Infinite but Tiny: Towards a Hybrid Architecture of Dwelling

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Ten years after the turn of the millennium a new movement started to take shape in the United States, which believed in the possibility of living with fewer things, even asking, 'Is it possible to own nothing?' The pioneer of this way of life – the Cult of Less – was Michael Kelly Sutton, an American software engineer born in 1987. He started the movement by selling almost all his belongings until he managed to live out of only 'two suitcases and two smallish boxes'.[1] According to Sutton, all of his music was already '100 per cent' digital, so he did not have any CDs ('I just have an iTunes library'), nor did he own any DVDs ('I just rent movies on occasion from iTunes or stream them using Netflix'); even his books could be contained within a Kindle, 'so now I can just read whatever book I want on the device'.[2] Sutton argued that much stress and anxiety could be reduced by taking stock of possessions and bluntly asking oneself 'What do you really need?' Soon other people followed, who took the movement further by deciding to live on the road. Chris Yurista, a DJ from Washington DC, and Joshua Klein, a New York City-based technology innovation consultant, digitised as much as they could of what they owned and started living out on the streets. They no longer needed to worry about the state of their belongings, about cleaning or organising them, since their new digital goods 'can continue to live on indefinitely with little maintenance'.[3] For Yurista, 'the internet has replaced my need for an address'.[4]

This new way of living was only possible thanks to the rise, over the last quarter of the twentieth century, of the so-called service economy. By the end of the 1970s, 'the share of service industries ha[d] risen from 40 to over 60 per cent', reducing the dependency on muscle power and replacing it with intellectual and clerical skills.[5] Against static manufacturing, the service-based economy had caused 'more than 50 per cent of all US jobs [to be] centred in information-related activities'.[6] The changes in the nature of jobs and the advent of the World Wide Web finally made the mainstreaming of flexible work practices and telework possible, bringing along a new type of subject: the contemporary worker, who could work anywhere, at any time. This new flexible mentality did not only canonise connectivity but permitted the outflux of work beyond the traditional space of the office and diffused it across the city. Using in-between spaces such as coffee shops, libraries and co-working areas, the division between life and work became blurred. It was this hybrid mode of living and working which, coupled with cloud computing technologies and non-stop connectivity, constructed a continuous space of production for an increasingly mobile, dynamic and allegedly collaborative workforce. They were the 'catalyst' able to 'radically change the structure of American society in much the same way that the automobile acted as a catalyst on our way of life during the first half of [the twentieth] century.'[7] By the 2020s, the any time, anywhere work ethic had been successfully assimilated.

In this sense, the new digital vagabonds that emerged after Sutton had very little to do with earlier radically minimal ways of living, such as the hermits in fourth-century Europe who withdrew from

the world not only as the result of the institutionalisation of the church, but also as an escape from 'the oppressive conditions of urban life'.[8] The hermit who chose to live a life of solitude, separated from both family and community, was renouncing a mundane life. Sutton's idea of dispossession could not be further away from the famous Franciscan vow to live without property – *vivire sine propio* – when establishing 'use' as a radical alternative to ownership. The understanding of use proposed by Saint Francis, *usus pauper*, presented an alternative way of life. Yet, the philosophy established by the Cult of Less and its followers was not one based on renouncement, but on substitution. As Sutton had predicted, 'cutting down on physical commodities in general' meant 'cutting down on physical commodities that can be replaced by digital counterparts'.[9] The Cult of Less did not propose the renouncement of material things only in order to optimise space, but to have access to a digital world of infinite possibilities. Thus, the promoted 'digital minimalism' could rather be understood as 'digital maximalism'. Why have just twenty – or two hundred – records when you can have access to all sorts of music for just a few dollars' subscription? In this sense, the sphere of consumerism was not transformed, but shifted from the real to the virtual realm. This new life is no less dependent on superfluous things; on the contrary, it relies excessively on digital storage. However, although the Cult of Less had little impact on our form of life, dominated as it is by a capitalist ethos, it did have a huge impact on our form of dwelling: in the twenty-first century, living between the material and the virtual realms of commodities became truly possible.

A new kind of space

What started as those new 'digital counterparts' that could be stored in the cloud – music, photos, videos, books and the like – were soon followed by digital social relationships, triggered by the widespread use of social media.[10] The latest step in this process would be the digitalisation of one's spatial surroundings and, potentially, one's subjectivity. It took place on 28 October 2021, when Mark Zuckerberg, CEO of Meta, announced the company's vision for a 'beyond universe' with constant connection and where someone could feel present irrespective of distance: 'Imagine you put on your glasses … and you are instantly in your home space. It has parts of your physical home, … it has things that are only possible virtually and it has an incredibly inspiring view'.[11] The metaverse, as Zuckerberg explained, could be described as the three-dimensionalisation of the internet, occupied 'with people from all over the world, online avatars, and commerce platforms'.[12] [Fig. 1] In this sense, through the use of both virtual and augmented reality, the metaverse will not only create a realm of infinite possibilities, but it also aspires to redefine the way in which we relate with one another and, ultimately, to redefine life itself.

