Towards an Architectural Theory of Space and Organisations: Cognitive, Affective and Conative Relations in Workplaces

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Abstract

Theories of space and the physical reality of organisations have been widely ignored by organisational theory, as Clegg and Kornberger asserted in their 2006 edited volume on 'Space, Organisations and Management Theory'.

To contribute to the understanding of the spatiality of organisations and the organisational implications of space, this paper suggests investigating the multiple networks in which people engage. Considering that an organisation can be described as a 'social unit with some particular purposes' (Shafritz et al. 2005) the basic phenomenon to investigate in organisational theory could be seen as humans and their relationships, aiming to achieve certain goals. Those relationships between people can either be governed by spatial rules, such as proximity or visibility, but also by transpatial rules, which includes conceptual closeness between people such as common preferences, attitudes or behaviours.

Drawing on an overview of network related theories of social form, i.e. Social Exchange Theory, Social Network Analysis, Dynamic Network Analysis, Network Science and Actor Network Theory, this paper argues that all of these theories have neglected the role of spatial networks. Space Syntax as theory of spatial configuration will therefore be introduced briefly in order to add a spatial perspective to organisation theory.

In a following step it is argued that a paradigmatic theory of space and organisations needs to satisfy and explain both general patterns as well as case particularities. While Space Syntax makes a strong case for detecting general patterns, by and large it lacks a more qualitative perspective. Therefore it is proposed to add yet another layer to the story and explore the missing link between organisational behaviours, transpatial and spatial networks by drawing on cognitive psychology and the classic tripartite classification of mental activities into cognition, affection and conation. Each of these three functions of the mind has implications for relationships between people; they relate to organisational dimensions, such as power, workflows, or shared organisational cultures; and lastly they can be reinforced spatially. For example how departments own areas of a workplace can be understood cognitively as demarcation of territory in the organisation, but they can also be affective in creating a sense of place and belonging.

Bringing empirical evidence from various organisational backgrounds like offices and other workplace environments to bear, it will be discussed and interpreted how relationships can form spatially on the one hand, and transpatially based on cognitive, affective and conative functions on the other hand. The initial idea of transpatiality as introduced by Hillier and Hanson in 'The Social Logic of Space' will be enhanced. Thus the paper lays further foundations for an architectural theory of space and organisation, and offers new perspectives on the spatiality of organisational theory.

Introduction

Organisation theory is characterised by its diversity of approaches, resulting in multiple and largely incommensurable schools of thought (McKinley et al. 1999). Drawing on the seminal work of Kuhn (1996) in describing the history of science in various stages, McKinley et al. proposed that organisation theory was still in a pre-paradigmatic stage, similar to what they labelled as the foundational disciplines of organisation theory, i.e. sociology, economics and psychology.

It could be argued that organisation theory is facing other issues including the anecdotal nature of evidence in the managerial discourse (Price 2007); too narrow a focus on business contexts within organisation theory, ignoring the diversity of other forms of organising (Parker 2008); and last but not least the wide ignorance of the spatial contexts in which organisations operate (Clegg and Kornberger 2006). While some approaches use the notion of space entirely metaphorical (Lekanne Deprez and Tissen 2009a, 2009b; Tissen and Lekanne Deprez 2008), a variety of studies exist considering the physical realities of organisations, yet, the evidence base overall lacks coherence and consistency (Gieryn 2002; Sailer Forthcoming).

However, this paper aims at discussing organisations and organisation theory within the wider context of the emergence of social forms.

Since theories of organisations fit into more general theories of society, they have been characterised by the same divisions of methodology and approach. For example approaches focussing on the individual come from psychology and social psychology; those that deal with our intentional behaviour, that consider individuals to be rational and utility maximising, come from economics; those focussing on collective behaviours come from organisation theory and economic theories of firms. In recent years attention has turned away from what constitutes the structure of social organisation as this might be drawn from the configuration of the social network or the organisational structure, to the dynamics of its generation or reproduction – asking how it is that social forms emerge, adapt and conserve their form over time. This adds yet another layer to each of the approaches. At the same time consideration has been given to the way that material artefacts and media become socially meaningful and can be considered as social agents in their own right.

All of these approaches focus on different aspects of society and organisation. The difference between their many positions, however, does not mean that any are necessarily incorrect or incompatible. In fact it seems clear that they each give us a glimpse of one facet of the truth, however it is also apparent that currently there is a lack of a paradigm under which these different perspectives can be brought together. This paper brings yet another perspective to bear, that of architecture, the real physical and spatial form of the buildings that organisations construct and inhabit. Our aim is not to further complicate the story, but by injecting a layer that is currently only sketchily formulated or missing from most existing accounts, to resolve some of the apparent incompatibilities between different perspectives. The missing layer we include is the spatial configuration of organisations and of the buildings they inhabit.

Any attempt to develop a new theoretical framework must be based first on an analysis of the different existing theoretical positions. It must then show how by taking a different viewpoint new insights can be generated. In this paper we briefly review some of the theoretical threads regarding organisations, and discuss the assumptions that appear to make them incompatible. We will focus on theories discussing organisational structures and relations between agents, i.e. theories that consider networks in the widest sense. Next, we review the development of space syntax approaches to the analysis of spatial configuration, and add an extended organisational perspective to this discourse. We then outline some of the empirical findings relevant to this discussion. Finally, we discuss the implications of these findings for organisation theory and social theory in general.

Theoretical contexts – social relations, networks and organisations

Considering that an organisation can be described as a ‘social unit with some particular purposes’ (Shafritz et al. 2005) the basic phenomenon to investigate in organisational theory could be seen as humans and their relationships, aiming to achieve certain goals.

