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DOMESTIC DEVICES

HOW INTERIOR ARCHITECTURE AND DESIGN REACT TO THE CONTEMPORARY SCENARIO

Flexibility in the Workplace

Envisioning the Role of Domestic Spaces in the Era of Hybrid Work

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Domestic Space, Working from Home, Hybrid Work, Work Activities, Workspace Design.

Abstract

Modern society has always pictured the home and the workplace as two separate entities: the former for personal and private space, the latter for professional growth and productivity.

The COVID-19 pandemic disrupted this dichotomy as homes became the only places to work. Companies had to reorganize their dynamics remotely, discovering new communication and resource management methods. Employees adjusted to unconventional workstations and new behaviors led to a domestic new deal. Rooms became flexible areas in which to organize work activities as well as leisure tasks. It has also become clear that the daily commute to the office is not vital, and working from home has both productivity perks and drawbacks on well-being. With the resumption of office work, employees desire to maintain work from home, urging companies to comprehend how to incorporate flexible approaches. This entails striking a balance between the home environment's opportunities and enhancing the collaborative and physical interaction that the office still provides.

To integrate new workspace habits, a multidisciplinary approach is key, merging design practices, organizational management, and behavioral analysis. The contribution aims to explore how new working practices are redefining the functions and dynamics of workspaces. The analysis of the home transformation, through a literature and case study review, will generate insights to improve mixed workplace strategies.

For a long time, the conception of home and work spaces has been very sharp: the former represented a personal and private space, for family affection, conviviality, lightheartedness, and life responsibilities. Conversely, the workspace represented a context for professional growth, production, learning experiences, and social interactions. The separation between these two spaces has always been preached as fundamental, as a way to pursue well-being and life balance in a society shaped by work and productivity.

The need to define boundaries has been reflected both at home and in the office, where spaces have been traditionally organized around tasks to perform: focused or collaborative activities, breaks, and social interactions. In the late 1960s, offices shifted to open plans (Budd, 2001), modulating the space with temporary and flexible elements; conversely, houses have maintained their rigid division and its role of personal identification, security, and protection. Thus, with the Covid-19 pandemic, domestic spaces became the only places where to seek peace, and their role shifted from *home as identity* to *home as refuge* (Ahrentzen, 1987). During lockdown, the meaning of home as a physical unit merged with the idea of an *emotional territory*, reflecting the individual-environment interaction (Bettaieb & Alawad, 2018).

Domestic spaces had to adapt to multiple aspects of people's lives and replicating office work impacted the most on the layout of spaces. Working from home offered benefits like improved flexibility and productivity. However, it also in-

troduced challenges such as meeting fatigue, reduced social cohesion due to the lack of physical interaction, and blurred work-life boundaries, leading to concentration difficulties and anxiety (Teevan, 2021). Furthermore, repurposing physical spaces for work activities has influenced the perception of ergonomics, lighting, privacy, and noise control within the home walls (Vitra, 2021).

Despite the challenges, a 2020 survey from Microsoft showed that 71% of employees and managers¹ had the desire to continue working from home, at least part-time (Spataro, 2020). However, by May 2023, full-time employees worked from home less than a day per week² with 26% working on hybrid arrangements, and 8% working entirely from home (Aksoy et al., 2023). This data indicates that houses, as well as organizations, are not fully ready to include working-from-home practices in their strategies, suggesting a review of the multifunctional home to understand how workspaces can be integrated within domestic environments.

The contribution aims to explore how homes are becoming dynamic places able to mix pleasure, leisure, and work. The analysis of the transformation of the domestic space, through a literature and case study review, will generate insights to improve hybrid workplace strategies. The findings contrib-

¹ Data retrieved from a survey commissioned by Microsoft on May 26-30, 2020, among 2,285 total adults ages 18+ who are currently working remotely across the UK, US, Germany, Italy, Mexico and China.

² Survey commissioned on April-May 2023 across 34 countries. Results retrieved from "Working from home around the globe: Report 2023". The report is based on data from Wave 3 of the Global Survey of Working Arrangements (G-SWA).

ute to a wider research project in collaboration with an ICT company focused on developing the workplace of the future. The research aims to develop tools and spatial solutions to promote flexibility between home and office, focusing on employee well-being and company communication.

