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Actual developments and possible futures

“If the wind starts to blow, swarms of leaves turn out to be subtle bio-engineered robots that harness that very wind to propel themselves into an emergent shelter that surrounds you.”¹

Jaron Lanier

“How can the new tools available to the architect bring people together - not only inhabit, but to change, augment and ultimately create the environment around them?”²

Carlo Ratti

For some years now, the broad “technology” discussion is – finally – focusing more intensely on the ethical and social questions concerning the “infosphere.” Previously most digital developments surpassed the important questions of acceptance and implementation; i.e., to which question was an answer formulated and answered. With the rapid intertwining of the analog and the digital and of the real and the virtual, it became abundantly clear that the possibility to escape from the “infosphere” was next to zero. The granularity of (future) digitalization provides a world that requires an adapted attitude, based on a deep, well-thought, and appropriate understanding of what it means to live in such a sphere. This thanks to, e.g., Luciano Floridi who argued that *“The infosphere will not be a virtual environment supported by a genuine ‘material’ world. Rather, it will be the world itself that will be increasingly understood informationally, as an*

¹Lanier, J. (2013). *Who owns the future*. Allen Lane. (p.9)

²Ratti, C. (2015). *Open Source Architecture*. Thames & Hudson.

*expression of the infosphere*³. I say, finally, because over the previous period as well as sometimes today we experience an increase of – sometimes innovative – digital products, services, and technologies simply because it is possible. We did, or often do not, question the “why,” we question, in particular, the “how.”

Focusing on the built environment, it implies that we encounter some significant issues concerning the fundamental difference between existing and future buildings and, because of that, the possible implementation of innovative technologies, be it for basics or for infrastructures. Remembering various utopian projects, e.g., Constant’s New Babylon, Ron Herron’s Walking City, or even the more recent Lars Spuybroek’s Son-O-House (mentioned in Chapter 4), we witness some strange objects and environments that have no visual resemblance to what we – think we – know; their appearance is alien to us due to shape and form, i.e., due to a changing ontology. Even in the latter case, though, this is a reality, it is real and it is built. I believe this alienation is caused by the fact that our traditional – say nostalgic, maybe even romantic – view of what constitutes our house causes the rejection of other, more future appearances. We seem reluctant, maybe even incapable to embed the *infosphere* into this view because we have no embodied experience – let alone knowledge – of what it means to live and, above all, act within such an environment. That is by no means to argue or suggest that we can only dwell if we accept all consequences of such a sphere but that we need to acknowledge that the world as we – think we – know it is changing and that we should not turn a blind eye. We do need to incorporate, with a positive but critical attitude, its constructive and imaginative possibilities; also concerning architecture and also, therefore, our housing. At the same time, however, it concerns an artificial sphere intertwined with a natural world, and, by now, we have come to the conclusion that we need to live – and therefore dwell – within this sphere, with respect for both nature and human values.

When Paul Virilio, looking ahead, came to the conclusion that “*Something will affect the building in its very persistence, the resistance of its materials, the duration of its immediate efficiency. It will become less than a decor - a form-image as unreliable as a mirage*”⁴, he sounds theorized far away of today’s brick-and-mortar principles of realizing our housing. The fact that many prefer traditional connotations where it concerns (the architecture of) our housing instead of incorporating “modernity” in all its aspects is in itself ample proof of the rejection of certain aspects of that same modernity. We accept most technological developments in case of comfort issues but not in the case of architectural design, let alone disruptive changes in functionality.

³Floridi, L. (2014). *the 4th Revolution*. Oxford University Press. (p.50)

⁴Virilio, P. (2012). *Lost Dimension*. Semiotexte.

Modernity, in Jurgen Habermas' words, is "an unfinished project" and the question remains whether this should not be true for our housing as well.

