TIME-BASED DESIGN PARADIGMS

edited by Anna Barbara, Silvia Maria Gramegna

D.I. FrancoAngeli
DESIGN INTERNATIONAL

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3. Time-based spatial design. Chronotopes as measurements

by Anna Barbara
Department of Design, Politecnico di Milano

Abstract

Spaces are not inanimate volumes fixed in time. When we live in a space, we stay with all the senses and we experience many times, not just the present.

Time must be stimulated, involved, to become tools for designing the spaces, to be part of the experiential performances. We have to learn how to analyze, to map and to design with time, reshaping the forms and writing systems of notation to describe the experiences, the rhythms, the duration of our experience in the spaces. First the digital revolution and then the pandemic, have made it clear that new forms of time – simultaneity, co-presence, slowing down, displacement, extended spaces, etc. – are designing the spaces of physical presence and absence.

The objective of the chapter is to return, to senses and time, the role of key ingredients in the architectural design of places.
The dimensions of architecture are multiple and complex: the known metrical coordinates of the surfaces and volumes; the more complex psychical plans of the mind; the anthropological dimensions of the social experiences; the sensitive quality of the human body.

The involvement of time in spatial design will be managed between the linearity of Cronos and the fluidity of Kairos, but in both cases, we need to design new measurements, chronotopes, to help designers to

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answer correctly to the new places. We need a semantic of signs and symbols to represent and express the qualities of time.

Notation is not only an instrument of relief and storytelling, but also the way to start the project, because the construction of sense-time language is the first design choice to involve them in the DNA of the next spaces.

> We dwell in time as much as in space, and architecture mediates equally our relationship with this mysterious dimension, giving it its human measure (Pallasmaa, 2016).

3.1 To design forms of time

The relationship between time and space is cardinal in the interpretation and design of spaces. It embodies the historical dimension with place, with communities, with the past and with the future; it expresses the topic of durability and resistance of artifacts to manipulation and wear over time; it is individual and collective memory; it is projection and thus it builds visions and future scenarios; it is phenomenology and tactile perception (Pallasmaa, 2016; Merleau-Ponty, 2003).

What is increasingly evident is that, in recent years, designers and architects have been engaged to design forms of time, much more than forms of space. This has become evident with the digital revolution, but will become even more in the coming years, due to the current pandemic. The relationship between space and time has always concerned fundamental issues in the design of spaces:

- Historical identity.
- Movement.
- Duration and durability.
- Rhythms.
- Nodes.

The identity of a place is rooted in individual and collective history, but it is also the timeline along which the events of one's spatial existence unfold. Movement is one of the cardinal issues, both because it is defined in the relationship between space and time; both because

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through it space is measured and the relationships between mobile and fixed entities become dynamic; and because through the phenomenology of speed, acceleration and slowing down, the perception of space is deformed.

Duration is the measure of the time taken, but it is also the length of the life of spaces, of artifacts, of the durability of materials: it is the measure of the segment between the beginning and the end.

Rhythm is the pattern that cadences the periodicity and extraordinariness of the events and activities that take place in spaces. It is a fundamental parameter for grasping the nature of places and the lives they can host. The rhythms can concern the simple opening and closing of activities, but also the natural rhythms of day and night, of holidays and festivities, of seasonality, or the circadian rhythms of the inhabitants (Zardini, 2005).

The node is the meeting in a precise point of space at an exact instant, between people and things in motion. These nodes are the focal points of time-based space design and are the most strategic places in contemporary places. They are points of exchange, of intersection, of intermodality, of passage of state and speed that contribute to the vitality and management and design of spaces. In the nodes we measure presence, absence, but also co-presence, crowding or emptiness (Lynch, 1964, 1977).

3.2 Shaping time

> What, then, is time?
> When no one asks me, I know,
> but if someone asks me and I want to explain it to him, I don't know.
> Saint Augustine, XI Book of Confessions

There are countless attempts to explain time, often using metaphors, which have been the fundamental means of trying to represent it.

The theme of "giving shape to time", has been the subject of reflections of the greatest thinkers. Saint Augustine who could not answer, Immanuel Kant for whom time could not be visualized because it is the form of our inner intuition and therefore lacks visible

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contours; Aristotle and Kant for whom time was point and line; Hegel and Nietzsche for whom time was circle; while it was cone and pyramid for Bergson; net for Merleau-Ponty; gift for Heidegger; crystal and fold for Deleuze; labyrinth for Borges, Chinese roof for Francois Jullien (Birnbaum, 2007).

Different ideas of time corresponded to different geometric representations. The most common, however, remain the line (timeline), which follows a regular course used to tell the story and its events as a sequence, and the circle/spiral connected to the seasonality and cyclicity of recurring events. This one-way form, almost didactic, sometimes lacking in complexity, was the form of time in twentieth-century space, which was also industrial and productive, designed by the industrial idea to reduce waste and optimize distances and movements. Thus projects, such as Margarete Schütte-Lihotzky's Frankfurt kitchen, became as efficient as the command cabins of air force planes (Bassanini, 2008).

The idea of linear space-time is the one that was adopted with narrative intentions, as a visualization of trajectories of continuity that from Cubism to contemporary architecture, accompanied the history of architecture and interiors of the twentieth century (Giedion, 1967).