How relationships are structured within organisations creating hierarchies, reporting lines, departments and complex organisational formations is indeed one of the earliest concerns of organisation theory. The question how to organise and structure work efficiently has been discussed since the late 18th century by raising issues such as the division of labour (Smith 1776). In due course, other aspects of structure and organisational design were addressed, for instance the efficient structuring of tasks (Taylor 1911), management, authority, delegation and the organisation of work in bureaucracies (Fayol 1949; Weber 1947), or the organisation of work through market mechanisms as well as firms (Coase 1937). In contrast, the idea of structures as relationships or networks did not properly emerge until the second half of the 20th century, when for example Burns and Stalker (1961) discussed the differences between hierarchies and network structures in organisations. Still, the origin of conceptualising social structures as relationships, and therefore as networks in the widest sense, can be traced back to Simmel (1908), the study of sociometry – a term coined by Moreno in the 1930's, as well as sociological and psychological studies of small groups (Homans 1950) and social structures (Blau 1977). This line of research was finally associated with the terminology of 'networks' in the 1970's, fuelled by two research clusters around Freeman at UC Irvine and White at Harvard (for a review of the history of network analysis see: Freeman 2004).

The joint heritage of theories of social relationship and networks, and how a process of differentiation of theories began since the 1960's and 1970's is illustrated in figure 1. Driven by different approaches and disciplines, various schools of thought developed around social structures, relationships, networks, actors and agency.

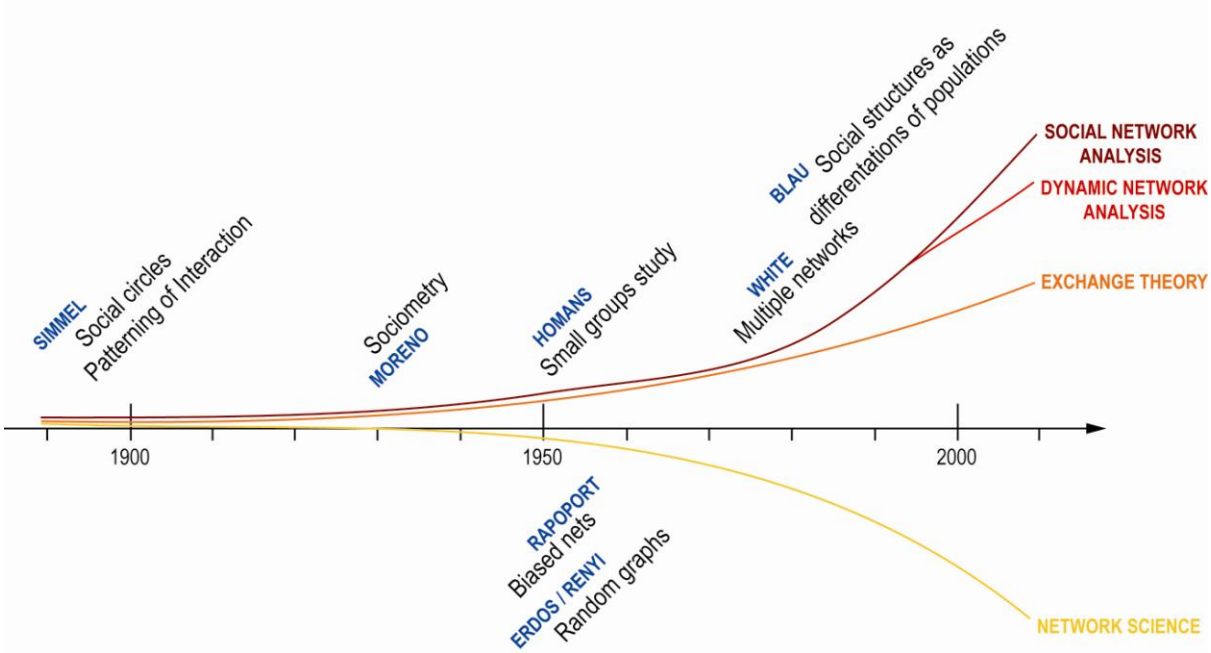

Figure 1: Shared tradition of network theories

In the following review, some of those theories shall be briefly introduced, among them social exchange theory, actor network theory, network analysis, and network science. The main contributions and concerns of these theories will be outlined as well as how and why they were criticised; figure 2 will provide an overview of the underlying assumptions and theoretical models used by these network-related theories. The introduction of each of the theories will be followed by a summary of the theoretical problem.

Social exchange theory (SET) conceptualises interaction among agents primarily as instrumental transaction, i.e. a process of exchange of goods, materials, or non-material values of symbolic importance such as prestige (Blau 1964; Homans 1958; Thibaut and Kelley 1959). Interactions arise from the motivation of agents, which is fuelled by economic reasoning, expected gains and direct rewards, but also by anticipated reciprocity and perception of efficacy. Choosing the dyadic relationship as its unit of analysis, SET posits that from the dynamics of exchange processes group structure is generated.

Despite important contributions to the explanation of organisational behaviours, for instance power, psychological contracts or leadership (Cropanzano and Mitchell 2005), SET is criticised for a variety of shortcomings: its tautological reasoning; the reduction of the breadth and wealth of social interactions to the rationalist and utilitarian view of exchange; the conduct of an economic analysis of non-economic social situations; as well as its ignorance of larger network structures in favour of dyadic relations (Cropanzano and Mitchell 2005; Emerson 1976; Zafirovski 2005).

