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Transforming workspaces: A topological perspective on multi-location work

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ABSTRACT

While work becomes increasingly flexible, distributed, multi-located, and asynchronous, the understanding of its spatial dimensions is still limited. This study explores the evolving nature of organizational spaces in the context of multi-location work (i.e., when the workplace consists of a multiplicity of locations). Using a topological spatial perspective, we investigate how organizational spaces adapt to meet the demands of multi-location work. Using a mixed-method approach, we investigate the work experiences of academics from three higher education organizations during and after the Covid-19 pandemic. Preliminary results uncover two key topological changes and various linked topological shapes. This research provides a novel lens for understanding the dynamic and relational nature of spatial arrangements in contemporary work practices, offering valuable insights for organizations adapting to changing work landscapes.

Keywords

Organizational spaces; Multi-location work; Workspaces; Topological perspective.

1.INTRODUCTION

The recent surge of remote work (Petani and Mengis, 2023) and the increasing mobility of workers (Costas, 2013) have ignited scholarly exploration into the configurations of organizational spaces. While work becomes increasingly dislocated, multi-located, and asynchronous, the understanding of the spatial dimensions of work is still limited in this context (Petani and Mengis, 2023). Specifically, how do organizational spaces adapt, transform, or deform to accommodate the multifaceted demands and interactions associated with multi-location work? Organization studies have witnessed

a resurgence of efforts to reintegrate spatial dimensions (Beyes & Steyaert, 2012; Dale & Burrell, 2007; Kornberger & Clegg, 2004; Taylor & Spicer, 2007). These spatial approaches within organization studies span various paradigms, including traditional (Elsbach & Pratt, 2007; Weinfurtner & Seidl, 2019) and critical (Taylor & Spicer, 2007). While these approaches provide a relational understanding of organizational spaces, emphasizing their generative role in shaping social interactions, they have been criticized for compartmentalizing space into dichotomies (Beyes & Steyaert, 2012) where the conceived space (the space that according to Lefebvre, 19991 is planned by architects and designers) contrasts with the lived space (the space felt and altered through individuals' experiences). More recently, processual (Stephenson et al., 2020), constitutive (Cnossen & Bencherki, 2019; Wright et al., 2023), and topological (Beyes & Holt, 2020) spatial approaches have gained prominence in the study of organizational spaces. Collectively, these studies acknowledge that organizational spaces are not static entities, but rather dynamic phenomena shaped by ongoing processes. Particularly, there have been efforts to conceptualize organizational space as an open-ended "spacing" (Beyes & Steyaert, 2012), offering a performative and continuous view of space marked by incompleteness and disorganization. It is within this context that topology becomes a valuable tool for exploring multi-located work, compelling us to explore organizational space as unfolding across various topological configurations (Lash, 2012). In this framework, distinctions between "lived" and "conceived" spaces blur, and conventional notions of space, boundaries, and calculations are deconstructed (Beyes & Steyaert, 2012). According to Ratner (2020, p. 1526), when space is viewed topologically, organizational actors operate with the sense of being on the brink of an imminent "breakdown". In this paper, to further our comprehension of organizational space, we investigate how members of three higher education organizations located in Milan (Italy) manage different spatial configurations when working in a multiplicity of work (and non-work) locations. By definition, multi-location work involves dispersed workspaces and activities across multiple locations in the daily lives of workers (Hislop & Axetell, 2009). In our empirical analysis, we thus collected and analyzed data on how academics managed their multi-location work in the wake of the pandemic. Through our analysis, we demonstrate how the organizational space shrinks and expands dynamically in response to the multifaceted demands and interactions associated with multi-location work after the pandemic and how it unfolds across various topological shapes. This paper represents a step toward unraveling the complexities of organizational space in the context of evolving work practices.

