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320-331 **TAMARA RELIĆ
BOJAN BALETIĆ**

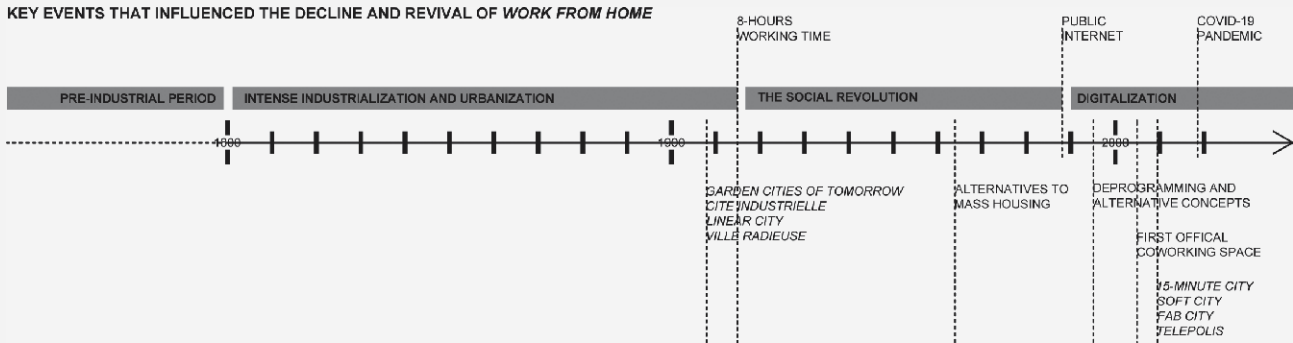
DUAL-USE DWELLINGS - HISTORICAL OVERVIEW

SCIENTIFIC SUBJECT REVIEW
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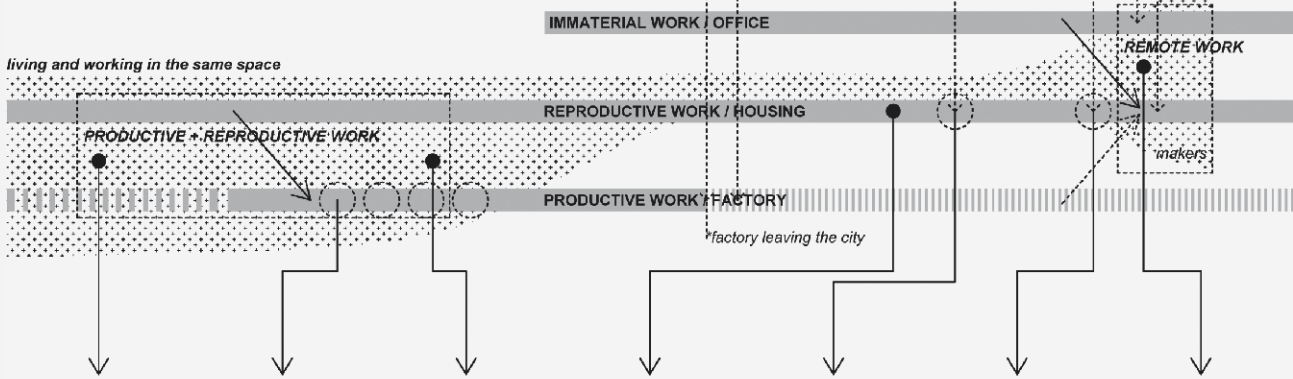


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KEY EVENTS THAT INFLUENCED THE DECLINE AND REVIVAL OF WORK FROM HOME



OVERLAP BETWEEN PRODUCTIVE, REPRODUCTIVE AND IMMATERIAL WORK



- THE SHOPHOUSE**
Dual use dwelling that continued existence from the medieval period to present day despite changing environment.
- WORKERS SETTLEMENTS**
Utopian socialism emerged with the intention to design communities that were cooperatively organized, collective vision of living and working.
- COTTAGE FACTORIES**
A transitional model with specific spatial organization that set a historical urban precedent: neighborhood development centered around home-based work.
- LOFT**
The artist's studio is characterized by an intense overlap of working and living space, with indirect impact on the community.
- OPEN BUILDING CONCEPT**
An approach to design that anticipates the dwelling individualization and potential need for modifications throughout their lifetime, in response to social or technological changes.
- USE-NEUTRAL DWELLING**
Building deliberately left open-ended, demonstrating a high degree of variability and flexibility, enabling easy reprogramming when necessary.
- LIVE/WORK UNIT**
Space designed to accommodate both residential and work activities within the same dwelling, facilitating a seamless transition between personal and professional activities.

DIAGRAM OF THE OVERLAP BETWEEN LIVING AND WORKING AND THE RELATIONSHIP TO THE IMMEDIATE NEIGHBORHOOD

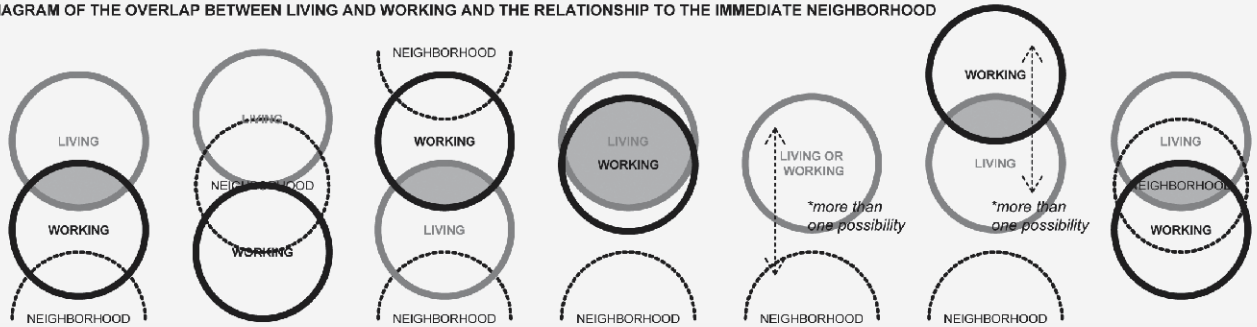


FIG. 1 HISTORICAL OVERVIEW OF KEY EVENTS THAT INFLUENCED THE DECLINE AND REVIVAL OF WORK FROM HOME AND RECOGNIZED ARCHITECTURAL MODELS



