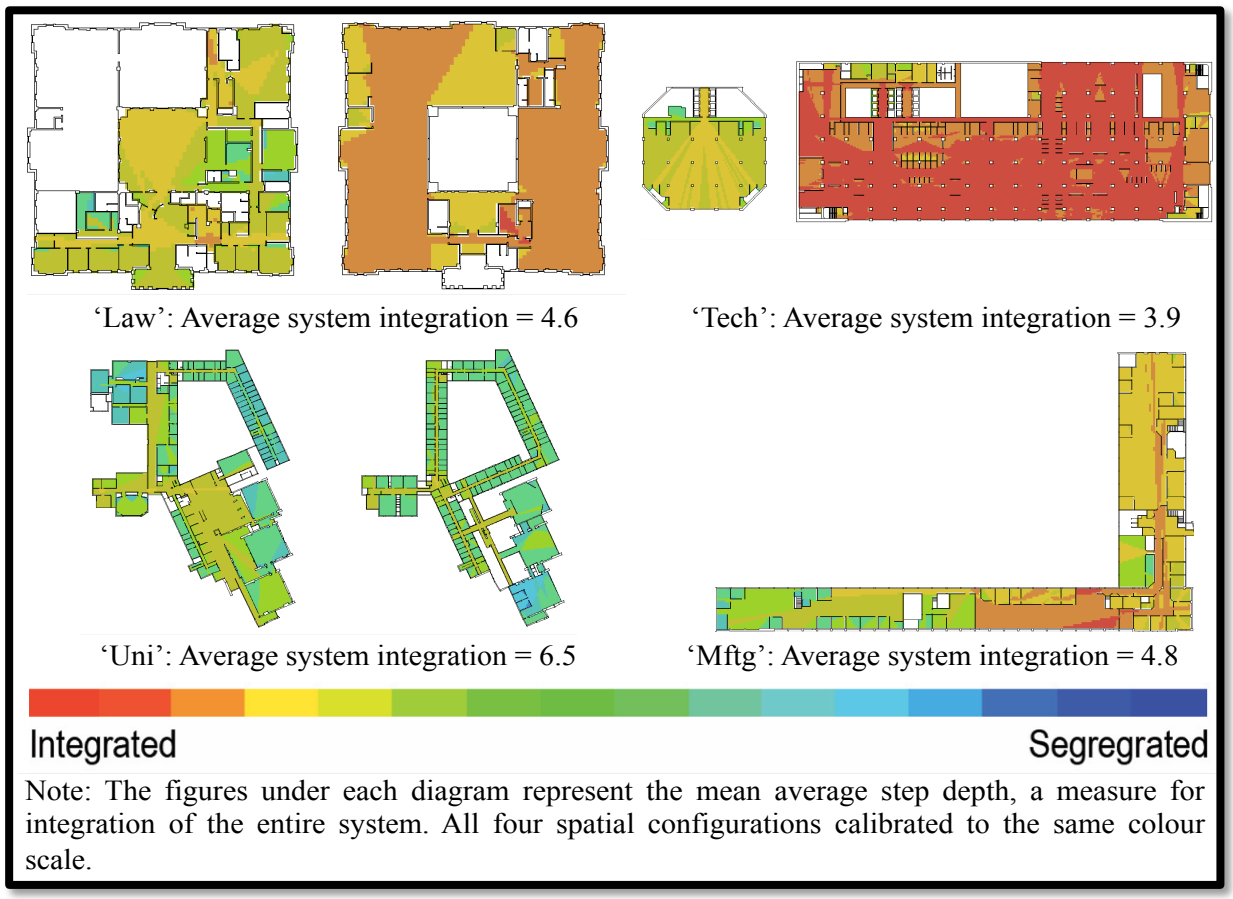
Source: Comparative spatial analysis using Depthmap X

Research has shown that levels of integration of a building tend to be reduced by the overall size of the offices and by the number of floors the office is spread over (Sailer *et al.*, 2012). As 'Tech1' is the largest of the four spatial systems studied and spread over three floors (see table 3.10 for the comparison), this emphasises just how much more integrated 'Tech1' is relative to the other three organisations studied.

A sense of what determines the relative levels of integration in each of the buildings can be gained from comparing their layouts on a heatmap. Figure 5.2 shows the heatmap for the four buildings analysed using a consistent colour coding on each. Although not all floors are shown in Figure 5.2, the colour coding used provides a visual representation of the degree of integration in each building on the floors shown. The warm colours (red and orange)

represent the most integrated spaces and the cold colours (blue and green) represent the most segregated spaces. As the same colour scale is used on each graph a visual comparison can be made between each of the diagrams shown. 'Tech1' with the predominantly red open plan office shows the most integrated office whilst 'Uni' with the green and blue cellular offices shows the most segregated office.

Figure 5.2: The average visual mean depth (AVMD) for the four organisations studied



Note: The figures under each diagram represent the mean average step depth, a measure for integration of the entire system. All four spatial configurations calibrated to the same colour scale.

Source: Comparative spatial analysis using Depthmap X

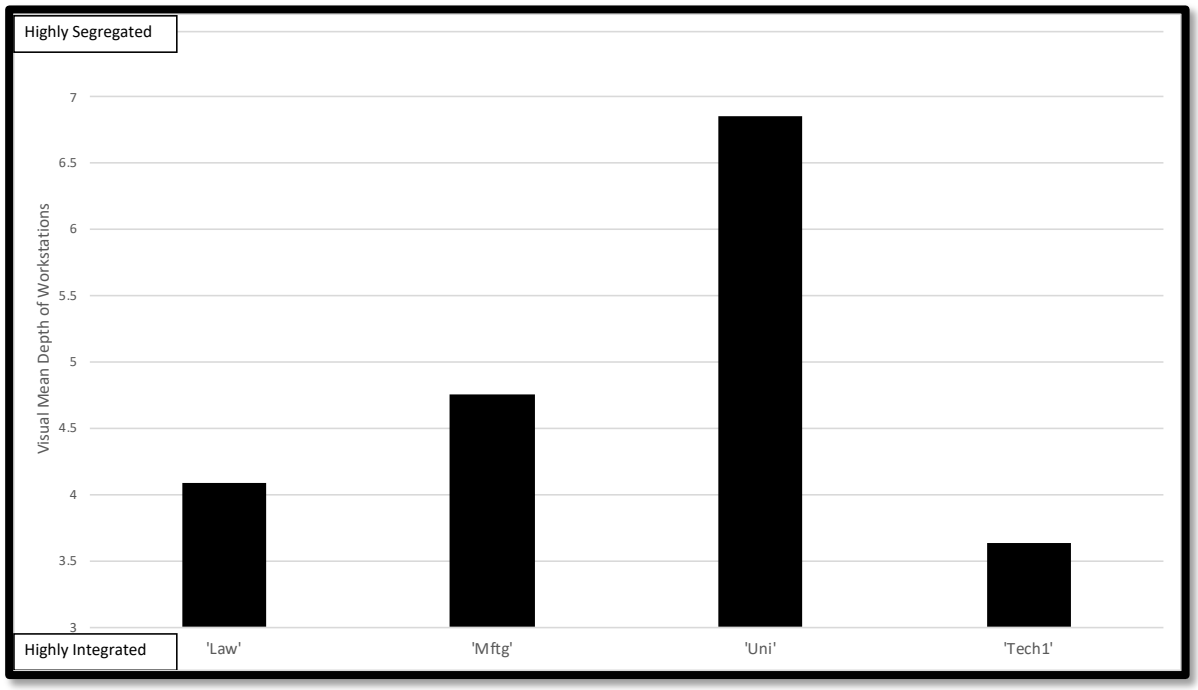
This analysis suggests that overall the greatest frequency of unplanned interaction will be found in 'Tech' and the lowest level of unplanned interaction in 'Uni'.

5.1.1.2 Integration of workspaces and areas of transit

In section 4.1 we found that the relationship between integration and frequency of unplanned interaction not only applied at the global organisational level as described in the previous section, but also applied to individual spaces within buildings. The most integrated

spaces within ‘Law’, the workspaces and areas of transit, had the highest levels of unplanned interaction. The only organisation to have more integrated workspaces than ‘Law’ was ‘Tech1’, shown in figure 5.3. In both ‘Tech1’ and ‘Law’ the workstations were the most integrated areas in the building. Both employed the use of open plan offices affording good visibility of colleagues and both used clusters of desks for departments. In ‘Tech1’, visibility between desks was greater than in ‘Law’ because the desks did not have screens dividing the desks that formed clusters.

Figure 5.3: Comparative analysis of visual mean depth (VMD) of workstations



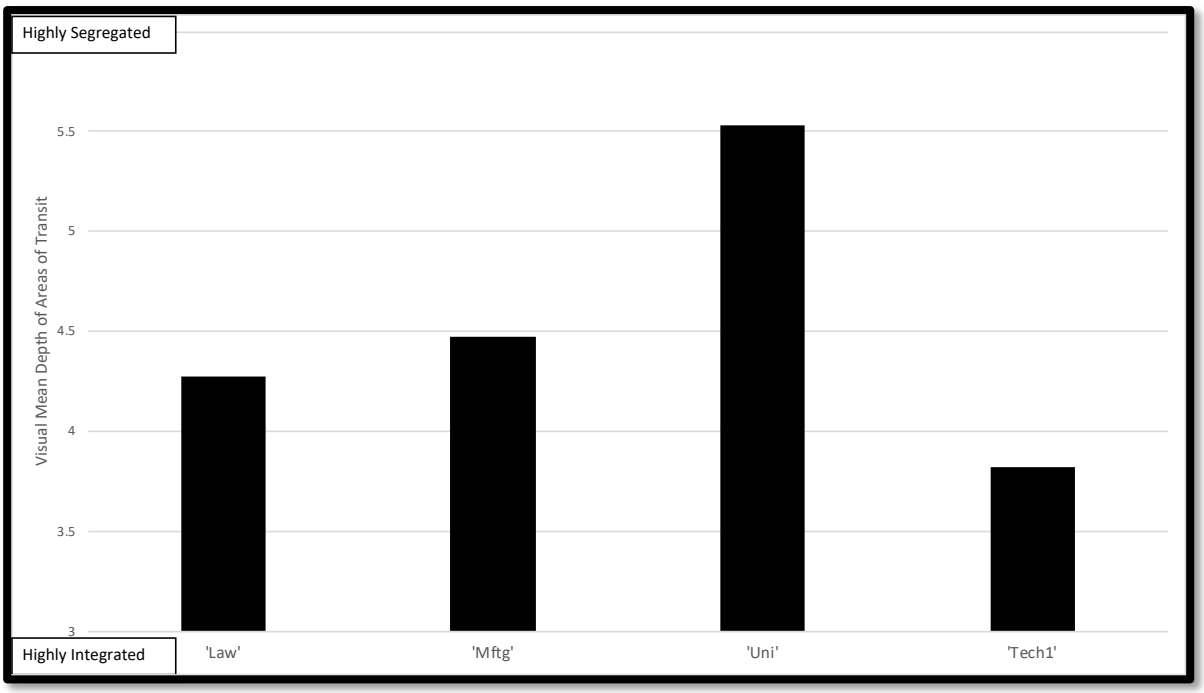
Source: Comparative spatial analysis using Depthmap X

By far the least integrated (most segregated) workstations were found in ‘Uni’. Here academics occupied cellular offices located off narrow corridors and tended to keep office doors shut even when being used. In ‘Mftg’, the workstations are found in a mixture of open plan office space with clustered desks and cellular offices resulting in workstations that are less integrated than ‘Law’ but far more integrated than ‘Uni’.

A similar story is evident when comparing the levels of integration in areas of transit, shown in figure 5.4. ‘Tech1’ has even more integrated areas of transit than ‘Law’. In ‘Tech1’ the area of transit that ran the length of the entire office on the main floor had been widened to the

extent that it was called the ‘boulevard’. This level of integration allows for a greater frequency of interaction because it encourages movement and movement generates interaction through a process called ‘recruitment’ where a person on the move is seen as available by others and hence considered appropriate to approach to start an interaction (Backhouse and Drew, 1992). By contrast, the areas of transit in ‘Uni’ varied a great deal. From a highly integrated, wide, open plan thoroughfare leading from the main entrance through to segregated, narrow, corridors that led to the academics’ offices. When averaged across the whole building, the areas of transit in ‘Uni’ were the most segregated.

Figure 5.4: Comparative analysis of visual mean depth (VMD) for areas of transit



Source: Comparative spatial analysis using Depthmap X

In ‘Law’ the level of integration of the workstations and areas of transit was found to be particularly important to the frequency of interaction between inhabitants. From this it might be inferred that unplanned interaction between inhabitants would be at its highest in ‘Tech1’ and at its lowest in ‘Uni’.

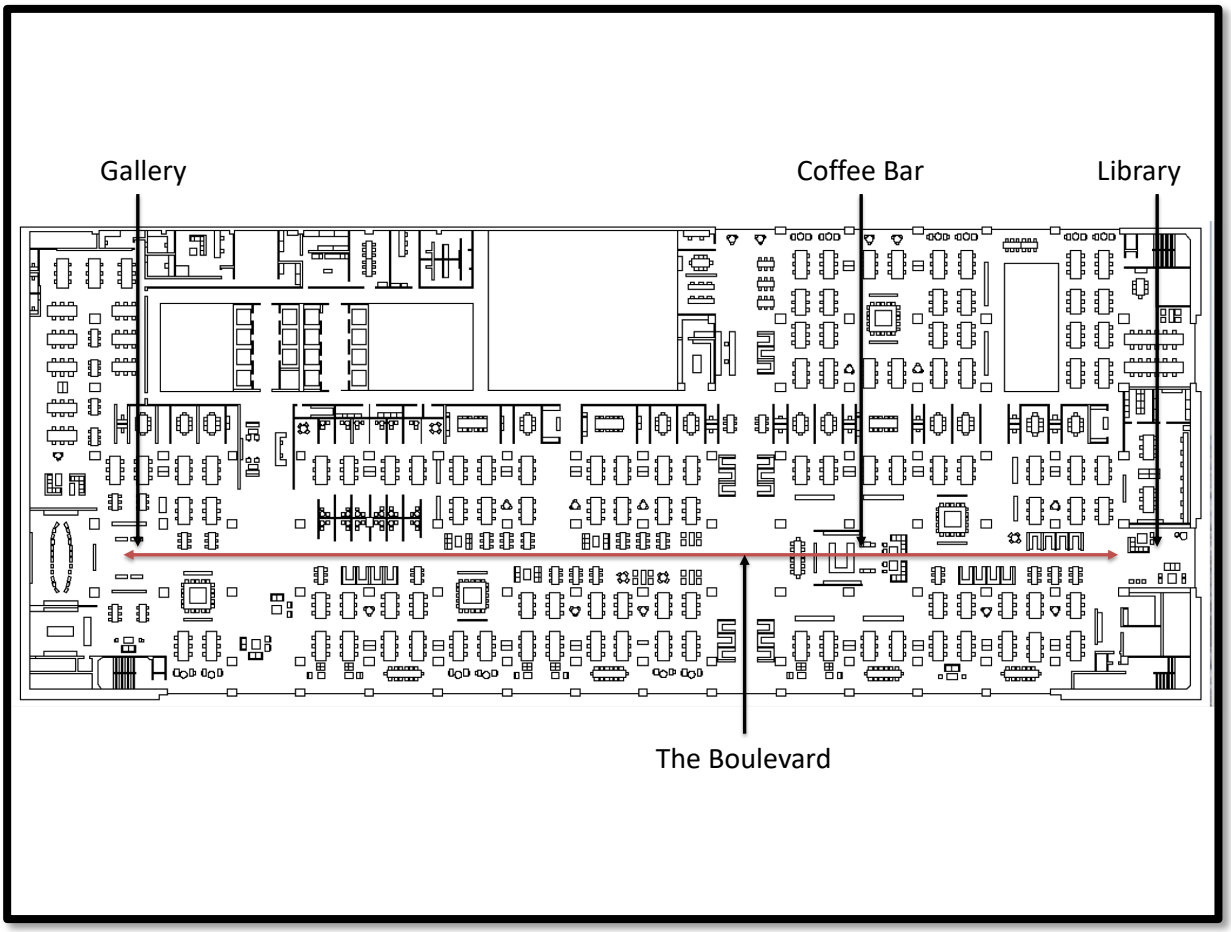
5.1.1.3 Placement and use of attractors

In ‘Law’ a segregated kitchen presented an anomaly in terms of the unusually high amount of unplanned interaction that was observed. This was explained in Space Syntax terms of being

an ‘attractor’. Sailer et. al. (2012) recommend that to increase the volume and diversity of unplanned interactions in a spatial system, attractors are placed in integrated areas amplifying *“the naturally integrated character of space by attracting further movement and usage*” (Sailer *et al.*, 2012, p. 22). This was not the case in ‘Law’ where the kitchens were in particularly segregated areas. The VMD of 5.97 of a kitchen compared with a more integrated 4.6 AVMD for the whole of the ‘Law’ building.

However, in ‘Tech1’ attractors were placed in the most integrated places, by placing a library at one end of the boulevard, a gallery at the other end and a coffee bar somewhere in between, shown in figure 5.5. Not only does the use of attractors in integrated places encourage interaction in those places but the placement of them across the office also encourages movement.

Figure 5.5: Placement of attractors along the boulevard in ‘Tech1’



Source: Floor plans supplied by ‘Tech1’

What defines the library, coffee bar and gallery as attractors is that each are unique in the spatial system. This means that if any employee wants to use the library they have to make their way to the single space that has been designated for that purpose regardless of where their desk is situated. This can be compared with the use of a breakout space for example. There are many breakout spaces dotted around the offices of 'Tech1' so if an employee chooses to use one, they can head for the nearest available. The unique character of these attractors means that an individual may have to move a long distance in order to use the unique facility, whereas the distance travelled to reach a breakout space is minimised by having many of them evenly spread across the office. To encourage use of the attractors still further they are made highly visible. They are placed along the length of the most integrated area of transit (the boulevard) and are themselves highly integrated in their own right. All three have a VMD less than that of the office as a whole, as shown in table 5.1.

Table 5.1: Visual mean depth (VMD) of attractors in comparison with the average for the building in 'Tech1'

Facility	**Visual Mean Depth**
Library	3.59
Coffee Bar	3.34
Gallery	3.25
Average for Building	3.97

The combination of spatial integration and uniqueness means that the impact of using attractors in this way is likely to increase both the frequency of interaction and the diversity of the people who interact. In moving away from the workstations, employees in 'Tech1' increase their chances of finding themselves in the same vicinity as people from other desk clusters.

The use of attractors in 'Tech1' can be contrasted with that in 'Uni' where there is also an area to get hot drinks and snacks, much like the coffee bar in 'Tech1'. In 'Uni' it is called the

Hub and is located on the ground floor just off the thoroughfare from the main entrance. Like the coffee bar in 'Tech1', the Hub is also very highly integrated in the building. The visual mean depth of the Hub is 5.22 compared with an average for the whole spatial system of 6.49. However, the Hub facility is not unique as each department within the faculty has its own kitchen and staff lounge. By placing these facilities within each department, staff are encouraged to move from their office only as far as their own department's coffee lounge. Although this spatial arrangement does not eliminate the possibility of staff using the Hub, it does reduce the chances of it happening.

Lecture theatres might also be considered attractors as they are unique in the sense that a timetable allocates a specific lecture theatre to a specific class. The impact of this is that both students and lecturers move across the building in large numbers to the rhythm of the university timetable. In this way lecture theatres meet the criteria of an attractor because they amplify the naturally integrated character of space by attracting further movement and usage. In combination, it appears that the impact of the attractors in 'Uni' is to encourage unplanned interaction between students and staff but less so between staff themselves.

The use of attractors in 'Mftg' is very similar to that of 'Law'. Two kitchens were provided in 'Mftg', one of which has a small breakout area attached. As a result, the impact on interaction is likely to be similar to that seen in 'Law'.

