Routledge
Taylor & Francis Group

Design Philosophy Papers

ISSN: (Print) 1448-7136 (Online) Journal homepage: http://www.tandfonline.com/loi/rfdp20

# 4D City

Francesca Spanedda

**To cite this article:** Francesca Spanedda (2003) 4D City, Design Philosophy Papers, 1:5, 221-228

**To link to this article:** http://dx.doi.org/10.2752/144871303X13965299302514

Design Philosophy Papers VOLUME 1, ISSUE 5 PP 221–228


# 4D City

**Francesca Spanedda**

**Francesco Spanedda is practicing architect and tutor in the Faculty of Architecture at Alghero, Sassari, Sardinia. Many of his projects have been short listed in international competitions.**

Urban planning usually concerns spatial transformations. Time, however has proved to be a very important component in the processes of building architecture and transforming cities. Moving from experience, a concept of 'planning as process' has been developed and enriched, and now planners regard time as operable as space.

In what follows, the descriptions of time made by scientists and philosophers will be left aside, as well the many thoughts on the relevance of time in design practice, ranging from the 'praise of quickness' of Plato's disciples to the value of the slowness of 'labor limae'. Examples from across the twentieth century will be discussed to show how concepts like duration, history, progress, linearity, homogeneity and sequence can be questioned to find new ways of thinking cities and their transformation, combining traditional techniques related to spatial and urban investigation with the tools proper of other disciplines like project management and organisational sciences.

## Five Properties

Architects and planners traditionally thought space and time in terms of universal and generic data, as homogeneous media represented by infinite grids where

objects and events find their proper place.[1] Time retains some self-evident properties. Firstly, time has a direction, brought to evidence by the never-ending evolution of the context and through new and unexpected irreversible events.

Secondly, time has an absolute orientation, because it follows its direction forwards, to the future. Considering these prerogatives, time seems to be only an immovable contextual datum or a kind of constraint to deal with. Its flow only reveals the permanence of some elements and their capacity to withstand the events of history.

Duration and its opposite, instantaneity, have played a fundamental role in research about spatial transformations, from the reflections on territorial permanence[2] to the studies on ephemeral architecture. The idea of duration has influenced the analysis of urban structures and the engineering processes of buildings and territorial infrastructures, more so than it having been taken up as an idea to enrich the designer's toolbox.

Although scientists long ago ceased to consider time as homogeneous and linear, their concepts seem to have only indirectly influenced the empirical discoveries of architects and planners that can set only a posteriori analogies with scientific thinking.

Time has some less-evident properties that a pragmatic approach could turn into design material, composing strategies to modify the city.

The path of this development can be illustrated through several urban projects that work on some categories of time that can be exploited in design: direction (past/future), topology (linearity/fractality), duration, density and synchrony.

## Duration / Instantaneity

Duration is almost an undisputed value in architectural history. It is still the measure of successful design and planning. Yet even in the early modern era, architects tried to deal with the contradictions between the fixity of buildings and the ever-changing surrounding world. Along with the mainstream studies of new typologies suited to modern needs, many projects were developed for the idea of the 'growing house', thanks to contributions of Wagner, Figini, Aalto, Stirling and Gowan, among others. But the ever-changing needs of families did not suggest actual modifications in typologies and design methods: these exercises were most conceptualised in terms of the flexibility made available by new construction methods.

The temporal dimension gained importance in the urban planning experiences in early '60s, together with an "idea of a town configured by a continuum of dynamic relations, in every development phase of which past configurations recompose in new ones, coherent with the reality arising in that specific moment".[3] Old planning appeared weak, "abstract, projected in an unclear

future. The new plans instead are conceived for a short temporal horizon, strictly linked with their targets".[4]

Here, architectural and regional planning aimed to formulate a process and the milestones to verify it, rather than trace only a spatial configuration. Architects had to abstain from coherent well-determined compositions, whose formally closed structures need to be built all at once. The studies of the relations between spatial organisation and functional programs lead to the concept of project as 'process'. This word implies resonance with the open and unforeseeable natural processes that have informed the experience of Landscape Ecology.