2. BACKGROUND: ORGANIZATIONAL SPACES, TOPOLOGICAL DEFORMATIONS, AND MULTI-LOCATION WORK

Previous research has investigated the spatial practices of workers in different work environments. Most research on organizational space has focused on the spatial practices of workers inside organizational workspaces (e.g., Wasserman and Frenkel, 2015; Sivunen and Putnam, 2020) including universities (Beyes & Michels, 2011; Van Marrewijk and Van den Ende, 2018; Jones, 2014) and new working spaces (e.g., Cnossen and Bencherki, 2018). Some authors have studied spatial practices during homeworking (e.g., Brocklehurst, 2001; Halford, 2005; Wapshott and Mallett, 2012); other authors have studied spatial practices in public spaces (De Molli et al., 2020; Munro and Jordan, 2013), virtual spaces (Maznevski and Chudoba, 2000), in *absent* (i.e., unfinished) spaces (Giovannoni and Quattrone, 2017) and while being mobile (Brown and O'Hara, 2003; Costas 2013; Felstead et al., 2005;

Halford, 2005; Hislop, and Axtell, 2009; Lucas, 2014; Messenger and Gshwind, 2016; Munro and Jordan, 2013). The focal point of these studies is that space is not a container of everyday practices, instead, space and practices reflexively account for each other to the point that people and the material continuously renew organizational spaces (Stephenson et al., 2020). This study extends the focus to examine how workers experience organizational space through a topological perspective. At the heart of topology is the concept of space (and time) as emergent *becomings*, rather than predetermined and rigid categories. This conceptual shift envisages space as in constant flux and deformation (Lury et al., 2012; Ratner, 2020). One illustrative example is the Möbius strip, a topological construct that challenges conventional notions of space, highlighting its dynamic and ever-changing nature. We see organizational spaces as akin to the Möbius strip, continuously evolving and adapting in response to the actions, processes, and interactions that define them (Beyes and Steyaert, 2012). Topology provides a novel lens through which to conceptualize and analyze the multi-location of work. As other examples of topological changes (e.g., Ratner, 2020 analyzing interruptions during meetings in a Danish school), multi-location of work blurs the previously established boundaries of work (e.g., those between private life and work life; those between virtual and physical), and spatial configurations challenge established notions of spatial scaling and hierarchy (Taylor & Spicer, 2007). Therefore, topology helps us tune into those moments of change.

1. METHODOLOGY

Both the data collection and the data analysis for this paper are distinctly mixed-method. Two studies analyzed academics working at the three public universities in the city of Milan (Italy). The choice of academics is not casual. Academic work is unique in its nature as it offers a great level of work autonomy, a low degree of formalization, and an unconventional organizational structure (Wilhoit et al., 2016). These factors enable academics to work from various locations such as their university workspaces, their homes, or temporary workspaces beyond these locations. In a first quantitative study, we developed a survey asking participants about their work location choices, including frequency of access to their office, home, and other spaces beyond the office and home (e.g., libraries, cafés, co-working spaces, public spaces, companies' sites, etc.). The survey asked for this information referring to the periods before and after the Covid-19 pandemic to provide a complete overview of where academics work(ed) and whether the pandemic disrupted their habits[1]. The survey also collected information about the physical arrangements of the multiple spaces where academics worked. The survey was administered in the summer of 2020 to the whole number of tenured academics working at the three public universities of Milan (n=4,614), 1,064 answered the survey (response rate=23,1%). The sample is representative of the population. Among the respondents, 51% were female and 49% were male. The average age of the sample is

50.45 (SD = 9.25). The sample belongs to multiple disciplines: physical science (23%), life science (29%), architecture and civil engineering (11%), industrial engineering (14%), social science (10%), and humanities (13%). Referring back to our research aim, in analyzing our quantitative data we focused specifically on the workspaces that academics use and the frequency of their usage before and after the pandemic. We aimed to uncover any changes in their practices of multi- location work and determine if there were any shifts in their topological patterns. We constructed a transition matrix based on subjective experiences that academics revealed through survey responses.

In a second qualitative study, we zoomed into the experiences of 22 survey respondents. All the interviews were conducted in the academics' offices. The interviews served to collect narratives of academics moving across different physical locations (i.e., their offices, their homes, and other spaces where they work) and how their experiences eventually changed with the pandemic. Interview questions were designed after the quantitative analysis in which we disclosed the presence of two main groups of academics marked by topological changes.[2]

In total, the 22 interviews translated into more than 320 pages of transcripts. After each interview, we created a memo summarizing additional observations coming from the site visit to each university campus and office. Furthermore, we collected pictures of workspaces and campuses' spaces, in general, to add the highest details to understanding spatial settings as done in similar studies (e.g., Van Marrewijk, 2009; Peltonen, 2011). Referring back to our research question, in analyzing our qualitative data we focused specifically on the spatial deformations and topological shapes that emerged in academics' narratives and their conceptualization of organizational space. We organized the field notes by coding them into a spreadsheet database. To do this, we used coding strategies that are known from grounded theory (Corbin & Strauss, 2008). Our approach involved three types of coding: descriptive/topic coding, which involved categorizations of 'what was happening' in an open-ended way; in-vivo coding, which highlighted the terms used by the participants; and process coding, which detailed the activities we detected while observing the spaces. The qualitative analysis was complemented by a second round of quantitative analysis. Data patterns were identified across both datasets using a convergent mixed-method design (Creswell & Pablo-Clark, 2011).