3.3 When do buildings expire?

> The relationship with time expressed by great contemporary urban architecture reproduces, inverting it, the relationship with time expressed by the spectacle of ruins. The ruins accumulate too much history. What they present to our gaze is not history. They do not tell us history, but time, pure time (Augé, 2009).

Time is also duration, entropy in which everything that is built, everything that lives, is transformed. Spaces are inexorably conceived by designers through the lens of their time of existence and end. It is this presence of time that arranges the composition of spaces, the sequence between them, the connection, but also the choice of materials that build it, their resistance, and their value.

The western monotheistic, with its idea of an afterlife, has programmed the time of artifacts and buildings along a linear time, with a beginning and an end, while the eastern polytheistic has based

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the construction of its buildings on the idea of a cyclic time, where artifacts are transformed into an endless repetition.

Think of the millennial nature of the cathedral and the ephemeral nature of the Shinto temple that every twenty years is demolished and completely rebuilt, changing both the external structure and the interior (Barbara, 2011) and you understand that the theme of materials is not purely aesthetic, technological, or constructive, but also symbolic and temporal.

It is an existential theme related to the relationship between a society and its idea of death, but also a thanatological issue, dealing with the subsequent transformations of buildings beyond their presumed end.

Jill Stoner, Professor of Architecture at Berkeley, has attempted a cataloguing of buildings with respect to the design possibilities that arise beyond their expiration date:

- **Abandonment**, referring to the sense of functional and semantic end that invests some places that remain as a sign of a "natural" death of architecture, becoming ruins and thus taking on symbolic value.
- **Demolition**, referring to an idea of a building that expires, that ends, and that is destroyed at the end of its functional mandate, as happened for buildings such as the Pruitt-Igoe complex in 1972, which was among the most famous cases of a building's proclaimed end, but also of a promise.
- **Deconstruction**, that allows buildings to be completely disassembled and rebuilt, as in the radical dreams of the architects of the 1970s, recovering most of the materials and architectural components.
- **Preservation**, conservation, restoration that works on the stratification of the new in superimposition on the existing and on history.
- **Renovation**, and rehabilitation in which we "restart the clock" using the shell of the existing building but destining it to a new life.
- **Adaptive**, where a reuse of the building not connected at all with the previous functions and destinations is pursued.
- **Reoccupation**, when a building lives in the "meantime", that is, it occupies a temporal band between the previous life and a new one

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with projects of ephemeral nature, such as the project of Location et Vassal for Palais de Tokyo, which is also a project of "meantime", that is, of temporal occupation between a previous life and a new one yet undefined (Barbara, 2012).

- **Pure expression**, when the time of places is employed by artists as an ingredient of their works as for Matta Clark and Rachel Whiteread, but also dust in the works of many artists starting from Duchamp.
- **Resurrection**, when a project reclaims the memory of an existing building, as in the case of the memorial for the Twin Towers.

Buildings and spaces are designed to live in time and for this reason the temporal dimension is never exempt from the designer's thinking, both as a projection into the future and as a practice of transformation (Stoner, 2016).

3.4 The observer in motion

Architecture until the nineteenth century worked on the static nature of the relationship between observer and place, although there had already been attempts, during the Baroque, to design places whose formal matrix stemmed from the movement of the observer. But this dynamism assumed, at the end of the nineteenth century, the identity of the flaneur, who did not limit himself to observing the fixity of space during his walk in the Parisian *passages* as Walter Benjamin described but wanted to experience the movement of the same space through the cinematic eye of Siegfried Kracauer, that formed and deformed the scenic and urban space.

The cinema, but also futurist art, sensed that speed would be the great designer of the spaces of modernity, in which Cartesian plans would no longer be sufficient to contain the excitement of acceleration and time would be an unstoppable race towards the future.

The avant-garde explored, in that century, the potential of the phenomenology of time on the perception of space and left to the following generations the best experiments in art, architecture, design, theater and cinema. The timeline was not only used to measure time but became the narrative path along which to move the camera of the observer-director.

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Modern architecture was fascinated by the movement, even when the enthusiasm for speed was cooled by two world wars. Proof of this are the architectural promenades of Le Corbusier, such as the famous one in the Villa Savoye, or the double spiral of F.L. Wright in the Guggenheim Museum in New York. The experience of movement in space became the main narrative of the space itself, in a succession of poetic frames.

Other avant-gardes explored the kinematic dimension of space, such as the Gruppo T (T meant time) which explored the dynamism of the observer, but also of space and its devices, to fully involve the senses of those present.

They are the works by Gianni Colombo, Topoestesia, Spazio Elastico, the space-time dilation of Grazia Varisco's paths and Davide Boriani's Chronostatic Environment, in which Euclidean space actually seems to deform into new temporal and perceptive coordinates.

3.5 Time as capital

Among the accusations against the merchants, figure prominently the reproach that their profit presupposes a mortgage on time which belongs to God alone (Jacques Le Goff).

Postmodern philosophers David Harvey and Fredric Jameson identified the existence of two seemingly opposite phenomena: the temporalization of space (changing spatial dimensions in experiences and temporal units) and the spatialization of time (Harvey, 2000).

The combination of technology and speed turned out to be dangerous because it created an instability capable of devouring space and time and leaving humans at the mercy of incompleteness, but above all short of memory (Virilio, 2000).