2. The Evolving Relationship Between Home and Work Spaces. A Literature Review

The debate on domestic spaces in current work scenarios cannot be addressed without considering the underlying connections between home and work as living spaces. The concept of working from home has existed way before the Covid-19 pandemic. Existing literature on the topic focuses mainly on two eras, the 1970s to the late 1990s and the mid-2010s onwards. The motivations can be traced to specific technological and social shifts. Before the 18th Century, homes, specifically country houses, were the businesses' headquarters (Cottage Industry). Then the Industrial Revolution disrupted the existing paradigm, with work activities that required gathering many people in larger and centralized factories (Ahrentzen, 1987). In the 20th Century information technology defined a new type of worker, less focused on manual labor and more on cognitive tasks (Lund et al., 2021). Their work required moderate physical proximity and interactions with colleagues, which required a limited workstation made of a desk, a computer, and other communication tools.

Cities became the center of work activities, with workspaces concentrated in centralized buildings (Wilkinson, 2019). The workspace has then become the place to commute every

It was also acknowledged that working from home would have led to a "diffused work society", requiring a re-thinking of organizational structures, types of employment, mechanisms of coordination, and supervision (Brandt, 1983). However, these studies were mainly future-oriented, thus based on the potential of telecommunications to envision innovative work strategies. These forecasts became a reality in the mid-2010s when remote work expanded in the corporate sector. At the time, personal device proliferation, cloud computing, and virtual technologies allowed employees to work from various locations, challenging the conventional "commute to work" paradigm (Baruch & Nicholson, 1997). The adoption process, however, has been really slow primarily due to three factors:

- Resistance to change: Corporate communication hinges on spatial and organizational dimensions. A hierarchical structure impacts employees' mutual awareness (Allen & Henn, 2006). This organizational mindset makes it easier for managers to monitor activities when everyone is in sight in a single workplace.
- Work coordination: Knowledge work involves tasks like thinking, planning, and organizing. When executed virtually, it requires more coordination and communication among colleagues compared to a physical office.
- Lack of empathy in virtual communication: Telecommunications lack the "face-to-face" interactions that physical spaces offer, or at least they are not as fulfilling. This gap is particularly evident in impromptu meetings, breaks, and other social moments that are fundamental for a thriving workplace (Newport, 2020).

Then in 2020, the COVID-19 pandemic forced the entire globe to pause and re-think work. At that moment, most workers

found themselves "obliged" to work from home. The emergency at which this condition happened required houses to accommodate multiple and divergent activities, generating changes in their layout and living and work patterns.

During the pandemic, homes were small experimental workshops, spaces where to reflect on the improvements to be done (Zurlo et al., 2020). Individuals and organizations experienced the limits of remote work, discerning which tasks suited home offices or corporate settings best. Employees realized the benefits of replicating traditional office setups at home, establishing clear boundaries for work-life balance, and enhancing task engagement (Yang et al., 2021). Furthermore, it became evident that organizational knowledge thrived on both explicit and tacit experiences, highlighting the importance of fostering casual and interactive exchanges among colleagues in virtual home offices.

With the end of the pandemic, the work scenario is still uneven. Homes continue to be the primary location for remote activities, but still with the pandemic's challenges. A design approach is needed to address the overlapping role of domestic and work life. Moreover, understanding which activities are better supported at home than at corporate offices can help to understand the positive impacts of flexible work arrangements.

The state-of-the-art aimed to define the evolving work/home dynamic and to develop some observations contributing to future research: regardless of the historical context considered, sources have rarely questioned interior characteristics

Another observation that has emerged is related to the disciplines investigating the domestic spaces as a work nest: management, technology, sociology, economy, and urban planning are the common areas in which the topic has been analyzed. Few researches have been carried out in the field of architecture and design; this might be due to the fact that architects and designers are not used to planning and designing domestic spaces intended for home-based work.

3. Setting the Boundaries of Home Working

During the pandemic, terms like home working, remote work, telework, and smart work were used interchangeably to describe employees using technology to work outside their traditional offices. It is crucial to understand that these terms, while similar, have different nuances. Using them correctly marks the first step toward envisioning domestic spaces as parts of the future vision of work. To achieve this, it is important to define the specific context this research seeks to enrich. Amid the variety of individuals who are experiencing

working from home, this analysis aims to identify and experiment with solutions for an Italian ICT (information and communication technology) company that has embraced remote work. In this company, telecommunications are part of employees' daily tasks; people are grouped in organizational units that are experiencing decentralized communication processes; their interactions are influenced by various activities including tasks, team projects, and meetings.

