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**The place of the organisation beyond organisational space**

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'Space is the product of interrelations'

(Doreen Massey. 'For Space')

'Space is the everywhere of modern thought'

(Mike Crang, Nigel Thrift 'Thinking Space')

"Space is fundamental in any exercise of power"

(M. Foucault 'Surveiller et punir,  
Gallimard', Paris.)

'Yet we treat space somewhat as we treat sex. It is there but  
we don't talk about it. And if we do, we certainly are not  
expected to get technical or serious about it'

Edward T. Hall "The Silent Language"

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## Abstract : I luoghi dell'organizzazione al di là dello spazio organizzativo

Lo spazio é stato a lungo trascurato nelle teorie organizzative.

Nonostante sia evidente che le organizzazioni siano costituite anche da accordi per la gestione degli spazi di lavoro e che le vite lavorative si sviluppino attraversando questi spazi (Halford, 2008), solo recentemente i concetti di “luogo” e “spazio” sono riapparsi nella teoria delle organizzazioni (Kornberger and Clegg, 2004).

Negli ultimi anni i ricercatori (Mukherjee 2017) hanno evidenziato come assistiamo contemporaneamente al crollo ed all'espansione dello spazio (organizzativo) a causa delle nuove tecnologie: i lavoratori e le lavoratrici sempre più spesso perdono un “ufficio fisico” mentre, contemporaneamente, interagiscono con artefatti tecnologici che di fatto espandono lo spazio organizzativo a loro disposizione, trascendendo i limiti dei loro corpi fisici. Questa tensione tra crollo ed espansione si può considerare indicativa dei limiti dell'approccio topografico al concetto di spazio organizzativo e rende lecita la domanda se la digitalizzazione dei processi di lavoro porti alla creazione di *nuove tipologie di spazi organizzativi* oppure semplicemente arricchisca le scelte tecniche per l'implementazione delle azioni nell'ambito del processo di azioni e decisione che costituisce l'organizzazione. La presente ricerca muove dall'analisi dei contributi più recenti e rilevanti alla definizione ed all'analisi dello spazio organizzativo con l'obiettivo di sistematizzare questi contributi in relazione alla loro possibile appartenenza alle tre concezioni dell'organizzazione come definite da Maggi (1996) ed utilizzati da Albano, Curzi, Fabbri (2017): la concezione che vede l'organizzazione come un sistema predeterminato rispetto agli attori (system centred), la concezione che vede l'organizzazione come “entità emergente e imprevista” (actor centred) e la concezione processuale che vede l'organizzazione come “processo di azioni e decisioni”. Questa sistematizzazione consente di definire una tipologia dello spazio organizzativo, in cui le definizioni di spazio organizzativo ed i metodi di intervento sullo spazio organizzativo sono descritti in accordo alle tre posture epistemologiche. Questo esercizio è preliminare alla definizione di un framework concettuale che aiuti a comprendere in che modo lo spazio organizzativo subisce l'impatto dei processi di digitalizzazione e quale delle tre posture epistemologiche sembri offrire un approccio allo spazio organizzativo capace di resistere alle sfide poste dai processi di digitalizzazione.

## Abstract: The place of the organisation beyond organisational space

Space has been for long time neglected in management theories.

Despite the fact work organizations are made by the arrangement of space and working lives are made and lived through these spaces (Halford, 2008), only recently the concepts of 'place' and 'space' have been brought back into organization theory (Kornberger and Clegg, 2004).

In the latest years, researchers (Mukherjee 2017) have noticed how we assist at the same time at the collapse and at the expansion of (organizational) space through new technologies: workers increasingly loose a "physical office" but, at the same time, interact with technological artefacts which expand their organizational space, transcending the limits of their physical bodies. This tension between collapse and expansion can be considered indicative of the limits of the topographic approach to the concept of organizational space and may raise the question if the digitalization of work is creating a *new type of organizational space* or if it enriches the technical choices for the implementation of the actions in the process of actions and decisions which constitutes the organization.

The research moves from the analysis of the most recent and relevant contributions to the definition and analysis of organizational space and points to the systematization of these contributions according to the three possible epistemological approaches to organization as defined by Maggi (1996) and used by Albano, Curzi, Fabbri (2017) – system-centered, actor-centered and process-centered. This systematization leads to a typology of organizational space, where organizational space definition and methods for acting upon it are sketched in accordance to the three epistemological postures.

This exercise is preliminary to the definition of a conceptual framework for understanding how organizational space is impacted by digitalization processes and which of the three epistemological postures seems to provide an approach to organizational space resisting to the challenges posed by digitalization processes.

## 1. Introduction

### 1.1 Organisation and Space: the reason of the interest to the subject

The relation between “space” and “organisation” as subject of research brought me quite far from my previous working and studying experiences. When I decided to start a pathway in this direction, I considered it a promising challenge to develop new cognitive tools to understand the organisations I daily work with and within. However, my approach to the subject was one of a neophyte, with a vague idea of the immensity of the concepts I was approaching. I slowly started to get the picture of the dimensions and implications when, as I had learnt to do in other fields of research, I started from what I thought it was the ground, definitions, what space is, what organisation is.

Surprisingly this very basic step required a lot of energies and went into the direction of expanding the areas of investigation instead of making them more finite and understandable.

I also had to recognise that, despite my will to be neutral (at least at this first stage) towards different contributions and interpretations, I was immersed in a topographic view of the concept of *space*, which brought me to consider *boundaries* as a key starting point for my research.

In my implicit first understanding of what I was trying to do, I supposed most of the literature I was going to find would share a common definition of space and/or organisational space and would mainly be about “physical” organisational environments; it was then going to be quite easy (I hoped) to identify limits and borders to describe the organisational perimeter and clearly state what was the space of the organisation and what was the outside space, the other space, the space with which the organisation had not relations at all.

However, boundaries (as they often do) shown at a very early stage of the research their limits in being able to explain relations and, moreover, the more I read about organisation and space the more I got confused about *what space is* and *where space is* (is it only physical environment? Is it given, objective and external to organisational actors or the results of their interpretation and interactions? Is it the context where organisational actions take place although it might be *virtual* and not *physical*?).

The more I was advancing in my research the more I was getting the impression to be one of the two young fish in David Foster Wallace famous 2005 “What is water” speech:

*“There are these two young fish swimming along and they happen to meet an older fish swimming the other way, who nods at them and says “Morning, boys. How’s the water?” And the two young fish swim on for a bit, and then eventually one of them looks over at the other and goes “What the hell is water?”*

Nevertheless, I felt knowing what water is might be crucial, since we cannot avoid swimming in water and we need water to be able to swim.

It was becoming clear that while I thought the focus of my research was to investigate the relation between organisation and space through the analysis of most recent literature contributions, reaching a satisfactory definition of *organisational space* was becoming more a point of arrival than a point of depart of the study.

I also found out I was not alone in my search for “space”: despite the recent emerging of a “spatial” turn in organisational studies, a turn which gives more relevance to the spatial dimension after years of indifference (might that be due to the fact that *space* is organisational *water*?) the consensus on the definition of organisational space is far to be reached, and especially now, when the materiality of space is questioned by the digitalization of work and the emergence of virtual / digital dimensions of organisational space.

So, in the middle of the pathway, I had some questions instead of getting some answers.

And the questions were:

- what is organisational space and where is the place of work, beyond organisational space?
- which is the relation between organisational space and organisational processes and workers?
- how does this relation change with digitalization and the development of the immateriality of organisational space?
- are existing frameworks of analysis and tools for action still valid in digitalized, hybrid, virtual organisational spaces?
- which are the practical implications for organisations and workers?



- is there any approach to or definition of the *place of the organisation* which could “resist” in its explanatory function to the attacks made by the change digitalization processes bring to organisations?

In order to find answers to these new questions I firstly went back to my literature review and I tried to organise the contributions of different scholars and researchers following Maggi’s typology of organisational theories.

My first questions then became “what is organisational space according to different epistemological postures? Which features of organisational space have been taken into account and (tentatively) act upon?”.

As an attempt to provide an answer to this question I systematized the contributions from different authors according to their possible belonging to one of the three epistemological organisational approaches - system centred, actor centred, process centred – as defined by Maggi (1996) and utilized by Albano, Curzi, Fabbri (2017). This part of the work helped me to understand how organisational space is described according to different organisational approaches and which is the role/function of space in different organisational theories, with the aim of identifying a conceptual framework for understanding organisational space, and to test it against the new digital (spatial) dimension of work organizations.

The following step was to better understand the impact of digitalization processes on organisations and on organisational spaces, given the immateriality digitalization involves and the potentiality it offers to extend (virtual) organisational space over the limits of physical organisational spaces.

This part of the exercise led me to better focalize the characteristics of organisational space in the era of digitalization and the role technologies have in the definition/extension of digitalized spaces.

While investigating the impact of digitalization processes on organizational spaces - which is somehow leading to the disappearance/reduction of physical organizational spaces and bringing workers to work “physically” alone, dislocated in different environments while sharing virtual environments – I encountered new forms of organisational spaces which emerge and exist “beyond organisations” as we used to know them.

These new organisational spaces seem to answer to the need and desire physical workers – owning physical bodies – have to share physical working environments in addition to virtual/digital organisational spaces. These spaces offer to workers “belonging” to different organisations and/or no organisation (free lancers, individual consultants) the opportunity to be part of a community where they can have access to knowledge, social exchange and (in some cases) opportunities for social representation.

It is the case of the co-workings, creative or innovation hubs - organisational spaces gathering people belonging to different organisations, temporary sharing technological means and physical environments - or “non organisational spaces” (cafés, parks) gathering nomadic workers.

The organisational space of these new spaces is designed to support innovation and creativity of the actors they host, which often belong to the “hub” as well as to other organisations.

On the other end of an hypothetical line linking “physical” organisational spaces to “digital” organisational spaces – and passing through “hybrid” organisational spaces I encountered new form of organisations which eliminate the need for “physical “ organisational spaces – it is the case of small international consulting firms operating without a physical office and gathering consultants in different continents, taking benefits of the absence of physical and temporal constraints to offer a 24h/24h service.

These new forms of organisational space questioned a topographic view of organisational space.

My final step was to try to define a conceptual framework for understanding organisational space and how it is impacted by digitalization process. I moved from the reflection on which of the three epistemological organisational approaches - system centred, actor centred, process centred - seemed more promising in terms of understanding organisational space, and mainly in the moment in which organisational space seems to collapse – but also to expand –in relation to the impact of digitalization processes.

## 1.2 Plan of the work

In Chapter 1 I introduce the present work, explaining the research pathway and my interest to the subject. In Chapter 2 I introduce the problem of organisational space through an overview on the concepts of space and place and their evolution across different disciplines, focusing on contributions having a greater impact on the definition of organisational space. In chapter 3 I discuss the relation between organisation and space according to the three possible epistemological approaches to organization as defined by Maggi (1996) and used by Albano, Curzi, Fabbri (2017) – system-centred, actor-centred and process-centred. The chapter includes a short introduction on epistemological reflection on organisations as specific social phenomena and a first critical assessment of theories in each conception. In chapter 4 I propose a selection of practical implications in terms of methods and tools. In chapter 5 I discuss the challenges digitalization processes bring to organisations in general and specifically to organisational space and I propose a critical review on how theories in different conceptions approach organisational space when the space becomes (also) digital. In chapter 6 I draft some conclusions and suggest further researches while in chapter 7 presents the list of references used to elaborate the research.

## 2. The problem of organisational space

### 2.1. What is Space (and why it is so difficult to define it?)

What is space? According to the English Oxford living Dictionaries<sup>1</sup> *space* is: i. a continuous area or expanse, which is free, available, or unoccupied; ii. the dimensions of height, depth, and width within which all things exist and move; iii. an interval of time (often used to suggest that the time is short considering what has happened or been achieved in it); iv. the portion of a text or document available or needed to write about a subject; v. the freedom to live, think, and develop in a way that suits one. The variety of definitions mirrors the complexity of the concept, shows the link between space and time (“an interval of time” is used to explain space) and synthesizes the major philosophical dispute between two different accounts of space ‘relationism’ and ‘absolutism’.

The dispute is more than 300 years old: in *A Collection of Papers, Which passed between the late Learned Mr. Leibnitz, and Dr. Clarke, In the Years 1715 and 1716* (London: 1717) the relationist Leibniz argued that space is the spatial relation between things, that space would not exist independently of the things it connects; in contrast, the absolutist Clarke argued that space is a sort of substance that is everywhere. Space is a giant container, containing all the things in the universe: stars, planets, us. Space allows us to make sense of how things move from one place to another, of how our entire material universe could move through space.

If we consider physics, one of the privileged domains for the analysis of space, Newtonian physics conceived *space* and *time* as some kind of absolutes only to subsequently have Einstein’s theory of relativity recast these ideas in terms of the position of the observer (Carr. 2006). With the evolution of scientific discoveries the separation between *space* and *time* is going in the direction of being even more difficult: Stephen Hawking (1989, p. 24), in his *A Brief History of Time*, suggests that “we must accept that time is not completely separate from and independent of space, but is combined with it to form an object called space-time”, as it happens when we look upon the stars in the night skies and we need to remind ourselves that what we are seeing is the light coming from those distant stars left some thousands of million years ago.

<sup>1</sup> <https://en.oxforddictionaries.com/definition/space>

If we consider philosophy, we will find that in Kant's view space is a concept human use to make sense of the world, rather than a real entity: the external world is essentially unknowable, its contents, the things-in-themselves, which cause our sensations, are beyond knowledge because they are outside time and space. Our perceptions of things-in-themselves are, however, knowable phenomena, constituting both the sensation arising from the thing-in-itself and its ordering by our mental apparatus into spatial, temporal and causal relationships.

Things get more complicate in post-modern thought (Aubert- Gamet, Véronique -1997, p.7). In modern society, space has direction, area, shape, pattern and volume as key attributes, as well as distance, and it has been considered as an objective thing which can be measured and thus pinned down; subjective experience which produces mental spaces and maps through perception, imagination, fiction and fantasy, is recognized, but it is considered as so many mirages of the supposedly real thing (Baudrillard, 1991; Harvey, 1989). The postmodern conception of reality rubs off on space as uncontrolled and unpredictable. This induces confusion and relativism: nothing can be assumed entirely present or absent, things are related in an absolute interactive way. There is no reality to any physical world apart from the meanings attributed by those who perceive them. In consequence, humans are co-builders of the universe (Harvey, 1989).

In social studies the focus on *time* instead of *space* has been for long-time predominant. This imbalance has been questioned in the last decades of the XX century by a series of milestone contributions re-abilitating the relevance of space for better understanding organisations and leading to a conceptualisation of space as fundamentally social (Nicolau 2015).

The first of these contributions is the seminal work by Henri Lefebvre's 'The Production of Space' (1991), which proposes a trialectic view of space and distinguishes among the *perceived space*, the *conceived space* and the *representational space*. Soja (1996) views Lefebvre triad as a trialectic between the perceived, the conceived and the lived, introducing the terms of Firstspace, SecondSpace and ThirdSpace, where *Thirdspace* is an analytical concept that encourages people to come to terms with the representational strategies of real and imagined places. (Nicolau 2015).

Michel Foucault (1986) reflects about the concept of *heteropias* as "other spaces" that are at the same time mythic and real contestations of the spaces in which we live.

All these interpretations of space introduce a *relational view of spatiality*, giving relevance to a subjective perspective in the process of becoming of space: materiality (the physical characteristics), representation and imagination are not separate any more.

Finally Doreen Massey's in her "For Space" (2005) introduces a more dynamic concept of space defined as "not only physical space but a construct of materialised social and political practices". According to her vision space is always the product of interrelations, it doesn't exist prior to identities/entities, it is the sphere of the possibility of the existence of a multiplicity in the sense of contemporaneous plurality, co-existing heterogeneity, which means that there are always more spaces co-existing at the same time; it is always under construction, it is a product of relations embedded in material practices, it is not the sphere of immobility.

Linked to concept of space, the concept of 'place' as a meaningful space (re) emerges together with a stronger focus on space (Dovey K. 2007): as Casey (1997) has shown, the philosophy of place emerged first (as 'topos') in early Greek philosophy (most notably Aristotle) where it was seen as a form of ontological ground, a view of place that is inseparable from being or existence – to exist is to exist in a place. Casey argues that this notion of place was repressed throughout most Western philosophy in favour of the idea of place as an abstract 'location' within spatial coordinates, the 'site' of something. This view can be traced to the rise of a scientific empiricism that privileges an objective and abstract conception of space as a framework for the particularities of place. Under the enlightenment and modernity, space became identified as the primary and abstract context within which place was seen as secondary and derivative (Casey 1997). For most structuralist and post-structuralist thinking, the meanings of place are a form of discourse without intrinsic meanings. For Barthes (1973), place is a form of mythology; for Foucault (1979) a form of constructed subjectivity; for Derrida (1974) a text. Such approaches seek to problematize the ways that conceptions of identity become enmeshed with place, naturalized and depoliticized. Massey's progressive sense of place, defined by multiple identities and histories, its character comes from connections and interactions rather than original sources and enclosing boundaries. A seminal study on place is Malpas' (1999, rev 2008) *Place and experience: A Philosophical Topography*: as Edward Casey states in the introduction to 2008's edition, according to Malpas "the human subject as an agent does not precede spatiality or temporality but, deploying both, operates within the milieu of places that provide the scene of action. In this deployment, human activity is not only located in places but dynamically reveals aspects of placement that would not come forward without such activity (p. X-XI)". In Casey's

understanding Malpas “is not interested in ‘place *as* experience as in ‘place as a structure *within which* experience (as well as action, thought, and judgement) is possible’ This structure is not a formal *a priori* of experience but rather what we could call a *material condition* of that experience in its many forms” (p. XI).

More recent contributions have started to investigate the relation between space and new technologies, focusing on space, networking and movement. In this stream the concept of the 'space of flows' developed by Manuel Castells (2010), whom defines the space of flows as the ‘material organization of time-sharing social practices that work through flow’ (Castells 2010). This approach seems of particular relevance to organizational space research since it opens opportunities to the theorization of the role of new digital technologies in the shaping of space (Mukherjee 2017). Others have approached internet as a performative space. Nina Kivinem (2006) builds on this vision and referring to Rosi Braidotti’s (1996) theory of nomadic subjects - according to which a nomad represents the situated and post-modern subject that refuses to be pinned down to any fixed category or identity - describes the Internet as a space that we co-construct as we log on the net; on the Internet, the organisation is simultaneously everywhere and nowhere, situated in a specific place it calls its home in cyberspace, while at the same time occupying no place at all.

In the latest years researchers (Mukherjee 2017) have noticed how we assist at the same time at the collapse and at the expansion of (organisational) space through new technologies: workers increasingly loose a “physical office” but, at the same time, interact with technological artefacts which expand their organisational space, transcending the limits of their physical bodies. This tension between collapse and expansion can be considered indicative of the limits of the topographic approach to the concept of space and may raise the question if the digitalization of work is creating a *new type of space*.

## 2.2 The problem of defining organisational space

### 2.2.1 *What we talk about when we talk about organisational space?*

Space has been for long time neglected in management theories.

Despite the fact work organisations are made by the arrangement of space and working lives are made and lived through these spaces (Halford, 2008), only recently the concepts of 'place' and 'space' have been brought back into organization theory (Kornberger and Clegg, 2004).

As we have seen in the previous paragraph, space is an ambiguous and inconsistently defined concept: it is a fundamental dimension of biological and social life of human beings, it has been object of analysis and reflections in many disciplines - including philosophy, physics, maths, science, geometry, architecture, art – still for a long time social disciplines considered space as a “practico-inert container of actions” a “neutral medium that stands outside the way it is conceived”, a representational strategy (Cragg M., Thrift N., 2000 pg 1-3).

Talking about space, and organisational space, is made additionally difficult by the fact that space is often indissolubly linked to time. They are both considered “necessary forms of thought” (Noel-Smith, 2002, p. 2), it is difficult to imagine one without the other, one is often used to describe the other and “space is often used as a metaphor for other things, including time” (Noel-Smith, 2002, p. 1).