"Do not waste time" became the *dictat* of twentieth-century capitalism and its culture, which was reflected in the search for the efficiency of the infrastructure of mobility and productivity. Duration therefore became a parameter to be monitored, in favor of speed and efficiency, of the ephemeral.

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The "time-saving" as a measure of innovation, counted however on the efficiency of space infrastructures of the last millennium, has produced economic imbalances, social, political, and productive paradoxes in every sector. From places of entertainment to hospitality, from tourism to retail, all have sought to shorten the distance between pleasure and supply, selling experiences and places *à la carte* (Gwiazdzinski, 2003) that compress or expand temporal coordinates to reshape distances and simulate proximity (Virilio, 2000).

The temporal manipulation, functional to the market, transformed the inhabitants into consumers, conveying an idea that the physiological nature of our body was an obstacle to innovation and that it had to train to the needs of a globalized world, at all costs.

The circadian rhythms induced by day and night, as well as the sequence of weeks and seasons, became too limiting temporal boundaries for spaces capable of being 24/7 open.

In this vertigo, bodies and places have tried to adapt, to stress themselves to reach the required performances with often unsustainable and paradoxical results.

But the value of acceleration, and the consequent excitement, was not exclusively positive. The writer Milan Kundera associated with it the loss of memory in proportion to the speed. The end of the twentieth century, and of the fast and tireless city, was decreed by a promotion of slowness, of awareness, of the shared experience of places, but also of serendipity (Sennett, 2016).

Only a conscious design, of the various forms of time, recognizes the potential, not only in the exploitation, but also in the capacity of the slow forms of time to give birth to community, meeting possibilities, construction of the relationship between people (inhabitants, users, citizens), of presence, proximity and distance.

In the reconciliation between time and space, we can redesign a design bet of the current millennium: analogical time, digital time, but also *phygital* time in the interweaving between the first two (Floridi, 2009).

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Fig. 18 - Buildings are like clocks. Chronotopes designed by Gnocchi, Frusca.

3.6 Digitalization and fragmentation of time

The city of men becomes fluid so much so that the built city is a caravanserai that hosts like a skin, an extended flows in transit that combine and meet for the space of time for the space of time insufficient to decree a new identity of the place (Bonfiglioli, 1990).

Just as the technologies of the 20th century were technologies of speed, of acceleration, those of the 21st century are leading to other dizzying movements, to a bending of spaces due to co-presence, ubiquity, overlapping, increasing congestion of spaces and peaks of stress in infrastructures and spaces.

When it was introduced the concept of 'liquid modernity', it initiated a profound reflection on the spatial-temporal morphology of places, relationships, and technologies, which is still ongoing. From that moment on, designing spaces could no longer be the same as before, because the fluidity of time also reshaped space. Spaces were no longer the frame, the set of reference, of human actions, but became one of the possible media able to allow adaptability and flexibility, in a continuous flow of changes, characterized by an endemic uncertainty (Bauman, 2007).

The digital age has led to the implosion of the time horizon and the proliferation of forms of time, to the ubiquitous (Pallasmaa, 2016). Today we live in a multi-temporal connection, in a continuous and "liquid" flow, we simultaneously inhabit different temporal zones, in a kind of hetero chronology that has become the condition of normality (Groys, 2018).

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Digitization has transformed time into a dusting of moments, long "each of which proceeds according to its own direction and immediately disappears" as Italo Calvino wrote.

Thus, the continuity of the narrative is fragmented, hypertextual connections of spaces in different times are created, the framework of human relationships is no longer anachronic, but becomes synchronic to ensure coincidence of information and circulation (Choay, 2003).

As time multiplies, transforms, and empowers, on the contrary, there is a sense of inadequacy of the real estate market and the real spaces in which we live. They are static spaces, unsuitable for the new forms of living that the revolution of technologies now allows (Carpo, 2017). They are the technologies of:

- **Mobility**, which distorts the perception of space and time.
- **Communication**, which redefines the interaction between chronemics and proxemics.
- **Sharing**, which promotes flexibility, transformability, and availability of space (Gausa, 2010).

Media have become indispensable tools for creating a sense of closeness at a distance, aided by simultaneous, non-deferred interaction. Asynchronous media have a lower degree of engagement than sharing media, of the experience embedded in the space of places (Castells, 1989).

Through this "connected presence," all the places we pass through are imbued with a sense of intimacy, but also a sense of separation from context and absence (Perry, 2001). Media communication does not make us free of spaces, places, and practices, but it does make them available to other networkers.

Places and moments of disconnection are increasingly rare: everything you can do online is open 24/7 (Barbara, 2012). Private space seems to become more open and global as the public becomes more intimate and local (Augé, 2009).

