

Dwelling in the Digital Age: Imagination, Experience, and Subjectivity

Antoine Picon

A revealing crisis

The pandemic has reinforced the importance of dwelling. Square feet have never mattered as much as during the successive lockdowns experienced by large swaths of the world population. In countries like France where small apartments are common, it has triggered a desire for single-family houses, preferably in suburban or even rural settings. Though the total number of moves out of major cities have remained limited so far – the exodus announced by the media has not happened – the imaginary of the home has somewhat shifted.¹

The digital has proved an essential component of this heightened awareness of the importance of the home. Indeed, lockdowns would not have been manageable without the digital tools that made remote working possible and enabled family and friends to stay in touch, thus allowing the maintenance of social ties and work relations challenged by spatial separation. While making life in time of crisis easier, at least for those with jobs that didn't need physical presence, the use of these tools was accompanied by the rise of new requirements and problems. The pandemic has not only provoked a rapid evolution of the imaginary of the home; it has also transformed the understanding of what it concretely takes to make the home fully liveable. For example, lofts without partitions met with their limits when more than one person had to engage in a video call. Never have isolated rooms or corners proved more attractive than at a time when phonic isolation was becoming crucial. Simultaneously, the existing antagonism between direct sun light

and the use of computer displays became more acute. After months of remote work, we understand comfort in a different way than before the pandemic.

Crises often act as revelations of evolutions that had begun years and even decades before, rather than as triggers of totally unheard-of changes. In North America for instance, the 1872 horse plague contributed to reveal the irresistible character of the mechanisation of urban transportation.² If Covid-19 played a part in making evident the importance of the digital in our attitudes towards dwelling, the transformation of our conceptions and practices of inhabiting had begun long before. As always with the digital, the imaginary and the real, the experimental and the widespread coexist in disconcerting ways, a consequence of its proximity both to our expectations and our everyday life. While we dream of smart homes and responsive environments, Airbnb has very concretely altered the use of apartments and houses to the point that it has become a matter of concern for municipalities like Barcelona and Paris, not to mention Amsterdam and Berlin; in all these cities, it has led to the adoption of specific regulations. Whereas Mark Zuckerberg's Metaverse is still in its infancy, a disappointing infancy so far, we already live in digitally augmented spaces with our computers, smartphones, and tablets.

How to disentangle such an intricate set of dreams and realities, mental representations, and concrete practices? How to discern in the maze of existing conditions and possible evolutions what can reasonably be expected? Dwelling in the digital age proves an especially complex question, not

only because of the specific issues raised by the digital. For the home, even more than the digital, tends to blur the distinction between the imaginary and the real. This imaginary dimension, powerfully evoked by Gaston Bachelard in books such as the *Poetics of Space*, complicates even further the very notion of dwelling.³

On the meaning of dwelling

Even more than to Bachelard's *Poetics of Space*, any attempt to theorise what dwelling is about must confront Martin Heidegger's seminal essay 'Building Dwelling Thinking'.⁴ Few texts from the philosophical canon are as often invoked by architects, not always with a complete understanding of Heidegger's real intent. Contrary to Bachelard, the home in its architectural sense is not the real topic for the German philosopher, who probes situatedness at a much more general level, as being in the world, fully inhabiting our planet, rather than what it means to occupy a given place and live in specific premises. From Heidegger's perspective, dwelling was seriously compromised by modernity, a critique that obviously expands far beyond architectural and urban modernism.

I would like to recentre the attention on the question of architectural dwelling. What does it mean to inhabit a place and a building? From an architectural standpoint, inhabiting or dwelling connotes two things. It refers to the attachment to certain places and spaces, and to the feeling that part of us is defined by the repeated experience of these places and spaces. This feeling is inseparable from one of the most fundamental powers of architecture, namely its capacity to simultaneously regulate our relation to physical phenomena, ranging from contact with materials to the experience of light, and to suggest something about who we are. This suggestion is usually discreet. As Walter Benjamin famously remarked, architecture is usually perceived in a state of distraction.⁵ Notwithstanding its discretion, such a suggestion is powerful enough to create a nagging sense of something missing

when we are transplanted to places for which we feel no empathy.