If we summarize and try to address the main reasons for fundamental change in the way we envision, design, and build our housing, we can conclude that three issues rise to the surface:

1. For decades now, it is acknowledged by many that the current process of building and supplying housing is inadequate: it is expensive, inflexible, non-participative, and unsustainable.
2. The inhabitant is no active participant in the process of designing and building the framework for his/her house as well as his/her home.
3. The traditional house is a supplied "product" that is not adequate to address, to incorporate, or synthesize with the increasingly hybrid built environment.

If we address the various accompanying reasons for both arguments above, we could include, primarily from a social point of view, that by large:

- we fail to provide proper housing to changing households, i.e., many more households have/will become one person for various reasons as well as the increasing demand to live together in more or less multi-family households;
- we fail to provide proper housing for refugees, the homeless, and/or otherwise people who have the (legal⁵) right to a roof over their head;
- we fail to provide proper housing for elderly people who are committed/forced to remain in their house since other options/locations of care-taking have disappeared;
- we fail to address the anomalies of "the market," causing unjustified variations in housing prices or rents within one street;
- we fail to facilitate larger scale creative and/or innovative projects in which the citizen or inhabitant prevails, despite the urge to do so since decades and the proof that this is feasible;
- we fail to create a level-playing field for those individuals and/or groups that search for alternative options in housing;

⁵<https://www.un.org/en/universal-declaration-human-rights/index.html>

- we fail to adapt/modify regulations for building housing where it concerns more innovative and/or personalized typologies.

Summarized: we fail to synchronize our lived space – i.e., our house and our home – with the climate, social, and technological (digital) developments that have an undeniable, inescapable, and continuous influence on our lives, our identity, our experience, and, therefore, on all consequences involved. Where architecture is the conditioning of the environment for human inhabitation, we cannot disregard the developments that influence that same inescapable environment, now as well as in the future. I repeat, we do not have even an educated guess what the world will look like in 25 years while, at the same time, we act rather pretentious by envisioning and realizing what our housing should look like in 125 years. Taking into account that the average period people inhabit their house and that most developments occur within a timeframe of 10 years, we give in to the necessity to build flexible, adaptable, and sustainable. We need to acknowledge that not all can/should be planned, organized, and realized; we need to ensure an amount of freedom; freedom to adapt to changing circumstances and shifting households, in brief, to a society in continuous change. This runs parallel with the urging issue of organizing and, above all, protecting our online and offline identity as participating citizens as well as the accompanying personal data involved.

Much like, e.g., the actual climate discussion, adapting and/or changing the entire process of providing the basics of our housing requires awareness, imagination, but, above all, the ambition, desire, and persuasion to change; not for the change itself but because it answers current questions and developments as well as addressing social and environmental questions. Since my working years in architectural offices, during my own work and research over the years as well as participating in a wide variety of debates and discussions on different platforms, I am well aware of the arguments – usually distributed by the building chain – for *not* having to contemplate or consider change and for *not* adapting or transforming traditional habitual processes. In particular, where it concerns housing the traditional – rather stubborn – view is that designing and building housing does not, should not, or cannot include the inhabitant. It is at large limited to business as usual, known practice and to keeping procedures and product as they are instead of envisioning contemporary and future housing in an increasingly hybrid world. However, we do not build for the sake of building only, we build in a world that is in a constant mode of change, and the actual as well as future consequences of these changes now require a serious shift. The entire building chain, i.e., municipalities, project developers, architects, and builders, has the shared responsibility to recognize this, acknowledging

the fact that a changing world implies a changing attitude, response, and, above all, a changed “product.” Or, in the words of architect Ben van Berkel: *“One of the tasks is to design buildings so that they can operate in an energy-neutral way. But not as it is now. With all the machines it contains, the current buildings are a kind of dead body. The designs of the future should be much more organic, optimally circular, energy neutral, fully digitized, but above all much more social and focused on people. Another important task is that we make the buildings optimally flexible and can be re-arranged to be able to respond to changing needs of users or residents. A kind of architecture on demand that remains during the life of the building. That will be the point in the future.”*⁶

