

Mapping (in) the New Time. New Analytical-Synthetic Representations for the New n-City and its Multi-Territories

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Cities between centuries: territorializing (and synthesizing) information

Our cities –as translations of our societies themselves– are the most complex dynamic and informational systems that exist: they are space-time (as well as sensorial) systems constantly exchanging information among the elements that comprise them, and between the latter and the surrounding environment, mutating and fluctuating in an evolutionary manner [Gausa 2015; 2016].

As their capacity for movement, processing, transformation and transfer –and the degree of connectivity– among “conditions,” “situations,” “solicitations,” “fluctuations” and, ultimately, “information,” has grown, so has their capability for “simultaneity” between levels and processes of exchange and thus the complexity –diversi-

ty, heterogeneity, plurality and irregularity– of their most explicit manifestations.

In this new, definitively heterogeneous, dynamic and interactive understanding of our collective environments (a condition they have always had, but which has become more pronounced in recent decades, moving beyond the old stable and gradually progressive conceptions of their development processes) lies, in fact, the true “information” revolution of our time and the basis of a shift in logic and thought more open to a new holistic capacity for “interaction of information” happening now in all that relates to the conception of space and the definition of our environments of existence and relations [McHug 2014].

The setting of this new open, dynamic and “informational” condition of the city is no longer built on the basis of more or less substantive formal criteria, but is defined and re-

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defined dynamically, continuously, relationally, by the interactive combination of different –and simultaneous– levels of information (geographical, biological, economic, cultural, environmental, socio-political, etc.) which characterize it and the (infra)structural networks of exchange (of transport, energy, diffusion, communication, demographic or financial movements, etc.) which (inter)connect it, materializing the variations proper to a complex and plural “system of systems,” definitively “in process” [Gausa 2010].

The main characteristic of this complex space, where the variables are multiplied, would be, as in the whole “non-linear” system, that of multiplicity –or “multipli-City”– of variability and uncertainty [Batty 1997, p. 6; Kley, Taverne 1997, p. 44].

The approach to this new type of multiple (“metapolitan”) [Asher 1995] spatiality (and/or territoriality) and the movements and evolutions that would define and/or delineate it, thus requires, for its effective recognition, the development of new analytical instruments and perspectives of recording, representation and projection, as well as the definition of possible qualitative (and adaptive) vectors associated with them.

Representation and projection have always been terms closely linked to the notion of “project”; and it seems important today to understand, in this time of new socio-cultural and urban paradigms [Ricci 2012] which are the new approaches to the traditional polynomial “representation/projection/planning,” once the old models (and certainties) of the city-form, composed, figurative, planned or drawn have given way to the new tools of recognition, analysis and approach.

From an architecture and an urban planning understood as disciplines destined to trace, design or draw “linear” and stable forms in space, today we are moving towards an architecture and an urban planning understood as trans-disciplines –or disciplines among and across other disciplines– called upon to combine, synthesize and express dynamic, complex processes and variable, interconnected relationships, in possible formulating, more than formalized, gambles. This shift entails the replacement of a certain idea of urban-architectural space as an “a(bs)tractive object” (that is, as a formal-figurative event) and its new conception as an “interactive system” (that is, as a relational process, implicitly “con-figurative”); and therefore, the emergence of a “new logic” called upon to replace the old classical compositional order or the new modern “intrusive” order (and the post-modern “expositive” order) for a more “organi-

zational” order –fluctuating and flexible– called upon to react with the environment and among environments, by “info-strategic” criteria open to different tensions, stimuli and solicitations [Gausa 2010].

The advent of this new “advanced approach” –urban and architectural– associated with the digital and informational revolution itself, has been that of a whole generation of ideas, explorations and research mobilized by the innovative vocation, in which transversal strategies have been combined with new holistic approaches in the search for an effective mapping and for a new type of (intentional/informational) perspective and/or a new type of “hyper-urban” settings, more complex (multi-level and multi-scale), more dynamic and n-dimensional [Fargas, Papazian 1992, p. 90; Barahonda, Ballesteros 1997; Bijlsma, Garritzmann, Deen 1998].

We can speak, therefore, of the necessity of proposing new “operational (and operating) maps” for cities. These are new synthetic scenarios of approach: of diagnosis, responses and gambles, all at the same time.

The progressive capability for innovative combination generated in the last three decades, between the “3IN” terms, Information, Interaction and Integration (to be understood in all their dimensions: spatial, environmental, social, technological and cultural) shows the digital possibility of managing complex programs and simultaneous solicitations, trend parameters and environmental indicators, creative movements and social dynamics through the increasing computational ability to process, measure and optimize data in new open, systemic (but also, integral and integrative, multi-typological and anti-typological) approaches associated with this new “Information Logic” [Gausa et al. 2001; 2003].

These dynamics build a new global framework for a new projective interpretation of cities “in and of” the territory: that of an “n-city,” “multi-city” or “pluri-city” (*poly-polis*) given to a multiple network of infrastructures and intra-structures, landscapes and intra-landscapes, density nodes and exchange hubs, road and fabric networks [Gausa, Gualart, Müller 2003].

Developments locally oriented to the urban scale and developments globally articulated to the large scale (regional, trans-regional, territorial) in which the city-system would no longer be interpreted as a single expansive movement around a large unitary center but as a large polyhedral, polycentric, polymorphic and definitively multidimensional structure [Gausa 2001].

Maps for a new time

"Multinter" strategies

The definition of possible "Multi-inter" (multi-urban and inter-territorial, multi-level and inter-networks, multi-scale and inter-systems...) strategies for the great challenges that present themselves today in this complex scenario of exchange, obliges us to consider some of the great transversal themes associated with the new urban-territorial agendas of this early twenty-first century, raising different strategic issues regarding representation, cities, architecture, infrastructure and landscape [Gausa 2009].