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DUAL-USE DWELLINGS – HISTORICAL OVERVIEW

DUAL-USE DWELLING
LIVING/WORKING
MULTI-RESIDENTIAL DEVELOPMENTS
WORK FROM HOME

The COVID-19 pandemic in 2020 forced many employees to work from home, and since then, remote work has remained a prominent topic. From an architectural point of view living and working in the same space is a complex issue that challenges the boundaries between private and shared spaces, productive and reproductive work, the home and the city. To address how workspaces can be integrated into residential buildings today, examining the historical background of dual-use dwellings is essential. This paper analyzes historical forms of *work from home* settlements and purposely built dual-use dwellings,

with a focus on identifying their basic characteristics, the degree of overlap between living and working spaces, and their relationship with the immediate surroundings. The results show three historical types of dual-use dwellings: integrated into the neighborhood, within the building community, and in the housing unit. With the digital revolution, the high demand for remote work jobs, and a growing interest in work-life balance, it is evident that there is a growing need for further research on the integration of dual-used dwellings within multi-residential developments.

INTRODUCTION

The dwelling serves as a reflection of society and the lifestyle of its inhabitants. As progress unfolds, evolving life patterns drive modifications in the design and functionality of living spaces. The digital revolution has significantly reshaped how we live, work, and communicate further influencing these developments. With the rise of the Internet and smartphone usage, the relevance of physical distance has diminished, enabling virtual connectivity. This has led to the creation of new living patterns, where family life, work, and leisure increasingly overlap (Junestrand, Tollmar, 1998; Fig. 2). Consequently, a growing number of individuals now work from home, with flexibility and mobility emerging as the most desirable attributes.

Since the start of this research, the COVID-19 pandemic has occurred, prompting a major shift towards remote work. In 2017, only 5% of the European Union's working population regularly worked from home. However, due to the pandemic, this figure sharply increased to 37% by 2020 (López-Igual, Rodríguez-Modroño, 2020). The percentage has since decreased but remains higher than pre-pandemic levels, especially in countries with good digital infrastructure, suggesting that remote work is here to stay (Judes *et al.*, 2021). A DW News article on Europe's attitude toward remote work, published in 2022, reported that three out of four people wanted to continue working remotely (Beardsley,

2022). COVID-19 accelerated the adoption of remote work and exposed its challenges and potential benefits. During this trial period, it was noted that a rise in remote work could reduce urban congestion, lower CO₂ emissions, and offer employees more free time and a better work-life balance (Bonenberg, Lucchini, 2022). To achieve these positive global effects, it is important to establish the potential of integrating workspace in multi-residential buildings. Living and working in the same space is a complex problem that questions the border between private and shared space, between productive¹ and reproductive work, between the home unit and city, and has the potential to become a new community generator.

THE PHENOMENON OF 'WORK FROM HOME'

Remote work today is largely defined by information and communications technologies (ICT) that enable a seamless workflow regardless of the work location. *Work from home* is part of remote work that is happening at the employee's home. In this context, working from home can be divided into two main categories: home-based business and teleworking (permanent or occasional).

The first category refers to business entities registered or operated from the owner's residential address, comprising an average of 15% across the EU (Reuschke, Domecka, 2018: 8). Examples include freelancers such as writers, designers, consultants, or owners of online stores. Such businesses often require the use of computers, the Internet, and other technologies for managing business activities, communicating with clients, and handling finances.

Teleworking involves working for an employer either permanently or occasionally from a location outside of the traditional workplace. According to 2015 statistics, 20% of employees engaged in telework², with this number steadily increasing (Eurofound and the International Labour Office, 2017: 15). Following the COVID-19 pandemic, these figures doubled. "Early estimates from Eurofound (2020) suggest that close to 40% of those currently working in the EU began to telework full-time due to the pandemic. A recent JRC study provides a rough estimation of around 25% of employment in teleworkable sectors in the EU as a whole." (Milasi *et al.*, 2021)

Both categories are predominantly represented in knowledge-based sectors, such as information and communication, construction, business services, and creative industries. Individuals aged 19-21 account for 21%

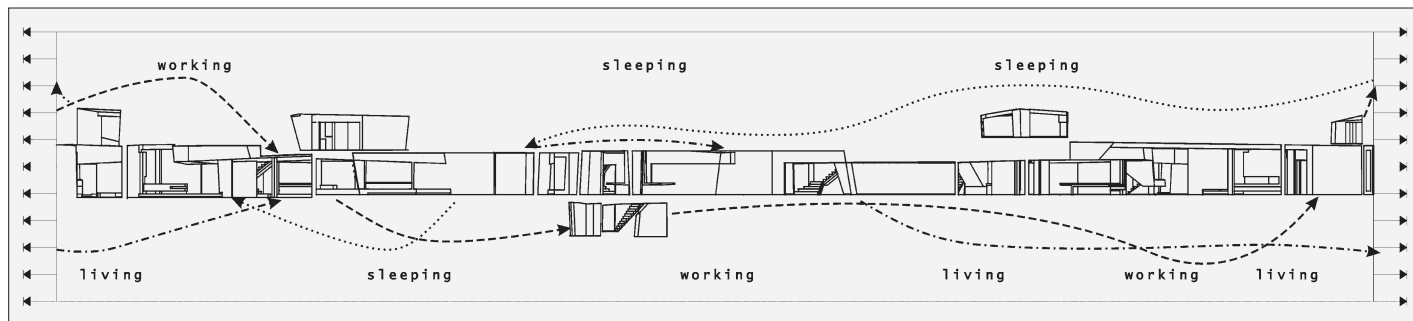


FIG. 2 VAN BERKEL, B.; BOS, C. / UN STUDIO (1993) MOBIUS HOUSE, HET GOOI – DIAGRAM OF THE INTERCONNECTED PATH OF THE LOOP THAT REFLECTS THE FAMILY'S 24-HOUR ROUTINE OF LIVING AND WORKING