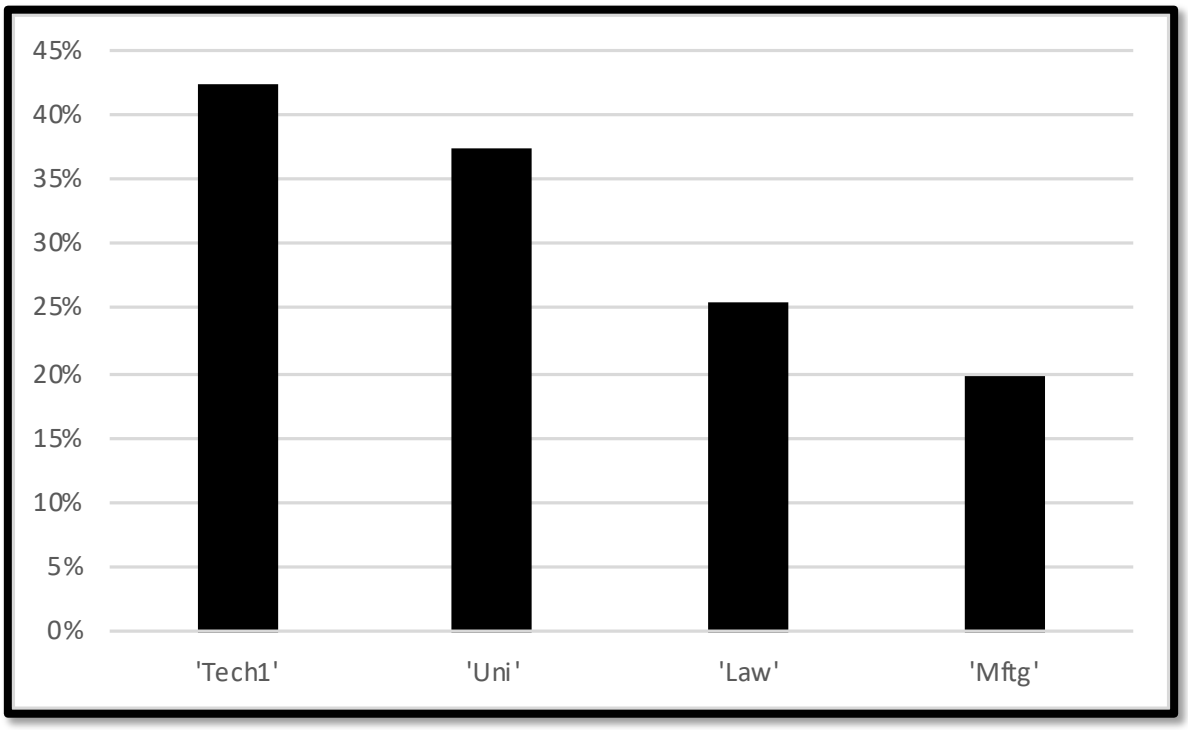
Ultimately, the impact of attractors in a spatial system has two effects. Firstly, it encourages movement over longer distances than would otherwise occur and secondly, they potentially co-locate people that may not otherwise find themselves occupying the same space. Both create the potential for unplanned inter-departmental encounters. In this respect, relative to 'Law', both 'Tech1' and 'Uni' have spatial configurations that encourage more inter-departmental interaction. In the use of attractors, there is no discernible difference between 'Law' and 'Mftg'.

However, in 'Law' it was found that the duration of unplanned inter-departmental interactions was constrained by the availability of space in which an unplanned encounter may continue. The following section analyses the allocation of space to facilities away from the workstation that provide the scope to lengthen the duration of unplanned encounters.

5.1.1.4 Allocation of space to facilities

This research has identified four types of space; workstations: areas of transit; flexible facilities and bookable facilities. Figure 5.6 compares the total amount of space allocated to both flexible and bookable facilities in the four comparative organisations.

Figure 5.6: Percentage of total floor area allocated to facilities



Source: Comparative spatial analysis using Depthmap X

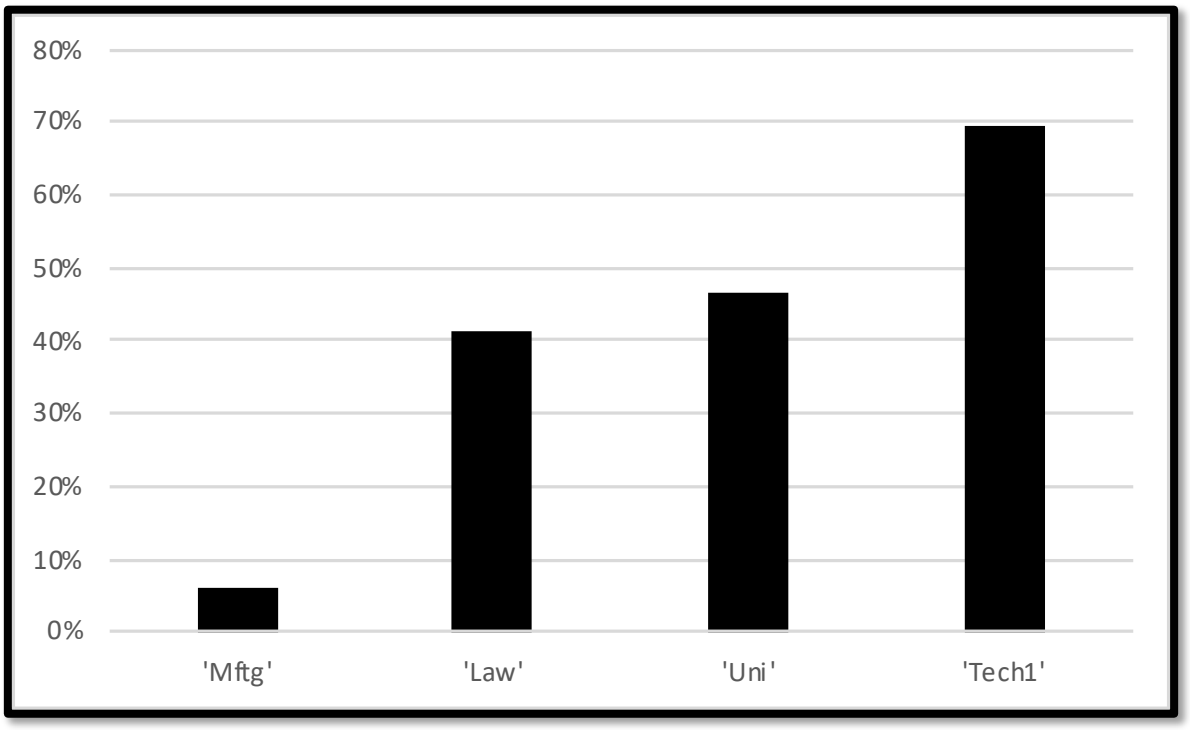
The combination of flexible and bookable facilities gives a sense of the importance each organisation places on activity away from the workstation. In 'Law', 25% of the total floor plan is allocated to facilities. Figure 5.6 demonstrates that the organisations studied have taken very different views on the importance of non-workstation facilities. In comparison with 'Law' both 'Tech1' and 'Uni' allocate significantly more space to such activities and 'Mftg' less.

To lengthen the duration of chance encounters, it was found in 'Law' that facilities needed to be available without booking. These were labelled flexible facilities and figure 5.7 shows the percentage of facilities allocated to flexible space.

In both 'Law' and 'Uni' the split between flexible and bookable space is quite even. 'Law' allocated 41% to flexible facilities and 'Uni' 46%. However, 'Tech1' not only allocates more

space to facilities generally but also allocates far more to flexible facilities. ‘Tech1’ appears to be an organisation that takes interaction away from desks very seriously. This will also have the effect of encouraging unplanned interactions that are able to continue for longer durations. In dramatic contrast, ‘Mftg’ has allocated just 6% of all facilities to ones that can be used without booking. This is actually a small breakout area next to a kitchen, other than this no other flexible facilities are available. In contrast to the other three organisations, ‘Mftg’ appears to place little weight on unplanned interactions beyond those that occur at desks and in corridors. This suggests a greater weight is placed on intra-departmental interaction and almost a deliberate constraint on unplanned inter-departmental interaction.

Figure 5.7: Percentage of facilities allocated to flexible space

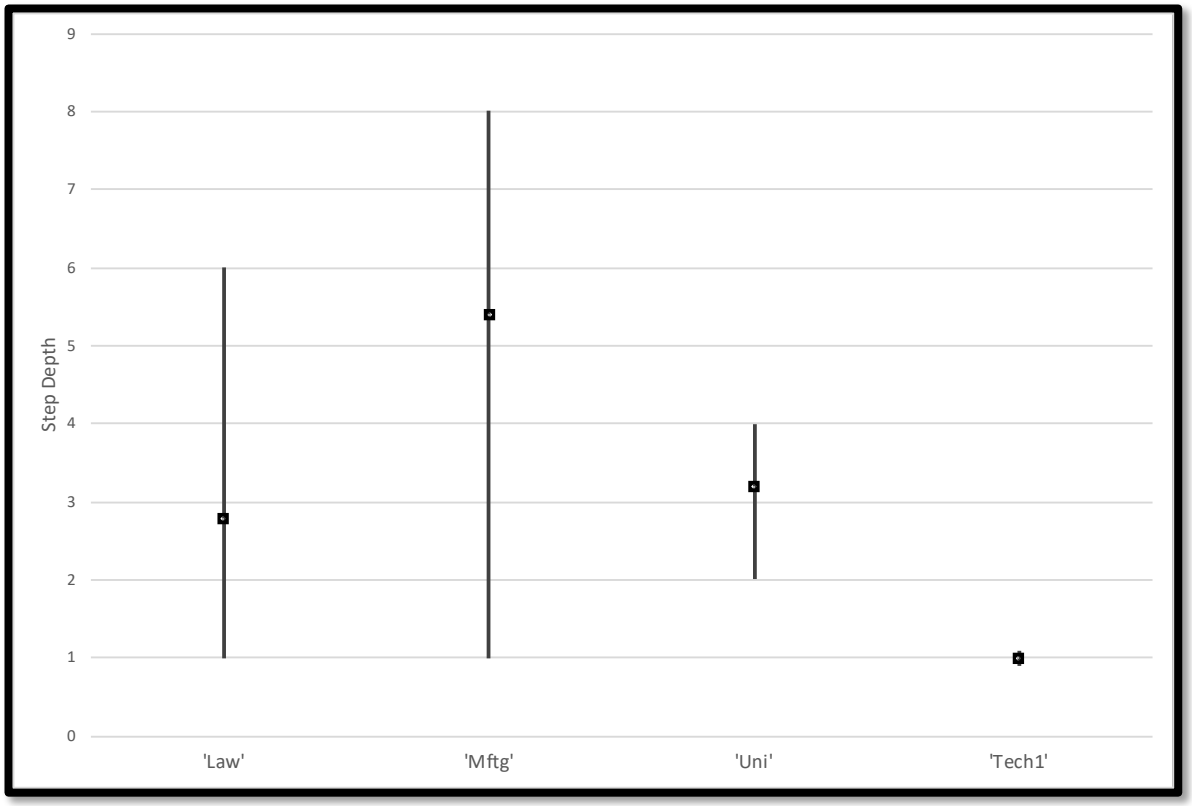


Source: Comparative spatial analysis using Depthmap X

The other important feature of flexible facilities within an office complex is the ease with which they can be accessed. It was observed in ‘Law’ that flexible facilities were used to continue unplanned interactions if they could be seen to be available. The Space Syntax measure of step depth reveals how visible and accessible flexible facilities are from workstations. Figure 5.8 shows the range of step depths from all desks to the closest flexible facility in each organisation.

A step depth of 1 means that the facility is visible from the desk. The spread of flexible facilities across the entire floor plan of 'Tech1' means that all desks have a direct line of sight to at least one. In 'Law', we know that although some inhabitants could see the breakout area from their desk others were a step depth of six away from the nearest flexible space. The inconvenience was shown to be a deterrent to engaging in or continuing with unplanned discussions. The situation is worse still in 'Mftg', where there is one breakout area and some desks are a step depth of 8 away. In 'Uni', the distribution of staff lounges across each of the departments, whilst a potential constraint on movement across the whole building, actually provides good convenient access to flexible facilities to staff within the same department. In addition, if the cellular offices were considered to be not just workstations but also spaces for collaboration and interaction that do not need to be booked, it could easily be argued that the position in 'Uni' is similar to that in 'Tech1'.

Figure 5.8: Step depth from workstations to nearest flexible facility



Source: Comparative spatial analysis using Depthmap X

In three of the four organisations studied, the flexible facilities are well integrated into the office spatial system. Their visual mean depths are low in comparison with the AVMD for the

whole spatial system. Well integrated spaces attract the highest frequency of interaction. The exception is 'Uni' where two extremes are evident. On the ground floor the flexible spaces are very well integrated whereas on the first, second and third floors the flexible facilities are rather segregated. An example is the staff rooms located within each department. Each are cellular in arrangement like the academics' offices, although in the case of the staff lounges, the doors tend to be kept open. The degree of segregation constrains the frequency of use to those in closest proximity, put simply a staff member would use the staff lounge located in their own department close to their office but would be highly unlikely to use any of the other staff lounges.

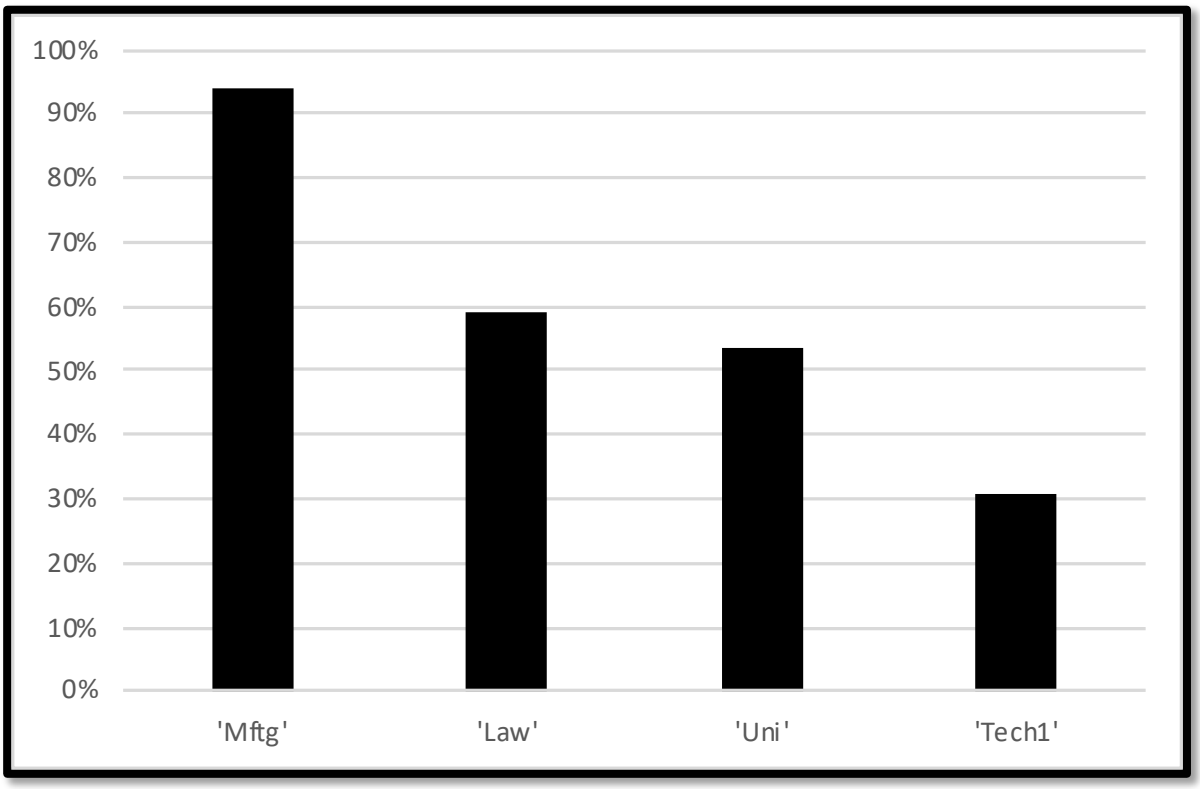
In summary, the spatial configuration of flexible facilities varies considerably across the four organisations studied. This variation provides the potential for very different priorities in terms of unplanned interaction. Allocating a great deal of space to flexible facilities, making them highly visible and easy to access, suggests that 'Tech1' is an organisation that takes unplanned interaction very seriously. These spatial arrangements encourage both greater frequency and lengthening duration of unplanned interaction intra-departmentally and inter-departmentally. In stark contrast, 'Mftg' appears to do the complete opposite. By allocating very little space to flexible facilities there appears to be an active discouragement of unplanned interaction away from the workstations. As in the findings in 'Law', the constraint on the availability of flexible space is likely to shorten the duration of intra and inter-departmental interaction. In 'Uni', intra-departmental unplanned interaction appears to be encouraged on the first, second and third floors, but inter-departmental interaction virtually eliminated by the spatial arrangements. Yet on the ground floor the spatial arrangements are far closer to those seen in 'Tech1' with plenty of space allocated that is highly visible and easy to access. In 'Uni', the ground floor is used by visitors (students) and inhabitants (staff) alike. The spatial arrangements in 'Uni' therefore appear to provide the potential for inhabitant/visitor unplanned interaction rather than inter-departmental. The relationship between inhabitants and visitors in each of the organisations will be analysed further in section 5.1.2 below.

It should be noted that the different potentials for unplanned interaction found between the organisations may or may not be deliberate. In the case of 'Law' there were conscious deliberations about the impact of spatial arrangements on interaction. However, this is not

necessarily always the case. Often spatial arrangements are adopted because of historical precedent and ideas about what is normal for a particular sort of organisation. In some cases the spatial arrangements could just be random. As a result, the variations in spatial layout may be deliberate decisions to prioritise certain types of interaction but equally they may not.

An analysis of bookable meeting rooms will give an indication of the importance each organisation places on planned interaction. Figure 5.9 shows the percentage of space allocated to bookable space. This is simply the reverse of figure 5.7. The differences between the organisations is striking. In 'Mftg', virtually all (94%) of the space allocated to facilities needs to be booked to be used. This is an organisation where, if you want to have an interaction with a colleague away from your desk, you need to have planned it. In 'Tech1', only 30% of facilities can be booked. However, because 'Tech1' has allocated a far greater proportion of the total office space to facilities, this does not mean that bookable facilities are less accessible to employees than in 'Mftg'. This can be seen by studying the spatial relationship between the workstations and the bookable facilities, shown in figure 5.10.

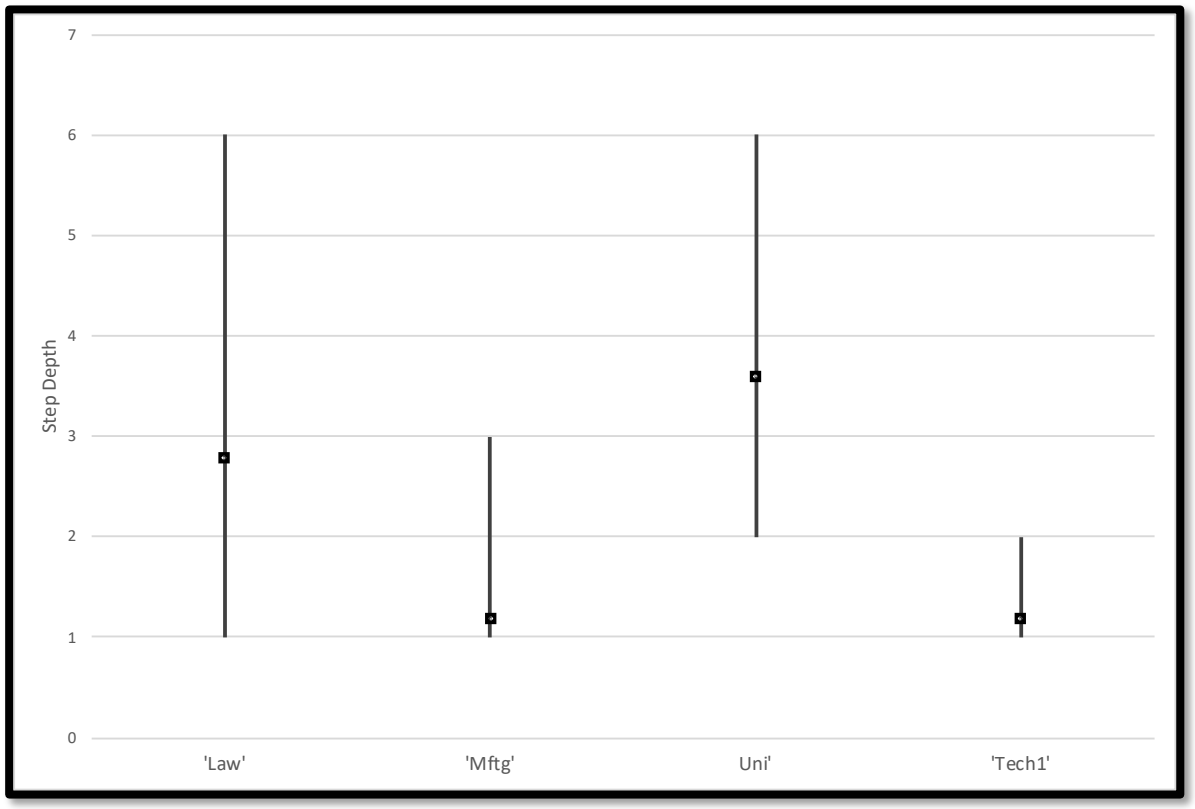
Figure 5.9: Percentage of facilities allocated to bookable space



Source: Comparative spatial analysis using Depthmap X

In both ‘Tech1’ and ‘Mftg’, bookable facilities are highly accessible and visible from desks. In the case of ‘Mftg’ this is not such a surprise given that over 90% of facilities are bookable. However, it is noticeable that these facilities are evenly spread around the office, no-one is more than a step depth of three from a bookable facility and, on average, all employees are a step depth of 1.2 away. In ‘Tech1’ the relationship is very similar, in fact the bookable facilities are even more evenly spread. In ‘Tech1’, no-one is further than a step depth of 2 away and the average is identical to that of ‘Mftg’ at 1.2.