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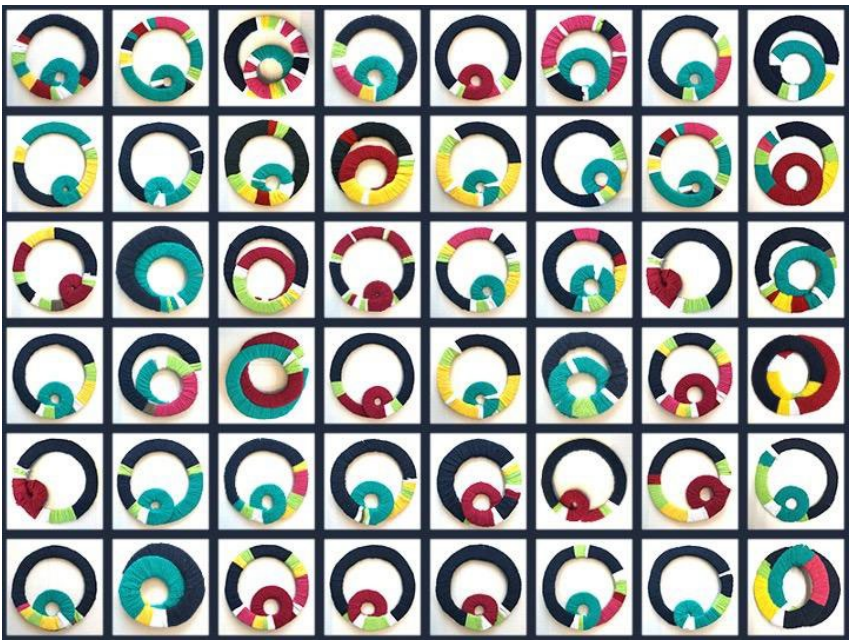

Fig. 19 - Circadian Chronotope. This is an exercise that I propose to my students, to build a double spiral chronotope where one circle is the day, and one is the night ... and the color indicates where they are. You can quickly see that even a distinction that everyone might agree on – where night begins and where it ends – finds a homogeneous group of students in their 20s with completely different answers. Some consider night to be the time when they go to sleep; others when they close the door to their room and enter their digital world; others when the sun goes down... this shows that even the cyclical time of a day and the simple definition of the difference between day and night is by no means obvious. If we add to this analysis the digital life, which complements the real one, we can deduce that a student could be physically in Milan but continue to live (digitally) in Beijing and vice versa. Designed by the Students of Ephemeral Lab, Politecnico di Milano, a.a. 2018-2019

3.7 To warp the space

The world of hypervelocity, of hyper connection, has become a congested world, where events happen concentrated in the same focal points, creating congestion and crowding; where networks connect a system of discrete points, with a high attraction quotient, while the rest of the world, the periphery, the other places are inexorably distanced, excluded, marginalized.

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In 1992, the philosopher David Harvey predicted that the compression of time would have a destructive impact on societies, would make Cartesian space lose its sense of depth, tactility, and plasticity in favor of other morphologies. The end of Cartesian space and the birth of compressed and elongated spaces that would have redrawn geographies, completely modified with respect to those, we had known until then, had been announced. In these new spaces, distances would have been measured by time and distances between places, cities, would have moved closer and further away according to the speed of the transport and connection infrastructures that innervated those territories. The warped space of the third millennium is one in which proximity is established by economic logic, digital connections, infrastructural systems and not by the metric measurement of space between nodes, people and spaces. In time-based spaces, distances are temporal and not spatial, maps are isochronous, they are anamorphic (Ling & Campbell, 2009).

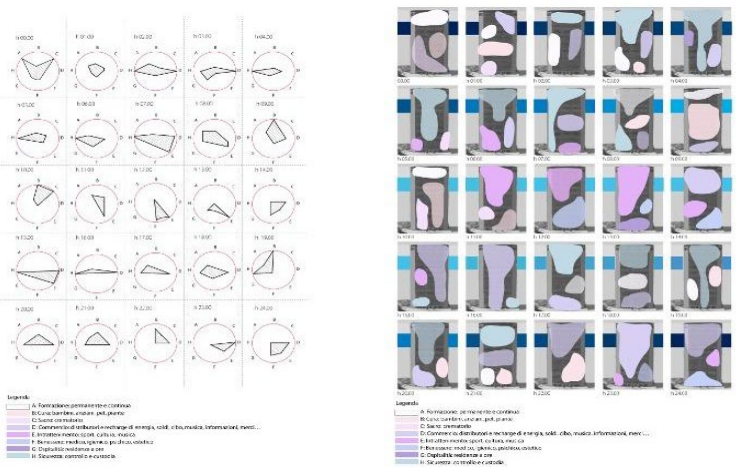

Fig. 20 - ON-OFF Chronotopes. The most frequent chronotopes indicate the use of a space as an ON function and as OFF when there are no activities. This type of chronotope gives information on the possibility of providing other functions in the unused times of spaces, but also offers indications on the sizing and energy consumption of spaces. The chronotopes in this image refer to the Cronos and Kairos project, exhibited at the Venice Architecture Biennial in 2010, in which new functions were experimented inside the Pirelli skyscraper in Milan, in spaces that were momentarily empty. The aim was to make the skyscraper active 24/7, without significantly modifying the spaces. Designed by Anna Barbara

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3.8 To flat the peaks

The spaces of the twentieth-century city were sized according to a single time, which equally measured the spaces and lives of everyone. Those who did not adhere to that time were excluded, outsiders who were viewed with moral suspicion, because their asynchrony could have jammed the great social clock.

But that unique and exclusive time cannot stand complexity, it produces maximum crowding, congestion and ends up being unproductive and generating emptiness and waste.

Designing time concerns the dimensioning of spaces and infrastructures, that suffer from congestion due to "crowding peaks". At nine in the morning, commuters clog the roads, causing traffic jams and accidents. The same happens at lunchtime or on the way home in the evening.

