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For an Adaptable, Reversible and Inclusive City

Time, an essential aspect of our lives, is a somewhat overlooked entry key in the development and management of the city. While space has often been organised to save time, rarely has time been organised to save space. More generally, the chronotopic approach combining space and time remained marginal for a long time.

But times are changing. The constraints placed on contemporary cities, transforming lifestyles, the need to control the mobility of goods and people and urban sprawl, the need for independence, proximity and sharing forcibly expressed by citizens during the health crisis, overall expectations in terms of sustainable development and transition, require a change in perspective and practices for the observation, development and management of urban worlds.

The response to these challenges necessitates the deployment of a chronotopic and rhythmic approach to the city, which includes the notion of time at all levels, from the apartment through the neighbourhood down to the city, in the short, medium and long term. It also requires transitioning from an approach based on zoning and spatial specialisation (housing, work, shopping, leisure) - the negative effects of which have been identified - to an approach based on diversity of uses and functions, versatility and hybridisation of space and time.

This shift in approach is self-evident; it is a necessity and an opportunity to develop scenarios together for the city of tomorrow, an adaptable and inclusive city that meets the needs of residents and visitors, with a limited impact on the environment. It is self-evident because the city is not a fixed entity but a living system which is constantly evolving over different scales and at different paces, and urban beings do not have the same expectations and needs over the course of a day, week or life. It is a necessity because we must address economic, social, cultural and environmental challenges.

How to limit urban sprawl? How to reduce travel and the economic, social and environmental costs of urbanisation? How to meet the needs of the people throughout the life cycle? How to maintain diversity in terms of activities, populations and local services while continuing to construct monofunctional and monocronic buildings and neighbourhoods in the suburbs, used for a few hours every day, a few days a week or a few weeks in the year? How to meet the changing needs of residents over the course of a day, week, year and life? How to find space in cities seen as over-stretched?

Part of the answer lies in intensifying the simultaneous and alternating use of buildings by increasing the number of functions in the same space (urban diversity, cohabitation, hybridisation) and over time by rotating activities during the day, week or year. It requires all those involved in urban development to focus on the modularity and versatility of public spaces, premises, buildings and neighbourhoods for multiple uses and users. This solution invites us to define new rules in terms of temporary occupation and chronotopic uses, as well as a form of “collective intelligence” where Smart City tools can be implemented. On a different scale, the chronotopic approach also helps integrate the possibility of future use by other populations and for other purposes, a form of usage reversibility bringing about faster changes when released.

Adaptability, versatility, modularity of public spaces, apartments, buildings, neighbourhoods in the course of a few hours, days, weeks, seasons and more, are avenues for being pursued with a view to improving the urban situation, promoting compact cities with shorter distances, maintaining urban intensity and urban life. The time prism is also a fantastic opportunity for the joint development of our cities with the residents. There can be no life without needs exploring in conjunction with all those involved in urban development, starting with the residents. This approach of interest to everyone as it refers to the human notion, sensitive aspects and needs of everyday life. It responds to the demands of citizens in terms of prosperity, engagement and concrete action. It cities not fall within the compartmentalised single player, but concerns them all - public and private - on various levels. It requires partnership and transdisciplinarity and appears as a formidable source of innovation.

This is not a pipe dream. As is often the case, users are one step ahead of institutions. Adaptable, reversible, temporary cities already exist in our urban centres through artistic, creative, political or commercial appropriations in public spaces, squares or roundabouts, online rental platforms, or on another scale with the temporary occupation of derelict sites. New forms of cohabitation are created there between multiple and temporary activities and uses, and constructions that are both more fragile and more sustainable. For existing buildings as well as ongoing and future constructions, we should demand the introduction of a “high temporal quality” standard, obliging architects, urban planners and operators to integrate these principles of versatility, diversity and intensity of uses, in space and time, into their designs, conversions or constructions.

In light of the limitations of today’s cities, and beyond declarations of intent on transition and promising early experiments, adaptable, reversible and inclusive cities are a path that needs exploring in conjunction with all those involved in urban development, starting with the residents. There can be no life without rhythm.
Transitioning Cities: One Space, Several Uses and Several Lives

Over the past century, the world's population has increased from 2 billion to nearly 8 billion and could reach 10 billion by 2050. During this period, cities occupy less than 2% of the world's land mass, but produce 80% of the world's gross domestic product, and generate more than 70% of CO2 emissions. Human activities therefore cause rapidly accelerating global warming on an unprecedented scale: the global rise in temperatures is responsible for environmental degradation, increasingly frequent natural disasters, extreme weather conditions, food and water insecurity, economic disruption and conflict. Nowadays, ecological transition and responsibility towards climate change are core concerns for many stakeholders; it is a strategic priority for Bouygues Construction, who position themselves, through their various strategic initiatives, as a major player in this transition to a low-carbon economy.

In addition to these various factors, the Covid-19 global health crisis alters our relationship with time, space and the essence of things. The useful value of spaces (housing units, offices, outdoor areas, etc.) is enhanced. By searching for a quality living environment, people aspire to proximity, in a city life where distances are shorter.

Now more than ever, a spatial-temporal approach to our lives and our territories really makes sense. As mentioned by Luc Gwiazdzinski, the response to these challenges requires the deployment of a chronotopic approach to the city, combining space and time on various levels.

Limiting urban sprawl, reducing our environmental footprint, preserving natural resources and meeting new societal expectations are challenges we have integrated into our open-ended and multi-stakeholder forward-looking approach, alongside other city agents and users (urban planners, architects, local authorities, businesses, institutions, developers, researchers, start-ups, operators, design offices, academics, etc.), so that together we can come up with new models and devise an advantageous future for a desirable city. How do we make better use of our built-up areas to maximise their useful value while limiting their environmental impact? Intensify uses: which limits and social acceptability? How to design infrastructures/buildings and urban spaces with no predefined function, capable of adapting to changes in use over time? Which new models should be devised to create economic, human and societal value while promoting positive externalities?

Bringing together these stakeholders from a variety of backgrounds to focus on common issues, as part of participatory workshops or webinars, brought to light inspiring initiatives and courses of action; we share the result of this open-ended and multidisciplinary approach in this new “Transitioning Cities” trend book with a view to supporting change.

In the short term, to tackle these challenges, part of the answer lies in a better use of existing spaces. For decades, the city was designed with specialisation in mind, with monofunctional buildings (housing units, offices, leisure, shops, etc.) that contributed to urban sprawl and the central role of cars in urban and territorial planning. Buildings - public or private - are currently underutilised: the use rate of offices ranges from 30% to 45%, while that of schools is 20% on average. In addition, 8% of housing units are vacant in France! These figures demonstrate the potential for a better occupation of underutilised or neglected spaces in the city, for blending uses to demonstrate the potential for a better occupation of underutilised or neglected spaces in the city, for blending uses to address the challenge of “Zero Net Land Take” (ZNLT).

Increasing the intensity of use by ensuring the coexistence of various activities in one place, or by alternating uses and user profiles in the course of a day helps address environmental issues while providing new economic models for buildings or infrastructures.

A building with a high use rate is more profitable, becoming a profit centre rather than a cost centre. Furthermore, de-specialising neighbourhoods by mixing urban functions reflects a strong societal desire, by taking full advantage of different uses near one’s home and bringing life to the neighbourhood in order to recreate social ties.

In the medium term, possible building transformations must be envisaged from the design stage. Designing a building in symbiosis with its environment and local ecosystem means creating spaces fit for several lives and several uses over time, as well as enabling functional upgrades, in new and existing constructions, to combat the obsolescence and underutilisation of buildings.

This is why it is urgent to come up with new urban models, designed to be upgradable, with a high quality of use to facilitate future transformations in accordance with the territorial needs of the moment!

Focusing on the scalability and reversibility of infrastructures, interlinking uses of existing structures, converting neglected places, rebuilding the city on top of the city, by breathing new life into living spaces. For a vibrant, desirable city!
New Urban Challenges to Overcome

Why do we refer to transitioning cities?

Today, most urban spaces are underutilised with regard to their built-up space potential: derelict sites, vacant buildings, spaces used only part time. An approach aimed at improving the use of existing structures may help curb construction projects. This responds to environmental requirements - carbon footprint reduction, control of soil sealing caused by urban sprawl, adaptation to the depletion of natural resources – while also ensuring adaptation to new uses and needs of populations. Improving the use of built-up areas in the short, medium and long term involves the adoption of new economic models, consistent with the guiding principles of sustainable development.
There are several reasons for this underutilisation:

- **Urban spaces are inherited from the past:** often designed for a specific purpose corresponding with a single use, their transformation has not been anticipated from the beginning.

- **The reuse of these spaces is bound by the following requirements:**
  - **Legal:** the legislation governing the design of buildings differs depending on whether said buildings are used as housing units, offices or public access buildings (PAB). As a result, compliance with these rules may hamper the reuse of spaces for other purposes.
  - **Tax-related:** taxation schemes are different for offices, shops, PAB and housing units.
  - **Architectural:** the distribution of spaces, access to natural light and, more generally, the use of space dictate the shape of buildings depending on their function.
  - **Technical:** the design of load-bearing structures and the layout of utilities (water, electricity, ventilation) hinder the modification of an existing place.

- **Stakeholders with various lines of reasoning and very different ways of doing things can undermine cooperation and complicate the shared comprehension of a long-term common interest. It is therefore necessary to bring these various stakeholders, with sometimes diverging logics, to work together.**

Lastly, this reflection can be extended to our use of public spaces, a significant part of which is dedicated to mobility: is their potential fully achieved to serve the general interest of all users?

### Underutilisation of buildings and facilities

<table>
<thead>
<tr>
<th>Use rate of offices range from</th>
<th>Typical use rate of schools</th>
<th>Typical use rate of school playgrounds</th>
<th>Unused parking spaces in Paris</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 to 45%</td>
<td>20%</td>
<td>7%</td>
<td>150,000</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Vacant urban spaces</th>
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<tbody>
<tr>
<td>11 million vacant housing units in Europe in 2015</td>
</tr>
<tr>
<td>3 million square metres of offices are vacant out of 55 million square metres in total in the Île-de-France region in 2017</td>
</tr>
<tr>
<td>55% of towns with a population of less than 10,000 have a commercial vacancy rate of over 10%</td>
</tr>
<tr>
<td>3 million brownfield sites across Europe</td>
</tr>
</tbody>
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<tr>
<th>Underutilisation of public spaces</th>
</tr>
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<tbody>
<tr>
<td>3 to 5 years’ vacancy for land and buildings undergoing work, from the date of purchase to the moment work actually starts – and costs of up to €80,000 per year to maintain these vacant spaces</td>
</tr>
</tbody>
</table>

In 2014, the number of parking spaces in the EU is estimated to be: 440 million

Approximately 2 spaces for every passenger

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1. Data available on the website of the Banque des territoires
2. According to IEIF, 2017
3. European Commission, Remediated sites and brownfields, 2015
4. QPark, EU Car Parking Market, 09/2014

The underutilisation of buildings is all the more problematic as lack of space and its corollaries - housing costs, distances travelled every day, lack of parking spaces, sensation of overcrowding and oppressive density - are regarded by urban users as factors particularly detrimental to their quality of life.
Urban Sprawl Faced with the Zero Net Land Take Objective

Although numerous spaces remain underutilised in cities, there has been a steady progress of urban sprawl. Expanding city outskirts lead to increased soil sealing. The overall proportion of artificial surface areas has increased by 70% since 1981, when the French population has only grown by 19%: this imbalance shows that urban sprawl is disproportionate in relation to population growth.

Various factors contribute to the acceleration of urban sprawl: improved transportation networks and mobility or appeal of urban regions. These causes include in particular the role of cars, a real paradigm based on which an urban model involving very long distances has developed, as well as the users’ strong desire for individual housing units. Individual homes however use up to 15 times more space than apartment buildings. Thus, soil sealing is for the most part linked to the housing sector.

Between 1990 and 2000, 275 HA of soil were lost per day to soil sealing in the EU between 2000 and 2006, the average increase in artificial areas in the EU was 3% with figures exceeding 14% in Cyprus, Ireland and Spain.

Between 2000 and 2018, the largest share of arable land consumption (25%), i.e. 6 222KM² happened because of growth in economic sites and infrastructure.

This soil sealing causes significant environmental damage:  
- **Biodiversity**: according to IPBES, soil sealing is a threat to nearly 1 million plant and animal species.  
- **Carbon**: soil sealing increases CO₂ emissions: every year it causes the emission of the equivalent of 4.35 gigatonnes of CO₂.  
- **Environmental degradation**: soil sealing exacerbates flooding and erosion phenomena.  
- **Food resilience**: urban sprawl reduces agricultural production areas, pushes farmland further from the cities, thereby affecting the ability to feed the population through local supply chains.

In addition to these environmental costs associated with urban sprawl, financial costs are incurred by local authorities in charge of roads and transportation: the negative externalities of urban sprawl facilitated by the use of cars have been estimated at €50.5 billion for France by the Dresden University of Technology.

Limiting urban sprawl and soil sealing has therefore become a priority for public and private stakeholders: this consensus is being transposed into the legislation. The European Commission created a roadmap aimed at suppressing any net increase in the surface area of artificialised land by 2050: this is known as the “Zero Net Land Take” objective (ZNLT). The ZNLT objective is embodied in the Limit, Mitigate or Compensate (LMC) sequence:

- **Avoiding** whenever possible the sealing of new agricultural and natural land.
- **Reducing** the use of this land in new development projects.
- **Compensating** the loss of land used nonetheless, through the ecological restoration of other land currently artificialized.

Despite avoidance and reduction targets, it appears that stopping the territorial planning process altogether with a view to preserving soil is out of the question for the moment. The term “net” underlines this distinction and encourages us to consider the notion of ecological compensation – the purpose of compensatory measures is to restore a normal ecological status, not far from an artificialised site.

Consequently, improving the use of vacant or underutilised spaces in the city is fully consistent with the approach dictated by the “Zero Net Land Take” objective: this innovation helps focus on avoidance and reduction objectives.

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1. EEA, Overview of best practices for limiting soil sealing or mitigating its effects in EU-27, 2006
2. Sylvain Grisot, Manifeste pour un urbanisme circulaire
3. Corine Land Rover cited by Sylvain Grisot, op. cit. p.44
Environmental Impact of Cities and Construction

It is now recognised that global thresholds in terms of loss of biodiversity and depletion of non-renewable natural resources have been exceeded.

Carbon footprint and climate change

Dominique Bourg, philosopher and professor at the University of Lausanne, paints the portrait of Earth where habitability has deteriorated significantly:

“There is not a single place on Earth where the effects of climate change cannot be observed first hand: melting glaciers; rising sea levels; violence of cyclones and typhoons (…); collapses in the Alps; emerging craters in Siberia due to melting permafrost; heat waves from the Arctic to the Antarctic; heavier rainfall than usual, causing spectacular and devastating floods; sharper rise in average temperatures (…), etc.1

25% of bees have disappeared in Europe between 1985 and 2005. And in the absence of pollinating insects, 35% of the world cereal production could disappear4

In 2014, some 210 million tonnes of minerals were extracted in the UK, of which 83,8% were construction materials4.

Disappearance of pollinating insects impacting agriculture.

To respond to these challenges, it is becoming necessary to completely rethink our practices in terms of construction, with a view to ecological transition, to reduce the use of these resources and limit the massive carbon impact of the construction industry.

To respond to these challenges, building transformations must be envisaged from the design phase and, more importantly, the use of existing built-up areas must improve with a view to curbing construction projects.

To check whether new construction is necessary, an in-depth assessment must be carried out. It consists of assessing the need to build, based on the supply of buildings and facilities within the territory, their availability and the corresponding demand for property. This initial verification helps make better use of existing property assets, thus saving the resources necessary for new constructions. This approach is consistent with territorial ecology.

Circular economy and transitioning cities

The principles of the circular economy are largely based on the need to make better use of urban spaces.

Here are three major levers identified to advance an economic sector towards a circular process:

- Building less, making better use of existing structures:
  - diversity
  - chronology

- Building for longer:
  - transformation
  - reversibility

- Slowing down resource flows
  - Minimising the use of resources per product use.
  - In the case of built-up areas, this corresponds with diversification and chronotopy approaches.

- Reducing resource flows
  - Minimising the use of resources per product use.
  - In the case of built-up areas, this corresponds with transformation and reversibility approaches.

- Making resource flows circular
  - This lever consists of reusing outflows to feed inflows. In the case of built-up areas, this approach means regarding a building or infrastructure at the end of its life as a potential source of resources, reusable components or recyclable materials.

1 BOURG Dominique, De l’économie circulaire à l’économie permacirculaire in Annales des Mines - Responsabilité et environnement, 2018/1 No. 89, pages 30 to 33
2 GIEC, Press release, 25/09/2019
3 Muryel Jacque, Matières premières : ces pénuries en série qui nous menacent, Les Echos, 30/06/2015
4 IPBES, “Summary for policymakers of the thematic assessment on pollinators, pollination and food production”, 2016
5 Ministry of Housing, Communities and Local Government, Mineral extraction in Great Britain 2014, March 2016

By combining greenhouse gas emissions (GHGs) relating to building construction and renovation activities with those relating to their use, the industry is responsible for 1/3 of national emissions.
Uses and Needs
Are changing

The uses of built-up areas are changing. Our living environments have generally been designed to correspond with the ways of life of their time: this explains in part the current underutilisation of existing buildings, designed based on models adapted to past uses. When these uses change, it becomes necessary to adapt spaces, which can be complex when the construction is very specific.

By way of illustration, changes in working practices can render certain office layouts obsolete: the lifestyle also influences the way of living and therefore housing units. Similarly, our consumption habits bring about major urban changes: convenience stores in city centres have declined in favour of large supermarkets on the outskirts, which are themselves challenged by drive-through and home delivery services.