Figure 5.10: Range of step depths to bookable facilities



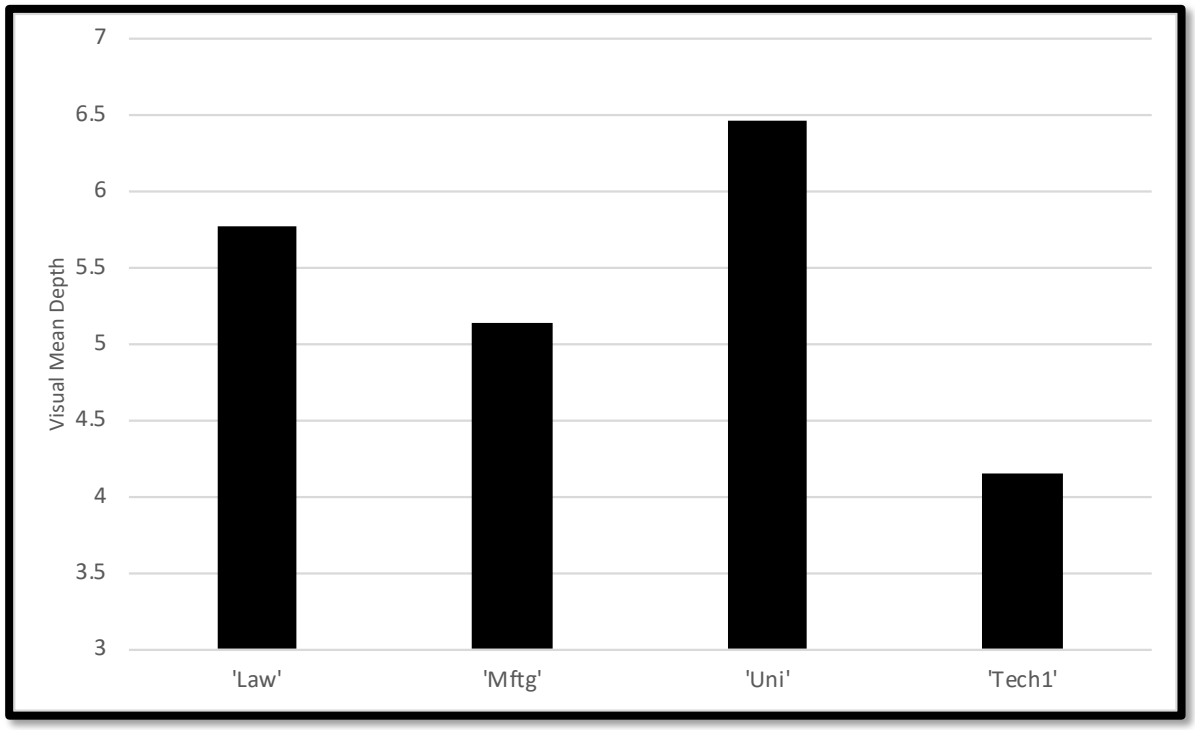
Source: Comparative spatial analysis using Depthmap X

The ‘close’ relationship with bookable facilities in ‘Tech1’ and ‘Mftg’ can be contrasted with that in ‘Law’ and ‘Uni’. In both, the closest bookable facility for some employees is a step depth of 6 away from their workstation. In both, the average step depth is close to 3.

The relationships with bookable facilities in each organisation are reinforced by the degree to which these facilities are segregated or integrated into the office as a whole, shown in figure 5.11.

Not only are bookable facilities further away from desks in ‘Law’ and ‘Uni’, they are also the most segregated. In ‘Law’ it was found that this was, at least in part, due to the need for privacy in meetings with clients. Rooms that are far away and segregated from inhabitants’ desks afford more privacy than those that are close and integrated. The most integrated bookable facilities are found in ‘Tech1’, followed by those in ‘Mftg’ suggesting less concern about privacy in these two firms.

Figure 5.11: Visual mean depth of bookable facilities



Source: Comparative spatial analysis using Depthmap X

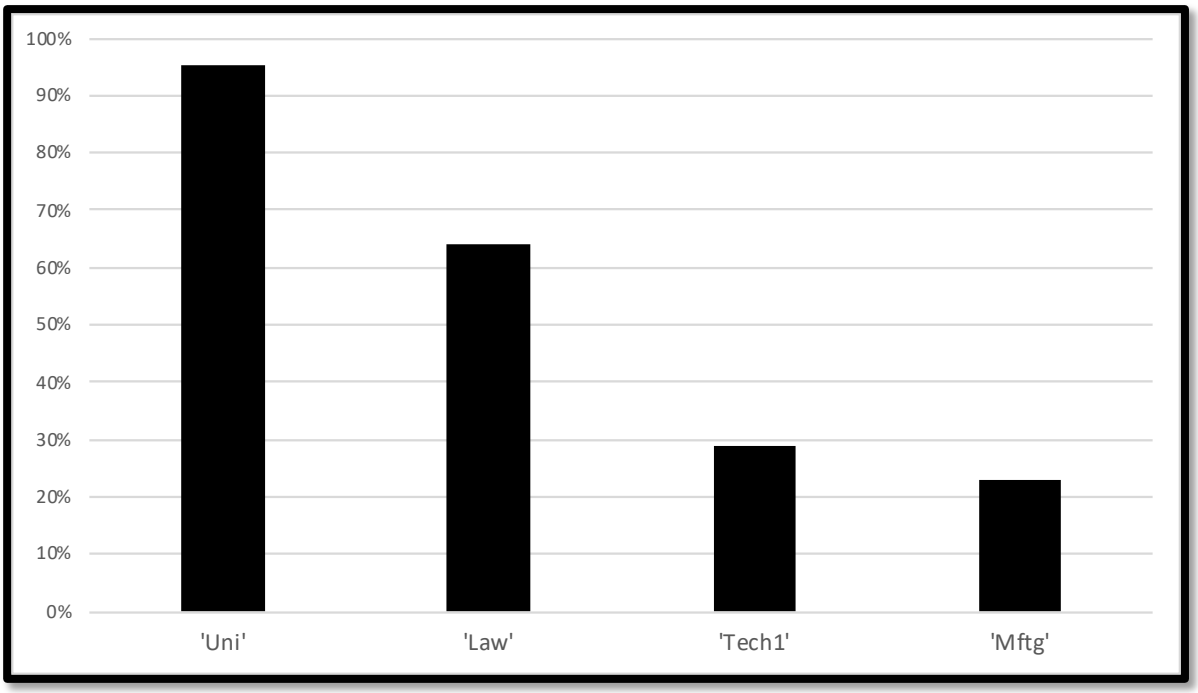
5.1.2 Spatial configuration affecting visitors

The previous two sections analysed the way each organisation allocated the spaces away from workstations between those that were designed for flexible use and those that could only be used by booking. This section examines whether these facilities are designed to be used by visitors as well as inhabitants of the building. The analysis includes both flexible facilities and bookable facilities. Although bookable facilities can typically only be booked by inhabitants, some are clearly also used by visitors, such as client meeting rooms in ‘Law’ and lecture theatres in ‘Uni’.

It is important to note that this thesis has used a single definition for visitors. This is in line with Space Syntax research that suggests the difference between inhabitants of a socio-spatial system and visitors to that system, the definitions for which are given in section 2.6 on page 36, is one of the most important in understanding social structures. However, this is a broad category and it is recognised that the relationships of all visitors to an organisation cannot be considered as equivalent. For example, the relationship of a student to a university may not be the same as a client or customer to a commercial organisation. Given the importance of interaction with visitors and external social networks generally, further subdivision of the category of visitor may be of value in future research. This is discussed further in the conclusions to this thesis.

Figure 5.12 shows the percentage of facilities, in each organisation, that can be used by visitors as well as inhabitants and gives some sense of the importance each organisation places on interaction with visitors.

Figure 5.12: Percentage of facilities that can be used by visitors.



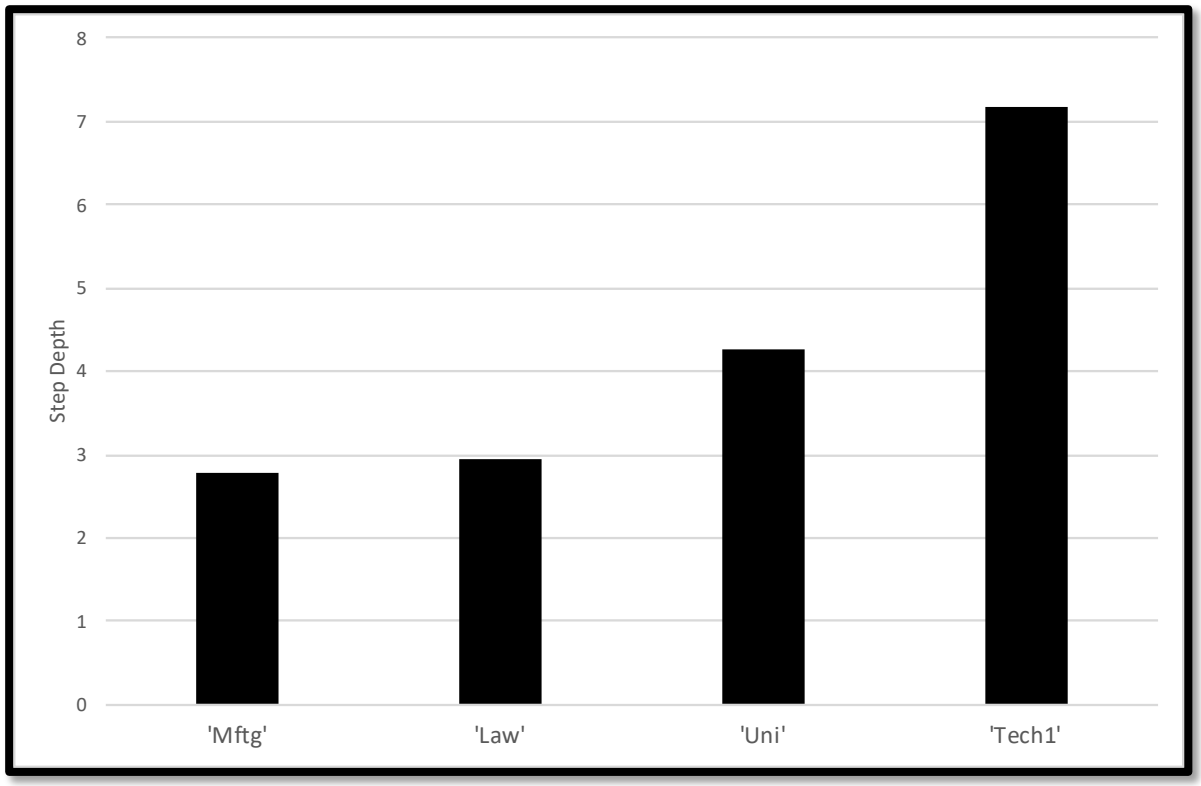
Source: Comparative spatial analysis using Depthmap X

It was established in the analysis of 'Law' that interaction with clients was important to them and this is reflected in more than 60% of their facilities being allocated to visitor use. This

percentage is exceeded only by ‘Uni’ where more than 90% of all facilities are open to the use of visitors to the organisation. This is clearest on the ground floor that is open to students and other visitors and includes access to the main lecture theatres, also used by students. However, access to other floors in ‘Uni’ is also open to students. Some of the smaller lecture theatres are located on the first and second floors, as are seminar rooms and computer labs. Visitors to ‘Uni’ can access all parts of the building apart from the Dean’s office on the third floor. By contrast, ‘Mftg’ and ‘Tech1’ allocate far less space for the potential use of visitors. This suggests a far greater emphasis on interactions between employees of these firms than with visitors, at least when compared with ‘Law’ and ‘Uni’.

However, another important aspect of the relationship between an organisation and its visitors can be found in where the visitor facilities are placed. The position of such facilities may be based on conscious and sound operational decisions or taken-for-granted norms of an industry, however, this analysis is concerned only with the impacts of these choices on interaction. In ‘Law’ the visitor facilities were located as close as possible to the visitor entrance and access to the rest of the building was restricted. This had the impact of virtually eliminating the possibility of chance encounters between inhabitants and visitors. Figure 5.13 shows the average step depth of the visitor facilities from the main visitor entrance in each organisation.

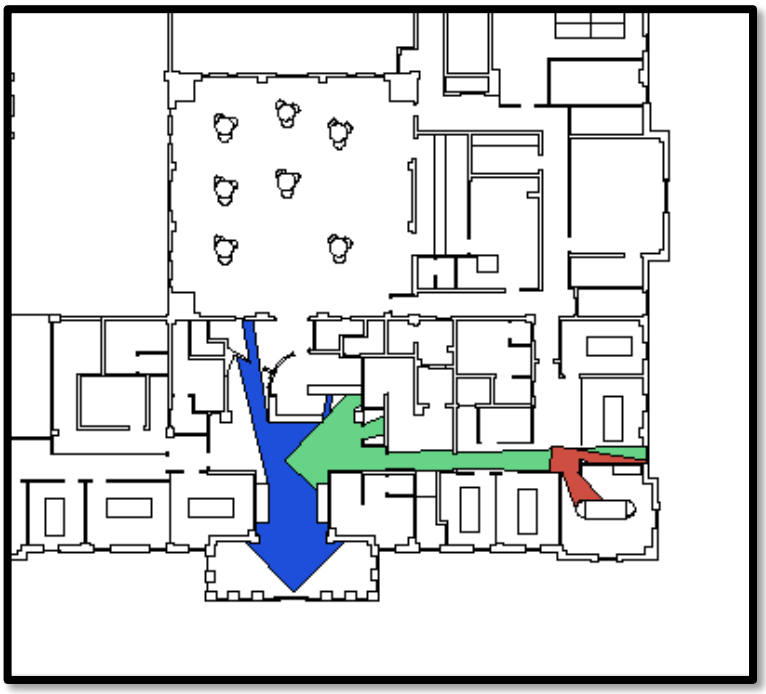
Figure 5.13: Step depth of visitor facilities from main entrance



Source: Comparative spatial analysis using Depthmap X

This analysis reveals a very different relationship with visitors than that suggested by space allocation alone. The control of visitor movement found in 'Law' is revealed by the low average step depth visitors must travel before reaching the facilities that they may use. The same low step depth is found in 'Mftg' where visitors use either a training academy or a large meeting room, both of which are located immediately off the main reception area. In 'Tech1', visitor facilities are located much deeper into the building as visitors travel an average step depth of seven to reach these facilities. The depth of the facilities in 'Tech1' suggests that visitors need to pass inhabitants along the way, creating the possibility of an unplanned encounter along the way. The opportunity for such unplanned inhabitant – visitor interaction is highlighted by plotting the route taken by a visitor in moving from the entrance of the building to the facility they end up using and by understanding what they can see along the way. This is done using a Space Syntax tool called an isovist. An isovist plots what is visible along certain straight-line routes and an example is shown in figure 5.14 of a visitor to 'Law' moving from the main entrance of the building to a client meeting room.

Figure 5.14: Isovist for visitor from entrance to client meeting room in ‘Law’

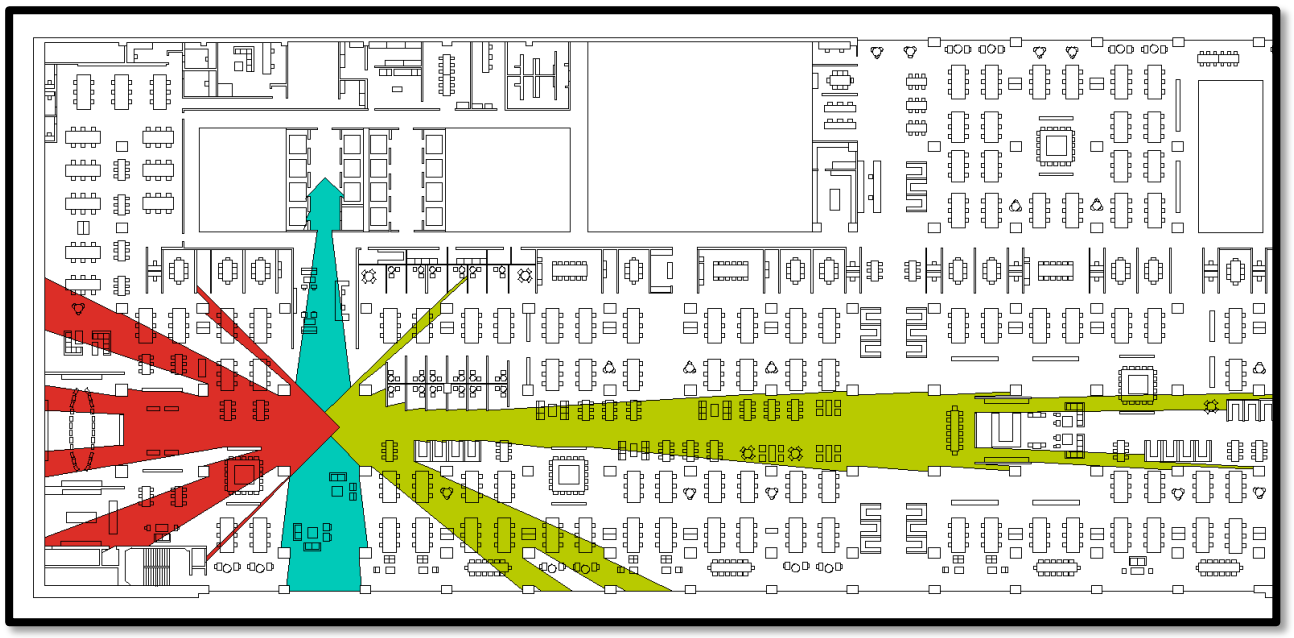


Source: Output from depthmapX software

Each colour represents what is visible to a person with a 90-degree field of view travelling along a straight line. In figure 5.14 there are 3 colours because three turns would be necessary for the journey to be completed. The isovist demonstrates that no workstations are visible whilst making this journey. This can be contrasted with the isovist for a visitor to ‘Tech1’, shown in figure 5.15.

A visitor to ‘Tech1’ arrives via the elevators to the sixth floor, exiting straight into a reception area. There are a range of facilities that can be used by visitors to the building such as the conference room on the sixth floor, the café located on the central boulevard or one of the smaller bookable meeting rooms distributed around the office. A great many desks are directly visible from the routes to these facilities. As a result, the typical path shown in figure 5.15 where the visitor uses the conference room and the café, creates a number of opportunities for informal interaction between the visitor and inhabitant.

Figure 5.15: Isovist for visitor from entrance to conference room and coffee bar in 'Tech1'



Source: Output from depthmapX software

In 'Mftg', the visitor facilities are just as close to the entrance as in 'Law'. What is visible to the visitor on their journey to the visitor facilities provides no opportunity to see workstations. As a result, the visitors in 'Mftg' appear to have little opportunity for informal interaction with inhabitants.

'Uni' provide almost the reverse situation to 'Mftg' and 'Law', with regard to the potential for informal interaction with visitors where a wide range of facilities are used by visitors. On the ground floor the Hub café is open to all visitors and off this are located the main lecture theatres. On the second and third floors are located lecture theatres, seminar rooms, computer labs and administrative offices all of which are used by students. In addition, academics' offices are located throughout the building that visitors use by invitation. As a result, the opportunities for informal interaction between inhabitants and visitors are likely to be more frequent in 'Uni'.

In summary, the spatial configurations of the four organisations studied vary a great deal on a range of spatial measures, found to be important to the interaction profile in 'Law' and the comparative study demonstrates a broad variety of configurations. The degree of integration or segregation, the amount of space allocated to facilities away from workstations and the

location and configuration of space designed for the use of visitors to the organisation all show differences. The degree of variation between the four organisations suggests very different profiles of interaction would be found in each. The profile of interaction inferred for each is summarised at the end of the following section. Before this is done, levels of departmental and inhabitant/visitor correspondence are compared in the comparative organisations.