Moreover, changes in the way space is implicitly or explicitly considered in organisational studies reflect more general changes in the relation other disciplines have towards space. It is possible to identify an ideal trend that leads from a static to a more dynamic and relational approach, from seeing space as an 'objective' dimension to seeing it as a 'subjective' and 'process' dimension, from considering space as only physical, to seeing it as also social, virtual/digital and hybrid. As the visions of space change, the epistemological posture towards the concept of organisation mutates at the same time, making it difficult, as we will see, to identify a clear separation between the two.



Early research on space and organizations considered the physical features of spaces, they studied the *ordering of space* and how through the study of spatial arrangements and physical structures one can reveal assumptions about status, behaviours, values and power relations within organizations (Daskalaki 2006). These behavioural or functionalist approaches have been challenged by more constructivist views that utilise the notion of *appropriation* to demonstrate how users of space participate in giving meaning to a space and as a result, how they divert managerial and organisational initiatives (Aubert-Gamet, 1997). More recent studies consider the relationship between the built environment and management power structures, consumption and domination (Burrell and Dale, 2003).

Space is ontologically (implicitly or explicitly) present in all methodological approaches to social and human sciences, including management theories. References to the *environment* and its influences on organisations and organisational behaviours include almost always implicit consideration of spatial setting, nevertheless not all management theories have explicitly studied the organisational space or spaces.

When taken into account, organisational space, or the space of the organisation, has been thought as divided, controlled, imposed and hierarchical, productive, personalised, symbolic and social (Chantal J.F 2006).

Contributions to the understanding of the relation between space and organisation and the definition of organisational space include a variety of disciplinary backgrounds (Sailer 2010); and organisational space engages various aspects of work-related settings and their relationships to their inhabitants from employees at all levels to clients and customers, from visitors to onlookers (De Vaujany and Mitev 2013).

In organisational theory space is often associated with materials and their Euclidean arrangements (Hetherington, 1997a). The meaning of understanding of space is frequently challenged against those of place (Nikolaou, 2015).

Following the subsequent changes in the representations of space presented in paragraph 2, a theoretical shift has occurred also in organisational theories, from considering mainly physical settings to studying 'organisational spatiality' (Lefebvre, 1991; Massey, 1994; Soja, 1996); from a

focus on the “objectivity” of space to the focus on the role of the actor/subject plays in conceiving/producing space. The introduction of the notion of ‘spacing’, which 'entails a rethinking of space as processual and performative, open-ended and multiple, practiced and of the everyday (Beyes and Steyaert, 2012: 47) is interesting in this sense.

De Vaujany and Mitev (2013) in their *Materiality and space: organization, artefacts and practises* propose a synoptic table summarizing the main approaches to space in social sciences; the table below presents a selection of their overview (only approaches explicitly relating to space in organisation have been included). Despite not being complete (the following paragraphs will present additional contributions to the ones included in the table) the synthesis is interesting since it introduces some of the key research questions in relation to organisational space, underlining at the same time the variety of disciplinary approaches which sustain them (from environmental psychology to sociology and architecture).

*Table 1 Main approaches to space in social sciences*

<b>Main approach to space and material spaces</b>	<b>Key research questions</b>	<b>Status of objects and materiality</b>	<b>Key references</b>
Environmental Psychology in organisations	How do individuals make sense of space in everyday interactions?  What is the influence of the physical environment on inter-individual interactions?	What the subject is not.  Something located within a specific space, a physical environment.	Evans and McCoy (1998),  Gifford (2007),  Gustafson (2006),  Fischer (1983)
Sociology	Space as structuring social interactions	Space as a relational property of actors and objects.	Giddens (1981,1984),  Lefebvre (1991),  Simmel (1908)
Sociology of architecture in organizations	What is the link between architecture and social interaction?  What is the main role	What represents, constitutes and delimits organizational space?	Guillén (1997),  Fischer (1983,1990)

	and occupation of architects in society?	The aesthetic of organizations.	
Sociology of space in organization	<p>How is organizational space constituted? How does one describe the symbolic and material dimensions of organizational space?</p> <p>What are the spatial practices of organizational members?</p> <p>How do they contribute to the dynamic, competitive advantage, legitimacy, identity, etc. of organizations?</p>	<p>What constitutes and delimits organizational space?</p> <p>Space scale and mobility practices in organizations.</p>	<p>Taylor and Spicer (2007),</p> <p>Kornberger and Clegg (2003a, 2003b, 2004),</p> <p>Rose and Tolia-Kelly (2012),</p> <p>Black (1997),</p> <p>Hockey et al. (2010)</p>
Sociology of translation  (actor network theory)	How do social networks of actants emerge and become irreversible	<p>Actants.</p> <p>Both social and material objects.</p> <p>Possible place for inscription</p>	<p>Callon (1986, 1987, 1991),</p> <p>Latour (1987),</p> <p>Latour and Woolgar (1986)</p>
Socio-material Perspectives in organization studies	<p>How are social and material aspects entangled in everyday life? Why is material space co-substantially social?</p>	<p>Material and social elements are melted in socio-material practices.</p> <p>Practices are mediated by material artefacts (body, clothes, cars, voice, ICT . . . ).</p> <p>Materiality (as identified by actors) is always a social product.</p> <p>Actors are involved in</p>	<p>Barad (2007),</p> <p>Pickering (1995)</p> <p>Dale (2005),</p> <p>Leonardi and Barley (2008),</p> <p>Orlikowski (2007, 2010)</p>

		<p>a 'mangle of practices'(Pickering, 1995).</p> <p>Space is often implicitly present and at the margin of the theorization.</p> <p>Distinction between those who keep a frontier between material and social elements</p> <p>(in particular, at the level of agency, see e.g. Leonardi, 2011) and those who maintain a necessary symmetry between material and social elements at the level of socio-material practices</p> <p>(see e.g. Orlikowski, 2007).</p> <p>Space is often implicitly present and at the margin of the theorization.</p>	
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Adapted from "The main approaches to space in social sciences" in Materiality and space: organisations, artefacts and practices edited by F. De Vaujauny and N. Mitev (2013)

### 3. Which is the relation between organisation and space – a critical literature review

#### 3.1 Conceptions of organization: a typology of organisational theories

Theoretical conceptions of organisations, or the “epistemological reflection on organisations as specific social phenomena” (Albano, R.; Curzi, Y.; Fabbri, T., 2014) can be conducted in very different ways. According to Bruno Maggi (1996) we can identify three typical ways to look at organisations, three ways that reflect more general methodological approaches to social and human sciences and how they see the relation between social reality and social agents.

The first conception sees organisations as “systems” which are “pre-determined” and separate from the dynamics and structures of individual personalities and individuals’ choices and actions. According to these approaches the organisation as a system can be “planned” in detail *prior to* subject’s participation/involvement in it, providing general and abstract rules for its functioning. System centred approaches to organisations can consider organisations as close (as “machines”) or “open” (as “organisms”) systems. This distinction has an impact on how much prescriptive or adaptive are the general rules beyond their functioning. When organisations are seen as close systems no external influence is considered and organisational charters can describe in detail tasks for each subject. When organisations are seen as open systems or organisms the external environment is considered to have an influence on it, thus the need for adapting to changes and searching a continuous internal balance. In this case subjects’ participation in the organisation is planned/described in terms of “roles” which identify a set of “expected behaviours” leaving to the subject a margin for discretion in decisions; an *informal* organisation exist contemporary to the more rigid formal one.

The second conception is actor centred: it sees organisations as “entities that unintentionally emerge from individual interactions” (Viscusi, Campagnolo, Curzi 2012); in this view subjectivity is predominant, the organisation emerges as a cultural product, as an external artefact, which can be analysed only *a posteriori*. It is not possible to plan roles or tasks for the subjects; individual unpredictable strategies contribute to define the organisation.

Despite being on opposite positions both these two conceptions propose a “reification” approach to organisations: organisations are considered as “objects” per se, separated from the human beings whom *a priori* or *a posteriori* may have created them.

In this sense, in both cases individuals are not considered protagonists of their history. On one side a structural determinism holds fast them; on the other their individual rationalities disperse in collective artefacts that are totally indeterminable beforehand and escape any design aspiration (Viscusi, Campagnolo, Curzi 2012).

A third conception sees organisations as a “process of actions and decision”. In this group Bruno Maggi’s “Theory of Organisational Action” - TAO considers human beings as “competent protagonists in the process of reproduction of their systems and regulations”. Organizational phenomena are seen as *processes* and *not artefacts* and they are the actions and decision individuals take with the limited information they have at their disposal, guided by “intentional and bounded rationality towards satisfying results”. This third conception is non-dualistic and process-centred, and it is in line with the sociological tradition that stems from Weber and Siemmel and leads to Giddens, Tourraine and Bordieu. Building on H. A. Simon concept of “bounded rationality” that supports a shift from substantial rationality to procedural rationality, this conception sees organisations as processes evolving in time and resulting from the attempt to reduce uncertainty and search for satisfactory solutions. As stated by J. D Thompson organisational processes always face uncertainty at different levels; uncertainty is caused by lack of knowledge, absence of consensus on expected outcomes and on technologies and tools to achieve them. At the same time the organisational process tries to reduce uncertainty through a “rational structuration of actions” so “each empirical organisational process, guided by intentional and bounded rationality, expresses in such a way its relatively autonomous capacity of regulation (structuration) the validity of which is then evaluated on the basis of the achievement of the desired outcomes” (Simon 1947).

This approach transcends the opposition between system/structure and actor/agency and focuses instead on actions and decisions as the elemental units of analysis, each and every of them being somehow ordered, or coordinated with others in the pursuit of desired outcomes, by means of pre-existing rules – what in the other conceptions is called “system” – and of new rules generated in the course of action – what in the other conceptions is called autonomous “actor” or intentionality.

### 3.2 Organisational Space as given locale

The system centred theoretical conception of organisations tends to see organisational space as *given locale*: organisational space is seen as part of a system and its dimensions are defined with the aim of ordering it *prior to* subjects' participation/involvement. Studies and researches aim to understand given organisational space effects on working processes and organisational actors (workers but also external stakeholders as for instance consumers) in order to design the best organisational physical setting (the workplace, the office) to generate the desired effects.

Research questions concern, among others:

- the physical layout of workplaces – eg: how space in the firm/office can be organised in order to enhance work productivity (portion of space vs open space; propinquity vs privacy; integration vs separation), how organisational spaces can be organised to influence communication flows; how the possibility to personalise workplace can enhance personal commitment (building commitment through territorial identity);
- the role of space in organisational power dynamics – eg: how the discipline of access/deny of access to selected organisational physical spaces (openness/enclosure) can be used to influence power relation among actors and/or to make them explicit;
- the symbolic role of organisational space design in communicating internally or externally the vision of the organisation

As we will see, empirical studies on the outputs of a priori spatial choices are not always coherent, in some cases are even discordant (in terms of the best/most performant spatial organisation of the workplace) and it has been observed that one of the criticalities stands in the fact that results of different empirical studies can be hardly compared since research methods and tools are very different and often lack of a sound approach (Sailer 2010).

Despite their different focuses in all contribution belonging to system centred approaches we can note the conviction that space *is one of the elements of the organisational system*, whose organisation and use can be planned in detail for the purposes of the system. In these approaches organisational space is *deliberate*; its use can be planned and general and abstract rules for its (optimal) functioning can be provided. Organisational space is described, or implicitly considered, as

*divided* (with a distinction between internal and external spaces); *controlled* (with different contributions considering different forms of control and communication, visual or distant); *imposed and hierarchical* (with the focus on the fact that the managerial hierarchy imposes spatial design on the work place, according to different criteria, and that the disposition of space is closely related to a hierarchical system); *productive* (considering that the organisation of the space is designed in relationship with the requisites of the productive system of the organisation); *personalised* (organisational space as locus of an affective investment; since human beings are territorial beings, workers or employees invest the workplace with personal meaning, activating a process of appropriation important to well-being at work); *symbolic* (considering how spatial forms and organisational space contribute to the symbolic representation of the culture of the organisation, to the universe of meanings that encode the organisation); and *social* (organisational space reveals something about the sociology and anthropology of the organisation itself) (Chantal J.F 2006).

#### **A selection of contributions on organisational space from a system centered perspective**

In Taylor's (1919) first reflections on management, space is discussed in terms of the physical setting, the space of the workshop. It is a rationalized, productive, controlled, divided, hierarchized space functional to the optimisation and rationalisation of work through the analysis of tasks. The workshop space is organised following a strict division of labour, the method engineer scientifically organises the work in the physical context of the workshop, the supervisor controls the correct use of the space. The scientific method studies the best spatial design to enhance productivity and, in a time of class struggles, to reduce conflicts via a more rational organisation of work. (Chantal J.F. 2006). The "Hawthorne Studies" at Western Electric's Chicago (E. Mayo & Roethlisberger 1933), influenced by Taylor's Scientific Management, are one of the earliest experiments on organisational space. The studies aimed to investigate how the physical environment - namely illumination levels within a factory environment - could affect worker productivity. The results surprisingly showed that workers were more responsive to social factors—such as the people they worked with on a team and the amount of interest their manager had in their work—than to environmental factors (lighting, etc.). In the immediate the Hawthorne study resulted in a shift of attention for many scholars on social, organisational or psychological factors (the so-called human-relations approach) instead of looking at physical or spatial ones (Sailer 2010).



As Sailer (Sailer, 2010) recalls the Hawthorne studies included analysing the physical environment as one variable among other social and organisational influences on work behaviour and attitudes. It comprised a series of investigations in the Hawthorne-Works in the US between 1927 and 1932 inquiring into the performance of workers and how it could be raised through various actions, for example by changing the lighting conditions, introducing incentive systems or closer management supervision.

Although the study dramatically lacked scientific rigour (Carey 1967), the investigators drew bold conclusions, for example that output was a form of social behaviour, and that collaboration was *“far more a matter of sentiment than a matter of logic”* (Roethlisberger 1941: 26). In a radical criticism of the study, Carey summarised the conclusions drawn by the investigators that *“social satisfaction arising out of human association in work were more important determinants of work behaviour in general and output in particular than were any of the physical and economic aspects of the work situation to which their attention had originally been limited.”* (Carey 1967: 404)

However, as Polina Nikolau recalls (2015) the Hawthorne Studies for the first time linked organisational space to Organisational Theory and although *“the linkage here is less spatial and is frequently explained as an environmental connection of illumination and temperature, nonetheless, it lays the foundations for organisational space and Organisational Theory research”*.

She explains this link remembering the original purposes and content of the study:

*“As it is known the original Hawthorne studies began in 1924 and were geared by The Western Electric Company and an interest in the relationship between changes in lighting levels (bright to dim illumination) and productivity at the Hawthorne plant. A collaboration with the Massachusetts Institute of Technology (MIT) and Harvard University further supported the study by looking for a connection between working time and productivity. The experiment consisted of two groups of people working in controlled environments; one acting as a control, while the other experienced a change in lighting conditions. Early results showed that both groups had a similar increase in the rate of productivity (Wickstrom & Bendix, 2000). Nevertheless, Elton Mayo (1933), a psychologist and organisational theorist, encouraged management to observe beyond the physical and visible factors which influenced productivity, a relationship which was deemed unimportant until it was identified during the 1970s and 1980s by George Homans. Nonetheless, the initial intention behind the*

Hawthorne effect was to study the *effect of the physical working environment on employees*". While, the study encouraged a wave of research on social relations and how they shape organisational outcomes, other important psychological outcomes remained under-explored, until recently (Zhong & House, 2012)".

The Hawthorne Studies, despite the initial interpretation of their results, are still considered crucial in demonstrating that the physical environment constitutes a large part of understanding organisational space. (Nikolaou, 2015).

Bureaucracy theory as an illustration of the process of rationalisation of the human modern experience (Weber 1947) contributes to create a new spatial representation – the bureau – and the office building separated from the private sphere, a "space of efficiency founded on expertise in contrast to the ancient forms of administrative work based on family and money ties" (Chantal 2006 p.24).

With the birth of social design in the 1960 sociologists in collaboration with designers and architects start to study physical setting suggesting that the physical environment can create certain expectations about how individuals should act. (Sommer 1969). The aim is to investigate the relationship between people and their environment in order to design the optimal physical setting that could induce desired behaviours, to use the "response to the environment" as a psychographic segmentation variable (Cowell, 1984).

A series of empirical studies establish relations between physical space, communication, interaction and control. The focus is on physical arrangements (including furniture and lightening), distance (including social density and proximity) and partitioning (including privacy and visibility) of space and the behaviours they influence.

Moving from the analysis of previous empirical and theoretical contributions Fred Steele (1973) identifies six different functions that physical settings play for people. They are 1) *security and shelter*, i.e. physiological and psychological protection from unwanted or harmful stimuli, 2) *social contact*, i.e. the arrangement of facilities that permit or promote social interaction, 3) *symbolic identification*, i.e. the messages sent by settings about the character of a person or organisation, 4) *task*

*instrumentality*, i.e. the fit of facilities and layout to carrying out specific tasks, 5) *pleasure*, i.e. the gratification a place gives to its users, and 6) *growth*, i.e. the stimulus that the setting gives for growth (e.g. learning) in the people that use them (Sailer 2010).

Jeffrey Pfeffer (1982) focusing on organisations as physical structures identifies six physical characteristics of the organisation, which are relevant for communication and interaction. These are *size, quality of physical spaces, flexibility of space, arrangement of physical space* (distance, visibility), *privacy and partitioning location facilities*.

Ergonomics science and practice (Kleiner, 2008,) is part of this approach: macro-ergonomics are concerned with a holistic view of the work process of an employee, commonly working in an environment such as a factory. Methods using ergonomics are mostly implemented in organisational space research to analyse sound and noise levels (see: Banbury & Berry, 2005). Micro-ergonomics are most commonly used to analyse the best possible angles, heights and materials. These can be used to either protect or create comfort for the employee within an organisation on a daily basis (Ousnamer, 2002).

For Allen and Gerstberger (1973) the amount of interaction that occurs in a social system is driven by distance and the layout of physical space: according to their view closeness may favour interaction while the influence of open plan is controversial; flexibility to arrange own space may lead to positive attitude of the worker towards his/her workplace.

Tomlin and Allen (1977) analyse the relation between communication flows and physical bond and barriers: they show that communication is more likely to happen when pairs have an organisational bond but are physically separated than when co-located - spatial variable is seen as weaker bond. Allen (1984) also investigates the influence of architecture and office layouts in communication. Physical space is given the role of structuring and managing an organisation's communication flow as well as its performance.

Still on communication flows and spatial organisation Monge (1985) introduces the concept of organisational proximity as the extent to which people in an organisation share the same physical locations at the same time providing an opportunity to engage into face-to-face communication. He

theorizes the virtue of management by wondering around.

Peters (1991) theorizes the importance of co-location of cross-functional teams to induce cultural change; Nohria and Eccles (1992) focus on the importance of face-to face interaction for well-functioning network organisations stating that virtual communication could never substitute face – to – face interaction. The Matsushita Electric Works (1988) focus on “*officing*” proposing a collection of best practices designs of buildings to facilitate knowledge work (standard dimensions, planning modules).

Bitner (1992)’ Servicescape is an applied stimulus-response model where the application is specific to the service sector. It is based on the assumption of the impact of physical space on customers and employees in service encounter environments. The stimulus factors are physical features (e.g. colour, store layout, lighting, music, ambient factors). The physical environment induces the emotional states in terms of pleasure or arousal. Approach behaviours include a willingness – or desire – to move around and explore the store (e.g. propensity to buy). Contrary to approach responses, avoidance behaviours are an outgrowth of negative feelings about a service place, manifested by an unwillingness to purchase.

Hillier’s (1996) “Space is the machine” considers spatial configuration as a contribution to architectural theory. He finds a correlation between the rate of intergroup contacts and the spatial integration of a floor: local integration predicts network densities across groups and global integration predicts network usefulness. Hillier argues that the spatial integration of a building, and specifically the relationship between local and global integration, may drive the innovative capacity of an organisation by bringing staff from different groups together (Sailer 2010).

Baker (1987) develops a model to illustrate the nature of physical facilities in services activities. She breaks the physical environment into three basic categories: ambient factors, design factors and social factors. “Ambient factors are background conditions that exist below the level of immediate awareness and typically draw attention only when they are absent or unpleasant, for example, at temperature and noise levels. Usually taken for granted by customers, their influence is typically neutral or negative (e.g. customers avoid a certain restaurant because it is noisy). Design factors are visual stimuli that are far more likely to be apparent to customers than ambient factors. Accordingly,

design factors have a comparatively greater potential for producing positive customer perceptions and encouraging approach behaviour. Design factors can be classified as either aesthetic (e.g. architecture, style, colour) or functional (e.g. layout, comfort, signage). (Aubert- Gamet, Véronique 1997 pp 29-30).