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[1] *This period proved ideal for addressing our research topic. Strict mobility restrictions were eased, limiting only access to crowded places (e.g., cinemas, theatres, cafés, and public spaces). Although some people continued to work- from-home, many returned to their offices. This contingency made the period more relevant, marking the exact time when working from home and working from the office became equally attractive to academics.*

[2] *During interviews, it quickly became apparent that 'place of work' as a singular, distinct location was an outdated concept for all of our participants. Their everyday working lives revolved around multiple work sites which were different compared to before the pandemic. Our interviews asked participants for details about what constituted a working day, what sites were involved and to describe them.*

[3] *For instance, one of the interviewees says: "After going through years where home was the hotel of the night, now, I discovered home as a variation of my previous routine and I did the opposite, that is, I don't want to go to the office. I only go there if I have to pick up papers and then I leave. Probably soon, I will change again." (interview #9)*

1. PRELIMINARY FINDINGS AND CONCLUSIONS

In what follows, we describe the preliminary findings that emerged from the mixed-method analysis of our two datasets. The first empirical contribution of this paper reveals two main topological changes in how academics produced their workspace within and beyond the boundaries of their university offices. After the Covid-19 pandemic, academics either decided to *extend* or *compress* their organizational space. Academics *extend* their space by locating temporarily their work in additional work locations. Conversely, they *compress* their work by reducing the number of work locations they work from (usually reducing it to the unique home workspace and making the other spaces temporarily disappear). In our sample, it was found that 55% of academics (586) compressed their organizational space, while 45% of academics (478) extended their organizational space.

The second empirical contribution expands the findings of the first study and uncovers how and why the two described practices of *compression* and *extension* can be spatially interpreted through different topological shapes, one deforming into the other. Although the analysis is still ongoing, we report below initial interesting results.

Space compression is linked, both quantitatively and qualitatively, to the presence of *enclaves*, that allow the organizational space to shrink temporarily, excluding other work locations. Frequently, the university space does not exist anymore (or it is only a memory), and the home workspace dominates supreme[3]. Indeed, through multinomial logit estimations (N=1,064 academics), we discovered that *space compression* is positively related to the availability of a home office (p- value=0.095). However, the organizational space shrinks into other locations (i.e., the university). In our quantitative analysis, we found that space compression is positively related to the possibility of access to meeting rooms on campus (p-value=0.026). Meeting rooms often serve as designated

spaces for gatherings and interactions, resembling again *enclaves* in which the organizational space shrinks[4].

Space extension implies the organizational space to expand across multiple locations to include streets, countryside, and various leisure and non-leisure spaces. Formerly insignificant when work was secluded in a single work location, these spaces became large and a matter of concern after the pandemic for a consistent group of academics[5]. Space extension is linked to the topological shape of the *parallax*. Describing the parallax, architect Steven Holl (2004) states that different viewpoints reveal distinct shapes within a building's design, and these shapes can change as the viewer's perspective changes, highlighting the dynamic nature of topology. For instance, in our empirical material, we found that classrooms are no longer just places for teaching, but also serve as meeting places due to the dispersed nature of work[6].

In conclusion, the paper investigated how organizational spaces adapt, transform, or deform across diverse topological shapes and spatial formations (Lash, 2012; Beyes & Steyaert, 2012; Ratner, 2020). By examining the experiences of multi-location workers in various workspaces, including offices, homes, remote locations, and third workspaces, the study preliminary found that the organizational space can take shape across different topological figures, such as enclaves, or parallaxes, and these shapes may continuously deform or transform as work practices evolve. This dynamic flexibility is

essential for adapting to the changing needs and demands of multi-location work which is found to push academics toward compression or extension of the organizational space.

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