Let me illustrate this problematic situation using a somewhat literally “outer-space” parallel example: imagine for a moment that in the near future, a large group of men and women has once again set down on the moon, by now with the clear goal of staying there for several years. First important consequence is that some kind of adequate shelter has to be erected or constructed to create and provide the premises for a habitat. Is it realistic to believe that they will start by laying a concrete foundation, pile bricks, mount window-frames, and add roof tiles? Most probably not; long before this journey started, an innovative technological system will be envisioned, developed, and prepared based on time, space, and place, on circumstances and requirements, on technological (im)possibilities, as well as adequate methods and processes of logistics, construction, and maintenance. We will have fundamentally rethought ahead the whole paradigm of providing shelter, i.e., adequate living space.

The current process of building our housing (as illustrated in Chapter 6) is primarily structured around fixed entities, at the end of which the inhabitant is the one lacking all real participation. This is all the more curious as well as undesirable, given the fact that while a house is a most vital and prominent element in life – it is to become our lived space, i.e., our home – it is at the same time the element on which one has the least influence. Assuming we grant the (“smart”) citizen the much necessary agency, we should extent this agency to the – shaping of – built environment as well. There is no “smart city” without a “smart” inhabitant, meaning that citizens occupy a “connected” environment while staying in control over the data gathered by actions, movements, and decisions made within their private space.

⁶<https://www.architectuur.nl/interview/ben-van-berkel-circulair-bouwen-innig-omarmen/>

Form and shape

Due to social changes, technological innovations, and industrial developments, the need to accommodate inhabitants as well as trying to ensure future markets, we sometimes encounter interesting examples of other forms of – in fact traditional – housing, sometimes initiated by project developers and/or building companies. An actual development is “tiny housing,” i.e., small houses with a floor plan of 25–50 m², preferably located in the periphery of cities in rural or natural areas. Provided reasoning for this is the perfectly reasonable question whether it is necessary to have more m², argued by the supposed lack of need for persons, objects, and space. While it is obvious that everyone should decide for him/herself what amount of space and objects is required, it is also obvious that the “romantics” of this way of housing is in its minimized size/scale and its location, preferably (as stand-alone) in the natural/rural environment. Understandably, many of us will prefer to live in or near nature; at the same time, this can hardly be achieved while scaling up, i.e., for the larger numbers in need for a “housing for the millions.” It is, in that sense, an almost privileged and maybe even somewhat elitist escape.

An accompanying principle is pre-fabricated (tiny or semi-permanent flex), houses that can be transported to another location should, e.g., changing jobs or social reasons, require removal. This assumes that municipalities have the option of simply relocating a complete house and supplying the needed foundations and adequate infrastructure. Although for many the ultimate goal is to be “off-grid”, i.e. independent of local infrastructures, the question remains if this is a realistic option for the larger scale. Together with the requirements for building houses that are technologically suitable for removal, the costs of transport and relocating one can question once again whether this is a realistic solution for larger numbers. Also, we should be aware that what at first was supposed to be an often, temporary solution ends up becoming permanent solutions. The most adamant reason for removal has its origin in the qualities/characteristics of the house, not primarily other factors such as work or family (see Chapter 6). It seems therefore not very logical to relocate the same house elsewhere, if even achievable in the first place (ill. note: e.g., the – once nomadic – Dolgan-people of Siberia used portable housing that was moved “in full” elsewhere on a sledge when the seasons shifted; even they have now moved to more or less fixed settlements⁷).