Duffy's (1997) framework to classify ways of working depending on the level of interaction desired by the staff - which identifies the following *hive*: individual processes; *den*: group processes *cell*: concentrated study and *club*: transactional knowledge – together with Heerwagen (2004) study on collaboration patterns and physical space, which identifies four distinct dimensions of collaboration (awareness, brief interaction, working together and concentrated individual work) is the base on which Lee and Sawyer (2010, p 15) built their framework on spatial types, work patterns, level of individual autonomy and use of ICT. The model, described in the picture below (Lee and Sawyer 2010, p 15) identifies distinct and different needs for information and communication technologies in the new form of organisations.

In their willing to go beyond the taken-for-granted nature of time and space in relation to using ICT, which often considers ICT as able to overcome spatial and temporal constraints – with their model they focus on the interrelation between space and time, especially when it comes to new technologies:

tele-working transforms not only the temporal patterns of work, but also patterns of space use by individual workers and organizations. Similarly concepts such as 'homeworking', distributed work, distant learning and mobile work are about both time and space. The question of 'where to work' raises by nature the questions like 'when to work', 'how long to work' and 'how to organize one's work time. (Lee and Sawyer (2010, p3).

They also underline how the importance of space is further highlighted with the emerging focus on the virtual office, stating, "One constraint on virtual office space design is that space remains important in organizations".

Their model is an interesting attempt to link ICT - acting as a defining technology in that its presence and uses are helping people rethink what is possible, re-imagine what is desirable, and explore what is useful – a functional characterization to represent people's needs relative to production, control,

access, coordination and enjoyment and four types of ways to organize work relative to their temporal, spatial and ICT needs.

Figure 1 Integrative frame of time/space and ICT

Interaction	High	<p><b>Den (need some shared space)</b></p> <p>Polychronic work processes          Monochronic work structures          ICT used to enable, access, coordination and control</p>	<p><b>Club (requires shared space)</b></p> <p>Polychronic work processes          Polychronic work structures          ICT used to enable access, coordination and production</p>	
	Low	<p><b>Hive (do not need shared space)</b></p> <p>Monochronic work processes          Monochronic work structures          ICT used for control and production</p>	<p><b>Cell (rarely need shared space)</b></p> <p>Polychronic work processes          Mono- and/or Polychronic work structures          ICT used for access and production</p>	
		Low	Autonomy	High

From Lee and Sawyer (2010, p15).

As Sailer (2010) underlines more recent research on organisational space focus on knowledge creation or knowledge sharing and creativity, with the aim of identifying best (most efficient) space designing solutions. Only few of this studies can be considered under a system centred approach; they have pointed out the unequal distribution of knowledge in space, concentration in clusters and centres (Allen 2000); the fact that while routine information and common sense knowledge are seen as mobile and less bound spatially, more complex forms of knowledge required spatial proximity in order to be shared, (Meusburger 2000); how knowledge creation and innovation relies heavily on localised networks and proximity, (Dankbaar 2004).

Other scholars have focused on the relation between space, performance and effectiveness: Kampschroer e Heerwagen (2005) have integrated the analysis of the spatial environment with business strategy in a balanced scorecard (definition of organisational goals, linking goals and changes in behaviour, identifying spatial features linked with behaviours, create measures to implement and monitor progresses); Visher (2007) focused on how complex performance issues in the workplace are affected by spatial settings. Performance is described by physical comfort, functional comfort (spatial configuration, visibility and dedicated shared meeting spaces) psychological comfort (control of a team over their space).

Organisational space influence on creativity has also been investigated with a focus on how creativity is shaped by *spatially formed parameters* as: localisation at the interface of different diverse cultures and perspectives as well as in centers of lively activity, transgression of (disciplinary) borders, clear structuring, centrality and accessibility of knowledge, design of very own context, being at a specific place, being in stimulating surroundings during the inspiration phase Csikszentmihaly (1997 as quoted in Sailer 2010); or how routine tasks benefit from co-location, but creative activities are best performed alone and in concentration (Meusburger 2009) and how different stages of creative processes (preparation, incubation, insight and elaboration) require distinct spatial features Kristensen (2004). Space has also been described as the ideal tool to increase the potential of communication and to raise awareness for other people, Allen and Henn (2006).

Few scholars have considered the relation between organisational space and *the need for organisations to change*, to stay flexible and to adapt; the concept of “zero – time-space” (Becker and Sims - 2000) has been introduced as a prescription for a space that can be procured and/or constructed and is ready for use in as short a period of time (as close to zero) as possible from when space is needed. In the same direction goes the reflection on non-territorial offices, telework, the use of common resources to cope with increasing uncertainties of organisational environments, the concept of “spatial indeterminacy” Freimuth (2000) as “communicative setting” spatially materialised in spatial arrangements including un-coded extra spaces to simulate spontaneous communication.

## Critical assessment

The recent paper *Towards a spatial perspective; an integrative review research on organisational space* (Weinfurtner, T.2018), which reviews a total of 121 papers mainly published in organisational and management journals, identifies 3 distinct concepts and four major spatial themes used by authors to conceptualise organisational spaces, the majority of these approaches can be understood as system centered.

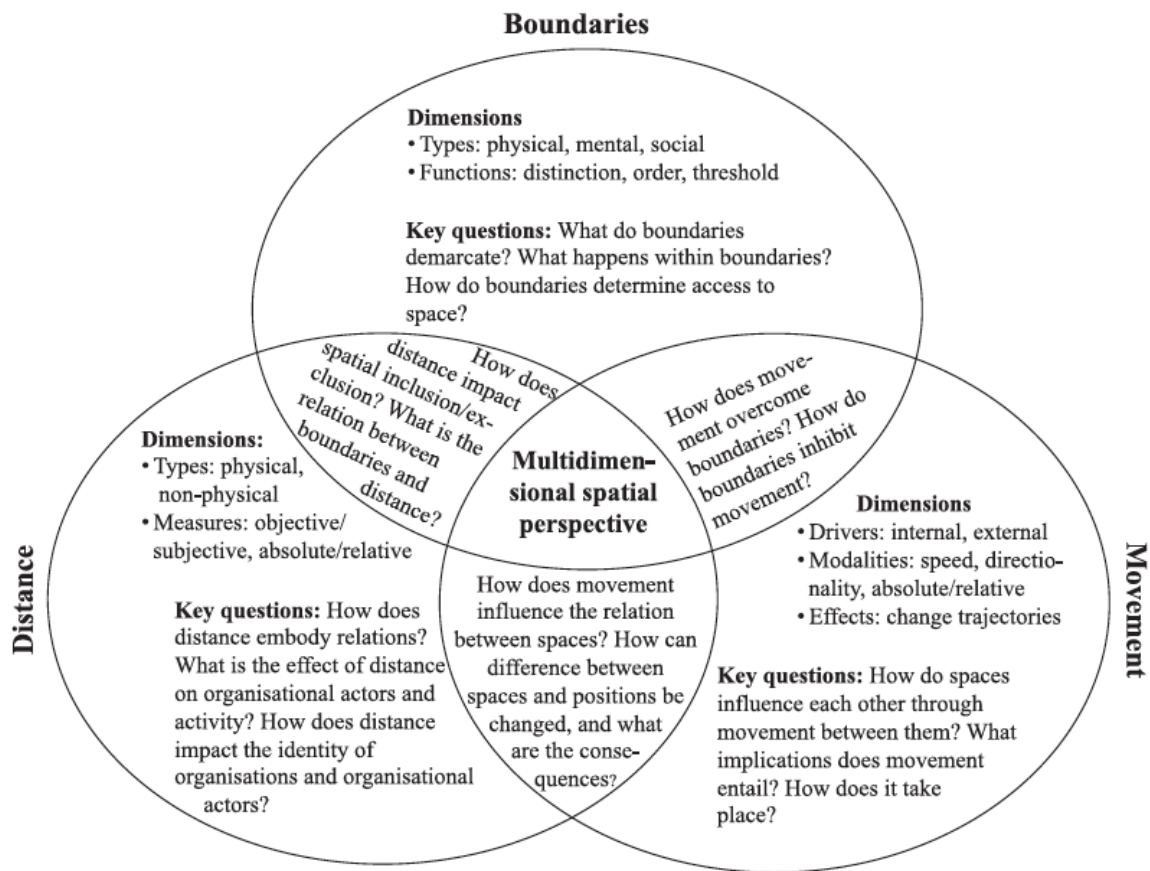
Most recurrent concepts and spatial themes are :

- the concept of *boundaries* – organisational space is something defined by boundaries, contained in boundaries;
- the concept of *distance* – organisational space is between different points;
- the concept of *movement*: organisational space is associated with (potential) movement between points or boundaries;
- the spatial theme of *distribution in space*; that is, how a specific space is shaped by different positions within it;
- the spatial theme of *isolation of space*; that is, the demarcation of a space and how it affects the actions that take place within it;
- the spatial theme of the *differentiation of spaces* - namely, the distinctive features and structures that characterize different types of space;
- the spatial theme of the *intersection of spaces*; that is, the blurred zone between two or more distinct spaces.

The figure below, taken from the above-mentioned paper, synthetizes the research questions emerging in the review papers according to these spatial concepts and themes.



Figure 2 Integrative framework of organisational space (with key questions)



From *Towards a spatial perspective; an integrative review research on organisational space* (Weinfurtner, T.2018)

They aim of posing these research questions was to find methods and tools to provide effective spatial solutions – in this sense, despite their specific focus, the contributions can be considered as mainly originating from a system centered approach.

Research questions concerning organisational space may concern different dimensions, however the (few) empirical studies that have been implemented lead to very different results.

It is interesting to note that another paper proposing the analysis of empirical researches on the physical environments in organisational settings (Elsback. and Pratt M. 2007, p.181) reveals how:

“no common elements of the physical environment (e.g., enclosures and barriers in work spaces, adjustable work arrangements, personalized work spaces, and ambient surroundings) are consistently and exclusively associated with desired outcomes in these work settings.

Instead, these elements are routinely associated with both desired and undesired outcomes”.

The table below, extract from the paper, offers an example of these contradictory effects focusing on a dimension of organisational space (enclosure vs openness) which is now at the centre of the debate after several years of general agreement on the beneficial effects of open spaces in any given organisational setting.

*Table 2 Trade-Offs in the design of Physical Environments in organisations*

<b>Dimension of Physical environment</b>	<b>Generally desired effects</b>	<b>Generally undesired effects</b>
High degree of Enclosure and Barriers	<p>Increases satisfaction for managers and professionals (Brennan, Chugh, &amp; Kline, 2002; Carlopio &amp; Gardner, 1992; Hedge, 1982)</p> <p>Increases performance and satisfaction on simple tasks (Oldham et al., 1991)</p> <p>Improves perceived status of managers (Carlopio &amp; Gardner, 1992)</p> <p>Reduces fatigue and psychosomatic complaints if job accompanied by high numbers of interruptions and low screening ability of occupant (Fried, 1990)</p> <p>Low degree of noise, distraction, and crowding leads to high perceived architectural privacy and sense of control over environment (Becker et al., 1983; Crouch &amp; Nimran, 1989; Oldham, 1988; Oldham &amp; Brass, 1979; Sundstrom et al., 1980; Sundstrom et al., 1994)</p> <p>More enclosed sides and few neighbours improve job performance of administrative and clerical employees (Sundstrom et al., 1980)</p> <p>Employees prefer privacy on complex and routine tasks (Sundstrom et al., 1980)</p>	<p>Reduces satisfaction for clerical workers (Carlopio &amp; Gardner, 1992; Zalesny &amp; Farace, 1987)</p> <p>Reduces performance and satisfaction on complex tasks (Oldham et al., 1991)</p> <p>Reduces task identity among clerical, professional, and managerial workers compared to open plan (Zalesny &amp; Farace, 1987)</p> <p>Open plan improves speed of mission proposal design among engineers at Jet Propulsion Lab (Mark, 2002)</p> <p>Use of desk as barrier between occupant and visitor signals unwelcomeness to visitor (Morrow &amp; McElroy, 1981)</p> <p>If barriers block visual intrusion, but not noise intrusion, they are detrimental to workers with poor stimulus screening abilities (Maher &amp; von Hippel, 2005)</p>

selection from Elsbach. and Pratt M. 2007, p.185

Based on these findings, the authors suggest that understanding the role of physical environments

in organizations requires an understanding of common trade-offs in organizational life. Further, they suggest that the prevalence of such trade-offs is grounded in tensions that are inherent to the functions that physical environments serve (i.e., aesthetic, instrumental, and symbolic functions). (Elsback. and Pratt M. 2007).

Despite their attempt to be able to provide the best possible organisational space solutions according to organisational needs, system centred theories, when applied to practice, generate contradictory results.

As Sailer (2010) concludes after an exhaustive literature review on organisational space three main trends emerge: i. the majority of empirical studies dealt with outcomes on individuals and not on a group or organisational level; ii. the more collective and complex the phenomena under consideration became, the less straightforward were the influences found. “While most authors would agree that proximity between actors increased the probability of informal interaction, less accordance was prevalent for outcomes like knowledge flow, innovation or performance. With increasing complexity and variety to define organisational constructs, the relationship between space and organisation necessarily blurred as well”; iii. throughout the years of studying space-organisation relationships, attempts were made to explain contradictory and deviating results. Thus, the field of space and organisation presents itself as one difficult to grasp and master.

For example, and with reference to the differences between enclosed offices and open plan offices - open spaces – which has been at the center of a controversial debate in the last years, Sailer (2010) proposes the following overview of the contradictory results of a selection of empirical studies.

*Table 3 Comparison of methods and outcomes for studies that analysed organisations and their changing communication patterns as they moved from an enclosed to an open plan*

Study	Type of study	Measurement	Changes in communication	Result
Brookes and Kaplan (1972)	Survey of employees (n=120) before and after the move into new spaces	Communication measured as 'sociability'	Communication increased	+
Hundert and Greenfield (1969)	Study of two comparable, but different departments of a large firm, one occupying a conventional, the other an open plan office Questionnaires	Time involved communicating face-to-face, via phone and in meetings	Information flow was better in open plan office  Time communicating face-to-face was higher, number of phone calls and meetings was lower in open plan office	+
Ives and Ferdinands (1974)	Retrospective study after move into open plan offices (comparison of earlier office from memory); self-reports on communication by employees	Unknown	Communication increased	+
Allen and Gerstberger (1973)	Year long study on a group of 13-19 product engineers whose conventional offices were converted into open plan with non-assigned workstations;  Employees kept diaries of interpersonal contacts on one randomly chosen day each week for a few months before and after the change	Amount of average communications per day and the numbers of people contacted	Communication increased	+
Boyce (1974)	Study before and one year after the move into new spaces;	Different types of communication recorded (interdepartmental, supervisory)	Mixed results (interdepartmental communication increased; communication with immediate supervisors decreased)	+ -
Clearwater (1980)	Survey on communication, interaction and productivity before and three months after the move into new spaces	Variables measured with self-reports and rating scales  Communication measured as face-to-face talking	Communication decreased	-
Hanson (1978)	Study before and after move into open plan office	Confidential conversation recorded	Confidential conversation decreased	-
Oldham and Brass (1979)	Survey of employees (n=81) at a newspaper once (8 weeks) before and twice (9 and 18 weeks) after the move into new spaces;  Questionnaires	Variables (to be rated on a seven-point scale) included task feedback, supervisor feedback, co-worker feedback, friendship opportunities, and interaction (intra- and interdepartmental)	Supervisor feedback and friendship opportunities decreased	-
Sundstrom et al. (1982)	Study before and after move into open plan office	Communication and speech privacy recorded, details unknown	No changes in communication	0

Boje (1971)	Retrospective study after move into open plan office (comparison of previous office from memory)	Unknown	No changes in communication	o
Sloan (undated)	Retrospective study after move into open plan office (comparison of previous office from memory);	Communication was rated by employees at two locations, details unknown	No changes in communication	o

From Sailer, 2010; Key: +” indicates an increase in communication, “-”decreasing communication and “o” no changes at all

The table below summarizes the main elements characterizing organisational space as a given local, according to system centered approaches.

*Table 4 Organisational Space as a Given Local in System Centered approaches - main elements*

Main Definition	Organisational Space as given locale, defined <i>a priori</i>
<b>Space characteristics</b>	planned (designed) divided, controlled, imposed and hierarchical, productive, symbolic and social (used to communicate organisational values and culture) abstract (not embodied) Intentional, deliberate
<b>Actions towards organisational space</b>	Ordering of space Gridding of space Designing of space Workplace optimization (a priori via designing) Providing signs prescribing the (correct, expected) use of space – maps, charters Facility management (FM) as an approach to organise and structure offices and logistics.
<b>Main focus of the analysis</b>	<ul style="list-style-type: none"> <li>- Office layouts, working environments, working setting and physical design (barriers, borders)</li> <li>- spatial configuration &amp; layout</li> <li>- spatial concentration</li> <li>- proximity and distance, supra-individual</li> <li>- how space can influence behaviours i.e. interaction, information and knowledge flow in organisational space,</li> <li>- Performance and space</li> </ul>

	- Health and space (ergonomics)
<b>Research methods applied to investigate organisational space</b>	<p>Quantitative analysis :</p> <ul style="list-style-type: none"> <li>- data on the distribution of space per function; data on the use of space</li> <li>- analysis of maps and floor plans, photography, texts available in several media</li> </ul>

### 3.3. Organisational Space as (unpredictable) social construction

Actors centred theoretical conceptions of organisations tend to see organisational space as an unpredictable social construction: organisational space is seen as being defined by the actor(s)' subjective interpretation(s) of organisational physical settings and features. Actors centred theoretical conception understand organisational space as a dimension which cannot be planned or defined *a priori*, it can only be observed and described *a posteriori*, taking into account the perception and the interpretation acted *by the subjects involved in the setting* (employers, employees, other external stakeholders). Space is *social, relational* and *symbolic*, it is the dimension where organisational power dynamics take place, any attempt to design the best organisational physical setting encounters the subjective (and potentially subversive) interpretation (and consequent (re)action of the actors situated in space.

As van Marrewijk points out “scholars study spatial designs in relation to daily activities of human actors and suggest that spatial designs are incomplete until they are realised in action”; (van Marrewijk, 2010). Only when organisational members use a design to do something useful this design is completed (Orlikowski, 2004). This production and reproduction of space is what (Hernes et al., 2006, p.44) is called the *recursive view on organisational space*. In this view spatial settings in organisations shape action and interaction and in return is reshaped by interactions (Lefebvre, 1991).

*Embodiment* and *enactement* are key words to understand the relations with organisational space: it is not only an issue of rational or emotional subjective understanding of space dynamics, it also the material relation of bodies in organisational space.

Many of the approaches under this umbrella have been influenced by Lefebvre's (1991) trialectic view of space: the *perceived space*, the *conceived space* and the *representational space*.

Research questions concern, among others:

- the *interpretation* (de-codification) of physical layout of workplaces by the actors – eg: how actors in space react/feel towards the firm/office planned organisational space and/or to physical (natural or build) spatial constraints;

- which *spatial practices* actors put in place to act in organisational spaces (including spatial practices that can be seen as alternative/resistant to formalized guidelines to the use of organisational space); how actors deal with spatial organisation of communication flows (eg: are communal space used in the way they have been conceived? do spatial practices identify other spaces for informal communication in organisational space?); how/if actors feel to belong to organisational spaces (territoriality and definition of spatial dimension of the identity);
- *power dynamics* in organisational space – eg: how organisational space planning is perceived as linked to organisational control and which strategies to cope/resist to control actors put in place; how the discipline of access/deny of access to selected organisational physical places is interpreted in terms of power dynamics; which is the (perceived) narrative behind the physical organisation of space (power grid); explicit and implicit messages in the planning of organisational space and their interpretation by different stakeholders.
- *symbolic meanings of organisational space*, the perceived coherence (or incoherence) between conveyed and perceived symbolic meaning.

#### A selection of contributions on organisational space from an actor centered perspective

*The Spaces of Organisation and the Organisation of Space: Power, Identity and Materiality at Work* (Dale, 2010) offers a clear interpretation of organisational space in this kind of approaches.