Social network analysis (SNA) is concerned with the flow of resources – money, power, information, knowledge, social capital – through a network structure. It looks at organisations as systems of nodes (individual people, teams, groups, whole organisations) connected by multiple sets of ties (trust, interaction, information flow, friendship, advice). By considering social structures as a whole, SNA proposes to advance the understanding of the constraints and possibilities of certain positions within a network, as well as related behavioural aspects (Scott 1988; Wasserman and Faust 1994; Wellman 1983). Although empirically driven, it has been argued to be both a methodology and a theory (Freeman 2004).

SNA has contributed to the understanding of formal and informal networks within organisations, for example focusing on interaction and communication networks (Casciaro and Lobo 2005; Contractor et al. 2009; D. J. Krackhardt and Hanson 1993), organisational behaviour, gender and homophily (Ibarra 1992, 1997), collaborative networks and knowledge creation (Borgatti and Cross 2003; Cross et al. 2001), and knowledge transfer and learning (Skerlavaj et al. 2008), to name but a few. Still, it has been criticised for its lack of qualities of a good organisation theory, i.e. helping to understand how collective action is organised (Salancik 1995). Furthermore, it continually was and still is questioned whether SNA can be seen as a theory at all (Cook and Whitmeyer 1992).

Closely related to SNA, yet grounded in mathematical considerations of the structure and properties of graphs, for example biased networks (Rapoport 1957) or random graphs (Erdös and Rényi 1959), **network science** approaches emerged, discussing network models and simulations. Network science is interested in the formulation of theoretical and mathematical models to describe ideal network structures, and compare these simulated models with real life networks. The most well known topics of network science are the small world theory (Watts and Strogatz 1998; Watts 2003, 2004), where networks were conceptualised as a combination of highly localised clusters with some additional random links to create global short path length in networks. Equally reputed in network science is the issue of scaling in networks, leading to the proposition that network structures resembled each other across various scales, so called scale-free networks (Barabási and Albert 1999; Barabási 2003). Network structures were hence seen as predictable to a degree (Butts 2003).

A recent offspring of SNA, yet relying on some of the simulation methods of network science is **dynamic network analysis (DNA)**, suggesting to study multiplex network relations and change in networks through simulation and computational means (Carley 2002, 2003)

As opposed to the previously introduced network approaches, which share a common tradition and foundations (as outlined in figure 1), **actor network theory (ANT)** uses the notion of networks in a more conceptual way. ANT is concerned with the forming and reforming of groups of heterogeneous

actors. It traces temporary associations between actors, but also between actors and material objects, forming material-semiotic networks that are argued to act as a whole (Latour 2005; Law 1991). The theory redefines what could be seen as social, i.e. the momentary association of entities gathering together into new shapes. Using the example of a supermarket, Latour argues that the social would not be a specific shelf or aisle, but *"the multiple modifications made throughout the whole place in the organisation of all the goods – their packaging, their pricing, their labelling."* (Latour 2005: 65) Thus, ANT looks for meaning in semiotics and material artefacts and elaborates a radically new understanding of what agency is.

Granting agency to inanimate objects is the most common criticism of ANT. Agency could be seen as based on the capacity to act with intention, and for inanimate objects this seems problematic. Furthermore, ANT is criticised for being mainly descriptive and failing to provide explanations for social processes. While ANT certainly has added value to the understanding of organisations in detailed empirical studies, covering aspects of professionalism, communities of practice, knowledge management and the implementation of technologies, it has also been argued to follow an un-reflexive epistemology and naturalising ontology, therefore rendering it inadequate to provide a critical account of organisations and power-knowledge relationships (Whittle and Spicer 2008).