Originally, the term 'metaverse' was coined by Neal Stephenson in his 1992 science fiction novel *Snow Crash*.[13] Similar to the way Zuckerberg would describe it almost three decades later, Stephenson imagined a three-dimensional virtual realm where 'physical, augmented, and virtual reality' converged in 'a shared online space.'[14] In the story, the metaverse emerged in response to a collapsed global economy in the form of an urban environment developed around a single wide street. It was conceived as a terrain of real estate supported by equidistant service points and different transportation modes, and it stretched across the entire circumference of a fictional planet. The space, accessed through personal and public terminals and experienced in a first-person perspective, allowed the development of a group of people who chose to be continuously connected. As Ken Friedman explained in 1998, Stephenson's metaverse 'could be considered a glorified chat room with total-body surround made possible by a sophisticated system of earphones and goggles that allowed individuals to live and act.'[15]

Fig. 1: One of the spaces presented during Mark Zuckerberg's introduction to the metaverse. Screenshot from Meta, 'The Metaverse and How We'll Build It Together: Connect 2021', *YouTube*, 28 October 2021.

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In fact, Stephenson conceived the metaverse parallel to the rise of online gaming environments and the emergence of virtual worlds. In the early 1970s, the first developments in the video-game industry such as those from Atari, dwelled on the construction of digital built environments from scratch, and from the early 1990s, the mimetic realism of the new massively multiplayer online role-playing games (MMORPG) took the lead in the reproduction of real-world environments into virtual worlds.[16] However, it would be the next generation of platforms in the early 2000s, such as *The Sims Online* (2002) and *Second Life* (2003) that, unlike traditional video games designed to be finished products – both copyrighted and goal-oriented – came closer to what the author of *Snow Crash* had originally envisioned. These have become the true 'harbinger[s] of a 3D environment', able to provide 'a richer, more expressive interactive environment than today's internet.'[17] By erasing obligatory levels to complete as the fundamental part of the game, they provided an experience that has no finality. The absence of goals is taken over by a 'platform which provides a real-world quality that is lacking in other modes of computer mediated communication.'[18] As a result, a new spatial communicative paradigm emerged that escapes from the inefficiencies found in computer-mediated communication such as emails, instant messaging and chat rooms. Within this virtual space one can establish a new virtual community, and explore it by immersing oneself in it.

The immersiveness of perception, which has been an intrinsic characteristic of some MMORPG and the dawn of the metaverse, has an earlier precedent in the multiscreen and multimedia techniques of information presentation. Spaces like those of war situation rooms, TV control rooms or even traffic control rooms, in which a wall, filled with screens, embraces its viewers and presents them with multiple perspectives of different scenes to provide a comprehensive understanding of a complex environment. As Beatriz Colomina has argued, 'designers, architects, and artists were involved from the beginning' and played 'a crucial role in the evolution' of these modes of presenting information.[19] Perhaps one of the earliest and clearest examples is the 1959 American exhibition in Moscow, for which Charles and Ray Eames imagined 'a new kind of space'. [Fig. 2] It consisted of seven twenty-by-thirty-foot (six by nine metres) screens suspended within the 250 foot-diameter (seventy-six metres) golden geodesic dome designed by Buckminster Fuller. The screens projected *Glimpses of USA*, a movie by the Eames composed of thousands of images from many different sources, showcasing the American lifestyle to the people of the USSR. The effect of the exhibition's immersive experience 'was so convincing that apparently some people even smelled things when no smells were introduced, only a suggestion in an image or a sound'.[20] Yet, as Colomina explains, 'the Eameses' innovative technique did not simply present the audience with a new way of seeing things. Rather, it gave form to a new mode of perception that was already in everybody's mind' and 'manifest[ed] in television, space programs, and military operations.'[21] It was a mode of perception that altered linear discourse, so conflicting interests and different viewpoints could be explored at once.[22]

With the metaverse, a complete immersive virtual experience is closer than ever. Rather than merely viewing content through small glowing screens, users, immersed in this created environment, experience what they could not have experienced on a simple 2D app or web page. In the so-called next chapter of the internet, 'people will hang out, you'll be able to really feel like you're present with other people, you'll be able to do all kinds of different work, there'll be new jobs, new forms of entertainment.'[23] In fact, this will be what the company has described as their 'big transformative idea'. [24] The metaverse would be the emergence of 'the internet from being lonely and empty to being a place that always has other live people in it'.[25] In this sense, Zuckerberg's announcement came right on time after a year and

a half of strict government-imposed lockdowns and quarantines that had created a context of deserted cities, empty offices, closed shops, and most importantly, no physical interaction. The Covid-19 pandemic had forced tens of millions of people to self-isolate. Online meetings on Zoom, Teams, and Skype replaced physical contact. Grids of names and faces took over and became the environment in which to relax, meet with friends and escape the four walls of our homes.

But the metaverse 'already feels almost more real, and more like you have a sense of space, than a Zoom call.'[26] This sense of space would be developed further by the ambition that, in the metaverse, all different systems and platforms would be knit together. Movement within the space will not be restricted to the company that owns the specific platform. Instead, instantaneously, people will have the possibility to switch between spaces or withdraw into a separate place. According to Matthew Ball, an established venture capitalist and expert on the emergence of the metaverse, the metaverse will be characterised by 'unprecedented interoperability'.[27] Within it, from virtual identities to digital goods, from avatars to new creations, all would have the possibility to move across platforms. This unrestricted vision, against today's barely interoperable and siloed platforms, fosters the possibility for a seamless use and transition in the metaverse. It is precisely this free movement in space that makes the growth of a myriad of experiences possible in live mode. As an infinite and real-time space, the metaverse 'will be persistent – which is to say, it never "resets" or "pauses" or "ends", it just continues indefinitely.'[28] It will be a space that will always be on, facilitating the possibility to live synchronous experiences.