The term "working from home" is quite broad since it refers to work that takes place fully or partly within the worker's own residence (International Labour Organization, 2020). Initially, it was used to indicate certain working classes like clerical workers or independent artists. The spread of information technology extended its use to both autonomous workers and employees (Holliss, 2012). This research is focused on employees in organizations that have embraced remote work policies. *Remote work* refers to a situation where the work is fully or partly carried out on an alternative worksite other than the default place of work (International Labour Organization, 2020). When remote work is carried out using ICTs, it transitions into *telework*. Yet, when ICTs are integrated with remote work's spatial, temporal, and managerial flexibility, the term *smart working* is better suited (Sperati, 2021).

The research aims to explore how workplace flexibility can be integrated into innovative work strategies, moving beyond teleworking to achieve smart working (Fig. 1). Workplace flexibility allows workers to choose when, where, and for how long they engage in work-related tasks (Yang et al., 2021, p.3).

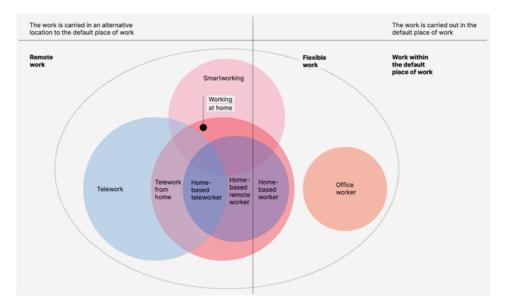


Figure 1. Concepts of remote work and work in the default place of work. Personal elaboration on the data of the International Labor Organization (2020).

Achieving this requires a shift in organizational management from control and presenteeism to trust, collaboration, and delegation (Area Centro Studi, 2021). Balancing space distribution, technology equipment, teamwork, knowledge sharing, and employee autonomy leads to a condition of *hybrid work* (Yang et al, 2021), a state that recognizes home as a feasible work location, among others.

4. Repurposing Domestic Spaces to Meet Work Needs

The current workspace scenario highlights that most knowledge jobs are technically spatial independent (Brandt, 1983). However, the pandemic emphasized the importance of flexibility in choosing where to work based on tasks, spatial characteristics, and social interactions to enhance work strategies. By expanding Jack Nilles' concept of a "distributed work"

network" (Nilles, 1994) to current needs, organizations must recognize homes as *one of the possible* workplaces alongside offices and other environments like co-working spaces, cafès, bookshops, and hotels (Fig. 2).

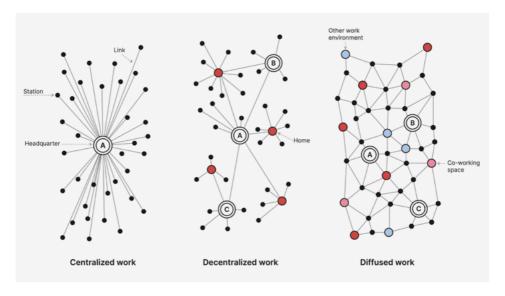


Figure 2. Centralized, decentralized, and distributed network. Personal elaboration based on Barans' diagram (1962).

The pandemic role of domestic spaces confirms Bettaieb and Alawad's notion of them being "expanded psychological spaces" and "minimized social spaces" (2018). This section focuses on understanding how physical components and behavioral patterns impact domestic spaces. Leveraging insights from the literature review, we will discuss three categories: (1) work activities, (2) spatial pattern of use, and their influence on (3) furniture semantics. Each category will integrate case studies to support the identification of practical design recommendations for the concept of working from home.

4.1. Work Activities

What employees do significantly influence their workplace experience, whether at home or in the office. Identifying the variety of work tasks undertaken is a fundamental step to understanding the ideal work environment according to employees' needs.

Considering the different layout attributes of homes and offices, a hypothesis is that home spaces excel in facilitating individual and focused activities, whereas offices are more suited to promoting interactive and collaborative activities. To address this theory, Leesman³ has developed the *Leesman Office* and *Home-office Survey* to compare work experiences in the two settings. Both surveys ask how home-office environments support daily work tasks. The surveys encompass 21 work activities, categorized into individual work, collaboration, conversations, formal meetings, and others. The surveys' goal is to support companies in identifying employees' activity complexity and profiles, thereby defining workplace needs and configurations.