As Karen Dale states for Lefebvre the physical and the theoretical and the imaginary are not separable but are brought together through the medium of the embodied social subject who mediates both the material and the conceptual. (Dale, 2010, (p.171).

Lefebvre attempts to bring together diverse understandings of space – physical, mental and social – that have been artificially separated by intellectual fields and classifications. Lefebvre also seeks to move beyond an ‘abstract’ notion of space, which often may be discerned across these fields, that generalises and reduces space to a theoretical category.

Lefebvre makes a distinction between space as perceived, conceived and lived, and relates these to three overlapping aspects of social space: *spatial practice*, *representations of space* and *representational space*:



- 'spatial practice' is linked by Lefebvre to 'perceived' space: according to Dale it is "the spaces that we know and experience on a day-to-day level, including work, home, leisure and the linkages (routes) between each. Lefebvre also indicates it has elements of both daily routine and of being gradually developed through a society's history (Dale, 2010 p. 38).

Thus as well as being phenomenologically experienced spaces, they may be taken for granted through the habits of the body. This should be compared with Merleau-Ponty's 'knowing without knowing' (1962, 1973) and Bourdieu's 'habitus' (1984), made up of class- and gender-based sedimented bodily ways of engaging with the world. Thus our experience of organisations, of work or leisure, for example, is built up not only through our own individual habituated ways of engaging our bodies with a certain materiality, our 'knowing without knowing' of the spatial relations within a particular place; but also the historical embodiment of a 'workplace', a 'gym' or a 'department store' and how it is constructed spatially in certain ways so as to produce the meaning of that particular sort of social space.

- 'representations of space', is characterized by Lefebvre as 'conceived' space. According to Dale (Dale 2010, p9)

These are spaces as planned and executed by planners, designers, architects and engineers and, although he does not include them, we could add managers. These are the deliberate constructions of space to embody certain conceptualisations (e.g. functionality, control) in materialised form.

Dale characterizes this as 'organised space':

For example, the conscious spatial construction of sales has long been known, with its construction of image, placing (literally!) of product where it is most likely to be noticed, and sensory domination of space, as in for example, the dispersal of the smell of fresh bread in the direction of the customer. But in recent years, as we have noted, there has been a much more deliberate movement in the conscious design of workplaces to achieve certain values and business goals through the manipulation of

space. This is not simply in terms of work ergonomics or to gain greater efficiency, but as an integral element to the impetus of capturing hearts and minds through the use of spatial politics in attempts to manufacture both organisational culture and appropriate employee identities.

- “representational space” is ‘lived space’. As Dale explains

This is phenomenologically experienced space overlaid with ‘imaginary spaces’ whereby the material and the cultural are fused: the social creation of space so that signs, images and symbols are made material. In the workplace, we can see this in the use of larger offices and plush furniture as status symbols, and also in the less formal creation of spaces of resistance through, for example, cartoons, personal email messages and family photographs. These three elements are of course difficult to disentangle in our embodied experience of social space, and Lefebvre recognises that there are contradictions within and between these elements of social space, and the ‘dialectical relationship that exists within the triad of the perceived, the conceived and the lived’ (1991: 39). But this is the consequence of attempting to develop a meaningful understanding of the different ways in which social space is shaped by and shapes everyday lives, without being reduced to an elegant but abstract model. These different elements of the construction of space provide us with some conceptual tools for understanding the spatial politics of organisation. (Dale 2010 p.10)

Moving from this theoretical background comes the conviction that organisation is an important ordering process that produces particular knowledge and understandings of the world, but this is not simply a cognitive process that produces discourses. Organisation is accomplished through spatial, embodied and material relations, which can construct and reproduce certain power effects. The ordering and meanings that are produced through spatial organisation are often hidden through being taken-for-granted aspects of everyday life that seem ‘normal’, “the spaces and places of organisation – encompassing production, consumption and leisure organisations – are part and parcel of power relations (p.43)”.

Dale identifies three fundamental distinctions in the relation between space and power (Dale 2010, p. 47-48): *enchantment, emplacement, and enactment*.

- enchantment (enchantment of space) - is the fusion of the material and the symbolic and includes, but is not exhausted by, the sort of built expression of power. It may be described as an enchantment of space, of linking together matter and meaning in such a way as to produce various power effects;
- emplacement (emplacement in space) - refers to the construction of certain places for certain activities and certain people. It involves the processes of inclusion within and exclusion from specific spaces;
- enactment (enactment in space): Whereas emplacement implies that there are boundaries and compartments producing effects of fixity, enactment of spaces is about the ways that social spaces are lived, are processed through, are experienced through mobility and what power effects this brings about.

With reference to “emplacement in space” Dale underlines the importance of the *map* and of the *grid* to make organisational space intelligible, since in her view emplacement is also very closely related to the production of knowledge: for as things and people are placed, classified and ranked, they have to be known and compared (Dale 2010 p.61). Thus, mapping is a form of spatial representation, the intellectual territory becomes central to knowledge. And a central element of the spatial-representational organisation of the map is the grid. Grids are crucial to codification, to visibility and to making this knowledge intelligible. (Dale 2010, p.62). Grids are seen as significant tool of power. (p.62).

Finally, and with a view to modern forms of organisations she explains the importance of enactment.

“social actors move in and through spaces, as part of a complex web that is physical, human and cultural, those spaces are lived in particular ways. Through the development of habits and routines for inhabiting and creating those spaces, a whole set of power effects and relations are incorporated. There are three aspects to this incorporation that we wish to tease out in developing an understanding of how enactment operates as a form of socio-spatial power. The first is that the learnt and routinised ways in which we engage with many social spaces becomes sedimented. This relates

to the concept of the habitus, our everyday bodily ways of engaging with the world. The second is that by 'living through' various social spaces, the constructions of both physical and imaginary space embedded in them become linked to processes of identity construction. Our understandings of ourselves, our place in society and our relations of others are intimately bound up with our enactment of everyday social spaces. The third theme is to introduce a notion of the 'neo-baroque' as a way of understanding some contemporary aspects of spatial power achieved through enactment. This incorporates an understanding of how embodied spaces relate to identity production with a recognition of the way (post)modern spaces are often aestheticized, linked with narratives of consumption and choice, appear to present multiple perspectives and routes, but through these same elements serve to simultaneously 'secure and obscure' their inherent power relations". (Dale 2010 p 66)

This latter reference to 'Baroque forms of spatial organising' - which are seen as fundamentally about securing power whilst obscuring its operations. (Dale 2010 p.74) – may open interesting fields of investigation also in digital work spaces. Power and politics could be masked, apparently removed altogether, through the use of aesthetics.

These classifications of the relation between spatial organisation and power are useful for Dale's further investigations on the relationship between the spaces and places of organisation and the social production of subjectivity and intersubjectivity, a person's conceptualisation of themselves and their relations with others.

As Gagliardi explains "artefacts" are crucial elements to understand *a posteriori* organisational space or the physical setting:

As the physical setting can be natural (as the rectangle of sky of my informant) but in contemporary organizations – generally receptive towards any technical expedient that may improve efficiency – it is in large measure strewn with *artifacts*. An artifact may be defined as '(a) a *product* of human action which exists independently of its creator, (b) *intentional*, it aims, at solving a problem or satisfying a need, (c) *perceived by the senses*, in that it is endowed with its own corporality or physicality' (Gagliardi 1990a: 3).

However, in this actor's meaning making perspective, it is very difficult to investigate organisational

space.

Organizational space studies in actor centred conceptions focus on the *aesthetic elements of organisational life* in order to explore what has otherwise been hidden in mainstream organisation and management studies (Warren, 2008). Here, aesthetics is understood as “the study of the feelings, concepts and judgements which arise from our appreciation of the arts or the wider class of objects considered moving, or beautiful or sublime (Blackburn, 1994 in Charters 2006, p.236)” As Warren states the main focus of aesthetic research in organisations should be on how to explore aesthetic responses of employees (Warren, 2008, p.564), while often the main perspective, and perception is the one of the researcher.

As Strati explains “the aesthetic understanding of organizational life is an epistemological metaphor, a form of knowledge diverse from those based on analytical methods”. (Strati, 1992)

Organisational members’ aesthetic experiences of spatial settings are expressed through bodily sensations such as hearing, feeling, and smelling (Corbett, 2006; Warren, 2008). As we have seen in the previous paragraph, the literature on *servicescapes*, highlines the expected impact of designed spatial settings on employees and customers interaction (Bitner, 1992). Servicescapes include environmental dimensions such as ambient conditions (noise, music, odour), space (design, lay out, furnishing), and sign and symbols (style, personal artefacts) (Bitner, 1992) . For the interest it expresses on how ambient conditions influence workers sense making of space, servicescapes can be considered partly belonging also to the actor centered approach.

To understand the *experience* of organisational spaces, Strati identifies (1999, p.187) eight categories of organisational aesthetics:

- the sacred, which includes legendary, fantastic, and mysterious emotions
- the picturesque, which contains colourful and fascinating spatial settings
- the tragic, related to heroic, suffering, and routine aspects of organisations
- the ugly, as a category of distasteful and repulsive emotions
- the rhythmic, which focuses on movement
- the comic, concerned with the grotesque, irony, laughter, sarcasm, and humour
- pathos, embracing the beauty and joy of aesthetics

- the graceful, related to elegance, work settings and charm.

van Marrewijk clearly explains how

Interpretive methods seek to define the stories that organisational spaces tell (Joy and Sherry, 2003; Taylor and Spicer, 2007) and try to understand the meanings given to spatial settings in organisations by their employees, clients, customers and other visitors.

One of the most interesting contributions, also in consideration of the focus of her research on the relation between organisations and technologies, is Wanda Orlikowski's attempt to overcome what she calls the tendency in "organizational studies of technology adoption, diffusion, and use to focus either on technology effects (a techno-centric perspective) or on interactions with technology (a "human-centered perspective" (Orlikowski 2007, p.2)"

She aims to develop new ways of dealing with materiality in organizational research, considering materiality critical to be able "to understand contemporary forms of organizing that are increasingly constituted by multiple, emergent, shifting, and interdependent technologies" (Orlikowski 2007, p.1)"

In her view organisational space is part of the materiality of the organisation:

Consider any organizational practice, and then consider what role, if any, materiality may play in it. It should be quickly evident that a considerable amount of materiality is entailed in every aspect of organizing, from the visible forms — such as bodies, clothes, rooms, desks, chairs, tables, buildings, vehicles, phones, computers, books, documents, pens, and utensils — to the less visible flows — such as data and voice networks, water and sewage infrastructures, electricity, and air systems. (p.2)

She sees the need to overcome this dualistic approach (p.3), through what she defines a position of *constitutive entanglement*:

Moving beyond these conceptual difficulties and conventional approaches requires a way of

engaging with the everyday materiality of organizational life that does not ignore it, take it for granted, or treat it as a special case, and neither does it focus solely on technology effects or primarily on technology use.

Such an alternative view asserts that materiality is integral to organizing, positing that the social and the material are constitutively entangled in everyday life.

A position of constitutive entanglement does not privilege either humans or technology (in one-way interactions), nor does it link them through a form of mutual reciprocation (in two-way interactions). Instead, the social and the material are considered to be inextricably related — there is no social that is not also material, and no material that is not also social it links them through a form of mutual reciprocation (in two-way interactions).

In order to do this, she builds her notion of constitutive entanglement on that of “mutual or reciprocal interaction common in a number of dynamic social theories (p.4):

Notions of mutuality or reciprocity presume the influence of distinct interacting entities on each other but presuppose some a priori independence of these entities from each other. Thus, for example, we have tended to speak of humans and technology as mutually shaping each other, recognizing that each is changed by its interaction with the other, but maintaining, nevertheless, their ontological separation. In contrast, the notion of constitutive entanglement presumes that there are no independently existing entities with inherent characteristics (Barad 2003: 816). Humans are constituted through relations of materiality — bodies, clothes, food, devices, tools, which, in turn, are produced through human practices. The distinction of humans and artifacts, on this view, is analytical only; these entities relationally entail or enact each other in practice.

Organisational space is a component of these *activated contexts*, as explained in the paragraph that follows (Barbini et al 2017, p 141):

One example may be useful to highlight the need for further critical reflection: in activity theory (Engeström, 2015), one of the theoretical approaches that can be ascribed to practice-based theory (Feldman, Orlikowski, 2011), the basic idea is that human beings are involved, on a daily basis, in multiple activity systems. These activities are focused and directed by an

object that confers general sense and specific meaning on them. Thus, for example, in healthcare the object should be the treatment of diseases; in education, the object should be student learning. The object evolves over time according to historically determined configurations and is also mediated, in its identification, by rules, roles, tools, division of work, and languages in use. In this approach, the dynamic and modifiable system of activity becomes the unit of analysis, as it is a collective dimension, oriented to an object, mediated by cultures and artifacts. Within such collective activities, we can identify individual actions (tasks that nurses or doctors have to perform; lessons that teachers have to prepare or teach), which in turn can be traced back to sequences of actions (selecting and preparing appropriate material; identifying and managing appropriate resources). In this perspective, complex organizations are activity systems, with internal divisions, that are interrelated with other activity systems. Assuming this theoretical view means addressing the complexity of internal and external relationships and understanding how activity systems are generated, what transformations are undergone, and how they operate in different spatial and temporal contexts. Acting can be interpreted on the basis of practical knowledge, of operating cultures, of widespread rules and routines, which constitute a fabric that can influence courses of action and orient identity”.

### Critical assessment

The most critical element of theories in this group in providing a satisfactory definition of organisational space stands in the subjectivity of the approach which focuses on actors’ perceptions and sense making leaving behind the action and the context of the actions they jointly perform in the workplace as a shared working context. This criticality risks to be more relevant as we consider the impact of digitalization in terms of extension of potentialities and means of organisational space and, consequently, in terms of additional fragmentation of individual experience of multiple forms of organisational space – thus multiplying the possibilities for individual perceptions.

In addition, the speed of change digitalization imposes to some aspects of organisation contexts risks to make even more difficult the attempt to understand organisational space as (unpredictable) social construction, since when empirical studies are ready to give keys for understanding the organisational setting *a posteriori*, this setting risks to be already quite different from the studied one



due to technological innovation. Digitalization continues to offer new technical means for extending (or blurring) work context and environment; it often requires workers to be able to shift from physical to virtual workplaces creating hybrid working environments; these continuous changes have an impact on perceptions, feelings and sensemaking which risk to be understood once they are overcome by new perceptions, feelings and sensemaking originated by new working environments created by new (digital) technologies.

The potentialities and challenges of these new organisational spaces require a conceptual framework incorporating movement, change and process to explain (and understand) them.

Finally, traditional interpretative methods for actor centered theories are conditioned by the researcher and his/her perceptions which are the main instrument of aesthetic research which often takes the forms of the ethnographic approach.

Yanow (2005, 2006) proposes to the researcher-ethnographer four categories for a systematic analysis of space and physical arrangements:

- *design vocabularies* concern the shape, height, width, mass, scale and material of the building
- *design gesture* contextualises the relation of buildings to surrounding spaces
- *design proxemics* refers to the social and personal space between people that shapes human behaviour
- *décor* includes furnishing, furniture, art, chairs, statues and photographs.

Peiltonen underlines the limits in terms of subjectivity of (auto) - ethnographic approaches and stresses the need of “interplay of different styles of investigation” to “achieve a holistic understanding of the meaning of space in organizational structuring” (Peiltonen, 2012).

The exemplary empirical analyses (Warren, 2008; Yanow, 1995; Halford, 2004) as well as the emerging methodological reflections (van Marrewijk and Yanow, 2009, p. 7) suggest that the prime methodological vehicle in spatial research is some form of auto-ethnographic sensitizing to the architectural features of the research site, complemented in most cases with interviews, photography, document analysis or other predominantly qualitative methods (Peiltonen 2012).

In his case study of a Finnish University Organisation he complements participant observation with “the user tours focussing on the aesthetic and symbolic meanings communicated in and through architectural features of the buildings as well as with selected documents describing the original planning ideas and contemporary representation of space. (Peiltonen 201)

He concludes that:

the majority of the previous studies into architecture and organizations have so far ignored the potential to expand the methodical repertoire in the direction of design ideas and architectural theories and solutions influencing the production and consumption of material structures and shapes. Design is assumed to be connected to managerialist intervention and control and as such is left empirically unexamined. However, as the Finnish case suggests, architectural design can also be empowering or communal (Kornberger and Clegg, 2004). University architecture in the 1960s and 1970s was informed by the wider ideas about the importance of collective interactional spaces and harmonious co-existence of the diverse parts of an organization (Vuorinen, 2005). Whenever available, some form of inquiry into architectural plans and accounts should be included into spatial studies (Peiltonen 2012).

The table below summarizes the main elements characterizing organisational space as (unpredictable) social constructions, according to actor centred approaches.

*Table 5 Organisational Space as (unpredictable) social construction in Actor Centered approaches - main elements*

Main Definition	Organisational Space as (unpredictable) social construction
<b>Space characteristics</b>	Social Symbolic Personalised - Actor’s meaning making perspective Space of organisation as space of power Embodied Enacted (sense-making and enactment) Unintentional

<p><b>Actions toward space</b></p>	<p>Experiencing space  Controlling the use of space as a power dynamic (spatial control)  Segregation of social spaces  Localisation reflective of status  Enactment, spatial narratives  Understanding space usage patterns (a posteriori)  Making cartographies (a posteriori)  aesthetic understanding of organizational life</p>
<p><b>Main focus of the analysis</b></p>	<p>Individual behaviours in space/towards space  Aesthetic elements of organisational life  Perceptions and judgements on organisational space  Proximity and distance and co-location effects on individuals (may differ from desired and planned effects, unpredictable)  Space usage patterns  Territoriality and appropriation  Psychological well-being in space  Enacted environment  Power dynamics in space  Spatial performance of the identity  Spatial practices as a focus of the investigation</p>
<p><b>Research methods applied to investigate organisational space</b></p>	<p>Empirical Research: researcher-participants auto-ethnographic experience - including “diaries on the use of space”; use of photographs and metaphors to explain own perception of organisational space; story telling).</p>

### 3.4 Organisational Space as instrumental (bounded rational) choice

The *process centered* theoretical conception of organisations tends to have a completely different approach to organisational space.

As we have seen theories in this third group see organisations as a “process of actions and decisions”. Organizational phenomena are seen as *processes* and not artefacts and they result from the actions and decision individuals take with the limited information they have at their disposal, guided by “intentional and bounded rationality towards satisfying results”. This third conception is non-dualistic and process-centred, it supports a shift from substantial rationality to *procedural rationality* (Simon, 1979).

Organisations are seen as processes evolving in time, and we could add in space, resulting from the attempt to reduce uncertainty and search for satisfactory solutions; the organisational process tries to reduce uncertainty through a “rational structuration of actions” In this way “each empirical organisational process, guided by intentional and bounded rationality, expresses in such a way its relatively autonomous capacity of regulation (structuration) the validity of which is then evaluated on the basis of the achievement of the desired outcomes” (Simon, 1947).

This approach transcends reification and the opposition between system/structure and actor/agency; transcending reification means that the organisation is not separated *a priori* (as in system centred conceptions) nor *a posteriori* (as in actor centred conceptions) from actors.

Process centred approach focuses on actions and decisions as the elemental units of analysis, each and every of them being somehow ordered, or coordinated with others, in the pursuit of desired outcomes, by means of pre-existing rules – what in the other conceptions is called “system” – and of new rules generated in the course of action – what in the other conceptions is called autonomous “actor”. In process centred theories imposed, heteronymous rules always coexist with autonomous rules and rules can always be negotiated and interpreted. The actual regulation of each social process is always resulting from the encounter between pre-ordered control rules – rules through which subjects exercising legitimate authority pre-order the organizational process - and autonomous rules, pre-existing or concurrent with the implementation of the action.

Not surprisingly process centered theories see organisational space in a *non – topographic* perspective. Differently from system-centred and actor-centred conceptions, which see organisations as separate entities with “internal” and “external” dimensions and, consequently, conceive organisational space in geographical/topographical terms, in the case of process centred conception organisational space can be seen as an *analytical dimension* existing at different levels of the organisational process.