5.2 A comparison of socio-spatial correspondence and non-correspondence

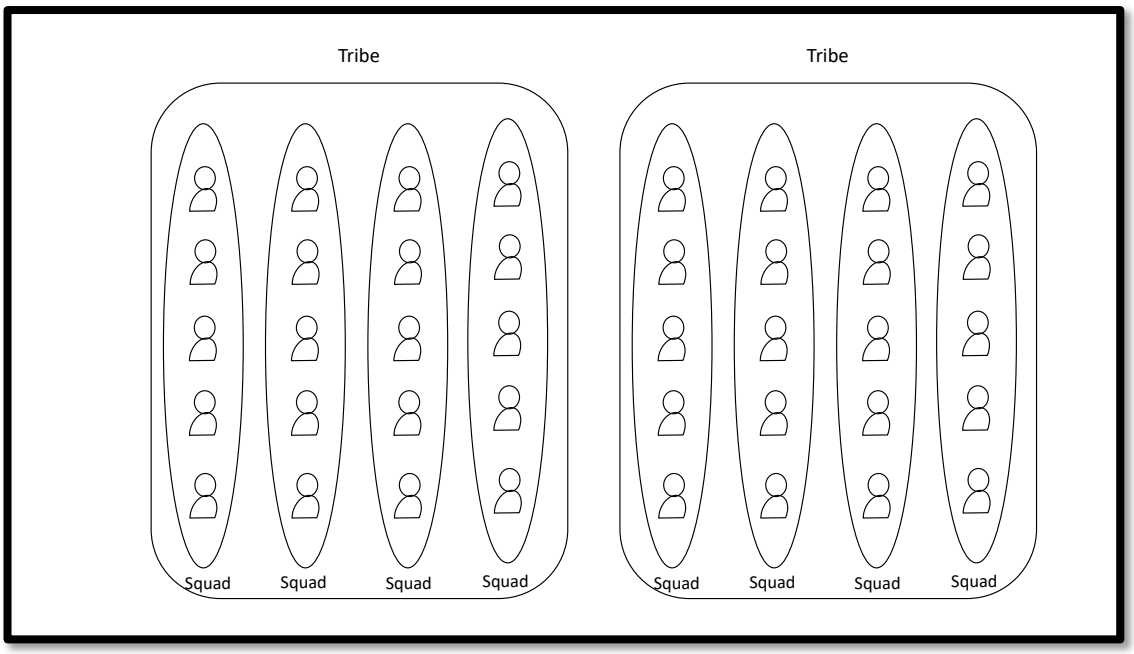
In theory, correspondence, defined in section 2.6 on page 33, is one of the most powerful influences on interaction in a socio-spatial system. In 'Law', a significant degree of departmental and inhabitant/visitor correspondence was found which reinforced and conserved existing intra-departmental relationships and constrained the possibility of new and unexpected interactions with other departments and visitors. This section examines the variation in departmental and inhabitant/visitor correspondence that are possible through different socio-spatial arrangements. The section starts with a detailed description of the second technology organisation, 'Tech2', the head office of a global music streaming business whose socio-spatial arrangements are considered an exemplar of office layout amongst international technology firms. 'Tech2' was not included in the detailed spatial analysis of the previous section because sufficient access was not granted to complete this analysis, however, enough data was gathered to provide detailed qualitative descriptions of the organisation's socio-spatial arrangements and to make the quantitative calculations for departmental and inhabitant/visitor correspondence. In addition, at face value, the socio-spatial arrangements in 'Tech2' are quite different from those found in 'Law' and therefore provide an interesting counterpoint for qualitative and quantitative analysis of the important measure of correspondence.

5.2.1 Correspondence in 'Tech2'

To assess levels of correspondence in 'Tech2' requires an understanding of the spatial and transpatial (social) arrangements which are described in detail before the calculations of correspondence are performed.

The basic team in 'Tech2' is called a squad. A squad is an autonomous, cross functional team. Each squad has sole responsibility for developing a particular aspect of the firm's product such as an Android client, the radio experience or providing payment solutions. They are autonomous in that within the squad they have all the skills required to produce the element of the product for which they are responsible. Each member, therefore, brings a different expertise to the squad. For example, an expert in testing, a web developer and an expert in the backend systems. A squad has up to eight members and each squad has a dedicated workspace.

Figure 5.16: Squads as members of tribes in 'Tech2'



Source: Publicly available information

Each squad in 'Tech2' is a member of a tribe, illustrated in figure 5.16. Tribes are groups of squads that are tasked with work in related areas such as the music player or backend infrastructure. The squads in each tribe are located in close proximity with each other. For this reason, the seating areas in the corridors outside the squad rooms are often referred to as 'tribal lounges'. Tribes are typically limited to 100 people or fewer to ensure that it is possible for members of a tribe to establish and maintain relationships with each other.

Tribes regularly hold gatherings in which one squad shows the others in the tribe what they have been working on. These are held in spaces away from the squad and tribal lounges

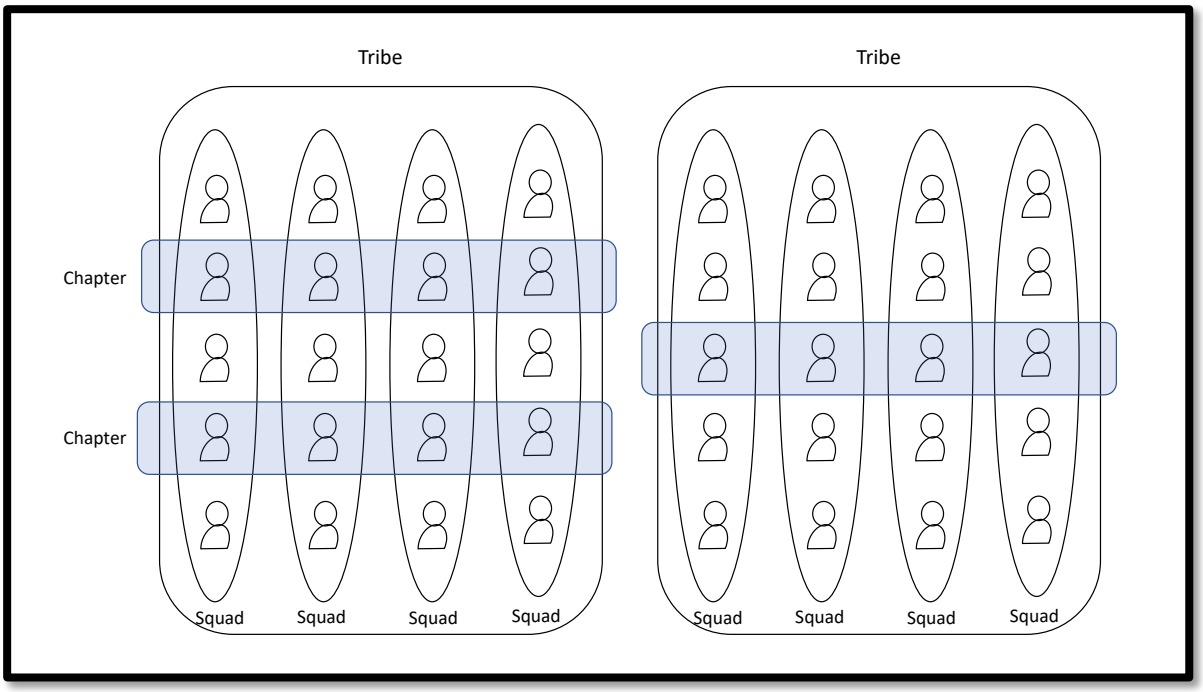
already described. These spaces are designed for larger groups of 50 to 100 and have facilities for audio-visual presentations. This enables the presenters to show live demos of working software to relatively large groups. An example of a tribe gathering is shown in figure 5.17.

Figure 5.17: A tribal gathering in 'Tech2'

Source: Supplied by 'Tech2'

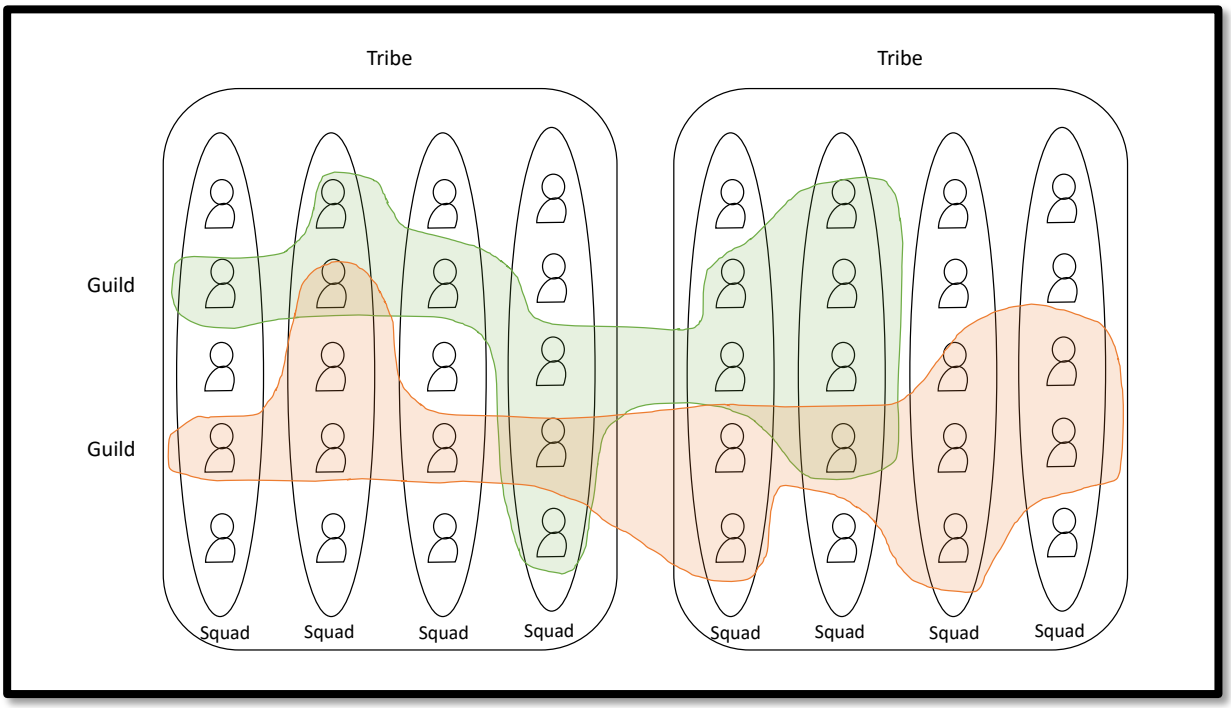
Each member of a squad is also a member of a chapter, illustrated in figure 5.18. Chapters are groups of people with the same specialist skills and exist to ensure that knowledge is shared within each specialism. For example, it is quite possible that a 'tester' in squad A will encounter problems that a tester in squad B has already solved. If not, chapter members can work together to find solutions to common problems. Each chapter has a line manager, or lead, with responsibility for developing people, setting salaries, and ensuring that the group meets regularly. In the analysis that follows, chapters are considered the equivalent of departments in other organisations because of the line reporting. It is rare for someone to leave a chapter and far more common to change between squads or to join newly formed squads. This enables 'Tech2' to react quickly to changing circumstances and to pursue new ideas rapidly by creating, dissolving and remixing teams (Goldsmith, 2015).

Figure 5.18: Relationship between chapters, squads and tribes in ‘Tech2’



Source: Publicly available information

Figure 5.19: Relationship between guilds, tribes and squads in ‘Tech2’



Source: Publicly available information

In addition to the chapters, staff are encouraged to join guilds, illustrated in figure 5.19. Guilds span tribes to include a group of people with common interests. Examples include a guild interested in leading edge web technologies or a guild interested in the 'agile' methodology of running teams. Guilds meet less frequently than tribes and chapters and tend to have wider membership across the office and the firm. Figure 5.20 shows a Guild meeting.

Figure 5.20: A guild meeting in 'Tech2'

Source: Supplied by 'Tech2'

In addition to the work in squads and the commitments to tribes, chapters and guilds, each employee of 'Tech2' is expected to spend 10% of their time on 'hack days'. Hack days are free flowing, creative days with no set agenda where groups can just try things out or build things from scratch. Some groups choose to do a hack day once every two weeks, others save up their hack days so that they can run a hack week.

In 'Tech2', because squads are co-located it is the members of squads that relate to each other because of their spatial proximity. Membership of tribes, chapters and at least one guild create transpatial relations between people because they do not depend on spatial proximity for interaction to occur. On top of these organisational groupings the hack days offer further opportunity to leave the spatial confines of the squad areas to interact with other members

of the firm. The meetings that result from these transpatial affiliations are as a result very common within the organisation.

One of the key characteristics of non-correspondence socio-spatial systems is the degree of openness of the transpatial mixing mechanisms (Hillier and Hanson, 1984, p. 248). It is noted that some meeting mechanisms might vary from formal, almost religious gatherings where membership is strictly controlled and relationships governed by strict rules through to parties for like-minded people that are open to whomever would like to join in (Hillier, 1996, p. 5). In 'Tech2', particular efforts are made to make the meetings held as open to others as possible. It has already been noted that the design of the squad areas is deliberately left open to encourage non-squad members to join discussions held (see figures 3.30 and 3.31). In addition, meetings held by tribes, chapters and guilds are typically called 'unconferences'. This label is used widely in the technology sector to signal that the rules of engagement are far from those typically employed by conference organisers. Typically, there are just two rules for an unconference in 'Tech2'. The first and most important is the 'law of two feet' which states that "*if you aren't contributing or learning or having fun where you are now, use your two feet*" to walk away. The law of two feet applies equally to those invited to the unconference and to those who may happen to be passing. Those passing are encouraged to join in if they think they can contribute or learn, equally those invited are free to start side discussions or leave if they are not learning or contributing to the current proceedings. In this way individuals take personal responsibility for the best use of their own time. The second rule is that "*nobody should be giving a presentation – an unconference is about discussion and conversations*". Figure 5.20 is an example of an unconference in action.

'Tech2' also invite several customers into their premises on gig nights. Bands play short gigs in the offices and customers of the 'Tech2' product are invited to be present. Staff, customers and musicians are all present and intermingle during the performance. Gig nights increase the number of visitors to the organisation.

At face value, the socio-spatial arrangements in 'Tech2' are quite different to those found in 'Law'. In 'Law' it was concluded that the spatial and transpatial relationships were largely in correspondence, both internally (departmental) and externally (inhabitant/visitor). Teams were organised by the legal speciality and these teams were co-located. The organisation

chart reflected this with heads of departments for each legal specialism, team leaders line reporting to them and more junior staff reporting to the team leaders. It was therefore very likely that each member of staff was co-located with their line manager. It was also observed that examples of transpatial mixing mechanism were rare and when they did occur tended to be rather closed and exclusive to those invited. In addition, visitors and inhabitants rarely had the opportunity for unplanned interaction.

'Tech2' appears to provide an example of a very different organisational setting. The line managers in 'Tech2' are chapter leads and not the squad leaders and as a result, employees rarely sit in close spatial proximity to their line manager. Because line managers in 'Tech2' head chapters, this thesis treats a chapter as equivalent to a department. Spatially each employee is co-located within a squad and the squad areas are designed to maximise interaction between the members. However, each employee is also a member of a tribe, a chapter and at least one guild. The mixing mechanisms that encourage these groupings to interact are common and the format used for all these gatherings are deliberately open to those not invited. In addition, visitors to 'Tech2' move deeper into the office creating more opportunities for unplanned interaction with inhabitants.

'Tech2' appears to represent an example of departmental non-correspondence in its socio-spatial system. This should be reflected in the calculations for both departmental and inhabitant/visitor correspondence which are shown below.

5.2.1.1 Calculation of departmental correspondence in 'Tech2'

The figures used to calculate departmental correspondence ($Q_{(intra/inter)}$) in 'Tech2' are shown in table 5.2. The same definition for spatial closeness is used and the chapter is taken as the main mechanism for transpatial closeness because this reflects direct line of reporting in the organisation structure.

Table 5.2: Yule's Q data for intra/inter correspondence in 'Tech2' using social and spatial data

Q(intra/inter)'Tech2'	**Spatially Close**	**Spatially Separated**	**Totals**
Transpatially Close	a = 25	b = 55	a + b = 80
Transpatially Separated	c = 245	d = 335	c + d = 580
Totals	a + c = 270	b + d = 390	a + b + c + d = 660

Using these figures in the formula for Yule's Q the correspondence of 'Tech2' is calculated as;

Q(intra/inter)'Tech2' = (a x d – b x c)/(a x d + b x c) = (8,375 – 13,475)/(8,375 + 13,475) = (**0.23)**[12]

The figure of (0.23) for departmental correspondence (Q(intra/inter)) shows a socio-spatial system in negative non-correspondence and can be contrasted with that of 'Law' that has figure of 0.86. The negative figure means that interaction with people in other departments are likely to exceed those within a department. For 'Tech2' this happens because inhabitants are organised spatially into squads that have representatives from several departments (chapter).

5.2.1.2 Calculation of inhabitant/visitor correspondence in 'Tech2'

The calculation for inhabitant/visitor correspondence (Q(inhabitant/visitor)) for 'Tech2' can also be calculated and the figures are shown in table 5.3.

[12] The brackets represent a minus figure

Table 5.3: Yule's Q data for inhabitant/visitor correspondence in 'Tech2' using social and spatial data

$Q_{(inhabitant/visitor)}$'Tech2'	**Spatially Close**	**Spatially Separated**	**Totals**
Transpatially Close	a = 280	b = 380	a + b = 660
Transpatially Separated	c = 9	d = 101	c + d = 110
Totals	a + c = 289	b + d = 481	a + b + c + d = 770

Using these figures in the formula for Yule's Q, the inhabitant/visitor correspondence of 'Tech2' is calculated as;

$$\mathbf{Q_{(inhabitant/visitor)}'Tech2'} = (a \times d - b \times c)/(a \times d + b \times c) = (28{,}280 - 3{,}420)/(28{,}280 + 3{,}420) = \mathbf{0.78}$$

This compares with the figure for 'Law' of 0.96 calculated in section 4.1.2.3. The lower figure for inhabitant/visitor correspondence found in 'Tech2' shows a socio-spatial system that less emphatically separates inhabitants from visitors, yet despite all the open plan space and flexible facilities dedicated to informal interaction, the calculation of inhabitant/visitor correspondence ($Q_{(inhabitant/visitor)}$) for 'Tech2' still shows a correspondence system. In other words, the socio-spatial system tends to conserve the relationships between employees of the business and does not encourage more diverse interaction with visitors. This is because the offices for 'Tech2' are, like 'Law', closed to outsiders without invitations. Despite the gig nights and the extra visitors these bring to the offices, unplanned encounters with visitors are still relatively rare. The result is that multi network interaction is still constrained by the socio-spatial system employed by 'Tech2'.

5.2.2 Correspondence in 'Tech1'

A full spatial analysis has been conducted on 'Tech1', the technology firm specialising in mobile payment solutions, and in this section the scores for departmental and inhabitant/visitor correspondence are calculated in order to make a comparison with the other organisations studied. Qualitatively in 'Tech1' are found some of the same

characteristics of non-correspondence as were described for 'Tech2'. Employees are located at desk clusters in cross-functional teams and the functional reporting crosses the whole organisation.

5.2.2.1 Calculation of departmental correspondence in 'Tech 1'

The figures to calculate departmental correspondence ($Q_{(intra/inter)}$) in 'Tech1' are shown in table 5.4.

Table 5.4: Yule's Q data for intra/inter correspondence in 'Tech1' using social and spatial data

$Q_{(intra/inter)}$'Tech1'	**Spatially Close**	**Spatially Separated**	**Totals**
Transpatially Close	a = 32	b = 71	a + b = 103
Transpatially Separated	c = 276	d = 371	c + d = 647
Totals	a + c = 308	b + d = 442	a + b + c + d = 750

Using these figures in the formula for Yule's Q the departmental correspondence of 'Tech1' is calculated as;

$Q_{(intra/inter)}$'Tech1' = (a x d – b x c)/(a x d + b x c) = (11,872 – 19,596)/(11,872 + 19,596) = (**0.24)**

Like 'Tech2', 'Tech1' shows negative departmental non-correspondence within the single network defined by employment within the business.

5.2.2.2 Calculation of inhabitant/visitor correspondence in 'Tech1'

Table 5.5 shows the figures to calculate inhabitant/visitor correspondence ($Q_{(inhabitant/visitor)}$) in 'Tech1'.