The rise of the environmental dimension in the urban disciplines made both concepts of time and space more concrete. Acceleration of decisional processes unfolded a segmented time, as in the novel of Charlemagne reported by Calvino, where "events, independent from their duration, become points, linked by linear segments, in a zigzag pattern that matches a restless movement".[5]

The different values given to the concept of duration produce new forms of representations, often focused on movement, the kind of action that closely links space and time. Isochronal maps warp and upset the traditional geographical space, showing the actual distances between cities and bringing up new relations that privilege speed more than spatial proximity. Some architectural concepts are rendered through 'scripts', like movies, that describe architecture as event, space and movement.[6]

## Past / Future

The modern obsessions of both identity and progress mark the approach of urban designers. They determine antagonistic spatial structures: urban spaces that follow the tradition of the European town,[7] or spaces that aim to anticipate a near future. Usually cities try to follow both directions, threatened by the loss of identity on the one hand, and, on the other, by the fear of losing the competition against other cities to gain new settlers attracted by higher infrastructural standards.

One of the most important and extremist representation of town planning pointing towards the past are the oil paintings and the old-fashioned drawings that delineate Leon Krier's project for Atlantis, an 'ideal town' placed in Tenerife, one of the Canary Islands. Atlantis is a place where intellectuals and visionaries might meet and research to reconstruct "the humanistic values that transform individuals into citizens", and break ground for a better future to live in. The new town features a monumental acropolis, sign of its well-recognizable identity. Its pictures emphasise the nostalgic intentions behind the project: the crowds act after Renaissance models, and the traffic is limited to one vintage automobile dating to the beginning of the 1900s. Nostalgia-driven 're-invention of tradition' seems to Krier and the components of 'new urbanism',

the only way to an agreeable future. For them, the planner's gaze ought to turn backwards in order to go ahead. Atlantis suggests a paradox, an inversion in time.

However, over-valuing the spatial structures of ancient towns could freeze a city's physical and social development. If historical buildings and spaces cannot be modified to house new functions, life settles unavoidably elsewhere, in urban fabrics that can accommodate more traffic than a single vintage auto. Such places form the 'Generic City' of outskirts, whose space have apparently minor value, but have the advantage of the possibilities of change.

> Regret about history's absence is a tiresome reflex. It exposes an unspoken consensus that history's presence is desirable. But who says that is the case? A city is a plane inhabited in the most efficient way by people and processes, and in most cases, the presence of history only drags down its performance.[8]

The theme of the elimination of history, whose traces discourage the continuous mutations in urban life, informs Rem Koolhaas' competition entry for Paris – La Défense in 1991. The surprise to discover "the unpleasant and absurd burden of having to invent a concept for an area that was already filled"[9] suggests the idea of operating a tabula rasa, like Le Corbusier in his Plan Voisin. "But while Le Corbusier might have been too drastic in removing one of the most universally admired examples of urban culture, we could argue that here such an urban culture didn't exist, or even that this urban culture presumes this kind of elimination."[10] The problem of historical permanence makes no sense when compared to the poor quality of existent buildings: the proposal of urban renewal continues the tradition of quality that informs the urban history of Paris. A dynamic sequence of black and white photographs explains the project. The first group of pictures shows a hand that rips the building blocks older than 25 years from a model of the area. The frames of the picture hide the rest of the body: the hand acts impersonally, pushed by a force transcending every subjective interpretation, although some "buildings of sentimental value" are left. The project team appears only in the second group of pictures, while the new buildings are set upon the liberated ground: "Momentary exhilaration as we reconquer the profession of urbanists…"[11] Only those who dare to throw off the burden of the past seem to be able to regain a place in the frame, work creatively and produce again the future.

## Linearity / Fractality

Urban design and planning practices assume linear, homogeneous and measurable time. Every phase of planning and building process management can be positioned univocally on this isotropic grid, in

order to plan and control every procedural step, and analyse the concatenation of events through 'cause and effect' dependencies. Time has to be measurable in order to share its segments among different activities. In current practice, tasks are grouped and linked as if they were closed systems. Every unexpected event induces a race against time, and skilled project managers are concerned about anticipating troubles deriving from the unavoidable openness of the system.