It is important to underline that in process centred logic the units of analysis are not persons or organisational roles but *actions* and *decisions*. The organisational process is seen as a flux of actions and decisions at three different levels (Thompson, 1967): the institutional level (the level of the objectives); the technical level (the level of technical knowledge) and the managerial or structure level (the level of the ordering of the process through coordination and control of actions and decisions).

As recently recalled in the collective work *Thompson’s Organizations in Action 50<sup>th</sup> anniversary: a reflection* (Barbini et al 2017, p 140) “from a dynamic and procedural perspective, the experience of the subject in a working and organizational situation takes the form of “organized acting”, in relation to which he activates (“acting”) contexts that allow him to interpret what is happening within a framework (“organized”) of meanings and structures of sense (technical, managerial, institutional) that form a kind of available “silent organization”.

It interesting to note that seeing organisational space as an analytical dimension allows to evidence its relevance at all the three levels of the organisational process: at the level of the institutional plan – where the issue of borders and “boundary maintenance activity” (Aldrich, 1999) can be used to explain its relevance in defining organisational process objectives; at the level of the technical knowledge - where technical competences of the organisation are put in place, and the choice of the place and time for implementation of the action is relevant - as well as at the managerial level where implementation choices are taken in terms of coordination and control actions coherent with actual or potential organisational objectives and with the techniques used or that could be used.

As we see, while in system centred and actor centred logic organisational space is taken into consideration only with reference to the performance of the action by individuals or groups - and therefore is understood as a topographic, geographical space whose possibility to be understood

becomes more complicated when the work goes digital - in the case of process centred logic organisational space is not topographic neither “reified” and it can be seen as an analytical dimension at different organisational levels, including the level of strategic and technological choices.

In other words, in process centered approach we do not have a given locale (pre-designed for the best possible performance or flexible enough to be adapted for a limited set of adjustments and scopes) where individuals or groups implement actions nor an organisational space “made” *a posteriori* by individual actors through an (unpredictable) social construction. In process centred approach the place of the organisation is in its process, in its actions and decisions.

This perspective brings new possibilities for answering the question of “what is” and “where is” the place of the organisation: there is no specific reified object to be named “organisational space” and to be seen as a separate component of the organisation; an element that needs to be analysed and designed via a set of concepts belonging to geographical, topographic and etno-behavioural fields of knowledge. Organisational space as such actually vanish. However, the *place of the organisation* clearly emerges: the place of the organisation is in its actions and decisions which are implemented in the most suitable physical – or digital - environment depending on its contingent strategic, technical and/or operational choices, given the actual general conditions for the implementation of the process.

This interpretation leads to three main group of considerations:

- i. process centred approach to organisational space offers interesting opportunities for an understanding of the *place of the organisation* which transcends the limits of geographical and topographic approaches. This element provides possibilities to find answers to some of the questions system centred and actor centred logics leave opened, especially with the emerging of digitalization processes (eg: is digital, cyber, hybrid organisational space a new organisational space? Where is the place of the organisation, the place of work when the proliferation of new technical possibilities creates new digital environments? Which is the relation between physical and virtual organisational space?)
- ii. to consider organisational space as an analytical dimension at all levels of the organisational process it means to shift the attention from organisational space as a reified topographic concept to the *place of the organisation* as a choice of coordination

of methods and means, coherent at the three levels of the organisational process. This perspective allows to consider new digital opportunities offered by evolving technical solutions, including “news spatial forms”, in view of their actual coherence with organisational process;

- iii. to see organisational space as an analytical dimension at all the different levels of the entire organisational process puts organisational place in the core of the organisational process at the same time avoiding to exaggerate the relevance of the “spatial turn” and the proliferation of a never ending set of definitions for new spaces: the choice of organisational place for the execution of the action is implemented thanks to technical competences and knowledge, which in process centered approach are part of the action from which they can be distinguished only at an analytical level and not at an empirical one.

### A selection of contributions on organisational space from a process centered perspective

An important contribution to understand how process-centred theories see the relation between space and organisation and the *place of organisation* at institutional level comes from Masino and Maggi's 2001 paper on organisational borders (G. Masino, B. Maggi, 2001 *Verso una ridefinizione del concetto di confine organizzativo*). They start stressing the increasing importance the concept of *organisational borders* is acquiring at the beginning of the new Millennium, in the moment when it becomes more and more problematic. They identify two sets of reasons for this problematisation:

- outsourcing processes, which question Fordist organisational logics and highlight the centrality of what happens at the borders for organisational and strategic choices;
- the new technologies, which create new opportunities, expanding and accelerating change processes.

The authors' main question is if it still makes sense to talk about relations between “internal” - and “external” for companies which have found relevant advantages in the process of disaggregating their activities to recompose them following organisational plans which overcome their traditional borders. As they say (my translation from Italian) “How is it possible to combine the interpretation

of control and coordination processes and activities having more and more transversal characteristics and concerning more than one organisation with the maintenance of distinctions between different subjects which, although with nuances and variables, maintain a relevant meaning (for instance from the juridical, industrial relations, social, cognitive perspective?)” (Maggi, Masino 2001, my translation from Italian).

In their view an interesting contribute for the revision of the concept of organisational borders can be seen in Aldrich’s (1999) interpretation of organisations as systems having three fundamental characteristics: i. the orientation towards objectives; ii. the existence of sets of activities instrumental to these objectives; iii. the implementation of activities aiming at maintaining socially defined borders. As Masino and Maggi recall, Aldrich quotes Weber on the last point underlying that (my translation from Italian) “the existence of an organisation implies a distinction between members and non-members, which realises de facto a separation, which can be variable and porous, between the organisation and the external environment” (Masino, Maggi 2001). Since this separation is variable and porous it requires *boundary maintenance activities*. Through these activities “organisations define their boundaries not only in the more traditional and immediate terms of selecting their activities but also in terms of defining relatively homogeneous and relatively unique and distinct decision processes, different from those of other organisations or from the general external environment” (Masino, Maggi 2001, my translation from Italian). Boundary maintenance activities according to Aldrich happen in bounded rationality contexts and this shows that organisations are embedded in their environment (Aldrich, 1999). Finally, according to Aldrich, boundary maintenance activities mainly concern the reproduction of organisational knowledge, which is a key activity for the organisation.

Moving from this contribution, Masino and Maggi (2001) define the concept of organisational boundaries in the framework of the Theory of Organisational Action (Maggi, 1990).

They introduce the presentation with a reflection on the fact that it is not surprising that Theory of Organisational Action authors show a limited interest for organisational boundaries. Differently from those conceptions (as system-centred and actor-centred) which see organisations as separate entities with “internal” and “external” dimensions and, consequently, with organisational boundaries conceived as geographical boundaries, in the case of process centred conception and in the Theory of Organisational Action, the relations between different processes of actions cannot be represented



in terms of organisational (topographic) boundaries. In other words, it will be difficult to find explicit references to organisational boundaries and to organisational space since process centered theories see organisations as processes and not as *separate entities* in which actions take place.

Then Masino and Maggi proceed selecting three key authors for the development of the Theory of Organisational Action and present their views on the problem of organisational boundaries and their transformation. Since organisational boundaries are a key element of organisational space definition in those theories using a topographic metaphor (system centered and actor centered) the presentation of these authors approach to organisational boundaries can be considered an interesting insight on their vision of organisational space or of the place of the organisation.

The first author is Chester Barnard (1938), “an intellectually curious business executive who distilled from his experience as President of the New Jersey Bell Telephone Company, and as executive of other business, governmental, and non-profit organizations, a profound book on decision making titled *The Functions of the Executive* (1938)” (Simon, 1978).

In Barnard's view organisations are systems of purposive cooperation of human activity. Masino and Maggi (2001) underline that in this vision the elements composing the organisational and cooperative system are *actions* and not individuals. Organisation as a cooperative system aims to coordinate activities in order to reach a shared purpose, for instance the production of goods and services. When the purpose of a system of cooperation is attained, then the cooperation is said to be *effective* (1938: 43). The organization as a cooperative system is seen as overcoming both the physical limitations and the cognitive limitations (bounded rationality) of the individual (Williamson, 1995). In terms of relations among different organisational systems – which is relevant to understand how Barnard sees the problem of organisational borders - Masino and Maggi identify two aspects: the first is related to the relation of inclusion of organisational systems in wider organisational systems, the latter exercising a power of control on the smaller, since according to Barnard the only way to create big organisations is through a combination of smaller organisations. The second aspect concerns the relation of exchange of utilities among different cooperation systems. According to Barnard these relations vary continuously since they depend on the control each system can exercise, and the possibility for organisations to vary control depends on the organisational coordination capacity to acquire “through a creative act” new control (Masino, Maggi 2001 - my translation from Italian).

The second author Masino and Maggi consider is Herbert Simon, whose theory on bounded rationality has been influenced, as they recall and how Simon recalled in his Nobel Lecture (1979), by Barnard suggestions. According to Simon the construction of the organisational process coincides with the choices in terms of coordination and control of the actions composing it, the modalities of coordination and control of actions and decisions form the structure of the process. In this sense, as Masino and Maggi (2001) underline, the relations of an organisation at its “borders” can be interpreted as modalities of coordination and control of the actions of relation and exchange with other organisational processes. In addition, Maggi and Masino recall how for Simon each process of actions and decisions can develop at different levels, within an organisational process as well as between different organisational processes.

The last author Masino and Maggi mention is James Thompson whom, moving from Barnard and Simon contributions, further develops the theory of organisation as a process of actions guided by bounded rationality. As already mentioned in paragraph 3.1 Thompson focuses on the uncertainty organisations as organisational processes face at different levels and on how organisational processes try to reduce and control uncertainty through a “rational structuration of actions” so “each empirical organisational process, guided by intentional and bounded rationality, expresses in such a way its relatively autonomous capacity of regulation (structuration) the validity of which is then evaluated on the basis of the achievement of the desired outcomes”(Simon 1947). In terms of defining the problem of “organisational borders” Masino and Maggi underline how Thompson touches the problem of “borders” while reflecting on the production of the process. Thompson introduces the concept of *domain of the action*.

As explained in the recent *Thompson’s Organizations in Action 50<sup>th</sup> anniversary: a reflection* (Barbini et al 2017, p 24-25) “the organization defines its “domain”, *i.e.* the range of products, the target population and the additional services it is going to supply. The decision about what and how to do something implies the identification of the relevant technologies (as well as the identification of the technologies the organization is willing to control and the technologies it is going to “buy” outside its boundaries). Given the bounded rationality of human decision - making processes, organizational action is never able to preside over the entire matrix of technologies related to its domain. Therefore, definition of the domain necessarily involves the development of dependencies from other subjects

(i.e. the subjects who preside over the technologies which are relevant for the organization but not managed by it). Then, Thompson introduces the concept of *task environment* as the set of entities with which the organizational action finds itself in conditions of interdependence (e.g. customers, suppliers, competitors for markets and resources, regulatory groups). The *choice of domain is therefore an intentional act, and the task environment stems from that decision*. The task environment has a fundamental importance because, on the one hand, it has to express a consensus (even implicitly) about the domain claimed by the organization and, on the other hand, because it is in conditions of interdependence with such organization. The consensus on the domain is essential for the actual development of organizational action. It expresses a set of expectations about what the organization will or will not do and is reflected in the agreement expressed by the subjects to enter into relationships with the organization. However, when an element of the task environment expresses the consensus on the domain claimed by the focal organization, this implies a change in its own domain (in analytical terms, the element of the task environment changes its domain to embrace the actions requested by the focal organization); so the element of the task environment, right through its consensus, develops dependence on the focal organization. A situation of mutual dependence (interdependence) is then established, with the organization and the elements of the task environment trying to use their power to impose constraints and contingencies to each other and simultaneously trying to reduce their exposure to the contingencies posed by the other". As Masino and Maggi (2001) underline the focus is on power relations which can of course vary; Thompson calls *organisational design* the combination of choices of definition and change of the "borders" of the domain of action.

Maggi and Masino conclude integrating Barnard, Simon and Thompson's visions of the relation among organisational systems and of the problem of the definition and modification of organisational borders as follows: *each process defines its relations with other processes through regulation (structuration) choices which use primary criterium the capacity of control that can be exert* (Masino, Maggi 2001 - my translation from Italian). This conclusion, that they consider coherent with the Theory of Organisational Action, offers an interesting perspective for understanding organisational space and redefining it in terms of "organisational place" as a choice for the implementation of the action where the quality of the place in terms of tool for coordination and control and its coherence becomes relevant.

To understand organisational place as an analytical dimension at structural or managerial level an interesting contribution comes from the parallel with Rinaldini's work on time and justice in organisational analysis.

As we know in process centred theories, the focus is on *actions* which happen through, among other, *space-temporal choices*; *space* and *time* are seen as continuums *inherent* to the process of actions and decisions and to its continuous change. Matteo Rinaldini in his "Tempo e giustizia nell'analisi organizzativa " (Neri; Rinaldini 2016) offers a clear description of the relation between "time" and "organisations", explaining how in process centred conceptions "time is an inherent variable to the process of actions and decisions" and "actions as processes necessarily take place in time", "time is part of the action" (Neri; Rinaldini 2016 p 47).

If we considered the relation between *space and organization* in process centred theories similar to the relation between *time and organisation*, also in view of the intersections between time and space that we have underlined in paragraph 2, we can affirm that also space is part of the action and the place of the organisation is (also) an implementation technical choice.

As Rinaldini refers to "time making" we could refer to "organisational place-making" not in the actor centred perspective of actor's *meaning making* of an organisational space object of reification (external to the actor and the action) but in the sense of the "where" – physical or virtual – actions and decisions are performed, a place which is inherent to the process and tentatively coherent with the technical choices which appear more appropriate given bounded rational choice for the implementation of the process.

Although out of the scope of the present work, organisational place as an analytical dimension of the organisational process is relevant at the level of technical knowledge as well and could be investigated considering the role of competences and knowledge in process centred approaches.

Organisational place as an analytical dimension for the implementation of a specific process of actions and decisions is linked to the technical competences and knowledge activated in the process, knowing that in process centred approach knowledge and competences are part of the action from which they can be distinguished only at an analytical level and not at an empirical.

Competent knowledge about spatial options – which are part of technical options among which coordination and control need to be taken – is key for organisational process.

## Critical assessment

The most promising element of process centered approach is the fact that it overcomes a topographic vision of organisational space which showed its limits both in system centered theories – despite sophisticated attempts to improve organisational design the results are ambiguous and conditioned by a gap in time between the proposed spatial solutions and the new challenges technologies impose – and in actor centered theories – where, in fact, the focus on the actors implies the impossibility to design/define organisational space from an organisational perspective and even to understand it as an organisational setting since individual perceptions and experiences prevail.

Seeing organisational place as an analytical dimension at all levels of the organisational process and underlining that *each process defines its relations with other processes through regulation (structuration) choices which use as primary criterium the capacity of control that can be exert*, offers a possibility to look at a set of phenomena that apparently vanish space – from digitalization processes to different spatial design favourizing an hybrid use of what were offices and workplaces - in a different way which shifts the attention from the phenomenon *per se* to the choices in terms of coordination and control the phenomenon underlines. In addition, it offers the opportunity to assess if these choices can be considered coherent with organisational purposes and aims, focusing on organisation and its actions in process instead of merely on the system or on the actors/individuals in the system.

In this sense instead of focusing on organisational space as a separate dimension this conception allows to focus on the place of the organisation, which can vary according to actual organisational process objectives and strategies and can benefit from technological changes and new opportunities, avoiding the risk that innovative *spatial options* - physical and virtual – are embraced without considering the congruence with the whole organisational process.

The table below summarizes the main elements characterizing organisational space as instrumental (bounded rational) choice according to process centred approaches.

Table 6 Organisational Space as instrumental (bounded rational) choice in Process Centred approaches – main elements

Main Definition	Organisational Space as instrumental (bounded rational) choice
<b>Space characteristics</b>	Not relevant <i>per se</i> . Space is not a reified separate entity; it is an analytical dimension inherent to the organisational process as a choice for coordination and control
<b>Actions toward space</b>	No action towards space since space is not a separate entity Organisational Place is an attribute of the action Organisational place as an analytical dimension
<b>Main focus of the analysis</b>	Consistence of spatial choices in organisational processes at institutional, technical and structural level
<b>Research methods</b>	Action-Research Method of Organisational congruencies

#### 4. Practical implications

Conceptions and theories generate methodologies and tools which attempt to transfer visions into practices.

Practical implications of organisational theories towards organisational place concern the possibility, and consequently the approaches and tools, to plan and design organisational place (system centered theories), to investigate and explain *a posteriori* actors experiences and practices of use of organisational space (actor centered theories), to assess the congruence of spatial choices (processes centered theories).

Coherently with the conceptions and theories we have seen in the previous paragraphs, there is a continuous and more and more sophisticated flourishing of methodologies and tools deriving from system centered theories – approaches and tools which take into due consideration physical and digital space and aim to support organisations in planning for workers the best possible organisational use of organisational place; there are fewer approaches deriving from actor centered theories – approaches mainly aiming at discovering and explaining to the organisation the individual interpretation workers as actors have of organisational place, eventually providing maps and indications for a shared understanding – while processes centered theories since they approach organisational processes through an action-research approach include organisational place as one of the analytical dimensions of the intervention. One of the examples of this possibility of intervention is the Method of Organisational Congruences which, in the description of the Social Structure, offers the opportunity to assess the congruence of spatial choices in the organisational process.

The table below compares the main differences between the three conceptions' views on organisational space / the place of the organisation before introducing, in the in the following paragraphs, a selection of practical implications for each approach.

Table 7 Organisational Space in the three organisational conceptions (system centered, actor centered, proces centered) - comparing main elements

Epistemological approach	System centred (objective) approaches	Actor centred (subjective) approaches	OS Process centred approaches
<b>Main Definition</b>	Organisational Space as given locale, defined <i>a priori</i>	Organisational Space as (unpredictable) social construction	Organisational Space as instrumental (bounded rational) choice
<b>Space characteristics</b>	planned (designed) divided, controlled, imposed and hierarchical, productive, symbolic and social (used to communicate organisational values and culture) abstract (not embodied) Intentional, deliberate	Social Symbolic Personalised - Actor's meaning making perspective Space of organisation as space of power Embodied Enacted (sense-making and enactment) Unintentional	Not relevant <i>per se</i> . Space is not a reificated separate entity; it is an analytical dimension inherent to the organisational process as a choice for coordination and control
<b>Actions towards organisational space</b>	Ordering of space Gridding of space (In the control of space, the grid also becomes a significant tool of power) Dale, (p.62). Designing of space Workplace optimization (a priori via designing) Providing signs prescribing the (correct, expected) use of space – maps, charters	Experiencing space Controlling the use of space as a power dynamic (spatial control) Segregation of social spaces Localisation reflective of status Enactment, spatial narratives Understanding space usage patterns (a posteriori) Making cartographies (a posteriori) aesthetic understanding of organizational life	No action towards space since space is not a separate entity Organisational Place is an attribute of the action Organisational place as an analytical dimension



	Facility management (FM) as an approach to organise and structure offices and logistics.		
<b>Main focus of the analysis</b>	<ul style="list-style-type: none"> <li>- Office layouts, working environments, working setting and physical design (barriers, borders)</li> <li>- spatial configuration &amp; layout</li> <li>- spatial concentration</li> <li>- proximity and distance, supra-individual</li> <li>- how space can influence behaviours i.e. interaction, information and knowledge flow in organisational space,</li> <li>- Performance and space</li> <li>- Health and space (ergonomics)</li> </ul>	<p>Individual behaviours in space/towards space</p> <p>Aesthetic elements of organisational life</p> <p>Perceptions and judgements on organisational space</p> <p>Proximity and distance and co-location effects on individuals (may differ from desired and planned effects, unpredictable)</p> <p>Space usage patterns</p> <p>Territoriality and appropriation</p> <p>Psychological well being in space</p> <p>Enacted environment</p> <p>Power dynamics in space</p> <p>Spatial performance of the identity</p> <p>Spatial practices as a focus of the investigation</p>	Consistence of spatial choices in organisational processes at institutional, technical and structural level
<b>Research methods applied to investigate organisational space</b>	<p>Quantitative analysis:</p> <ul style="list-style-type: none"> <li>- data on the distribution of space per function;</li> <li>data on the use of space</li> </ul>	<p>Empirical Research:</p> <p>researcher-participants</p> <p>auto-ethnographic</p> <p>experience- including “diaries on the use of</p>	Action-Research Method of Organisational congruencies

	analysis of maps and floor plans, photography, texts available in several media	space”; use of photographs and metaphors to explain own perception of organisational space; story telling).	
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#### 4.1 System centred theories and Spatial Design

Organisational theories referable to system centred approach propose a set of methodologies and tools aiming at *designing* organisational space in order to create the best spatial conditions for improving the performance of the system and the actors. Several reasons, including technological innovation and the possibility it offers to collect and process “in real time” a massive amount of data on individual’s behaviour in space, push in the direction of an increasing interest towards spatial design, however organisational space design has been an important component of organisational design since the beginning.