Today it is a question of rethinking the possible propositive quality implicit in the dynamic potential of this new multi-urban, poly-urban and "geo-urban" scale of the current metropolitan structures, where nature and artifice, eco-systems and anthro-systems (re-naturalization and urban recycling) would be articulated; favoring a positive and at the same time critical action, attentive to those conflicts, tensions and deficits generated by new socio-environmental phenomena and dynamics [1] which require new, resilient and intelligent, integrated approaches for our life and relation scenarios; new operational scenarios of recognition, diagnosis, formulation and (inter)action. Systems "in" and "of" networks (info, infra, intra, eco and socio-structural) that would constitute a new instrumentation made up of different models of representation (multilayer cartographies, scanner sequences, development schemes, compression diagrams and/or conceptual ideograms or dynamic simulations), combining analytical analogue approaches and new synthetic digital and even plastic expressive logics [Gausa, Guallart, Müller 1998].

Lines of action associated with research anxiety related to the development of new digital technologies but, also, to a new contemporary thought, and that respond to explorations and trials (more or less intense over time), generated in the different phases that the digital/information revolution itself has experienced in the last thirty years. Approaches that are not mere "trends" (they are not closed in themselves) but that are combined, as potential models and innovative methodologies, still currently being verified.

*1990-2000: Battle maps (intertwined strategies)
(Formulations and/or configurations: networked integrated systems and multi-level models)*

The first shift in urban and architectural paradigms, generated in the last decade of the 20th century with the initial

emergence of a new instrumentation and of a new digital information logic, was the transition from traditional occupational planning to a new type of relational strategies for cities. GIS analysis and the first manifestations of Internet 2.0 have favored the ability to combine complex systems and synthetic models, interwoven, integrating, in compatible and differential meshes, multilevel programs and grids; new models of organizational (topological and matrix) geometries, more irregular but interlaced, intended to form the basis of a new advanced approach particularly interested in favoring multiple directives (or guidelines) –in the network and in networks– conceptual, strategic and operational at the same time.

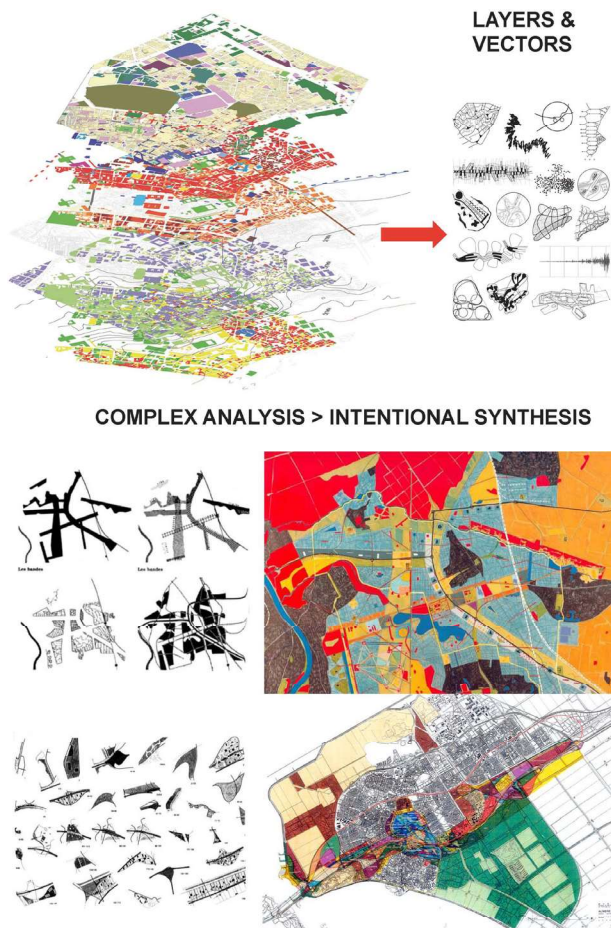
The sale of the first PCs and portable computers, that is, laptops (with a personal access to computing) as well as the launch of the first Hubble Space Telescope in 1990 –the first "processor" of geo-referenced information– favored a new approach to this multi-register condition (multi-level and multi-layer, real and virtual, material and immaterial, formal and informational) of a system –the urban one– referred to processes of exchange –and mapping– in which diversity and simultaneity, multi-scalar complexity and inter-scalar transversality, could be addressed with the new GIS systems (launched in 1991) and the first sequential scanner readings (marketed in 1993). The factors of access, portability, speed, adaptability or simultaneity, typical of a systemic, complex, multiple, precise and flexible approach to context, were combined to facilitate a real change in the management and perception of our realities and environments [2].

The first generalized network connections –associated with the first popularized developments of the Internet (Web. 2.0. Internet of People), globalized at the end of the 1990s– contributed to strengthen this idea of a diversity/heterogeneity connected on the network... and in networks (networks understood not only as physical service and transport networks, but as virtual connections and, also, as eco-sustainable systems; flexible, landscape, social, identity, cultural and, evidently, environmental matrixes) favoring a concept that is programmatically intersected and intertwined, integrated and interconnected, aimed at combating the patchwork city or the sprawl city [Neutelings 1992; 1994] with potentially organized and diversified (*agencès et diversifiés*) schemes and systems [3].

We have used, on several occasions, the terms "LAND-LINKS" [Gausa 2003], "LAND-GRIDS" [Gausa 2001], or "RECYTING" [Gausa, Ricci 2012] associated with the

Fig. 1. Data-Layers & Diagram-cities, Territorial diagrams and Ideograms. From: Gausa, Ricci 2013.

Fig. 2. OMA: *Mélun Sénart*, 1987 (with the expressive images by Yves Brunier) and MVRDV: *Antwerpen*, 1997.



new dynamics of the n-CITIES [Gausa, Ricci 2013], to define these possible integrated, flexible and interdependent strategies, designed to ensure local and global, combined and qualitative developments on a large (territorial) and an intermediate (urban) scale: developments in which the city would no longer be interpreted as a large area of "urban sprawl" tied to a single mono-central and mono-referential reality, but as a possible multicentric and interlaced structure; strategically adjusted, appropriately recycled, environmentally re-naturalized, sensibly "re-equipped" and intelligently "re-informed," rather than just "reformed."