There is a powerful link between architecture and the constitution of human subjectivity, a link that extends in both directions. To borrow a concept developed by science and technology studies scholar Sheila Jasanoff, one could be tempted to call this process of mutual determination a 'co-production'.⁶ Tell me where and how you live, and I will tell you something about who you are. Going further, at least on the surface, Beatriz Colomina and Mark Wigley posit that 'design always presents itself as serving the human but its real ambition is to redesign the human'.⁷ A seductive statement, indeed. It may be true at a very general level, considering design as encompassing all the artefacts and systems that we conceive and build, in other words as synonymous with technology and the arts as a whole. But is it so true, and so radical when applied specifically to architecture? For the latter, contributing to the constitution or the emergence of subjectivity may in fact have far more profound consequences than this alleged redesign of the human. In my book *The Materiality of Architecture*, I relate this contribution to the emergence of subjectivity to another fundamental aspect of dwelling.⁸ Dwelling not only whispers in our ears and the ears of others something about who we are; it contributes to the feeling that what we think, say, and do has relevance, that it is meaningful. Never has this feeling been so necessary as in an age marked by the crisis of traditional modes of political representation. It is certainly no coincidence if this crisis corresponds to a destabilisation of traditional modes of living and inhabiting.

The meaningfulness of human thought, speech and action requires something like a frame. The built environment, architecture especially, provides this frame. The true power of architecture is analogous to that of a theatre. Even when it is empty, the theatre is organised in such a way that the words pronounced on the stage have a special resonance. Anyone who goes on stage feels this effect. Architecture stages human thoughts, words, and

above all actions. It does not necessarily need to possess in itself a significance, even if it often does, notwithstanding the advocates of the self-referentiality of architecture like Valerio Olgiati. Rather, it suggests that human thoughts and actions have a relevance, a meaning, and it nudges these thoughts and actions in some directions. This nudging is what the political character of architecture means most of the time. Indeed, architecture rarely constrains its users violently (prisons or camps fortunately remain the exception among its programmes); it orients behaviour rather than bending it forcefully, which does not mean that these orientations are necessarily benevolent. When they are not, those for whom they were designed may experience difficulty to inhabit.

To dwell strongly suggests that we can be the actors of our own lives instead of being tossed back and forth by powers beyond our control. It is good to remember in this respect that for Renaissance humanist Daniele Barbaro, one of Andrea Palladio's protectors, the role of architecture was to establish a specifically human world, partially protected from the rival powers of the gods and nature, from the transcendence of the former and the implacable immanence of the latter.⁹ Both denied humans the possibility to settle in a way that suited who they are or rather who they believe they are, for to see oneself as human is always partly an imagination, a fiction. To inhabit is to be protected from the infinite and the blatantly inhuman through the creation of a built environment tailored to human measure.

Returning to Heidegger and his vehemently anti-modern stance, the philosopher was certainly right in his diagnosis of a crisis of dwelling, which was clearly a crisis of the human scale provoked by technology and its consequences for the built environment. But he tended to forget that one of the aims of modernism was to restore this human measure through a redemptive process. Modernist architecture and urbanism saw in technology a destabilising power that had introduced both exhilarating and frightening rhythms and scales that no longer had

anything to do with traditional human measure and pace. With its speed, which at the time was twenty times that of the walking human, the automobile was emblematic of this shift. But modernist architects and urbanists simultaneously believed that this power could be mastered and made compatible with inhabiting. It was, for instance, the source of Le Corbusier's interest in human scale and measure.¹⁰ His celebrated Villa Savoye, which one reached in an automobile before ascending on foot via the ramp into the interior, was meant to offer an example of such a reconciliation between the rhythms of mechanisation and the immemorial rhythm of the human gait.

Revealingly, a similar type of debate has accompanied the rise of the digital. Here again, the question of the gap between the traditional rhythms of human life and those impelled by technology has arisen. This was accompanied by a series of interrogations concerning the importance that space could keep within the new world of the instantaneous communication by means of digital networks. While the critics of digital technology lament its dramatic disruption of everyday life and its supposedly nefarious consequences on architecture, its proponents envisage it as a path towards a regained quality of life in spaces improved thanks to digital technology. In his 1995 book *City of Bits: Space, Place, and the Infobahn*, William Mitchell imagined that cities would become more peaceful and liveable with the development of online activities and the subsequent decrease in aggressive physical mobility.¹¹ More generally, in the eyes of its most fervent advocates, the digital seems to offer the possibility to truly dwell again, thus making it possible to overcome the disorienting effects of globalisation. Even Patrick Schumacher's 'parametricism' may be interpreted from this perspective despite its focus on the stylistic dimension and its notorious links with unbridled star-architecture hubris.¹²