Urban infrastructures, predominantly effect of a 20th century culture, suffer from peaks of crowding, and with the pandemic and lockdowns, we've come to understand the senselessness of a single, Fordist time.

Work flexibility – which we tested in the months of COVID-19 – presents us with a unique opportunity: that of rescheduling and reconciling our schedules to avoid overloading the city's infrastructure. In recent months, many people have begun to move in a staggered fashion, going to the office at alternate days and times. In addition to reducing the risk of contagion, this practice allows us to better distribute traffic flows.

The 21st century architecture must not only design new buildings but must increase the capacity and flexibility of those that exist, promoting sharing, shifting, digitization.

The policy of public and private spaces must allow the flattening of the crowding curve, the reduction of peaks in favor of the dilution of flows and a better distribution of densities. If we transfer this logic to our residences or offices, it will become obvious to radically rethink the organization of the spaces where we live, for reasons of cost, but also of sustainability. Time-based spaces will be more and more like temporal gears, which we will ask to synchronize the temporalities of the activities and communities present, following their desires and needs. We can no longer afford monofunctional buildings, empty or

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turned off when closed, but potentially available for other activities. Buildings must be designed to be adaptable over time because even when closed, they have an energy, social and economic cost. A school that is empty at night, or a train station that is deserted 90% of the time, or a stadium that is only open for games on weekends, are unsustainable forms of waste.

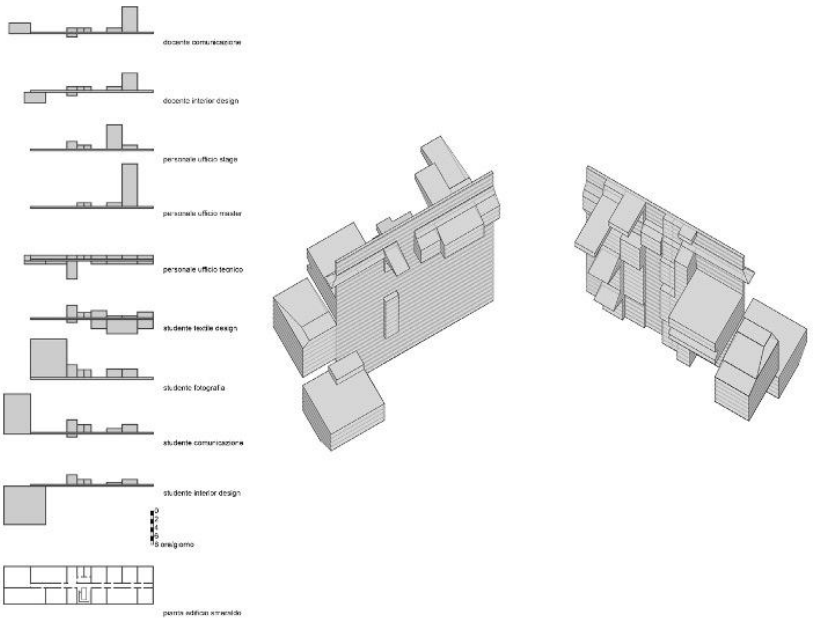

Fig. 21 - Temporal Axonometry. In the temporal axonometry, we demonstrate what the proper sizing of a school should be by sizing the spaces according to their actual use. An interesting indication that emerges is that, for example, many spaces could accommodate many more functions by simply staggering the schedules. Such information should be provided to designers as a design brief, to think about all the possible lives of the spaces being designed and consequently make decisions that can make different activities compatible. Designed by Luca Poncellini

3.9 Time-based design

The definition of time-based design comes from research by Leupen, Heijine, and van Zwol in 2005, in which they began to investigate how the design of spaces would involve time. Leupen

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recognized that the speed of modernization and the unpredictability inherent in technological processes, made it very difficult for buildings to respond appropriately.

While Leupen began to investigate the potential offered by temporal flexibility in conditions of lack of space, van Zwol realized that in the meantime the relationship between work and living had also changed and investigated the potential functional hybridizations and overlaps, considering the possibility of designing spaces without specific functions (Leupen, Heijne & Van Zwol, 2005).

Their research was cardinal, because it emphasized the urgency of including the temporal dimension already in the genesis of spaces and not only at the end of the design, as an exclusive management of spaces. What emerged from their studies was that a space that is designed by already foreseeing its potential destinations and its transformations not only over the years, but also over different times and days, is a space with exceptional potential both for those who live in it, for those who design it, and for those who invest in it.

The results they arrived at were aimed at:

- Transform the mono-functionality of spaces, introducing the need to design spaces that are versatile in form and time.
- Introduce the personalization of spaces.
- Rethink the performance of components.
- Introducing new rhythms in spaces.
- Change the size/shape of each space according to changing needs.
- Change the sense of privacy.
- Etc.

From these paradigm shifts in the design of spaces; entire strands of research and experimentation were born. The utopias of Radical architecture, which believed that the temporal dimension would transform buildings into living machines, vehicles on an architectural scale, adaptable to different inhabitants and contexts, in a dynamic relationship between people and places (e.g., Walking City by Archigram, Generator Project by Cedric Price and John Frazer), were the most visionary.

The masters of the caliber of Peter Eisenman, Greg Lynn, Kas Oosterhuis and Marcos Novak who approached the theme with the optimism and enthusiasm of the beginning of the digital revolution,

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understanding time as the possibility of modifying spaces through parametric design, robotics, etc. in a constructive and performative dynamic.