Changes in households

While there is an increasing number of households in France, they are smaller than before, consisting of 2.2 people on average in 2015, compared with 2.4 in 1999. These transformations result in new housing needs. There are a number of reasons for this change in households:

- Population growth in France: 19% increase since the 1980s.
- Ageing population: It is primarily the elderly who live alone: this is the case for at least 26% of men and 62% of women aged 60 and over.
- Changes in family lifestyles: increase in the number of single-parent families, stepfamilies, young people moving out of the family home later.

In this respect, the lockdown exacerbated well-known housing inequalities. The Camille Noûs collective recounts:

A lot of people develop tactics by taking possession of the space available at certain times of the day: the living room during the day, the kitchen when it is big enough, the balcony, the child’s bedroom with the family computer where the father, who works at night, sets up his office during the day while his child is at school, etc. These arrangements, based on alternation between presence and absence of household members, are put to the test when one or more household members suddenly find themselves confined to the home.

Similarly, the health crisis has shed light on changes in working practices: offices must reinvent themselves accordingly. Presence in the workplace during the first lockdown plummeted by 56% in France and did not immediately return to normal, thus highlighting the relevance of teleworking.

Last but not least, some public spaces seem poorly suited to social distancing requirements and resulting new uses. For example, it appears that preventive measures are more difficult to comply with in some types of public transport: 25% of public transport users in the Île-de-France region interviewed by the “Paris de trains” association said they preferred to use their bicycle at the end of lockdown rather than get back on metros and RER trains. Consequently, the development of public spaces should adapt to this increase in the number of cyclists.

Underlying trends

While the health crisis cast light upon these new uses, there are underlying trends which will become more prominent over the coming years. Emerging trends include in particular a growing demand for proximity: reducing distances travelled – for example being within one kilometre of the infrastructures necessary for well-being – would help improve the users’ quality of life. This concept notably resulted in a global campaign launched by the C40 Cities network in July 2020.

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The 15-minute city, according to Carlos Moreno:

The objective of this concept is to give city dwellers what they are lacking: time.

Feeling good and being with loved ones, first of all, for matters relating to personal well-being. But also social well-being, which consists of being comfortable around our neighbours, work colleagues. Account must also be taken of the notion of well-being within our environment, paying attention to inclusion, social cleavage and ecology. The closer to each other these social functions become, the more incremented these three well-being indicators become. With our family, as we have more time to spend with them, with our neighbours by being available, with our colleagues as we are less tired, with the planet as we are more CO2 efficient, etc. That’s how the 15-minute city concept was born.

1 INSEE, 2019
2 C. Noûs, La ville du quart d’heure, ou le village réinventé, Lettreducadre, 17/02/2020
3 Sébastien Dumoulin, “Confinement : Google publie des données de déplacement dans 331 pays”, Les Échos, 01/04/2020
4 Olivier Razemon, Comment les Parisiens et les Ile-de-Francois se sont réaménagé pour faciliter la distanciation sociale, Le Monde, 14/04/2020
5 Carlos Moreno’s quotes taken from the article, Marjolaine Khur, La ville du quart d’heure, ou le village réinventé, Lettreducadre, 17/02/2020
6 La covid-19, la guerre et les quartiers populaires, la Nouvelle Revue du Travail no. 16, 2020
7 Sébastien Dumoulin, Confinement: Google publie des données de déplacement dans 331 pays, Les Échos, 01/04/2020
8 Olivier Razemon, Comment les Parisiens et les Ile-de-Francois se sont réaménagé pour faciliter la distanciation sociale, Le Monde, 14/04/2020
9 Carlos Moreno’s quotes taken from the article, Marjolaine Khur, La ville du quart d’heure, ou le village réinventé, Lettreducadre, 17/02/2020
Shared places to develop social connections

Over the past decades, there has been a growing interest in “shared” places: inhaling common areas together – “third places”, participatory habitats, shared gardens, common areas of buildings taken over by neighbourhood communities – could help build stronger social connections and encourage diversity initiatives.

The social benefit of these places is apparent in a number of areas:

- Bringing various stakeholders together around the production of shared representations

The specific nature of the “third place”, a new type of space that has emerged over the past decade, is due to the configuration of the social interactions therein. The third-place is characterised by its “neutrality”, as it does not exclusively relate to the professional, private, or public world. It is a meeting point for heterogeneous participants. However, the existence of a third place must give rise to a representation. This shared imaginary construct is developed and designed collectively, by participants who share common values.

Ensuring new stakeholders discover and adopt best practices

A distinction is usually made between underground, experimental practice – and upperground, development of practices by recognised organisations. This division is however qualified by Patrick Cohendet, Professor and Co-Director of the Mosaic Creativity and Innovation hub at HEC Montreal, who points out that the transition of ideas and lifestyles from one social stratum to another is facilitated by a third medium: the “middleground”. This term refers to networks and communities who set up projects inspired by underground practices and ideas, thereby decoding them and making them accessible to major upperground organisations and institutions. Spaces shared and taken over collectively can facilitate interactions between these different levels of organisation.

Sharing places to contribute to social innovation

Lastly, sharing certain places makes them genuine social innovation incubators in a world faced with the need to change. For example, third-places are used to invent and test new practices to overcome uncertainty and future challenges, from our present, while remaining in a safe space. This is how third-places become pioneering microcosms. Therefore, making better use of existing built-up areas would help adapt to the users’ new needs and improve their quality of life, while also enhancing social innovation.

New Business Models are Emerging

Intensifying the uses of built-up areas also results in inventing new economic models. This is a unique opportunity to come up with an economic model where the three drivers of sustainable development – economic, social, environmental – are no longer opposed but complementary.

This is the more challenging as property-related costs are substantial expenses for individuals, businesses, local authorities and the State; optimising the uses of existing buildings would therefore help limit unnecessary spending, perhaps even find additional sources of income.

On average, real estate is the 2nd largest cost item for businesses

The BHEP is intended to be a profit-generating property asset, with spaces that can be shared, produce flows automatically, generate multi-user services and are compatible with shared electromobility. Its objective is to move towards maximum energy efficiency in terms of total carbon cost through bioclimatic design, increased intensity of use, the use of reusable and, where possible, bio-based materials, as well as adaptability and reconfiguration.

Fabrice Bonnifet
Sustainable Development and QSE Director, Bouygues Group, Chairman of C3D
Another way of exploring urban studies and real estate: the productivity of the built environment

To approach real estate from a different angle and through the prism of uses, the notion of “productivity of built-up areas” can be used. This notion is defined as the ratio of the quantity of use produced to the quantity of resources mobilised for its construction (natural, land or capital resources). This ratio is presented below.

\[
\text{Productivity of the built-up space} = \frac{\text{Quantity of use produced}}{\text{Quantity of resources mobilised}}
\]

Productivity of the built-up space = Number of hours of use (work, classes, etc.) ÷ Quantity of resources mobilised (raw materials, energy, water, land, etc.)

This notion encourages us to work towards a better productivity of built-up spaces in two different ways:
- by increasing their use: intensifying the use of the place, opening it to wider user categories through sharing, reversibility;
- by reducing the amount of resources used: use of existing structures, raising awareness, sobriety in the volumes of material used, longer life span.

So how can we define added value and the production factor?

Added value is how the built-up space is used, for example the number of training hours provided to students, the number of care procedures carried out or patients treated and, more generally, the time spent in this space. The production factor is made up of the resources used to build the built-up space: land, various materials incorporated in the structure, bit also energy, water and the construction and operation phase.

How can we measure the productivity of a building?

It all depends on the function of the building and measurement choices: for a school, for example, we could measure the number of pupils or the number of teaching hours, divided by the weight of materials used for construction. For offices, we could measure the number of working hours divided by the weight of the building’s materials. Then we could compare the productivity of an office building with that of another by saying: “This building produces 200 working hours per tonne of material used in the structure”, based on which its environmental performance can be inferred and compared with the value produced. Its use!

3 questions for

Xavier Gauvin
Bouygues Construction and CEA Minatec Ideas Lab

Where did this idea of productivity of built-up spaces come from?

The agronomy sector uses the term “agricultural productivity”: “The efficiency of wheat - divided by the resources mobilised - i.e. the surface area of the field. Similarly, the industrial sector defines productivity as the ratio of production added value to the production factors implemented to achieve this added value. This makes it possible to measure the productivity of assets, capital, labour, etc. Why not adapt this concept to buildings?

What is territorial resilience?

Resilience is the ability for a territory (and all its components: residents, institutions, infrastructures, businesses, flows, networks) to keep operating independently of major shocks to which it may be subjected, by reducing chronic, everyday stress, a latent phenomenon that affects its operational capability.

Different Time Scales

Working towards a better use of built-up areas encourages us to consider different time scales: taking the short, medium and long terms into account allows urban transition initiatives to become genuine drivers of territorial resilience.

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An exceptional crisis which sheds new light on these considerations: COVID-19, lockdown and physical distancing

- Physical distancing has underscored the need to make better use of existing structures: lack of space in some housing units seems to painfully contrast with other housing units emptied of their occupants, as well as offices adjacent to these units which were hardly used during the lockdown period.
- The environmental imperative is emphasised by the pandemic: environmental degradation contributes to health crises and should result in further disasters of various kinds, just as serious and increasingly frequent.
- Furthermore, this crisis has cast light on new practices, for example blending uses of our homes: children’s education, telework, sport, leisure, etc., and new needs (introducing production and supply logistics functions in the city), prompting us more than ever to reinvent how we use our cities, our neighbourhoods, our buildings, our homes, etc.
- Lastly, this crisis reminds us of the existence of unpredictable events and the need to adapt thereto. It encourages us to prepare our living spaces to facilitate future adaptation to an uncertain world.

In the short term, during immediate crisis management, blending the uses of an urban space makes it possible to adapt under duress and when faced with an exceptional situation.

In the medium and long term, anticipating possible changes in needs, spaces and how they are used paves the way for the adaptation to sometimes unpredictable future events, relating to climate change, socio-economic shocks, geopolitical conflicts, health risks, etc.

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In your latest book, you paint a fairly gloomy picture of the prevailing urban development model. Where does the city currently stand?

My approach is based on the study of urban sprawl and soil sealing, and results in a comprehensive observation: the basic failure of the urban development process. We now know how to build new constructions on neutral, essentially agricultural land, and we have effectively industrialised this process. Our current construction methods are extremely intensive in terms of soil, energy and materials. Urban sprawl is linked to automobile development as a whole, while it is made possible by car journeys. It also induces car dependency. In fact, our oil dependence, immediate environmental impact and social fragility are intensifying. Another key point is that today, we fail to identify the need, to ask “why” before wondering “how” a project should be undertaken. Numerous needs could be addressed by work which does not require the use of soil: through urban densification and renewal processes, perhaps even recycling processes, and by working on existing buildings. More than 60% of individual housing units are considered significantly under-occupied by INSEE. Households find themselves alone in oversized housing units, on oversized plots of land, often located far from the centre of town. It is quite clear that these are forms of obsolescence linked to a programme which, albeit legitimate at the time, is no longer viable, hence the need to go further by focusing on the supply of adapted and sustainable housing, while aiming for attractive and diverse urban structures.

Among the consequences of this state of affairs, you mention social segregation. How is generational fragmentation apparent in our cities at the moment?

In several so-called attractive cities, the production of new housing units, in particular privately rented, is not keeping up with the influx of new populations. This lack of supply compared with demand causes prices to soar, which effectively results in the eviction of households to the outskirts of the city centre and the metropolis. The heart of France’s major cities is not welcoming for young children and their parents, whether in terms of services or space. Families are somewhat neglected by the housing supply, and public spaces are dangerous for children. Of course, some encouraging efforts have been made in terms of mobility and bicycles, schools, hospitals, etc., but these are partial efforts and it is necessary to go further by focusing on the supply of adapted and affordable housing, as well as on the attractiveness and diversity of urban structures.

You also mention another consequence of urban sprawl: its exorbitant cost in the long term for local authorities. Why are they struggling to take into account the long-term consequences of this urban planning choice?

This difficulty is essentially due to the difficulty in anticipating and estimating the maintenance, operating but also service provision costs, which are not included in the developer’s equation. Municipalities think primarily in terms of investment costs and fail to realise that economics of scale are lost in sparsely populated territories. For example, to extend networks, we neglected the maintenance of primary utilities which require heavy maintenance operations. This direct cost of urban sprawl is a ticking time bomb for municipalities as this work will have to be carried out sooner or later. Another indirect effect of automobile hypermobility is the health expenditure induced by pollution, etc. The cost of urban sprawl is higher than we think.

And yet we have the resources to make better use of existing structures rather than continue to build more. Why is the short term neglected in urban planning?

The time dimension is neglected in the planning process because the short term is, by its very nature, a time for managers, not projects. It is complex, intangible, raises organisational and management issues, such as access rights and the insurance of spaces shared between several types of users. For example, Mab’lab is a co-working space operational in the Crous Mabillon university restaurant in Paris outside meal times. The Crous is not qualified to manage this space outside meal times, which is why they have called upon a third party, with all the complexities that entail.

To conclude, is there anything else you wish to mention about this transition?

There is a notion of alert, and an urgent need to take action. You cannot change a system by gently moving the lines: you need to branch out into a different model. There is still a long road ahead to build the city. We are already living in the city of 2050, we have begun to design the city of 2050.
The environmental, social and economic issues of our times prompt us to engage cities, neighbourhoods, public spaces and buildings in a transition intended to make better use of their spaces. How should this be done? Which practical initiatives help respond to this paradigm shift? New, very diverse approaches are emerging to make better use of urban spaces. We review a wide array of initiatives and solutions that are emerging across the world, using four major drivers:

1. TRANFORMATION
   Adaptation of an existing place for a new use, different from its original function
   P.28

2. REVERSIBILITY
   Ability for a place to be transformed in the future in order to accommodate other uses
   P.44

3. URBAN DIVERSITY
   Simultaneous presence of several uses or user profiles in different, nearby spaces
   P.60

4. CHRONOTOPOLOGY
   Focus on temporality to ensure several user profiles or several uses coexist alternatively in the same place
   P.70
TRANSFORMATION

Definition
The term transformation encompasses approaches aimed at adapting existing places for new uses, different from their original function, or for new user profiles.

Useful concept
- Transformation effort rate: ratio of transformation cost to the initial building construction cost.

Example
A building cost €10 million to build. It is no longer adapted to new uses: a major overhaul is estimated at €11 million, i.e. a 110% effort rate, whereas light renovation would cost €3 million, i.e. a 30% transformation effort rate.

Key idea
Developments that do not meet or no longer meet requirements are not inevitable.

A building the initial use of which is no longer relevant, a poorly designed public space, a deserted area or a place that has not been designed to host any activities (underutilised car parks, roofs, etc.) can be transformed to accommodate new uses.

Benefits
- Adapting to new needs
  The territory where a building, public space or urban project is located changes over time: its economic, social and environmental parameters are altered and form a context to which certain uses of existing spaces are no longer suited. In addition to this local context, the evolution of society as a whole affects the needs; transforming a place helps make it more relevant to this new context.

- Prioritising heritage and recounting the history of the place
  The form of buildings and public spaces carries the history of their construction and successive uses. Keeping track of these forms helps showcase fragments of this history and therefore keeps records of former uses. This adds meaning to the place and creates connections with the past.

- Regenerating spaces
  By focusing on vacant or neglected spaces, transformation drives localised revitalisation at neighbourhood level. This revival creates social momentum in the transformed space, which goes hand in hand with economic and institutional dynamics (mating of entities), beneficial to surrounding areas.

- Increasing proximity / reducing mobility requirements
  Newcomers to an already urbanised territory benefit from the vicinity of facilities, public services, shops and activities of all kinds. Integration is made easier and quicker by the fact that all these elements are already present in the territory.

- Depending on the spatial organisation of the place and the intended uses, this transformation may often require conversion work or simply renewing street furniture or furnishings.
Converting Existing Structures

Over the life cycle of a building, as it is repaired and renovated, certain aspects of its form and operation change gradually, but its use often largely remains the same. All around the building however, the economy of the territory changes, as do social relations and needs. And then one day, the use for which the building was designed no longer meets the requirements. Conversion is a way of upgrading the form of the building from time to time to adapt it to these new uses.

The service sector is particularly concerned by conversions: declining needs for offices and the relocation of offices within major cities. These conversions require modifying the layout of spaces, in a way that varies depending on the extent of the change in use and the initial form of the building. This can involve major works and costly restructuring operations. Minor work is rarely sufficient. Examples of this include the Palais de Tokyo, which was transformed for modest costs, by enhancing the raw aspect of the premises. From a legal perspective, building transformations can be subject to a sale of a building to be renovated, whereby the seller of an existing building makes a commitment to the buyer to carry out work within a given timeframe.

Conversion of offices into housing units

The objective is to develop housing units in spaces which were initially intended for work, which can turn out to be complex. Industrial spaces are another type of building largely concerned by conversions. Their large volumes offer opportunities paving the way for conversions into cultural centres, convivial places and occasionally housing units.

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Unity Cube, temporary occupation of vacant buildings

The Unity Cube association has designed and developed emergency accommodation solutions since 2016. Its activities include assisting individuals and local authorities, assessing the potential of spaces and setting up projects. The use of modular technologies is instrumental in the association’s research and achievements. For example, in 2019 Unity Cube worked on three floors of a former office building left vacant, located Boulevard Blanqui, to accommodate 31 people for 12 months in housing units consisting of individual bedrooms with communal areas.

Emblematic transformations

Le Colorama

This originally tertiary building belonging to EDF was converted into a residential building in 2016-2017, including 67 housing units (upgradable for the elderly, assisted housing) and a sales office on the ground floor. The load-bearing structure was reinforced, balconies were added on the façade for every housing unit, and the building was insulated on the inside.