Is the digital synonymous with a new age of dwelling? This question must be addressed at three levels. First, what are the changes that it brings to

the concrete experience of the built environment? The Covid-19 pandemic has contributed to reveal some of them, but the full picture is still far from clear. Secondly, how are these changes related to this different understanding of the human, which is often dubbed a transition towards a posthuman condition? Thirdly, the least easy to address: will these shifts lead to the emergence of new spatial organisations and programmes? In particular, what would the impact on housing be beyond the multiplication of screens in all sorts of rooms, from kitchen to bedrooms, and from family room to home office? This is the least easy issue to address for we are probably just at the beginning of an evolution that may prove more insidious than spectacular. Like electricity before it, the digital has begun to transform the general atmosphere of the home rather than its spatial organisation. Will it eventually, again alike electricity, translate into concrete spatial changes? Electricity gave a much greater flexibility to the design of apartments and above all allowed their stacking beyond what had been done before. It also fostered suburban development by better equipping homes, particularly individual houses, with appliances, thus making them less reliant on human labour, a process evoked by Giedion in *Mechanization Takes Command*.¹³ The tall apartment building and the twentieth-century suburban house were both children of electricity. Will there be comparable changes with the digital?

A changing experience of the material world and the home

The first thing to note is that digital has not taken architecture away from the physical world, far from it. More generally, the increase in electronic stimuli and time spent online has been accompanied by a heightened sensitivity to certain aspects of the physical world. If we agree to call materiality, not a property that certain phenomena and physical objects possess in themselves independently from us, humans, but the type of relation that we maintain with the physical world, a relation characterised by

the importance granted to some of these phenomena and objects by our culture, our science, and our technology, the digital corresponds to an evolution of materiality, not to a dematerialisation.

Since the beginning of the digital age, in just over twenty-five years, the use of computers, tablets and especially mobile phones has contributed to changing the way we see, hear and even touch what surrounds us. In particular, we have become much more sensitive to materials and their textures, and to certain qualities of light. Digital technology also seems to have caused a blurring of the lines between sight and touch, an effect that architecture has seized upon by means of the 'return of ornament', which has led to the multiplication of visual effects that give the impression of touching certain surfaces with both the eyes and the fingers. This impression is particularly strong, for instance, in Herzog & de Meuron's de Young Museum in San Francisco, with its skin covered with protuberances that resemble Braille characters.¹⁴

The blurring of the initially sharp division between atoms of matter and bits of information represents another striking evolution. Whether we surf the Internet with our computers or consult a road map on our mobile phones, we are increasingly living in a reality that can be described as augmented insofar as its physical dimension is constantly enriched by digital content. This augmentation is among the key dimensions that has enabled the rise of the smart city as a new set of urban ideals and practices.

This set of evolutions, which can be characterised as a change of materiality, has been expressed in the field of architecture by the crisis of a certain number of traditional dimensions of the discipline. Received aspects of architectural design, such as structure or tectonics, have become less important, while other aspects, such as the often ornamental treatment of envelopes, have become more so. Closer to the question of dwelling in the digital age, the notion of space central to modern architecture and urbanism is hardly applicable to the way of conceiving buildings mobilised by many

contemporary architects. In fact, it has almost disappeared from their vocabulary. In some buildings, like those produced by Zaha Hadid Architects or UN Studio, the topological complexity can at times recall modern architecture's work on space, but the resemblance remains superficial, insofar as the desired effects, starting with a certain feeling of disorientation, are quite different.

Most of the time, architectural interiority seems to unfold in relation to other factors, like texture and light, no longer envisaged as a dramatic revelation of the space, but as parameters of the 'well-tempered environment' theorised by British historian Reyner Banham in his eponymous book.¹⁵ Speaking of such an environment, an architect like Iñaki Abalos interprets the rise of thermal performance as a key dimension of design in terms of a progressive move from mechanics to thermodynamics, a transition also staged by architect Philip Rahm in projects that pay special attention to phenomena like gradients of humidity, and above all, temperature.¹⁶ In the new conception of materiality that underwrites much of today's experimental architecture, the physical phenomena that take place within a construction should matter at least as much as the layout of the floors, walls and ceilings.

What does it mean to feel at home in such a context? Dwelling seems subject to complex trends. To begin with, the crisis of the modernist notion of space goes hand in hand with the questioning of a conception of human subjects as radically distinct from what surrounds them. Inhabitants no longer settle within an emptiness that it is up to them to furnish. They move within a set of fields of force and networks, many of them electromagnetic and electronic, which tend to abolish any clear separation between subjective interiority and the exteriority of the environment. Borrowed from the philosophy of Gilles Deleuze and frequently mobilised by the representatives of the digital neo-avant-gardes, the notion of affect is a convenient term for this relatively unprecedented situation, to which I will return shortly.