And finally, all those who sought to design temporal transformations of traditional spaces through dynamic qualities of structures, volumes, and subsystems. As in Gary Chang's Domestic Transformer in Hong Kong, in which a spinal wall at the center flows from one side to the other compressing spaces according to the presence and need of the individual inhabitant of the house. Or Origami, designed by Michael Janzen; Greg Lynn's Embryologic House; or Transformer, the temporary pavilion designed by OMA in Seoul, which is rotated on its sides to become a theater, a place for fashion shows or an exhibition hall.

"Smart" technologies were supposed to reshape spaces, interiors, architecture, buildings, and infrastructure according to needs, desires, and environmental conditions, as well as personalize the experience (Carpo, 2017). However, we are still in a phase of speculation and experimentation, which has not yet had any significant impact on the daily reality of the spaces we inhabit.

3.9.1 Chronemics

Another discipline that has dealt with time in spaces is Chronemics – often combined with proxemics – which analyzes relationships with time in its various manifestations. Chronemics shows the personal, social, and cultural qualities of designing with time, and is based on the principle that the failure of synchronicity, causes dystonia, misunderstandings, discomfort (Zucchermaglio, 2013).

Mobile media have increased spatiotemporal flexibility in social interactions. Time and space have amplified degrees of freedom requiring greater flexibility, negotiation, and reconstruction of roles and rules in both private and public settings.

It is a negotiation based on a subjective sense of space and time that, to ensure the process of interaction, requires maximum involvement and identification. The greater the inclusion and involvement, the better the interaction. The context, the space in which

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the body is physically present, becomes the background and not the stage of the action (Light, 2006).

In this sense, the time-based space, configured by the new media, replaces, or adds new possibilities for relationships, but above all intensifies the social presence, with all that follows and makes many activities shareable. When we are connected, we experience a co-presence because, in Heideggerian terms, the physical space – in which we find ourselves – is juxtaposed to the phenomenological one.

3.9.2 Chronotopes

The representation of the forms of time, and the systems of notation, become therefore strategic to detect, analyze, but also to design time-based spaces. The literature proposes chronotopes, to be understood as the concept that names the temporal characters of a place: times of the processes of historical construction; temporal structures of the presences of populations; schedules and calendars of services; temporal structure of mobility flows (Zedda, 2010).

Chronotopes also refer to the different declinations of temporality: temporal distances, times and calendars of activities, services, mobility, the age of the people who inhabit places, their rhythms, their modes and intensity of presence and use of spaces, the potential of places, historical stratifications (Drevon, Gwiazdzinski & Klein, 2017).

Chronotopes are a tool for drawing time by attributing to it a physical, spatial dimension, to represent it with the same techniques used to draw space. In general, the size of the spaces in which we live, work, study, etc. is proportional to the function and the amount of people that need to be accommodated. What if it also depended on the amount of time spent there? The chronotopes represent attempts to represent the spaces of a building as a function of the expected length of stay for each individual guest. They are a visualization system that makes it possible to make immediately visible the need for services and equipment (power of the air conditioning system, power of the wi-fi signal, etc.) in the different areas of a building.

Depending on the idea of time, chronotopes take on different geometries: *linear*, which is often the way in which chronology is

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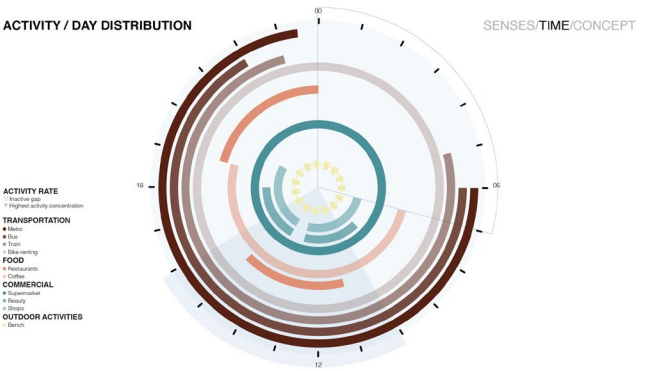
represented, as a sequence on a timeline; *circular* linked to the seasonality and cyclicity of small recurring events, but also *parametric*, capable of representing the dynamic deformations of space over time. There may be various chronotopes according on the purpose of the time analysis:

- The opening and closing (on-off) of locations with respect to planned activities.
- The stratification through levels that show the change of a situation in time.
- The deformation generated by stress in "fleet the peak" conditions.
- The sequencing of a transformation through sequential or time-lapse images that, viewed together, show the change in progress.
- The porosity of a space or an area inside a compensation system able to absorb the transformations without changing its aspect.
- The dynamism that allows the spatial representation of phenomena marked in time.

Citizens share the same spaces but with different temporalities. (Drevon, Gwiazdzinski & Klein, 2017). For this reason, through the temporal study enabled by chronotopes, it emerges that cities are filled with emptied spaces that have fulfilled their function and are only momentarily empty. Precisely these temporal voids offer an extraordinary potential that a coordinated planning could make available for other activities. It would be a kind of circularity, which employs the voids as areas of compensation, of flexibility in space and time (Sennett, 2018).