Neither "mono-compact" nor "poly-diffused" models, but possible "(in)twined" (polycentric, networked); articulated or focused, extensive and intensive systems; with the potential to simultaneously combine—within new matrixes and territorial mosaics— systoles and diastoles, concentrations, dilations and interconnections; density structures (urban fabrics), connecting structures (connective meshes) and structures for expansion and relations (active landscapes) capable of establishing new urban geographies or "geo-urbanity" [4].

Intertwining, in eco- and infra-structural networks, the different nuclei of life, exchange and relation, to strengthen, recycle and qualitatively re-naturalize cities, to trim (or shape) the margins (outlines, perimeters and confines of differential density or substance) or re-articulate (or re-urbanize) scattered proximity areas or peripheries, would constitute operations associated with possible equations of "city/city" continuity, "city/landscape" contrast or transition, or a qualitative fusion of "city/landscape/infrastructure."

During much of the 1990s, the exploration of a new type of urban architectural organization and configuration, but also of a new type of geometry (elastic, irregular; topological, intertwined) that was more open, varied and irregular (and its links with schematic diagram potential, such as "information compression, induction and vectorization") went further in these lines of action (fig. 1).

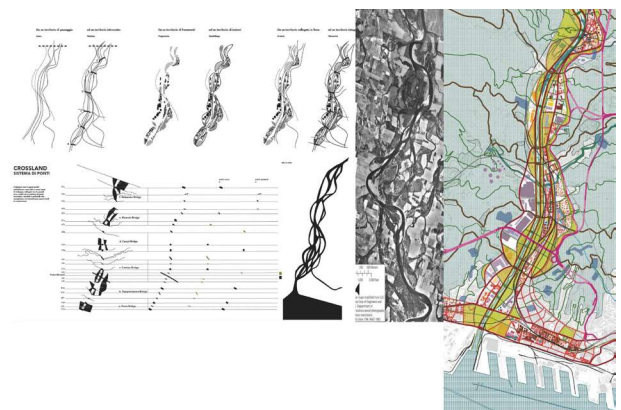
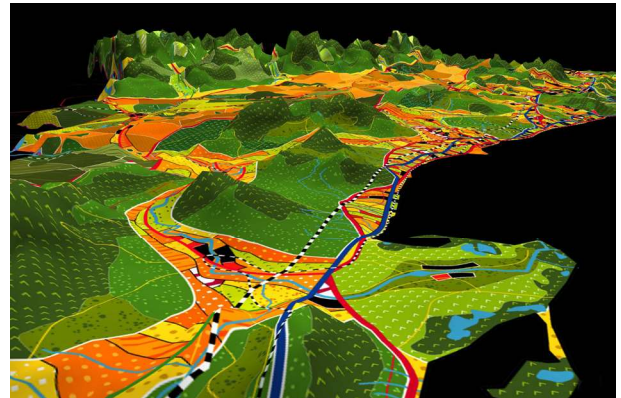
A pioneering project like that of OMA's for *Mélun-Sénart* (1990), with its infrastructural mix of city and landscape (suggested by the interlocking expressive matrixes in "K" by the unfortunate Yves Brunier), had a decisive influence on many subsequent proposals more intentionally linked to the notion of networked cities, in particular many of the interesting research studies by "ex-OMA" figures (Kees Kristiansee, Willem Jan Neutelings, Max, MVRDV etc.) (fig. 2) [5].

Fig. 3. Catalunya Land Grid. Barcelona/Catalunya, an integrated model of urban-territorial development (Hicat-Actar Arquitectura, 2003). Mastering and 3D viewing. (Source: author)

Fig. 4. Barcelona Eixample – New Multistring Green Centrality. Green cord basic band grid: data and flow management model and diagrammatic plan (Actar Arquitectura, Gic-Lab-UNIGE, Massi di Roma 2010).

Fig. 5. Genova - Val Polcevera 2019 (Gic-Lab UNIGE, Diagrams and mastering / general mastering).

Mélun-Sénart was one of the first projects to formulate a project using voids (vacant land) as an active instrument: research studies such as that of MVRDV (South Almere, 1997-1998) in the Netherlands, Actar Arquitectura (Barcelona Land-Grid, 1998 or Catalunya Land-Grid, 2003 or GOA Val-Polcevera, 2018) (figs. 3-5) in Spain and Italy, by Mosé Ricci (Genoa PIC City, 2010, UniverCity, 2012) or Maurizio Carta (as the expression of the entire Italian Villard network) or other actors in France such as Fin Geypel, Obras, TVK etc., went on to explicitly investigate this type of potential by examining this possibility of proposing adaptable, flexible and changing (but articulated) virtual mosaics, associated with a new type of strategic-tactical-diagrammatic, multiple “territorial filigree” (dentelle urbaine), also expressive in its projectual representation. Many important contributions generated at the end of the last century would go on to explore the instrumental and dispositive, a-scalar and multi-scalar capability of the scheme diagram as an (expressive and dynamic) cartographic synthetic device for a city, strategically reinterpreted [Gausa 2018, Ch. 7 (Diagrams); Allen 2001; Lynn 1995]. In any case, the interaction between “data and processes + potentials and objectives + structures and lines of force + gambles and strategies + narrations and expressions + operations and concrete propositions” - that is, between “Recognition + Diagnosis + Strategy + Formulation + Communication + Approach” - did not turn to a necessarily linear nor complete path but would have progressed by detours, back and forth, stylizations and redefinitions, from plan (thematic, selective cartography) to scheme (structural model), from scheme to diagram (organizational criterion), from diagram to ideogram (strategic concept of orientation and/or generation), from ideogram to logogram (expressive, communicative message), and its new multi-level relaunch towards a possible simulated vision of the whole (“masterizations” intended as “proto-master-plans” or “diagram-maps”) compatible with possible projections and digital and/or visual images of syn-



thesis –collages or new-generation photomontages, with a high degree of heterotopic realism – interpreted as possible “strategic scenarios,” suggested and defined at the same time, rather than as mere illustrations; these mastered simulations (well beyond the old master-plan) proposed an interpretative, expressive and plastic reformulation, at the same time, of the geo-urban city, where its broad lines of force would combine with particular and precise details of reality in an intense and explicit narrative of its potentials which, however, would contribute to vectorize the basic organizational concepts of its future conceptualized developments: “strategic-formulative” organizational (rather than formulating) criteria, to which the infinity of urban, evolutionary and changing, particular and general, autonomous and systemic processes relating to it openly refer [Gausa 2015; 2016; 2018, Ch. 7 (*Diagrams*); Allen 2001; Lynn 1995].