of these sectors (Reuschke, Domecka, 2018: 11). These sectors also demonstrate a trend toward increasing their share of the workforce (Judes *et al.*, 2021). These forms of work are often associated with mobility, flexible job structures, and temporary employment. Both categories rely on advanced technologies that enable remote communication, collaboration, and access to information.

Commonly cited advantages include reduced labor costs, improved work-life balance, flexible working hours, adaptable childcare arrangements, and the elimination of commuting time (Holliss, 2012; Lipnjak, 2012; Bonenberg and Lucchini, 2022). However, many new remote workers faced inadequate home setups and additional responsibilities such as childcare during the COVID-19 crisis, which posed significant challenges (Milasi, 2021: 15). Commonly highlighted problems, regardless of the pandemic, include social isolation, limited space for meetings, and a generally weak social and professional network (Holliss, 2012: 24). Research from various accredited institutions has produced mixed results regarding the impact of remote work on productivity, with some studies indicating that employees in hybrid work environments are the most productive, while others challenge these findings (Bradshoe, 2024; Bloom *et al.*, 2015: 181).

Analysis of previous research on the topic from an architectural point of view has established that the idea of living and working in the same space is not a novel concept; it has well-established historical precedents. The most significant contribution to the topic was made by Frances Holliss, whose primary objective in her doctoral thesis was to establish the “workhome”, as she calls it, as a building type (Holliss, 2007: 101). She documented its continued existence, mostly in single-family homes, from the medieval period to the present day in England. A different perspective on the topic was provided by Aureli and Tattara, who explored through research and design theoretical architectural models of cooperative housing based on the overlap of living and working spaces (Aureli, Tattara, 2018, 2022). Architectural research conducted during the COVID-19 pandemic, focusing on the use and spatial organization of homes during mandatory remote work, pointed out privacy issues (McGee *et al.*, 2023: 99), the lack of space (Kuropka, 2022), and that spatial organization and adaptability of space are the most important factors for satisfaction with working from home (Bonenberg, Lucchini, 2022). There is a lack of architectural research that systematically focuses on the integration of dual-used dwellings within multi-storey residential buildings.

METHODOLOGY AND SCOPE OF PAPER

This research is part of doctoral research³ focusing on *work from home* from an architectural point of view and its integration within the context of multi-storey residential buildings. To address how workspaces can be integrated into residential buildings today, this paper aims to describe and characterize historical models of dual-used dwellings with a specific interest in historical *work from home* settlements and purposely built dual-use dwellings in multi-storey buildings as a more complex form of living together.

This paper considers that researching historical examples of *work from home* within the socioeconomic context of their time is the

¹ The terms productive and reproductive labor have been extensively described in economic theories of capitalism. Productive labor involves activities through which we earn a living. Reproductive labor includes activities such as sleeping, eating, cooking, cleaning, and household maintenance – tasks essential for life but not remunerated. Together they constitute ‘vita activa’, as described in the book *The Human Condition*, by Hannah Arendt (Aureli, 2011: 99).

² Approximately 9% of these employees regularly or frequently worked from home, while 11% worked from home more than once a week (Eurofound and the International Labour Office, 2017: 15).

³ First author's ongoing research for the Ph.D. thesis *Architectural criteria for the integration of home-based work in residential buildings*, at the University of Zagreb Faculty of Architecture, with the second author as a mentor.

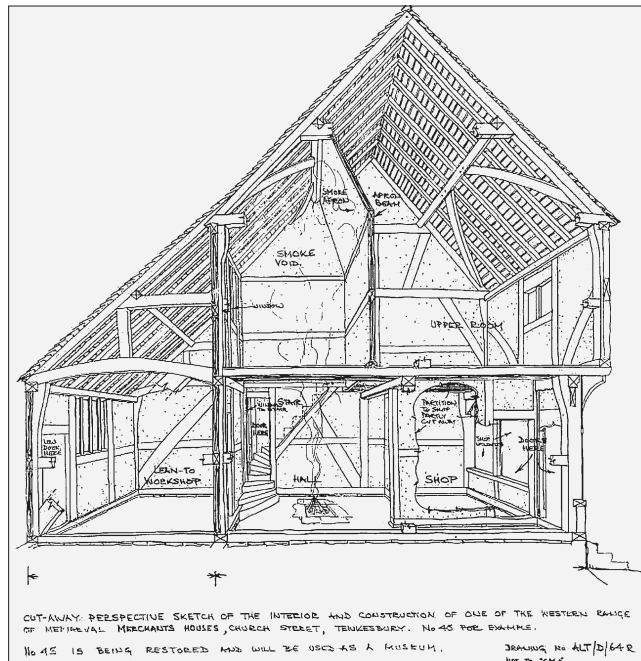


FIG. 3 DRAWING OF THE MEDIEVAL MERCHANT'S HOUSE. AT THE FRONT OF THE BUILDING, THE SHOP FEATURES TILTING SHUTTERS THAT CLOSE SECURELY AT NIGHT AND TILT OUTWARD IN THE MORNING TO CREATE BOTH A SHOP WINDOW AND COUNTER.

first step to exploring contemporary trends in home-work integration. The analysis of examples is presented chronologically, and conceptually divided into 4 historical periods, according to the tendencies in which each example emerged: the preindustrial period, the period of intense industrialization and urbanization of the 19th century, the period of social revolution of the 20th century, and current tendencies in the time of the digital revolution. The examples are analyzed through 3 groups of criteria with a focus on identifying their basic characteristics: the degree of overlap between living and working spaces, the privacy level of living space, and their relationship with the immediate neighborhood. The data collected is systematized to determine the types of relationships between work and home through history. The results obtained from researching historical examples will contribute to understanding the complex relationship between living and working in contemporary projects.