Ericsson, the ICT company, has used the Leesman Surveys to develop the *Helix Workplace Model*: it is based on five personas profiles, categorized according to their inclination to go to the office (have to go, choose to go, rarely go). The profiles are tailored to the insight from people's spatial interaction and the range of work activities. Each *personas' helix* is the

³ Company specialized on measuring and analysing the experience of employees in their workplace through assessment tools.

outcome of comparing the effectiveness of supporting the 21 activities in the office versus at home (Hobbs, 2021). While Ericsson's focus is on envisioning new office spaces' functions, their model offers crucial insights into how domestic settings should be modulated by tasks and behaviors. Furthermore, by prioritizing the relationship actions-workplaces, reconfiguring existing spatial configuration can be more socially and economically sustainable.

4.2. Spatial Pattern of Use

A notable distinction between home and office lies in the level of personalization and identification. In offices, employees have a limited range of workspace personalization, often confined to their workstations. Conversely, homes allow owners creative freedom, reflecting their personality while still fostering a sense of security. However, in a home-work setting, personal space needs to be both virtually connected and physically enriching (Crawford, 2020). This multidimensional spatial role highlights the significance of domestic space distribution. Two main patterns of use can be identified (Holliss, 2012):

- Multi-use space: No differentiation is made between paid work and daily domestic activities.
- Dedicated workspace: A rigid division is made between paid work and domestic/leisure pursuits. It is not allowed for paid work to migrate into living spaces (or other areas of the house), and vice versa.

It has been understood that people who have a dedicated work area at home experience better home working condiOn the other hand, design companies that have always maintained a focus on domestic furnishing have enriched their product catalogue by adding the concept of work to the one of well-being and comfort: standing desks, ergonomic chairs, storage units and sound absorbing wall dividers emerge as key components to make the home a place for work. In this field, Ikea has put a lot of effort on its product range. If in the catalogues from early 2010s the section on the workspace was integrated into the bedroom furniture (IKEA Museum, 2023), from 2022 they have been dedicating an entire brochure and section on the website to the activity of working from home. Also, the design company Artek has introduced The Compact Home Office, a tool that through a series of simple questions can suggest tailored office areas to be created in the available home space (Fig. 3). The tool spans from compact 1.6m² spaces to more spacious 5m² areas, suggesting element compositions based on existing walls (Fig. 4) (Artek, 2022).

Figure 3. Interfaces of the Compact Home Office Tool. Artek.

Figure 4. Brochure provided by Artek once the configuration of the home office is complete. The arrangement of Artek furnishing accessories is accompanied by their description.

These companies share the vision of a domestic space that does not necessarily have to change but declines to new uses. However, there is yet no integration in terms of flexibility and frequency of use: existing solutions offer furnishing products able to dialogue with the domestic environment in terms of formal language. In a hybrid perspective where working from home is a feasible option, it must be understood that a dedicated workspace is not used every day. It is necessary to comprehend how and when it is used, to define a more integrated system within the domestic walls. To achieve more integrated solutions, design companies and work organizations should dialogue to envision connections among personal needs, work activities, and furniture requirements.

4.3. Furniture Semantics

Before the pandemic, the room setup was defined according to distinct functions: kitchen for food preparation and consumption, dining area for eating meals and having convivial moments; living room for leisure and entertainment; and bedroom for rest and quiet. During the pandemic, these boundaries have become a lot more malleable, with single rooms working as hybrid and flexible spaces.

Just as rooms have undergone a transformation to accommodate home-based work, furniture items have similarly shifted in their semantic meaning. In particular, three emblematic domestic objects have seen a transformation from their traditional use: the dining table, sofa, and bed.

Among furnishings, the table exemplifies the hybridity of home and work. Becoming the focal point for domestic, work, and learning activities, the table shift has contributed to the dissolution of the traditional workstation and dining room archetypes (Barber & Osgerby, 2020).

Softer fabrics and warmer colors of the home have questioned work seating comfort. Particularly fitting is Edward Barber and Jay Osgerby's project, *Soft Work* (2018). According to the designer, the daily use of laptops, smartphones, and tablets at home has turned sofas into common workspaces. Soft Work is both a spatial concept and a product of furniture design; it's a sofa-as-office system in which table workstations are focused around a seating landscape. It is a vision that combines the office as a public and shared space and work as a less formal activity. It's a modular platform where technology is integrated but not embedded.