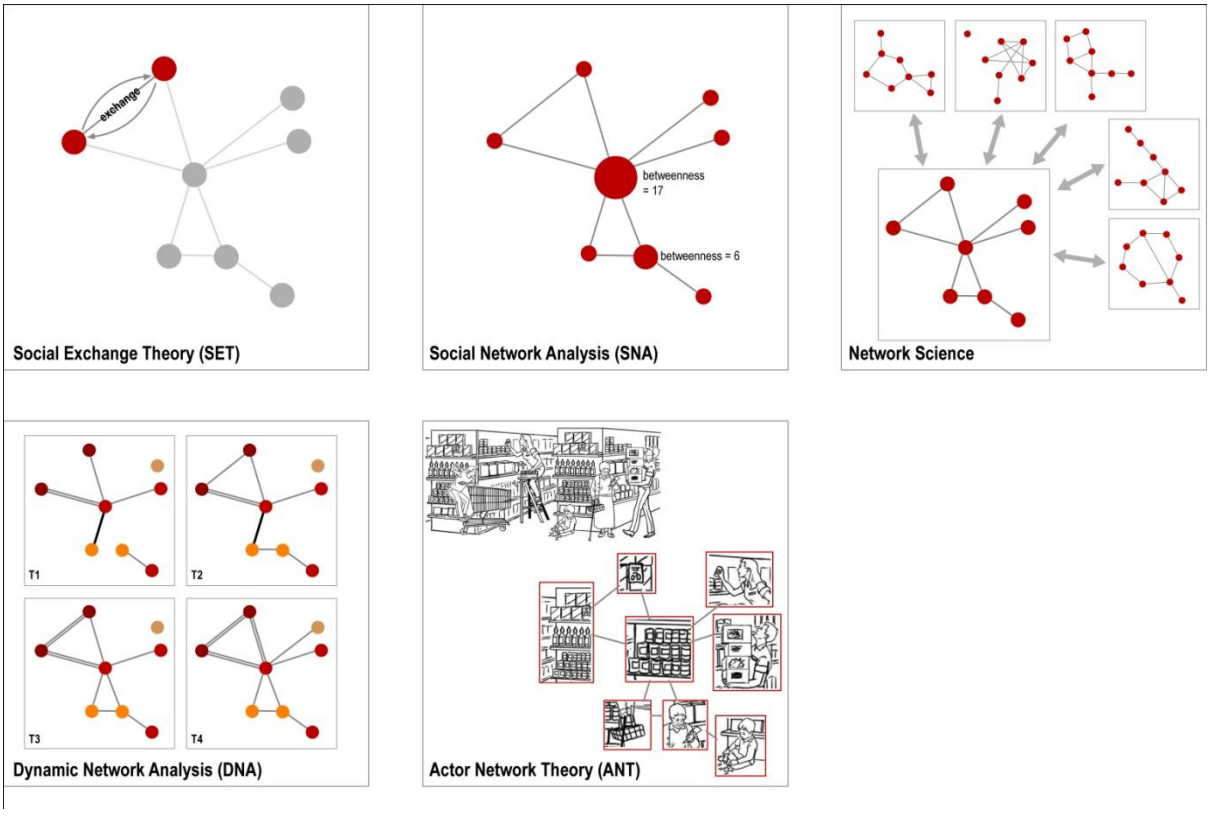

Figure 2: Overview of underlying assumptions and theoretical models used in the different network related theories

Summary of the theoretical problem

All of the theories introduced above share an interest in the emergence of social forms combined with a relational perspective. However, methodologies, terminologies and approaches differ vastly.

A useful taxonomy to discuss the contributions of various approaches to the knowledge in an area has recently been made in the field of project management (Smyth and Morris 2007). The authors distinguish two different types of epistemological contributions: firstly, those aiming to identify general patterns based on cause and effect, and secondly, those focusing on particularities of a specific case, scenario, or unit of analysis. While the general patterns approaches can be argued to marginalise the particular, the particular approaches can be seen as blind to the emergence of common patterns and normative recommendations. According to Smyth and Morris this results in difficulties to relate research within paradigms and to contribute to paradigmatic development.

Bringing this argument to bear in the context of this paper, we now argue that SET and ANT are theories of particularities, whereas network science is a general pattern approach. SNA and DNA sit somewhere in the middle of this taxonomy, since they often focus on empirical investigations of real data and unique situations (particularities), yet employ a holistic view by looking at structures as a whole (general patterns).

The first fundamental problem to consider then in order to develop organisation theory further is to overcome this split between particularities versus general patterns.

The second fundamental problem is closely related: how can one account for social forms outlasting the individual agent? How to account for rapid change, as well as for the apparent inertia of forms? Where is the 'genetic code' for social forms?

Traditionally, sociology has developed various answers to this question, for instance the Durkheimian view proposing that social forms are more than the sum of its parts, therefore following a structural approach of investigating the forms societies take. On the contrary, sociologists have argued that social forms emerge from individual agency. Those two opposing viewpoints have formed one of the central problem of sociology, i.e. what is the relationship between individual and society, between structure and agency, and between micro- and macro sociology (Archer 1995).

We will refer back to the debate on structure and agency later in this paper, however, it is time to add a missing dimension into the discussion: the aspect of space.

Our answer to the problem of social forms outlasting individual agents is that individuals participate in numerous networks, but predominantly of two kinds: spatial and transpatial networks (Hillier and Hanson 1984; Hillier 2009). Spatial networks are those that we inhabit and move through, they create relations of 'neighbourhood' and face to face interaction. Transpatial networks are defined by who we are rather than where we are. These include kinship networks, professional and guild networks, clubs and societies, networks of affiliation and belief. Two specific kinds of association create most transpatial networks: 1) those based on common features or homophily (McPherson et al. 2001) , i.e. contact with similar people, for example shared parentage for a kin network, or shared profession for a guild, and 2) those based on differentiation and segregation (Blau 1962), or complementarity of function for an exchange network (the specialised members of a firm or trading network for example). These can be thought of as mapping onto Durkheim's mechanical and organic forms of solidarity respectively (Durkheim 1893).

An important aspect of our understanding is that individuals participate simultaneously in multiple networks of all types, often based on contexts or roles. Crosscutting social circles were an early concern of sociology (Simmel 1890) and continue to form a relevant foundation for more recent discussions of social structures (Blau and Schwartz 1984; White et al. 1976). The same argument of multiplicity and simultaneity can be applied to other agencies – a corporation for example may be composed of multiple cultures (Penn et al. 2007), or subcultures that are separated by ambiguous and differing frames of reference (Martin 2005). This is neither chaotic nor problematic. On the contrary, our current understanding is that social forms are characteristically complex and multilayered. This lends strength through redundancy, but also strength through access to differing sets of knowledge and

expertise (Burt 1992; Granovetter 1973), thus giving rise to the idea of relationships as social capital (Burt 1997, 2000).

However, where our argument is based on the multiplicity and simultaneity of participation in social as well as spatial networks, the majority of the discourse on cross-cutting social circles disregards the spatiality of human life. How human societies can actually be seen as spatial phenomena is outlined by Hillier and Hanson (1984: 26):

> *"A society does more than simply exist in space. It also takes on a definite spatial form and it does so in two senses. First, it arranges people in space in that it locates them in relation to each other, with a greater or lesser degree of aggregation and separation, engendering patterns of movement and encounter that may be dense or sparse within or between different groupings. Second, it arranges space itself by means of buildings, boundaries, paths, markers, zones, and so on, so that the physical milieu of that society acquires a definite and recognisable spatial order."*

In a more recent contribution, Hillier (2009) enforced the argument by proposing to conceptualise societies as social networks in space-time. According to Hillier societies would have to operate two mechanisms in order to develop and prosper: mechanisms for overcoming space to create non-local groupings (transpatial solidarities) and mechanisms for controlling local space (spatial solidarities). This argument on the spatiality of social networks also holds on an empirical level. It can be shown that social structures can arise from features of the spatiality of actors as much as from social and relational factors (Sailer and McCulloh Forthcoming).