Table 5.5: Yule's Q data for inhabitant/visitor correspondence in 'Tech1' using social and spatial data

$Q_{(inhabitant/visitor)}$'Tech1'	**Spatially Close**	**Spatially Separated**	**Totals**
Transpatially Close	a = 318	b = 432	a + b = 750
Transpatially Separated	c = 8	d = 104	c + d = 112
Totals	a + c = 326	b + d = 536	a + b + c + d = 862

Using these figures in the formula for Yule's Q the inhabitant/visitor correspondence of 'Tech1' is calculated as;

$Q_{(inhabitant/visitor)}$'Tech1' = (a x d – b x c)/(a x d + b x c) = (33,072 – 3,456)/(33,072 + 3,456) = **0.81**

Like 'Tech2', 'Tech1' is also closed to visitors that are not there by invitation resulting in a correspondence in inhabitant/visitor socio-spatial structures. The results of the calculations for 'Tech1' and 'Tech2' show very similar results.

5.2.3 Correspondence in 'Uni'

The main transpatial relationships in 'Uni' for inhabitants are the specialist departments. The management school faculty is divided into eight departments each one specialising in a different area of management education such as strategy or economics. In addition, there is a strong transpatial bond between students who qualify as visitors to the organisation. Like the specialist lawyers in 'Law', the academics in each department occupy offices that are co-located. To this extent there appears to be a correspondence between the spatial arrangements and the transpatial relationships when considering the academic departments. However, away from the academics' offices correspondence is much less evident. For

example, lecture theatres are specifically designed for transpatial interactions between teaching staff and students. Equally, the Hub is a large open area used by staff and students creating opportunities for interactions generated by spatial proximity across the transpatially affiliated groups.

5.2.3.1 Calculation of departmental correspondence in 'Uni'

The departmental correspondence for 'Uni is calculated in table 5.6.

Table 5.6: Yule's Q data for intra/inter correspondence in 'Uni' using social and spatial data

$Q_{(intra/inter)}$'Uni'	**Spatially Close**	**Spatially Separated**	**Totals**
Transpatially Close	a = 20	b = 19	a + b = 39
Transpatially Separated	c = 18	d = 193	c + d = 211
Totals	a + c = 38	b + d = 212	a + b + c + d = 250

Using these figures in the formula for Yule's Q the departmental correspondence of 'Uni' is calculated as;

$$\mathbf{Q_{(intra/inter)}'Uni'} = (a \times d - b \times c)/(a \times d + b \times c) = (3{,}860 - 342)/(3{,}860 + 342) = \mathbf{0.83}$$

This figure shows a correspondence system internally similar to that found in 'Law'.

5.2.3.2 Calculation of inhabitant/visitor correspondence in 'Uni'

Table 5.7 shows the data required to calculate inhabitant/visitor correspondence ($Q_{(inhabitant/visitor)}$) for 'Uni'.

Table 5.7: Yule's Q data for inhabitant/visitor correspondence in 'Uni' using social and spatial data

Q(inhabitant/visitor)'Uni'	**Spatially Close**	**Spatially Separated**	**Totals**
Transpatially Close	a = 38	b = 212	a + b = 250
Transpatially Separated	c = 155	d = 245	c + d = 400
Totals	a + c = 193	b + d = 457	a + b + c + d = 650

Using these figures in the formula for Yule's Q the inhabitant/visitor correspondence of 'Uni' is calculated as;

Q(inhabitant/visitor)'Uni' = (a x d – b x c)/(a x d + b x c) = (32,868 – 9,310)/(32,868 + 9,310) = **0.55**

This result for Q(inhabitant/visitor) is significantly less correspondent that 'Law', 'Tech1' or 'Tech2'. The openness of the building at 'Uni' means that the potential for unplanned interaction between inhabitants and visitors is greater than in those other organisations. This creates the possibility of bringing a breadth to the unplanned interaction across multiple networks.

5.2.4 Correspondence in 'Mftg'

In 'Mftg', employees are organised either by business unit or by function in services that are shared across business units. Four business units are sited in the office studied and the shared services include functions such as purchasing, accounts and customer service. These groupings, as the main reporting structures, also form the main transpatial affiliations within the firm. Spatially, each business unit and each function are co-located. This arrangement describes a correspondence system. However, there is a certain amount of matrix organisation built into this structure in that each function performs tasks for each of the business units. For example, someone in a purchasing function will buy materials for each of the business units, someone in customers services will take sales orders for each of the

businesses. In this way members of each functional shared service will have some sort of transpatial relationship with the business units.

5.2.4.1 Calculation of departmental correspondence in 'Mftg'

The figures required to calculate departmental correspondence ($Q_{(intra/inter)}$) in 'Mftg' are shown in table 5.8.

Table 5.8: Yule's Q data for intra/inter correspondence in 'Mftg' using social and spatial data

$Q_{(intra/inter)}$'Mftg'	**Spatially Close**	**Spatially Separated**	**Totals**
Transpatially Close	a = 36	b = 5	a + b = 41
Transpatially Separated	c = 38	d = 126	c + d = 164
Totals	a + c = 74	b + d = 131	a + b + c + d = 205

Using these figures in the formula for Yule's Q the departmental correspondence of 'Mftg' is calculated as;

$Q_{(intra/inter)}$'Mftg' = (a x d – b x c)/(a x d + b x c) = (4,536 – 190)/(4,536 + 190) = **0.91**

This shows a correspondence system similar to that found in 'Law' where interaction is likely to be weighted towards intra-departmental.

5.2.4.2 Calculation of inhabitant/visitor correspondence in 'Mftg'

Table 5.9 shows the data required to calculate inhabitant/visitor correspondence ($Q_{(inhabitant/visitor)}$) in 'Mftg'.

Table 5.9: Yule's Q data for inhabitant/visitor correspondence in 'Mftg' using social and spatial data

Q(inhabitant/visitor)'Mftg'	**Spatially Close**	**Spatially Separated**	**Totals**
Transpatially Close	a = 74	b = 131	a + b = 205
Transpatially Separated	c = 0.4	d = 10.6	c + d = 11
Totals	a + c = 74.4	b + d = 141.6	a + b + c + d = 216

Using these figures in the formula for Yule's Q the inhabitant/visitor correspondence of 'Mftg' is calculated as;

Q(inhabitant/visitor)'Mftg' = (a x d – b x c)/(a x d + b x c) = (784.4 – 52.4)/(784.4 + 52.4) = **0.87**

Because the training academy in 'Mftg' is located next to the main entrance for employees, some unplanned interaction between inhabitants and visitors is encouraged.

5.2.5 Summary of the comparison of socio-spatial correspondence

This section aimed to explore the variation across selected organisations in the socio-spatial conditions known to influence social interaction. Interaction data is not gathered directly from these firms but the relationships between space and interaction found earlier in the thesis are used to infer likely profiles of interaction for each. What follows summarises what can be inferred about the likely profiles of interaction in comparison with that measured in 'Law'.

As a reminder, the profile of unplanned interaction in 'Law' saw a profile weighted towards intra-departmental interaction, where inter-departmental interaction appeared to be constrained, in particular in terms of the duration of the interaction. Unplanned interaction with visitors had been almost eliminated by the spatial arrangements. Overall, the social-spatial system showed strong correspondence both internally and externally.

In 'Tech1', the integration of the building overall suggested the highest frequency of unplanned interaction of all the organisations studied. The allocation of space to facilities,

their evenly spread accessibility across the office suggested and the departmental non-correspondence all pointed to a much more even distribution of interaction between intra-departmental and inter-departmental. As a result, inter-departmental interaction is likely to be much higher in 'Tech1' than in 'Law'. Although the spatial arrangements in 'Tech1' suggested interaction with visitors would be greater than that in 'Law', it was still a socio-spatial system with inhabitant/visitor correspondence, suggesting that unplanned interaction with visitors is still constrained.

Despite some differences, the spatial system in 'Mftg' was similar to that of 'Law' suggesting a similar profile of interaction.

Some of the biggest difference in spatial structure were found in 'Uni'. The only organisation studied using cellular offices for inhabitants and the least integrated building is likely to mean unplanned interaction is lower in 'Uni' than in the other organisations. The self-contained spatial arrangement of each department suggests inter-departmental interaction would be constrained, however the movement caused by attractors mitigates this somewhat and the score for departmental correspondence suggested greater levels of inter-departmental interaction were made possible than in either 'Law' or 'Mftg' but less than in 'Tech1'. The biggest difference in 'Uni' was in the potential for interaction with visitors. The lowest score for inhabitant/visitor correspondence suggests the greatest opportunity for unplanned interaction across multiple social networks.

Having investigated the spatial arrangements of the five organisations studied and considered the implications for their interaction profiles, the following section discusses what this is likely to mean for each organisation in terms of their emergent strategy.

A typology for emergent strategy is proposed based on the findings described above.

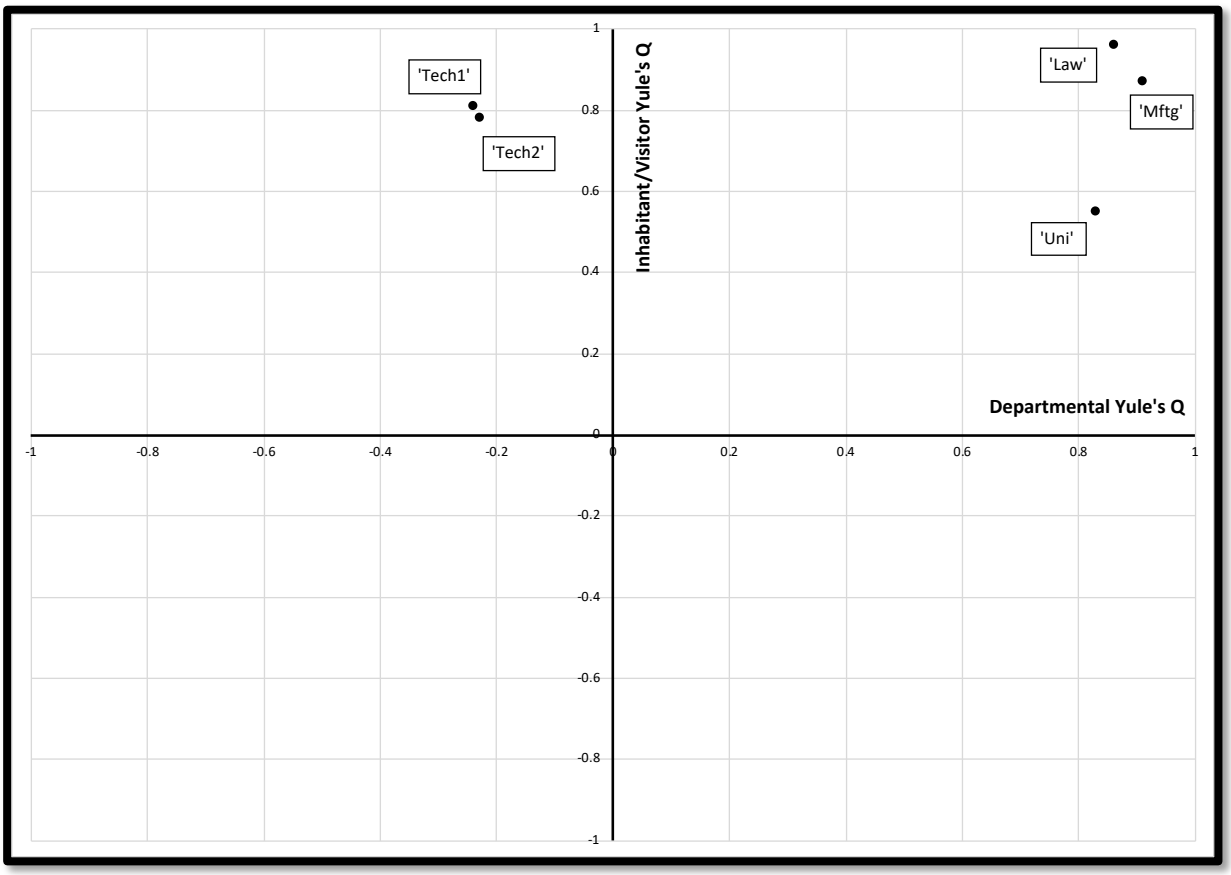
5.3 A summary of the calculations for correspondence and a typology of emergent strategy

The measures for departmental and inhabitant/visitor correspondence capture much of the information found to be relevant to the relationship between physical space and emergent strategy by this thesis. Correspondence was found to explain the ratio of interaction between

departmental colleagues and colleagues from other departments, and between inhabitants and visitors. In other words, correspondence helps explain who interacts with whom and with what frequency. Differences were found between the five organisations for which these two measures of correspondence have been calculated. Departmental correspondence varied from a low of minus 0.24 in 'Tech1' to a high of 0.91 in 'Mftg'. Inhabitant/visitor correspondence varied from a low of 0.55 in 'Uni' to a high of 0.96 in 'Law' and no negative values were found in the organisations studied. The values for each of the organisations studied are plotted on a graph shown in figure 5.21 in which the horizontal axis represents departmental correspondence and the vertical axis inhabitant/visitor correspondence. The full range of possible values for Yule's Q are shown on both axes that range from minus 1 to plus 1.

In section 5.3.1, the position on figure 5.21 of each of the organisations studied is discussed. This is followed with a proposed typology for emergent strategy that links these positions back to the literature summarised in table 2.1.

Figure 5.21: Summary of the calculations for correspondence



5.3.1 Correspondence, configuration and unplanned social interaction for the five organisations studied

Using the relationship between correspondence and interaction ratios found in 'Law' and shown in figure 4.19, it is possible to summarise what the findings of the socio-spatial analysis mean for interaction in each of the comparative organisations studied. A reminder of the findings in 'Law' is described first followed by each of the other organisations based on their position in figure 5.21.

5.3.1.1 Summary of 'Law's' socio-spatial structure and implications for interaction

In 'Law', the calculations of spatial configuration showed the most integrated spaces to be the desk clusters occupied by the lawyers, and it was here that the highest frequency of unplanned interaction was found. In addition, the departments located in the most integrated spaces had a higher frequency of interaction when compared with those in less well integrated spaces. A high degree of departmental correspondence within 'Law' was found as the social structures aligned with the way the office was organised spatially. The high degree of departmental correspondence meant that across 'Law' intra-departmental interaction was nearly five times more frequent than inter-departmental interaction. This ratio of intra to inter-departmental interaction varied between the departments such that at the extremes the Litigation department interacted amongst themselves 10 times more often than with other departments whilst for the Real Estate department it was only twice as often.

An even higher level of correspondence was found using the inhabitant/visitor measure for correspondence, a socio-spatial arrangement that seriously constrained unplanned interaction with visitors.

This socio-spatial structure places 'Law' at the top right hand corner of figure 5.21

5.3.1.2 Summary of 'Mftg's' socio-spatial structure and implications for interaction

The analysis of 'Mftg' places it in a similar position on figure 5.21 to 'Law'. Both departmental correspondence and inhabitant/visitor correspondence in 'Mftg' are tending towards plus 1, making a profile of interaction that is likely to be similar to that of 'Law's'. The global measure for integration (see figure 5.1) is also similar suggesting that overall the frequency of

interaction is also likely to be similar. The integration of workstations is similar and also sits between the more extreme values found in the more segregated 'Uni' and the more integrated 'Tech1 & 2'. Areas of transit are very similar in terms of their integration into the building as a whole and the findings suggested no discernible difference in the way both systems used attractors. In both buildings the flexible facilities were unevenly accessible to inhabitants, as were the bookable facilities.

However, a breakdown of the analysis that leads to this conclusion highlights an important insight gained from the use of the methods developed in this thesis.

Subjectively, the look and feel of the 'Mftg' offices are quite different to those of 'Law'. The building occupied by 'Mftg' is based in an industrial area of a big city, whereas the building occupied by 'Law' sits within landscaped gardens of a residential area of a regional town. The footprint of the 'Mftg' building follows an 'L' shape creating long thin office accommodation. There is a single main thoroughfare that runs along the centre of the 'L' and workspaces are located off this transit path. All movement in the office is forced along this path. The entrance is at the centre of the 'L' so movement to and from desks repeats the same route – there are no alternatives or circular routes. Working areas are a mix of offices for more senior staff and open plan desk clusters for more junior staff.

By contrast, the footprint of 'Law' is a square creating the opportunity for fatter spaces such as the square shaped 'Atrium'. The areas of transit run around the square footprint creating the possibility of optional routes for people when moving around the office. Working areas with desks are all open plan and only bookable meeting spaces are cellular.

As a result, what is found when 'Mftg' with 'Law' are compared, is two organisations that subjectively appear to have very different spatial layouts, but which objective socio-spatial analysis suggests are really quite similar. Given the way each organisation has chosen to organise itself, what this is likely to mean in practice is that the lived experience of being in each of these buildings would also be similar. An employee would interact with team mates, colleagues and visitors at similar frequencies regardless of which building their organisation used. In effect, the two organisations could swap offices and notice little difference in their day-to-day activities. According to Hillier the reason subjective assessment of space might be

different to the objective assessment is that our minds handle spatial configuration unconsciously but we "*find it very difficult to analyse and talk rationally about the configurational aspects of things*" (Hillier, 1996, p. 3).

According to Space Syntax theory and in line with the relationships between interaction and spatial measures within 'Law', the similarity in configuration and correspondence in 'Law' and 'Mftg' means that their profiles of interaction are likely to be similar. That is, a relatively high frequency of unplanned interaction that is weighted towards intra-departmental and largely excludes interaction with visitors.

The importance of this finding is that it may not always be possible to understand how a spatial system is likely to impact interaction within an organisation through subjective means alone. The methods used and developed in this thesis provide objective measures of socio-spatial systems that are hard to articulate or describe subjectively.

5.3.1.3 Summary of 'Tech1's' and 'Tech2's' socio-spatial structure and implications for interaction

The offices of 'Tech1' appear to be of the style being built by many technology firms around the world. They are modern and 'trendy' in appearance with lots of different places for people to sit, stand and interact. Employees can work at desks, in cafés or in little cubicles. They are described in an article in the Harvard Business Review as 'cathedrals to innovation' (Waber, Magnolfi and Lindsay, 2014) but, given the finding above, that it is hard to understand the impact of socio-spatial systems through appearances, it is an important question to ask whether the spatial structure is, in Space Syntax terms, any different to the other offices studied.

In fact, the spatial analysis showed that the spatial structure of 'Tech1' was substantially different to the others studied. Overall, the offices were the most integrated (lowest AVMD), as were the workspaces and areas of transit. 'Tech1' also used attractors differently to the other organisations by placing them across the floor plan in highly integrated places which encourages more movement and more unplanned interaction (Sailer *et al.*, 2012). 'Tech1' also allocated far more space to facilities (see figure 5.5) than the other organisations studied and far more space to flexible facilities that could be used without booking (see figure 5.7). It

was also shown that these facilities were made more accessible to all inhabitants through the number provided and their positions in the overall spatial system.

Waber et.al. suggest that this style of office is designed to "*maximise chance encounters*" (2014, p. 70) and it was concluded in the calculations of spatial configuration (in section 4.4) that 'Tech1' was an organisation that took unplanned interaction very seriously. All the configuration measures suggest that the frequency of unplanned interaction would be at its highest within 'Tech1'. The internal (departmental) measure for correspondence also suggested that who interacted would be different to 'Law' and 'Mftg'. The departmental correspondence score of minus 0.24 shows a socio-spatial system displaying negative non-correspondence which means that inhabitants are more likely to interact with members of other departments than with members of their own. This supports the claim in the literature that this style of building encourages chance encounters, at least between the inhabitants of building studied and this places 'Tech1' furthest to the left in figure 5.21.

However, the measure for inhabitant/visitor correspondence of 0.81 shows a relatively high degree of correspondence suggesting that, like 'Law' and 'Mftg', unplanned interaction with visitors is not encouraged by the socio-spatial system.

Overall, this places 'Tech1' at the top left of figure 5.21 and the analysis of 'Tech2' shows a socio-spatial system that works in a very similar way.

5.3.1.4 Summary of 'Uni's' socio-spatial structure and implications for interaction

Hillier and Hanson identified the importance of the interfaces between inhabitants and visitors to socio-spatial systems and suggested that fundamental differences in these interfaces could be found in buildings. Where these differences existed, Hillier and Hanson suggested that the buildings should be considered to be a fundamentally different type (Hillier and Hanson, 1984, p. chapter 5).

With the lowest score for inhabitant/visitor correspondence of 0.55, a score that is tending towards positive non-correspondence, 'Uni' does appear to be different to the other four organisations studied. This is confirmed by some of the specific configurational findings for the 'Uni' building. For example, inhabitants occupy the deepest spaces, and these are the

most segregated in the building. Visitors occupy the shallowest spaces, and these are the most integrated. In addition, there is less control of the interface between inhabitants and visitors in 'Uni' than in the other organisations studied. Visitors use the deeper parts of the building normally occupied by the inhabitants because of the spatial location of seminar rooms, academics' offices and computer rooms. In addition, inhabitants are encouraged into the shallower parts of the building through the use of attractors such as the Hub café and lecture theatres. As a result, the spatial arrangements used in 'Uni' are likely to generate more interaction between inhabitants and visitors than the other organisations studied.