##### 4.1.1. The panopticon – organisational space, organisation and control

It is interesting to mention that one of the first ever attempts of Spatial Design - or the designing of organisational space with the purpose of favouring the best performance - is the well-known Panopticon model elaborated by Jeremy Bentham in 1791, which is considered a clear explanation of the symbolic relation between organisational space and power. Thanks to the seminal work of Foucault (1995) the Panopticon model is seen as a “generalizable model of functioning; a way of defining power relations in terms of the everyday life of men... it is the diagram of a mechanism of power reduced to its ideal form; its functioning, abstracted from any obstacle, resistance or friction, must be represented as a pure architectural and optical system” Foucault (1995, p.205).

It’s worth mentioning that the first idea of the Panopticon came to Jeremy Bentham from his brother Samuel who was working in Russia on the estate in Krichev and had a relatively unskilled workforce, so he sat himself in the middle of this factory and arranged his workforce in a circle around his central desk so he could keep an eye on what everyone was doing; Bentham went to visit his brother in the late 1780s, saw what he was doing, and decided the centralised arrangement could be applied to all

sorts of different situations - not just prisons but factories, schools and hospitals. (The Guardian, 2015). The basic setup of Bentham's panopticon is this: there is a central tower surrounded by cells. In the central tower is the watchman. In the cells are prisoners – or workers, or children, depending on the use of the building. The tower shines bright light so that the watchman is able to see everyone in the cells. The people in the cells, however, aren't able to see the watchman, and therefore have to assume that they are always under observation. As Nikolau recalls (Nikolau 2015) Foucault (1995) backed Bentham's (1791) belief that the panopticon's main benefit was that it provided *a maximum of efficient organisation*. Theoretically, an inmate cannot see whether there is a guard in the tower or not; thus, the inmate will behave as if surveillance were constant, inducing a sense of self-control on the inmate, and causing them to act as their own guardian (Dreyfus & Rabinow, 1983).

The Panopticon has become the leading academic metaphor for analysing surveillance, however, surveillance is becoming less attached to spatial observation (ie the Panopticon) and, as such, has become post-panoptic, contrasting “the fixity and spatial orientation of solid modern surveillance with the mobile, pulsating signals of today's flowing forms” as explained by Bauman and Lyon (2013). With the development of technology, it is becoming increasingly easier for surveillance to take place. In general, more and more people can be ‘watched’ or ‘tracked’ through novel technologies; causing the accumulation of data to grow to extraordinary levels and resulting in surveillance slipping into a liquid state (Bauman & Lyon, 2013).

With digitalization processes – as we will see - the notion of video or camera surveillance is typically the same as that detailed above: people under surveillance are, similar to the Panopticon, to be seen but to never know when or by whom: thus, under control but without physical intervention (Koskela, 2002).

As in Orwell's' 1948 famous novel “1984” the television able to watch spectators as they watch it is a concrete reality.

#### 4.1.2 Ergonomics

As Russel Flitchum (2000) recalls ergonomics is linked to the rise of Industrial design in the '20s of last centuries in the United States. One of the major representatives is Henry Dreyfuss (1904-1972)

who brought anthropometrics (now referred to as *anthropometry*) to bear on industrial design. This was realized in both the designs executed by his firm and in the publication in 1960 of the collection of charts of "Joe" and "Josephine" in *The Measure of Man: Human Factors in Design*. These were a series of anthropometric charts which designated all the most important dimensions of men, women, and children, that affected the design of products to be used by people.

“Although some human factors/ergonomics professionals have taken issue with the Joe charts and their derivations, industrial designers quickly adopted them, and they no doubt made a rising generation aware of a new level of complexity in shaping the built environment. (Russel Fritchum, 2000).

Ergonomics is a process of decision-making regarding layout, type of equipment and furnishings. An important development over the past 50 years has been the formalization and development of organizational design and management in human factors and ergonomics science and practice (Kleiner, 2008, p.461).

To achieve best practice design, Ergonomists use the data and techniques of several disciplines:

- anthropometry: body sizes, shapes; populations and variations
- biomechanics: muscles, levers, forces, strength
- environmental physics: noise, light, heat, cold, radiation, vibration body systems: hearing, vision, sensations
- applied psychology: skill, learning, errors, differences
- social psychology: groups, communication, learning, behaviours.

#### 4.1.3 Servicescape

Bitner (1992)' *Servicescape* is an applied stimulus-response model where the application is specific to the service sector. It is based on the assumption of the impact of physical space on customers and employees in service encounter environments. The stimulus factors are physical features (e.g. colour, store layout, lighting, music, ambient factors). The physical environment induces the emotional states in terms of pleasure or arousal. Approach behaviours include a willingness – or desire – to

move around and explore the store (e.g. propensity to buy). Contrary to approach responses, avoidance behaviours are an outgrowth of negative feelings about a service place, manifested by an unwillingness to purchase.

As recalled by Wakefield (1996) Bitner (1992) identifies three primary dimensions of the servicescape that influence customers' holistic perceptions of the servicescape (i.e. perceived quality) and their subsequent internal (i.e. satisfaction with the servicescape) and external responses (i.e. approach/avoidance, staying, repatronage). These dimensions are:

- (1) ambient conditions (i.e. weather, temperature, air quality, noise, music, odors),
- (2) spatial layout and functionality (i.e. the way in which equipment and furnishings are arranged, and the ability of those items to facilitate consumers' enjoyment), and
- (3) signs, symbols and artefacts (i.e. signage and décor used to communicate and enhance a certain image or mood, or to direct customers to desired destinations).

From a facility planning and management standpoint the second and third dimensions are more commonly referred to as "interior layout and design" (Brauer, 1992), or what Bitner (1992) succinctly labels as the "built environment."

Proposal for intervention may differ but are based on these elements.

#### *4.1.4 Zero-Time space*

As we have seen the concept of "zero – time-space" Becker and Sims (2000) has been introduced as a prescription for a space that can be procured and/or constructed and is ready for use in as short a period of time (as close to zero) as possible from when space is needed.

In its's "Workplace flexibility: Value for money" F. Becker (2002) highlights "some things companies can do, specifically, to constrain costs while increasing the speed with which groups are able to begin work in a new environment, accommodating change in group size and structure, and strengthening corporate image and work effectiveness: (p.8)

- Minimizing renovations in space and looking for ways of imaginatively using existing space and design. That may mean using a conference room for an executive team space, or a lobby for a central social hub and meeting area.

- Doing targeted branding. Identify a few key features such as a highly visible reception or break area and fit it out with inexpensive, but distinctive, furniture that establishes the desired image and feel at low cost.
- Zoning activities more carefully, to minimize the need for physical barriers between incompatible job functions (e.g., marketing and software development) that are costly and disruptive to move over time.
- Creating an aesthetic of flexibility; that is, celebrate visible diversity related to productive work. All spaces do not need to look like a furniture showroom. Create more “dens” and fewer “parlors.”
- Think about how to make cable drops and other technology solutions a simple and visually interesting design element, not just a morass of wires. Whimsy does not cost a lot, but in the right setting lowers costs and enhances flexibility.
- Using more freestanding furniture that workers themselves can reposition for a team meeting or to support a newly created work group in a team-oriented bullpen.
- Creating more permeable boundaries between groups that allows them to ebb and flow over time, by using flexible, easily movable, freestanding panels instead of walls or fixed panels.

#### 4.1.5 Activity based workplace

An interesting concept, in socio-technical approaches, is the so called “Activity based workplace (ABW)”. As Rianne Appel-Meulenbroek recalls (Appel-Meulenbroek et al., 2011, p2) “Office innovations have produced the so-called *activity-based workplace (ABW)* to support the productivity of present-day knowledge workers who mostly populate offices.”

As Rolfo recalls “with the development of mobile Information and Communication Technology the activity-based flexible office (A-FO) has been implemented worldwide. The reasons for implementing A-FOs are to decrease facility costs, increase flexibility and employee satisfaction (de Been et al., 2015; Hirst, 2011; Kim et al., 2016; Rolfö and Babapour Chafi , 2017), stimulate interaction, improve creativity and efficiency, reduce footprint, and attract personnel and external clients (van der Voordt, 2004; Vos and van der Voordt, 2002). The concept is also termed *multi-space office, flexible office, hot-desking office, non-territorial office, and activity-based office* (Brunia et al., 2016; Kim et al., 2016; Knight and Haslam, 2010; Ruohomäki et al., 2015)”

During the 1980s, the foundation for this concept came into being, called *the CoCon-office* (COmmunication and CONcentration) (Worthington, 1997). In the CoCon-office, people could use different types of office settings for different types of activities. In the 1990s, the low occupancy rate of these types of offices brought about the sharing of office workplaces. The introduction of mobile technologies increasingly made working time and place independent, thus supporting this trend. People could choose the right workstation for their work and even change several times a day, when they started up a different activity. To support these developments, management needed a supplementary working philosophy that required a paradigm shift (Stone and Luchetti, 1985). Knowledge workers became one-man businesses, according to the New Ways of Working philosophy by Veldhoen þ Company (2009). According to this philosophy, employees should be allowed to determine themselves where, when and how they want to carry out their job activities; with three core principles: trust, responsibility and performance. If we translate this to the activity-based office concept, it means that people, whilst in the office, can choose an activity-based workstation that best suits the activity at hand from a functional perspective and also matches with the employees' preferences. A well-known drawback of this activity-based office concept is a loss of identity, i.e. possibilities for personification of the workplace (Becker et al., 1991). If (individual) output, i.e. productivity is the leading principle, in time employees' behaviour will mirror a natural (– optimal) balance between functional needs and personal preferences”.

However workers/actors' choice is limited by given possibilities (which tend to extend thanks to digitalization); the interesting element in this approach is that actors are not “making space” in the sense that they are giving their interpretation to a given space, they can chose organisational space options according to their objectives/actions, “using workspace as a tool” (Wolfed L. 2010 p2).

As Linda Victoria Rolfö (Rolfo, 2018) synthetizes:

Activity-based working, or New Ways of Working, is a philosophy whereby employees determine for themselves where, when and how to conduct their work (Appel-Meulenbroek et al., 2011). Hence when re- locating to A-FOs (the Activity Based Flexible Office), employees face a change in ways of working. From a sociotechnical perspective, this autonomous, flexible working philosophy puts new demands on the interdependent components of the sociotechnical system. The components are (1) the technological, (2) the personnel, (3) the organizational, and (4) the external environment subsystem (Hendrick and Kleiner, 2016).

Normally, A-FO implementation lacks a systematic process and applies a general concept solution, rather than investigating internal organizational context such as tasks and activities performed by employees (Bjerrum and Bødker, 2003). Process factors contributing to successful changes are defined for industrial settings and open-plan offices. Success factors include for example (1) goals and change drivers, (2) employee participation, and (3) thorough process including good inventory and intervention activities (Davis et al., 2011; Vink et al., 2006; Vischer, 2008). However, there are insufficient studies examining process factors specifically for A-FOs. In summary, perceived performance and employee satisfaction vary in A-FOs. ”. (Rolfo, 2018, p1)

An interesting contribution in this sense comes also from non - academic research. The recent Leesman<sup>2</sup> report defines ABW (Activity Based Work) as follows: “Rather than forcing individuals to carry out the majority of their work at a single allocated desk or cubicle, ABW encourages employees to recognise that different work activities can be better supported by spaces and features designed specifically for that task. Spaces are designed to create opportunities for different activities, from intense, focused work and solo telephone calls to impromptu meetings or more formal collaborative work. But ABW strategies also need similar different approaches to technology, people and culture, operational process and business practice. All will need some level of re-design. (Leesman Report 2017, p6).

It is interesting to notice that Leesman provides a set of tools that measures employee experience via the Leesman Index – a global business intelligence tool that captures employee feedback on how effectively the workplace supports them and their work and provides the organisation with critical insight into how “their building is performing”. They offer to organisations the possibility to benchmark organisational space management performance against the world’s largest employee experience database.

It’s a quantitative and qualitative approach whose rapidity in providing answers, thanks to the new digital technologies, can provide information on instrumental choices for organisational space.

<sup>2</sup> Leesman is a British research and consulting group offering companies support to examine, how workplaces affect employee and organisational performance. They own, as they state on their website, “the largest independent database of workplace effectiveness data in the world”.



However, relying on what they define “the largest independent statistical analysis of its kind, ever undertaken” Leesman study into the performance of ABW presents contradictory findings: (Leesman report, 2017).

“Viewing the data at macro level, significant benefits of ABW environments are difficult to see. Comparing them on mass to a control group of non-ABW workplaces, they show higher pride agreement, marginally higher Leesman effectiveness scores, but lower productivity agreement. Presented with these results in isolation, it could be difficult to build a case for ABW adoption. However, at a micro level, the image is entirely different. The averages mask a dramatically diverse picture showing how ABW environments deliver significant performance improvements on multiple measurement lines for employees who modify behaviours to their new surroundings. But almost always, these employees are dramatically outnumbered by those who maintain distinctly traditional workstyles, putting them in conflict with their new environment.

This split story is of pivotal importance. Employees were asked to select one of four mobility personas that best describes their workstyle, ranging from static and sedentary to predominantly itinerant activity based. By comparing those who have adopted the most activity based working styles within ABW environments to co-workers who have yet to, we can identify the extent of the potential failings, risks and gains. This report highlights where the operational and organisational gains are at their greatest, but consequently perhaps raises more questions as to why so few employees are embracing the opportunities being offered to them in ABW spaces.”

The fact that the results the Leesman Index provides are contradictory seem to confirm the suspect that it is very complicate to define *a priori* organisational space as a given locale, even when having an increasing set of data on behaviours and results.

Practical examples seem to go in the direction of a more and more sophisticated approach in the way most modern organisations deal with organisational space, using Big Data available thanks to digitalization processes.

Serraview, founded in 2006 by a group of consultants whom “identified a need for a simple and intuitive enterprise platform for managing and optimising corporate real estate” (Seeraview website, 2019), proposes to its customer, which now include “multiple Fortune 500 customers”, services to

support a “transition from reactive to proactive with our intuitive space optimization solutions (Seeraview website, 2019).

On their web site they explain why one size (of organisational space) doesn’t fit all and how (digitally collected) data can lead workplace design and transformation:

The reason for this is simple: different groups in your organization have varying needs for space. For example, an accounting group or a call center might have 90 percent of the staff in the office at any given time. However, a sales team might have only 40 percent of the staff sitting at a desk in the office each day. Your teams also use different types of spaces. The sales group might need small private areas for phone calls, and multiple meeting rooms that accommodate 3-4 people. A software development team might work best in a cluster of open workstations or a team table, with a larger conference room for team meetings. That’s why your activity-based workplace design must include custom “neighbourhoods” designed specifically for the tasks your teams need to accomplish on a day to day basis. One or more teams will be assigned to each neighbourhood, and you will develop different seat-to-people ratios for each neighbourhood. For example, you might aim for a ratio of 12 people to every 10 seats for the accounting neighbourhood, but a ratio of 18 people to every 10 seats for the sales group. Each neighbourhood will be designed with the types of spaces needed by the teams using it. Workplace technology is becoming an essential strategic planning tool for developing and managing activity-based workplace design. Badge readers, lighting sensors, network sensors and Low Energy Bluetooth gather utilization data automatically, enabling you to see which groups are using which types of space and with what frequency. These technologies are getting both simpler and more sophisticated all the time: some can track a specific person to a specific desk, and you can even get light-powered sensors that work without wires or batteries. However, it’s important to know that each type of technology has its strengths and limitations. In all likelihood, you’ll want to deploy a combination of utilization tracking technologies to gather all the data you need to make decisions about activity-based workplace design.

As they explain in the Whitepaper “Managing Workplace Utilization” (Serraview,2019) tracking technology offers the opportunity to collect a lot of data on organisational digital space and

“workplace management software” can provide real-time reports useful to create the right mix of different space types and the right ratios of seats to people for each neighbourhood or business unit. The software also provides information on effectiveness over time so to allow adjustments to activity-based workplace design as business changes. This method underlines the crucial role the collection and analysis of spatial data plays in consulting services for companies.

Another interesting practical application is the one proposed by CBRE<sup>3</sup> which introduces the concept of *“Smart office”* and *“placemaking”* defined as “integrating design, amenity and community to create a unique space where people want to be,” (CRBE, 2019).

According to CRBE “an office is not truly smart until all its parts, from technology to services, fully supports each and every individual that work there. It is the employees who are to be supported in the office and all the parts, from process to services, need to be in place so that the office can fully support the employees in their work; the Smart Office is Centered around the people working there; Based on the activities that need to be performed in the office. A place designed for flexibility. Flexible in the way that it is accessible and used every day and it is open for changes and innovation over time. Enabled by technology which efficiently supports the needed ways of planning and performing work. Enhanced by the services provided both regarding function, convenience and experience. Sustainable in every possible way balancing both economic, environmental and social aspects (CRBE,2019).

The data CRBE is able to collect at global (worldwide) level on “space utilization” per countries and per type of industries offers to organisations interesting “benchmarking metrics” (such as workplace density and space utilisation) which can help in possible organisational space choice.

The purpose of data collection is to “support companies to implement a workplace strategy capable of achieving cost effective business transformation” (CRBE 2015) – which is a typical system centered approach – while the idea that the Smart Office supports employees in their work and needs to be a place for flexibility incorporates an element of limited and predefined opportunity of choice for the actor/employee.

<sup>3</sup> CBRE is a leading full-service real estate services and investment world-wide organization; it offers a broad range of integrated services, including facilities, transaction and project management; property management; strategic consulting and others

## 4.2 Actor centered approaches and Ecological Psychology

Organisational theories referable to actor centred approach propose methodologies and tools aiming at *understanding* organisational space through different declinations of ethnographic approaches. Interviews, diaries, photographs and videos together with participatory research support the researcher - or organisational actors acting as researchers - in defining *a posteriori* actors' sense making of organisational space.

### 4.2.1 Ecological Psychology and the theory of affordance

The 'ecological approach to perception' as coined by Gibson (1979) brought to light the concept of 'affordance/s'. This concept provides insight into the ecological perspective on how humans perceive objects in their environments. Emerging during the 1970s and 1980s, ecological psychology focuses on the relationships of living organisms with their environments.

Affordances symbolise the notion that physical objects, such as buildings, doors and windows have capabilities within an organisation that do not require an explanation in their use or application. For example, printers afford the opportunity to print, scan, etc., chairs, to sit, however in everyday practice, relaxing on a printer or scanning a chair is not afforded, therefore, objects as well as spaces have a material representation that affects their available uses (Pepper, 2008)

Therefore, in spatial design the extrinsic motivation can be seen as the spatial power materialised in intentional spaces, whereas the symbolic mode of thinking can be viewed as the meaning spatial design implies, such as harmony, interaction or self-realisation (Krippendorff, 1989).

As Nicolau (2015) synthetizes "In summary, the theory of affordances informs the theory of organisational space as it can be considered from an individual's behavioural perspective. Through affordances in objects and symbols to behaviour, it provides an alternative form of thinking about organisational space and perhaps the construction of organisational identities."

#### *4.2.2 Social practice design and Actor Network theory*

The approach of Social Practice Design (SDP) is based on the idea that problem solutions are in the hands of the organisation's personnel, and that person-centred counselling approaches are capable of empowering them and support them to success (Jacucci, 2007).

Moving from the conviction that "social practices cannot be 'engineered' but they are evolving as part of people's activities of integrating a new technology into their ways of doing" Jacucci uses the word 'design' to stress "intentionality, proactiveness, creativity and planning as necessary ingredients of organisational innovation processes".

In his view SPD is similar to any methodology for the social and it includes multiple perspectives into the usual triad of scientific paradigms: observation, analysis, and synthesis. Its core actions reside in the two basic phases of the 'design' approach for innovating social practices: an ethnographic analysis phase to identify outstanding problems in the area of social practice; a creative design phase for developing social practice innovations.