⁷<https://www.encyclopedia.com/history/modern-europe/russian-soviet-and-cis-history/dolgan>

Another small-scale development is the realization of co-housing, i.e., a group of houses, often within one larger unit accompanied by common spaces for a selected amount of like-minded people that have decided to act and live together. An early example is the “Centraal Wonen” project in Hilversum, built in 1977, largely based on previous projects in, e.g., Denmark. While many of these projects have a history of organizational discussions as well as an extensive period of realization and problems concerning rules and regulations, it remains a random group of various people with the rightful intention to share some services/facilities but keep their individual preferences. Since this will be a repeating issue – the composition of the group will change over time, and people change their mind and move or pass away – the question is valid whether this is an adequate answer for the larger scale/numbers, as long as it is to be realized for a specific group of people only. The need/desire for living together in some cooperative construction is of course worthwhile researching and realizing; nevertheless, it will always need incorporation within some larger scale/entity. An interesting actual and well-thought example of a socially creative initiative is, e.g., the Rotterdam’s “Woongenootschap,” as argued in their statement: we wish to create a variety of housing within one project, facilitating various family compositions in close combination with common areas. By operating without a profit motive they claim to guarantee the preconditions for quality, affordability and sustainability.

In a recent article in a Dutch financial newspaper, the lack of owner’s participation in providing/building houses is questioned: it is a clear plea for self-building by individual inhabitants, not via project developers and/or municipalities. It argues: “self-building is essential in a self-reliant society” (transl.mp). This is in itself a justifiable argument, were it not that our housing will always be part of some community with needs and wishes for adequate infrastructure and common services. Another argument used is the fact that owners of houses build up capital (in periods of economic growth), given that – for now – the value of their house tends to increase over time; tenants do not profit in this way. It raises the question why it is necessary in the first place to own a house instead of using one; the same issue is increasingly raised over many other topics/objects such as, e.g., cars or tools.

Once again, the limited number of privileged inhabitants building their own individual housing does not answer for the urgency to build for the larger numbers, and it does not address flexibility and/or the future adaptability; it causes therefore ultimately more waste as well as shortage in specific types of housing. It answers an individual need for creating and building one’s own specific house without questioning its environment and the – personal or other – needs in a near or further future. At the same time, the current discussions too often become blurred by the (traditional) argument – false or else – that many desire

an individual house with a garden and a carport. What should not be forgotten is that for decades the ownership of a house is often given priority over renting a house, also encouraged/stimulated (financially) by various governments. Given many other actual developments e.g. expected changes in household typologies, we should rethink this and probably accept that for a number of reasons this is not realistic; if only for the danger that individual housing often causes individualized neighborhoods since we all “own/rent” our property and have our own garden instead of common grounds. Many examples over various countries show that a shared responsibility for the (built) environment develops shared interest, often resulting in a more committed community in which all inhabitants participate.

Industrialization and standardization

Creating a split between support and infill provides ample industrial options to (pre)fabricate standardized/modular systems to separate spaces. An interesting industrially innovative building development – since 2011 – comes from the UK: Wikihouse. It consists of an industrialized system of open design and prefabricated elements of which characters, measures, and technology are available as open-source data, to be downloaded and provided to a manufacturing plant with an adequate computer numerical control (CNC) machine. Unlike the tiny house principle, however, it originates in situations where there is enough space – read urban options – to add an individual house to other plans. The system requires a certain amount of “freedom” to deliver its advantages; it is not (yet), however, focused on a larger scale as part of a wider (urban or architectural) environment. Its undeniable benefit and quality, however, is its open-source principle, its standardization, modularity, options for reuse, and, therefore, circularity and sustainability. It is therefore promising that this “system” is now part of EC/Interreg – Housing 4.0⁸, a project for “near-zero energy homes.” Also, companies like the US-based Katerra or Blokable as well as the Dutch company van Wijnen strive for a far more industrialized building system that prefabricates complete houses or elements such as walls and roofs and transports these to the site and assembles. This is, in fact, an updated/modernized version of the 1960s Dutch LELY-system in which complete one-storage housing was prefabricated in sections, transported to the site on a trailer, assembled, clad, and completed with a roof.