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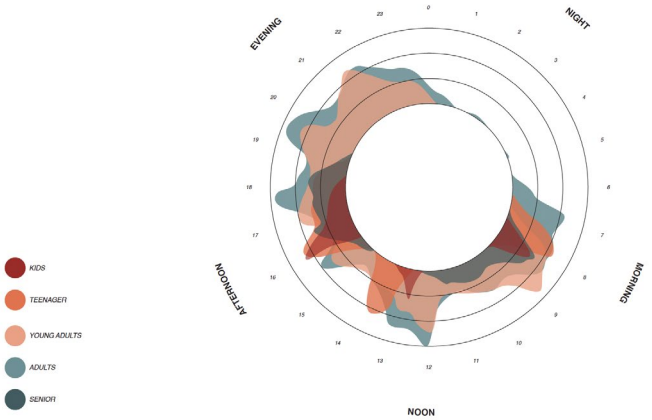

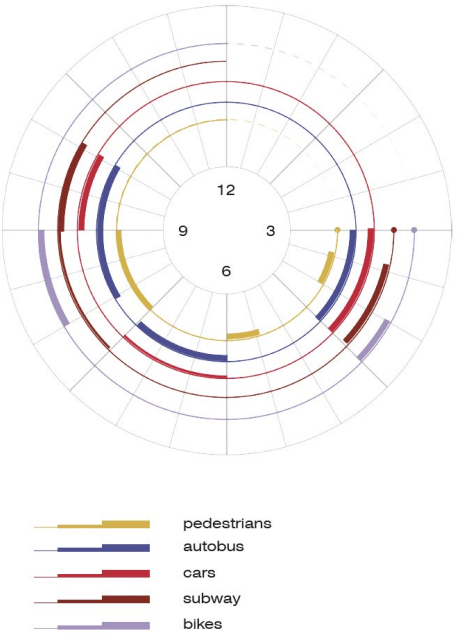

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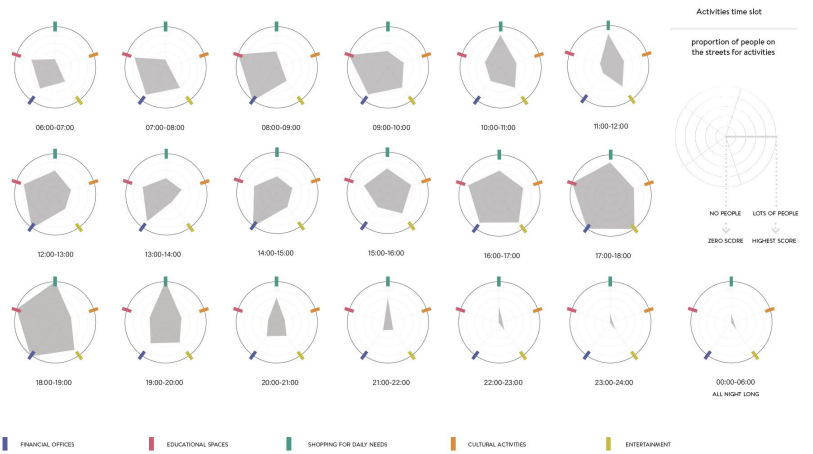