This situation seems to reinforce the cocoon-character of a habitat perceived as inseparable from the inhabitant, except that the digital simultaneously contributes to opening it to the outside, the computer or phone screens appearing as windows on physical or electronic distant horizons. A paradox noted by historian of science and technology Paul Edwards in his seminal analysis of the control rooms of the first large-scale computer network, the Semi-Automatic Ground Environment, which was used from the late 1950s onwards to coordinate the military response to a possible Soviet air attack, is that digital age interiors, whether public or private, military or civilian, are subject to the paradoxical imperative to self-enclosure in order to be able to open up to the outside world by means of electronic systems.¹⁷ Decades later, the digital age home is still following this pattern with a striking mix of closure and connection, like a cocoon that is impervious to certain influences while being permeated by others.

Ideally, the home of the well-off digital age inhabitant should filter physical nuisances from outside, starting with sound and excessive light, while enabling a seamless electronic connection to that same outside. However, this attempt at closure is counterbalanced by the desire to open the home to a class of phenomena, objects and beings usually categorised as 'natural'. Never has the longing for nature proved so universal. The very notion of nature is criticised by influential contemporary philosophers, anthropologists, and social scientists, from Timothy Morton to Philippe Descola and Bruno Latour, but it is at the same time endorsed uncritically by the public at large.¹⁸ Reinforced by the pandemic, this interest has led in countries like France to a rediscovery of the advantages of living in mid-sized cities, in villages, or even in the countryside, at least for those able to work remotely. It has also translated in a multiplication of planted balconies and rooftops, a craze epitomised by projects like Italian architect Stefano Boeri's *Bosco Verticale* in Milan or Vincent Callebaut's utopian vision of spectacularly green cities.

The contemporary relation to the physical world is likely to not only blur the formerly sharp distinction between subjects and objects, between humans and their immediate environments. It is also likely to lead to an equally radical blurring of the traditionally clear-cut division between the natural and the artificial, a joint evolution that may be summarised as a new alliance between humans and non-humans, to use the contemporary phrasing of the humanities and social sciences. Inhabiting is supposed to erase, at least for the members of the social classes that can afford it, these disjunctions that are often accused of having contributed to the current environmental crisis.

It is necessary to relate these emerging trends to changes in the conception of subjectivity that have accompanied the rise of the digital. Again, inhabiting is related to the way subjectivity is constructed in relation to the experience of a series of physical phenomena and objects filtrated through the prism of the materiality of places, spaces, and buildings. Both the digital and architecture bear the mark of a massive ongoing transformation of the way the contemporary subject understands themselves. Both express fundamental features of this ongoing shift.

A different inhabitant

Since the Renaissance, the architectural discipline posited a subject isolated in space and able from the privileged position of the observer to experience buildings as spectacles that could generate emotion and pleasure. Modernist architecture and urbanism remained faithful to this interpretation, even if architectural space acquired affective connotations under the pen and in the practice of some of its most eminent representatives, from Le Corbusier to Mies van der Rohe. The inhabitant of the digital age seems to belong to a very different species. They appear not as a concentrated individual, like an animated statue whose sharp contours contrasts with their surroundings, but as a looser, more diffuse, or rather distributed subject, whose

presence extends far beyond their body. Instead of being collected, compact, immobile or in movement but endowed with a fundamentally static character, they seem to exist only through their incessant circulation, under variable and changing subjective conditions and social identities, in physical or electronic networks.

This evolution appears as the last stage of a transformation that started in the 1960s and '70s with the development of reflections and experiments that challenged the traditional closure of the subject. Anthropologists like Gregory Bateson had already put forward the hypothesis that it was necessary to rethink the human being as an ecology inseparable from its surroundings, rather than as an entity closed upon itself.¹⁹ In an illuminating book, architectural historian Larry D. Busbea shows how this type of hypothesis had spread among designers in close connection with the notion of responsive environments that were to replace passive architectural objects.²⁰ It is certainly no coincidence that the digital promises the advent of such responsive environments, which had failed to materialise in the '60s and '70s, except in a few experimental projects.²¹ As William Mitchell convincingly argued in one of his last books, the conception of the human subject conveyed by digital culture is surprisingly close to some of Bateson's intuitions.²² History does not repeat itself, but it often picks up the thread of unfinished developments.