Rue de Mouzaïa

The property complex of Rue de Mouzaïa has had several lives: no. 58 was designed as a manufacturing plant for Athos sewing machines, while the office building at no. 58 was a blueprint for brutalist architecture by Claude Parent and André Remondet. In the early 2010s, the complex was transformed for moderate costs, by enhancing the raw aspect of the premises. From a legal perspective, building transformations can be subject to a sale of a building to be renovated; whereby the seller of an existing building makes a commitment to the buyer to carry out work within a given timeframe.

Gasholders

Four former gasholders, with a height of 70m and a diameter of 60m, shut down in 1994 and underwent major rehabilitation, which was completed in 2001. Housing units, shops and recreational areas now occupy freed spaces in this unique architecture, where façades and parts of the roof were preserved.

Church-bookshop

An abandoned church in Maastricht served as a warehouse, boxing ring, car dealership and bicycle storage, before it was converted into a bookshop in 2005. For this purpose, the architects made the most of the height of the building to install a two-level structure giving access to rows of books. The choir and the ambulatory were converted into a reading room and tea room.

Reviving Derelict Sites

Abandoned buildings and land are legion, whether this is because industrial and military sites have closed for economic or political reasons, or hospital, administrative or logistical complexes have moved to the outskirts of cities. The space to be transformed includes buildings that have to be dealt with. The challenge with numerous renovations is to showcase and sometimes protect the historical architectural or industrial heritage, while reintegrating it into the life of today’s cities.

On sites that are often vast and sometimes left abandoned for a long time, the challenge is to rehabilitate the wastelands in such a way that the public wants to take ownership of the sites. In other words, the objective is to facilitate the creation of a sense of community. Ephemeral urbanism can be a means of creating activity and helping to make the place discoverable to future residents and potential visitors alike. Although plans for the rehabilitation of derelict sites are sometimes defined as soon as the original sites are closed, the time required for their design can leave space for temporary occupation, in which a mix of uses, audiences and functions are created. Ephemeral urbanism projects developed in these derelict areas often overcome their temporary nature and turn into more sustainable projects. An example of this was Grands Voisins, the temporary occupation of the former Saint-Vincent de Paul hospital in Paris, from 2015 to 2020.

It’s always easier, from a strictly engineering point of view, to wipe the slate clean and build new structures, except that the end result is not the same. I feel that, when people who used to work in the “Compact” building discover the market square, the hanging gardens or the car park we intend to create, they will recognise the volumes, posts, ceilings and the environment they used to work in.

Benoît Gérardin
Director, LinkCity Nord-Est
about the La Maillerie project - see opposite page

Ephemeral urbanism is a tool

Ephemeral urbanism is a temporary or short-lived approach which contributes to the long-term transformation of an urban project. Ephemeral urbanism makes it possible, through temporary occupation, to make use of a place during the transition period, and to anticipate, if not participate in the planning of future urban projects.

Improving public space

Having become derelict, the Foresta area in Marseille has been subject to an eight-year occupancy agreement since 2015. It is being converted into a metropolitan park, a recreational but also local production area. Facilities are currently being built (hamlet, farm, clay ovens, etc.).

Foresta, Marseille.
Organisers: Yes We Camp, Résilience, Coopérative Hôtel du Nord
Livening up a place through art and culture

La Belle-de-Mai

This former derelict site has become one of Marseille’s major cultural institutions. Since 1990, over 45,000 m² of floor space, concert venues and exhibition halls, food courts, a bookstore, a nursery and, more generally, public spaces such as skateparks or playgrounds have been developed. The collective project was conceptualised in 2002 and played an important role in the planning of 2013 when Marseille was European Capital of Culture. Friche La Belle-de-Mai, Marseille

Espace Darwin

Since 2009, this former derelict barracks has been home to a very attractive Third Place: gardens and permaculture vegetable gardens, indoor skatepark, market hall, community spaces and cultural events. The Darwin project, initially intended to be temporary, is a well-established local ecosystem, fighting for sustainability and aiming for the long-term development of the barracks and surrounding areas. Espace Darwin, Bordeaux

Plantage 9

In a former derelict textile factory, around thirty cultural initiatives were launched and resulted in the occupation of the premises before a factory transformation project. This helped local residents on board and give Bremen a new image as a dynamic city, no longer a passive victim of deindustrialisation. Plantage 9, Bremen (Allemagne)

4 questions for

Lauren Andres

Urban planner, Associate Professor, Bartlett School of Planning (University College London)

What is the context and what are the major issues transitional urban spaces are currently faced with, more specifically derelict sites?

I noticed a change in ephemeral urbanism on derelict sites. Fifteen years ago, ephemeral structures usually took the form of squats and citizens’ initiatives. They were usually viewed negatively by local authorities and landowners, as an obstacle to a development project. Progressively, under pressure from increasingly scarce land and the residents’ desire to access these spaces, empty urban areas have become an asset in the city’s development; the temporary occupation of derelict sites have become the norm, as illustrated by current initiatives of a public entity such as SNCF in its former train stations and warehouses. Some contractors and developers view ephemeral structures as a way of supporting the urban project, by getting residents on board and creating activities on sites, from an early stage, as soon as the transformation process has been initiated. As a result, the sector has become more professional in the past ten years with the emergence of specialised operators.

It seems that there are more and more of these ephemeral urbanism operations. How do you explain this trend? What were the contributing political and social factors?

It is clearly a fad on the part of developers and policy-makers. It relies on a sort of return to the local level, with the idea of the “city for its residents” and the creativity and innovation resulting from the ephemeral nature. There is also an economic and financial aspect as ephemeral developments have an impact on the property value but also on the symbolic value of the land. It appears that certain difficult urban contexts benefit from the progressive transformation of a territory’s image, and temporary structures have a positive impact as they gradually and flexibly fill vacant spaces through its new uses. The fact on the part of developers and owners is also due to the fact that uses are changing so fast that ephemeral structures are becoming necessary to test and determine whether a type of use can work; it allows for changing uses and urban adaptability. All the more so, in my opinion, in light of the pandemic we have just experienced and the enhanced need for spatial adaptability.

What are the different international approaches to ephemeral urbanism?

In Europe, Berlin was the leading city on this matter for a long time. It characterises the evolution of the temporary occupation model, which initially started with spontaneous or alternative developments and moved towards a strategic and institutional vision (urban marketing) for example, the Tacheles squat. Secondly, a diversity of approaches is observed: “shrinking cities” such as Detroit or Leipzig, where temporary structures have a more symbolic dimension, because there is a lot more space available, or major cities where land is scarce and the purpose of temporary facilities is to take advantage of the market value of vacant space. In London for example, a genuine temporary occupation market, based on container projects, was created with the “Boxparks”. A similar approach to temporary structures can be found in developing countries. In Sao Paulo (Brazil) or Santiago (Chile) for example, the role of temporary and ephemeral structures is fairly similar to Europe, as they create a bond between people from different social backgrounds.

Does the ephemeral urbanism model have its limitations?

With ephemeral urbanism comes a risk of gentrification; the increase in value can ultimately be detrimental to the social diversity of the neighbourhood. The other problem is the emergence of more superficial temporary urbanism operations: when no thought is given to the influence of temporary occupation on the territorial project, the impact of the operation is very limited. All ephemeral urbanism operations should be guided by a strategy in order to be relevant and have positive effects on all those concerned.
Using Forgotten Areas

The urban fabric features underutilised and less desirable spaces: underground car parks rendered obsolete by the ban on the use of cars in some areas, abandoned basements intended for logistics activities, flat roofs with no planned use, underused public spaces.

While these spaces represent a cost (maintenance, security, etc.) for the owners and managers, they can also be a valuable resource in the heart of major cities. Their specific constraints (low light conditions, tight space, limited traffic, equipment) can turn into opportunities for other activities!

Shops, association offices, urban farms or even logistics spaces are developing as a result of the census of these neglected urban areas and the identification of both the activities most likely to develop there and the partnerships to be formed between owners or managers and future occupants. This was illustrated by the Paris City Council with the launch of the Réinventer Paris 2 call for innovative urban projects, where 34 underground sites (road tunnels, car parks, petrol or metro stations, industrial infrastructures) were proposed.

La Caverne

As part of the Parisculteurs call for projects of the Paris City Council (intended for revegetation projects in Paris), social housing provider ICF La Sablière proposed an abandoned site: a 3,500 m² underground car park located under a block of 300 council flats. This is where, in late 2017, the Cycloponics start-up company installed an underground urban farm called La Caverne, where organic food products are grown using LED lighting (microgreens) or in the dark (mushrooms and endives). Parking spaces were converted into mushroom beds where oyster, shiitake and button mushrooms grow on a substrate based on coffee grounds and residue from Parisian micro-breweries. The start-up company is a member of local direct sales networks in food co-ops, and also sells directly to individuals via bicycle deliveries. Since the call for projects, Cycloponics has moved into new sites which should open to the public in 2020, as a result of fundraising operations.

Le Terminus - Croix Rouge

Winner of Réinventer Paris 2 call for projects, the Terminus will take over a former metro station, Croix-Rouge, which has been closed to the public since 1959. Its central location from the heart of Paris will attract visitors eager for a gourmet experience in 2022. The platforms will host various food courts, like a gourmet hall.

Peckham Levels

Seven storeys of a former supermarket car park were converted into a place to live for local residents. The architects worked on planning, with a view to fostering exchanges between visitors and artists. In particular, they feature food courts and play areas open to the public, artist’s workshops, cultural events (concerts, art gallery), etc.

Car parks and basements

Carpark Futures

A study conducted by DPA-X on behalf of the Indigo group highlights the transformation potential of underground car parks insofar as these spaces are viewed as “resourceful places” in a world where “urbanism is firmly rooted”. Scenarios on the future use of car parks as spaces made available to users have been devised in various urban contexts. They outline the programmes they could host, as well as the obstacles encountered.

Carpark Futures study: Opportunities in the underground, DPA-X

2 million m² of floor space in underground car parks under public roads in Paris

There are around 700 green roofs in central London, which is the equivalent of 25 football pitches.
By definition, neglected urban spaces are unused. However, planning these forgotten spaces contributes to creating usage, architectural, urban and therefore economic value. These plans can be similar to what already exists, such as mobility services, or other forms of planning such as production (urban agriculture, object production or repair, etc.), food laboratories, recreational areas (table tennis, arms room, escape game), etc.

Urban logistics and distribution are an underlying trend arising from a growing need for distributions in the city centre. The first example dates back to 2013 during the conversion of a Beaugrenelle car park in the centre of Paris. We are now working on numerous logistics or storage projects. We have also begun to explore ground floor activities and how they can be linked to underground levels, perhaps by integrating the basement or mezzanine to host productive functions for example.

To undertake these projects, a number of barriers have to be removed: technical, regulatory (as work is carried out on existing buildings and sometimes under structures), land-related, legal and programmatic, with regard to the low rental value of the space or constraints in terms of height, operating costs, access and exposure to natural sunlight. I believe the processes involved in the setting up of these projects should be streamlined, and the legislation should be adapted, to be less general and aim for a case-by-case approach.

The viewpoint of

Damien Antoni
Architect, co-founder of Syvil

Neglected urban spaces

Reintroducing production into the city

The desire for greater proximity, the questioning of urban sprawl and the growing awareness of the dependence of cities on increasingly long supply chains have given rise to projects aimed at rebalancing the distribution of urban functions between the cities and their outskirts. Hence the launch of many projects with the aim of transforming an existing space so that it can adopt a “productive” function:

- Urban agriculture is booming and is generally implemented on the roofs of residential buildings, or iconic buildings, but also underground where specific products are grown. In 2020, Europe’s largest urban farm was set up on the roof of the Fashion shopping centre. CultiCime is an urban vegetable garden created on the roof of the Fashion shopping centre. The Espaces association is in charge of its development, using an approach that combines agriculture with social concerns. Five people work on the site, three of whom under a job training contract. Crop development includes home-made manure and composts, mulching and net fabric, over 1,500 m², as well as 38 varieties of vegetables.

- New forms of artisan production sites are emerging, such as “ICI Marseille”, a space integrated into the Fabriques project led by Bouygues Construction/LinkCity (see page 75), where workshops are shared to promote the exchange of knowledge among professionals. The development of FabLabs in city centres also has the aim of sharing knowledge, with a focus on design and manufacturing.

- This trend also applies to logistics, which emerged as a vital function during the COVID-19 crisis and is already affected by a major trend: the growth of e-commerce, which currently accounts for 8% of the retail sector, up 12%-15% per year. In particular, these projects include the Sogaris logistics space, built under a road bridge in Paris’ Porte de Pantin, in an underused area.

Roofs

- Park’n’Play
A children’s playground was created on top of the car park building in Copenhagen. Accessible via two external staircases on the facade of the building, this 24-metre high public facility offers amazing views of the city, port and Øresund strait.

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Urban distribution space

- The Cascade Project
An ordinary staircase in the streets of Hong Kong was converted into a dynamic and attractive public space. A sculpture mirrors the shapes of the steps and provides shaded seating. At night, an integrated lighting system livens up the site and creates a sense of security.

- The Cascade Project, Hong Kong. Edge Design

The Cascade Project

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- Urban distribution space
A vast, steep-sided area under a suspended section of the Paris ring road was transformed into an urban logistics area, serving as a link between major logistic hubs (Rungis and Arras) and Paris stores. See “viewpoint of Sonia Samadi”, Director of development and innovation at Sogaris (page 67). Sogaris, Porte de Pantin. SYVIL Architectures du Système Ville

- The Cascade Project
An ordinary staircase in the streets of Hong Kong was converted into a dynamic and attractive public space. A sculpture mirrors the shapes of the steps and provides shaded seating. At night, an integrated lighting system livens up the site and creates a sense of security.

- CultiCime
CultiCime is an urban vegetable garden created on the roof of the Fashion shopping centre. The Espaces association is in charge of its development, using an approach that combines agriculture with social concerns. Five people work on the site, three of whom under a job training contract. Crop development includes home-made manure and composts, mulching and net fabric, over 1,500 m², as well as 38 varieties of vegetables.

- Urban distribution space
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**Densification: Striking the Right Balance**

To combat soil sealing while addressing population growth in some territories affected by a lack of housing units, offices and facilities, already urbanised land must sometimes be densified: this involves questioning our relationship with density. It can be a good thing: it brings populations closer to existing utilities, waste management or transport services.

However, density is often perceived negatively. In 2020, an observatory of the uses and representations of the territories revealed that 40% of French people were unhappy with the density of their living environment; 28% of French people feel their municipality is “a little too” or “far too” dense in terms of population density. The term frightens people, and wrongly so, points out Sylvain Grisot, urban planner: “Increasing density does not mean turning regional cities into Paris after Haussmann’s renovation, or building tower blocks everywhere.”

As part of the transformation of a neighbourhood to make it denser, solutions are available to make density more pleasant, by eliminating the sense of crowding which often comes with it. This involves for example higher-quality built-up areas, which are not overlooked, to reduce visual clutter; including vegetation to bring a fresh note and please the eye; with public spaces designed to create a quiet atmosphere in places and liven things up in others.

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**Regulations**

The withdrawal of the maximum floor area ratio since the ALUR law of 2014 made it possible to increase the floor area on a plot of land and, as a result, the number of floors, as permitted by the PLU’s (local urban development plan) rules in terms of volumes.

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**Densifying up: raised structures**

There are several approaches to densification: grouping together a larger built-up area in the same space (building density) or more population (population density). To go even further, rather than measuring population density or built-up density, one can imagine that a more accurate measurement of the actual use of urban spaces would make it possible, in the future, to determine the density of uses of a given space.

- **Population density:** number of inhabitants per unit of area, generally one square kilometre.
- **Built-up density:** ratio of built-up area to land area.
- **Density of uses:** actual use of a given space per unit of area (experimental concept difficult to measure).

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**Les Piaules**

Bouygues Construction reference

By raising an existing supermarket, LinkCity built a multi-storey youth hostel, with a bar-restaurant on the rooftop that offers a panoramic view of Place de la Nation. The wood joinery and structure blend in with the built environment.

Place de la Nation, Paris. LinkCity

Architects: JBMN Architectes, Architecture Pelagrin.

Hostel management: Just Like Home

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**Alex Monroe Studio**

In central London, three contemporary floors have been erected on top of a renowned jeweller’s shop on the ground floor. In addition to the shop, this mixed-use building hosts the workshop, a recreation room and a roof terrace accessible to employees. All functions, from production to sale, are now under the same roof.

Alex Monroe Studio, London. Architects: DSDHA
Densifying down: underground structures

The city-State of Singapore has a very limited territory but needs space to improve the quality and vitality of the City.
After building many polders in the late 20th century, the urban development strategy, which covers the period until 2030, focuses on the city’s basements, used for activities that do not require a major human presence as a priority, to ensure the largest number of people enjoy natural sunlight.

Jurong Rock Caverns

Since 2014, oil products have been stored in five man-made caverns, 150 metres below Jurong Island. Petrochemical companies can rent these tanks with a capacity of 1 million cubic metres to store their oil stocks without encroaching on open air areas, which are therefore used for other activities as a priority.

Densifying the residential urban fabric

Jurong Rock Caverns, Singapore

The soft densification process is viewed in a PUCA study1 of French Urban Construction and Architecture Plan as an alternative housing production method, insofar as these operations are not planned like ZACs (joint development zones) or housing estates or any "traditional" urbanisation by "expropriation". This study shows that the soft densification process (plot division, plot densification, residential division) is already in use: on the outskirts of Limoges, 17% of the houses built between 1999 and 2011 are the result of soft densification, and 37% in the Paris conurbation. However, recent initiatives have accelerated this trend.