⁸<https://www.nweurope.eu/projects/project-search/h40e-housing-40-energy/>

What, however, binds the above (with the exception of Wikihouse) is that almost all have their origin again primarily in *process*-innovation, not in *product*-innovation. Ultimately, it is the building/manufacturing company that profits while – if standardized, planned and utilized properly – it should be the inhabitant that profits, be it the first or the last. As Habraken and CIB⁹ illustrate, starting back in 1960s up till today, there is a number of reasonable and realistic “ideas” that do justice to the much needed important participative role inhabitants should have in creating their built environment, whether they are the owners or tenant. The primary important question is to what extent its framework can/should be common and its “infill” remains personal and individualized. Next, what innovative technological means are and will be available, now and as a result of broad developments in 5 or 10 years. If we distinguish an entire building in a permanent main structure and a flexible further infill, we can also acknowledge that the former demands other qualities/specifications than the latter; i.e., where the “outer” shell requires sustainable barriers against the elements, the “inner” infill can be more flexible, leaving more room for adaptation.

As early as around 1950, Yona Friedman concluded that “*architecture must learn from its inhabitants; the inhabitants are always right.*” He added three preconditions for a “people’s architecture”:

- it must make use of inexpensive elements;
- it must be easy to assemble, at a do-it-yourself level;
- it must be easy to disassemble and reassemble.

Later, in 1967, John Habraken declared¹⁰ that architecture always knew three aspects:

- the particular building first desires a completed concept;
- it concerned a single piece of work, in the sense that details and construction were determined for each project individually;
- there is the aspect of time; building is the braving of time.

(transl.mp)

⁹<http://open-building.org/about/objectives.html>

¹⁰Habraken, N. J. (1967). *het Alledaagse*, over het ontstaan van de omgeving van alle dag. Lemniscaat.

Note the similarities and consequences between the above and van Berkel's statement referred to above; all address the flexibility and the role of the inhabitant over time. Where it concerns issues of sustainability; it is also encouraging that – at last – the overall call for building with wood as a full constructive material instead of the CO₂-consuming process of using concrete (the production of cement is responsible for 8% of all CO₂ emission¹¹) and steel is made. Recently, architects Andrew Waugh in England and the Dutch Bjarne Mastenbroek and Marco Vermeulen made a clear plea¹² for a paradigm shift: building with wood is far more eco-friendly (i.e., it encloses CO₂, is more sustainable, and provides a better inner atmosphere). Both point to the traditional “system” as a cause for not applying/utilizing wood as a standard material: in the Netherlands, we are used to the building in concrete and bricks since, historically, we are located near rivers and use its clay. Compare this with, e.g., Scandinavian countries where wood is all around, resulting in a widespread use for building housing. The claim often heard is that there simply are not enough trees to supply the necessary wood: however, e.g., in the EU, the “Bonn Challenge 2011” to replant 150 million of acres deforested/degraded lands, as well a renewal of forests of 350 million acres worldwide by 2030 meets broad agreement. On top of this comes the EC's Green Deal – plant 2 billion trees in Europe. What is needed is a real shift in thinking first: it is therefore promising that various housing projects on a larger scale in wood are now planned/realized: e.g., the “SAWA” project in Rotterdam by MEI-Architects, the “HAUT” project by Team-V and the “Poppies” project by MKA, both in Amsterdam.

Concept and system

As said before, our environment rapidly becomes a synthesis of digital and analog, of the physical and non-physical, and of the real and the virtual. Environment as well as object becomes digitally addressable, meaning that a new layer of connectivity – and thus the exchange of data – occurs. This exchange is vital for a connected city and its inhabitants since we need to behave and act as involved and above all participating citizens. The framework for these interactions will, for decades, remain a primarily physical one, nevertheless, again in Ben van Berkel's words “*A kind of architecture on demand that remains during the life of the building.*” It is this amalgam of spheres that, above all, requires that we rethink our identity within the *infosphere* and the ways/means to protect this; after all, so far, we have little or no control over

¹¹<https://www.carbonbrief.org/qa-why-cement-emissions-matter-for-climate-change>

¹²<https://www.vpro.nl/programmas/tegenlicht/kijk/afleveringen/2019-2020/houtbouwers.html>

the data we produce and, in fact, own. Currently, research is conducted over what constitutes our identity, our relation to objects, as well as the need to maintain that relation when unwanted or unneeded. Initiatives like Solids and an EC project like DECODE are “a response to people’s concerns over losing control of personal information on the internet.”