What is probably new, despite Busbea's claim that the most profound changes had occurred by the 1970s, at least from a design point of view, is the more and more diverse and volatile character of identity in the digital age. The stable identities of old, which seemed the basis of modern, well-managed societies, have been superseded by mobile, at times almost liquid forms of subjectivity. These diffracted and changing identities were keenly observed around the mid 2000s by the French sociologist François Asher, who saw in their multiplication a sure sign of what he called a hypermodern regime.²³ However, 'hypermodern'

might not be the most appropriate term, insofar as it suggests a continuity between modernity and what we are currently experiencing in the digital age. Philosopher Jean-François Lyotard's characterisation of the postmodern subject as intrinsically diverse, assuming sometimes very different, even contradictory roles, is perhaps closer to today's reality, as is Bruno Latour's description of the human as a mediating figure in constant circulation.²⁴

Equipped with digital tools, monitored by other digital apparatuses, treated by means of still other digital devices, the contemporary subject can be also interpreted as 'post-human' even if all their lived experiences, their knowledge and ultimately their consciousness will not yet be uploaded into giant computer networks tomorrow or the day after, with all due respect to the prophet of the singularity, Raymond Kurzweil, who has repeatedly announced this event, equivalent in his eyes to a form of immortality.²⁵ Away from this singularity, which would see technological development accelerate exponentially, merging humans and machines, the post-human subject has been diversely approached, from the cyborg hypothesis initially explored by Donna Haraway, who posits a seamless association between bodies and technological protheses, with a Deleuzian accent on the inner diversity of a contemporary subject that is fundamentally irreducible to the Cartesian dualism of body and mind.²⁶ The contemporary subject as an ecology, to use Bateson's characterisation, is also part of the post-human spectrum.

But does the post-human in all its guises contain all that there is to say about what is happening to individuals in the digital world? Their heightened sensitivity to exterior stimuli and their interest in materials and textures, with their ornamental connotations, go hand in hand with a renewed attention to the body, a body limited in space, both exalted and vulnerable, whose metabolism and performance can be quantified by the digital. The age of dividing and proliferating identities within numerical networks also sees a return to the body

and the unique character of its experiences. Social networks reflect this dual character. On the one hand, its members tend to dilute themselves into their various channels, to the point that they appear like constantly transient entities. On the other hand, by posting their most recent experiences, glimpses of a physical life that they hope is unique and arresting to others, they are trying to recentre themselves, to regain a stability and a permanence challenged by their online life. Sociologist Sherry Turkle's influential analyses of the destabilisation of the self provoked by the digital age, should be counterbalanced by the recognition of the opposite tendency, to reconstruct oneself as the hero of one's life in memorialising all these 'privileged' moments, emotions and thoughts; this seems to suggest that we remain fundamentally human despite the seduction of the post-human rhetoric.²⁷

Could we still be somewhat modern? Are we hypermodern, postmodern, human, or post-human? Probably all at the same time. As I have tried to show at different scales, from the return of ornament in contemporary architecture to the experience of the city being transformed by intelligent technologies, the evolution of the built environment bears the mark of our ambiguities.²⁸ The home is no exception. Dwelling in the digital age appears as a contested field.

New housing trends and rising incertitude

Indeed, housing reflects the contradictions of our time. On the one hand, as I observed earlier, the pandemic has made evident the need to increase the surface of dwellings; on the other hand, in many countries the tendency to reduce the square footage available to inhabitants has continued. For example, in Hong Kong, micro-flats have become an unavoidable reality.

As I said earlier, it is difficult to identify transformations of the habitat linked to digital technology that are radical enough to speak of a new era of living. Like electricity before it, information and communication technologies have no clear spatial

translation, at least for the moment. The contradictions that I have mentioned can, however, appear as the premises of future transformations. In architecture as in many other fields, contradictions represent catalysts of change. It is no coincidence that the imagination welcomes contradictions that ordinary logic would immediately reject. The evolution of the home is inseparable from a complex and contradictory imaginary.

In the digital age, the home is invested both with a desire for stability – a stability that professional life has long since lost – and with a growing concern for adaptability partly inherited from modernism, but going further. Apartments should, for instance, be able to expand and contract according to the changing needs of their occupants. A recent project developed at the Bartlett School of Architecture goes further and imagines a ‘reconfigurable autonomous architecture’ steered by artificial intelligence and powered by a distributed robotic material system that would allow buildings to evolve according to the requirements of their occupants.²⁹ As we have seen, the home of the future must protect private life while at the same time it is open to the multiple electronic networks that must help make it connected, even ‘smart’. It remains to be seen to what extent these two imperatives can be reconciled. After all, the triumph of the Internet and mobile devices is accompanied by increasingly frequent dreams of partial or total disconnection. Perhaps we can imagine the home of the future as organised according to gradients of connection, just as our current apartments and houses are frequently structured according to the degree of privacy of the rooms.