The BIMBY experience

The BIMBY approach (Build Beauty In My BackYard) aims at developing soft densification by targeting individual properties. It involves extensions or new constructions on vacated land, especially in the outskirts of cities. Montreal is a model in the use of underground caves for storage and parking purposes, and developed the first master plan on the development and use of underground spaces in cities. Montreal has the largest underground pedestrian network (32 km), largely developed through a public-private partnership.

The city of Singapore has a very limited territory but needs space to improve the quality and vitality of the City.

In 2019, 173,660 new houses were built in the UK2.

The suburbs, with their residential areas, are the result of urban sprawl. However, these spaces are also a source of densification, conducive to innovative practices such as plot division. These approaches are still faced with legal and operational obstacles, and depend on the local context in terms of existing facilities and dynamics.

In the benchmark3 on the development of underground spaces in cities. Montreal is a model in the use of underground caves for storage and parking purposes, and developed the first master plan on the development and use of underground spaces in cities. Montreal has the largest underground pedestrian network (32 km), largely developed through a public-private partnership.

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Safeguarding natural resources
Facilitating the reuse of structures helps reduce the scale of future transformations, as well as future needs for new constructions. This lowers the quantity of material needed and ultimately the use of natural resources such as sand used for making concrete. This means that the construction sector will be able to cut its dependence on these natural resources, available in finite amounts on the planet.

Construction materials represent 50% of the mass of material used in France for domestic consumption.2

Reducing waste
Similarly, anticipation helps avoid future demolitions, thereby reducing waste generation in the sector.

Construction and demolition waste accounts for approximately 30% of the all waste generated in the EU.3

In Europe, construction and demolition generate 450 million tonnes of waste every year.

Key idea
• If a building or public space is designed to change function in the long term, long-term costs are reduced, as is the scale of the transformation and resulting disturbances, while the change in the building’s function gains pace.
• Reversibility must be thought out at the planning stage and enabled by local urban planning regulations and development methods. The principle of reversibility must then drive the design to define the technical and architectural choices guiding the construction and concretely facilitating future transformations. The ability of the site to be transformed is subsequently enhanced throughout the operation of the structure, as real estate needs evolve.

As with any new approach, reversibility poses challenges:

- Architectural
- Technical
- Financial
- Legal and fiscal

Benefit
- Reducing carbon footprint
To address the challenge of climate change faced by humanity, reversibility is a change-factor in the transformation of the construction sector, which needs to find cleaner ways to build our living spaces, while drastically reducing its emissions.

The building sector is in the front line. It accounts for 1/3 of national emissions, taking into account the energy used by buildings, in their construction, maintenance and renovation.1

- Reducing transformation costs
Reversible constructions generate, at the cost of marginal efforts in the design phase, substantial savings during future transformations. It will be far more economical to transform the structure than to destroy and rebuild it.

- Optimising existing assets
The owner, or a potential investor, can optimise the intrinsic adaptability of the structure, and take it into account during the financial valuation of the asset as soon as it is built. This requires long-term vision when appraising the structure.

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Adaptation to changing uses
The rapid transformation of our living spaces allows the near-instantaneous adaptation to our changing uses. Greater adaptability of existing places to new uses would help prevent unnecessary new constructions every time our lifestyles change, or every time the household structure changes.

Over the past thirty years, the size of households has decreased overall, with an increase in the proportion of people living alone, an increase in the proportion of childless couples and a sharp increase in single-parent families (INSEE, 2019).

Better resilience in the face of uncertainty
We need places that could be transformed quickly and cost-effectively to cope with various crises and temporary emergencies. The idea is to be able to deal with a variety of disruptive events, some of which, such as the lockdown periods of 2020, are unpredictable.

2  ADEME
The Office Switch Home concept, developed by Bouygues Bâtiment Ile-de-France Construction Privée within the Bouygues Construction Group, proposes an ingenious model of office buildings designed to be easily converted into housing units, using in particular innovative, standardised subfloors to this end.

Convertible Floors

While the idea of converting offices into housing units is gaining momentum, its feasibility varies greatly depending on the configuration, and the process remains expensive. At present, it is often as expensive, if not more so, to refurbish an existing structure by transforming its uses as it is to destroy it and rebuild a new one. In this context, the reversibility approach consists of anticipating this new lease of life of buildings by designing unassigned programmes which can accommodate offices, housing or even parking spaces over time. An assessment is essential to establish the need for reversibility and to choose the right approach. On the scale of the project, the assessment must establish the provisions of the local urban plan to determine the most relevant form of the building.

At neighbourhood level, the reversibility of offices into housing also opens up the question of the quantity of public facilities available nearby: what future transformations prefigure the public services and the profile of uses in the neighbourhood? This aspect of reversibility raises many technical and architectural questions, which themselves lead to an additional cost of 5% to 20% during initial construction. For example, it is necessary to choose a ceiling height for the floors and a grid of façades that reconciles the constraints of housing and offices. Building structures, such as the design of utilities, must allow maximum adaptability of the storages. The organisation of vertical flows is at the heart of safety issues, and these blocks must be designed in compliance with various regulations, corresponding with all potential uses of the building. While tentative solutions have already been found, there is still a long way to go in terms of regulations, urban planning and tax issues.

Regulations and Reversibility

Hindrances

- Building permit: applications must specify the function of the building and do not accept unassigned projects.
- Fire regulations: the safety rules vary depending on the type of building: Public (PAB), Employee Access Building (EAB), Labour code, housing.
- Office creation tax (in the Ile-de-France region): the tax for the creation of offices, retail premises and storage premises applies and identifies those liable at the start of operations.
- PLU: sometimes the zoning provided for in the PLU only has a single purpose, and any change is subject to an application for an authorisation to change the purpose.

Aids

- Permis à double état: introduced in 2018 with a view to the 2024 Paris Olympics, this system allows, in these exceptional circumstances, for the future transformation of the building. It has yet to be extended outside the Olympics.
- ALUR law: helps local authorities differentiate between urban planning rules for existing and new constructions.
- Innovation permit: introduced by the ELAN law, it is used to derogate from certain construction rules in some areas: operations of national interest (OIN), but also major urban planning operations (GOU) and territorial revitalisation operations (ORT).
- Permission to experiment: the ESSOC law provides for the future inclusion in the French construction code of a results-based instead of means-based logic, which will facilitate innovation.

Historical example

With their high ceilings, some Haussmann-style buildings were converted into offices in the 20th century, even though the concept of working in an office did not yet exist when these bourgeois dwellings were designed. The “Paris Haussmann” exhibition publicly emphasised the reversibility properties of Haussmann-style architecture.

Office Switch Home

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The Paris region had 3.3 million m² of vacant offices in 2017, while housing units were lacking.

1 Paris Haussmann, Modèle de ville? exhibition, Pavillon de l'Arsenal, 2017
What is your objective when you develop this principle of building reversibility?

With these seven principles, our goal was to address the issues raised by reversibility in terms of construction, technique, structure, fluids and safety. Our demonstration (there are others) consists of claiming that, technically speaking, it is entirely possible to create reversible buildings... One of the criteria of sustainable development.

The objective is to anticipate to quickly adapt the space to the desired function, with only limited extra costs.

3 questions for

Patrick Rubin
Architect
CANAL Architecture

How can a reversible building permit be filed?

The innovation permit, for example, is used to derogate from traditional construction rules to test new techniques, including reversibility. The State launched a call for expressions of interest at the end of 2017, following which we were fortunate enough to be selected to make our visions come true. A planning permission application, with no specified purpose, will be submitted in Bordeaux for the Euratlantique area, in December 2020. The building, built in conjunction with Elithis, will develop, over 5,000 m² and nine levels, convertible floors for all uses. The models are capable of absorbing all types of function. Generic buildings should not be perceived negatively: one just has to look at Paris after Haussmann’s renovation. But of course we tested different forms, not just the tower, i.e. building blocks and islets, on reversible buildings in actual urban contexts.

The principles you develop take the form of a standard 60m long tower. Will reversible construction be defined by a single matrix?

No, the future is not limited to imposing a single matrix that would set in stone architectural forms and urban models. The development of the theoretical framework gave us an opportunity to re-examine interior design criteria within housing units and offices, primarily in terms of everyday uses. The models are capable of absorbing all types of function. Generic buildings should not be perceived negatively: one just has to look at Paris after Haussmann’s renovation. But of course we tested different forms, not just the tower, i.e. building blocks and islets, on reversible buildings in actual urban contexts.
Appropriation and Future Extension of Housing units

There are many changes within the household population through the life cycle: living alone, with a partner, apartment sharing, arrival of children, even separation and stepfamilies. Reversibility helps put an end to spaces with a limited lifespan, for example by facilitating the extension of housing units.

This approach also encourages the appropriation of one’s housing unit in the medium and long term. This is not a new issue, as attested by raising operations carried out in numerous Paris buildings in the 17th century. Today however, to anticipate safe physical modifications of housing units, a number of technical parameters must be factored into the design of the building.

The half-house principle, as part of a logic of housing accessible to all, was deployed in South America in the 1970s. Edwin Haramoto developed an inventive strategy for housing appropriation, referred to as “Sistema Haramoto”, within the Instituto Nacional de la Vivienda (INV) in Chile. The objective is to identify the primary and necessary elements of a housing unit to design its core, thus preparing for the possibility of extensions or raised structures, like the controversial projects of architect Alejandro Aravena several decades later.

To this end, the notion of variable geometry must be integrated into housing programmes, for example to combine a studio apartment and a 1-bedroom apartment with a 2-bedroom apartment to obtain a 4-bedroom apartment, by anticipating access openings and joint ownership arrangements. The change in typology can also result in student housing converted into housing for elderly people.

However, there is a lot of pressure from local authorities on the housing issue, and regulatory changes on this matter are increasingly in favour of operations such as raised structures or extension.

Boulevard Davout

This project, consisting of 68 social housing units, premises for associations and a kindergarten, won the EdF Bas Carbone 2012 competition with honours for its foresight approach to urban planning. The future of the building is taken into consideration from the beginning, in terms of the scalability of housing units or raised structures. The foundations and façade walls are reinforced to enable the construction of an additional three to five levels. The envelope of the building is also designed to be subsequently improved with the addition of balconies and conservatories, 134 Boulevard Davout, Paris 20th arrondissement. Architects: Naud & Poux / Environmental technical consultants: Franck Boult. Project owner: RMVP

Villa Verde

The “half-house” model can be personalised and extended, as attested by the Quinca Momy project designed by Alejandro Aravena. This very simple, sober and functional housing programme responds to the urgent needs which arose after a devastating earthquake hit the city of Concepcion, Villa Verde, Concepción (Chile). Architect: Alejandro Aravena

Wizom for Life

The offer proposes a medium and long-term housing unit. For example, wall reinforcements are provided to install grab bars and partitions are easily demountable to adapt to the changing composition of the household. Emphasis is given among other things to the use of the housing unit by elderly people: it is equipped with connected objects capable of detecting emergency situations and raising the alert.

Homdyssée

Homdyssée (Crédit Agricole Immobilier) provides a housing unit that is designed to adapt easily to its occupants: a 3-in-1 apartment to suit every situation in life, which can be arranged according to three possible configurations, with a constant surface area. Everything is already in place to facilitate the change in configuration: the floor covering is the same throughout and the entire electrical and heating installation is already integrated.

Owwi

Thanks to an innovative power distribution system, the Owwi start-up company enables the scalable personalisation of housing units via connected removable partitions. The housing unit does not become obsolete but adapts to its occupants.

Housing units designed to change typology, with a constant surface area

Lodges

This project involving 36 timber-frame independent houses is unique because of its upgradable and modular nature. The two-bedroom houses can easily be extended using prefabricated modules, to create a five-bedroom house depending on changes within the home. Furthermore, housing units are passive and materials are bio-based. Lodges, Chatou-Bougis. Project owner: Bouygues Immobilier. Architects: ARF2 Stéphanie Ledoux & Reda Amalou architect

La Serre habitée

By 2021, La Serre habitée will be home to a social student residence in the form of shared flats, topped by a greenhouse on the roof. The timber structure is designed to combine several family housing units. The choice of innovation for this project was reflected in the method (participatory approach with architecture students) and the integration of reversibility into the planning phase. La Serre habitée, Réinventer Paris, Paris 20th arrondissement. Project owner: City of Paris. ICF Habitat la Sablière Designer: Vincent Salmon Architect: Chiofana (landscape)
Unique Reversible Facilities

Mega-events often result in the construction of major facilities. One of the strengths of the Paris bid for the organisation of the 2024 Olympic and Paralympic Games was that more than three quarters of the infrastructure is already in place. Involving less heavy construction, this also avoids repeating the recurring pattern of cities hosting international events who often inherit expensive and oversized facilities that have become obsolete, also known as “white elephants”.

Planning for the second life and future uses of these infrastructures, requires upstream consideration of the technical and legal constraints necessary for transformation once the event is over. In most existing projects, regulatory issues do not seem to be burdensome insofar as the facilities, in most cases, maintains the same function, often with a reduced capacity. However, one might imagine that new uses could be assigned to those facilities, thus providing single-purpose super-facilities that meet the needs of the exceptional event, convertible into mixed multi-facilities that meet local needs.

Aquatics Centre, a tailor-made sports facility

The second life of infrastructures was designed as part of the 2012 London Olympic and Paralympic Games, for the construction of the aquatics centre. Its stands were like two wings designed to accommodate 17,000 people for the Games. Subsequently dismantled, the two wings were replaced with large glass façades, giving the building its final form with a capacity reduced to 2,500 people. It is now intended for amateurs or professionals, taking part in local or international events.

London aquatics centre, 2012 Olympics
Architect: Zaha Hadid

London aquatics centre during the Olympics
London aquatics centre after the Olympics

Bridge and Aquatic Center, Saint-Denis

Like the London Aquatics Centre, the site’s legacy has been envisaged from the design stage. During the Games, the aquatic centre will host water-polo, diving, artistic swimming and Boccia events. At the end of the event, the number of seats may be reduced (from 5,000 to 2,500) and the removable partitions and bottoms of the pools will adapt to various configurations, with a view to welcoming the general public and hosting competitions. Other sports facilities (climbing walls, basketball courts, fitness centre, etc.) should be added to the aquatic centre during the legacy phase.

Bridge and Aquatic Center, Saint-Denis. General contractor: Bouygues Bâtiment Ile-de-France. Project owner: SIMBALA (RECREA, OMNES, Bouygues Bâtiment Ile-de-France). Licensor: Métropole du Grand Paris

London aquatics centre during the Olympics
London aquatics centre after the Olympics

Ras Abu Aboud Stadium

The project of the Ras Abu Aboud stadium, due to host the 2022 football world cup in Qatar, is a first: it is designed to be fully demountable, transportable and reusable, from the toilet facilities to the 40,000 seats provided for the event. Made up of modular blocks, it features in particular recycled shipping containers.

Ras Abu Aboud Stadium Doha, Qatar. Project owner: FIFA. Architect: Fenwick Iribarren Architects

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Ras Abu Aboud Stadium Doha, Qatar. Project owner: FIFA. Architect: Fenwick Iribarren Architects

Ras Abu Aboud Stadium
Demountable Construction

Reversible construction also means that the land on which the structure was built can revert to a state prior to construction, effectively making it fully reversible. We shall now address the ability of structures to be easily dismantled, and their components reused: reversibility for the end of the building’s life.

Once the structure has been easily deconstructed, the plot of land becomes available for new users, and building components can be used to recreate a similar structure on another plot. This structure is therefore flexible in time and space. This type of demountable construction is made possible by prefabricated and standardised modules or elements. The components and materials of the building must be easy to recycle and reuse.

From the 15th century, for economic reasons, the typology of half-timbered houses in the Bresse region, for example, made it possible to dismantle the houses in order to move their components. Nowadays, the strong ecological dimension of this feature raises issues in terms of resources, waste and material transformation. Historically, in 1950s France, architect Jean Prouvé proposed ephemeral architecture projects for demountable independent houses or public facilities. This approach is currently re-emerging against the backdrop of the development of the circular economy. It is related to the reuse and recovery of building components at the end of their life cycle.

Villejuif temporary school

The roadmap of this school with 18 classes included requirements in terms of speed of construction and future deconstruction of the structure. The light steel structure, half-timbered roof and bolting assembly system make this school, which was erected in just a few weeks, unique. Built in 1957, it was actually dismantled three years later, before being reassembled later and partially reused for other purposes.

Le Havre Pressoir offices

Le Havre Pressoir is a building made up of timber-frame modules, fixed to a fully demountable structure on stilts. Certain parts of the building can be entirely relocated and reassembled on another site while the rest of the building remains operational. In addition to being fully demountable, the floors of this office building can be converted into housing units. Architect Julie Delamare contributed to a successful and multifaceted reversibility approach.

Offices, Pressoir ZAC, Le Havre. Project owner: CODAH (La Havre Consultation Committee), Architect: Cabinet d’architecture 6.24, Julie Delamare registered architect

Kumbh Mela

Kumbh Mela is one of the world’s major religious pilgrimages. It is held every three years successively in different cities of India. An ephemeral city hosting approximately 120 million people is assembled and dismantled each time. The facilities are designed to be recycled or easily stored until the next festival.

Bellastock QC Festival

Since its creation in the form of a student association, Bellastock has regularly organised ephemeral structure construction festivals. Now a cooperative entity, Bellastock has lent its assistance to Quebec City in the creation of an ephemeral city as part of a festival. To this end, wooden residues were reused.

Burning Man Festival

More than 60,000 people come together every year for one week in the Black Rock desert on the occasion of the Burning Man festival. Black Rock City is the name given to the semi-circular temporary city, with a central meeting place in the middle of the villages and theme camps. Once the festival is over, the overriding rule is to leave no trace on site. The desert reverts to its initial form for one year. This gathering has inspired other similar events in other parts of the world, such as the Nowhere festival in Spain, Burning Man, Nevada.