To develop this proposition of the need of a spatial theory of organisations and networks further, the next section will introduce Space Syntax as a theory to bring to bear in more detail.

Space Syntax as a Theory of Spatial Configuration

Churchill once said: "First we shape our buildings; thereafter they shape us". Here we propose to be more specific: it is primarily the spatial configuration created by buildings that acts to shape society. Spatial configuration is clearly a social product: people and organisations make decisions on exactly what to construct and where; each decision is made with knowledge of the currently existing built context (itself a product of previous generations of decision takers); decisions are subject to complex market mechanisms; to regulatory and legal controls, each in turn produced by systems of government and markets; and subject to the influences of culture and current theoretical frameworks on design style and morphology. Given a built context, individuals and organisations appropriate particular locations for specific uses and behaviours: the market trader may locate their stall strategically to be visible to the passing trade; the shopper may bias their movement to take them past a row of stalls selling things they are interested in. In both cases the affordances of space can be thought of as inherently social in that different locations afford (or inhibit) access to interaction with other actors. Each step in the process, from construction of a stall to habitation and movement is distributed, with each individual's actions contingent upon those of many others, both contemporaneously – the shopper may avoid congestion or seek interaction – and asynchronously, since the spatial configuration which informs individual behaviour results from the actions of previous generations of inhabitants who may no longer be present. This means there is an underlying social logic of space, which has been developed and researched over the last decades under the theoretical paradigm of Space Syntax.

In numerous theoretical as well as empirical contributions Space Syntax has elaborated how social life springs from spatial configuration. In general, Space Syntax investigates the structure of spaces and configuration, i.e. the way spatial elements are put together to form an interconnected system of spaces. The relationship between spatial elements (like streets in a city, or rooms in a house) is studied based on a theory of society, yet working with a mathematical model of elements and connections, like it is formalised in graph theory, thus rendering it comparable to other network approaches. In general,

Space Syntax research found that the quality of social life within a space depended on the position of this space within the fabric of a city or a building: more integrated spaces were found to be livelier and frequented by more people while more segregated spaces showed lesser frequentation. This general relationship between the collective flows of movement and the integrative capacity of a space was called 'natural movement' (Hillier et al. 1993), and it was argued that spatial configuration drives movement flows (Hillier and Iida 2005), which in turn affects the patterns of co-presence and encounter in space and thus the patterns of interaction between people. Thus, the importance of spatial configuration for organisational behaviours like interaction, communication and knowledge flow has been underlined (Peponis et al. 2007; Sailer and Penn 2009; Wineman et al. 2009).

To summarise the effects of spatial configuration on the emergence of social life, Hillier (2009) has argued for a two-fold process to explain how spatial systems like cities are formed: 1) network emergence, and 2) network agency. Network emergence refers to the process of aggregation of buildings in a city to form a continuous spatial system. Then, network agency takes place upon this background, shaping the emergent patterns of uses through the non-uniform distribution of movement. Land uses seeking movement, for instance retail, migrate to integrated locations, attracting more movement and thus creating a multiplier effect, so that a foreground network of centres and sub-centres is formed in cities against the background of residential space.

This twofold process of network emergence and network agency also applies to complex buildings, since the network first emerges from intentional design decisions, and then network agency occurs, driving movement flows according to the logic of spatial configuration; however, it has also been shown that other intervening variables like attractors in offices (Sailer 2007) or product placement in supermarkets (Gil et al. 2009) partially divert movement flows within some types of buildings.

So how does Space Syntax compare to the other network related theories, or put the other way round, how does the Space Syntax perspective help in answering some of the questions raised by this paper, i.e. what is the potential role of space in organisation theory? The obvious answer is that Space Syntax offers a perspective to study the spatial networks in which humans participate as an additional layer to their social networks.

Yet applying the same taxonomy of particularities versus general patterns, Space Syntax could be seen as an approach aiming for general patterns. As such it could be argued that Space Syntax in general falls short of appreciating the particular, and more specifically, has mostly missed considering the more qualitative aspects of the relational networks of people, organisations and space. In order to integrate perspectives of emotion, the feelings of people regarding their workplace, as well as issues such as identity and place attachment into the discourse, this paper will bring psychological theories of affection, cognition and conation to bear.

The Psychology of Mind – Cognitive, Affective and Conative Relationships in the Workplace

Sources for a discussion of the various aspects or faculties of the mind can be traced back in various forms to Leibniz, Kant and the period of Enlightenment; Alexander Bain in 19th century Britain distinguished thought (i.e. intellect or cognition), feeling (i.e. emotion, passion, affection, sentiment) and volition (i.e. will, activity), whereas modern psychology framed the terminology of cognition, affection and conation (Hilgard 1980).

Psychology refers to cognition as the process of generating information or knowledge, i.e. perceiving, encoding, processing, sorting and retrieving information. Affection refers to the emotional interpretation of perception, information or knowledge; it commonly denotes people's attachment to other people, but also to objects, places and ideas. Conation then relates information as well as feelings to wilful

behaviour; it is commonly associated with intention, purpose, goal-orientation, motivation and initiative (Huitt and Cain 2005).