This synchronicity is clearly communicated in Meta's advertisement, 'The Tiger and the Buffalo'. The advert is set in a museum, where four teenagers come together to realise that, on a painting, the tiger's eyes are moving. After a moment, the tiger looks at them and says: 'this is the dimension of imagination'.[29] Music starts to play and all the animals in the painting start to move their heads to the rhythm. Soon the teenagers, mesmerised by the image, join in, suggesting that what happens in the metaverse, happens in sync with reality. [Fig. 3] Contrary to previous lifeless virtual spaces, where interaction was reduced to a repetition of predescribed mechanical responses, the metaverse is presented as a space full of life. People's actions in the metaverse would be coming directly from the real world. They would be 'spontaneous', 'instilling in the virtual world a real-world sensibility.'[30] The presence of such real-world features, amounting to multimodal communication, would facilitate a great fluidity and regularity across multiple levels. Whether this is between the participants' real selves and their avatars or among participants, this interactively enhanced virtual world would be further supported by users' possibility to explore a variety of activities but also create and amend the virtual landscape themselves. As Meta's advertisement concludes: 'this is going to be fun.'[31]

The next labour platform

Yet, as Ball points out, the metaverse should not be perceived as a game or a mere virtual theme park. Instead, 'in its full vision, the metaverse becomes the gateway to most digital experiences, a key component of all physical ones, and the next great labour platform.'[32] It presents an ideal workspace of new capabilities that expands Meta's Infinite Office, a personal virtual office space.[33] Built upon studies that indicate the effectiveness of someone when working on multiple and related things at once, this future will enable the possibility to 'pull up your perfect workstation … anywhere you go, … all set up, … all preconfigured to the way you had it', all 'with basically a snap of your fingers'.[34] It allows the development of an economy of virtual labourers able to work remotely. Unbound to geographical locations, via the metaverse companies could potentially overcome local labour shortages, and workers could live beyond commuting distances.

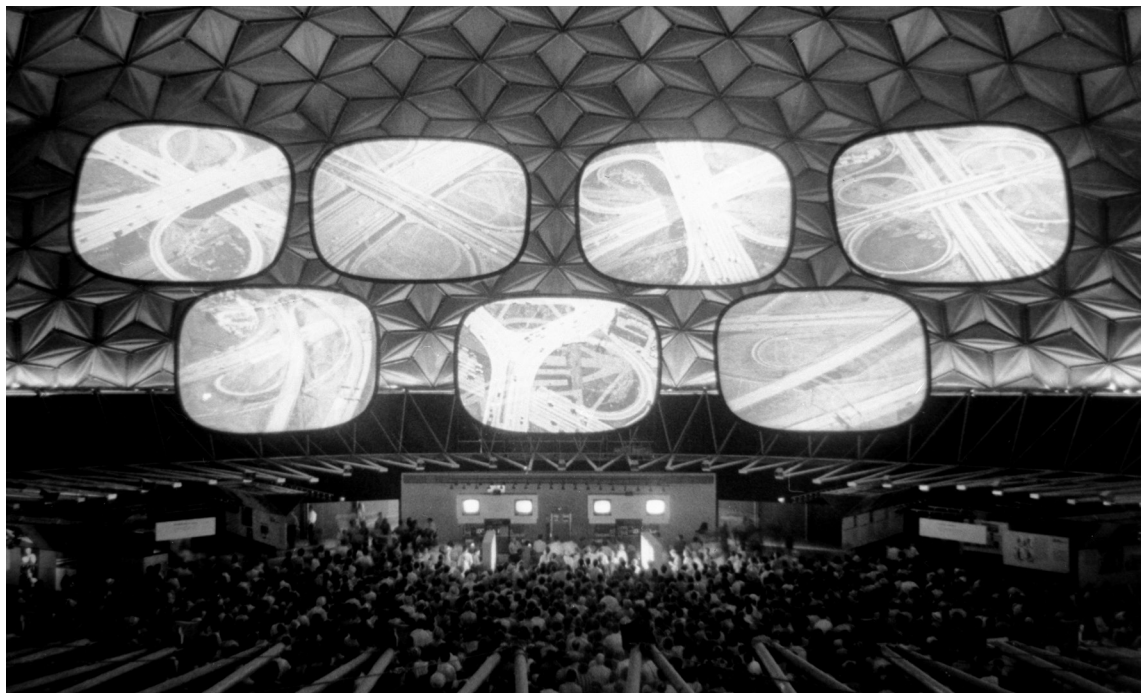

Fig. 2: Multi-screen presentation by Charles and Ray Eames, ‘Glimpses of the USA’, shown to an audience in the geodesic dome theatre by Buckminster Fuller at the American National Exhibition in Moscow, 28 August 1959.

Fig. 3: Screenshot from Meta, ‘The Tiger & The Buffalo’, *YouTube,* 4 November 2021.

Changes to employees' working and living routines caused by the pandemic are thus materialised, consolidating a model of remote work.

Certainly, the idea of remote work is not new. In the 1970s, Jack Nilles, director of interdisciplinary research at the University of Southern California, delinked work from the central-business-district location and proposed a diffused work society organised into subunits or 'new centres'. He described a modified mode of working and living that cut down on US automobile dependency that ultimately relied on finite oil reserves. Thanks to emerging telecommunications and computer technologies, he envisioned a complete transformation in the geography of work, with the role of the central office replaced by a flexible model where information industry workers could 'perform their work … at locations much closer to their homes', or else 'telecommute'.[35] [Fig. 4] In a sense, Nilles did not read the 'problem' as one of transportation, but as one of communication. In a similar way, in 1979 Frank Schiff, vice president of the Committee for Economic Development, concluded his *Washington Post* article 'Working at Home Can Save Gasoline' by asking 'Why not give it a try?' Surprised to notice that no extensive attention had been paid to the scenario of remote work, especially when working tools like distant access to stored data and portable terminals had started to emerge, Schiff endorsed an 'Industrial Revolution in reverse'. According to him, it was about the growth of 'new types of "cottage" industries', similar to those that had proliferated during the pre-industrial period before they were taken over by the 'rigid disciplines of the factory process'.[36] [Fig. 5] The repatriation of work to its 'home' was about to take place.