Ephemeral cities

Reversibility also applies to major temporary events, insofar as the land where they are organised subsequently reverts to its initial state. These “cities” are assembled within a very short period of time, using organisational patterns that sometimes make them resemble actual cities: streets, squares, sometimes transportation infrastructures, etc.
In New Zealand, the government decided to invest more than 7 million New Zealand dollars (€3.8 million) in a call for tactical urbanism projects in public spaces, to be delivered in 2021.

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### Bottom-up initiatives

#### Nutibara Avenue

The Colombian city of Medellín is plagued with many traffic accidents. The "Movilidad Humana" collective participated in the painting of the intersection of two accident-prone avenues, to encourage motorists to slow down. As a result, the number of accidents in this spot has drastically decreased since this intervention.

Nutibara Avenue, Medellín. Movilidad Humana

#### Pavement to Parks

*Initiated by a group of activists and designers before becoming more popular, the temporary occupation of parking spaces in San Francisco inspired many street reclaiming trends in a number of cities in the USA and worldwide.* Certain parking spaces are converted into gardens, others into places of artistic creation or meetings places for neighbours. As a result of these installations, these places are being reclaimed by residents and increasingly used by pedestrians and cyclists, in particular at weekends.

Pavement to Parks

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### Top-down initiatives

#### JC Walks Pedestrian Enhancement Plan

In October and November 2017, six workshops were organised with the residents of Jersey City to improve the city’s pedestrian infrastructure. The objective was to change the use of pavements using road paint, add temporary furniture, facilitate signalling, etc. These workshops generated feedback for the preparation of the city’s Pedestrian Enhancement Plan.

Architects/urban planners: The Street Plans Collaborative, Fitzgerald and Halliday, Inc

#### Biscayne Green Pilot Project

In 2017, approximately one hundred parking spaces on Biscayne Boulevard were converted into public spaces for three weeks. Dog parks, dance areas, seating areas, children’s playgrounds; this space attracted 17,000 visitors over three weeks, and consideration is now given to the long-term conversion of car parks into public spaces and the redesigning of the boulevard.

Biscayne Green Pilot Project. Miami Architects/urban planners: The Street Plans Collaborative

#### Plaza Program

Cars were suddenly banned from Times Square through the use of road paint, planters, tables and deckchairs in 2009. This example of tactical planning was put in place for six months to test its consequences, before the developments became final. In 2015, Brazil, then, other places in New York have participated in the programme, resulting in an increasing use of public spaces and a drop in the number of traffic accidents.

Plaza Program, Times Square. New York, New York Department of Transportation. Architects/landscapes: Snhetta

#### Redesigning the Banks of the Seine

In Paris, the conversion of the banks of the Seine into a pedestrian area initially involved minor, demountable units, mostly made of wood, that could be removed quickly, in case this space had to be reopened to vehicular traffic, or replaced with other units intended for other uses. Preliminary tests were conducted with one-off operations such as the ban on vehicular enhancement on Sundays in the summer of 2020, the imposing and playful installation of a shower-playground project revitalises the square and encourages social interactions during summer, while leaving a lasting mark (social and spatial) in the urban space.

The Shower

#### The Shower

Installed in a public square of the city of Shanghai in the summer of 2020, the imposing and playful installation of a shower-playground project revitalises the square and encourages social interactions during summer, while leaving a lasting mark (social and spatial) in the urban space.

The Shower, Daning Road Shanghai. Architect: 100 architects

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*Innovating Streets for People pilot fund*, www.nzta.govt.nz

*This is referred to as tactical urbanism, a term made popular by the Rebar collective in the USA in the 2000s. Users, at the core of the approach, test the facilities implemented quickly and cost-effectively, via an array of tools, including:*  
- furniture  
- signs  
- paint  
- works of art  
- plantations  
- suspended elements above the street  

Tactical urbanism is not dissimilar to the notion of “urban acupuncture”, introduced by Jaime Lerner (Brazilian architect and urban planner, former governor of the State of Parana) in the 1980s. He drew an analogy with the city where certain neglected places are “ill” or “dormant” and need to be revitalised by way of interventions.
In the Greater Paris metropolis, APUR, road traffic in favour of bicycles. During the health crisis, Ciclovia, or “cycling Sundays”, by suspending part of the pedestrianised in Paris streets have been temporarily created in the summer of 2020. On a world scale, in the 2000s Bogota introduced the technical recommendations for implementing temporary cycling facilities.

Tactical urbanism has been brought to the forefront in the context of the 2020 health crisis, as it allows rapid adaptation to the crisis. Mobility is at the heart of this issue, and several cities in France and worldwide have come up with tactical adjustments on topics relating to mobility, in particular the numerous and high-profile temporary cycle paths.

At the end of the lockdown period, Cerema published a document intended for French local authorities, listing technical recommendations for implementing temporary cycling facilities.

In the Greater Paris metropolis, 210 km of temporary cycle paths had been or were being created in the summer of 2020.* 56 streets have been temporarily pedestrianised in Paris

On a world scale, in the 2000s Bogota introduced the Ciclovia, or “cycling Sundays”, by suspending part of the road traffic in favour of bicycles. During the health crisis, the municipality adapted the number of kilometres of extra paths to real-time needs. The frugality of tactical urbanism developments is conducive to testing and building on feedback, and even helps ensure the sustainability of facilities.

In the context of health crisis, derogations are made by the City of Paris to authorise the extension of café and restaurant terraces beyond the boundaries initially set out. These ephemeral terraces reveal the urban potential of parking spaces by bringing vitality to the streets. Some streets have been temporarily pedestrianised.

Derogation for the temporary occupation of parking spaces, Paris, 2020

At the end of the lockdown period, the City of Paris was the first to turn to the drastical and temporary suspension of a large number of parking spaces in order to create these urban terraces. The municipality adapted the number of kilometres of extra paths to real-time needs. The frugality of tactical urbanism developments is conducive to testing and building on feedback, and even helps ensure the sustainability of facilities.

Last year, the City of Paris underwent a large-scale temporary pedestrianisation of parking spaces in order to create urban terraces. The number of extra paths was adapted to real-time needs. The frugality of tactical urbanism developments is conducive to testing and building on feedback, and even helps ensure the sustainability of facilities.

Parking spaces

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Temporary adjustments to public spaces, referred to as tactical, may achieve a number of results. They may be genuinely temporary and result in micro-adjustments or mobile facilities, implemented by the municipalities or interest groups for a special circumstance: event, crisis, etc. Demountability is in their DNA as they are not destined to last. The other option for these developments is sustainability, in which case they are installed temporarily to serve as a laboratory of urban uses. Insofar as their relevance is deemed to exceed the negative externalities, they are made sustainable and referred to as “transitional” developments.

Lastly, another vision takes the form of developments installed from the onset with a view to transitioning to a more sustainable status or to a comprehensive redevelopment of the road. They are consistent with a well-designed urban transformation process, in which case they are referred to as ephemeral developments. They support a form of participation, communication or demonstration via the use of what can be achieved in a development project.

Do these various configurations share the reversible nature of the urban development?

It should be kept in mind that reversibility in public spaces never means a return to the starting point. While the physical embodiment of the development is reversible, time is a continuum: whatever the development implemented, it will leave a mark on the uses it changes, the conflicts and debates it gives rise to or the new representations of the places it generates.

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This spatial and social mark left by reversibility is palpable in the context of health crisis, derogations are made by the City of Paris to authorise the extension of café and restaurant terraces beyond the boundaries initially set out. These ephemeral terraces reveal the urban potential of parking spaces by bringing vitality to the streets. Some streets have been temporarily pedestrianised.

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Do these various configurations share the reversible nature of the urban development?

If we manage to systematically use reversibility in public space development projects, it will give rise to a top-down approach. But what place does that leave for community initiatives (bottom-up)?

I work on the assumption that it is not because ephemeral developments are included in the toolbox of developers and institutional bodies that they will be systematically internalised, and that ephemeral developments led by civil society can no longer exist. On the one hand, the spaces and challenges are so substantial that there is room for everyone. On the other hand, it is in the interest of local authorities and developers to rely on civil society groups to lead this type of development as close as possible to local residents.

Which other benefits can be derived from the consideration of temporality in public space projects?

Time is a very complex matter; it relates to the evolution of our society, which is also increasingly complex. We must address the rhythms of the city in their material as well as organisational dimension. Short-term, or temporary issues, for public spaces as well as built-up areas, can bring all those involved to the table. They help synchronise all those involved to increase permeability between project stages, between professional silos and between professionals and civil society. To push the logic even further, perhaps tomorrow will see the emergence of “urban temporality planners”, ephemeral project managers or observatories of local rhythms. The evolution and realisation of temporary operations show that time considerations can result in tangible achievements which could be, in the near future, used in the urban development process.

4 questions for

Benjamin Pradel
Sociologist, consultant at Kaikido/Scop and co-founder of Intermède

We must address the rhythms of the city in their material as well as organisational dimension.
Urban diversity is the opposite of separating urban functions.

The principle of function separation guided how we planned cities for decades after it was theorised in the Athens Charter under the auspices of Le Corbusier in 1933. With a view to limiting cohabitation difficulties between functions and the nuisances generated by certain activities, this approach, largely facilitated and accelerated by the expansion of the automotive industry, was conducive to the development of dedicated and monofunctional working, living, circulation and entertainment spaces. In light of the limitations of this model (isolation, car dependency, etc.), functional diversity is the exact opposite to this vision as it advocates bringing functions closer together. It has gradually established itself as a new urban planning dogma since the 1990s.

How to measure diversity?

Despite being widely used in the sphere of regulatory and operational urban planning, the notion of diversity remains difficult to measure. The different pieces of legislation aimed at promoting it do not offer a specific definition. Furthermore, functional diversity is not subject to an established framework of target figures. Last but not least, it may concern a variety of factors, from the “mixed neighbourhood” to the block or the building.

The following indicators provide an approximate assessment of functional diversity:

- Population density/job density
- Proximity to shops and services
- Existence and capacity of public facilities (social, cultural, educational, etc.)
- Multifunctionality of economic areas
- Diversity of user profiles who spend time in the neighbourhood

Benefits

- Functional diversity is regularly identified as a factor likely to favour social diversity: mixed neighbourhoods are supposed to attract users with a variety of socio-economic profiles who are destined to come together and interact. A mixed city is therefore a more cohesive and inclusive city.
- From an economic point of view, functional diversity is also used with a view to reducing territorial inequalities by responding to the major imbalances between housing and employment in some neighbourhoods.
- Functional diversity is also expected to contribute to the quality of life of urban dwellers by facilitating access to a variety of services and opportunities. Therefore a mixed city is also a lively, intense city.
- Lastly, mixed neighbourhoods are conducive to urban proximity and short distances. Bringing functions closer together also participates in an environmental approach, by reducing forced journeys, promoting the use of active mobility and guaranteeing the rational use of the cities’ land resources. The “15-minute city” has become a political promise as well as an operational objective to develop the city in a different way.
The Paradox of Urban Diversity

A ubiquitous notion...

Functional diversity benefits from a legal framework intended to promote it, which has developed over time. 
- In 1991, the French framework law on the city advocates the right to the city, an indirect reference to the functional diversity objective.
- In 2000, the Urban renewal and Solidarity law (SRU) makes it a more explicit reference to diversity by indicating that urban planning documents should ensure the variety of urban functions and social diversity. At this stage, however, diversity falls under a due diligence obligation rather than an obligation to achieve results.
- In 2005, the purpose of the “Social and territorial equity” documents for the first of these calls for projects, APUI, stressed that “only 40% of the 35 train station districts is actually conducive to the construction of a mixed city, most of the land is covered by monofunctional zoning”, collective or single-family housing, facilities, activities, natural or agricultural area, etc.

In addition to this regulatory constraint which may hinder the deployment of mixed programmes, the hybridisation of uses can also be hindered by organisational difficulties. In 2011, the Paris Region Institute pointed out the frequent difficulties faced by various stakeholders.

Beyond certain emblematic urban projects for which functional diversity is a marker of their identity and a success factor, the hybridisation of functions does not always prevail, even in high demand sectors. For example, in its analysis of the 35 train station districts of Grand Paris Express carried out in 2019, APUR stressed that “only 40% of the 35 train station districts is actually conducive to the construction of a mixed city, most of the land is covered by monofunctional zoning”, collective or single-family housing, facilities, activities, natural or agricultural area, etc.

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...but a somewhat disappointing reality

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Morland Mixité Capitale

Winner of the Réinventer Paris competition in 2016 and having entered the work phase, the purpose of the Morland Mixité Capitale project is to rehabilitate the former administrative site of the Paris Prefecture, located in the 4ème arrondissement. The project’s originality lies in its extreme functional diversity. Eleven complementary uses will be brought together under the same roof: kindergarten, fitness centre, youth hostel, and more standard functions such as offices, housing units and shops.


*APUI, Le modèle bidimensionnel: un objectif à définir et à négocier au cas par cas, July 2011
The Challenge of Functional Diversity Within a Building

Another difficulty occurs when the ambition is to make one single building diverse.

This is only possible when the Local urban development plan (PLU) allows it. Project coordination teams are sometimes required to create separate access points for each of the functions within the building (housing units, offices, etc.), which reduces the areas available on the ground floor. Moreover, designers must combine the construction standards applicable to the different functions, while preserving the overall architectural coherence of the building and the economic balance of the project.

To overcome these difficulties, the anticipation of functional diversity, i.e. its early inclusion in urban planning documents, is an essential condition for success, in addition to the adoption of this new concept, changes in work cultures and the development of culture of dialogue and compromise between all those involved in the project. In spite of these difficulties, functional diversity within a single structure remains an objective for local authorities, who can rely on the ingenuity of the most innovative architects, developers and contractors, keen to come up with novel solutions to overcome these difficulties.

Shake

In the heart of the Euralille business district, a new kind of office building will see the light of day in 2022: the Shake building, which provides a predominantly tertiary ecosystem combining city with nature, economy with social life, work with relaxation. Although destined to host the head office of Caisse d’Epargne Nord France Europe, the building is by no means limited to this function it also hosts co-working areas, an incubator and a business centre, restaurants and shops, a kindergarten, a gym, private apartments as well as an urban plaza, terraces and rooftop farms. With the diversity of this programme, Shake “decompartmentalises” offices and hosts other users, thereby bringing people together and adapting to new lifestyles.

Shake, Lille. Architect: PCA-Stream. SPL Euralille, City of Lille, Métropole européenne de Lille

The first IKEA store without a car park

In January 2020, the Swedish furniture and home furnishings giant announced the launch of its first store without parking spaces. Located in the heart of Vienna, the store is intended for customers who travel by public transport, on foot or by bicycle. It guarantees the delivery of substantial purchases within 24 hours by electric truck. With this project, the brand breaks away from its traditional model of single-storey retail areas on the outskirts of cities, and engages in proximity.

Ikea, Vienna. Project owner: Ikea. Architects: Querkraft Architekten

Le Belaroïa

Planning diversity is one of the objectives of the Saint-Roch ZAC project in Montpellier, and buildings such as Le Belaroïa incorporate this principle in their planning. Completed in September 2019, this building opposite the station hosts:

- Two hotels over five storeys,
- Offices,
- A brasserie on the ground floor,
- Twelve housing units and an overhanging balcony on the top floors.

Belardo, Saint-Roch Montpellier ZAC. LinkCity. Architect: Manuelle Gautrand

While it is important to think in terms of large multi-programme urban areas, this planning diversity also permeates through built projects such as Le Belaroïa. In this case, diversity takes the form of overlapping programmes, like a programmatic layer cake.

*Opinion piece published on 9 January 2020 on Bouygues Construction’s blog, Shared Innovation

Manuelle Gautrand Architect of the Belaroïa project
Diversity Creates New Opportunities

Functional diversity to improve proximity to logistics functions

Agreeing to mix functions and keeping the conditions of a peaceful cohabitation means being able to reintroducing activities that are potentially disruptive in a city but making them work in areas outside urban centres.

Logistics activities, the provision of services contributing to effectively managing the movement of goods, which were banished from the cities for a long time, are gradually returning, in particular under the effect of the growth of e-commerce and its need for immediacy. The return of logistics functions to city centres is viewed favourably as it is deemed environmentally virtuous, by contributing to reducing the distances travelled to deliver goods.

La Poste Immo has even provided for the use of parking area for carriers and delivery vans, who will be able to charge their electric vehicle on site. La Poste Immo, La Caisse d'Epargne

A 45,000 m² property development project has repositioned logistics in the heart of the city. It is imperative that the project initiators integrate this dimension from the onset. However, this process is not yet ingrained in the work culture.

The viewpoint of

Sonia Samadi
Director of development and innovation, Sogaris

Logistics has long been neglected in urban planning even it is needs for a functioning sustainable city. The movement of goods is becoming a genuine challenge with the explosion of e-commerce, which continues to soar by 10% to 15% each year, thus increasing the number of deliveries.

Le Grenier Saint-Lazare, Paris 3rd arrondissement

The project proposes the transformation of a former underground car park into a services and storage centre entirely geared towards the needs of shopkeepers and local residents. This space dedicated to local logistics, across six underground levels, will host remote storage facilities and services for professionals (shopkeepers, artisans, gallery owners), as well as storage areas for individuals. Local concierge services will be available at ground level, run by Lulu dans ma rue, a new service for local residents, consistent with the principles of social and inclusive economy.

Diversity of uses, a source of shared energy

In addition to the compactness of a mixed project, other positive results may emerge from the hybridisation of uses including, first and foremost, ease of sharing. This aspect paves the way for intensified uses, examined in the next section - Chronotopy.