Integral (and integrating) models that would refer, in general, to differential and mesh structures, of a networked multi-city, (made of density points and attractor poles, flow (and articulation) lines and networks and surfaces and matrixes of landscapes (whether agricultural or natural, etc.); that is, of natural networks, occupational networks and infrastructure networks.

“Battle maps” that would refer to a “logic of decision,” a “logic of education,” a “logic of action” and a “logic of representation,” combined together.

Maps capable of visualizing the new city as a systemic, complex, dynamic and varied (multi-layer) scenario, potentially arranged as a set of sites, sets and networks [Gausa 2011; 2012a; Krausse 1998, p. 3].

Confidence in an urban and territorial orientation, open, indeterminate and vectorized at the same time, gave priority, during the 1990s, to a “concept-strategy,” flexibly articulator (networked) as a guideline (or line of action) and to the notion of “nuclear criterion” – whether large- or medium-scale [Kwintar 1998].

2000-2010. Flow maps (optimized data)

(Processes and/of management: eco-efficient data recording and processing in responsive scenarios)

The second paradigm shift, generated in the first decade of the 21st century, was the transition from open but “drawn” and/or fixed strategic representation to a new kind of parametric, dynamic or evolutionary mapping, with simulations of variable processes through algorithms (re) elaborated and synthesized in real, or almost real time.

The expansion of digital technologies and mobile telephony (Internet 2.0 and 3.0, open source software, drone recording and big data) and progressively more sophisticated applications –apps– as well as an “urban sensorization” obtained through responsive devices and precision digital programs, favored the ability to visualize space-time processes (and to simulate their diversified evolution) through increasingly optimized parameters and indicators.

The mobile phone revolution also accelerated access to the “network,” emphasizing the new potential of a more ubiquitous and diffused connectivity: social, environmental and material. But also, the capacity for progressive data management.

The advances in the development of processing devices proposed, in fact, new interfaces that combined technological efficiency –and design– with new multi-level functionalities.

In this sense, the consolidation of the FAB-LABs, starting in 2000, as a consequence of the evolution of new virtual-material technologies (in particular 3D printing devices and the possibility of creating topographic-geographic models linked to the projected –or inversely-projected– processing of different, variable and dynamic data) was perfectly suited to this type of dynamics, in which conceptual (re) production and digital production assimilated more sophisticated open source devices and software (Arduino, Rhino, Grasshopper, etc.) [6].

The development, in the first decade of the new century, of the third and fourth generation (3G and 4G) mobile phones and the spectacular irruption of social networks or the authorization (on May 16, 2006) of flights with drones for civil purposes contributed to the advent of a new framework of relationships not only “virtual” in their operational definition, but “real” in their (socio-economic, productive, socio-cultural and environmental) operational effects [7] which accelerated the recording, compilation, archiving and management of data (Big Data), in a process closely linked to the appearance of the concept of Smart Cities.

The notion of Smart Cities, fundamental at the beginning of the 21st century, required a new type of urban management in which the city tended, increasingly, to be understood as a complex but potentially more efficient information system, designed to integrate and algorithmically process data, parameters and indicators in (theoretically and tendentially) safer, qualitative (and innovative) spaces in urban uses, services, structures and spaces (USSS) [Mitchell 1996], reducing costs and consumption of re-

sources and promoting new positive interactions between citizens, habitat(s) and local governments [Markopoulou, Gausa 2014; Markopoulou 2014].

A techno-efficient system that seemed to refer to a new potential for “sensorization” and real-time co-production (big data, real-time data, data optimization, ener-grids, fab labs and fab citizens, eco-agendas etc.) from which to explore new sustainable (responsible and responsive) agendas and possible self-sufficient models [Gausa 2012b].

The application of these new algorithmic processing capabilities, aimed not only at optimizing the management of an integrated techno-urban systematics, but also of a new, more complex and efficient environmental response (associated with a new “sensorized,” implicit vocation), suggested a new “resili(g)ent” (resilient and intelligent) condition [Gausa, Andriani, Fagnoni 2017] open to evolutionary and adaptable scenarios, associated with a new “urbaneutics” (a term used to define this urbanism of data and sensors) but also with a new type of representation and of animated management capable of reacting to the evolution, networked, of the urban systems themselves.

The works and studies of Carlo Ratti at MIT or John Palmesino at ETH, Polero and Paschero at the Bartlett, but also of Vicente Guallart, Willy Müller, Tomás Diaz and Areti Markopoulou at IAAC in Barcelona, dealt with this type of research.

The old analogue “(re)presentation” has increasingly given way to a new type of “(pre)presentation” —or multiple, virtual, dynamic and visual “(proto)presentation”— as open and indeterminate as it is potentially “orientable” and “vectorizable” in its own procedural “indefiniton” and (and “n-definition”); a “representation-simulation” definitely open to the projection of possible simulated and simultaneous, multiple and differentiated scenarios, according to its particular conditions and response capability.