However, the response to Schiff's question was more complex than originally imagined. According to Nilles, this change was not only a matter of the advent and widespread diffusion of mobile and affordable technologies across the market, such as personal computers, teleconferencing software and fibre-optic systems. Beyond the potential proliferation of relatively inexpensive technological products, interventions at a higher level and broader scale became imperative. Whether at the level of federal regulations or state legislation, the development of policy changes played a key role in influencing the decision of an organisation towards decentralisation.[37] And yet, irrespective of the period's technological advancements and the progressive shift towards a different legislative framework, companies were hesitant to permit their employees to work remotely. On the one hand, the change required spending on training and the employees' adjustment to the new environment, and on the other, it mandated that companies 'keep a more careful eye on [their] employees' and secured the possibility for distant supervision.[38] Precisely such difficulties rendered this shift unrealizable at the time.

Nonetheless, in nowadays post-industrial post-pandemic context, everything is ready for this change. Flexible and mobile, today's globalised and digitalised culture and workforce could shift to an extreme stage of diffusion instantly, and at a significantly reduced cost to the employers. Almost fifty years after the conception of remote work, the global health crisis of Covid-19 became the force for decentralisation that had not been available before. It was the tipping point that, by capitalising on a highly compatible terrain, managed to alter things and convert remote work from home into the norm. With hardly any objection, the 'giant experiment', nurtured for half a century, swiftly increased the portion of the workforce working from home from 3 to 42 per cent.[39] The pandemic eroded the last remaining barriers between life and work. According to Daniel Pinto, J.P. Morgan's co-president and COO, there is 'zero chance' of going back to a pre-pandemic mode of work.[40] Earlier fears over employees' productivity levels are now allayed by data to the contrary. Online retailers like Amazon, financial service providers like American Express, sharing platform enterprises like Dropbox, and social media networks like Meta, all progressively

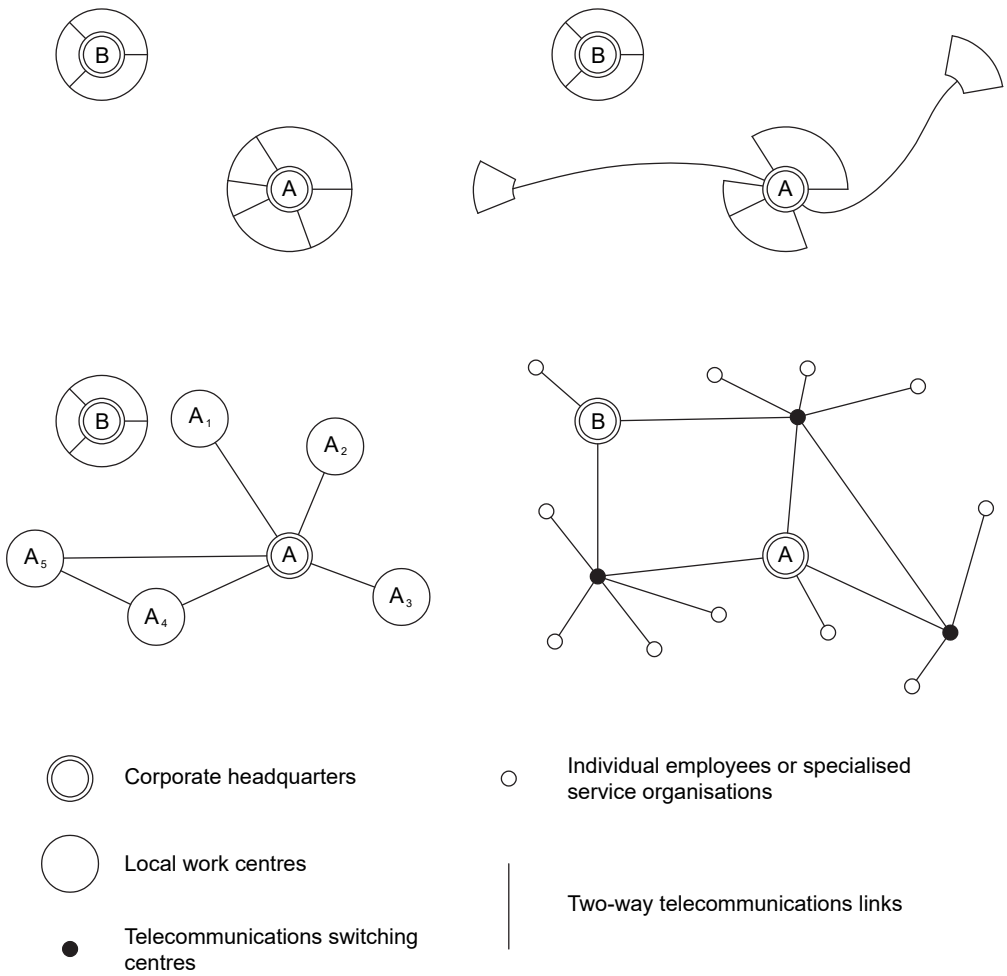

Fig. 4: Organisational evolution for two cases, Corporation A and B: (a) centralization; (b) fragmentation; (c) dispersion; (d) diffusion. Diagram: Jack M. Nilles, *The Telecommunications-Transportation Tradeoff*, redrawn by the authors.

substituted temporary work-from-home arrangements with long-term schemes.[41] Whether these are remote-first models of work or hybrid models with different ratios of remote and face-to-face work, telework is today the new status quo.