It has already been noted (on page 35) that the categorisation of visitors in Space Syntax methodology and adopted by this thesis is broad. It could certainly be argued that students are a different type of visitor to those of the other organisations studied. Future research might benefit from a sub-categorisation of the inhabitant and visitor categories. Nevertheless, the analysis does demonstrate that the socio-spatial structure of 'Uni' is different to the other organisations studied with regard to the relationship between inhabitants and visitors.

In figure 4.19 a relationship between correspondence scores and interaction ratios was shown. The inhabitant/visitor correspondence for 'Law' was 0.96 and this translated into unplanned interactions between inhabitants being over 100 times more likely than with visitors. Using the same relationship[13], the inhabitant/visitor correspondence score of 0.55 would suggest that interactions between inhabitants would be twice as likely as with visitors in 'Uni'.

Despite this, 'Uni' is still placed in the top right corner of figure 5.21 with 'Law' and 'Mftg' suggesting that intra-departmental interactions are likely to be more frequent than inter-departmental interactions and interactions amongst inhabitants are likely to be more frequent than with visitors. This broader perspective of the differences between the five organisations studied raises questions about what the socio-spatial structures of each suggest

[13] It is fully recognised that this thesis has not established that the curve describing interaction ratios in 'Law' would apply in other organisations and this example is provided for illustrative purposes.

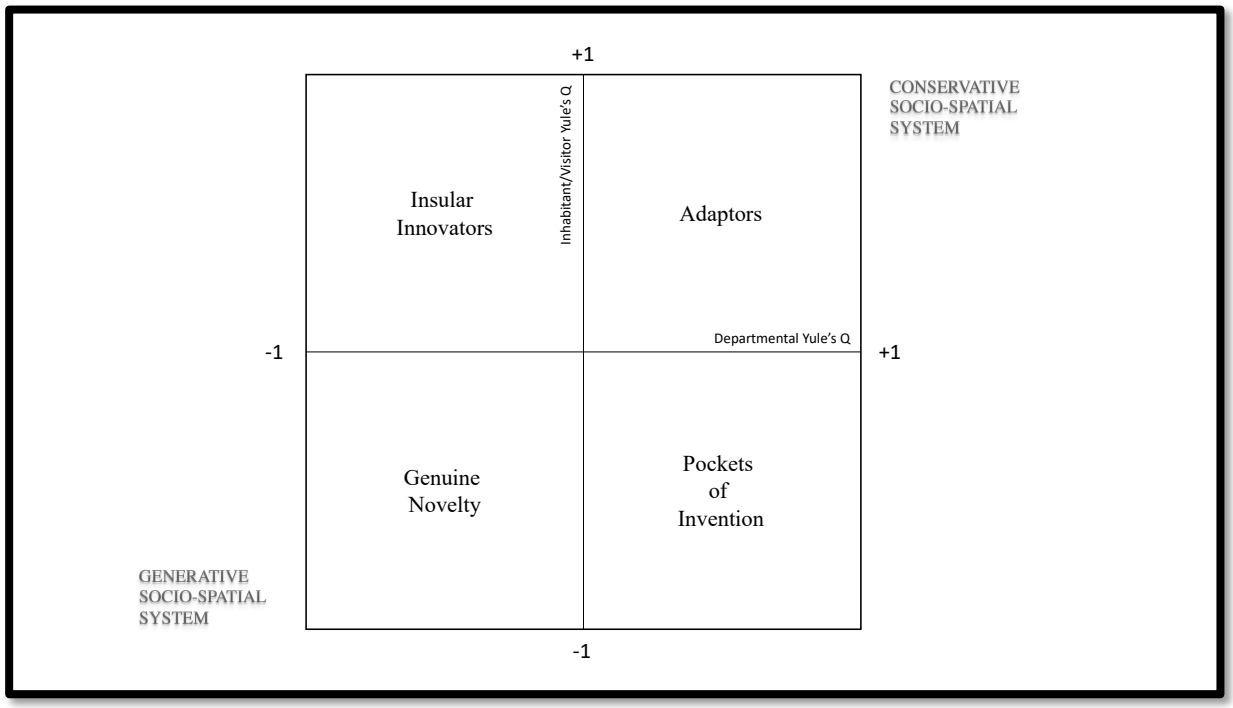
about the propensity for emergent strategy making in each organisation. This is question is tackled in the following section that suggests a typology of emergent strategy based on the position of each of the organisations on figure 5.21.

5.4 A typology for an organisation's propensity for emergent strategy making

In the literature chapter of this thesis the varying relationship between unplanned interaction profiles and the characteristics of emergent strategy was established (section 2.2.2 on pages 14 – 16) and this is summarised in table 2.1.

Combining the insights from table 2.1 with the calculations presented in this thesis a typology of emergent strategy is suggested and shown in figure 5.22.

Figure 5.22: A socio-spatial typology of emergent strategy



The typology uses the same axes as those used to summarise the socio-spatial systems found in the five comparative organisations showed in figure 5.21. Departmental correspondence is plotted on the x axis and inhabitant/visitor correspondence on the y axis. Because Yule's Q scores must fall between -1 and +1 these figures form the extent of both axes.

The typology splits the chart into four quadrants, each of which have very different correspondence scores which suggest different profiles of interaction and hence different propensities for emergent strategy making. Each of these quadrants is labelled in accordance with the headings in table 2.1 and described in turn below.

5.4.1 Adaptors

In the top right quadrant of the typology intra-departmental interaction will be more frequent than inter-departmental and inhabitants will interact more frequently with each other than with visitors. With a positive figure for both departmental and inhabitant/visitor correspondence resulting in an interaction profile weighted towards departmental structures, emergence is most likely to take the form of modest adaptations to the current *status quo*. In Space Syntax terminology this would be known as a conservative socio-spatial system. As a result, an organisation with socio-spatial arrangements that place it in this quadrant of the typology is likely to experience emergent strategy as a propensity for adaptation.

5.4.2 Insular innovators

In the top left quadrant of the typology intra-departmental interaction will be less frequent than inter-departmental but inhabitants will still interact more frequently with each other than with visitors. As innovation is the degree to which ideas are able to usefully spread around an organisation it requires inter-departmental interaction. With a negative figure for departmental correspondence and a positive figure for inhabitant/visitor correspondence, the interaction profile is likely to encourage innovation within the organisation because of the high levels of inter-departmental interaction but with little contact externally, these innovations will be somewhat isolated from the outside world. As a result, an organisation with socio-spatial arrangements that place it in this quadrant of the typology is likely to experience emergent strategy as a propensity for insular innovation.

5.4.3 Pockets of invention

In the bottom right quadrant of the typology interactions between inhabitants and visitors will outweigh those between inhabitants only. The literature on emergence shows that one

of the key conditions for invention, the process whereby ideas move from one network to another, is unplanned interaction across social networks. As a result, the regular interaction with visitors for organisations in this quadrant is likely to result in some form of invention. However, because interaction within departments outweighs interaction across multiple departments, the ideas generated through interaction with other social networks (visitors) are less likely to travel around the organisation with any ease. As a result, an organisation with socio-spatial arrangements that place it in this quadrant of the typology is likely to experience emergent strategy as a propensity invention in pockets around the organisation.

5.4.4 Genuine novelty

In the bottom left quadrant of the typology interaction ratios reverse from those found in the top right quadrant such that inter-departmental interaction is more common that intra-departmental and interaction with visitors is more common than with colleagues. As genuine novelty is made possible by a combination of invention and innovation it requires interaction across networks and across departments. With a negative figure for both departmental and inhabitant/visitor correspondence, the interaction profile is likely to encourage novelty. In Space Syntax terminology such a system is known as generative because boundaries between transpatial groups are weak and new social relationships within and across networks are consistently generated. As a result, an organisation with socio-spatial structures that place it in the bottom left quadrant is likely to experience emergent strategy as a propensity for generating genuine novelty.

5.5 Summary of findings from the comparison of socio-spatial structures

In chapter 4 it was found that an organisation's socio-spatial correspondence helped explain who interacted with whom and why this varied at multiple levels of analysis. In chapter 5 it was found that socio-spatial correspondence varies across organisations and a typology was proposed that links the socio-spatial structure of an organisation with its propensity for emergent strategy making. The typology proposed that an organisation might display four quite distinct propensities for emergent strategy such that the realised strategies of the organisations in each quadrant of the typology might be characterised as being adaptive, innovative, inventive or genuinely novel.

6 Discussion and conclusions

Emergent strategy is evident when part of an organisation's realised strategy occurs unintentionally (Mintzberg and Waters, 1985). Strategy emerges unintentionally through the day-to-day unplanned interactions of organisation members at all levels of seniority as they cope intuitively with everyday tasks (Chia and Rasche, 2015). This is of widespread importance because, in practice, some element of realised strategy will always be unintentional in all organisations (Mintzberg and Waters, 1985; Blom and Alvesson, 2015). The literature on emergent strategy has tended to focus either on meso trends at the level of the organisation or on micro level details in specific contexts (Chia and MacKay, 2007). This has led to a gap in the literature of a micro/meso divide that often results in explanations for emergent strategy as something that happens *to* an organisation and leaves little understanding of what actually happens *in* an organisation during periods of emergence (Garud, Langley and Tsoukas, 2015). Yet an organisation's social and spatial contexts make a difference to who interacts, and how often (Sailer and Penn, 2009), so are likely to have an impact on the strategies that emerge (Vaara and Whittington, 2012). As a result, this thesis aimed to develop a socio-spatial understanding for the characteristics of an organisation's emergent strategy via social interaction.

The findings have shown that socio-spatial conditions make a difference to profiles of interaction, making an organisation's propensity for certain types of strategy emergence more or less likely. A typology of emergent strategy was proposed that captures the bridge between micro level interaction and meso level characteristics of strategy based on the socio-spatial analysis developed in this thesis.

However, the typology proposed by this thesis, based on findings from organisations selected on the basis of a framework for emergent strategy proposed by Mintzberg (1989), challenges some of implications of that original framework. Challenging aspects of Mintzberg's (1989) framework potentially points to new ways of understanding emergent strategy and hence contributions to the strategy literature.

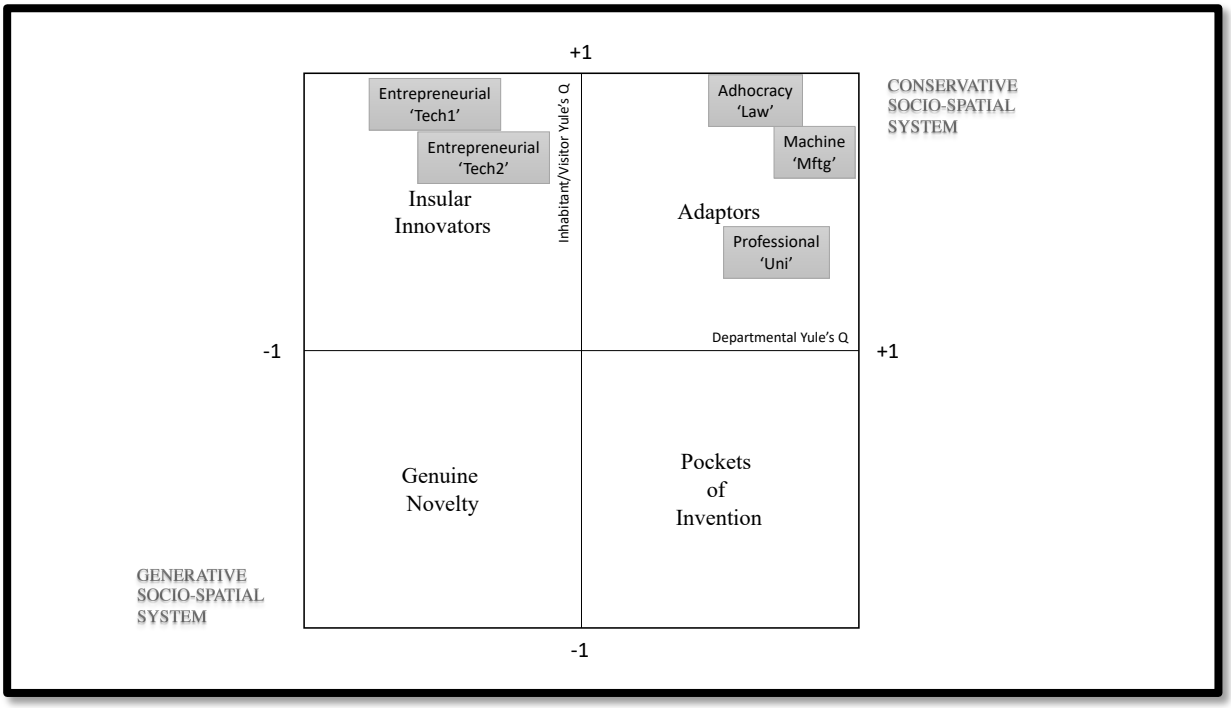
This chapter discusses the new perspective of emergent strategy developed by this thesis and the potential contributions to existing strategy literature. The chapter starts in section 6.1

with a discussion on how the socio-spatial perspective developed by this thesis might build on Mintzberg's framework for emergent strategy. The remaining sections highlight four possible contributions to the existing literature. Section 6.2 considers how the socio-spatial perspective contributes to the SaP literature. Section 6.3 considers possible contributions to architectural literature.

6.1 Building on Mintzberg's framework using a socio-spatial perspective

The organisations studied in this thesis were selected using Mintzberg's framework (1989) for emergent strategy, shown in figure 2.1, in which four distinct groupings are identified: adhocracy, machine, entrepreneurial and professional organisation types. Each of these organisation types have, according to Mintzberg (1989), different strategy making processes and the characteristics of strategies that emerge are also quite different. However, on the typology suggested by this thesis, three of the four organisation types appear in the same quadrant of the typology. This challenges Mintzberg's framework because organisations that he suggested would have very different emergent characteristics, have socio-spatial structures that, this thesis suggests, have similar propensities for emergent strategy. This is shown graphically in figure 6.1 which combines the typology suggested by this thesis, first shown in figure 5.21, with the names of organisation types from Mintzberg's framework, shown in figure 2.1. This section discusses the way in which the socio-spatial lens develops Mintzberg. As three of the four organisation types studied appear in the upper right quadrant of the typology, it is here that the discussion starts.

Figure 6.1: Combining the typology for emergent strategy proposed by this thesis with Mintzberg's organisation types



6.1.1 Emergent strategy as a propensity for adaptation

Three of the organisations studied fall into the top right quadrant of the typology: 'Law', selected as an example of an adhocracy organisation; 'Mftg', selected as an example of a machine organisation; and 'Uni', selected as an example of a professional organisation.

The socio-spatial structures of organisations that fall into this quadrant suggest that existing relationships are conserved and consequently there is little impetus for the creation of new ideas and few challenges to the *status quo*. The interaction profile is one where intra-departmental interaction outweighs inter-departmental and where interactions between inhabitants of the system outweigh interactions with visitors. Such interaction profiles suggest that the characteristics of emergent strategy for organisations in this quadrant is a propensity for adaptation to the *status quo*.

This was evident in the analysis of 'Law' in phase one of this research, where modest adaptations to pricing were observed first hand that appeared to be accumulating into a meso level trend of hardening prices. In addition, development of new lines of service in 'Law', that might be considered a more radical form of emergence, failed to gain traction.

The source of these modest changes in 'Law' were the departments, where relationships were conserved by the socio-spatial structure leading to a weighting towards intra-departmental interaction. These specialist legal departments undertook client projects that were essentially discrete in nature and where decisions relating to these projects were made within the department with relatively little input from others. As these discrete project-based decisions accumulated there was the potential for them to combine and set precedents for the firm that then become patterns of action and recognisable as strategy. It was this sort of accumulation of decisions that appeared to influence the hardening of pricing within Paula's Real Estate unit. No single decision was decisive, nor was there any apparent strategic policy to steadily increase prices, yet the accumulation of day-to-day coping actions appeared to result in such a direction being taken. It should also be noted that the socio-spatial system in which Paula and her unit operated was the least conservative found in 'Law', which was reflected in their interaction data where they interacted with people from other departments more than others in the firm. It is likely, therefore, that the modest adaptations in strategy that were observed to emerge in Paula's unit would be replicated across the firm.

In addition, because the departments in 'Law' rarely had unplanned interactions with visitors, the *status quo* was less likely be challenged by interventions from outside the organisation. At a broader level, therefore, this potentially means that the decisions each department makes in the discrete projects they undertake will only accumulate into new directions for the firm intermittently. As a result, the emergence of new strategies from an organisation with a socio-spatial system like 'Law', is likely to be somewhat 'lumpy' as precedents that become trends emerge randomly from discrete teams across the firm.

'Law' is an example of an organisation that Mintzberg categorised as an 'adhocracy' (Mintzberg, 1989). Organisations are categorised as adhocracies by two meso level phenomena: the dynamism of the external market and decentralised power within the organisation where a great deal of influence rests with teams of experts (teams of film makers, teams of architects or teams of lawyers). The realised strategies of organisations categorised in this way are characterised as "*cycling in and out of focus*" (Mintzberg, 2007, p. 353).

At a meso level, there is therefore some commonality in the way Mintzberg (2007) characterises emergent strategy for adhocracies and the characteristics suggested by the typology proposed by this thesis. However, this thesis also provides a bridge between the socio-spatial contexts within the organisation from which these meso level characteristics of realised strategy emerged. This is important when trying to understand why this thesis suggests that propensity for emergent strategy in the manufacturing company studied would be similar to 'Law' yet Mintzberg's (2007) framework suggest it would be quite different.

The second organisation analysed in this research also falls into the 'adaptors' quadrant of the typology. This is the manufacturer, 'Mftg', an example of a machine organisation in the framework developed by Mintzberg (1989) (see figure 2.1). Mintzberg's framework uses two criteria to differentiate between organisation types and their resulting tendency to display different emergent characteristics: the external environment and internal power. Essentially what Mintzberg's framework captures is that differences in the dynamism of external environments, places different demands on the strategy making process for each organisation, and that the organisations meet those demands in different ways based on their internal contexts. Mintzberg captures the different internal contexts found in organisations through the way in which they exercise power (Mintzberg, 1979), which is centralised or decentralised.

The adhocracy and machine categories differ on both criteria where the adhocracy tends to compete in a dynamic external environment and control within is decentralised. For 'Law' these conditions are broadly met in that there was a lot of change amongst second-tier law firms and power was decentralised to the specialist legal departments and units. The manufacturing organisation tends to be in more stable external environments and the power relations within are centralised. For 'Mftg' these conditions are also broadly met in that their competitors are well established and easily identified and power is exercised through a clear hierarchy.

To Mintzberg (1989), these differences suggest very different strategic characteristics but for the socio-spatially informed typology proposed here, the characteristics of emergent strategy are likely to be the same. The difference between the two perspectives is the way in which internal contexts of the organisations are understood. Mintzberg uses a single criterion, the

centralisation of power relations, to capture the differences in internal contexts found between firms. Mintzberg suggests that this criterion is a proxy for a number of potential differences such as the way decisions are made in practice, a reflection of culture in the organisation, a reflection of industry norms (Mintzberg, 1979), and as such it is a broad, meso level representation of an organisation's internal context.

By contrast, the socio-spatial perspective developed in this thesis provides a more granular appreciation of the internal contexts of each organisation. The perspective taken by this thesis includes a socio-spatial analysis of the internal context, based on the premise that understanding patterns of social interaction combines to explain propensity for emergence. The typology differentiates between organisations based on their socio-spatial structures and their likely patterns of interaction at the level of the organisation, but the findings have shown that within the overall structure are found nested socio-spatial systems with different properties and propensities. The added levels of analysis into the internal socio-spatial relations, make possible a more granular discussion on organisation's propensity for emergent strategy. These are discussed in the sections of this chapter that follow.

What the analysis of the socio-spatial structures in 'Law' and 'Mftg' has shown, is that at the firm level, the way people interact with each other day-to-day are likely to be broadly similar despite the different ways in which power is exercised in the two organisations. The findings in this research, therefore, question whether power relations provide a sufficient proxy for an organisation's internal contexts that most impact emergent strategy.

In the manufacturing organisation studied there are discrete departments that are organised in socio-spatial correspondence just like 'Law'. In the case of 'Mftg' these are the functional groups such as purchasing, accounts or marketing. It is therefore from these departments that the new strategies are likely to emerge but, like 'Law', these new precedents are likely to be intermittent because of the lack of unplanned interaction with visitors. These might be, for example, occasional innovations in marketing strategy or changes in the services offered to customers. Nevertheless, based on the socio-spatial structure and likely profile of interaction found in 'Mftg', the emergent strategy would be characterised by adaptations rather than revolutions in strategic direction and these changes would be evident only intermittently.