To improve the management of concatenated events and their consequences, a representation of time as a grid has been worked out; similar to the continuous space of cartographic representations that allows territorial control. One of the best-known examples of this kind of diagram is the Gantt chart: a set of horizontal bars, arranged to show a chain of tasks, whose duration is proportional to their graphical length.

City time is not always linear, homogeneous, and measurable, though.

As a map cannot embody the real space but only its abstraction, Gantt charts constrain the richness of events in an abstract grid.

But actual time, like real space, is much more complex. It hides folded areas that elude every attempt to measure them. Inside this invisible dimension grow up entities like the Temporary Autonomous Zones theorized by Hakim Bey. TAZs originate in the interstices between the reality of time and space and their abstract continuity postulated by cartography and timelines. They take the place left by the holidays that characterised urban history. TAZs are free enclaves where it is still possible to experience autonomy in an era of pervasive control. They liberate territory, time, imagination, continuously disappearing and appearing elsewhere, like a festival that refuses to be a part of the big show of everyday life. For Hakim Bey:

> The ancient concepts of jubilee and saturnalia originate in an intuition that certain events lie outside the scope of 'profane time,' the measuring-rod of the State and of History. These holidays literally occupied gaps in the calendar-intercalary intervals. By the Middle Ages, nearly a third of the year was given over to holidays. Perhaps the riots against calendar reform had less to do with the 'eleven lost days' than with a sense that imperial science was conspiring to close up these gaps in the calendar where the people's freedoms had accumulated – a coup d'etat, a mapping of the year, a seizure of time itself, turning the organic cosmos into a clockwork universe.[12]

Transforming cities in its own way, the TAZ occupies a different quality of time compared to the abstract linearity of Gantt charts. Carved in the foldings of official time, a TAZ could be represented by

a 'Mandelbrot set' where "we watch – in a fractal universe – maps which are embedded and in fact hidden within maps within maps etc. to the limits of computational power".[13] In such circumstances cities change: people walk different paths than usual and make different connections between places, an easy experience in riots, processions, markets or festivals. An example are the wooden bridges placed every year over the Grand Canal in Venice, for the processions of Redentore or Salute, instituted in thanksgiving for the deliverance of Venice from a plague. They are assembled a few days before the procession, and then disassembled shortly thereafter. The bridges temporarily link the two sides of the Grand Canal deflecting habitual pedestrian paths and giving unusual perspectives.

A cyclical and fractal dimension of time introduces concepts like temporal patterns and space occupation.

## Rarefaction / Density

The progressive growth of cities and the following environmental crisis in the late '80s raised the demand for inserting new functions in very dense urban settlements, like in the Netherlands and in the big Asian cities. In 1992, Rem Koolhaas' Office for Metropolitan Architecture (OMA) was charged to find a development scheme for an isle in the port of Yokohama. The site was almost entirely filled by two huge market halls, used only between 4:00 and 10:00 in the morning. "The permanent presence of the market halls was guaranteed; in other words, to serve the city, they had to stay… It became obvious that we would have to invent programs to fill the rest of the day, which would achieve maximum use of the existing infrastructure".[14] The market halls occupied a definite space, and their function occupied a definite time. The proposed expansion of the city in the market halls and in the surrounding lots is not merely a spatial saturation of urban voids: it becomes a saturation of time. Along zoning and spatial dislocation of functional programs a new strategy appears: a temporal dislocation of events related to urban life that cyclically fill the spatial and temporal voids, like an altered Gantt chart, whose linear bars warp to become fluctuating surfaces.

## Synchrony / Asynchrony

OMA's strategy for Yokohama discovers an unexpected space at disposal of the city, hidden in the folds of time that could be filled by distinct functions that share the same space, but flow asynchronously, without any binding dependence between them.

In the '90s, the vertiginous acceleration and the growing interdependence of economical processes caused instantaneity to succeed duration in the scale of values.[15] Designers registered the impression that "the conditions under which we work have to be redefined on almost a daily basis. Clients' decisions are

systematically made very late, as if they were waiting some additional information from an unexpected source, decision-making processes have become even more complex. This puts you in a state of uncertainty, a state that also implies constant openness".[16]

The coexistence of different parameters has to be investigated after the rules of their mutual interactions along a time line that is in form of synchrony.