If Nilles or Schiff's visions did not succeed during the last quarter of the twentieth century, the new 'telecommuting' facilitated by the metaverse provides the possibility to advance telework further. Today, following the pandemic, the 'dream' model of remote work is here to stay. The service workers' incredibly fast reflexes, legislative frameworks and supervision technologies are well established, while the possibility provided by the metaverse to not only telework but potentially teleport, would elevate such a premise. As Zuckerberg claimed, 'a realised metaverse could be the next best thing to a working teleportation device.'[42] In this sense, by utilising the latest technologies – from virtual reality and augmented reality equipment, to tablets and smartphones – the metaverse re-constructs a process of naturalisation. In Zuckerberg's words, 'I don't think that this is primarily about being engaged with the internet more. I think it's about being engaged more naturally.'[43] Different from navigating through a grid of apps, the metaverse employs elements such as a sense of space and presence, towards the development of a more 'natural' experience: an experience that ultimately argues to become more comfortable, more familiar and more homely. In the metaverse, interactions 'will be a lot richer, they'll feel real.'[44] It promises to provide the capacity to not only deal with, but literally face any problem and be there for any situation or discussion.

Unrestricted by caps on concurrent users, or the number and size of screens, in the metaverse, someone may not only share as much content as they want during a meeting, but can also 'customise their office space, and have it feel like … a digital continuation' of their physical working place.[45] It is precisely through such an approach that, beyond replicating the work patterns of a contemporary office, the metaverse will prepare the ground for new types of work and life that aspire to span among the physical and virtual worlds. It intends to create a new inhabitable space in the interoperable digital realm which appears to be no different from the accessible physical reality.[46] It will be a brand-new, infinite built environment that relies on the same real-world experiential principles, ultimately, becoming 'an extension of the real world that includes not just a physical appearance, but also cultural and social interaction, aesthetic appreciation, and philosophical engagement.'[47] In this way, the metaverse seeks to become the ultimate model not only for a new hybrid mode of working, but for a new way of dwelling – between the virtual and the real world – that will eventually reshape the very architecture of the home.

Happy homes

Less than a month after Zuckerberg's presentation, Ikea, the Swedish furniture giant, launched its latest project Tiny Homes. Located in Tokyo's Shinjuku district, the ten-square-metre apartment condenses the kitchen, bathroom, living and sleeping areas into a single volume designed and laid out with Ikea furniture: an extremely small, cheap, and optimised apartment containing all the necessary services for living. [Fig. 6] Ikea's project did not signify the company's expansion into the real estate business, but intended to prove that Ikea's solutions could fit the ever-shrinking apartments offered on the Tokyo real estate market.[48] In fact, the project emerged as an advertising campaign carried out by the Tokyo branch of the Wieden+Kennedy advertising agency. The idea was quite simple: they would rent one of the city's micro-apartments, furnish it with Ikea solutions, and advertise it via the traditional real estate agencies at an extremely low rate, only ninety-nine yen per month (seventy euro cents). The low price would inevitably draw attention to the apartment, and consequently, to Ikea's products. As Max Pilwat, the creative director, stated in an interview, 'by truly solving a tiny living space with

Fig. 5: Cottage industry. William Hincks, *Twelve Engravings Illustrating the Manufacture of Linen in Ireland* (London: Wm. Hincks, 1783), Plate 4.