This reactive (responsive, that is, informational and interactive) condition tends today, progressively, to qualitatively multiply the variables but also the solutions—in the form of logarithms and precise, recordable, searchable and re-editable statistics, in variable formats, trajectories, contexts and visualizations— combining different and diversified data and options, displaying them digitally (and dynamically) in different potentially qualitative scenarios (through multimedia projections, dynamic and evolutionary maps, reactive three-dimensional prototypes, etc.) without conceptually determined aesthetic/scenic gambles; progressively bringing the representation of the processes closer to a more

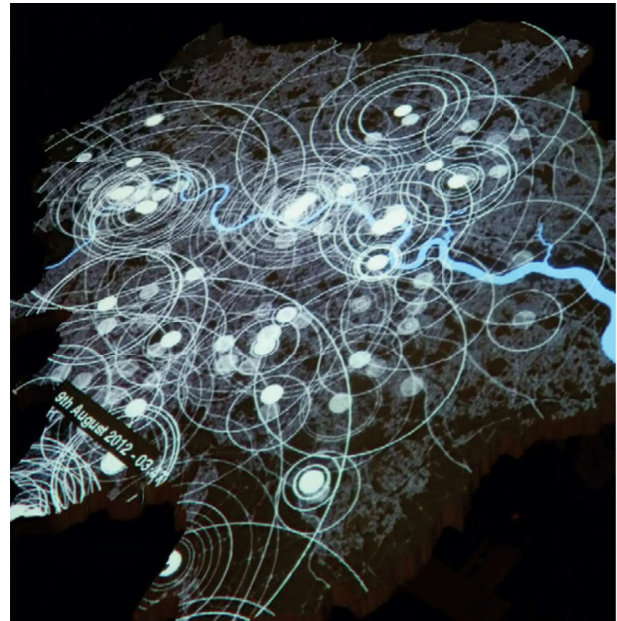


Fig. 6. London, Data Table 2017. From: Vivaldi 2014, p. 12.

diffused, varied and polyvalent condition, “virtual and real” at the same time, apparently indifferent to the final “form,” or at least to a single traditional idea of form/object qualitatively “drawn” as a unique creative gamble [Ramsgard Thomsen 2014, p. 2].

The increasing capability to manage mutable information, through algorithms and parametric data (thanks to new software programs), allows the vision of a multiple set of optimized options, through a possibly (and/or virtually) three-dimensional representation (multimedia models, the first holograms, augmented reality, etc.) that facilitates the visualization of a wide range of diversified and evolutionary developments, combining advanced technological models, responsible ecological attitudes and social actions in spatial manifestations without dogmas or prejudices: rigorous, imaginative and sustainable at the same time; capable of combining “sensory” and “sensitive” logics, as translations of new technical and technological conditions, but also of new ethical, environmental and, above all, socio-cultural expectations (figs. 6, 7) [Gausa 2018].

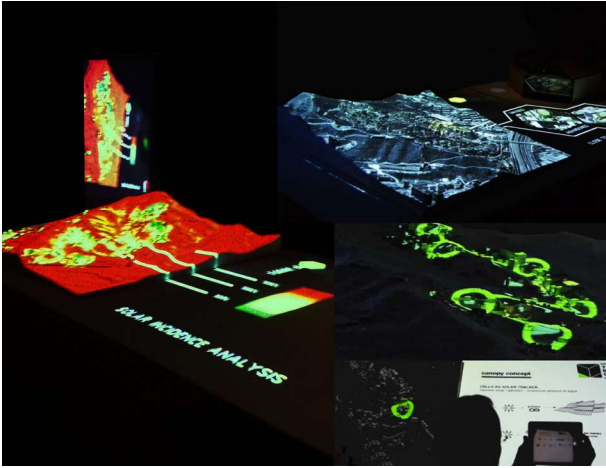


Fig. 7. Evolutionary and variable Data Maps in 3D projections of Energy, Barcelona Baró Tower. Interactive Plastic Model (IAAC Global Summer School, 2014).

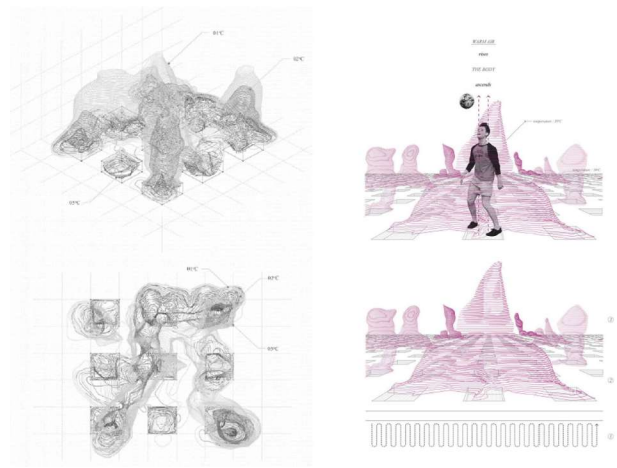


Fig. 8. Dynamic views of responsive elements in variable environments according to thermodynamic parameters, Barcelona (IAAC - From Craft to Research, Reactive Environments, IAAC-MAA | 2015-2016, Asya Guney).

Action maps (of movements and maneuvers)
(Programs and/in interaction: self-generating agents, collective intelligence and new social mediations in experiential spaces)
 The third paradigm shift, generated in the second decade of the 21st century, was the transition from dynamic and evolutionary representation to “sup(ra)presentation” (super-presentation) in distributed networks of generation, conception, materialization and/or mobilization, interconnected, but also interactive and/or co-active (co-participating) (fig. 8).

The evolution of research on Artificial Intelligence applied to matter and to the environment, bio-genetics and bio-materials, the increase in portable or immersive (embedded) technologies today focus on dynamics not only of interaction but of interactivity, at all levels; particularly in the social field with the emergence of new collective (common) behaviors and a new, progressively bottom-up, “interactive collective intelligence” open to experiences and to co-creative (co-productive, co-incident, co-involved, co-active) spaces or programs (fig. 9).