The objectives of energy transition involve breaking with a “linear use of resources, i.e. [with] the pattern that begins with collection, continues with consumption and ends with waste discharge into the environment”. The urgency of climate change issues requires rethinking this pattern to move towards the recycling of energy flows. The challenge lies in the recovery of “waste heat”, in other words the heat produced via a process the primary purpose of which is not heat production (ADEME, 2015). However, the location of activities impacts energy systems: as the idea is to carry this waste heat from the place where it is generated to the place where it can be used. The proximity of urban functions with different energy needs facilitates the development of virtuous energy systems. The recovery of the heat generated by data centres (data storage centres) is one of the emblematic examples of flow sharing made possible by functional diversity. What is applicable in a building is also in a block: several urban projects have already tested these energy sharing systems by making the most of the different energy needs of the urban functions found on site.

Recycling the heat of data centres to...

...heat 150 social housing units in Paris 15th arrondissement

The Paris Habitat social housing provider uses the heat produced by the data centre of the Iliad telecommunications company to heat 150 social housing units and a kindergarten. The project reduces energy consumption by 80% on individual heating and 50% on hot water, i.e. the equivalent of a €500 cost reduction per year per household.

...heat a municipal swimming pool in Paris 13th arrondissement

The Butte aux Cailles swimming pool is testing the digital boilers developed by start-up company Stimergy. The system recycles heat from IT servers installed in the basement: water from the swimming pool is partially and cheaply heated, while the servers are cooled down without having to use air conditioning. The system covers 10% to 20% of the peak heating demand, 45 tonnes of CO2 emissions for heating the water, plus another 20 tonnes which would have been emitted each year for the cooling of computer servers.

Functional diversity: a major drawcard

In addition to its urban and environmental benefits, functional diversity is also a major drawcard for cities.

By combining apparently opposed functions, certain projects manage to create exceptional and surprising spaces, so original that they become a metropolitan, national, and sometimes international attraction.

Diversity of uses, a source of shared energy

The viewpoint of

When we address the diversity of uses, we are immediately confronted with a series of constraints. Although obstacles arising from regulations and standards are a reality, in my view they can almost always be overcome. To a certain extent, the building is what you make it. The most difficult thing in the functional diversity equation is the human aspect: listening to users, enabling dialogue between project stakeholders. For example, one of the major challenges is to get local residents to agree to live in a smaller apartment, but to benefit from a shared room and facilities. We must cultivate the “common” notion. This is the condition on which functional diversity can turn a genuine opportunity to share resources and create different, sometimes exceptional places, where diversity is truly a source of attractiveness.
Key idea

If activities usually carried out in two buildings are brought together in a single building - by optimising hours of service, alternating uses and users - the need to build one out of every two buildings is eliminated.

This helps cut construction costs, fixed operating, servicing and maintenance expenses, natural and land resources used in half (in order of magnitude). The use of built-up space is intensified to derive significant gains, provided technical, architectural and organisational challenges can be overcome.

Benefits

- Reduction in property costs
  The expenses relating to a building, e.g. maintenance, are divided by the number of users, insofar as these users financially contribute to the payment of expenses.

- New revenue streams
  Additional revenue can be generated by increasing the use of space: rental revenue or new business models.

- Social dynamic
  Different user categories may come together or meet more often, creating or reinforcing dynamics within neighbourhoods and communities in the broad sense. It is in the interest of various organisations to get more involved in their territory, so that everyone can benefit from it.

- Environmental benefits
  Solutions may already exist, by adjusting hours of service or extending the audience and uses initially intended. This could reduce the need for new construction, and therefore the associated use of natural resources.

45% of French people would like to get more involved in their neighbourhood1

73% of French people are concerned about the potential consequences of global warming on the quality of life within their region1

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1 ObSoCo / Chronos / ADEME / Banque des Territoires / Bouygues Construction / La Poste, Observatory of the uses and representations of the territories, 2020
The crucial step when determining opportunities to intensify uses is the territorial assessment, carried out to identify and qualify these needs and resources. It makes it easier to match offers with compatible needs.

The main technical dimensions identified to help intensify uses are as follows:

**Access management**

- **Security**
- **Cleanliness**
- **Noise**

**Regulations:** PAB, Housing, Labour Code

Beyond these technical and regulatory points, the main implementation difficulty lies in the management of chronotopy. This is why the operator or integrator who manages the alternating uses and users of a space seems to be a key player in chronotopy. There are technical, architectural and contractual solutions to take the sharing of spaces to the next level, but the challenge is to ensure the optimal day-to-day running of the entire system. Digital tools will not always be sufficient, and human presence will often be required and desirable.

Will universal platforms soon emerge to match property needs with resources, which already exist for the selling and renting of housing properties (SeLoger, MeilleursAgents), short-stay accommodation (Airbnb, HomeAway) or the renting of workspace by the hour or month (Neo-Nomade, Hub-Grade)?

84% of French people who feel their municipality of residence is “far too dense” want to move (compared with half as many in those who feel their municipality has “the right density”).

Which uses is it socially acceptable to intensify?

- High urban density is generally perceived negatively by the French population. One of the challenges of intensification is to clearly distinguish it from built-up density.
- The limits to intensifying uses should be kept in mind: how humanly and culturally acceptable is it? There is a thin line between the dream of sharing and the nightmare of losing one’s bearings.
- In 2020, the COVID-19 health crisis led to increasing distrust of certain shared systems, linked to the “social distancing” imperative and the fear of infection through shared facilities. This distrust affected public transportation first of all, but also coworking spaces, hotels and other enclosed, crowded places. Is this new mistrust in “common” areas here to stay?
- To reassure users, those involved in sharing spaces point to lists of measures and recommendations for reopening: hygiene and cleaning, personal protection, distancing, prevention and dialogue, for example are presented as compulsory measures by the Neo-Nomade platform.

**Intensify the Use of Built-up Space**

Different approaches can be used to increase the intensity of use of an urban or property asset.

These approaches share the same goal - reducing the periods during which the structure is unused, i.e. increasing its use rate - and the same expected benefits, which come in many shapes, commercial or otherwise. Three separate factors can generally be adjusted:

- **hours of service**
- **different uses for which the place is intended**
- **different profiles who have access to the space**

Chronotopy can also be approached from the perspective of supply and demand. In the specific context of the intensified use of buildings, neighbourhoods and public spaces, one should refer instead to property resources and needs:

**Property resources (supply)**

- **location** (room, building, outdoor space, public space, etc.)
- **characteristics of the location critical for its use**
- **available slots (hours, days, months) when the space is unused**
- **economic need** of the main user

**Property needs (demand)**

- **user** (natural or legal person, group, etc.)
- **desired use**
- **desired slots (hours, days, months)**
- **ability or inability to incur expenses to meet this need**

We find these factors which, when combined, form different approaches to chronotopy:

<table>
<thead>
<tr>
<th>main use</th>
<th>extended hours of service</th>
<th>mix of uses</th>
<th>combined sharing and mix of uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>main user</td>
<td>extended hours of service</td>
<td>mix of uses</td>
<td>combined sharing and mix of uses</td>
</tr>
<tr>
<td>sharing (page 74)</td>
<td>space shared between several users</td>
<td>(page 80) use of space for a variety of uses</td>
<td></td>
</tr>
</tbody>
</table>

1. Assessment
2. Matching
3. Evaluation of the benefits and risks inherent in sharing spaces
4. Contractual, architectural and technical solutions

1 Method developed by the forward planning teams of Bouygues Construction, OuiShare and Chronos with a view to the Un espace, plusieurs usages forward planning workshop of 27/02/2020

2 Neo-Nomade blog, Checklist of Covid-19 measures in the coworking sector, April 2020
Sharing Space: Different User Profiles for Similar Uses

Uses can be intensified within a given space by broadening the range of users, while retaining the same function: more diverse users share the same uses. For example, more workers can share the same office building, different sports groups can share the same gym, and residents and employees can share parking spaces. This is referred to as a shared site.

Sharing parking spaces

Above-ground, underground or open-air car parks are hungry for space and, on the whole, financial investments in the construction and maintenance of parking lots are substantial. According to an INSEE study highlighted by APUR, Parisian households owned 462,690 cars in 2015, for a total of 612,610 spaces reserved for residents, on roads or in private car parks. This suggests that approximately 150,000 spaces are unused, unevenly distributed across the Paris territory. At the same time, the number of cars in Paris has declined by 17% between 1999 and 2015.

The principle of overlapping parking periods consists of "taking advantage of the fact that not all users of the same parking facility are present simultaneously. Either because the same category of users is never 100% present at the same time (residents, workers, visitors), or because the parking times of user categories vary throughout the day (residents primarily at night, workers during the day, etc.) and can even be highly complementary".

Sharing parking spaces consists of aggregating the private parking offer of several property projects and results in the creation of common car parks. In essence, the objective is to eliminate small parking areas specific to each property project, and aggregate them in a single location. This practice helps preserve land and optimise construction costs.

Sharing sports facilities

School and university sports facilities have sometimes been built within the establishments, which makes them inaccessible to other user profiles, while other sports facilities, such as private sports clubs, are not sufficiently used by school groups. Extending the use of these spaces to other groups requires the implementation of partnerships and agreements between the two entities and, where necessary, the external manager of the facility.

Sharing parking spaces is akin to reducing the number of spaces needed in the car park. Functional diversity is a condition for benefiting from simple sharing, as implementing overlapping parking periods is akin to reducing the number of spaces needed in the car park. Functional diversity is a condition for benefiting from overlapping parking periods. The diversity of activities and therefore users present on site guarantees the difference in the temporality of uses.

Hoenheim Car park

The car park of the Hoenheim town hall is used during the day by town hall users, and in the evening by the residents of the assisted housing units located nearby. This makes it possible to reduce the total number of spaces needed by aggregating these users with different needs.

MacDonald warehouse

The MacDonald warehouse, converted as part of the Paris Nord Est ZAC, is home to 2,000 jobs, 1,100 housing units, 32,500 m² of shops and 16,000 m² of facilities. The location of the project and the nature of the programmes generate significant flows of visitors and employees at various times of the day. The designers decided to make the most of this attractiveness and rotation by partly overlapping parking periods between residents and employees, while creating a section open to all.

Sharing: the OptiMove concept

OptiMove Bouygues Construction solution

The OptiMove concept, which won a prize during Bouygues Construction’s 2016 innovation competition, is based on the modelling of parking needs and the study of the hourly occupancy of car parks. This method is used to optimise the design of multi-use car parks (offices-housing units). By using input data from INSEE and the Household Travel Survey when available, complementarities are anticipated in terms of the hours at which the car parks of offices and housing units are used, and the number of parking spaces needed is reduced. This methodology was used on the La Mainrière project in Villeneuve d’Ascq and helped save more than one third of spaces compared with what was initially planned.

Zen Park

This platform, largely used in France and Belgium, proposes a shared parking system. The service includes the implementation of a system at car park entrances to control the opening of the car park via a pass directly available on the user’s smartphone. It involves a broad range of partners: hotels, administrations, supermarkets, etc.

In Des Moines (U.S.), there are about 18 times more parking spots than households.

1 APUR, Évolution du stationnement et nouveaux usages – Volume 1, May 2019
2 INSEE 2018
3 Article R151-45 of the French Town planning code, codified by decree no. 2010-1785 of 30 December 2010
4 Research Institute for Housing America, Quantified Parking: Comprehensive Parking Inventories for Five U.S. Cities, 2016
5 In Des Moines (U.S.), there are about 18 times more parking spots than households.
6 In Paris for example, the city + sportive sports policy strives the need to optimise the occupation of existing facilities, and to create new forms of cooperation with school and academic communities.
7 Furthermore, the Cité internationale universitaire de Paris makes its tennis courts available to the general public, through telephone bookings, as well as sports associations of different kinds thanks to its partnership with the Paris Université Club (PUC) association.

In 2019, in Paris, cooperation between 201 sports associations and 18 school facilities allowed students to benefit from an additional 1,184 h of sport per week outside teaching hours.

18 h of sport per week outside teaching hours
Sharing workspace

Intensifying the use of office spaces may involve subletting to other businesses in need, during or outside standard working hours, e.g. in the evening or at weekends.

A stumbling block is added to those already identified besides the fact that most office buildings are governed by the French Labour code and, as such, are unlikely to become accessible to the public, the difficulty in guaranteeing the confidentiality of the activities carried out therein may be off-putting to some users. Coworking spaces address this challenge by focusing entirely on their external users, in different forms:

- spaces dedicated to self-employed professionals, e.g. coworking cells;
- stakeholders dedicated to businesses, with a model similar to the subletting of offices with related services and shared spaces;
- modals relating to support for new undertakings, such as enterprise car parks or incubators;
- lastly, a trend relating to the return of production activities to the city, including for example Fablabs, still under-represented in terms of surface area, this approach can be enjoyed beyond the tertiary sector, and can involve other businesses and activities, not just office work.

Average price per workstation:

€330/month

In open-plan offices in Paris

In 2019, New York City and London alone accounted for

22%

of global coworking stock

1100 million sqm

of coworking spaces in London in 2019

In 2018, Vienna has had the strongest year to year growth in new coworking spaces:

+449%

4 players share one quarter of the

Les Fabriques - ICI Marseille

Bouygues Construction reference

The ICI Marseille collaborative and inclusive factory is at the heart of the Fabriques urban project. It is an artisan production and shared knowledge site which illustrates the return of production activities to the city through the sharing of workplaces among professionals, partially accessible to the general public.


Wojo

The special feature of the coworking offered by Bouygues Immobilier and Accor is that it comes in several workspace formats: Wojo Corners offer a quiet workspace, whereas Wojo spots offer a lively atmosphere. In addition, the network proposes to rent meeting rooms, but also hotel rooms converted into enclosed offices. The installation of small coworking spaces directly within Accor group hotels enables Accor to make numerous locations available, widely spread across the territory.

Looking at digital work

In apartment buildings, the optimisation of spatial density gives rise for example to shared spare rooms, common laundry rooms or shared terraces and gardens: communal areas help reduce private spaces.

Anticafé

This company provides a different kind of coworking service, with no strings attached and accessible to all: teleworking employees and self-employed professionals with no fixed offices. Offering simple individual workspaces in a relaxed atmosphere, the idea is to pay an hourly, daily or monthly rate to access the sites and benefit from various services: coffee of course, but also beverages, printers and paperboards.

Which proportion of your home are you willing to share?

9 in 10 young people say they are willing to share part of their home or outdoor areas with their neighbours.

When sacrifices have to be made on the private portion of one’s home to create vast shared spaces, careful consideration must be given to which spaces are best suited and desirable for communal use.

We asked 1,000 young people aged 15 to 25 about their vision of tomorrow’s housing sector. And they find the following to be the best options as spaces to be shared:

- Outdoor spaces: vegetable garden, compost, terrace or garden...
- Specialised services: laundry room, gym, games room, library, swimming pool, space dedicated to the donation of unused items, etc.
- Socialisation areas: shared spare room, relaxation area, kitchen, sauna, etc.
- Production places: DIY, workspace, printers, etc.
- Means of mobility, such as shared vehicles for example.

Integre

Based in Switzerland, Integre is a model for sharing standard urban resources.

The service includes the cleaning and check-in/check-out of the rooms. The initiative convinced several universities worldwide.

Pinnacle @Duxton

The flagship of the social housing offer of Singapore’s Housing Development Board (HDB), these seven towers are interconnected by wide sky bridges on the 26th and 50th floors. Thanks to these sky bridges, people can take a stroll in green spaces or exercise in the open air, and the terraces of the top floors can be booked for events.

Allure

With three communal living spaces managed by a concierge service, this building consisting of top housing units was designed to improve the life of its residents. A kitchen on the roof terrace of more than 100 m² can be privatised by the residents for any type of event. It is located near the shared guest room, which can accommodate ten guests, reserved for one night, host meetings or film screenings for example, and can also be booked by the residents of the building. On the ground floor, the shared laundry room is easily accessible.

Arval Check-in Rooms

Created by an Oxford alumnus, the “University Rooms” service rents unused student rooms during school holidays on behalf of universities. The service includes the cleaning and check-in/check-out of the rooms. This initiative convinced several universities worldwide.

University Rooms

This concept by architect Eric Cassar questions housing arrangements in an innovative manner. It is based on minimalist housing benefiting numerous shared spaces which can be booked via a mobile application or “digital compass”. The project was awarded the “Smart Cities” top prize by Le Monde newspaper in 2017.

Infinity Home

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Taking it further...

Bouygues Construction conducted a collaborative study on the role of sharing in social housing, summarised in the Osé à mutualisation dans le logement social/frendbook, available on the Bouygues Construction blog.
An increasing number of housing offers have embraced the concept of co-living.

With a wide variety of sizes (from a few beds to hundreds of bedrooms or studios) and involving multiple lengths of stay (from one night to one year depending on those involved), these spaces embrace, to some extent, the possibility of sharing vast communal areas at the cost of reduced individual spaces. In keeping with the principles of the functional economy, and embodying a service-based housing model, they generally provide a range of particularly vast shared spaces, often inspired by hotels or youth hostels, for example:

- Communal kitchens
- Shared workspaces
- Spaces dedicated to temporary events
- Bar and restaurant
- Gym
- Spa, swimming pool
- Games, screening rooms, cinema, etc.
- Outdoor areas

Another benefit of co-living lies in the quality of the furnished spaces provided, largely emphasised by their operators in the form of photos and videos, targeted communications and advertisements. This is coupled with the reassuring presence of the operator, an external manager, preventing disputes typical of flat-shares. The resident of a unit managed by Colonies in Paris' 20th arrondissement states: “This is nothing like a flat-share. All arrangements are made online, and states: “This is nothing like a flat-share. All arrangements are made online, and anything likely to create conflict between tenants is smoothed by the Colonies managers.” Lastly, these spaces often make it easier for newcomers to a city to access housing than the traditional housing sector, and offer more flexible departure conditions.