All of these aspects have a clear link to organisational behaviour, for example the cognitive domain bears on aspects of information processing, knowledge management, or knowledge sharing; affection may relate to trust, employee satisfaction and loyalty, whereas the conative may be connected to issues of leadership, motivation, teamwork, work flows and performance. What is more, they also encompass specific spatial perspectives. In this sense affection could mean place attachment, identification with spaces, or the feeling of a sense of place; cognition could refer to the intelligibility of organisation and space, i.e. does space give clues on organisational functions, like status, or departmental affiliation; last but not least, conation could link to purposeful movement behaviour and the power of attractors in offices, for example the coffee machine or the water-cooler.

How some of these ideas can be brought together with a configurational analysis of space, and thus add particularities to the syntactically revealed general patterns will be exemplified in the following section, drawing on empirical evidence from various cases that are reported in detail elsewhere.

The Interplay of Space, Place and People – Some Empirical Evidence

In the following, new aspects of three different empirical cases will be discussed: 1) The emergence of local cultures in the British Museum in London (Penn et al. 2007), 2) The lack of local identity in an office building in London (Sailer Forthcoming), 3) Time-space routines and social cohesion in a research institute in Germany (Sailer Forthcoming).

In their discussion of the construction of **organisational cultures in the British Museum**, Penn et al. (2007) outline how different departments of the institution are allocated different areas of the complex multi-level back of house structure of the museum. Within each department all areas are easily accessible on a local level, yet the inter-department connections lead through globally segregated areas and corridors. At the same time, departmental areas show distinctive architectural features, whereas the connecting areas appear devoid of obvious ownership. Each department forms a lively centre of activities accommodating storage areas for collections, staff offices, libraries and adjacent student rooms. The combination of architectural decor with a spatial configuration of globally segregated, yet locally integrated centres creates a twofold effect on the organisation and the emergence of local cultures and identities: firstly, on a cognitive level the clear segregation of departments allows staff and visitors to gain a clear picture of the organisation; it is easy to read and understand, and allows people to identify with parts of the institution without the need to engage with the whole complex organisational and spatial structure. Secondly, on an affective level the spatial features increase loyalty with a specific subject area within the institution, as well as a strong sense of place and ownership, since students repeatedly come to their areas to study artefacts, and staff mostly meet colleagues within their departments. Thus the spatial configuration of the museum helps construct distinct departmental cultures through the processes of cognition and affection.

In her thesis, Sailer (Forthcoming) discusses the move of a **London-based media corporation** from six different buildings across town into one shared building, uniting more than 1300 staff under one roof. The new building comprises of three floors with the majority of employees on the first floor of the building (approximately 750 staff). The brief to the architects of the refurbishment had been to provide a shared space for the whole business as well as to ease future churn by standardising workstations. Increasing demands to fit in more people resulted in a dense layout of desks with mostly centralised shared facilities (central cafe, breakout spaces) and a mix of printing points and meeting rooms scattered throughout the building. Being in one large and globally very integrated building had a positive effect on the levels of cross-departmental interaction and collaboration as well as overall levels of satisfaction, however, noise and disturbances as well as the homogeneity of the workplace were the

major issues after the move. Staff complained about the difficulties of identifying who sat where and finding colleagues from other departments. Since all workstations were the same it was impossible to understand which type of staff (managers, editors, sales, marketing or administrative staff) was located where. This means that the building failed to provide enough cues on a cognitive level for people to make sense of the organisation and to allow for orientation. This also hindered affection in the sense that people complained the workspaces felt soulless, clinical and factory-like leaving themselves feeling like a 'cog in a wheel' or 'battery hens'. The high degree of global integration of the building therefore inhibited the appropriation of space by smaller teams and brands of the media company and resulted in a lack of identity.

The same source (Sailer Forthcoming) also introduces specific space usage patterns in a **Research Institute in Germany**, which hosts around 200 scientists working in the field of theoretical physics. The institute successfully runs a visitors programme, allowing scientists from all over world to work at the institute temporarily for 1-12 months to undertake research in their area of interest and collaborate with others. Additionally, 1200-1500 visitors a year attend a workshop or seminar at the institute. Therefore, the institute feels very dynamic and ever-changing. A study of frequent interactions of researchers at the institute showed a very distinctive pattern (see figure 3): small clusters of scientists emerged that collaborated on a day-to-day basis. All of these clusters were engaged in very specific time-space routines, for example small groups going out for lunch together, meeting for afternoon tea, or for daily group discussions, but also triplets collaborating intensively, for instance in writing papers or writing software together.