New scenarios-interfaces between programs, materials, environments, citizens and a new reactive-activist logic (fig. 10). The exponential development of algorithmic programs for the representation, modeling, design and the dy-

namic and parametric generation, and their combination with differential (and multidimensional) “generation/simulation/representation” devices –through new types of interfaces that combine technological efficiency and augmented vision (holograms, virtual simulations and more precise augmented reality, etc.) in “surroundings” that are more and more realistically simulated and (rep)resented each time– is contributing decisively to the improvement of production and visualization tools associated with a new, more precise real/virtual condition, but also to a new robotic (almost “bio-robotic”) intelligence in the context of a possible association of space, architecture, artificial intelligence and automatic agents (2007-2010, *KUKA Robotic Knowledge & Technologies*, 2006, *Drones e Auto-drones*, 2018, *Self-Learning Devices & Matters*, etc.).

The next step, Web 5.0 –the sensory and emotive Web– must, in fact, aim to expand these capabilities in the field of sentiment, “datafied” emotions, in a “sensory” reality, elaborated in a more tangible development of artificial intelligence itself combined with a human-artificial (post-human?) intelligence associated with the quantum revolution, the growth of (ubiquitous, assimilated and integrated) nanotechnologies and an advanced bio-genetics, not strictly

deterministic but modifiable with new information from the environment [8].

The exponential diffusion of the Internet and of social and professional networks [9] and the spectacular growth, since 2009, of WhatsApp as well as Skype (decisive in promoting a direct –economic, productive, operational– interconnection between users) have been combined to contribute to the consolidation of a new framework designed to encourage shared exchanges and complicities between common positions, networked, with new socio-economic and cultural (but above all productive and co-productive) effects still in their initial phase.

Augmented Matters but also Common Behaviors speak of a new vocation, not only reactive but also co-creative, that aims to examine factors of interactivity and plural diversity: factors supported by multiple processes of exchange referred to synergistic mediation but also to new symbiotic operations associated with a new reality, not only “distributed” but also “augmented” in its conditions of hyper-connection and “sensorization”; an expansive and systemic reality, both collective and connective, associated with a progressive “info-technological” and “social-empathetic” definition as a capability for efficient interaction between systems.

In fact, today, a new type of “social-environmental-cultural” activism, more direct and spontaneous –OSBURT: Open Source, Bottom-Up, Real-Time– at times informal, fresh and casual, at times determined, committed and assertive, is combined (but not always, not necessarily) with a super-technology of open connectivity and exchange, of data, messages, experiences and information, as varied and multiple as it is mobilized and mobilizing.

In exploring this new logic of interaction, the pioneering advanced architecture of the 1990s, of the (diagrammatic, integrated and interwoven) “topological-strategic-synthetic formulation” opens to a space of operative immediacy; a space of the program and the immediate response; of the moment rather than the event (and the monument); a space that seems to intend to combine a new “(in) common logic” (active and activist, positivated or simply positive) called upon to make this potential of transversal interconnections exponentially extreme, translating it into responses, re-evaluative, direct and precise, at times elementary, beyond aesthetic prejudices or stylistic filters (fig. 11).

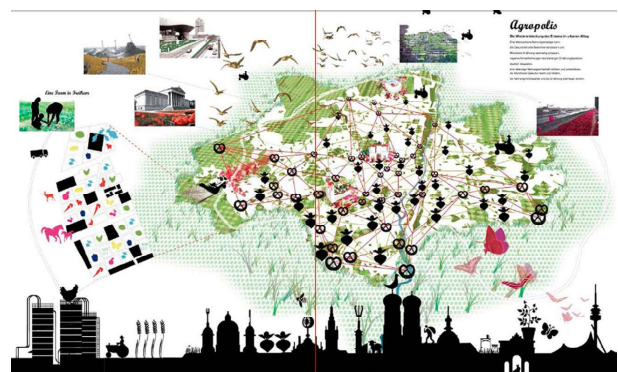
The development of new information or communication technologies brings us closer to a reality, that is recorded

and elaborated in an increasingly precise, simultaneous and immediate manner, opening up an immense repertoire of possibilities in the field of the combination of materiality, spatiality, sociability and “inform(action)ality,” through a reciprocal collaboration in (and with) the context; more “eco-” and “co-” qualitative (analysis and synthesis of data associated with urban mobility and accessibility, habitation and housing, energy efficiency, social economy, public spaces, collective self-organization, social-environmental responses, productive exchange, political action, etc.) [Markopoulou 2014; Brillembourg, Klumpner 2014].

It is clear that this strong sensitivity concerns a new combination of “information and interaction,” not always techno-operative but conjugated in “performative-social” terms (not only technological processes but actions and/or social-collective movements, innovative, generated at times with the resources at hand), entails a new positive, imaginative and sensitive (empathic or eco-empathic) mediation capable of spontaneously addressing increasingly complex scenarios (possibly affluent but, above all, deficient) produced in situations of conflict, tension or threat: geopolitical (and geo-economic) crises, migrations due to war or simply for pure survival, but also, of course, climate change with its devastating effects on the most vulnerable populations (risks, environmental problems, housing defects, pollution, ghettoization, increase in poverty thresholds, etc.) [10].

The operational approach to a directly confronted reality, in almost real time (precise data and concrete facts,

Fig. 9. Map of operations related to urban re-naturalization through agro-urban spaces (Münich, Joerg Schroeder Research Group, 2011-2012).