Together with the increasing Internet of Things/People we proceed in a direction in which it will become increasingly complicated – see the Onlife Initiative (OI), Chapter 10 – to distinguish what constitutes cause and effect; i.e., man’s influence needs to be redefined and renegotiated. At the same time, we should be aware that, as poetically put in, e.g., “the Data Prevention Manifesto”: “*We need to materially engage with the enigmatic, the flawed, the partial, the impure, the surprise, the transgressive, the Black Swan.*”¹³

Synchrony

Trying to summarize the above and incorporate/translate it into a system, the actual definition of both built environment, digital (infra)structure and data, could be described as a cyber–physical system (CPS). In the definition of CPSE: “CPS’s are systems that link the physical world (e.g., through sensors or actuators) with the virtual world of information processing. They are composed from diverse constituent parts that collaborate together to create some global behaviour. These constituents will include software systems, communications technology, and sensors/actuators that interact with the real world, often including embedded technologies.”¹⁴ Other definitions include more precisely the “human component” (NIST) and/or vary on details; their overall character however includes both human as well as non-human elements in an attempt to synchronize, ultimately to be able to perform adequate action.

Returning to the OI, we see the parallel: the concept as we know it – i.e., together with an originally natural sphere and an additional artificial/physical built environment that, by now, facilitates an increasing digitalized infrastructure – can be rethought as a more or less intelligent “system of systems”: the amalgam of all that surrounds us and influences, determines, and frames our (built) environment in which we are

¹³<https://dataprevention.net>

¹⁴<http://www.cpse-labs.eu/cps.php>

enmeshed but remain active players, not sub-ordinates of technology. As Kas Oosterhuis argues: “We must see all objects, including the ‘I’ and individual building components, as actors, as active players in a parametric world.”¹⁵

Research

With the above in mind, let us take a closer look at some actual international (research) initiatives and projects focusing on architecture (i.e., the built environment) and often its periphery on some research that has by now ended and, on some, still active.

- The EC-Levels¹⁶ project focuses on improving sustainability of buildings and environmental performance. It is/was a (in time) limited project by means of a reporting framework and has closed its first period; it will report back in Spring/Summer 2020.
- The EC-LIAR¹⁷ project searches to “transform our habitats from inert spaces to programmable sites,” using complementary technologies that can influence our built environment.
- At various universities, e.g., MIT-Cambridge (see, e.g., the work of Neri Oxman), IAAC-Barcelona, TU-Delft, etc., specific research programs study the options for a more creative and participative role: at TU-Delft Department of Architecture, its Hyperbody Lab searches for “interactivity in the process of collaborative design, also in the use and maintenance.” Recently, the Universities of Newcastle and Northumberland/UK launched a research hub¹⁸ where “Its aim is to create a new generation of ‘Living Buildings’, which are responsive to the natural environment, grown using living engineered materials, which process their own waste, reduce pollution, generate energy and support a biological environment that benefits health.”
- Other research institutions focus on, e.g., “Assisted Living”; see, e.g., the iHome-Lab at ETH in Zurich while Smart Homes Eindhoven’s emphasis is “home-automation & smart living.”

¹⁵Oosterhuis, K. (2011). *Towards a New Kind of Building*. NAI Publishers.