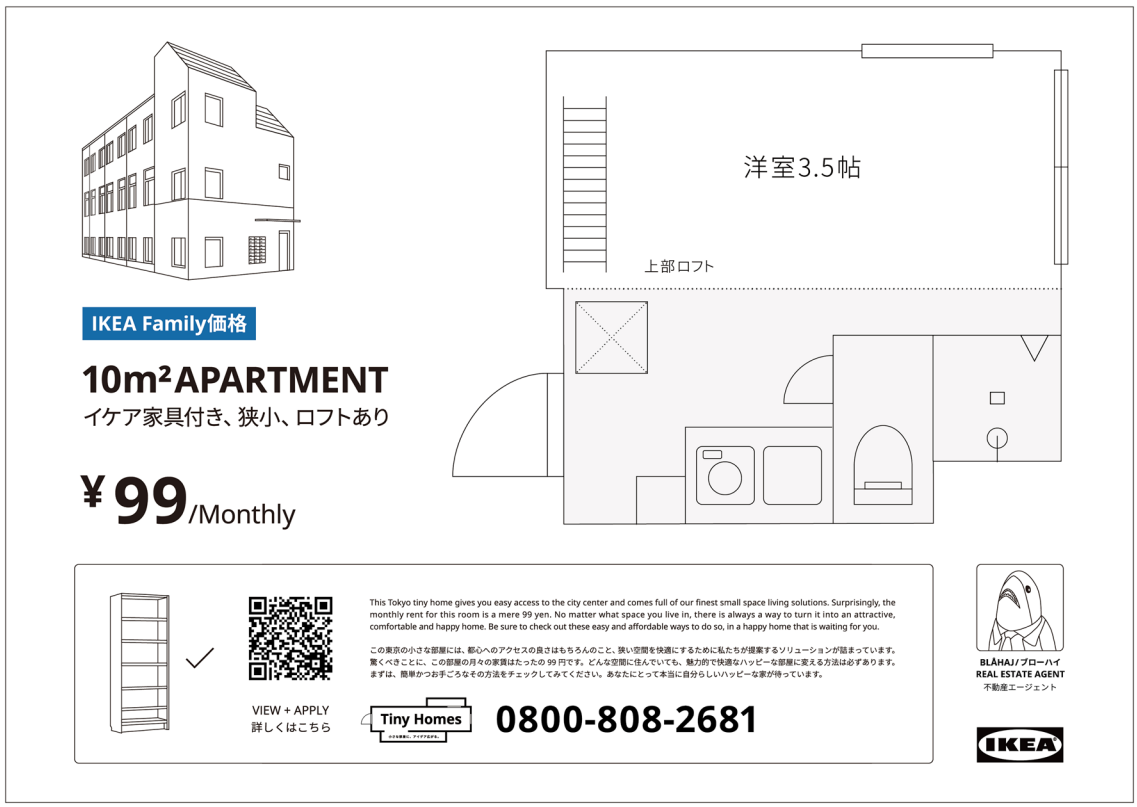

Fig. 6: Floor plan of the apartment just big enough to accommodate a single person. Image: Ikea Japan.

Fig. 7a, 7b: The before/after transformation of the Tiny Homes apartment in Tokyo. Image: Ikea Japan.

Ikea, we directly debunked the myth that Ikea furniture isn't made for Japan's small spaces.'[49]

The campaign was thoroughly curated. On the one hand, the chosen space needed to be carefully selected to convey 'a stark contrast' as part of a before-and-after transformation. [Fig. 7a,7b] As a result, the selection did not include any of Tokyo's micro-apartments, but one with an appealing volume. That way, beyond the few square metres of its floor plan, its height could be used to show the infinite possibilities of a three-dimensional space that, despite its smallness, could provide its inhabitant with a tiny double-height living room. Within it, anything is possible, from work to rest to, even, a party.[50] On the other hand, the campaign targeted a specific demographic: the young contemporary workers born as part of a service economy that promotes 'sharing' rather than 'owning'. In this sense, Blåhaj, a shark cartoon that '[came] out of the vast ocean' in Sweden 'to expand the possibilities of what you can do with small rooms' in Tokyo, became instrumental in communicating with an audience familiar with TikTok filters and animated avatars.[51] [Fig. 8] It played the role of an Ikea real estate agent that teamed up with an Ikea interior design team to transform the tiny flat into the 'happy … aspirational home that people would want to live in'.[52] The story, similar to a Netflix series, was delivered in different episodes and soon went viral not only in Japan, but also in other countries such as Russia and China.

The Ikea Tiny Homes campaign was a response to the new phenomenon of condensed dwellings that had started to populate the urban landscapes of global cities like Tokyo, Hong Kong, London, and San Francisco. Despite their lack of square metres – usually these units can only accommodate a bed, a cooking appliance, a small toilet, and some storage – micro-apartments appear to suit the needs of a generation who seems unconcerned with physical space. In fact, some political figures, like former New York mayor Michael Bloomberg, proposed the micro-apartment as a way to tackle the housing crisis by capitalising on this demographic change. In 2012, Bloomberg's office launched a competition for the construction of 'micro-flats'; they were to be an 'experiment', given that 'New York City's housing codes have not kept up with its changing population, and currently do not allow an entire building of micro-units.'[53] Thus, the mayor would commit to waive certain zoning regulations for the competition's site in Manhattan's Kips Bay neighbourhood, since the brief called for innovative ways of living together, even if within the ca. twenty-seven square metres 'these efficient, self-contained units [had to] include kitchens and bathrooms.'[54] The winning project by nARCHITECTS, completed in 2016, would become the first micro-apartment building in the US, with rental prices reaching as high as 2 800 euros per month.[55]

Unlike historical versions of the minimum living unit, such as rooms in boarding and communal houses, the kitchenless apartments of residential hotels, or even Japanese capsule hotels, which externalised most domestic activities, the contemporary micro-apartment condenses everything into the space of the home, reassuring its inhabitants with a certain sense of autonomy. These two opposing visions of the minimum dwelling were shaped by discussions on the housing shortage and degrading living conditions of the late 1920s. The idea of 'the minimum dwelling as a unit-sized reduction of the typical, bourgeois, single-family house' dominated most architects' proposals at the second CIAM congress held in Frankfurt in 1929, which was entirely dedicated to the question of the minimum dwelling.[56] In opposition to them, Karel Teige, a Czechoslovakian artist and critic, described an alternative way of living in his 1932 book *Nejmenší Byt* (published in English as *The Minimum Dwelling*). Instead of a condensed apartment, the minimum dwelling unit is defined as a 'minimal but adequate, independent, habitable room' supported by shared domestic services.[57] Meanwhile Teige's approach incorporated a collective ethos, the relation to the exterior that the architects of the *existenzminimum*

Fig. 8: Blåhaj, the shark mascot. Image: Ikea Japan.

envisaged is substituted by the promise of an alleged autonomy.

Yet, despite this autonomy, those minimum conditions provided within each dwelling would be highly reliant on the city's infrastructure. It was a process that started in the nineteenth century, when different districts were reorganised to be connected to different networks, and continued in the twentieth century, with the rise of domestic equipment that was able to shape a new living culture. As the architect Aristide Antonas explains, it would be precisely the possibility to freely plug in to this infrastructure that became, on the one hand, 'the first step in a culture of distinct shared systems', and on the other, a significant contribution 'to the decline of the community.'[58] The dominance of the city's infrastructure over its built fabric, over a common reading of life and dwelling, would form the foundation upon which the city would transform into a system of minimum cells devoid of any collective or shared functions.