Only 34% of young people say they are familiar with the term co-living.

Once the concept has been explained to everyone, 43% of young people say they are interested in co-living.

Emblematic examples of co-living offers:

- **The largest network**
  *Quarters*
  Located in Europe and the USA, this network is gradually expanding its model of medium-sized buildings (50 tenants) with small-scale shared spaces, focused on the kitchen and coworking.

- **The most intimate**
  *Outsite*
  Outsite proposes small co-living spaces, not dissimilar to shared flats: 5 to 8 bedrooms. Its opt-in model allows its members to access the network located on several continents.

- **The most ambitious**
  *Common and hmlet*
  The Common group in the USA, and hmlet in Asia-Pacific, are both experiencing rapid growth by renovating existing buildings to adapt them to their co-living model with a minimum amount of shared places: kitchen, lounge, workspace and laundry room.

- **The most natural**
  *Coconat*
  This isolated co-living space in a rural environment appeals to “workationers” by offering them a strong regional presence for short stays.

- **The most integrated**
  *The Collective*
  This is one of the few players capable of both designing, developing and operating buildings from A to Z. It is characterised by large buildings (up to 500 tenants) with a very wide range of services and shared facilities.

- **The most exotic**
  *Smena*
  Network of small co-living spaces in remote destinations (Montenegro, Sri Lanka, Bali, etc.), prioritising stays of less than two months, including events and excursions adapted to each location.

- **The most volcanic**
  *Nine Coliving*
  Located in Tenerife in the Canary Islands, this space is ostensibly dedicated to digital nomads on the lookout for unique places so that they can travel while working on their laptop.

- **The most mountainous**
  *Cloud Citadel*
  Located in former military lodgings in Briançon, in the French Alps, this place, also dedicated to international digital nomads, is a cross between a youth hostel and a coworking space, touting its easy access to outdoor activities.

- **The most sustainable**
  *Vitanovae*
  Vitanovae places emphasis on respect for the environment (choice of materials, objects, etc.) in a convivial setting accessible to as many people as possible. Its addresses are currently concentrated in two neighbourhoods, in Paris and Bordeaux.

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Diversifying the uses of a space often involves setting up a broader range of services for the users of this space. For example, an office worker who spends an entire day at their workplace may stay after work to enjoy the space as a living space, for example, in charge of managing the creation of user profiles, prices, ministry, the allocation of resources, related services...

- Managing uses, via a services operator, a platform or a contact person for example, in charge of managing the creation of user profiles, prices, ministry, the allocation of resources, related services...
- Organisation among stakeholders, with a clarification of the scope of use and the financial contractual links, and a clear division of responsibilities between stakeholders and a contact person for example, in charge of managing the creation of user profiles, prices, ministry, the allocation of resources, related services...

Taking out appropriate insurance specific to PABs, offices and housing units.

- Multi-standard layout, taking into account the requirements and security.

In 2017, according to a DARES study, 44% of employees in France (excluding Mayotte), i.e. 10.4 million people, work atypical hours at least once a month, primarily on Saturdays or in the evening.  

This aspect of chronotopy requires ensuring the following:

1. Managing uses, via a services operator, a platform or a contact person for example, in charge of managing the creation of user profiles, prices, ministry, the allocation of resources, related services...
2. Organisation among stakeholders, with a clarification of the scope of use and the financial contractual links, and a clear division of responsibilities between stakeholders and a contact person for example, in charge of managing the creation of user profiles, prices, ministry, the allocation of resources, related services...
3. Easy-to-use layout, enabling the rapid conversion of the space, in terms of spatial design or the choice of furniture, involving tight changes in layout (e.g. moving chairs), realter transformations or specific features (see below page 82).
4. Technical features, in particular to guarantee access control and security.
5. Multi-standard layout, taking into account the requirements specific to PABs, offices and housing units.
6. Taking out appropriate insurance covering multiple uses and user profiles.
7. Frequent cleaning systems, in response to the increasing occupation of the premises.

In our audits of the quality of use of tertiary buildings in the Île-de-France region, we found (before any impact of COVID-19) that at least 25% of office space was unused, due in large part to changes in working practices over the past ten years. For example, with the digital technology, the reduction in mail and paper consumption has reduced the vast majority of cabinets useless. In addition to this is the actual occupancy rate, which has declined sharply: it is now around 43% vs 60% in the early 2000s (number of employees present on site on average between 9am and 7pm, 5 days/week).

There has always been a considerable difference in asset valuation between an empty property and a fully occupied property. More importantly, a difference is emerging between a tertiary property leased to a single occupier (property leased to a full single lessee/multi-occupiers (coworking space) as the risk is diluted. Workplaces are becoming living spaces which must be operated. This need, expressed by company employees, has kept growing over the past few years. Coworking stakeholders address these needs by providing employees with a high level of services, thereby contributing to reducing the occupancy rate of non-operated buildings.

80% of tertiary property assets are in urgent need of an upgrade. There is an urgent need for companies and owners to rapidly integrate new uses into their properties with a view to maintaining their appeal.

### Residenc Machu Picchu

This residence with 53 collective housing units is equipped with covered shared spaces on each floor. The residents are free to take possession of these spaces, for exhibitions, film screenings, parties or even to install libraries or workshops of any kind.

Machu Picchu residences. Fives neighbourhood (Lille).  
Architect: Sophie Delhay.  
Social housing provider: SIA Habitat

### The viewpoint of

Philippe Morel  
Founding partner, Dynamic Workplace

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### ZOKU

ZOKU is a cross between a hotel, an apartment and an office, and provides mobile professionals with spaces for short or medium-term periods. Lofts are for accommodation and work purposes, thanks to the innovative configuration of the room: stairs to access the bed on a retractable mezzanine, bed disappearing behind a panel. Like in a hotel, shared spaces consist of lounges, cafes-restaurants and event areas that can be booked. This solution will be implemented in the Ilet Fertile project in Paris.
Enable a Flexible Use of Convertible Spaces

Easily convertible spaces are conducive to the intensification of their use. For example, the integration of movable or modular furniture is a rapid solution that responds to this need for short-term spatial transformation. Certain cramped housing units can be transformed into different configurations. Housing units, hotels or tourist complexes can also be transformed to accommodate a different function, for example by creating remote workspaces.

Examples of solutions:

- removable partitions
- sliding doors
- fold-up beds, tables and benches built into walls or whirling off ceilings and easily unfolded
- convertible kitchens
- adjustable size furniture
- movable furniture

Working in the hotel

In 2020, the Japanese government encouraged teleworking space initiatives as part of a policy intended to revitalise tourist areas neglected during the health crisis. Hotels are turning rooms into workspaces; by removing beds and offering additional services: yoga mats and stretching bars are provided, bar promotions are made available to employees, rest areas and pool tables are freely accessible.

Never too small

Australian YouTube channel Never too small highlights projects relating to small apartments and studios with a limited footprint, thanks to smart and creative design. In the 24m² apartment designed by the Cairo studio, the kitchen unfolds and opens. When folded up, the space turns into a simple living room. Similarly, sliding doors serve as a bookcase or pantry, and help isolate the bed to create a space akin to a bedroom.

Architect: Nicholas Agius. Design: Cairo Studio Never Too Small Australian YouTube channel

On-demand room

At the intersection of two housing units, the “on-demand room”, created as part of the Rennes 1 Foundation Chair with help from Bouygues’ e-Lab, can be dynamically integrated into either housing unit. This room can be alternately privatised for housing unit A and B, or shared by housing units A and B. This solution helps adapt to increasing changes in the make-up of families.

Flying Table

Practical for small spaces, a wooden board held by ropes and operated with a remote control comes down from the ceiling and serves as a table. The height of the table can be adjusted to its use: office for working in a standing position, table for eating. It even features retractable legs which can be unfolded.

On-demand room:

The flying table by JCPCDR Architecture

Yo! Home

Yo! Home is an apartment concept where a single room can take the form of a living room, bedroom or kitchen in a matter of seconds. Architect Simon Woodroffe uses ceilings, floors and walls for mounting furniture without losing any space. Yo! Home apartments are intended for upper-middle class families.

€210/half-day rental rate of a classroom for less than 20 people at EIVP in 2020.

€60/half-day price for renting the premises of the Saint-Benoît school (Versailles) on Wednesdays or at weekends, for family gatherings or children’s birthday parties for example.

Different User Categories and Uses in Hybrid and Shared Places

If we really think through the idea of intensifying the use of space, we can envisage spaces used by different user profiles and for different activities. This very flexible approach needs to be carefully examined and managed to work effectively. Combined with extended opening hours of the space, this is how more can be done about intensifying the use of space.

Opening school and university facilities to other user categories

While schools and universities are dedicated first and foremost to educating their pupils and students, the user categories and uses permitted in these spaces are becoming more diversified. In some cases, this may contribute to dynamism of a neighbourhood or respond to more occasional needs, e.g. the locals residents’ need to organise a business seminar, or a community workshop. Sharing premises brings in additional revenue, thus consolidating the finances of facilities of public interest.

360 pop-up store operations were identified from 2006 to 2015*.

In Europe alone, more than 360 pop-up store operations were identified from 2006 to 2015.*

In the same vein, the concept of corner-shop consists of temporarily installing a sales outlet for a chain in the sales area of another chain. The guest chains benefit from this practice: the corner-shop pays a commission for using the space which, as a result, pays for itself, and gains visibility. Some Carrefour hypermarkets, for example, have replaced their household appliances section with a Darty corner-shop.

Ephemeral sales outlets

The emergence of pop-up stores, also known as ephemeral stores, reflects the appearance of a new scale for new uses in terms of consumption, information and, more generally, our lifestyles. Their set-up is virtually instantaneous, thereby creating a rapid succession of uses and users.

Penguin Living

On International Women’s Day, publishing company Penguin Random House opened a pop-up store in London, with books relevant to the topic of the day. The pop-up store also hosted workshops and meet-and-greet sessions with female authors. The proceeds of the sales of books and registrations for workshops were donated to an association providing support for female victims of domestic violence.

Street Store

Ephemeral places can also be free and in a non-traditional setting. The “Street Store” initiative is based on a clothing donation and donation system for people in need. This give-away outdoor store encourages a new form of social interaction and enhances the dignity of these people.

Mab’Lab

Inaugurated in September 2016, the Mab’Lab is a coworking space accessible to all with a very distinctive feature: it uses the premises of the Crous Musicology university establishment in Paris, outside normal times. This project was financed by the participatory budget of the City of Paris of 2014 and led to new forms of partnership.

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Pop-up Store: le nouveau format vedette du retail, 2015.}

*Study by the Institut Français du Libre-service du Commerce.
Private spaces opening up to the city

The following examples show that spaces traditionally reserved for a given type of users (hotels, office buildings, universities) are innovating by opening up to the city and being given more diverse uses and users.

How can we convince stakeholders (investor, owner, tenant, etc.) and users of the positive externalities associated with a greater openness to the city?

This brings management complexity, but also benefits in terms of attractiveness and innovation.

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**Magasins Généraux**

Les Magasins Généraux de Pantin is a former industrial site in Pantin, converted into a work and creative space by advertising agency BETC. The very palpable cultural dimension is reflected in the number of events planned, which attract numerous artists. Workspaces are located in the upper floors while the ground floor is open to the general public, promoting synergy between employees, visitors and artists, like a small town.

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**Reception desk, Kiosk and exhibition areas**

The lobby is located between the two buildings of the Magasins Généraux. It is open to employees and the general public as well as occasional visitors. Right next to it, the 1,000 m² Grande Salle hosts cultural events and its “raw” appearance enables a wide variety of uses, including a two-week dance workshop, inclusive fundraiser or photo exhibition. This space open to everyone is proud of its public space status, and its ambition is to provide local residents with cultural activities.

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**La Cantine**

On the 1st floor, the company restaurant of the Magasins Généraux uses digital technologies to place orders and pay, and buys local produce transported over short distances. The food court is open to employees outside lunchtime so that they can meet for work or over coffee, based on the model of a coworking space.

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**Workspaces**

The upper floors make room for offices with unassigned desks and collective workspaces. Their specificity lies in the objects created by designers to furnish the space and propose different work methods: on stands, behind curtains, bar tables, telephone boxes, etc.

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**EM Lyon**

The purpose of the EM Lyon campus project is to open up to the city and its residents. To this end, the school’s central building will be divided by a pedestrian street, home to a few stores as well as business spaces. This future hub will accommodate a variety of uses throughout the day, with a view to blurring the boundary between the school, businesses and local residents.

EM Lyon Business School (Lyon), Attacq Cogedim and PCA-STREAM consortium

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**Sways**

The “Sways” (Smart Ways to Work) multi-use building project was born out of the desire to enhance the existing building, which was closed in on itself with a single entrance from the street. Sways will retain its primary use as offices but will be divided by a pedestrian street and will be more open to the city by creating more access points. The intensified use of the building will be insured through a broad range of services for the offices as well as the residents and employees of the neighbourhood: gym, restaurant, shops, etc.

Sways, Issy-les-Moulineaux
Project owner: Bouygues Immobilier
Architects: A. Bechu & Associés

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**Le Dock B**

On two levels on the ground floor of the Magasins Généraux, the Dock B space was designed by the Allo Floride association and Renaud Barillet, who is also the director of La Bellevilloise. Dock B combines cultural programming with food courts, where people can come and work in a convivial atmosphere.

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**Private spaces opening up to the city**

The following examples show that spaces traditionally reserved for a given type of users (hotels, office buildings, universities) are innovating by opening up to the city and being given more diverse uses and users.

How can we convince stakeholders (investor, owner, tenant, etc.) and users of the positive externalities associated with a greater openness to the city?

This brings management complexity, but also benefits in terms of attractiveness and innovation.
Spaces adapt to changing uses: market, parade, concert, sporting event, in other words, alternating temporary uses. In a more minimalist manner, certain large public spaces can also accommodate, due to their initially neutral layout, many successive uses. In the well known example of chronology in historic public spaces, in Siena, the medieval central square has a slightly curved shape and is home to a famous biannual horse race, which radically alters it use.

**Quatorze Collectif**

The organisation proposes ephemeral wooden architectural modules to create new spaces. The Matrioshka connected street furniture solution is used for example to temporarily transform a public space into a renewable energy micro-production and Internet access point.

**Imagination Playground**

Imagination Playground is an innovative playground solution conceived by architect David Rockwell. The concept consists of providing children with game kits in the form of blocks. Children build their ever-changing playground themselves. The originality of the solution lies in its ease of implementation, over space and time. Several spaces have adopted this solution: Burling Slip (Manhattan), Pop Up Park (Morgan Hill) or Betsy Head Park (Brooklyn).

**Undefined Playground**

BUS Architecture designs ephemeral sports facilities referred to as Undefined Playground. Installed in public spaces, they can be used to play Frisbee, football or basketball, thanks to removable panels which, depending on the layout selected, feature all major equipment of these sports such as football goals or baskets. Deployed in Seoul, this solution responds to the limited supply of sporting opportunities for local residents.

**Place de la République**

Inaugurated in 2013, the new layout of Place de la République, in Paris, makes it the largest pedestrian square in the city and aims to be a “stage open to multiple urban uses”. Every effort has been made to enable free appropriation with a multiplicity of uses.

**Sundance Square Plaza**

This 5,000 m² public square which can be privatised hosts concerts as well as yoga classes or outdoor film screenings. The entire square can be rented, or just the central pavilion, via a booking platform.

**Imagination Playground**

**Undefined Playground**

**Place de la République**

**Sundance Square Plaza**
A scalable road

Roads and road edges can also adapt to varying uses over the course of a day. Mobility plays a major role in this space. This is why some cities have decided to reverse the direction of traffic in certain lanes during the day in order to ease the traffic flow, as is the case with Connecticut Avenue in Washington DC. In Los Angeles, certain 2-lane dual carriageways turn into 3-lane dual carriageways at peak times, to the detriment of parking lanes where parking is prohibited from 7am to 9am and from 4pm to 7pm. To go one step further, the place given to a road is prohibited from 7am to 9am and from 4pm to 7pm. To go one step further, the place given to a road is prohibited from 7am to 9am and from 4pm to 7pm. To go one step further, the place given to a road is prohibited from 7am to 9am and from 4pm to 7pm. To go one step further, the place given to a road is prohibited from 7am to 9am and from 4pm to 7pm. 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Isabelle Baraud-Serfaty
Lecturer at Sciences Po Paris, founder of Racty

Which drivers of change are affecting the approach to public space?

Just look at the pavement. What we see first of all are changes associated with mobility: increase in chauffeur-driven vehicles who drop off and pick up passengers, development of online shopping which boosts the parking needs of commercial vehicles; adoption of micro-mobility solutions, which clutter up the pavement; growth in shared mobility; development of the Internet of things, with parking sensors for example; or conversion of streets into pedestrian areas and cycle paths. The pavement has become a key resource for many mobility operators but also, more generally, for a multitude of urban operators: street furniture operators or entities in charge of management of the kerb, in a fragmented way. Lastly, in my preferred scenario, local authorities would take over the management of the street curb like a strategic asset, which notably involves a paradigm shift and putting an end to fragmented management between several services.

In light of these changes, which scenarios would you envisage?

One scenario would be an escalating number of use-related conflicts due to the scarcity of the kerb, unless severe constraints are imposed by local regulations. In another scenario, private stakeholders would take charge of the interface between pavement users and uses, as part of public space management concessions or independently of local authorities. Lastly, in my preferred scenario, local authorities would take over the management of the street curb like a strategic asset, which notably involves a paradigm shift and putting an end to fragmented management between several services.

You are in fact raising the issue of the business model of the street curb, which is currently somewhat neglected in French studies on public space.