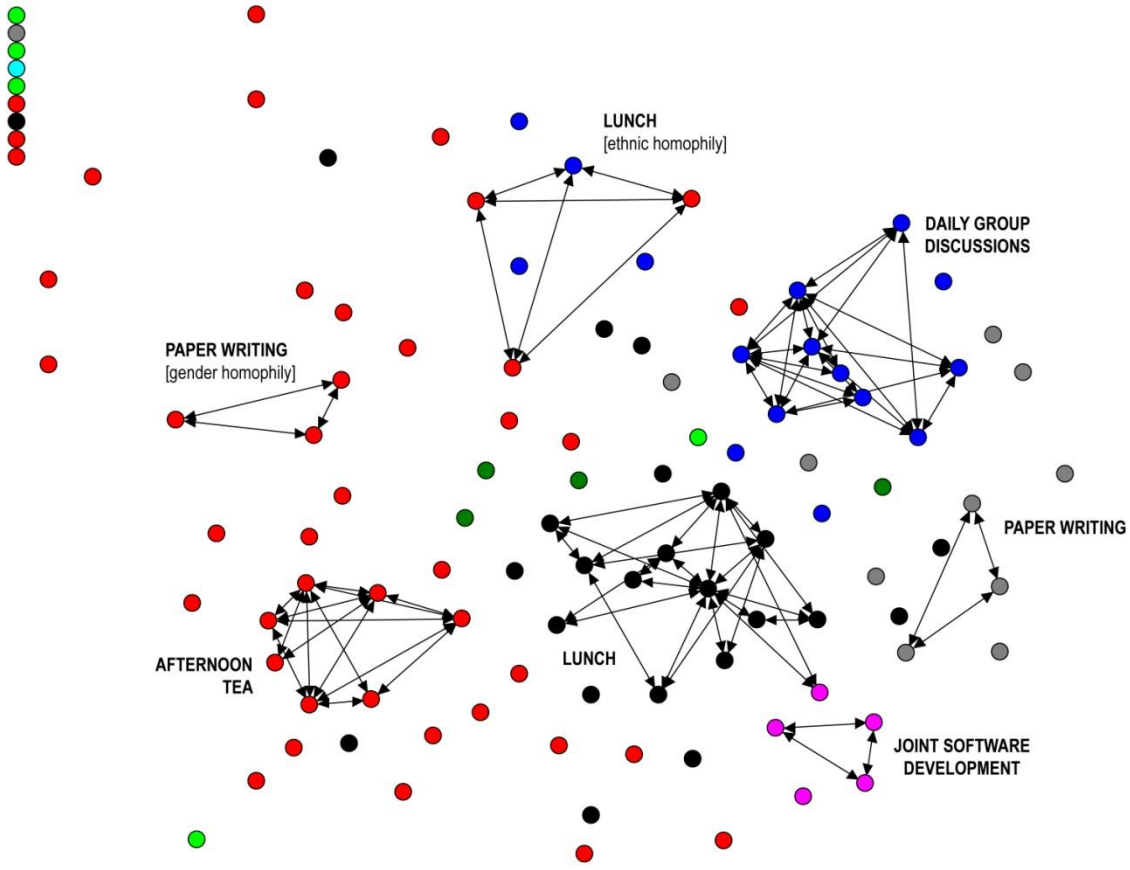

Figure 3: The network of daily interaction at the research institute; nodes are coloured according to research group affiliation; only simmelian ties are shown, i.e. mutual and strong ties involving at least a triplet (according to Krackhardt (1998) these ties are the most stable form of relationships).

This means that social cohesion was formed by transpatially organised activities and events, yet supported by and embedded within the spaces of the institute. On a cognitive level, the process of generating new knowledge was fostered through those time-space routines, however, they also assisted newly arriving visitors and staff on an affective as well as conative level to learn about the work of others in an informal setting, make new contacts and associate with a research group, thus increasing sense of place, attachment and locally formed identities within a relatively large, dynamic and complex organisational structure. The specific spatial configuration of the institute with three floors of long-stretched corridors involving relatively few turns to move from one place to another could be argued to have eased the emerging phenomena of small clusters and high social cohesion.

To summarise the lessons learnt from the three cases, it is worth noting that organisational behaviours can be effectively described and unpacked using the psychological concepts of cognition, affection and conation. It becomes apparent that social patterns form, transform and reform within organisations based on transpatial as well as spatial solidarities. Both forms of relationships, spatial and transpatial, interrelate in a complex and intricate way, requiring an in-depth knowledge of the specific situations. This means understanding and investigating the particularities of each case. However, using a method like Space Syntax and comparing across cases also allows to reveal general patterns, for example the effects of globally or locally integrated buildings: high levels of global integration combined with a highly standardised and homogenised workstation layout resulted in a lack of local identities in the case of the media corporation. Along the same lines, the globally segregated building structure of the British Museum allowed the emergence of locally integrated spaces, coinciding with the departmental space allocation, which brought forward localised and specialised organisational cultures and identities. Of course this does not automatically imply that any globally integrated building lacks identity, since other factors may come into play and need to be considered with due diligence. For instance in the case of the research institute an integrated building allowed people to make new contacts, which were then fostered and nurtured in small transpatially organised clusters. Therefore, we would argue that organisation theory requires the combined study of general patterns and case particularities.

Discussion and Conclusions

This paper has brought together various different approaches and theories in order to start the discussion on a new paradigm of organisation and space. It combined sets of theories normally discussed in separation: theories of social form and networks, among them social exchange theory, network analysis, network science and actor-network theory; psychological contributions on the functions of the mind; and theories of spatial configuration and spatial networks, known as Space Syntax.

Each of the theories on its own adds important facets to our knowledge on the emergence, sustainment and development of social forms. However, combining them offers additional valuable insights.

We essentially argue that human relations within organisations are structured by two crucial drivers: on the one hand relations are afforded by spatial networks, arranging agents in proximity to one another and thus shaping the way behaviours emerge as a function of space. On the other hand, social solidarities either based on homophily or diversity of its members shape the way humans relate to each other, interact with each other, collaborate and share knowledge. These relationships have been coined transpatial by Hillier and Hanson, since they allow agents to overcome the burdens of spatial distance. Different aspects of social solidarities have been discussed and understood effectively by social exchange theory, network analysis and network science.

We further proposed that the interplay between spatial and social solidarities required further elaboration. Bringing in the three-fold psychological lens of cognition, affection and conation allowed us to bridge the gap between socio-organisational patterns and spatial patterns, thus explaining real life

phenomena of culture, identity, knowledge sharing and satisfaction in organisations. It also allowed us to balance approaches aiming to explore general patterns (like Space Syntax) with those seeking to understand particularities – a criteria we defined as essential for a paradigmatic new understanding of organisation and space.