It is worth observing that although Mintzberg separated the manufacturing organisation from the adhocracy on his framework, his descriptions of the characteristics of strategy in the manufacturing organisations he observed actually resemble his own descriptions of strategy in adhocracies.

For example:

"*The description of the soldier's lot – months of boredom interrupted by moments of terror – applies more or less to the machine organisation*" (Mintzberg, 2007, p. 350)

Of the car manufacturer Mintzberg says: "*the new strategy emerged out of the learning of the dispersed groping and grafting. Then the company settled down with its new direction*" (Mintzberg, 2007, p. 350)

Of the US government Mintzberg says: "*The US strategy in Vietnam mostly followed a similar pattern of stability interrupted by periodic change, except that here the major shifts took place more frequently, almost like an adhocracy cycling in and out of focus*" (Mintzberg, 2007, p. 350).

In this way, Mintzberg's observations, rather than his framework, suggest that power relations, that are different in manufacturing and adhocracy organisations, does not provide the right proxy for the internal contexts that most impact emergent strategy. At the very least this suggests that additional levels of analysis might help differentiate organisations and this thesis puts forward the view that a multi-level socio-spatial analysis helps develop this understanding.

There is another reason why the socio-spatial perspective might develop a more granular understanding of the organisation's internal contexts that most impact emergent strategy. Although 'Law' and 'Mftg' were found to have similar socio-spatial structures that implied similar propensities for emergent strategy, there is no reason why other legal firms or other manufacturing firms need have the same socio-spatial structures as the ones studied. It is possible that a manufacturing firm could employ a socio-spatial structure that places them in any part of the typology with the implication that their propensity for emergent strategy would be quite different to the one studied in this research. Of course, strategy is not the only

reason for employing specific socio-spatial structures, operational concerns, cultural aims and industry norms might also be of influence. Nevertheless, Mintzberg's framework is explicit in saying that strategy tends to emerge in a similar way in all adhocracies and in all manufacturing organisations, and so on, whereas the socio-spatial view allows for circumstances where this is not necessarily the case. The socio-spatial perspective points to the value of further enquiry as to the range of socio-spatial structures within specific industries and sectors and the impact on strategy making. This possibility is discussed further in the conclusions chapter.

The third organisation to fall into the 'adaptation' quadrant of the typology is 'Uni'. 'Uni' is an example of an organisation that Mintzberg categorised as professional (Mintzberg, 1989) and is categorised as such because they compete in relatively stable environments and because power is decentralised.

Although 'Uni' falls into the same quadrant as 'Law' and 'Mftg' it was noted in the findings that the building occupied by 'Uni' appeared to be of a different type to the others studied because of the more open relationship with visitors. This was reflected in the inhabitant/visitor correspondence score for 'Uni' of 0.55 which was significantly lower than either of the other two organisations in this quadrant (see figure 6.1). The socio-spatial arrangements seemed closer to public buildings such as museums, libraries or hospitals than to 'Law' or 'Mftg'. This relationship between inhabitant and visitors is important to an organisation's emergent strategy as it represents the possibility of multi network social interaction which has been identified as a condition for invention, one of the more radical forms of emergence (Padgett and Powell, 2012). It can be said, therefore, that 'Uni' is likely to have a greater propensity for invention than either 'Mftg' or 'Law' but the socio-spatial structures found in 'Uni' are likely to encourage a profile of interaction where intra-departmental interaction outweighs inter-departmental and where interactions between inhabitants of the system outweigh interactions with visitors.

However, the approach used by this thesis may have underestimated the inhabitant/visitor interaction in 'Uni' because the socio-spatial system studied is bounded by the building occupied by the organisation. It is recognised that academics in universities interact with other academics in their field through conferences and professional organisations outside of

their own university environment with whom they have strong transpatial relationships. To capture this interaction the analysis would need to be extended to include additional socio-spatial systems. This is a development of the approach presented in this thesis that could be of great value and is discussed further in the conclusions chapter.

A greater frequency of interaction between inhabitants and visitors would push the position of 'Uni' down on the typology towards the lower right quadrant that represents organisations that are likely to show a propensity for strategy emergence characterised by pockets of invention. For this reason, this quadrant of the typology is considered now.

6.1.2 Emergent strategy as a propensity for pockets of invention

Organisations that fall into the bottom right quadrant of the typology have socio-spatial structures that encourage an interaction profile where intra-departmental interaction outweighs inter-departmental but where interactions with visitors are more common than between inhabitants.

The socio-spatial structures that are defined by the bottom right of the typology are therefore something of a hybrid in terms of spatial theory: conservative on the inside but generative in terms of the relationship with the outside world. The generative socio-spatial system externally is likely to mean that "*the spatial conditions exist for all kinds of generation – new relationships, new ideas, new products and even knowledge*" (Hillier and Penn, 1991, p. 29). The unplanned interaction with other social networks makes the probability of real invention higher where invention is defined as something that does not exist "*in our current practice or imagination*" (Padgett and Powell, 2012, p. 1). However, the conservative socio-spatial system internally makes it less likely these inventions will spread. Therefore, such interaction profiles suggest that the emergent strategy is likely to be characterised by a propensity for 'pockets of invention' that emerge at intermittent intervals around the organisation. It has been noted that 'Uni' has a socio-spatial structure that tends towards this quadrant more than the others studied and that a broader socio-spatial frame might push the organisation even further towards, if not into, this quadrant. Given this, it is of value to compare this socio-spatial view of the propensity for emergent strategy with Mintzberg's observations of emergent strategy in professional organisations such as universities.

To Mintzberg, professional organisations are characterised as having multiple strategies rather than a single identifiable strategy at the organisational level, he says: emergent "*changes are happening constantly, but independently, all over the place*" (Mintzberg, 2007, p. 357) and explains this pattern of strategy emergence with reference to multiple individual leaders, by which he means academics, who act strategically to changes in their specific environment.

There is clearly some commonality in the way Mintzberg characterises strategy for the professional organisation and the characteristics predicted for organisations that fall into the bottom right quadrant of the typology based on a socio-spatial perspective. However, the socio-spatial perspective provides insight into the micro level interactions that make possible the strategies that emerge in this way.

6.1.3 Emergent strategy as a propensity for insular innovation

Two of the organisations studied fall into the top left quadrant of the typology: the two technology driven organisations, 'Tech1' and 'Tech2', both selected as examples of Mintzberg's entrepreneurial organisation.

The socio-spatial structures of organisations that fall into this quadrant suggest an interaction profile where inhabitants interact more with people from other departments than their own and where interactions between inhabitants of the building outweigh those with visitors. Like the bottom right quadrant, this represents something of a hybrid in terms of spatial theory: a generative socio-spatial system internally but a conservative system externally.

The generative socio-spatial system internally is likely to mean that "*new relationships and new ideas*" (Hillier and Penn, 1991, p. 29) form amongst the inhabitants of the building. Existing research suggests that such an interaction profile encourages innovation. New and unexpected interactions with teams other than one's own have the ability to challenge the *status quo* and to generate new ideas. In this way, the socio-spatial structure is likely to produce a stream of continuous innovation.

However, the conservative socio-spatial system externally suggests a lack of unplanned interaction with visitors thereby minimising frequent interaction across multiple networks.

The literature suggests that this lack of interaction with other social networks would make the probability of invention low. According to Padgett and Powell, it is only the combination of innovation and invention that makes genuine novelty possible (Padgett and Powell, 2012, p. 1). The lack of invention would suggest that, despite continuous innovation within the organisation, more substantial strategic shifts are likely to be rare. The consequence for strategy is that innovation is likely to be common place but rather cut off from those the organisation is innovating for.

'Tech1' and 'Tech2' are examples of organisations that Mintzberg categorised as 'entrepreneurial' (Mintzberg, 1989). Organisations are categorised as entrepreneurial when the external market is dynamic, and power is centralised. According to Mintzberg, the realised strategies of organisations categorised in this way are characterised by continuous "*steady innovation with rare strategic shifts*" (Mintzberg, 2007, p. 347). This is explained by reference to leadership style and external environment. The continuous, steady innovation emerges out of necessity due to the dynamism of the external environment. The rare strategic shifts are explained in terms of leadership: the entrepreneurial leader remains "*attuned to changes in the environment and can be more responsive to them*" (Mintzberg, 2007, p. 348).

Again, as with the analysis of adhocracies, there is a commonality to the way Mintzberg characterises emergent strategy for entrepreneurial organisations and the characteristics predicted for organisations that fall in the top left corner of the typology proposed by this thesis. However, the explanations for these strategic characteristics differ between the two approaches in two ways. First, the socio-spatial explanation does not depend on an individual but on the continuous, day-to-day interactions of the employees of the organisation. Second, 'Tech1' and 'Tech2' have socio-spatial structures that isolate the organisation from the people they innovate for. Mintzberg's less nuanced framework does not allow for such analysis because it relies on meso level criteria only for categorising organisations.

The isolation of innovative processes from those the innovations are for raises serious strategic questions. For example, might this insular innovation result in the sorts of consumer, social and political problems created by some the world's largest technology companies, such as the deliberate slowing of devices by Apple (Gibbs, 2017), bullying on Twitter (Secrets and

lies; John Demjanjuk, 2012), or interference in democratic elections on Facebook (Do social media threaten democracy?; The politics of outrage, 2017)?

It is hard to believe that the two technology driven organisations studied have created socio-spatial structures that encourage 'insular innovation' deliberately. It is considered more likely that 'Tech1' and 'Tech2' believe they have employed socio-spatial structures that encourage a propensity for the emergence of 'genuine novelty'. The possibility that organisations might misunderstand the impact their socio-spatial structures have on their propensity for emergent strategy illustrates the potential value of the socio-spatial perspective and questions some of the taken for granted architectural practices adopted by technology organisations. An architectural view of the possible contribution of a socio-spatial perspective is discussed in section 6.4 below. As it is more likely that 'Tech1' and 'Tech2' believe they are in the bottom left quadrant of the typology, this quadrant is discussed next.

6.1.4 Emergent strategy as a propensity for genuine novelty

None of the organisations studied fall into the bottom left quadrant of the typology. This is despite the fact that at least one of all four of Mintzberg's organisation types were selected for study.

The socio-spatial structures of organisations that fall into this quadrant suggest that inhabitants interact more with visitors than they do with colleagues and more with other departments more than their own. These systems are what spatial theory label as 'generative' (Hillier and Hanson, 1984). Generative systems are important to emergent strategy because they create the social interactions that encourage the most radical forms of emergence (Padgett and Powell, 2012). According to Padgett and Powell (2012), it is only when unplanned social interactions are broadly spread both inside and outside the organisation across multiple social networks that both innovation and invention are possible. Innovation occurs when ideas move around an organisation to alter the system of which they are a part and invention moves ideas from one network to another (Padgett and Powell, 2012, p. 5). Together they are capable of creating something that is genuinely novel (Padgett and Powell, 2012).

It is possibly surprising that none of the organisations included in the analysis for this thesis fall in this area of the typology despite the inclusion of two technology companies and a university, organisations that might aspire to genuine novelty. However, the analysis of these organisations suggests that the emergence of genuine novelty is made less likely by their socio-spatial arrangements.

For organisations that do aspire to be located in this area of the typology it is worth considering what the spatial structure for such an organisation might look like. In the organisations selected, the technology companies both display negative departmental correspondence and the university is tending towards negative inhabitant/visitor correspondence. An organisation that occupies the bottom left area of the typology therefore might have the same interior structure as the technology companies but a porosity to visitors that exceeds that of the university. However, it is quite hard to imagine firms like Facebook, Apple and Twitter opening their office complexes to visitors in the way that universities, museums or libraries do.

An alternative is to abandon the large corporate HQs for office space that is shared with other organisations. This is a trend that is becoming increasingly apparent in the corporate world. Provider of shared office space 'Wework' report that more than 20% of their users are large organisations and that this also forms one of their fastest growing segments (Clark, 2017). HSBC is an example of one such large corporation that increasingly uses shared office space and gives reasons that explicitly reference opening the organisation to multiple social networks; for example; HSBC states that it "*likes the way the village like atmosphere means people from younger companies in the building can knock on the HSBC's glass door for a chat". "That's something you don't get in a normal corporate office*" (Clark, 2017, p. 2).

Alternatively, rather than the huge monolithic HQs, such as those recently built by Apple and Facebook, organisations might consider multiple offices as geographically dispersed as their customers and open to local visitors. Such spatial arrangements have been suggested by academics in the context of corporate governance and creating shared value (Porter and Kramer, 2011) but appear to be rare in practice. Although the analysis in this thesis is restricted to single offices for each organisation studied, there would be value to developing the methods to include multiple sites. For the reasons stated in this section, this type of

analysis is considered to be of interest in future research and is discussed further in the conclusions chapter.

6.1.5 A summary of why a socio-spatial perspective builds on Mintzberg's framework for emergent strategy

Mintzberg's framework (1989) for emergent strategy uses internal power relations as a proxy for a wide range of internal organisational contexts that may be too broad to capture the propensities for emergent strategy experienced in practice. The more granular socio-spatial perspective provides one way in which Mintzberg's framework might be built on. Whilst Mintzberg's framework might be considered a top-down categorisation of organisations and their emergent strategy, the socio-spatial perspective represents a bottom-up categorisation based on the way people interact everyday.

As a result, organisations may not have the socio-spatial structures that create the internal contexts required by their strategic objectives and this possibility has implications for the SaP literature that are discussed in the following section.

6.2 A socio-spatial view of Strategy-as-Practice

SaP research seeks to uncover the everydayness of strategy making in order to develop an understanding of what it is actors do in their everyday organisational lives that has an impact on organisation strategy (Golsorkhi *et al.*, 2015). This thesis set out to understand more about the everydayness of emergent strategy, a subject that has received less attention than deliberate strategy making by the SaP community (Vaara and Whittington, 2012). One of the reasons that emergent strategy remains under researched is that the actors involved do not necessarily recognise their social interactions, activities, processes and practices as 'strategic' (Tsoukas, 2015). Rather, emergent strategy lies in the unconscious pre-dispositions of all organisation actors (Chia and Holt, 2006) and manifests in everyday social interactions (Balogun and Johnson, 2005) that are unplanned (Chia and MacKay, 2007).

By studying the unplanned social interactions of actors across an organisation at all levels, this thesis has found that the patterns of unplanned interaction, experienced at individual, group and firm levels, are what matters to the emergence of strategic matters of concern.

Strategic matters of concern became evident to the researcher through the everyday conversations of actors across the organisation. The research showed that the actor's predispositions in relation to the strategic matters of concern identified changed as everyday interactions that involved discussions relating to the topic accumulated. When the number of interactions that related to the strategic matter of concern accumulated at a fast-enough rate, there was evidence that the predispositions of actors changed sufficiently for changing trends in the matter of concern to become evident. Through this mechanism of accumulated unplanned interactions relating to a strategic topic, emergent strategy making was evident.

By contrast, when the number of interactions that related to a strategic matter of concern were less frequent and accumulated at a slower rate, the evidence suggested that the predispositions of actors did not change sufficiently for changing trends in the matter of concern to become evident. This resulted in the absence of the emergence of a strategy where one might have been expected from the way that the topic animated the actors studied.

In addition to the frequency and accumulation of unplanned interactions relating to strategic matters of concern, this thesis also found evidence that the social diversity of unplanned interactions mattered too. The research showed that the existing predispositions of actors were challenged most when interactions with people that were not part of their own team accumulated at a sufficient rate. It was these interactions that appeared to challenge the status quo more than those within teams defined by the organisation structure. This supported the literature described in table 2.1 of this thesis, that showed that more diverse social interactions encouraged more radical strategic characteristics. However, it was an accumulation of interactions within teams that appeared to consolidate these ideas into action.

These findings build on the work of Knight, Paroutis, and Heracleous (Knight, Paroutis and Heracleous, 2018) by showing that it is not just interactions from deliberately strategic episodes, such as those described by the authors from strategy meetings using PowerPoint,

that prompt actors to revise their activities and encourage evolved understandings but that unplanned, unintentionally strategic, interactions also have this impact. It is the unplanned nature of the interaction that underpins the emergent nature of the evolved understandings.

In summary, the patterns of unplanned social interaction were shown to exert considerable influence on the development, and the absence of any development, in emergent strategy because it matters who interacts with whom, how often and for how long. In the organisation studied in this thesis, the unplanned interactions accounted for over 90% of all interactions observed, suggesting that understanding the emergence of strategy in this organisation is fundamental to understanding what strategies are realised in the long run. This high percentage of unplanned interaction is in line with previous studies of a wide range of organisations that have measured unplanned and planned interaction (Sailer and McCulloh, 2012; Fayard and Weeks, 2007; Penn, Desyllas and Vaughan, 1999; Steen, Blombergsson and Wiklander, 2005). These findings provide a SaP perspective of the view proposed by some scholars that emergent strategy, rather than deliberate strategy, is far more important to the strategies ultimately realised by organisations than has been credited in strategy research historically (Mintzberg, 1994; Chia, 2013).

Having established the importance of patterns of unplanned interaction to emergent strategy this thesis was able to show the importance of spatial configurations to the patterns of interaction. The findings showed that the configuration of the spatial system in the organisation studied exerted a considerable influence on the unplanned interaction observed. This finding extends the SaP literature on materiality (Le and Spee, 2015) to explicitly include the impact of space.

Despite the considerable influence of space on the patterns of interaction observed, this thesis found that spatial configuration was not able to explain all the variations in interaction found at individual, group and firm levels. This finding is in line with a recent review of the role of space in the formation of social interactions, that critiqued the consistency of the architectural literature that credits space as the only explanation (Small and Adler, 2019).

This thesis found that the social structure of the organisation was also important in understanding patterns of unplanned interaction at all levels. The importance of the social

structures of organisations in explaining interaction is pointed to in the paper by Small and Adler as they claim that the effect of homophily (the tendency for people to interact with others that are similar socially to themselves) has been understated (Small and Adler, 2019, p. 15)

This thesis found that both spatial configuration and social affiliations were important in explaining the interactions found but neither could explain all the variations found alone. The findings showed that social structures affected spatial structures and vice versa, in other words they were mutually enacting (Dale, 2005).

This finding is evident in other literature (Wineman *et al.*, 2014; Wineman, Kabo and Davis, 2009) but the absence of a mechanism to understand the ways that social and spatial structures mutually enact has inhibited further investigation of this phenomenon.

The thesis developed the measure of correspondence that combined the effects of social and spatial structure and was able to explain interaction far better than social or spatial explanations alone.

In combination, the SaP methodology used in this thesis provides a socio-spatial perspective of emergent strategy. This extends the work by Bucher and Langley (2016) that showed that intentional change in organisations required a combination of spaces that are spatially and socially bounded. This thesis shows that that unintentional change, or emergent strategy, is also substantially influenced by the social and spatial structures within organisations.

The methods developed in this thesis potentially enable a new socio-spatial research agenda to be developed within the field of SaP but also provides a SaP perspective to studies of the effects of workplace interaction on organisational outcomes.

For example, one of the advantages of the SaP research perspective is that it encourages a more nuanced multi-level analysis of the practice of strategy making. This thesis has shown that the relationship between socio-spatial structures and strategy is complex and plastic in nature. Not all strategic matters of concern place the same demands on the socio-spatial structure because they benefit from different profiles of interaction.

It is not sufficient to describe a single socio-spatial system because multiple socio-spatial systems, with quite different characteristics, can be found nested within a single organisation. It is therefore possible for one team to have quite different propensities for emergent strategy making to others within the same system. In 'Law', the nesting existed at individual and departmental levels demonstrating that the relationship between socio-spatial systems and emergent strategy needs to be understood at multiple levels.

Further complexity is evident in that it is easy for socio-spatial systems to change through relatively small changes to either the spatial arrangements or the social arrangements, each of which are intertwined such that as one changes, so does the other.

The measure of correspondence has been shown to be versatile enough to explain the effects of multi-level interdependencies between spatial and social arrangements and therefore potentially helps match socio-spatial arrangements to multiple strategic matters of concern.

The versatility of correspondence as a measure means that it has the potential to contribute to debates about the relevance and importance of social multiplexity within organisations. This is discussed in more detail in the following section.

6.2.1 A socio-spatial view of social multiplexity

Multiplexity is defined as the degree to which pairs of individuals are linked by multiple social relations (Tichy, Tushman and Fombrun, 1979) and is developed from the concept of cross cutting circles developed in the late 19th century (Simmel, 1890) and discussed more fully by Blau and Schwartz (1984). Multiplexity maintains that people relate to each other in numerous ways at the same time, for example, age, gender, class, ethnicity, religious beliefs, political positions, formal education, and so on. Within an organisational context other social relations become apparent such as seniority, divisional affiliation, functional affiliation, and so on. These social relations have been labelled transpatial relations in this thesis after the term used in Space Syntax.