Most publications on the house of the future tend to imagine gender and more generally identity as fluid spatial conditions, a miraculous conciliation between imperatives of flexibility and the desire to self-identify through inhabiting. An equally complex balance must be found in order to solve the contradiction between the multiplication of sensors sending information about the home to distant service providers and the protection of privacy. In

France, for instance, the resistance to the tendency to equip the home with devices that send information to service providers is apparent in the heated debates that have accompanied the installation of ‘smart’ meters by the national electricity utility company.

It is also striking how the futuristic perspectives that smart technologies and the Internet of Things allow us to sketch out are accompanied by a diffuse nostalgia for the interiors of yesteryear and their soothing ambiance. The place given to natural elements is also the subject of contradictory assessments. Though everyone agrees on the need to reinforce it, balconies and planted roofs are not unanimously accepted, at least in their present form, which owes as much to the desire to create a strong impression on the viewer as it does to research into an authentic synergy between built and natural elements. These contradictions refer once again to the uncertainties surrounding the evolution of contemporary forms of subjectivity. Uncertain of their identity, today’s inhabitant hesitates when about to project themselves onto the walls of their dwelling. Between disruption and nostalgia, the future on dwelling is far from settled.

The most fundamental contradiction may well refer to the increasingly individualistic character of contemporary social life and the simultaneous desire to recover forms of collective life. On the one hand, digital technology completes the process of increasing isolation of individuals by allowing them to do even more things alone and at a distance: from ordering food and goods without ever going to a store and interacting with other humans, to watching a play or a movie without going to the theatre or the cinema. On the other hand, the frustration almost inevitably generated by online exchanges that do not satisfy the need for bodies to brush against each other, for faces to meet in physical space, generates a desire to restore forms of community through habitat. The development of co-living, of ‘co-dividuality’ that takes co-living a step further by increasing the size and importance of shared

spaces, and of housing developments that border on utopia, like Vienna's celebrated Wohnprojekt, with its participatory character and multiple shared amenities, epitomise this desire to recreate a collective experience of dwelling.³⁰

When they evoke the digitally permeated future of housing, technology-oriented writers are keen on evoking a home in which the Internet of Objects and responsive environments play diverse roles, from the possibility offered to the inhabitants to change their wallpaper at will and to control remotely and intelligently all the systems and appliances in their house or apartment, to the prospect of using programmable modulations of light and material textures to counterbalance stress and anxiety. Hollywood movies have already given striking visual expression to this potential future. Doctoral theses are now being prepared on the possible intersections between neuroscience and responsive environments. The programmable home, the smart home appears as a distinct possibility.

But will this evolution be as radical as the techno-futurists would like us to believe? Will wallpapers evoking, with a high degree of resolution, peaceful alpine meadows or tropical beaches be enough to counterbalance the lack of square feet in cramped little apartments? Again, instead of dematerialising the world we live in, the digital has actually reinforced some of its salient features. The multiplication of Zoom meetings has made us more aware of the quality and defects of the rooms in which we work remotely. As for the Metaverse, even if it eventually develops, which is far from obvious at the moment, it will probably not be able to replace the experience of this physical world in which we are born, know happy and unhappy episodes, and ultimately die.

In *City of Bits*, anticipating the development of online sociability and activities, William Mitchell urges architects to become the designers of a virtual world whose growing scope and intensity would, in his opinion, deprive the material world of some of its relevance. More than twenty years later,

this advice seems to have lost some of its appeal. Even though it will be required to design responsive environments and work in ever closer contact with smart technologies, architecture remains fundamentally a matter of materiality. Its task is to make places and buildings liveable, and in so doing, to whisper to us about who we are as human beings. If atoms and bits of information are hybridising more and more every day, this does not mean that the former are disappearing in favour of the latter, nor does it imply that architecture should abandon its mission of ordering matter to organise the experience of humans in contact with it so that they can learn something about themselves and live more meaningful lives.