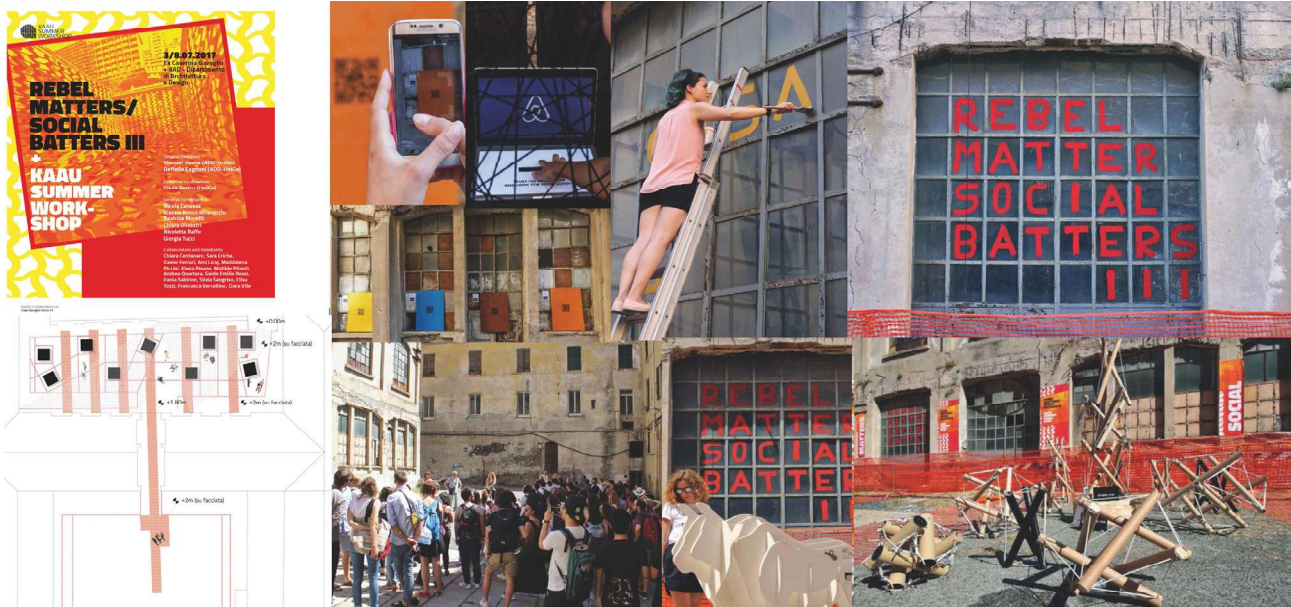


Fig. 10. Workshop of collective actions in the ancient Caserna Gavoglio. Photographs and map of the basic structure of the actions on the main patio. (Gic-Lab - UNIGE e collettivi urbani, 2017).

for possible “positivated” scenarios) favors experiences produced beyond aesthetics, by a certain ethics of action translated into the qualification and manipulation of matter; context, environment and inhabited space, without formalist or purist prejudices, in its manifestations and representations.

In fact, if the informational notion of “program and programming” has been one of the keys to this digital era, in this type of new approach, the planning of “programmatic” actions and operations such as fields and lines of temporal maneuvers proves to be as important as its own digital (software) programs for analysis, recording and processing.

The programming rather than the strategic formulation of the 1990s or the pure management of environmental data at the beginning of the century constitutes a new approach to a representation that defines sequences, instants or movements within a wide range of operations conducted over time through its possible phases and variations, according to possible stimuli and/or conditions.

Like our individual intelligence, a new collective intelligence generated through statistical parameters and majorities determined in (almost) real time, begins to be able to analyze, relate, connect, react, adapt and structure itself, changing our habits into a new kind of “instantaneous collective actions,” co-generated and co-programmed (fig. 12) [11]. Time groupings, generally generated via wireless telecommunications and oriented towards common and contingent, concrete objectives and interests, of “involved and organized” individuals (*Impliqués, agencés et engagés*, to use “Deleuzian” and “Hesserlian” terms) indicate a new type of more open and interconnected techno-social organizations [12].

Young mediator groups such as the pioneer Recetas Urbanas (Santiago Cirugeda, Seville) Ecosistema Urbano (Madrid), La Col (Barcelona) Al Borde (Quito, Ecuador), Elemental (Aravena, Chile) Haieck, (Venezuela), Plataforma Arquitectura (Mexico) etc., combine their field and on-field experiences with techno-social exploration conducted in research centers such as IAAC (Barcelona), CITA

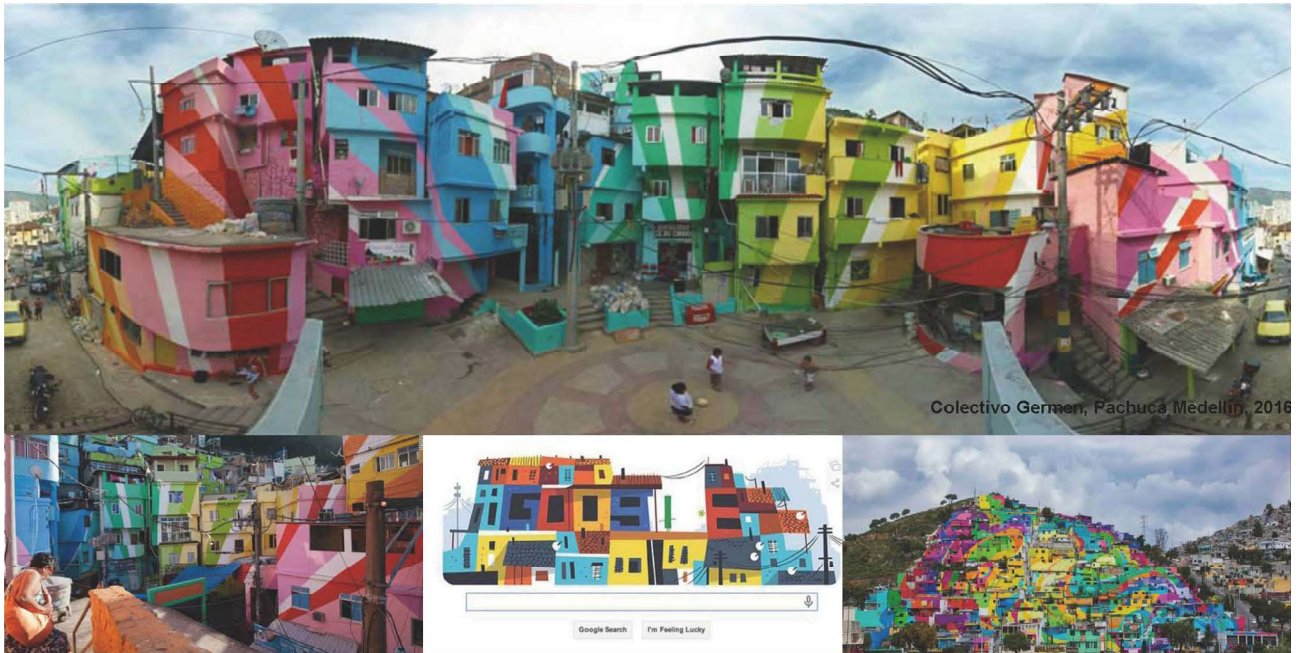


Fig. 11. Pachuca Medellín and Rio de Janeiro. Reactivation of the Favelas with colors painted by the inhabitants through a guide map (Colectivo Germen, 2016).