I do believe that we must be mindful of public space developments, and recognise the changes that are taking place. In England for example, there are BIDs (Business Improvement Districts) and POPS (Privately Owned Public Spaces), i.e. privately owned neighbourhoods with a strong commercial element, e.g. in Kings Cross or in the heart of Birmingham. If we want to avoid this radical privatisation in other countries, or a takeover by Tech Giants, we now need to have a debate on the use and pricing of public space, by focusing on the public interest and the end user.

Avenida Atlântica

In Rio de Janeiro, the city regulates the wide urban boulevards of Avenida Atlântica, along Copacabana beach, to adapt their configuration to mobility needs. In the morning, all vehicular traffic lanes are one-way towards the city centre, while in the evening they are directed towards residential neighbourhoods. During off-peak periods, half of the lanes are two-way. On Sundays, this entire coastal road is closed to cars to promote soft traffic and its other uses, as an extension of the beaches.
New urban trends are emerging in the urban fringe and on the edge of inner cities.

Michaël Silly
Sociologist-urban planner,
manager of the Ville Hybride agency

Which new practices and new uses have you observed in the territory, and more specifically the Greater Paris territory?

With Ville Hybride, I identified nearly 2,000 places in Greater Paris, on a number of topics relating to new uses, such as mobility, circular economy, crafts or urban farming, to name but a few. With regard to mobility, the need for speed will gradually take a back seat, in order to better serve the territories, as attested by ongoing discussions on the conversion of motorways and the ring road into urban boulevards, which represent potential urban and natural resources. On the issue of urban farming in the Île-de-France region, the objective is not so much to supply food (it would require four times the size of the Île-de-France region to feed the 12 million inhabitants) as to provide urban cooling and well-being. As for crafts, the question is how to transfer production and develop activities in densely populated areas. New hybrid models, such as productive third places, taken over by makers, are midway between the industry and the service sector.

How can we make sure those involved in urban development find out about these new uses, and how they are emerging?

The starting point must be the use and user experience via a bottom-up approach: this is why I organise, as part of Urbex by Ville Hybride (I managed this club, the members of which are primarily urban development professionals), cross-pollinating ideas between formal and informal urban development operators in a plain, neutral place, public and private players can speak more freely. This makes it possible to recreate an echelon between the building level and the street, neighbourhood, regional level. Consequently, a sort of hybridisation is required in the organisation of stakeholders to translate emerging urban practices into planning projects. Which other forms of hybridisation transform the contemporary city?

The hybrid city is a concept invoking the transformation of the existing, built-up city. New urban trends are emerging in the urban fringe and on the edge of inner cities. The hybrid city is, in effect, a central city regenerated by its social and physical outskirts. But it is also the overlap between the digital world and the physical world. There is currently a whole reality in the digital world which has no physical equivalent, like young people who meet virtually and take temporary possession of certain places. These digital practices have not yet been converted into urban development action. And yet, for crafts, the question is how to transfer production and develop activities in densely populated areas. New hybrid models, such as productive third places, taken over by makers, are midway between the industry and the service sector.

New ways to explore the many possibilities of public space

Urban hike
In August 2020, twelve consecutive days were dedicated to urban hikes along the future lines of Grand Paris Express 1.

This concept of metropolitan journey is currently spreading beyond Europe. In particular in Boston with the “Boston Metropolitan Trail” created by anthropologist Pascal Monier in 2019, with a view to re-creating this reality in the colonial identity of the city and its inner suburbs. The experience of the metropolis of the territory on foot is recounted in the L’Art des Sentiers métropolitains exhibition in the Pavillon de l’Arsenal.

Urban shepherds
For the past few years, sheep have made their homes in the La Courneuve’s Georges Valbon Park 2.

They regularly graze at the bottom of buildings in the Seine-Saint-Denis department, and it is not uncommon to see a flock on the streets. This social and agricultural experimentation, conducted in a dense urban environment by the Clinamen association, is original and innovative and marks a new way of taking possession of public spaces while re-examining the city’s landscape.

Sports to take possession of the public space
In street skateboarding, the skater uses street furniture intended for other uses, are taken over rapidly, according to the French Parkour Federation. New places, intended for other uses, are taken over, one after the other.

Community gardening
Originating in New York in the 1970s, the “Guerilla gardening” activist movement, which spread to France and Europe in the 2000s, promotes, among other things, the revegetation of urban spaces by community organisations, in particular on neglected sites.

Initially clandestine, this principle has been transposed into the political arena, for example with the “gardening permits” issued in Paris from 2015 (7,719 projects completed in July 2020) or the “Green Visa” in Marseille, which regulates the temporary occupation of the public domain.
Looking to the Future

Three Scenarios for the City of Tomorrow

We reviewed current initiatives aimed at improving the use of our spaces - buildings, public spaces, urban projects urban - today. But what about in 2035?

How will the four drivers examined - transformation, reversibility, diversity and chronotopy - transform our cities in the next fifteen years?

The answer is up to us: our cities will be what we collectively make of them. To help us in our choices, we can however imagine several radical future visions that current dynamics could lead us to. Let’s embrace uncertainty with three unusual narratives, three scenarios combining the adaptation and intensification of the use of built-up areas in a different way.

1 EVOLVING CITIES
Evolving cities constantly adapt to new needs and uses through minor transformations, thus benefiting from the massive adoption of reversible construction approaches.

2 SHARED CITIES
Shared cities, where all types of space can be booked via platforms, provide everyone with unique and bespoke life experiences, while guaranteeing the use of each space is maximised.

3 AUTONOMOUS CITIES
Autonomous cities, where a better use of existing structures supports an ambitious transition to a more responsible urban metabolism. The reduced mobility of people and goods is combined with local production to reduce the carbon footprint.
Twenty-four hours in the evolving city of 2035

Seven in the morning: I take a walk in the neighbourhood in the cool, early morning and visit the bakery. I like being outside so early; the streets are quiet. A freight tram carrying removable partitions is being unloaded. Three houses have appeared on the roofs of this apartment block since I was here last! And here’s a concert stage being assembled. I’ll have to tell my kids about it, they’ll be happy. I walk past the store of my new competitor, this florist who arrived two weeks ago and is attracting customers.

It is now eight o’clock, I am back home, I have breakfast with the kids and I open my shop. Because it’s fairly quiet, I should do something before all my customers disappear. What should I do? I could move again and go into a more dynamic market, the formalities are increasingly simple and quick. I arrived two years ago with the children and I don’t really feel like leaving. Perhaps I should reinvent my model? I could organise floral decoration workshops, or turn it into an educational fablab for teenagers, recently installed in our basement, and also tell me that interior refurbishment work is underway to set up a restaurant on the floor above us. The quality of the reversible building is so good that we hadn’t noticed anything! It’s the same thing for the kindergarten on the floor below, that we haven’t heard for eight months. I suggest that we decorate a street with an ephemeral flowered ceiling during an upcoming event. He is keen and will introduce in new buildings, making for minor and economical subsequent work.

At seven o’clock, the neighbourhood contact person drops by and tells me about the latest local opportunities. He mentions in particular the educational fablab for teenagers, recently installed in our basement, and also tells me that interior refurbishment work is underway to set up a restaurant on the floor above us. The quality of the reversible building is so good that we hadn’t noticed anything! It’s the same thing for the kindergarten on the floor below, that we haven’t heard for eight months. I suggest that we decorate a street with an ephemeral flowered ceiling during an upcoming event. He is keen and will put me in touch with the organisers.

At around nine, as the children have gone to a fablab event, I receive a notification on my smartphone. I have been given an automatic refund as the delivery space outside my shop has been reserved for another purpose for six hours tomorrow. The measurements of data on the uses of various urban spaces are improving. Broadly summarised, it raises general awareness of the fact that existing structures are ill-suited to current uses.

At five o’clock, I hear the children come back from the college and lycée on their borrowed free-floating vehicles. My eldest, in final year, tells me about today’s classes, which is completely identical to what my niece, who is also in final year, told me on the telephone at the other end of the country. My eldest, in final year, tells me about today’s classes, which is completely identical to what my niece, who is also in final year, told me on the telephone at the other end of the country.

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The kids love our apartment! I have to say that it was designed and converted with our specific requirements in mind.
It’s six in the morning. I have just completed an exhausting shift at the hospital. I’m worn out. To catch a few winks, I book a place to rest my head. Five minutes from the hospital and highly rated, a student who is away for a few days has let out their studio apartment. When I get there, the doors and access hatch unlock and I can settle in. It’s clean, it matches the description, it’s exactly what I’m looking for even though I’ve never been there. I lie down; the sheets smell nice. The cleaner was probably here recently, I guess they work nights like me. I call Louis, my son, who is getting ready for school: hearing his voice comforts me. I make sure his route to school is programmed. I just have time to wolf down my favourite snack, that I ordered online and was waiting for me on the apartment table, before I fall asleep.

Two o’clock, the alarm goes off. I go back to sleep for a few minutes but the notifications for my yoga class which starts at Ten o’clock in the evening: I usually put my son to bed and have a rest before I start my shift at the hospital. But today is Friday and I’m off! Friends are waiting for me on a balcony they rented from an individual for the evening. I kiss Louis and set off to meet my friends. On the way, I reply to a survey: which atmosphere would you like tonight? The vote is unanimous: a wine bar! When I get there, the providers are already setting up the decorative barrels, glasses and strings of light on the balcony. What a night! It is late when I return to my family, who have set up camp for the weekend in a charming, exotic and very central guesthouse, on the green roof of an office building.

I feel like having a nice, big meal tonight, and enjoying my family. Of course, our tiny home is not suitable, but there is no shortage of places where we can meet. Some of the parents from schools told me about this spacious kitchen that is well-equipped and surrounded by greenery. I booked it immediately. Once we have settled down in this bright place, Louis is very happy. Soon, our shopping is delivered and my partner meets us there. He joyfully tells us about his afternoon, when he booked a panoramic booth to exchange with a client. It’s ten o’clock in the evening; I usually put my son to bed and have a rest before I start my shift at the hospital. But today is Friday and I’m off! Friends are waiting for me on a balcony they rented from an individual for the evening. I kiss Louis and my partner and set off to meet my friends. On the way, I reply to a survey: which atmosphere would you like tonight? The vote is unanimous: a wine bar! When I get there, the providers are already setting up the decorative barrels, glasses and strings of light on the balcony. What a night! It is late when I return to my family, who have set up camp for the weekend in a charming, exotic and very central guesthouse, on the green roof of an office building.

Benefits of the shared city

- Optimising the use of existing places helps improve the use rate of spaces, and therefore reduce usage costs in terms of resources, carbon and capital.
- The diversity of places available for use ensures a multiplicity of valuable, bespoke life experiences, giving a sense of freedom.
- The quality of the proposed spaces is driven upwards by competition between providers; their constant desire to increase attractiveness creates exceptional sites.
- The supply is so extensive and ubiquitous that life plans can be readjusted in real time according to everyone’s desires, means and needs.

Vigilance points

- The city is becoming increasingly reliant on space booking platforms, increasing the predominance of these players, as well as the potential impact of a malfunction or hacking.
- The possibility of booking urban places, including widespread use of cashless payment via mobile phone gives rise to numerous cashless urban services, which only require simple telephone confirmation to finance the use of urban services, which only require simple telephone confirmation to finance the use.
- The constraints placed by cities on seasonal rental platforms are leading to their disappearance, in favour of more comprehensive space booking platforms which provide a wide variety of options.
- A law requires a minimum use rate for all public and private heated or air-conditioned spaces.
- Decrease in the rate of owner-occupied housing and massive purchase by property companies, who renovate left and right to make their spaces as attractive and unique as possible.

Twenty-four hours in the shared city of 2035

How did we get here?

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
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<tbody>
<tr>
<td>2024</td>
<td>The widespread use of contactless payment via mobile phone gives rise to numerous cashless urban services, which only require simple telephone confirmation to finance the use.</td>
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<tr>
<td>2025</td>
<td>The concept of “MVH”, minimum viable home, is developing. It consists of meeting in an ultra-compact and ultra-convertible living cell.</td>
</tr>
<tr>
<td>2026</td>
<td>The city is becoming increasingly reliant on space booking platforms, increasing the predominance of these players, as well as the potential impact of a malfunction or hacking.</td>
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<tr>
<td>2027</td>
<td>The constraints placed by cities on seasonal rental platforms are leading to their disappearance, in favour of more comprehensive space booking platforms which provide a wide variety of options.</td>
</tr>
<tr>
<td>2028</td>
<td>A major agreement among insurance companies largely facilitates the temporary occupation of spaces.</td>
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<tr>
<td>2029</td>
<td>New quick cleaning services are being deployed, boosted by health crises.</td>
</tr>
<tr>
<td>2030</td>
<td>A law requires a minimum use rate for all public and private heated or air-conditioned spaces.</td>
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<tr>
<td>2031</td>
<td>Subscription-based courier services are becoming widespread to transport the belongings of urban nomads between their different living spaces.</td>
</tr>
<tr>
<td>2032</td>
<td>Decrease in the rate of owner-occupied housing and massive purchase by property companies, who renovate left and right to make their spaces as attractive and unique as possible.</td>
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Evening: I’m a 34-year-old night nurse. I go back to bed after the breakfast meeting with my colleagues, which I missed earlier today. It’s around 2pm when I leave hospital on work release for my small son Louis who is due to be collected by his father at 3pm from the nursery. I carry Louis back to my apartment on foot as the nursery is within walking distance. I collect Louis’s belongings from the bench and transport them to my apartment via the platform available for such purposes. Lunch is ordered online and delivered to my apartment. Louis and I eat lunch before I go to work. I select a place to rest my head for the night and book it online. I arrive at my apartment at 7pm. It’s been cleaned and tidied. The sheets smell nice. The apartment table, before I fall asleep.
I return to my family, who have set up camp for the weekend in a charming guesthouse on the green roof of an office building! My stuff was sent there by courier.
Eight o’clock, I wake up. I have strawberries for breakfast! I picked them in the shared garden on the roof of my building last night. They are extremely juicy and sweet. As I leave the apartment, I leave my compost at the bottom of the building and walk across the central square. A large group of children have been dropped off by their parents in the middle of the square and play while waiting for the organisers to start the walking tour of a neighbouring area, which will take the rest of the morning. This afternoon, they will be in school, like other classes who will be out on a trip. I sit down for a moment on a bench in the square, which is relatively quiet except for other classes who will be out on a trip. I sit down for a moment on a bench in the square, which is relatively quiet except for the children shouting: a small delivery vehicle makes its way through the procession of cyclists and pedestrians.

It is nine o’clock, I go down to a community production site to meet a cabinetmaker who is teaching me and other local residents how to repair storage units. I am familiar with this space in the heart of the neighbourhood; I like it and I end up staying there all morning. It’s a former car park that has been converted and equipped with skylights.

Remote working is becoming the norm in the tertiary sector, and commuting the exception. The overall surface area of offices is decreasing and some of them are converted into housing units.

For lunch, I walk across the square towards the food co-op, converted and equipped with skylights. A big banner announcing the events of the week catches our attention. The neighbourhood Olympics will kick off soon! The sharing of experience between stakeholders and communities involved in repair, local production and permaculture is becoming more structured and widely disseminated. Its knowledge across the population.

At two o’clock, I walk across the central square again and stop: a group of citizens is gathered in a circle, and I stay back a little bit. It’s a working group discussing how to choose representatives. As I continue, I admire the façade of a building under construction. It seems that the woodwork is 100% reused, resulting in a fairly disparate and unique effect. I go up to the coworking space for the afternoon.

At nine o’clock, I go to the local school to meet my community singing and music group. I bump into adults coming out of a night class on the advances of permaculture, feedback and best practices. It is almost midnight when I get home and walk across the central square with my friends for the last time today. The square has turned into a large, busy night food market. A big banner announcing the events of the week catches our attention. The neighbourhood Olympics will kick off soon! I make a mental note to participate and I go home.

As part of the food and agricultural resilience policy, the conversion of urban spaces and tools for urban farming is simplified and encouraged.

How did we get here?

2025

The harvesting and importing of non-recycled natural resources is severely restricted by legal and tax regulations; this further enhances the reuse of elements in construction.

2026

Producing locally does not mean being cut off from the territory: on the contrary, a city is nothing without its hinterland, and urban farming initiatives alone are not enough to feed the population.

2027

The materials, components and resources needed for construction must come from a maximum radius of 100 km, resulting in increased focus on local channels.

2028

The autonomous city

2029

Vigilance points

 Producing locally does not mean being cut off from the territory: on the contrary, a city is nothing without its hinterland, and urban farming initiatives alone are not enough to feed the population.

 Making this scenario a reality would require the active engagement of all stakeholders, combined with a significant transformation effort.

The more local structure of exchanges and the development of the circular economy contribute to reducing the environmental impact of the territory, both in terms of carbon impact and resource consumption.

Everyone benefits from the proximity and use of urban production sites, which are also places where knowledge is exchanged: urban farming, fablabs, school, workshops.

Society is structured at local level through shared initiatives, ensuring quality of life and a sense of collective responsibility for everyone.

2030

Benefits of the autonomous city

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2035

The autonomous city

2025

Remote working is become the norm in the tertiary sector, and commuting the exception. The overall surface area of offices is decreasing and some of them are converted into housing units.

2026

A tax on work-related travel and transport drastically reduces demand for long-distance mobility.

2027

The sharing of experience between stakeholders and communities involved in repair, local production and permaculture is becoming more structured and widely disseminated. Its knowledge across the population.

2028

The autonomous city

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How did we get here?

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The harvesting and importing of non-recycled natural resources is severely restricted by legal and tax regulations; this further enhances the reuse of elements in construction.

2026

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Society is structured at local level through shared initiatives, ensuring quality of life and a sense of collective responsibility for everyone.
I am meeting with a cabinetmaker in a former car park converted into a shared production site. He teaches me and other local residents how to repair furniture!
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