Multiplexity is important to emergent strategy because the presence of interactions across multiple social relations has been linked to some of the more radical forms of emergence. For

example, Dhanaraj and Parkhe (2006) use the concept of multiplexity to explain the innovative capacity of an organisation.

The implication of this for researchers is that the assignment of a single label to describe someone's working relationship maybe problematic when the reality is much more multi-faceted. In fact, in the analysis of 'Law', two transpatial relationships were analysed: departmental and inhabitant/visitor. However, other transpatial relations were evident in the analysis. For example, it was clear that for James his relationship with other partners in the firm was important. His motivation for, and the impact of, moving desks was to increase his interaction with other partners. This suggests another important transpatial affiliation, that of relating to others of the same grade, was also important in 'Law'.

The importance of each transpatial relation may vary by strategic issue, for example, departmental affiliations appeared to matter more to Paula than to James, yet affiliations to colleagues of the same grade mattered to both. Isolating just one of these social affiliations would give only a partial understanding of the social structure in 'Law' and its potential impacts on emergent strategy. In this thesis measures of correspondence that incorporated two social affiliations (departmental and inhabitant/visitor) were developed. This was sufficient to demonstrate that the measure was adaptable enough to enable the calculation of correspondence for multiple affiliations but is unlikely to have captured the full complexity of social relations within the organisation. However, it has demonstrated that the socio-spatial perspective is able to move beyond analysis of individual categories of social relations to one that incorporates multiplexity.

The understanding of an organisation's propensity for emergent strategy necessarily involves the analysis of social multiplexity and the socio-spatial perspective on emergent strategy developed by this thesis potentially makes this contribution to strategy research. It is believed that the links between this approach and the study of multiplexity in social network analysis (Tichy, Tushman and Fombrun, 1979) is particularly promising.

6.3 A socio-spatial view of architectural literature and architectural practice

The focus of this thesis has been on strategy literature but since the thesis has incorporated theory from architecture it is also important to discuss possible contributions to the field of architecture.

The tendency for strategy literature (as well as other areas of management studies) to privilege social analysis over spatial analysis has been recognised (Kornberger and Clegg, 2004). However, the author of this thesis would argue that in the Space Syntax community within architectural theory the reverse is true. This is evident from the volume of Space Syntax research which uses measures of spatial configuration to help explain interaction in buildings but does not develop a measure for the socio-spatial concept of correspondence. This means that although social relationships are as important to the theory of Space Syntax as spatial relations, this is often lost in the research analytics. This creates an inadvertent bias towards spatial analysis over social analysis. The result of this bias is that too often a causal relationship between space and interaction is claimed, although some reviews of Space Syntax research points out that the results are inconsistent (Sailer and Penn, 2009).

An exception to this is the research of Jean Wineman (Wineman, Kabo and Davis, 2009; Wineman *et al.*, 2014). In a study of innovation in three organisations, a life sciences institute, a software company and the quality control group of a car manufacturer, Wineman et. al. showed that "*opportunities for serendipitous encounter among individuals who may come from disparate parts of an organisation*" (Wineman *et al.*, 2014, p. 1100) encouraged innovation and their results demonstrated "*the salience of both social and spatial dimensions*" (Wineman *et al.*, 2014, p. 1100) of the organisations studied.

The research concludes by stating: "*we suggest that innovation is a process that occurs at the intersection of social and physical space, and moves toward a sociospatial science of design for innovation*" (Wineman *et al.*, 2014, p. 1100).

However, the research methods used by Wineman et. al. analyses the effects of social dimensions separately from those of spatial dimensions. They find that both have an influence on the interactions that make a difference to innovation. The argument put forward in section 2.5.4 of the literature review in this thesis is that the separation of space and social

effects means that this research, like that of Allen and Henn (Allen and Henn, 2007), falls short of a genuinely 'sociospatial science'. This is because a socio-spatial perspective implies that the mutually enacting nature of social structures and spatial structures are understood. As long as they are analysed separately, the underlying assumption remains that their effects are also independent of each other. Without an integrating mechanism that allows the mutual effects of socio-spatial changes to be understood. Wineman et.al. point to this limitation when stating that further development is required before the research will be able to "*provide guidance to institutions in creating environments that enhance the process of discovery*" (Wineman *et al.*, 2014, p. 1111).

This thesis provides such a mechanism in the concept and measure of correspondence. As such, it is possible that this thesis can make a substantial contribution to the architecture community in advancing research interested in socio-spatial effects in organisations.

6.3.1 Possible implications for architectural practice

It is also possible, that the privileging of space over social factors to explain interaction in organisations in the architectural literature has spilled over into common architectural practice. It is the view of this author that this is most noticeable in the '*cathedrals to innovation*' (Waber, Magnolfi and Lindsay, 2014, p. 70) being built by technology driven organisations. Both 'Tech1' and 'Tech2' are typical of the large open plan offices being built by these technology giants globally that include such high profile examples as the new Facebook offices in Menlo Park, California (Waber, Magnolfi and Lindsay, 2014). Designed by superstar architect Frank Gehry for the Facebook CEO, Mark Zuckerberg, the building known as MPK20 is the world's largest open-plan office (Frearson, 2015). The building accommodates 2,800 people in one large room, a small section of which is shown in figure 6.2.

The comments of Zuckerberg and Gehry are typical of the prevailing wisdom that informs the design of such buildings.

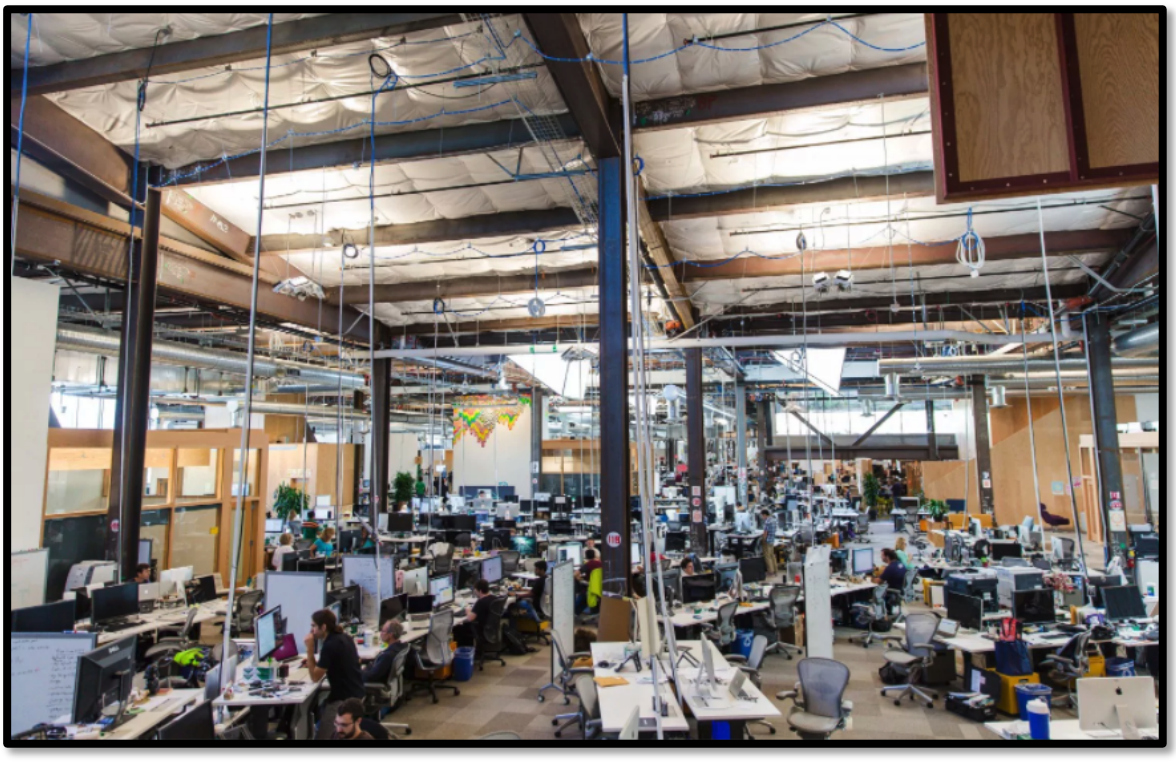
Zuckerberg has been reported as saying "*Our goal was to create the perfect engineering space for our teams to work together. To do this, we designed the largest open floor plan in the world – a single room that fits thousands of people. There are lots of small spaces where*

people can work together, and it's easy for people to move around and collaborate with anyone here" (Frearson, 2015).

Gehry said, "*He (Zuckerberg) did not want it overly designed. It also had to be flexible to respond to the ever-changing nature of his business – one that facilitated collaboration and one that did not impose itself on their open and transparent culture*" (Frearson, 2015).

This is the prevailing view in architecture and the same rationale is often repeated, for example, Norman Foster said of the design for the Apple Inc. HQ in Cupertino, California should: "*This open plan layout used in much of the building – with most employees situated around large tables instead of separated into individual offices – is intended to promote collaboration.*" (Moore, 2018).

Figure 6.2: A small section of Facebook offices, Menlo Park, California



Source: Publicly available information

In these comments, the wide scale collaboration being sought is understood to be the causal effect of the spatial structure. The research in this thesis has shown that open plan offices, such as those used by 'Law', are no guarantee of widespread inter-departmental interaction.

Rather, that interaction profiles are explained by the interweaving of social and spatial structures.

In addition, the analysis of 'Tech1' and 'Tech2' suggests that these organisations, and by implication their architects, are thinking about social interaction too narrowly. They are setting out to maximise interaction amongst employees but ignoring the outside world. This is possibly because of concerns about confidentiality and security, but typical technology firm offices are closed off from visitors. The danger for companies with socio-spatial structures like this is that they become isolated in their own bubble, cut off from the dynamic environments they claim to be innovating for.

Consequently, the development of a measure for correspondence by this thesis is a possible contribution to the Space Syntax literature that has implications for architectural practice.

The contributions made by this thesis are summarised in the conclusions chapter together with a description of limitations and possible future research.

6.4 Final conclusions and future research

This last section concludes by summarising the thesis. Section 6.6.1 summarises the main gaps in strategy literature addressed by the thesis and the resulting research question, the theory on which the thesis draws, the reasons for selecting mixed methods, and the key findings. Section 6.6.2 summarises the major contributions, section 6.6.3 describes the limitations of the research and section 6.6.4 suggests possible future research.

6.4.1 Thesis conclusions

There has been a steady stream of calls to 'bring space back in' (Kornberger and Clegg, 2004) to organisation and management studies (Taylor and Spicer, 2007; Dale and Burrell, 2008; Beyes and Steyaert, 2012) and to strategy research (Vaara and Whittington, 2012; Dameron, Lê and LeBaron, 2015). There has been little disagreement that space is important to organisations but there is little agreement on why and where it is most important. In addition, our knowledge of what happens within organisations during periods of strategy emergence has also been identified as a gap in the strategy literature (Vaara and Whittington, 2012). This thesis has developed the argument that these two gaps may be linked by asking the research question: How does physical space influence emergent strategy?

The reason an understanding of space might help understand emergent strategy better is because of its impact on unplanned social interactions. To help develop a research programme that might link space with emergent strategy via unplanned social action, this thesis turned to Space Syntax theory from architecture and to the field of SaP research. Space Syntax research demonstrates the nature of the complex relationships between patterns of space and patterns of social interaction that existed in organisations (Hillier and Hanson, 1984; Hillier, 1996). SaP, with its foundations in Practice theory, suggests that patterns of action were important to the characteristics of an organisation's emergent strategy (Chia and Rasche, 2015).

This led to a research programme that combined quantitative and qualitative methods. The quantitative methods were used to establish patterns in space and interaction. The qualitative methods were used to understand how patterns of day-to-day interaction might impact the unintentional emergence of new strategies.

A new quantitative measure was developed for this thesis by its author that combined the effects on interaction of an organisation's spatial structure with its social (or transpatial) structures. The findings demonstrated that socio-spatial correspondence was able to explain complex interaction patterns at multiple levels of analysis and that these patterns of interaction appeared to have an impact on real-world strategic patterns as they emerged.

By comparing five organisations, this thesis also demonstrated some of the variety in socio-spatial structures that exist and used this to propose a typology of emergent strategy based on an organisation's socio-spatial structure.

This led to a discussion on how the socio-spatial perspective provided a more granular appreciation of how organisation's internal contexts might impact an organisation's propensity for emergent strategy. The insights discussed suggested the potential for contributions to the strategy literature that are described in the following section.

The discussion also suggested that organisations may not understand the impact their socio-spatial structures have on their strategy making, which pointed to the potential for real-world contributions, also discussed in the following section.

6.4.2 Contributions

There are possible contributions to strategy literature, Space Syntax literature in architecture, methodology and to practice. These have been highlighted within the thesis and are summarised here in turn.

This thesis contributes to the strategy literature by developing a socio-spatial perspective to the analysis of an organisation's internal contexts and their impact on its propensity for emergent strategy. The socio-spatial perspective provides a more granular analysis of an organisation's internal contexts that builds on Mintzberg's framework for emergent strategy. The approach developed places a focus on the complex patterns of day-to-day interactions that are unintentionally strategic revealing more about what goes on *within* organisations during periods of emergence. Potential contributions to the SaP literature have been highlighted including the roles social multiplexity and spatial configuration play in emergent strategy.

This thesis also makes methodological contributions. The introduction of Space Syntax methods provides quantitative, objective techniques for analysing complex spatial patterns that complement the qualitative socio-spatial research methods more commonly used in SaP research.

In addition, this thesis makes the methodological contribution of a measure for socio-spatial correspondence. Correspondence has been shown to be a measure that is versatile in its application because it can be used at multiple levels of analysis, for multiple social affiliations across complex spatial structures. The findings of this research suggest that socio-spatial correspondence is important because it helps explain the complex patterns of interaction found in organisations. By developing a quantitative measure for socio-spatial correspondence, a methodological contribution is made to both strategy literature and Space Syntax literature.

Space Syntax is a specialist field in the architecture literature and is used to analyse cities as well as for the use it has been put to in this research, to analyse complex buildings. There has been a tendency for the Space Syntax community to split between those that focus on the analysis of cities and those that focus on buildings. In recent years, the analysis of cities has tended to dominate the Space Syntax community, in part because the results of the analysis on buildings has thrown up more anomalies and inconsistency in the results than the analysis of cities. It is the opinion of this author that the main reason for this is that the socio-spatial concept of correspondence has been rather lost in the body of work produced. The method for measuring correspondence is being presented to the Space Syntax community by the author of this thesis, in the summer of 2019 at a global conference in Beijing, China. This has the potential of setting a new research agenda that investigates the effects of correspondence and non-correspondence in complex buildings and organisations.

Engaging in its socio-spatial origins opens up another, far broader, contribution to the architecture literature. Potentially this work gives architects the tools to engage with their clients in a different way. Instead of discussing architecture in terms of visual styles this research opens the possibility of engaging with clients at a more fundamental level, by discussing the impact architectural choices have on the (strategic) outcomes of the organisation. This is in sympathy with the original aim of Hillier and Hanson in developing the

theory. They said: "*However much we may prefer to discuss architecture in terms of visual styles, its most far-reaching practical effects are not at the level of appearance at all, but at the level of space. By giving shape and form to our material world, architecture structures the system of space in which we live and move. In that it does so, it has a direct relation to social life, since it provides the material preconditions for the patterns of movement, encounter and avoidance of social relations. In this sense, architecture pervades our everyday experience far more than a preoccupation with its visual properties would suggest.*" (Hillier and Hanson, 1984, p. ix).

Finally, this thesis potentially contributes to management practice. It was highlighted in the discussion the potential for organisations to misunderstand the impact the socio-spatial structures they employ have on their propensity for emergent strategy making. The findings of this research suggest that the strategy of an organisation needs to be thought about spatially as well as socially. To do so systematically and analytically offers the prospect of strategic gain over competitors. The methods developed in this thesis offer practitioners the tools to understand the strategic implications of their organisation's socio-spatial structures and also allow practitioners to consider alternative structures that might impact the organisation in the future.

Before undertaking this research, I had a career in as a senior executive spanning more than 25 years that included senior strategic roles in an innovative multi-national corporation and my own small business. An important test to me, of the relevance of this research to practice, was to reflect on whether a knowledge of this research would have encouraged me to act differently on some of the strategic problems I was faced with. It is clear to me that I would have changed several key decisions during the course of my career had I had access to the socio-spatial perspective of emergent strategy. For example, in a multi-national organisation, I had responsibility for building a global business in a technology driven product within a group dominated by traditional manufactured products. After two years of struggle, I went through the expensive and time-consuming process of creating an entirely new business unit to accelerate the development of the technology business. This was an example of a structural solution to achieving strategic ambidexterity and with the benefit of this research, I would certainly have sought socio-spatial solutions to the problems I faced much earlier than I was able to create the new business.

6.4.3 Limitations

Three limitations to this research are identified, each of which relate to the way data was collected within the time and resource constraints dictated by the PhD process. The first relates to the data gathered on emergent strategy making, the second to the data on social interaction and the third to data on socio-spatial structures.

The difficulty of collecting data on emergent strategy making in practice was recognised from the outset. The unintentional nature of emergent strategy making means that an immersion in the organisation in order to build a sensitivity to emergent strategy making was essential (Rasche and Chia, 2009). The time constraints on the single researcher meant that data gathering was limited to a single organisation and that the problem of retrospective attribution could not be overcome by using a longitudinal research design. Despite these limitations, it has already been argued in this thesis that observing the *possibility* of SaP research on deliberate strategy.

The method selected to collect data on social interactions was essentially manual rather than using more automated approaches such as biometric sensors or remote video recording which could have provided a larger data set on interaction. The method of manual observation was selected so that the researcher could build an understanding of the three variables, emergent strategy, interaction and space, simultaneously. The ability to link the three variables in real time was considered critical by the author to build the sensitivity to the organisation described by Rasche and Chia (2009) and mentioned above.

The constraints described above limited the data gathering to a single site organisation, 'Law'. This in turn meant that the socio-spatial analysis on the other four organisations was also limited to a single site so that the results could be compared. It is recognised this has placed limitations on the findings and this was noted in the discussion of 'Uni' in section 6.1.1. However, this limitation is also seen as an opportunity for future research with very real potential which is discussed in the following section.

6.4.4 Future research

Three inter-related areas of future research are considered to have promise and are explored in the following sections. Section 6.4.4.1 explores the potential for further SaP related research. Section 6.4.4.2 explores the potential for developing the concept of correspondence and section 6.4.4.3 explores the potential for future research in the field of Space Syntax research in architecture

6.4.4.1 Future research in Strategy-as-Practice

As the limitations described in section 6.4.3 above make clear, further research is required to build on the findings of this thesis that are based on the detailed observations of a single organisation. SaP research would benefit from expanding the scope of this research to more organisations including; multi-site organisations; research with an industry or sector focus; and research in institutions such as universities where employees routinely interact with people outside of their own organisation.

One specific area that is considered to have particular promise for further research is that of organisational ambidexterity. Organisational ambidexterity describes the ability of an organisation to balance deliberate and emergent approaches to strategy (Bodwell and Chermack, 2010; O'Reilly Iii and Tushman, 2013; Burgelman and Grove, 2007). Ambidexterity has garnered a great deal of interest amongst strategy scholars because achieving this balance is difficult to do in practice (O'Reilly Iii and Tushman, 2013). Contextual ambidexterity can be achieved within a single business unit contemporaneously if the right internal contexts are present (Gibson and Birkinshaw, 2004). Analysis of the organisational contexts that can encourage contextual ambidexterity are currently restricted to four factors originally identified by Ghoshal and Bartlett (1994): discipline, stretch, support and trust. What is not recognised is the possibility that the socio-spatial structures used by organisations might contribute to achieving ambidexterity.

The socio-spatial perspective, therefore, with its granular, multi-level understanding of an organisation's internal contexts has the potential to generate new insights into achieving ambidexterity contextually. For example, in 'Law', socio-spatial systems of varying structure were found nested within the overall system and departmental correspondence was found

to vary at multiple levels within the organisation. This makes it feasible that all four of the socio-spatial structures represented by the four quadrants on the typology in figure 6.1, might exist within a single socio-spatial system. In other words, in a single organisation, it might be possible to have internal contexts that support a propensity for adaptation and genuine novelty.

This represents a new way of seeing ambidexterity and therefore potentially makes a contribution to the literature on strategic ambidexterity.

6.4.4.2 Future research in architecture and Space Syntax

The concept of correspondence can be further developed by being tested in a wider range of organisations. The ability for researchers to do this will be enhanced by developing the depthmapX software to include the measure for correspondence. The author of this thesis is aware that work has started on this at The Bartlett School of Architecture at UCL.

7 References

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