So what can we learn from this for the general discussion of the emergence and dynamics of social forms? Or in other words, how does this proposition relate to other debates and critiques in sociology and organisation theory?

In an attempt to resolve the debate on structure and agency, Archer (1995) proposed a morphogenetic approach. She criticised the proponents of solely structure, or solely agency approaches for downwards or upwards conflation, and those suggesting co-constitution of structure and agency for central conflation. Since clearly social forms owe their existence to both structure and agency interdependently, Archer argues to add the aspect of time in order to avoid conflation: structures formed at an earlier time constrain or enable agents at a particular moment; the behaviours of agents has consequences for the enforcement or transformation of structures, which then provide settings for agents in the future.

In fact, Space Syntax offers a similar perspective by conceptualising space as a network structure emerging from the collective design decisions made in earlier times, which then enfolds network agency by shaping collective behaviours like movement flows (Hillier 2009).

In this sense a primary criticism of ANT – granting agency to inanimate objects – may be resolved. If we grant agency it is 1) to a social construct composed by multiple distributed actors; and 2) the agency is granted to a system or configuration of space created by the many separate, but contingent and related 'moves' of the distributed and asynchronous actors, each reacting to the others through their current physical/spatial context. In this way spatial configuration transcribes both the actions of many into a single perceivable thing (albeit complex and relational), and the actions of others who are no longer present into a form that can be comprehended by all those present at some time in the future. It is this property of transcription from the social that allows spatial configuration to appear to possess agency.

Taking all of this into account we would now like to outline criteria for a new paradigmatic theory of space and organisations:

- Need to balance the exploration of general patterns as well as particularities;
- Conceptualising the multiple networks in which humans participate based on spatial and social solidarities that emerge in a complex, simultaneous and multiplex way;
- Integrating social and spatial dynamics as well as aspects of time in a cycle of influences in analogy to Archer's morphogenetic approach, thus understanding multiple relations of spatial network structure and agency, and social structure and agency. In this sense humans shape their buildings through design practice (social agency affecting spatial structure), humans shape their organisations through management practice (social agency affecting social structure), then buildings shape organisations (spatial agency affecting social structure), and then both organisations as well as buildings constrain agents in their behaviours (social structures and spatial structure-agency affecting social agency); in turn, humans change the way they shape buildings and organisations, starting the cycle of influences again, as illustrated in figure 4.

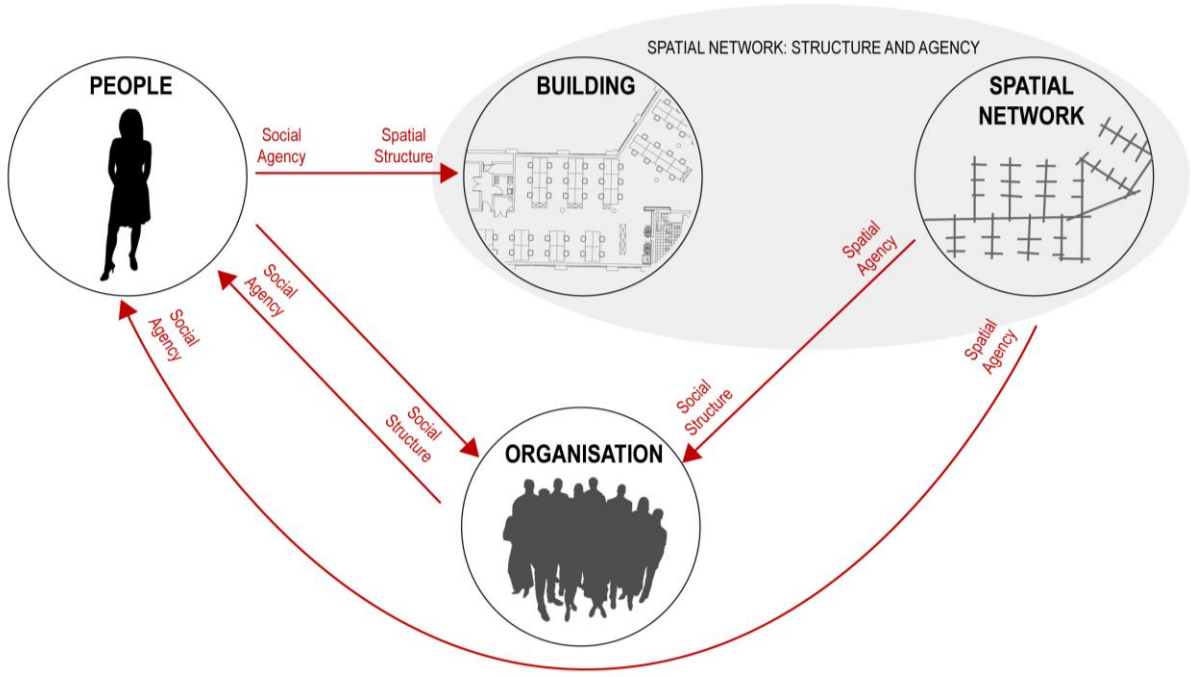

Figure 4: A model of cyclic influence of social structure, social agency, spatial structure and spatial agency

In conclusion, this paper has highlighted an approach of conceptualising the realm of the spatial in relation to the realm of the social without falling for conflation of either sort. However, considering the rare nature of real paradigms, this can only be considered a first step in a hopefully fruitful and critical ongoing discussion uniting scholars of organisational, social, psychological and spatial theories aiming to understand organisations and space.

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