Technology and work have also invaded the bedroom, and the bed is now considered an epicenter of productivity; it represents a horizontal architecture where people foster efficient work-rest cycles while improving outcomes (Colomina, 2014). As for the table and the sofa, the bed is now equipped with every possible communication technology.

5. It's Not Only a Matter of Space. Social and Cultural Implications

The analysis so far had the intent to focus on spatial and functional components impacting the domestic environment. However, design practices must consider the social factors influencing the behaviors of individuals and groups. In particular, when an organization's spatial structure – that also includes people – is more dispersed, greater emphasis is required on its formal and informal elements (Brandt, 1983). This includes mechanisms of coordination, supervision, group interaction, and individual routines.

The three categories mentioned above should be analyzed considering implications in the flexible/home scenario such as *temporal adjustments* and *transitioning rituals*.

5.1. Temporal Adjustments

Working from home requires rearranging domestic and work routines. Before the pandemic, the *Nine to Five* model (Budd, 2001) offered synchronized work, enabling communication and defining work-life boundaries. However, working from home allows flexibility in scheduling work tasks, especially if combined with improved work coordination among the team. Domestic settings have emerged as the ideal location to carry out

individual and focused work (Hobbs, 2022); as well, quiet hours – between 8-10 am and 6-8 pm – have seen an increase in work engagement (Spataro, 2020). This trend comes from the *lack* of transitioning rituals and by the possibility of home environments to structure the workday to personal preferences. This does not mean that every employee should freely choose when to work: establishing a range of hours in which it is mandatory to be "remotely" available, combined with flexible scheduling for the rest of the work day, can foster a better work-life balance. However, achieving such conditions requires considerable coordination and mutual trust among colleagues.

5.2. Transitioning Rituals

Rituals serve as transitions that people do to start the workday. In office settings, the commute acts as a transition between personal life and work. When working from home, the commute is absent and people need to find other activities to mentally shift roles. Additionally, the coffee break acts as another transitioning ritual: it represents an informal information exchange, that is not planned or structured, but that allows spontaneous communication and a "decelerated" social interlude, helping the shift between tasks (Barmeyer et al., 2019). Even if organizations are experimenting with virtual breaks, screen limitations only add to the feelings of community detachment and mental fatigue.

While these elements strongly influence the efficacy of home working scenarios, it should be considered that other social and human factors impact flexible work that are challenging to predict and manage. Variables like work nature and technology availability (Baruch, 1997), organizational culture,

managerial attitudes, individual personality, work attitude, and household characteristics contribute to the complexity of the system.

6. Conclusions

Companies are struggling to see homes as more than temporary workplaces due to control-oriented models. Ambiguity in flexible work terminology adds uncertainty on how organizations should adopt such practices. This also leads to questions about workplace regulations when tasks are done away from the default place of work.

Domestic spaces are becoming more work-friendly reshaping the perception of home furnishings. Unlike traditional offices that favor clean, formal, and repetitive setups, remote work allows greater personalization, enhancing motivation and self-commitment. In this perspective, the management of spaces and patterns of use is in the hands of the employee, who can modulate the space according to their preferences. Here, too, we need to clarify the support required by companies to accommodate work-friendly environments.

To improve home office layouts and furniture arrangements, organizations must first focus on filtering work activities. Taking cues from activity-based offices (van Meel, 2020), we can extend this approach to homes and overall workspaces. Choosing a work location should match the task's environmental and behavioral needs, whether it requires autonomy, privacy, focus, or collaboration and interaction. This shifts flexibility from quantitative to qualitative; whereas until now flexibility has been looked at as a purely numerical benefit,

i.e., being able to work fewer days in the office, the focus has to move towards a combination of spaces, tools, and actions. Design practices are pivotal, leveraging quantitative and qualitative tools, like the Ericsson case study, to help companies gather and visualize behavior data. This data informs the testing of new strategies, incorporating communication tools that enhance information exchange and help organizations in managing complex systems (Gaiardo et al., 2022).

In the 80s futurist Toffler predicted a "home-centered society", where people work at home ensuring community stability, better environmental quality, and an evolution of the service industry. The contribution goes against this vision to argue a system where work will be neither fully here nor there, and domestic spaces will be involved only when specific conditions are met.

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