SPD involves practice-based research know how in action research, in participatory design – including ethnography -, and in counselling and is inspired by from phenomenology oriented social theories and afford many different social dimensions, like: active learning; creative design for innovation groups, and teamwork culture for cooperation; communities of practice computer supported cooperative work (CSCW) Jacucci, (2007).

Social Practice Design can be useful for the introduction of technologies in an organisational context. SPD serves in general the objective to 'make place' for IT. "In fact, SPD can be rooted in visions of technology as "inscription", so that reflexivity on this issue is the key to good implementation of social practice. Yet, aside from the design of IT, in organisations there is always room/necessity for interventions to solve organisational problems. So that, while employed for making place for IT, SPD can also address other issues, and propose solutions for those. These solutions may or may not entail the implementation of IT; or they may, but not as a central ingredient". (Jacucci, 2007)

### 4.3 Process centered theories and action – research

As we have seen process centred theories see organisations as processes of actions and decisions and not as reified entities, separated - as pre-ordained systems or emerging social constructions - from the actors or from the process. This approach has practical implications in the methodologies for organisational interventions. If system centred theories originate methods and tools to design and pre-define the best possible organisational structures, within which planning effectively organisational spaces plays an increasing role in terms of importance; and actors centred theories originate methods and tools whose aim is to explain – or support – the process of appropriation and sense making of organisational spaces by actors involved, the situation is quite different for process centred approach.

In the case of process centred theories organisational intervention takes place during the organisational process and organisational space is an analytical dimension of the choices of coordination and control of the process of actions and decisions, not a given local nor a social construction.

According to process centred theories rules and regulations partly exist *before* the process of actions and decisions and partly are finalized *during* the process of action and are inherent to the action.

In this perspective those that in actor and system centred theories are seen as spatial choices become choices of coordination and control of the action, partly predefined partly adopted by the actors in the process of the action. In such a context the only possible intervention or attempt to *planning* is a process of continuous re-structuring based on knowledge and expertise.

#### 4.3.1 Action Research

In terms of modalities of knowledge and intervention action research (Lewin, 1946) is a modality of knowledge which seeks transformative change through the simultaneous process of taking action and doing research, which are linked together by critical reflection.

The term “action-research” groups together different approaches which share a common need to define the nature of the relation between the meaning of the action for the actors involved in the process and the meaning of the action for the researcher.

We can identify different types of action-research from the way they solve the nature of this relation. In system centred approach action-research is a way to identify and collect organisational knowledge from organisational practices in order to codify it, rationalize it and distribute it. In order to do so an external researcher is needed: someone “expert” to support the setting of the problems in a wider (than the organisational) context and to support the elaboration of solutions.

In actor centred approach we may see two different levels of interpretation: the level of the actor-object of the research which becomes subject of the research and the level of the researcher or external consultant. The research’s task is to describe and to interpret the real organisation – mainly informal – which is in contraposition to the official one with the means of (external) interdisciplinary knowledge. The researcher – external consultant offers an external view point to be compared with the internal one. Still in an actor system approach the so called *solution of the concrete composition* (Albano et al, 2016) gives more importance to the viewpoint “internal” to the organisational process: actors are the only source of the knowledge needed for organisational change, the (eventual) participation of an external researcher is not in the role of expert *super partes* but in the role of *activist*, supporting one of the actors in the field, in most of the cases the “weakest” of more progressive one.

In process centred perspective action-research is declined with the so-called approach of *analytical composition* (Albano et al, 2016): there are pathways of analysis and intervention which allow the composition of theoretical knowledge with competencies which are elaborated during the process of action by actors.

The etic perspective – the perspective of the expert whom brings the language of “theory” – is transferred into the process and integrated with the emic perspective, the perspective of the actor – in order to manage the process of regulation of the action in a congruent way.

#### 4.3.2 The Method of Organisation Congruences

The Method of Organisation Congruences is an example of tools for action -research in process centered perspective.

The MOC - Method of Organisation Congruences - is an operative instrument developed by interdisciplinary research derived from a specific epistemological choice (the idea of organization as a process of choices, decisions, and actions oriented in a rational and limited way towards desired outcomes) and a theoretical choice (Theory of Organizational Action). (Masino, Maggi 2001)

The MOC allows to analyze and evaluate the relationships among the *desired outcomes* (goals of the process), the *structure of technical actions* (technical actions and relationships independent of the workers involved), the *social structure* (participants carrying out the technical actions, places, ways, times, and workers' involvement in the performance), the *technical knowledge* (the knowledge of the object to be transformed, of the means and tools for the transformation, and the transformation process). This procedure leads to the identification of the *Organizational Constraints* (OC) deriving from the ties, variabilities, and incongruencies of the organizational action. The detailed description of organized work may vary according to the depth of the analysis to be carried out. The OC evidences the reduction in decision ranges and the individual freedom unavoidably induced by each organizational choice.

With reference to spatial choices the Method of Organisational Congruencies offers a tool to assess their congruencies as part of the Social Structure. The table below presents an overview from of the MOC.

Place is considered as part of the social structure and asses accordingly.



Table 8 Description of the Analysis with the Method of Organisational Congruencies (MOC)

Desired outcomes					
Structure of technical actions	Social structure	Technical knowledge needed	Organisational Constraints (OC)	Risks	Damage
Coordination and control of technical actions:	Coordination and control of individuals:	Technical Knowledge:	They represent conditions of danger:	Risks for workers wellbeing:	Damage:
Technical actions and their relationships	Assignments of technical actions, <b>places</b> , times, ways, involvement in the performance	Required to reach the desired outcomes, and related to the object and means tool of process transformation	Deriving from ties, variabilities, and incongruencies among the different levels of the organisational action. They may lead to risks for workers' wellbeing	Defined by an interdisciplinary biomedical evaluation of the OC. They can be measurable or not.	

From Salerno, Tartaglia, Garzi, Biagioni, Rulli, Maggi and Grieco 1998

## 5. Which challenges does digitalization bring to organisational space?

### 5.1 The impact of new technologies on organisations and organisational space

In the last years new technologies are rapidly changing (in fact, have already changed) the scenario: the apparent absence of spatial and temporal constraints in digital organisations (Fabbri, 2018) together with the software's ability to provide a new and complex form of automated spatiality, (Thrift N, French S, 2002) and the possibility modern technologies offer to track and trace most objects and activities on a continuous basis, constantly adjusting time and space in real time, so producing a progressive standardization of space and resulting in what is now called micro or hyper-coordination (Katz and Aakhus, 2002), pose new questions about organisational space and work behaviours.

In this perspective, as Anouk Mukherjee observes in his *Organizational Space Collapsed, Organizational Space Expanded: Experiencing Space with ICT, Affordance and the Body* (Mukherjee 2017):

One of the most obvious manifestations of changes to organizational space facilitated by ICT is the possibility of remote work. The idea of using ICT for working away from the office is not a novelty by any means. Telework, for example, has been around since the 1970s and appears to be growing dramatically in the last few years. Despite a lack of recent statistical data and a problem in defining what constitutes the practice (Bailey & Kurland, 2002), the evidence of its rise is very solid. Although telework – a term coined by Jack Nilles in 1973 – has been associated historically with the emergent practice of working remotely, myriad terms have appeared lately: mobile work, agile work, distributed work, remote work, smart working (in the UK) and workshifting (in Canada).

The research questions that this first change generates concern workers, organisational environment and technologies, as the ones Mukherjee tries to answer in his essay (Mukherjee 2017, p 8)

Organizational life is just as affected. The experience of workers is disrupted by the ever-increasing intensity of interactions with ICT artefacts. How does the worker experience space

in these conditions? How do workers interact with the immediate physical environment when they are staring at their screens? How is the experience of space produced, and what is the role of ICT in producing it?

Moreover, a recent document by EUROFOUND (2018) identifies the changing relations between organisation and space, as one of the criteria to define the new forms of employment.

New forms of employment are characterized by:

“a place of work other than the premises of the employer (in this context, traditional teleworking was not considered – only ‘more mobile’ work relationships) and strong and widespread support of ICT, where this technology changes the nature of work relations or patterns “ (EUROFOUND 2018, p.7).

ITC based work (the new form of employment more affected by these changes in the relation between space and organisation, according to EUROFOUND definition)

‘takes place wherever and whenever it suits the work activities, task, business schedule and lifestyle of the worker; it is performed not necessarily at a specific place but also ‘on the road’ (Andriessen and Vartiainen, 2006; European Commission, 2010). .....However, in contrast to teleworking, mobile work does not take place in a fixed location, but more flexibly in a variety of places or even while traveling (EUROFOUND 2018, p11).

The document identifies elements of advantage for employers (costs reduction, flexibility) and for workers (reduced commuting, work-life balance opportunities, enhanced autonomy, flexibility) but at the same time stresses some criticalities (overload of information leading to insecurity and stress, interference with worker’s privacy, long working hours and insufficient resting periods, low wages due to personal difficulties in to organise own work). Few of these criticalities and risks are explicitly related to organisational space: the risk of isolation for ICT-based workers, the lack of social contact due to the absence of face-to-face communication; ergonomic risk factors such as poor visual interfaces (due to the small display screens and controls of some mobile devices); problems related to effective glare; insufficient levels of ambient light; excessive noise levels due to high volume settings to compensate for background noise; bad posture related to the use of devices in an unsuitable environment; and continuous exposure to radiation and electromagnetic fields arising, from the use of mobile devices.

Nowadays, when the given for granted relation between organisations and physical space is entering a new era due to digitalisation of organisational processes, and work increasingly gets performed outside the typical physical, spatial and temporal boundaries of the organization or within the context of third spaces and liminal spaces (Oldenburg, 1989; Garrett et al., 2017; Sewell and Taskin, 2015; Spinuzzi, 2012; Waber et al., 2014; Johns and Gratton, 2013), a new focus on space is emerging.

EUROFOUND document is a signal of the interest at EU political level on changing dynamics in the relation between organisational processes and organisational space in the age of digitalization.

It is also interesting to note that even though the vision of future anticipated by Townsend and De Marie in 1998 (Townsend, DeMarie, & Hendrickson, 1998: 17)

“A group of technologies, including desktop video conferencing, collaborative software, and Internet/Intranet systems, converge to forge the foundation of a new workplace. This new workplace will be unrestrained by geography, time, and organizational boundaries; it will be a virtual workplace, where productivity, flexibility, and collaboration will reach unprecedented new levels.”

is nowadays reality it is also true that physical organisational spaces have not disappeared from our working lives. Investigating the nature of these ‘hybrid workspace’ (Halford, 2005) maybe one of the options for better understanding the future of work.

ICT are bringing to organisations even more substantive changes.

In its recent paper on *Automation, digitalisation and platforms: Implications for work and employment*, Eurofound (2018) identifies in the micro-processors the key technology behind the digital revolution.

The key technology behind the digital revolution is the microprocessor It is the quintessential general-purpose technology, since it can be applied to any type of process that involves information. Microprocessor- based technologies and devices have been developed for the processing, storage and communication of information of all kinds. The possibilities for re-combinations and new applications are growing rapidly. The steady reduction in production

costs and increase in capabilities of microprocessor-based technologies further leverages their applicability and combinatory possibilities. (p.9)

This new technology impact is wider than just allowing remote working. In EUROFOUND words (p.18):

The key advantage of digitalisation is that the processing, storage and communication of digital information is vastly cheaper and more efficient than the analogue equivalent. By digitalising a process, it can be understood, controlled and manipulated more effectively. To better illustrate this idea, the focus of discussion will turn to three of the key technologies driving the digitalisation of economic processes:

- Internet of Things (IoT)
- 3D printing
- virtual and augmented reality

The processes creating the Internet of Things attach sensors to outputs, inputs, components, materials or tools used in production. These feed into a real-time digital model of the entire process. In turn, this can be analysed, monitored and controlled using algorithms, to an extent that would be impossible in the physical world.

3D printers and virtual reality can move entire economic processes to the digital realm – for example, the provision of some types of face-to-face service. And augmented reality can blend the digital and physical worlds by superimposing digital information over human perception of physical reality.

All these technology-driven changes have a clear impact on the relation between organisation and space.

Another crucial effect of digitalisation, in terms of the division of labour, is the increasing irrelevance of the physical location of labour input in the production process; this could contribute to a further and perhaps final round of globalisation. Richard Baldwin (2016), argued that telepresence (virtual reality technology) and virtual and augmented reality can facilitate the delivery of face-to-face services from any distance, breaking the final boundary that has protected many service activities (and jobs) from globalisation. (p18)

The digitalisation of economic processes raises some serious concern for the autonomy and privacy of workers. If every single object in the workplace is a sensor that feeds real-time information to a centralised management algorithm, workers may legitimately feel that their autonomy and privacy are being compromised. The other side of the equation is that improved intelligence and information on work processes can reduce accidents, and dispense with the need for certain isolated, repetitive tasks. (p18)

Moreover, new organisational spaces are emerging, as for instance platforms:

Platforms are digital networks that coordinate transactions in an algorithmic way. There are two important elements in this definition. First, the network is a structured digital 'space' where goods or services can be offered or requested. These online spaces systematically collect, organise and store large amounts of data about the platform users and transactions. Some of these data are fed back to users as records of successful transactions or evaluations, which serve both the purpose of facilitating trust between users and incentivising good behaviour.

The second key element of platforms is a set of algorithms for matching and coordinating transactions in an automated way. The algorithms provide a governance structure to the platforms, incorporating encoded rules as well as automated monitoring and enforcement mechanisms. Platforms are hybrids of markets and firms: the network and algorithmic components of platforms perform the functions of each of those basic economic institutions (p.19).

The transformation of organisations is deeper than creating "hybrid" organisational spaces, as Fabbri clearly explains. (Fabbri 2018, p.30 )

From this standpoint, digitalization transforms the organization inasmuch as it substitutes analog and therefore, to some extent, tacit and informal rules for action and decision with digital and therefore explicit and formalized rules for action and decision. In a digitally transformed enterprise, actions and decisions, at every logical or empirical level (decision making, coordination and control, and execution), are increasingly performed *digitally*, i.e. using *digital* information, within *digital* work- flows, which are hosted in corporate digital

premises, which are accessible at anytime from anywhere via *digital* and mobile devices. As a result, we witness the erosion of space-time coordinates of work.

In fact, we need to understand digitalisation as a social phenomenon, not just a technological one (Reichel 2018) the importance of unpacking and understanding the relationship between ICT and space is imperative. (Mukherjee 2017)

Developing new ways of dealing with materiality in organizational research is critical if we are to understand contemporary forms of organizing that are increasingly constituted by multiple, emergent, shifting, and interdependent technologies (Orlikowski 2007)

## 5.2 What happens to organisational space when the work goes digital ?

As introduced above digital processes re-define the dimensions and features of organisational space: we assist at the same time at the collapse and at the expansion of (organisational) space through new technologies: workers increasingly loose a “physical office” but, at the same time, interact with technological artefacts which expand their organisational space, transcending the limits of their physical bodies (Mukherjee 2017).

Information and communication technologies (ICT) allow flexibility of time and space and enable work to be carried out at home, while on the move, or in transitory spaces such as cafes, trains and hotels.

From an organizational point of view, three level of changes are involved: change on ICT technology, change on the culture and management organization and change on the office. (Hasbi, 2018)

Moreover, digitalization processes not only allow remote working, with a level of efficiency and costs reduction that was never experienced before, they also offer technical solutions suitable to integrate physical workplaces with digital environments, creating what Manovich has defined as “augmented space: the physical space overlaid with dynamically changing information” (Manovich, 2002).

*Augmented space*, as Manovich explains “is a new kind of physical space, which involves: *overlaying dynamic data over the physical space*. This overlaying is often made possible by the tracking and

monitoring of users. In other words, the delivery of information to users in space, and the extraction of information about those users, are closely connected. Thus, *augmented space is also monitored space*".

Augmented space is the physical space which is "data dense," as every point now potentially contains various information which is being delivered to it from elsewhere (Manovich 2002).

The term "augmented space" is derived from the already established term "augmented reality" (AR). Coined around 1990, the concept of "augmented reality" is normally opposed to "virtual reality" (VR)<sup>4</sup>. In the case of VR, the user works on a virtual simulation, in the case of AR, she works on actual things in actual space. Because of this, a typical VR system presents a user with a virtual space that has nothing to do with that user's immediate physical space. (Manovich 2002)

In his "The poetics of augmented space" (Manovich 2002, revised 2005), Manovich also offers an interesting overview on how digital technologies have progressively transformed the relation organisations – and human beings – have with space.

As he recalls:

"The 1990s were about the *virtual*. We were fascinated by the new virtual spaces made possible by computer technologies. Images of an escape into a virtual space that leaves - physical space useless, and of cyberspace – a virtual world that exists in parallel to our world – dominated the decade. This phenomenon started with the media obsession with Virtual Reality (VR). In the middle of the decade graphical browsers for the World Wide Web made cyberspace a reality for millions of users. During the second part of the 1990s, yet another virtual phenomenon – dot coms – rose to prominence, only to crash in the real-world laws of economics. By the end of the decade, the daily dose of cyberspace (using the Internet to make plane reservations, check e-mail using a Hotmail account, or download MP3 files) became so much the norm that the original wonder of cyberspace so present in the early cyberpunk fiction of the 1980s and still evident in the original manifestos of VRML

<sup>4</sup> With a typical VR system, all work is done in a virtual space; physical space becomes unnecessary, and it's the user's visual perception of physical space is completely blocked. In contrast, an AR system helps the user to work in a physical space by augmenting that space with additional information. This end is achieved by laying information over the user's visual field. An early scenario of a possible AR application that was developed at Xerox PARC involved a wearable display for copier repairman, which overlaid a wireframe image of the copier's insides over the actual copier as it was being repaired (Manovich 2002)



evangelists of the early 1990s - was almost completely lost. The virtual became domesticated. Filled with advertisements and controlled by big brands, it was rendered harmless. In short, to use Norman Klein's expression, it became an "electronic suburb."

At the beginning of the twenty first century the research agendas, media attention, and practical applications have come to focus on a new agenda – the physical – *that is, physical space filled with electronic and visual information*. The previous icon of the computer era – a VR user traveling in virtual space – has been replaced by a new image: a person checking her e-mail or making a phone call using her PDA/cell phone combo while at the airport, on the street, in a car, or any other actually existing space"

The augmented physical space is full of technological applications that *dynamically deliver dynamic data to, or extract data from, physical space* - these technological applications include ubiquitous video surveillance, cellphone technologies, smart objects, wireless location networks, wearable technologies, intelligent architecture, suitable to collect data from physical space and to process data in physical space.

In this sense augmented space provides a challenge and an opportunity for many organisational architects to rethink their practice, since architecture will have to take into account the fact that virtual layers of contextual information will overlay the built space.

Another way to explain the impact digitalization processes have on organisational space is Bruni's concept of Technologically Dense Environments (Bruni, 2017). Bruni describes TEDs as a 'sensitizing concept' - concepts suggesting directions in which to look - see Blumer, 1969).

TEDs characteristics are: working implies complex sociomaterial practices and a specific technological know-how; human actors and technological objects work 'together'; interaction is made possible by technologies and time and space are reconfigured on the basis of such interactions (and technologies).

In Bruni's view "technology reconfigures space"; put otherwise, it is not enough that an environment comprises a large number of technologies, or that patterns of action require the use of various technological artifacts, for that same environment to be defined as technologically dense.

It is necessary instead for technological density to emerge in relational terms as a problem, routine, or a spur to improvisation”.

When trying to understand the relation between organisational space and new technologies, the concept of 'space of flows' (versus 'space of place') developed by Manuel Castells (2010), which relates to organisational space but not exclusively, is of particular relevance for the theorization of the role of new digital technologies in the shaping of space. Castells describes the “space of flows” as follows (2010: 442):

...our society is constructed around flows: flows of capital, flows of information, flows of technology, flows of organizational interaction, flows of images, sounds, and symbols. Flows are not just one element of the social organization: they are the expression of processes *dominating* our economic, political, and symbolic life. If such is the case, the material support of the dominant processes in our societies will be the ensemble of elements supporting such flows and making materially possible their articulation in simultaneous time. Thus, I propose the idea that there is a new spatial form characteristic of social practices that dominate and shape the network society: the space of flows. *The space of flows is the material organization of time-sharing social practices that work through flows.* By flows I understand purposeful, repetitive, programmable sequences of exchange and interaction between physically disjointed positions held by social actors in the economic, political, and symbolic structures of society.