The emergence of another network of infrastructure over the past decades, the internet, signified another key step forward in this transformation. After the 2008 economic crisis, in the 2020 Covid-19 pandemic those people lucky enough to remain in possession of their properties saw themselves forced to stay at home. Instead of enjoying what the city had to offer, the internet, via its platforms and the possibility to connect and play online video games, could act as a consolation. In fact, during both crises, sales of game hardware and software dramatically increased in North America.[59] As Nick Dyer-Witheford and Greig de Peuter point out, 'a maturing audience of stay-at-home gamers would cocoon around the Wii, Xbox 360, or PS3 or migrate to *World of Warcraft* or *Second Life* to enjoy a diversion from economic disaster.'[60] Thus, the constrained domestic space of the home, hit by the crisis and reduced even further towards the very minimum of a traditional flat, would expand into the virtual realm in order to provide an alternative to city life. The space of the minimum dwelling would extend beyond reality to virtuality through the infrastructural support of the internet, setting forth an array of possibilities as well as a place to escape from the burdensome circumstances of reality. This constitutes a new condition in which digital technology may have become as important as the need for shelter.

It would be precisely this canonised condition of infrastructural dependency that Ikea's Tiny Homes relies upon. Connected not only to the traditional city infrastructure but to the infinite network provided by the internet, Ikea's 'aspirational home' celebrates the micro-apartment that has become more autonomous than ever. By incorporating all the necessary domestic services – kitchen, toilet, laundry – within the unit, it answers the question of the minimum dwelling by continuing CIAM's predicaments of 1929. However, while in the 1920s, dwelling in a minimal space was expected to inspire in its inhabitants a certain material abstinence in search of defining 'real' human needs, today the direct behavioural consequence of residing in a space that has been reduced to the bare minimum translates into a new ethos of digital consumerism. Even if there is not a single digital device present in Ikea's Tiny Homes advertising campaign, their presence can be felt everywhere. As architect Nicholas Negroponte has remarked, 'like air and drinking water, being digital will be noticed only by its absence, not its presence.'[61] In fact, screens have already managed to colonise every ambience of the contemporary domestic space and soon, with the advent of the metaverse, all sorts of AR and VR equipment will become the indispensable mediator towards a virtually infinite productive terrain, in which every social and working relationship is relegated to the virtual. Understood as the architectural typology *par excellence* for today's global city, Tiny Homes celebrates the micro-apartment as the housing paradigm for a new service working class that has mastered a new mode of dwelling between the real and the virtual realm.

Towards a hybrid architecture of dwelling

In our current precarious context, the micro-apartment is becoming less a choice, as it was for the tech-savvy workers who embraced the Cult of Less, and more a last resort for many city dwellers across the globe. Yet, with the launch of the metaverse and its promise of a seamless connection of multiple realities, the condition of precarity, as defined by Paolo Virno and others, seems to take on a new shape, as is apparent in Ikea's Tiny Homes project. Both events – Meta's announcement of the metaverse and Ikea's Tiny Homes – appear to come together to naturalise this condition as a frictionless and comfortable state, free of worries about too many possessions and the burden of a fixed permanent house that requires care and maintenance. Such an 'absent' existence, disguised by the new 'freedoms' acquired via constant mobility and flexibility, is characterised by an utter uprootedness. Nearly a quarter of a century after Negroponte's 1998 article 'Beyond Digital', we are entering a period where digital and nondigital life are almost indistinguishable. The interplay 'between digital, biological, cultural, and spiritual systems, between cyberspace and real space, between embodied media and mixed reality in social and physical communication, between visual, haptic, auditory, and kinaesthetic media experiences, between virtual and augmented reality' has become more than a mere duplication of dwelling.[62] It has established a new relationship in which the boundary between the real and the virtual worlds is blurred. This unification of domains projects a hybrid future where people and communities simultaneously inhabit both realms. Even if only a few years ago this coexistence was thought to be 'certainly not for everybody', the advent of the metaverse promises to effortlessly colonise every aspect of human life.[63] Cyberspace will no longer be just the 'the habitat of the imagination', occupied by a liquid architecture unbound to earth: clearly a different realm from the real world, that constructs an alternative reality.[64] On the contrary, in the metaverse, the virtual is disguised as a new, infinite extension of reality for working, studying, playing, or socialising, in which there is a natural transition from the physical to the digital. It is a transmutation of already-known actions, but now, to be performed in a controlled, safe, and surveilled environment that presents itself as just another office, another classroom or another coffee shop, completely 'naturalised'.[65]

However, as Ball explained, 'the metaverse requires everyone to be able to create and contribute "content" and "experiences," not just well-staffed corporations and technically skilled individuals trying to make games or movies.'[66] It needs to be '"populated", rather than just "populable", and this population must then fill in this digital world with things to do and content to consume.'[67] It will be created by people, but not from scratch, since the metaverse should not be perceived as an empty space. As Zuckerberg points out, a number of apps and tools have already been specifically designed and set in place to 'help build the skillsets of the people who build these experiences'.[68] But at the same time, there is also a need to ensure that 'creators are ready to share their creativity and capitalise on this emerging opportunity from day one.'[69] This way, the genuine interest in facilitating and liberating users' creativity becomes the framework to place these users in a frantic mode of production that takes place every time they leave the real world and inhabit the virtual one.[70] It generates a subtle change in the form – rather than level – of engagement that signifies a pioneering form of accumulation. Extending the perpetual process of extraction, this novel type of accumulation increases its reach even more as it builds further on what Paolo Virno described as the 'general intellect'.[71] It shapes a context of continuous creation where today's diffused factory gets the possibility to be spread further. Entering the new platforms of the metaverse is more than just a new way of working or socialising; it manifests a transition into a new world where the individual's soul continues to be exploited. Driven by real-time connectivity and

market pressures that prevent any sense of collective construction of such worlds, the metaverse resembles a sophisticated construct where the 'digital virtualities amplify and reinforce imperial actualities'.[72]