DECLINE AND REVIVAL OF 'WORK FROM HOME'

Historically, dual-used dwellings were shaped by necessity and practicality, often dictated by technological limitations and economic considerations. A comparative analysis of examples with integrated workspace, within the socioeconomic context of their time reveals four phases of the observed relationship, corresponding to the following historical periods:

THE PRE-INDUSTRIAL PERIOD

Before the first Industrial Revolution, most people were part of self-sufficient and self-sustaining communities where productive and reproductive work overlapped. Productive work was not confined to specific working hours. Most people engaged in primary activities that they conducted from their homes or nearby. Individuals participated in the production process from start to finish, selling or bartering their products.

The merchant's house (Fig. 3) is the oldest form of a home-based workspace, originating from the pre-industrial era. Similar forms emerged simultaneously in different cultures. This global phenomenon, as Howard Davis refers to it, primarily occurred due to the technological limitations of the pre-industrial revolution period and the financial practicality of such spatial organization (Davis, 2012: 11-14).

In medieval, three types of houses were characteristic: the peasant longhouse, the manor house, and the merchant's house. According to Holliss, all three types combined living and working spaces. The English merchant's house has had the clearest distinction between living and working space including living quarters, production areas, storage, and a shop (Holliss, 2007: 113). The traditional Japanese house did not strictly separate residential and commercial functions. The traditional Kyoto townhouse, or *machiya*, is a long and narrow structure, no more than two stories high. Its spatial organization is similar to Western row houses. If the house included a workshop or craft area, it was in the room closest to the street. During working hours, the front space was separated to maintain the privacy of the residential area, and later, the space was combined with the second room to serve as a living area (Davis, 2012: 15-23). Similar principles are evident in the traditional houses of Bangkok, China, and Singapore.

The shophouse, as Holliss refers to it, is the specific type of dual-use residential space that was known through medieval as well as today (Holliss, 2007). Differences in the examples indicate that the recognized issues of dual space usage, such as the intersection of commercial and residential users and the need for privacy, are addressed with varying degrees of spatial flexibility, depending on the culture in which they develop. This spatial organization has persisted in family houses to this day.

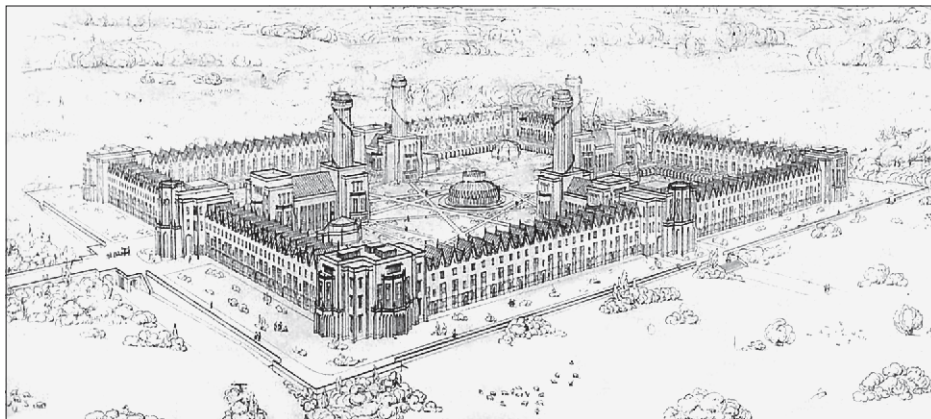
4 "Capitalism ... acknowledges productive labor for the market as the sole form of legitimate 'work,' while the tremendous amount of familial as well as communitarian work that goes on to sustain and reproduce the worker, or more specifically her labor power, is naturalized into nonexistence." (Murrillo, D'Atri, 2018)

THE PERIOD OF INTENSE INDUSTRIALIZATION

The 19th century was marked by industrialization and urbanization. Individual crafts were replaced by manufacturing, factories were built, and the previous economic and social order underwent significant changes. The demand for a large workforce in factories led many to abandon home-based work and seek employment in factories in bigger cities. Simultaneously, the relationship between individuals and work has changed. Workers no longer controlled their work hours; these were determined by employers. Productive work became predominantly a male responsibility, while reproductive work remained within the female domain. This shift began with manufacturing and intensified with mechanization, leading to a division of labor where multiple workers performed different parts of the production process (Rappaport, 2019: 41-45). Consequently, workers became parts of a process, repeating specific tasks without overseeing the entire product, and workspaces and living spaces became spatially separated. Industrialization led to an unprecedented migration of job seekers to the factories in the rapidly growing cities (Heckmann, Zapel, 2017: 14).

As a response to the miserable living conditions in industrial areas, Utopian socialists emerged with the intention to design communities that would foster equality, cooperation, and improved living conditions. Building **workers' settlements** such as Familistere, Guise (FR) established by Jean-Baptiste André Godin, a follower of Charles Fourier, a social utopian thinker, were designed. Inspired by Fourier's phalanstères (self-contained communities), Godin created a living and working complex for his workers at the Godin stove manufacturing plant. The Familistère combined residential units, workspaces, and communal facilities in one complex, reflecting the idea of integrating all aspects of life. A similar approach was taken by Robert Owen when he moved to Indiana and purchased New Harmony (Fig. 4) in 1825. He aimed to transform it into a model utopian community based on his social and educational reforms (Rappaport, 2019: 74). New Harmony was Owen's most ambitious community, but it was never built.