The interesting element, in the perspective of the digitalization of organisational processes, is that in contemporary society time-sharing interactions are considered possible in “space of flows” and thus do not need “physical continuity” (see in the quoted text: interaction between physically disjointed positions).

More recently investigation considered the perspective of the body as a medium of sensory receptors and motor organisms through which the mind interacts with the environment (Gigerenzer & Goldstein, 1996).

New technologies and digital processes offer the possibility to expand space characteristics, generating a set of new definitions for the place where work happens.

The table below offers an overview of these emerging concepts:

*Table 9 New forms of organisational space?*

New form of organisational space	Definition
<b>Virtual (Cyber) space</b>	<p>A space that exists in parallel to physical space and is made possible by computer technologies, and namely the Virtual Reality Modelling Language.</p> <p>In the first part of the 1990s, the inventors of this language designed it to model and access 3-D interactive virtual space or cyberspace</p> <p>(Manovich, 2002)</p>
<b>Augmented space</b>	<p>A new kind of physical space, which involves: <i>overlaying dynamic data over the physical space.</i></p> <p>Augmented space is the physical space which is “data dense,” as every point now potentially contains various information which is being delivered to it from elsewhere.</p> <p>(Manovich, 2002)</p>
<b>Hybrid space</b>	<p>Indicates the spatial reconfiguration of work through multiple locations.</p> <p>New information and communication technologies enable the spatial reconfiguration of work opening up possibilities for work to take place across multiple locations. The spatial hybridity changes the nature of work, organisation and management across domestic space, organisational space and in cyberspace. (Halford, 2005)</p>
<b>Transitory space</b>	<p>It is a space, conceived for activities other than working, which is occasionally used for working activities (Eg: cafes, trains and hotels)</p>
<b>Technologically dense environments (TED)</b>	<p>Indicates the relation of technologies and workers in physical spaces: working implies complex sociomaterial practices and a specific technological know-how; human actors and technological objects</p>

	work ‘together’; interaction is made possible by technologies and time and space are reconfigured on the basis of such interactions (and technologies). (Bruni, 2017).
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### 5.3 Which is the relation between work and space in the digital era?

As shown in previous paragraph (2.2.1) more recent contributions have started to investigate the relation between space and new technologies, focusing on space, networking and movement, highlighting how digital processes re-define the dimensions and features of organisational space and noticing how we assist at the same time at the collapse and at the expansion of (organisational) space through new technologies: workers increasingly loose a “physical office” but, at the same time, interact with technological artefacts which expand the organisational place, transcending the limits of their physical bodies (Mukherjee 2017). Questions start to arise about *where* work happens, if digitalization processes *create new organisational spaces* or if digitalization processes transform organisational place in TDE –Technologically Dense Environments (Bruni, A., Pinch, T., Schubert, C. 2013).

This tension between *collapse* and *expansion* of organisational space is more evident for system centred and actor centred conceptions which see organisations as entities, separated from the actors, where work takes place. The existence of this tension questions the topographic metaphor and its capacity to explain organisational space, especially in the light of digitalization processes.

As we have seen system centered and actor centered conceptions of organisations have in common the topographic view on organisational place. In theories referring to both conceptions organisational place is seen as a distinct component of organisational structures, a component which can be planned, organised, controlled in order to favour workers expected behaviours (system centred approaches) or, on the contrary, a component which is an external (to individuals) feature which cannot be planned or designed following organisational needs since it gets its meaning (sense making) only through individual workers enactment. In both cases organisational place is a *component of organisational structure*, which can be described - *a priori* or *a posteriori* - in terms of borders, distance, dimensions, symbols.

Applying the topographic metaphor to understand the effects of digitalization processes on organisational space it means to analyse the new options offered by digital technologies as new

*digital* spaces. These news spaces - as the old, physical ones - are seen as reified dimensions of the organisation, to be designed *a priori* or explained – through sense-making actor centred narratives – *a posteriori*.

Theories referring to system centred and actor centred conceptions tend to extend this topographic view to the so called digital organisational space, with the current use of terms whose origin is clearly linked to a geographical background (*digital spaces, digital environments*). Digital processes are considered responsible for the creation of new spatial dimension which are seen as - and approached with – an extension of the topographic metaphor. Physical organisational space and digital organisational spaces coexist, integrate, conflict. New definitions emerged: the hybrid, the technologically dense, the smart, the virtual, the transitory.

However, the narrative is not convincing: as we have seen, when the work goes digital organisational space seems to collapse and to expand: organisational *borders* seem to blur (work can happen *anytime anywhere*); *distances* acquire different meanings (a group of workers can experience an high level of proximity thanks to innovative communication means which allow them to see each other, work in a shared digital environment *and* simultaneously contribute to a shared document while being physically very distant, even. on the two sides of the Planet); *dimensions* affect differently physical and digital space (while physical offices reduce their dimensions and become more flexible new technology offers increasing opportunity to expand and formalize digital environments) while *symbolic* elements acquire new levels of complexity due to the fragmentation of the individual experience of different forms of space since very different types of organisational spaces – the physical one, the virtual, the augmented one - *de facto* coexist simultaneously for the actors (workers) and for the system. It is not clear *where - in which kind of organisational space -* the work is taking place.

Systems centred theories use technological facilities to elaborate more and more sophisticated approaches and tools aimed to design and plan the use of this expanded (thanks to digital processes) spaces. Sociotechnical approaches propose to workers hybrid organisational places suggesting a set of options among which they can choose using technological (digital) options at their best: “smart working” is proposed as an organisational space solution which integrates remote working possibilities with a new workplace design suitable to blend open spaces with enclosed options,

mitigating the effects on concentration, productivity and communication that a continued absence of privacy produces in teams.

Actor centred theories propose advanced and digitally integrated tools to detect workers interpretation and experience of organisational space, extending the interest towards virtual environments and trying to assess – still from the individual perspective – the effects in terms of satisfaction of digital organisational places.

However, digital organisations - or all organisations when affected by digitalization processes – blur the traditional space-time coordinates. The limits of a topographic metaphor, which were already evident in the contractions detected by empirical studies on physical organisational space. (Sailer 2010, Elsback and Pratt 2007), explode in the difficulties encountered in defining the *borders, the perimeter, the distances* within a digital organisation.

The result is – as we have seen in the previous paragraph – a never ending attempt to map these *new types of space* and to define them according to the most innovative of their characteristics, running after a continuous and fast technological innovation, with the risks that the focus on the mapping exercise catalyses all the energies leaving no room for a critical assessment of the impact or consequences for a certain organisational process (or for the actors and the organisation) to adopt one or the other of the possible spatial solutions, according to its actual objectives, purposes and means.

In this context a conception which doesn't need a topographical reference since it considers organisational space as an analytical dimension of the process of actions and decisions which constitutes the organisation, may offer interesting keys for understanding the so-called spatial dimension of digitalization. In a process centred approach new spatial solutions offered by digitalization processes can be seen as technical organisational solutions instead of new forms of organisational space, which are difficult to define according to a topographic perspective.

In process centred perspective the reflection on the so called “digital space” can be approached not looking at new spaces' characteristics *per se* (as in the topographic approach prevailing in system centred and actor centred perspectives) but as part of a more general reflection on the places and

times for the implementation of the process of actions and decisions. Since organisational space is an analytical dimension at all levels of the organisational process the variety of possibilities for the implementation of the process may include new opportunities offered by digital transformation, together with more traditional spatial solutions.

To see organisational space as an analytical dimension of the different levels of the entire organisational process puts organisational place in the core of the organisational process at the same time avoiding to exaggerate the relevance of the “spatial turn” and the proliferation of a never ending set of definitions for new spaces: the choice of organisational place for the implementation of the action is implemented thanks to technical competences and knowledge, which in process centered approach are part of the action from which they can be distinguished only at an analytical level and not at an empirical one.

This perspective’s conceptual framework for analysing the *place of the organisation* can be maintained with the emergence of “news spatial solutions”, which are considered for their actual coherence with organisational process: the *place of the organisation* becomes a choice of methods and means, coherent at the three levels of the organisational process.

The advantage of this perspective is that it shifts the focus from the analysis of the reified digital space – whose continuous and rapid evolution needs to be mapped and explained via new concepts, names and characteristics - to the organisational process where *space* as well as *time* remains an analytical dimension useful to assess the coherence of the mechanisms of control and coordination of the processes of actions and decisions.

### *System centred conception and digital space*

System centred theories approach digital organisational space as they approach physical organisational space, trying to use the amount of data available through the interactions workers have in augmented and tracked organisational spaces to provide effective spatial solutions.

In this sense, data collection and data elaboration become key assets in new spatial designing methods, as it happens for Activity-based working: big consulting firms offer as a competitive

advantage to their clients their databases of spatial uses and spatial practices as an asset for designing/planning the most performative spatial solutions.

Results are not always as satisfactory as expected, however, as explained in a recent paper comparing different empirical studies on Activity based Working (Candido, C., Thomas L., Haddad, Zhang F. , Mackey, M, Ye, W. (2018) the large amount of data collected go in the direction of providing always more sophisticated solutions, “ Results from post-occupancy evaluation (POE) surveys (n=896 responses), spot measurements of indoor environmental quality (IEQ) and step-count monitoring (one case study; n = 20 participants) before and after relocation are reported. A total of 10 workspaces participated (six combi and four ABW) in this study. Design features were documented and analyzed. While there were limited differences in the measured IEQ conditions between office layouts investigated here, ABW workspaces yielded significantly higher satisfaction results on key IEQ dimensions, perceived productivity and health. Office layout was also found as a significant (or nearly significant) predictor of occupants’ lightly active and sedentary time but did not affect occupants’ daily step counts and distance they travelled.”.

The continuous improvement of data collection and data processing systems – using spatial sensors, workers’ devices and traces of activities in digital spaces to collect and store information on workers productivity and behaviours– allows to predict for the next years a continuous evolution of organisational space design methods and tools with the aim of reaching a constantly increasing efficiency in the use of spaces. However new elements of tension seem to emerge at the horizon: how would a sophisticated data driven design of organisational space be compatible with the mainstream narrative of digital/hybrid spaces as the reign of workers freedom and autonomy? Although “remote working” or “smart working” is presented as a (spatial) solution enhancing workers’ autonomy since it blurs spatial constrictions (being in the office) would workers be autonomous or free in their modalities to use organisational spaces (other than offices) once “the best possible spatial solutions” will be designed, moving from the analysis of a massive amount of data?



### *Actor centred conception and digital space*

Also actor centred theories tend to approach digital organisational space as they approach physical organisational space, with a focus on workers perceptions and their spatial practices.

As mentioned above in terms of the relation between the actor and the new technologies, one of the most interesting contribution is Wanda Orlikowski's "human-centered perspective" (Orlikowski 2007, p.2)" on technologies. She aims to develop new ways of dealing with materiality in organizational research, considering materiality critical to be able "to understand contemporary forms of organizing that are increasingly constituted by multiple, emergent, shifting, and interdependent technologies" (Orlikowski 2007, p.1)". In her view technology in organisational space acquire a specific meaning thanks to the presence of the actor whom contributes to define the organisational space – as a separate entity - through his/her material involvement in the use of these technologies.

From the actor/workers perspective an interesting reflection comes from Susan Halford (2015) reflection on *hybrid spaces* and what it means for an individual to work in different spatial contexts. As she clearly points out:

"One of the central issues in the study of new technology, work and employment has been the way that information and communication technologies (ICTs) enable the *spatial* reconfiguration of work, management and organisation. Specifically, there has been wide ranging interest in the (interconnected) possibilities for teleworking and for virtual organisation. In the former case, ICTs are used to enable remote working, usually from home. In the latter case, similar technologies are employed to enable virtual organisational structures and relationships to operate with little or no face-to- face contact. In spatial terms, there is a hollowing out of the fixed organisational work-space and a polarisation towards the *relocation* of work into domestic space on the one hand and the *dislocation* of work into cyberspace on the other. In both cases, there has been speculation and research suggesting that new organisational, social and personal relationships may accompany these new spatial arrangements, highlighting the entangled interrelations between space, work and organisation. However, research on both homeworking and virtual organisation fails to address directly an important empirical aspect to this re-spatialisation. That is, that significant numbers of people work *both* from home *and* from an organisational workplace, using virtual technologies to

connect the two spaces. Whilst previous debates about tele- working and virtual organisation are relevant to this group, none explores directly the individual or organisational practices, experiences and implications of this mode of Hybrid workspace working. Being employed to work both at home and also in an organisational setting, using ICTs to maintain workloads and relationships across both domestic and organisational spaces raises new questions that lead beyond the sum of existing debates about teleworking and virtual organisation. Specifically, these concern *hybrid work- space*. These individuals work at home and engage in embodied organisational spaces; they conduct relationships virtually and in close proximity. How does this combination of organisational and domestic spaces, mediated in cyberspace, impact on practices of work, organisation and management?" (Halford 2005, p1).

In her view "spatial hybridity changes the nature of work, organisation and management in domestic space, in cyberspace and in organisational space" and this demands that we consider the spatial 'package' of working lives, rather than focussing on working practices, organisation or management in just one locale (Ball and Wilson, 2000), or at least, that we consider the spatial specificity of the findings from particular locales. Focusing on the spatial package shows that working lives are constructed in complex and multiple ways: that there is not one outcome in contemporary re-spatialisations of work, but several and perhaps many. This suggests a new approach to the perennial question raised in various guises in the study of homeworking: does homeworking represent a new form of organisational control operating through discursive power and subjectivity, or does homeworking offer workers' new forms of autonomy and flexibility? Whilst the organisation and control of office spaces has been tied theoretically to control and resistance and practically to the quality of workplace experience (Baldry, 1997, 1999); and working in domestic space to new practices of self-surveillance (Felstead and Jewson, 2000; Brocklehurst, 2001; Dimitrova, 2003), we should consider how hybrid workspace shapes the operation of these power relations".

#### *Process centred conception and digital space*

The more digitalization expands organisational space options – creating virtual environments or offering common physical places to workers belonging to different organisations or proposing hybrid spatial solutions – the more defining the borders of organisational space becomes complicated, however it is still necessary to identify the place of the organisation.

Considering organisational space as an analytical dimension of the process of actions and decisions which constitutes the organisation it means to consider the place of the implementation of the action as one of the dimensions of the process of coordination and control of action and decisions.

The place of the organisation is not a given locale nor a social construction it is a choice of coordination and control, in coherence with the organisational process.

In this sense the characteristics of organisational space – physical, virtual, augmented or hybrid - are relevant as part of control and coordination choices and the place of the organisation can be extended until where the organisation can exercise its control.

The focus on the place of the organisation as a coordination and control choice allows to look at news digital spaces options – those that we already know and those that will possibly come into reality thanks to future innovations and that we cannot even imagine yet – as attributions of the actions, which can be assessed when assessing the social structure of the process, in coherence with aims and purposes.

Spatial solutions cannot be defined *a priori* – with the additional risk that given the speed of change of digitalisation process when defined they are already obsolete, overcome by digital evolution – nor can be only understood *a posteriori* – as a sum of individual experiences and practices with technological artefacts – spatial solutions are organisational choices and, in this sense, they can be – de facto are – (if appropriate) flexible enough to include digital innovation as much as the organisational process is including digital processes in the process of action.

In addition, the focus this conception allows on the place of the organisation as part of coordination and control choices brings at the center of the analysis organisational objectives and strategies, power and control dynamics, avoiding distractions on *how* organisational place is characterised and concentrating on *why* - for which purposes? For the benefit of whom? With which rationale? - certain spatial choices is preferred – by the organisation – instead of another in terms of coordination of control.

This aspect is extremely interesting for all those stakeholders – social partners, policy makers – which are trying to understand where the organisational place of new form of working is, and

especially when we consider those new forms – for instance platform working – which have completely lost any contact with a physical organisational space.

## 6. Conclusion

### 6.1 Why it is important to have an analytical framework to understand the place of the organisation

As already discussed in the introduction the interest towards organisational space seems to grow among academic and practitioners as the organisational space seems to disappear in its physical features and to expand towards new non-physical and digital settings.

Once upon the time, when it seemed possible to identify a perfect coincidence between the organisational legal identity and the physical boundaries of its premises – the office, the workplace, the engine, the factory – there was a limited interest in reflecting on the *definition* of organisational space as a concept and on the place of work.

It was almost clear that the organisational space was the physical space where people went to work: a clearly defined environment, with its concrete borders (the buildings, the plants, the walls) and a physical settings organised in a way to support workers to perform their tasks, thanks to the presence of tools and means needed to perform their work. Notwithstanding the fact that historically work had been performed in less separated, structured and dedicated physical environments (craftmen and craftwomen in their houses for instance) the main discussions, in the post- industrialized era, was about how to design the physical setting in order to achieve the best possible performance and the best possible organisational system and to control as much as possible how this setting could be interpreted (understood, appropriated) by internal (workers) and external stakeholders (clients).

Although probably even in those times organisational boundaries where not so defined, and work could happen outside organisational space or even in the physical space of a different organisation – let's for instance think about consultants working for a certain time with their clients in their client's organisational premises while still organisationally depending to their firm, or workers depending from a construction firm implied in the restoration of a the organisational building of an organisation to which they were not formally tied – these situations were not considered of interest since in most cases they all implied physical organisational spaces of some kinds.

With the evolution digitalization brings to work processes and to organisations – and the possibility they offer to work *any time anywhere* - the place where work happens tends to be less and less coincident with a defined physical environment and, for this reason, the need to understand these new forms of work stimulates the debate on the spatial dimension.

New technological options offered by digitalization processes are presented - and approached – as new spatial dimensions – the digital, the virtual, the cyber, the augmented, the hybrid, the transitory – as if understanding their characteristics through a topographic lens could help to make these new modalities of working more intelligible.

However, what happens in fact, is that under the attacks of digitalization processes the topographic approach to organisational space shows all its limits: not only in explaining so called new emerging *places of work* but also in the understanding of more traditional physical working environments, which co-exists with the new solutions.

It seems every day more difficult to understand where the place of the organisation is, where work happens, if we use as a framework a topographic approach considering organisational space as something separated from the organisational process and the actors in it.

On the other hand, understanding the place of the organisation is nowadays crucial for a set of practical implications not only concerning strictly organisational space definition but also workers' rights and workers' well-being.

The emergence of what are generally described as “new organisational spaces” - as co-working spaces, platforms for which workers perform tasks without ever meeting their employers, smart working facilities which extend the possibility to track workers activity on one side and blur the distinction between personal and work life on the other - poses a set of regulatory issues - in terms of workers' rights, stress deriving from work activities, safety and privacy - in which understanding the place of organisation is relevant.

The mainstream discussion on the characteristics of new digital spaces risks to absorb the greater part of the debate, leaving limited room for a further investigation of the relation between the specific organisational process and its choices of places for implementations.

The exercise implemented so far lead me to the possibility of considering a different perspective, as the processual conception proposes: to see organisational space as an analytical dimension of the process of actions and decisions constituting the organisation, thus shifting the focus to organisation and control choices and considering new spatial options as technical solutions, among other technical solutions.

In this way spatial choices could be approached *within* the process for their congruences with the rest of actions and decisions – in a continuous process of regulations towards a shared object and with the limits of bounded rationality – and new forms of work could be approached taking into account a wider perspective – the process they activate, with all the relevant implications in terms of purposes, coordination and control.

The place of work – where the word place reminds to a meaningful space – would then be in the process of actions and decisions.

The place of work would then not be a separate entity but part of the process, whose meaning is not *per se* but in the process of the action.

Defining the “place of work” as an analytical dimension of the process of actions and decisions seems to be a solution suitable to welcome digital innovation as we know it now and how it could be in the future: technical features of environmental options will be considered, as they emerge, as new opportunities expanding the set of possibilities among which spatial choices will be made, in coherence with the other dimensions of the process, and given the actual conditions.

Moving from this perspective further studies could be implemented in the direction of questioning the so-called new forms of work for their spatial choices in coherence with the rest of the process, with the aim of better understanding what these spatial choices could mean in terms of coordination and control and of workers well-being, in the quest for organisational sustainability.

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