The growing inequality of contemporary societies constitutes another reason to distance oneself from an unbridled techno-futurism that tends to consider economic, social, and political obstacles as negligible. Not considering the one billion people on the planet who live in slums, even in developed countries access to decent housing is far from universal. Equally dramatic is the inequality in access to digital technologies despite the high penetration of smartphones in emergent markets like India. Of course, digital technology can also contribute to the reduction of such inequalities. For example, NGOs have developed digital services for slum dwellers, such as the possibility of acquiring a physical address to open a bank account, which many of them lack.³¹ There are also experiments in the digital printing of low-cost houses that seem to be succeeding. In the digital age, the most urgent challenges of housing remain fundamentally physical.³²

Dwelling differs according to the social conditions and incomes of any society at any given time. Like shelter, it corresponds to a universal need whose concrete translation depends on multiple situated factors. One of the tasks of the historian consists of suggesting where the dividing line between the universal, or rather the generic, and the specific lies. Dwelling in the digital age is no exception to this fundamental challenge of history. It may

appear limited to the sufficiently well-off to be able to be significantly exposed to its effects. However, the history of housing reveals that trends that were initially confined to the most privileged circles of the population often end up spreading to the various layers of society. For example, in countries like England and France at the end of the eighteenth century, the rise of modern ideals of intimacy transformed the homes of the aristocracy and the upper middle classes before reaching other social strata.³³ This is where the imaginary plays a role. Inhabiting is fundamentally an experience, but an experience informed by all the images of dwelling that circulate and propose alternatives to current inhabiting. The same process of proliferation will undoubtedly occur among certain trends that I have attempted to identify. Once again, dwelling engages the definition of the human and its historical evolution through a mix of concrete experience and imagination. Its transformation in the digital age is determined by many factors other than just the familiarity with computers, tablets, and smartphones. This familiarity is in fact only one of the expressions of a much more general transformation of the way human beings understand themselves in relation to their environment. Tell me where and how you live, and I will tell you something about who you are. Without always realising it, humans have become different from what they were at the time of modernism, even if part of themselves remains attached to modern ideals. To scrutinise what dwelling in the digital age might have in store for us we have to accept this evolution, even if we don't really know where it is leading us.

Among the remaining uncertainties is the nagging question about who we may have to share our homes with in the future. Since its earliest stages of development, humanity has lived with animals. The development of Artificial Intelligence may lead us to a different form of cohabitation. Algorithms and robots may very well share our domestic space in a not-so-distant future. What does it imply for dwelling? So far, Hollywood movies like *Her* and *Ex Machina* have evoked these potential housemates by lending

them a ghostly presence, as if they were haunting the places occupied by humans, in a border-zone between the material and the immaterial. But are we so different from machines? One thing is certain, the fate of the human being seems to play out between animality and becoming like a machine. Part of us cannot but feel comfortable with cats, dogs, and horses, not to mention the various birds we have lived with in the past, and often continue to live with. A different part speaks to computers after having worshiped all kinds of mechanical apparatuses. Who are we? Dwelling in the digital age has not yet finished confronting humans with their inner complexity and indetermination.

Notes

1. On the limited scope of the urban exodus in France, see 'L'exode urbain? Petits flux, grands effets: les mobilités résidentielles à l'ère (post-)covid', research report for *Plan Urbanisme Construction Architecture*, November 2022, <http://www.urbanisme-puca.gouv.fr/l-exode-urbain-petits-flux-grands-effets-les-a2388.html>.
2. Adam Longenbach, 'Contagious Machines: New York City and the Horse Plague of 1872', *Thresholds* 49 (2021): 148–57.
3. Gaston Bachelard, *The Poetics of Space*, trans. Maria Jolas (New York: Penguin Books, 1994 [1958]).
4. Martin Heidegger, 'Building, Dwelling, Thinking', in *Poetry, Language, Thought*, trans. Alfred Hofstadter (New York: Harper and Row, 1971 [1954]), 145–61.
5. Walter Benjamin, 'The Work of Art in the Age of its Technological Reproducibility', in Walter Benjamin, *Selected Writings*, vol. 3, 1935–1938, trans. Howard Eiland (Cambridge, MA: Harvard University Press, 2002 [1936]), 101–33.
6. Sheila Jasanoff, *States of Knowledge: The Co-production of Science and the Social Order* (New York: Routledge, 2004).
7. Beatriz Colomina and Mark Wigley, *Are We Humans? Notes on an Archeology of Design* (Zurich: Lars Müller, 2016), p. 9.