The other significant projects for the discussion on dual-use dwellings are the **cottage factories** projects in Coventry, England, which emerged in the mid-19th century. These projects provided a compromise between home-based work and factory work, offering a unique model of neighborhood development centered around home-based work (Holliss, 2015: 142). In the case of Eli Green's cottage factory from 1858 (Fig. 5), three resi-



dential rows formed a triangular block organized around a power source. Each residential unit included living spaces on the lower floors and a workspace, specifically a weaving room, on the uppermost floor. The workspaces of all units were interconnected by a drive mechanism that powered the weaving looms. The central area of the triangular block served as a communal space for all residents, accessible from the street through a few passages. Each residential unit had street-side access and an exit to the shared central space. The private living spaces were graduating toward the public space through a small semi-private outdoor area. It represents a transitional model with a specific spatial organization that sets a historical urban precedent for collective housing projects that incorporate home-based work and emphasize the importance of community.

FIG. 4 "ARTISTS IMPRESSION OF ROBERT OWEN'S IDEAL FOR NEW HARMONY" BY THE JR JAMES ARCHIVE, UNIVERSITY OF SHEFFIELD, DRAWING OF UNBUILT UTOPIAN COMMUNITY COMBINING RESIDENTIAL UNITS, WORKSPACES, AND COMMUNAL FACILITIES IN ONE COMPLEX

THE SOCIAL REVOLUTION IN THE 20TH CENTURY

Productive and reproductive work began to diverge in the 19th century with industrialization, and this separation was cemented by capitalism.⁴ At the time the first commercial

FIG. 5 ELI GREEN'S COTTAGE FACTORY, BUILT 1858: MULTIPLE HOME-BASED WORK DWELLINGS ARRANGED AROUND THE POWER SOURCE, PHOTOGRAPHY MADE IN THE 1970S BEFORE THE DEMOLITION OF THE ESTATE





FIG. 6 ANDY WARHOL'S PROJECT
"THE SILVER FACTORY"

offices appeared as part of industrial complexes. New technologies of the early 20th century (telephone, telegraph, typewriter, elevator) allowed the offices to be situated away from the factory and make their own architectural type development through the 20th century (Caruso, 2014: 122) creating a space frame for immaterial⁵ work.

New urban planning doctrines of the 20th century directed city development in two opposing directions: the low-rise railway-dependent city, derived from the Garden City concept⁶ by Ebenezer Howard (Rappaport, 2019: 83), and the high-rise city, from Le Corbusier's Radiant city concept. In the former, residential purpose shapes the typology of houses with gardens, while in the latter, it promotes residential towers as 'machines for living', surrounded by vast open green spaces, aiming to maximize sunlight and air circulation, and providing residents with direct access to nature. The CIAM, an international institute promoting new architectural ideas, advocated for functional zoning in cities, proposing that social problems in large cities can be resolved through strict functional segregation. Le Corbusier encapsulated residential neighborhoods into single architectural entities containing all necessary amenities, thus freeing up surrounding space (Rappaport, 2019: 95, 112). What both directions have in common is zoning out the industrial zone which resulted in spatial as well as social segregation of Modern city (Holliss, 2007: 203-209). A focus has shifted to mass housing and dual-used dwellings were marginalized in line with new social and economic values. They have developed further as individual housing or artist ateliers within the residential buildings.

The Prellerhaus, a five-story part of the Bauhaus complex in Dessau from 1926, is often mentioned for its design, but less so for be-

ing a set of 28 dual-used dwellings, **studios** for young masters and students with an interestingly high share of workspace in the living space (Levy Bencostta, 2023: 60-64). The building complex also included communal spaces on the ground floor and basement, while each studio was dedicated to individual work and sleeping.

The true flourishing of the coexistence of living and working in art occurred after Andy Warhol's project "The Silver Factory," realized in 1953 in New York (Fig. 6). Aureli and Tattara are considering this moment as the starting point for 'work/live' type of housing (Aureli, Tattara, 2022: 40). Warhol perfectly embodied the spirit of the times by blending the stark modernism of the Bauhaus with the intense individualism of romanticism. His choice to name his studio 'The Factory' was deliberate, serving both as a homage to and critique of mass production, while also reflecting the studio's actual industrial origins (Pratt, 2012: 25-31). Living and working in **the loft** overlapped in most parts of the housing unit, and the privacy of living space is defined by the user. The social life of artists⁷ is appealing to others who wish to be part of, or connected to, the artistic scene. This is an urban phenomenon in which artists often oc-

⁵ In Marxist economic theory, cognitive work is classified as immaterial labor. The term "immaterial labor" was introduced by Italian sociologist and philosopher Maurizio Lazzarato in his 1996 essay, *Immaterial Labor*. This concept encompasses all knowledge-based work derived from affective and cognitive activities. In the context of the internet, immaterial labor is commonly linked to themes such as digital labor, commons-based peer production, and the creation of user-generated content. (Terranova, 2000)

⁶ Many other utopian concepts formed in the same period such as Cite Industrielle by Tony Garnier in 1917 (Rappaport, 2019: 76) and Linear City by Spanish engineer-planner Arturo Soria y Mata in 1882 for Madrid (Rappaport, 2019: 107).