Hence, diversity and inclusion emerge as an opportunity for profit in pursuit of the ultimate globalising project.[73] The one billion users that are predicted to populate the metaverse within the next decade will transform it into a gigantic immaterial labour platform where everyone, irrespective of place, becomes a creator. In fact, the necessary hardware and connectivity infrastructures are already widespread and will become even more so.[74] Enabling a global community with more tools and connections, rather than the great empowerment of individuals, will inevitably facilitate a radical expansion of the labour market. It emerges as a new economic opportunity, in which the metaverse transforms from just a new product into 'an ecosystem'. In Zuckerberg's words, 'together, we can unlock a massively bigger creative economy.'[75] For this reason, 'the metaverse has become the newest macro-goal for many of the world's tech giants.'[76] Unlike the arrival and rise of the World Wide Web, which relied on public research and government funds, with private corporations only realising its commercial potential at a later stage, these premises are altered in the case of the metaverse.[77] As the owners of the skills and resources, 'the major tech companies don't just want to lead the metaverse, they want to own and define it.'[78] From corporations like Microsoft, Google and Meta to the creators of *Second Life*, Linden Lab, all are competing to build and commercialise the metaverse's infrastructure. Like the internet's mine of raw data, the metaverse too can be understood as an untapped quarry of raw materials which these private organisations would extract and control. Their software will soon be ubiquitous and move more and more into the background, becoming invisible; it will have more power over our lives than ever before.

In this sense, the upscaling of the digital dwelling and the parallel downsizing of the physical one echoes the interests of contemporary global capitalism. 'The inexorable dematerialization of physical space, distance, and objects constructs a resilient environment that responds to today's context of instability and uncertainty by confronting the static architectures of the real world with its transformable, dynamic and easy to reconfigure virtuality.'[79] It forms a flexible, fluid, ever-changing space that evades permanency and may be read as an ongoing process: negotiated and subject to constant reappraisal. Thus, the possibility of a hybrid architecture of dwelling translates into a domain resistant to economic disasters and health crises, granting the plutocracy an unprecedented, and much demanded, degree of security. In fact, crises such as the Covid-19 pandemic which, beyond threatening individual safety, have a huge impact on the economy, make the continuous shrinkage of the physical space and the maximisation of the digital an utmost priority.[80] Although the virtual will not be able to eliminate the city altogether, its disproportionate increase has the capacity to facilitate the construction of a threefold goal: a highly healthy world, devoid of real contact between people; a highly secure world, where everything is monitored, surveilled and controlled, leaving no space for an uprising; and, finally, a highly productive world, where existence becomes work itself.

This way, the division between the domestic space and the work space introduced by modern housing, which conveyed a perception of the house as a haven detached from the world of production and disguised all forms of reproductive and domestic labour, would get inverted and return in its pre-industrial form. Similar to the mediaeval house, where domestic and work spaces were combined within the same building, today we face a return to such an interiorisation. Yet, rather than facilitating a degree of self-governance, this inversion brings a series of conditions with it. While enclosing all the traditional functions of the home, Tiny Homes

appears to be more sustainable and affordable, easier to maintain, and, most importantly, virtually infinite. If this space becomes claustrophobic, there is always the possibility to digitally dwell somewhere else. It is precisely how the metaverse means to reshape the prospects for a new immersive virtual dwelling. Yet, within this framework, dwelling transforms into the ultimate form of production. What appeared as an opportunity to withdraw and resist the dominant order, is in fact about to become a new moment of dispossession. Consequently, this illusionary exodus does not construct an alternative but reconstructs the survival of the status quo. Disguised behind the idyllic image of a huge and infinite space where everything is possible and devoid of any spatial, economic and technical limitations, the metaverse emerges as the new essential infrastructure to be plugged into.

Devoid of any sense of belonging and community, any sense of care, and any possibility for a *bios* – the 'qualified life' that Giorgio Agamben opposes to *zoe*, the bare life – dwelling withholds the possibility of 'being' in Martin Heidegger's sense, and is surpassed by a mere productive existence. In the infinite but tiny space of this new type of hybrid architecture and urbanisation, dwelling becomes almost impossible. The home and its material tradition are uprooted, while, in parallel, 'virtual reality is creating a "deep-seated virtualization of human beings".'[81] It signifies an existence within a vicious cycle of constant production and monetisation that disguises a need for consumption and steers us towards the possibility of becoming 'machines, enslaving ourselves in our own virtualized reality'.[82] Within such a fully economised condition, subjects and avatars are 'not just … workers (as labour power) but also… consumers (the "mind share" targeted by marketers), … learners (university degrees as vocational preparation), and even… a source of raw materials (the bio- value extracted for genetic engineering)', thus upending the very condition of dwelling.[83]

Notes

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and *Mona Lisa Overdrive* (1988), discusses a global information space, 'cyberspace'. Yet, Stephenson's proposal was the first to imagine the possibility of fully engaged 'real-life' activities to shift into the non-physical realm. See John F. Barber, 'Reviewed Work: The Second Life Herald: The Virtual Tabloid That Witnessed the Dawn of the Metaverse by Peter Ludlow, Mark Wallace', *Leonardo* 42, no. 2 (2009): 171.

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Biography

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