8. Antoine Picon, *The Materiality of Architecture* (Minneapolis: University of Minnesota Press, 2021).
9. Pierre Caye, *Empire et decor: L'architecture et la question de la technique a l'age humaniste et classique* (Paris: Vrin, 1999).
10. Olivier Cinqualbre and Frédéric Migayrou, eds., *Le Corbusier, mesures de l'homme* (Paris: Centre Pompidou, 2015).
11. William J. Mitchell, *City of Bits: Space, Place, and the Infobahn* (Cambridge, MA: MIT Press, 1995).
12. Patrik Schumacher, *The Autopoiesis of Architecture*, 2 vols. (Chichester: John Wiley & Sons, 2011–2012).
13. Sigfried Giedion, *Mechanization Takes Command: A Contribution to Anonymous History* (Minneapolis: University of Minnesota Press, 2014 [1948]).
14. See Antoine Picon, *Ornament: The Politics of Architecture and Subjectivity* (Chichester: Wiley, 2013).
15. Reyner Banham, *The Architecture of the Well-Tempered Environment* (London: Architectural Press, 1969).
16. Iñaki Abalos and Renata Sentkiewicz, *Essays on Thermodynamics: Architecture and Beauty* (Barcelona: Actar, 2015); Philippe Rahm, *Architecture météorologique* (Paris: Archibooks, 2009).
17. Paul Edwards, *The Closed World: Computers and the Politics of Discourse in Cold War America* (Cambridge, MA: MIT Press, 1996).
18. Timothy Morton, *The Ecological Thought* (Cambridge, MA: Harvard University Press, 2010); Philippe Descola, *Par-delà nature et culture* (Paris: Gallimard, 2005); Bruno Latour, *We Have Never Been Modern*, trans. Catherine Porter (Cambridge, MA: Harvard University Press, 1993).
19. Gregory Bateson, *Steps to an Ecology of Mind: Collected Essays in Anthropology, Psychiatry, Evolution, and Epistemology* (San Francisco: Chandler, 1972).
20. Larry D. Busbea, *The Responsive Environment: Design, Aesthetics, and the Human in the 1970s* (Minneapolis: University of Minnesota Press, 2020).
21. Lucy Bullivant, ed., *Responsive Environments: Architecture, Art and Design* (London: Victoria & Albert Museum, 2006).
22. William J. Mitchell, *Me++: The Cyborg Self and the Networked City* (Cambridge, MA: MIT Press, 2004).
23. François Ascher, *La société hypermoderne ou ces événements qui nous dépassent, feignons d'en être les organisateurs* (La Tour d'Aigues: L'Aube, 2005).
24. Jean-François Lyotard, *The Postmodern Condition: A Report on Knowledge*, trans. Geoff Bennington and Brian Massumi (Minneapolis: University of Minnesota Press, 1984).
25. Raymond Kurzweil, *The Singularity is Near: When Humans Transcend Biology* (New York: Penguin, 2005).
26. Donna Harraway, 'A Cyborg Manifesto: Science, Technology and Socialist-Feminism in the Late Twentieth Century', in *The Cybercultures Reader*, ed. David Bell, Barbara M. Kennedy (London: Routledge, 2000), 291–324. The first version of the article was published in 1985 in the *Socialist Review*. On the more general question of the posthuman, see Rosi Braidotti, *The Posthuman* (Cambridge: Polity Press, 2013).
27. See, for instance, Sherry Turkle, *Life on the Screen* (New York: Simon and Schuster, 2011).
28. Picon, *Ornament*; Antoine Picon, *Smart Cities: A Spatialised Intelligence* (Chichester: Wiley, 2015).
29. Tyson Hosmer et al., 'Integrated Reconfigurable Autonomous Architecture System', lecture at Association for Computer Aided Design In Architecture (ACADIA) Conference, Philadelphia, 2022.
30. Salvator-John A. Liotta and Fabienne Louyot, *What Is Co-Divuality: Post-individual Architecture, Shared Houses, and Other Stories of Openness in Japan* (Berlin: Jovis, 2020); Wohnprojekt, Wien, <https://wohnprojekt.wien> (22 November 2022).
31. 'Addressing the Unaddressed', <https://www.addressingtheunaddressed.org>.
32. Debra Kamin, 'How an 11-Foot-Tall 3-D Printer Is Helping to Create a Community', *The New York Times*, 28 September 2021, <https://www.nytimes.com/2021/09/28/business/3D-printing-homes.html>.

33. Anne Debarre-Blanchard and Monique Éleb,
Architectures de la vie privée: XVII^e–XIX^e siècles
(Brussels: Archives d'Architecture Moderne, 1989).

Biography

Antoine Picon is a professor of the history of architecture and technology at the Harvard Graduate School of Design. He is also chairman of Fondation Le Corbusier. His research and publications deal with the relations between space, technology and society. Among his books related to the digital in architecture are *La Ville Territoire des Cyborgs* (L'Imprimeur, 1998), *Digital Culture in Architecture* (Birkhäuser, 2010), *Ornament: The Politics of Architecture and Subjectivity* (Wiley, 2013), *Smart Cities: A Spatialised Intelligence* (Wiley, 2015), and *The Materiality of Architecture* (Minnesota, 2021).