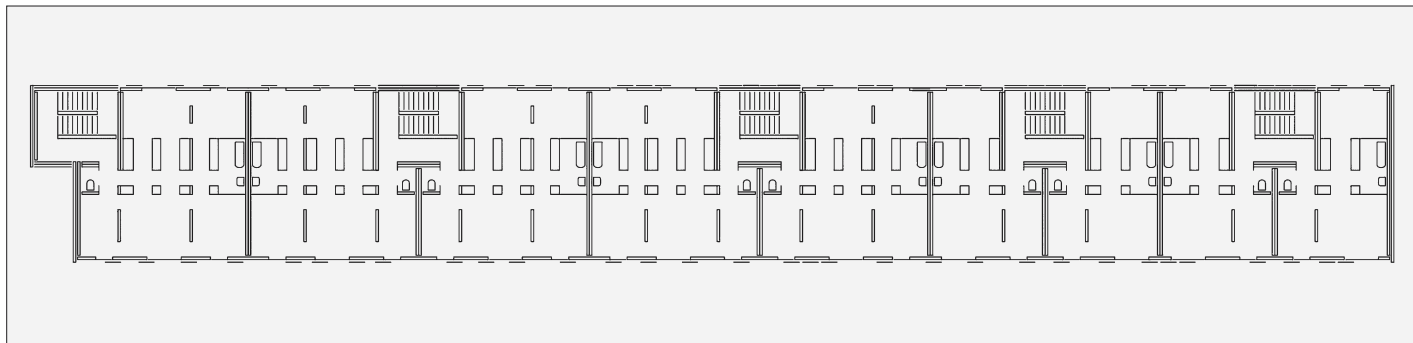


FIG. 7 TYPICAL FLOOR PLAN OF HOUSING IN GRAZ (1994) BY RIEGLER & RIEWE. THE APARTMENTS HAVE A THREE-LAYERED FLOOR PLAN: THE MIDDLE STRIP IS DESIGNED AS A SERVICE ZONE, AND THE OUTER LAYERS ARE ROOMS WITHOUT DETERMINED FUNCTION.

copy abandoned industrial spaces due to affordable costs, or even squat in them, gradually driving positive changes (Pratt, 2012; Aureli, Tattara, 2022: 41) and having an indirect impact on the neighborhood. In the post-studio era⁸ traditional studios are being replaced by flexible, multifunctional spaces or even virtual environments that enable creativity without physical limitations (Lockhart Milan, 2023: 267). This shift also reflects broader social changes toward mobility, connectivity, and decentralization in the contemporary world.

During the 1960s and 1970s young architects questioned the current practices in mass housing and alternative concepts were developed with a focus on individualization and diversification in housing (Heckmann, Zapel, 2017: 28-30). N.J. Habraken's "Supports: An Alternative to Mass Housing" (1962)⁹ emphasizes the importance of creating a framework or "support" for living spaces that enable personalization and adaptation. Habraken's **open-building** ideas have significantly influenced discussions on architecture, urban planning, and the design of housing, promoting a more user-centered approach to build environments. He did not initially consider remote work as a function at home; however, it is significant to the paper because the design approach allows easy adaptation for remote work as well.

As discussed in *Frame and Generic Space* (Leupen, 2006: 18), the traditional approach to

design presents a paradox: the more precisely a dwelling's requirements are defined at the outset, the more likely it is to become misaligned with future needs. When architects focus on measurable aspects of living and translate them into a design, they often overlook the intangible and unquantifiable elements, leaving the design less capable of adapting to unforeseen changes in use (Leupen, 2013: 24).

Buildings like *Housing in Graz* (1994) by Riegler & Riewe (Fig. 7) are deliberately left **use-neutral**, demonstrating a high degree of variability and flexibility, thus enabling easy reprogramming when necessary (Leupen, 2013: 30; Heckmann, Zapel, 2017: 39). Although not considered dual-used dwellings per se, these concepts emphasize individualization in open but precise structure, and a high degree of variability of use, easily adapted to include *work from home* in possible scenarios.

By the end of the 20th century, housing had become increasingly diverse and multifaceted, prioritizing adaptability, flexibility, and personalization. A wider range of apartment sizes, layouts, and standards emerged to accommodate various lifestyles and income levels.

The same process of diversification happened with the development of the office. As Mozas described we have had *the fun office*, *the connected office*, *the hyperreal office*, *the adolescent office*, *office sweet office* that is trying to feel like home, and *the diverse office* (Mozas, 2014: 4-21) which can also be described as working anywhere without needing the office space.

THE DIGITAL REVOLUTION OF 21ST CENTURY

The second shift in housing perspective happened in the 1990s and early 2000s and represents a response to the dominance of modernist architectural principles that prevailed

⁷ The art scene at the time is characterized by a dual nature: social networks and gatherings on one side, and artists in profound isolation on the other.

⁸ This era began in the 1960s and 1970s, in the middle of shifts in artistic practices and the social circumstances of the time, creating opportunities for collaboration and interdisciplinarity, where art enters into dialogue with architecture, technology, social sciences, and urbanism.

⁹ Inspired by Habraken's concepts and the pioneer work of the SAR in the 1960s and 1970s, TU Delft, led by Professor Age van Randen, established the OBOM research group in the 1980s to address the practical challenges of implementing the Open Building approach. <https://www.openbuilding.co/> (3.9.2024.)

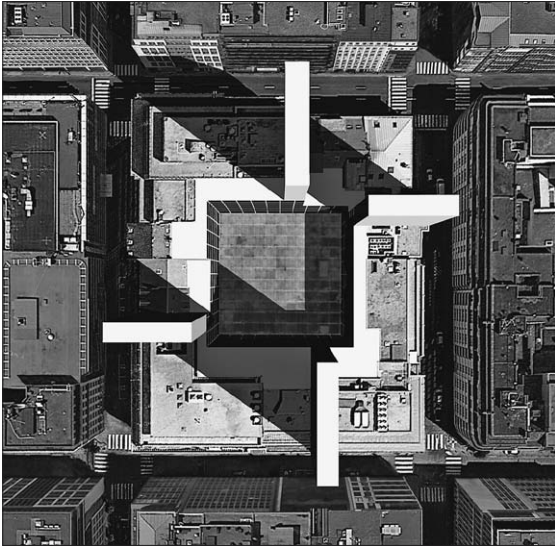


FIG. 8 DOGMA, PRETTY VACANT, 3D VISUALIZATION. TRANSFORMATION OF OFFICE SPACE INTO HOUSING IN THE QUARTIER LEOPOLD, BRUSSELS (BELGIUM), 2014. THE NEW HOUSING IS COOPERATIVELY ORGANIZED WITH LIVE/WORK UNITS. INDIVIDUAL SPACE IS MINIMIZED SO THAT ONE PERSON CAN LIVE IN IT COMFORTABLY, AND COLLECTIVE SPACE IS INCREASED TO CONTAIN THOSE FUNCTIONS USUALLY SQUEEZED INTO TINY APARTMENTS.