The complex of interactions that influence the evolution of cities is the theme of the Rubber Mat designed by the Dutch architect Ben van Berkley for a site in Rotterdam:

> The computerised organisational model of the Rubber Mat avoids architecture; it projects four urban situations as four layers or mats on a specific site. With its value-free urbanism and flexible layers the Rubber Mat constitutes an early version of an aesthetically neutral futurological instrument …we chose therefore to develop a model without architecture. The Rubber Mat consists of four conditions, living, work, fun and landscape, which are plotted on a horizontal time line in a 3-D model which follows the physical shape of the location. A vertical line charts the parameters structuring change in the layers. These parameters are land value, rent level, building density, occupational density, increase in business activities, in services and in landscape quality. Changes in one parameter would resonate in each of the four layers of the mat, like applying pressure to a point on a waterbed. The extrusion of changes already taking place on the river-bound Unilever terrain allows certain predictions to be made as to possible land use in the future; the margarine factory will shrink and ultimately disappear, to be replaced by representative office functions and housing. On the basis of this pattern of change, the 3-D model is animated and shows a movable organisational principle of function allocation, changing with time.[17]

As a result, the only definite shape in this project is the form of the site. Dealing with complexity, the designer pays attention to interaction analysis between variables on the time line. The drawings illustrating the project describe no longer its physical conformation, but merely the synchronous states that could generate particular forms.

## Conclusions

The examples illustrated above show how some concepts linked with time could become useful tools to gain unexpected visions of the city and its transformations.

They slightly turn their focus away from the physical definition of the built environment. To deal with an even more densely populated

and complex context, in an age that seems to defy prediction models in all disciplines, architects must broaden their field of observation beyond their traditional spatial domain. A planning extended to the richness of the fourth dimension would let the resources emerge to amplify urbanity without useless spread, vitality inside controlled space, prediction in complexity. To achieve this goal, planners, architects and urban designers have to merge their analytical tools with those proper of different disciplines, like management, organisational sciences and sociology.

Although the quality of the cities around us clearly illustrates the risks hidden in the undervaluation of the physical shape of the built environment, there is evidence that projects of a hybrid nature and the emerging new representations of urban processes can contribute to develop more complex urban typologies, regenerating traditional concepts like geometry, flexibility and duration to answer the newer questions asked by the contemporary society.

## Notes

1. A. Corboz *Vous avez dit 'Espace' ?* Werk Bauen + Wohnen, mars 1996.
2. A. Corboz *Le territoire comme palimpseste et autres essai* Paris: Éditions de l'Imprimeur, 2001.
3. G.C. De Carlo *'Premessa' La pianificazione territoriuale urbanistica nell'area milanese* Marsilio, Padova, 1966.
4. B. Secchi *Il racconto urbanistico* Einaudi, Torino, 1984.
5. I. Calvino *Six Memos for the Next Millennium* Harvard University Press, 1988.
6. B. Tschumi *Architecture / Événements Les mini PA*, no. 8, Paris: Éditions du pavillon de l'Arsenal, 1995.
7. L. Krier 'The Reconstruction of the European City' *Architectural Design* vol 54, 1984.
8. R. Koolhaas 'Generic City' *S,M,L,XL* New York: The Monacelli Press, 1995.
9. R. Koolhaas 'Tabula Rasa Revisited' *S,M,L,XL* New York: The Monacelli Press, 1995.
10. Ibid.
11. Ibid.
12. H. Bey *Temporary Autonomous Zone* New York: Autonomedia,1991.
13. Ibid.
14. R. Koolhaas 'Programmatic Lava' *S,M,L,XL* New York: The Monacelli Press, 1995.
15. Z. Bauman *Liquid Modernity* Cambridge: Polity Press, 2000.
16. A. Zarea *Continuitades. Entrevista con Herzog & de Meuro* Madrid: El Croquis n. 60, 1994.
17. B. van Berkel & C. Bos *Move* Amsterdam: Goose Press, 1999.