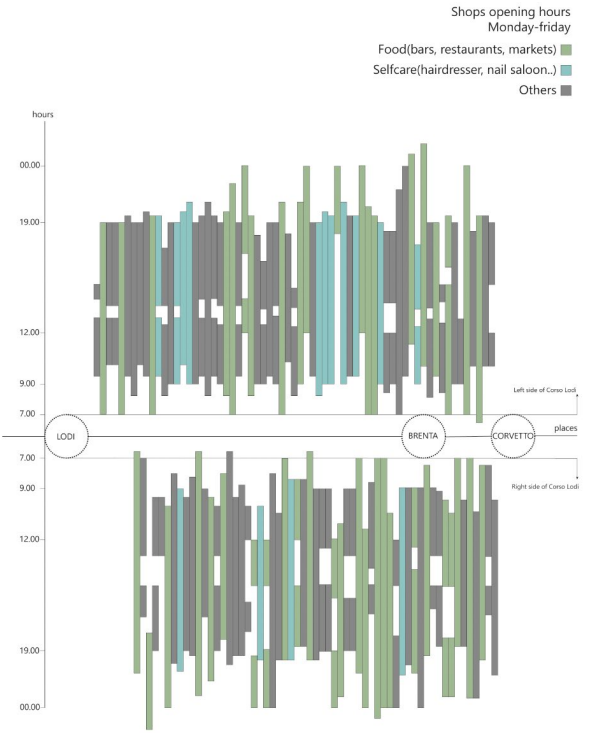

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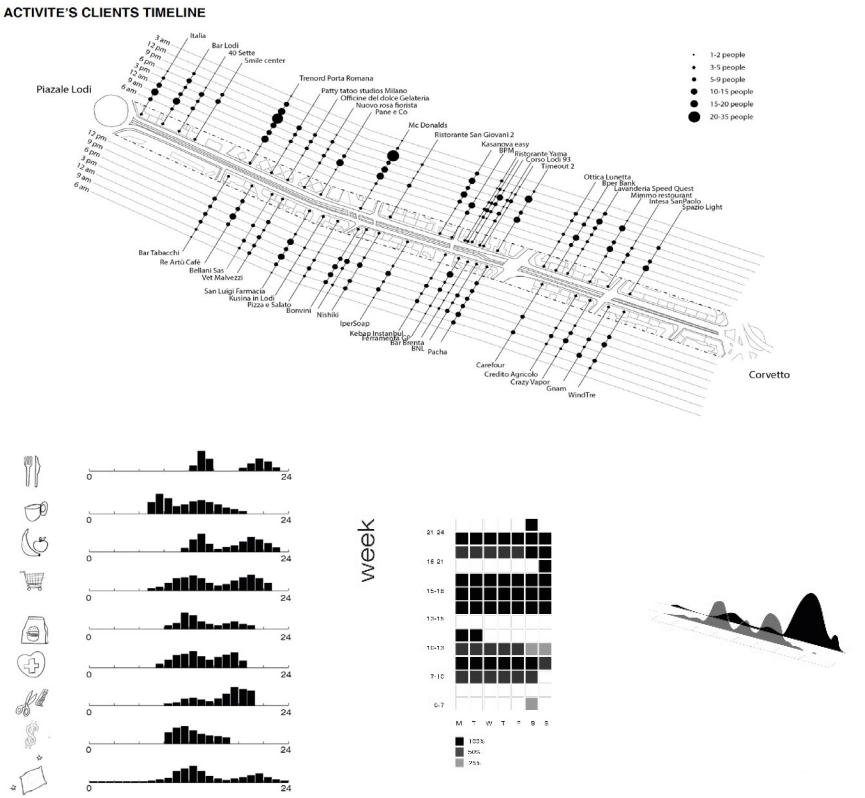

Fig. 22 - All the above images are Chronotopes. The social nature of time chronotopes as project tools. Chronotopes, besides being a tool for analysis, can also play a role of projection, of project, of sharing able to tell the potentialities of some project scenarios according to times, users, activities and services and the compatibility between them. Chronotopes build maps of movements, speeds and slowdowns, maps of services and times of different communities. Through chronotopes we try to understand when street furniture and bike lanes, benches are used, but also how they are used and by whom, to design a possible, different configuration making the space more welcoming and inclusive. The same chronotopes were used to reconcile the times of residents with those of visitors, workers, and users. Finally, through the chronotopes it is possible to formulate proposals for time-based design able to use less space, not requiring the construction of additional buildings, but a better use of time than those that already exist. Designed by the students of the Ephemeral Lab, Politecnico di Milano, a.a. 2021-2022. Designed by: Giuliana Burga, Viviana Galloni, Alejandra Gonzalez, Emma Torreggiani, Luisa Uscategui, Ciliberti Elisa, Drakonaki Angeliki, Kalachev Krastio, Osman Alaa Faisal, Wynants Maxim, Yuhsuan Lin, Alessandra Alocarni, Andrea Cavallier, Mahafarid Kazemi, Pegah Khazaeli, Vittoria Romanian, Elisa Arrigoni, Fang Shuyi, Nan Jiang, Stefano Garagiola, Valerio Morgante, Yuhan Wen, Ilaria Allioli, Valentina Steffenoni, Grazia Tonoletti, Xiaowei Zeng, Paula Abdelmalek

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3.10 Can we use CHRONOTOPES for the future studies?

It is evident that we can no longer speak of a single time, but of temporalities that move at different speeds and on different planes. The present alternative, as well as the possible, desirable, probable futures, etc., of a territory or an economy or a country do not move in sync with each other. The future of one area of the planet may coincide with the near past of another, or our present coincides with the desirable future of that of another country. Our future may yet happen, or perhaps somewhere it has already happened.

And in this very idea, chronotopes could be tools for future studies that, as it happens in the cinematographic fiction, can draw a multi-chronemic narration, moving along several parallel or intertwined stories, creative sequences, and developments, able to bend time and space according to geometries useful to the plot.

Designing the forms of TIME must not mean designing speed, but it will also have to mean designing rhythm (Lynch, 1977) and designing slowness (Sennett, 2018). It will not have to mean designing only the future of an elite. The competitive time we have experienced so far has a divergent future, that we can no longer sustain.

We will have to design times to reconcile work and living, care and education, and different cultures and generations (Bonfiglioli, 1990); we will have to design times to slow down and become more aware of the spaces and places we inhabit and traverse (Sennett, 2018); we should design times to possibly decrease or take backward paths perhaps (Latouche, 2014); to be collaborative with neighboring communities and reconstitute short networks between people and places (Manzini, 2021); we will need to be inclusive in the future, able to bring together innovation and sustainable development so that it is accessible to most people.

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The book *Time-Based Design Paradigms*, from the LEM_ Design International series, explores the relationship between time and the design of spaces. The ongoing digital revolution and the recent pandemic have shown that the temporal dimension of spaces is a horizon that has yet to be strongly explored. In the future it is increasingly likely that it will be the forms of time, rather than those of space, that will undergo the most interesting innovations and transformations. Within the LEM (Landscapes, Environments and Mobility) section of the Design Department of the Politecnico di Milano, a group of professors and researchers, together with some international colleagues, have tried to investigate which forms of time will increasingly impact spaces: those of memory, of the everyday, of the extraordinary, of the future, of terrestrial and astronomical spaces, etc. The essays explore time: as measurements, adaptations/compositions, memories, machines and technologies, identities, narratives, sensitivities in an increasingly globalized and wrapped world.

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La passione per le conoscenze