¹⁶<https://ec.europa.eu/environment/eussd/buildings.htm>

¹⁷<http://www.fetfx.eu/project/liar/>

¹⁸<http://newsroom.northumbria.ac.uk/pressreleases/world-first-research-hub-to-create-living-buildings-2889657>

- In particular, over the last years, we see an increasing development of innovative materials¹⁹ that interact with external sources or adapt/modify due to changing sound, light, or temperature. These materials are not only designed and utilized within architecture but also increasingly in objects that – given their purpose – become (active) part of that architecture. For example, consider artists like Antony Gormley who researches the positions and relations of the body within architecture (see “Horizontal Field” – 2012, or “Blind Light” – 2007), or media-artist Refik Anadol who “*explore(s) the space among digital and physical entities by creating a hybrid relationship between architecture and media arts with machine intelligence*” or architects Philip Beesley and Daan Roosegaarde who integrate material properties with art and urban/architectonic environments, fashion designers Pauline van Dongen and Iris van Herpen who fuse technology with traditional craftsmanship, or sound-engineers/artists like Martyn Ware who intertwines sound with spatial frameworks; all constitute their respective – future – links between the arts and the (built) environment.
- Finally, the options for bodily “connectivity” will only increase; we see a wide variety of, e.g., sensorial options to explore, sense, and participate within a hybrid environment, part of which remains physical. See, e.g., the work of Stelarc – “the body as a sensible concept” or artist Viktoria Modesta who is “a bionic artist exploring modern identity through performance, technology and science.” Again, sensorial options “in (wo)man” are closely linked to a responsive environment, providing/causing interaction and enhancement while diffusing our traditional role/position as a “consumer” of space.

Various other initiatives focus to rethink the realization of our built environment from a parallel perspective, often structured upon the increasing possibilities that digital (design) developments can facilitate. For example, Open Source Architecture (OSArc) initiated in 2011 by Carlo Ratti or the Berlin-based hybridspacelab which is an “interdisciplinary platform for innovation contributing to positive societal and environmental change” while incorporating digital technologies from all relevant and peripheral disciplines.

Summarized: due to innovative and creative technological research and development where it concerns physical frameworks/backgrounds as well as the continuous synthesis of the digital and analog and the real and the virtual, the traditional former strict boundaries of what constitutes our (built) environment change. It implies that our attitude, our behavior, and our actions will change accordingly since we are accustomed

¹⁹<https://materialdistrict.com>

to an environment that is traditionally inert. Back to Luciano Floridi: we now live in an “infosphere,” we can no longer disconnect, assuming one (c)laims to be an active participant of society in change.

So far, the virtual will exist *within* the physical; but its position and role will more and more become part of our experience since it can be integrated in the environment. Paul Virilio, though not the most optimistic one when it concerns technology, once predicted “*Something will affect the building in its very persistence, the resistance of its materials, the duration of its immediate efficiency. It will become less than a decor - a form-image as unreliable as a mirage*”²⁰. Still, a building will – for the coming first decades – remain a primarily physical entity, existing within a sphere that rapidly becomes a mix of traditional and new but also of more or less vague granular notions of connectivity and agency. The challenge will be to “build or construct” with a human-centric approach without neglecting its connectivity and flexibility, as Peter Sloterdijk once stated “*Those homes are the best in the market, combining all privacy benefits with all access options*”²¹. This is, in fact, a rather traditional point-of-leave, assuming he refers to a home as an entity that is built. Remember the OI: its first subtitle was “Concept-Reengineering Exercise” and its initial setup was the rethinking of public spaces in the digital transition, at the same time, acknowledging that a fifth topic should be added to the existing four; i.e., the blurring of the distinction between public space and private space (see Chapter 5). However, the “home” that does the “combining” has yet to be built certainly on a larger scale; it is in this scale where the most promising options are hidden. The “promising” is enclosed in the next and final chapter: “Epilogue.”

²⁰Virilio, P. (2012). Lost Dimension. Semiotexte.

²¹Sloterdijk, P. (2009). Sferen II / Schuim. Boom Onderwijs.(p.391)