FIG. 9 RIKEN YAMAMOTO'S SHINONOME CANAL COURT CODAN HOUSING PROJECT, TOKYO, BUILT 2003. "THE MAIN CHARACTERISTICS OF THIS HOUSING DEVELOPMENT, BY RIKEN YAMAMOTO, ARE THE 'COMMON TERRACE' WHICH IS A VOLUME CARVED OUT OF THE RESIDENTIAL BUILDING, THE 'FOYER-ROOM' WHICH CAN BE USED AS A HOME OFFICE, SUNNY CENTER CORRIDORS, AND SUNNY BATHROOMS/KITCHENS."



in the 20th century. This shift introduced alternative models of living, such as co-housing¹⁰, co-living¹¹, and cooperative building models¹², which emphasized the importance of community gathering as well as individualization and flexibility of personal living space. At the same time, the Digital revolution¹³ has led to new forms of work where private life and work overlap (Fig. 8). Work is no longer confined to 8am to 5pm, Monday to Friday, but integrates various private and social relationships (Aureli, Tattara, 2015). This creates a need for new spatial forms for workspace and some of them were included in alternative models of living.

As noted by Aureli and Tattara, the rise of freelancers¹⁴ has turned homes into work environments, with work being done at kitchen islands, dining tables, beds, or living rooms (Aureli, Tattara, 2022: 6).

In this context, residential space is becoming an epicenter of 'production' again in **live/work units**. This shift is possible not only because new technologies make work ubiquitous, reducing the importance of traditional workplaces but also because immaterial labor incorporates aspects typical of reproductive work, such as sociability, care, and attentiveness. Specific types of workspaces are once again becoming desirable parts of residential buildings (Fig. 9).

As the answer to raising questions placed on the role of communities and local networking in mitigating some of the negative effects of digitalization on the labor market (Dangschat, 2022: 150), there are few new urban planning concepts. Well-developed communities can absorb some of the growth in inequality caused by digital transformation.

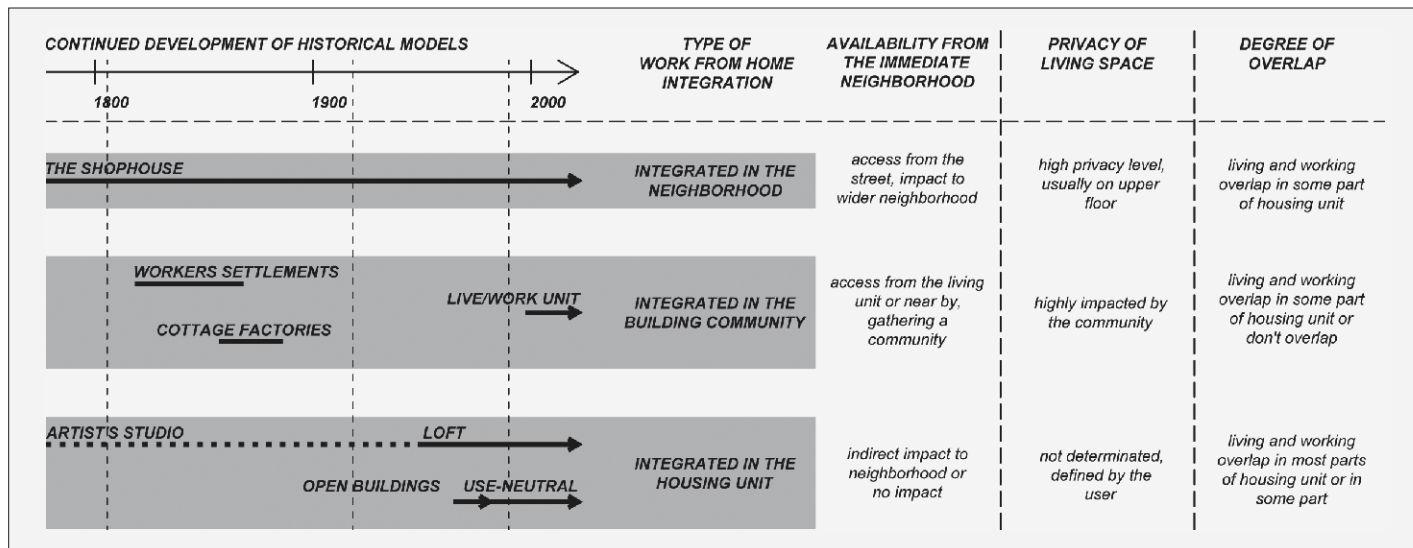
The most well-known is *The 15-minute city* where neighborhoods offer residents essential amenities – such as shops, schools, parks, leisure activities, and healthcare – within a 15-minute walk or bike ride (Papas et al., 2023: 546).

This concept gained worldwide recognition when Paris Mayor Anne Hidalgo made it a central part of her 2020 re-election campaign, advocating for pedestrian and cycle-centered urban design as the way forward. She was successfully re-elected. On a similar topic David Sim, the author of *The Soft City* concept, outlines the principles of layering and multi-functionality as particularly significant for the topic of *work from home*. The author emphasizes that such principles significantly increase the time available for personal needs by reducing the time spent commuting to work and fulfilling other obligations (Sim, 2019: 90). The concept of *Telepolis* by Javier Echeverría refers to a visionary urban model where advanced telecommunica-

¹⁰ Co-housing typically consists of individually owned homes or units, with residents owning their private spaces and sharing common facilities (like kitchens, dining areas, and recreational spaces). Focus is on creating a supportive, connected community where people can share resources, build social ties, and collectively manage shared spaces and responsibilities. (Medar, Čurčić, 2021)

¹¹ Co-living is a temporary housing model in which residents share living spaces, resources, and additional amenities while maintaining private areas, typically only bedrooms. It often targets young professionals, students, digital nomads, or people seeking a flexible, social lifestyle in urban settings. (Medar, Čurčić, 2021)

¹² Cooperative building models are conceived as self-managed projects based on collectively owned shares granting them rights to a specific unit. They are primarily focused on providing affordable housing, and some operate more like traditional housing complexes, while others are community-based and offer a



tions and digital technologies are seamlessly integrated into the fabric of the city. This integration aims to enhance urban living, optimize resources, and create a more connected and efficient urban environment. As author argues, in the near future homes will tend to be the workplace and cities the place of leisure (Gausa, 2003: 616). Collectively, these concepts and projects represent a shift towards more resilient and adaptable urban living, where working and living can seamlessly coexist.

RESULTS AND DISCUSSION

Analysis of historical examples with integrated workspaces in the socioeconomic context of the time has identified a dependency between socioeconomic conditions and the development of various models of dual-use dwellings (Fig. 1). Throughout history, the concept of the dwelling has evolved alongside changes in the organization of work,

from pre-industrial times when productive and reproductive activities coexisted within household units to the industrial era and 20th century marked by spatial separation of work and home. Seven models with specific characteristics, each emerging in a different period, were identified: *the shophouses* in the pre-industrial period, Utopian *workers' settlements* and *cottage factories* of the 19th century, *artists' studios* in the 1950s, *open buildings* in the 1970s, and *use-neutral dwellings* and *live/work units* in the 1990s and early 2000s.

The results of the research show that some of these dual-use dwellings, such as the shophouse and artists' studios, have continued to exist to this day, while others, like the cottage factories in Coventry, have remained in the past but established a historical precedent for contemporary projects. This home-based work community originally emerged around power sources in the 19th century, while contemporary examples, like live/work units, stem from the gathering around common interests.

Through comparative analysis of the basic characteristics of the layout of work and living spaces, the privacy of living spaces, the degree of overlap between living and working spaces, and the impact of the workspace on the immediate neighborhood, three types (Fig. 10) of relationship between work and home through history were identified: dual-use dwelling integrated into the neighbourhood (the shophouse), into the community within the building (cottage factories, workers' settlements and live/work unit), and into the residential unit (artist's loft, open building concept and use-neutral dwelling). A dual-use dwelling integrated into the neighborhood

FIG. 10 TYPES OF RELATIONSHIP BETWEEN WORK AND HOME THROUGH HISTORY

various facilities including co-working spaces. (Baraona Pohl, 2017)

13 It started when the Internet in 1995 became publicly available. At the time production moved to China and developing nations, and Europe strategically transitioned towards building a robust knowledge economy, leveraging technology, innovation, and sustainable practices to drive growth and improve quality of life. The advantages of working with the assist of ICT (informational and communicational technology) allow individuals to temporarily change their work and living locations throughout the year, connecting leisure with utility by utilizing different geographical locations for climatic differences or cultural needs.

14 A freelancer is a self-employed individual who provides services to clients on a project-by-project or contract basis. Their work arrangements can vary greatly – from remote and flexible, often seen in digital and creative fields, to on-site, where physical presence is required.

has direct access to the workspace from the street and an impact on the wider area. The living space is more private, and the overlap of residential and workspaces occurs in a smaller part of the residential unit. Dual-use dwellings integrated into the building community share a common goal of creating an active community around a shared interest, despite varying levels of overlap between work and living spaces at the unit level. Dual-use dwellings integrated into the residential unit are often characterized by an intense overlap of work and living spaces; however, the level of privacy of the living spaces cannot be determined with certainty and depends on the user. Although studio lofts often do not have direct contact with the street and immediate neighborhood, they have historically influenced neighborhood formation through their strong gravitational pull.

CONCLUSION

This paper has analyzed historical forms of *work from home* settlements and purposely built dual-use dwellings, with a focus on identifying their basic characteristics, the degree of overlap between living and working spaces, and their relationship with the immediate surroundings. The conducted research has shown that the intertwining of living and working spaces has a rich historical background, reflecting shifts in societal norms, economic structures, and technological advancements. The results show three types of relationship between work and home through history: integrated into the neighborhood, within the building community, and in the housing unit.

The results of the research on historical examples will contribute to a better understanding of contemporary concepts of *work from home*. Recognized types of relationship between workspace and residential space in historical dual-used dwellings will contribute to further research of criteria for the integration of workspaces in multi-storey residential buildings.

With the digital revolution, high demand for remote work jobs after the COVID-19 pandemic, and the rise of interest in work-life balance, it is evident that there is a growing need for architectural research on the integration of dual-used dwellings within multi-residential developments.

[Proofread by Branislava Pogacic]

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ILLUSTRATION SOURCES

- FIG. 1, 10 Authors, 2024
- FIG. 2 GAUSA, 2003: 402. Image courtesy of UN Studio.
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- FIG. 8 AURELI, TATTARA, 2015. Courtesy Pier Vittorio Aureli and Martino Tattara, DOGMA.
- FIG. 9 BROWNELL, 2024, Via Shutterstock

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