(Copenhagen) and the Bartlett School (London) etc. How does representation (or drawing) manifest itself in this type of approach?

In the more or less direct and/or instantaneous expression of its own action programs and movements; experimented programs and scenarios (and, at times, manifested or simulated by graphic or digital expression) in times, phases or sequences of maneuver; in and with different dynamics, but with a strong operative and investigative, social and environmental component.

A representation (manual and digital, but also sensory) that brings together different situationist scenarios (as in the early twentieth century) conducted with a clear operational-informational precision.

The performative capability of this experiential, active/reactive/activist condition brings together new socio-cultural and also material and immaterial (or environmental) programming conditions and its translation into maps that are not exactly psycho/emotional (situational) but socio/activ-

ist (experiential) with a high performative capability and with a high degree of conviviality, complicity, sharing and co-creation.

Conclusions. Flexible horizons

The old architectural and urban structures –whether compositional (figurative or formal) or positional (functional or objectual)– have gradually given way to others, more diffuse and impure, which express, then, a new kind of more indeterminate “inform(ation)al” order whose decidedly open, “undisciplined” nature becomes more accentuated in step with the growth in freedom of movement –and displacement– and the degree of interaction between local situations and global structures.

The new “multi-city” is no longer that “island” –harmonious, pastoral, familiar, perfectly defined on the territory– but an increasingly variable and heterogeneous aggregate



Fig. 12. Flow maps and synthesized collective actions. (IAC - From Craft to Research, Reactive Environments, Rasa Sukkari. In-Between Realities: Towards a Socially Sustainable Urban Strategy for Beirut City, MAA2, 2015).

which, as a complex interactive system developed under the influence of different information and dynamics, has come to be the “polymorphic” and “para-planned” result of successive events and occurrences with –and without– a will to plan.

We experience these phenomena every day, each time more mixed, hybrid and heterogeneous, in the manifestations of our own society.

It is true that in this new age of information, strategy seems to prevail over aesthetics, but not necessarily over creative vision, imagination or the ability to project unexpected (and generally hybrid) “shared scenarios,” intended as possible “horizons of action”: no longer super-formal, symbolic or totemic but stimulative; conductors, inductors and catalysts at the same time.

Terms such as “idea” or “concept,” combined with others such as “representation” or “expression,” are still necessary to guide or “design” processes [Gausa, Guallart, Müller 2003].

As architects we work with a secular idea of design able to synthesize creation and technique, subjectivity and objectivity, rigor and flair: compressing information and transforming, manipulating, reconverting and/or visualizing it in synthetic creative spaces, capable of translating an entire universe of messages and analytical

data into the form of expressive, visual, perceptual and perceived gambles.

This is/was our strength.

We have talked about this new, progressively open and variable condition, but this condition does not lack the capacity to create “shared horizons” destined to express (orient and induce) qualitatively (and, why not, aesthetically) the new open developments, combining advanced technological models with new, spontaneous, plastic and creative expressions; social, spatial and environmental at the same time; capable of simultaneously combining, in new innovative inhabited spaces (sense-cities), “sensorial” and “sensitive” logics.

CITY_Senses & sens(c)ivilities. Precise DATAS & holistic VISIONS.

Processing capabilities and projectual capabilities; strategic and relational [Gausa 2013, p. 6].

Previsions and interpretations, qualitative actions and visions –strategic scenarios and formulative devices, management or programs, associated with them– define, in any case, urban, spatial and mental “maps,” that are no longer closed, totalized or finalistic, but combinatorial, adaptable and increasingly dynamic and evolutionary, and which, in any case, refer to the different cities, both physical and virtual, coexisting in the new “n-city” [Barahonda, Ballesteros 1997].

The three successive approaches that have been presented here, tested or examined at the turn of the century (in relation to the digital revolution itself) do not cancel each other out but, instead, today converge and combine, not replacing, but completing themselves according to the circumstances [13].

The new research springs from this interest in trying to understand the current processes of urban-territorial development [Gausa 2013], not out of mere fascination for the diffuse, chaotic or simply accidental city –or from its mere “intelligent efficiency,” through the pure “smart” management of a field of environmental or functional data– but out of a committed and implicated will: that of conceiving new logics and new expressions of interpretation, organization and/or restructuring capable of combining “visions, sensations and information” in new models of action and representation, but also of relation and interaction, more polyphonic, defined beyond the traditional “form” of what has been interpreted historically as city, landscape, territory or, simply, habitat [14].

Notes

[1] The term *geo-urbanity* is introduced in: Gausa, Guallart, Müller 2003; also in Gausa 2009.

[2] See: "*History of Computing*". In <https://en.wikipedia.org/wiki/History_of_computing> (accessed 2 December 2019); <<https://www.encyclopedia.com/science-and-technology/computers-and-electrical-engineering/computers-and-computing/digital-computer>> (accessed 2 December 2019) See also: Baricco 2018.

[3] We use the term "*agencement*" as "*assemblage*," a contractual (or relational) organization, in a way similar, but not identical, to Deleuze and Guattari. See: Deleuze, Guattari 1987. See also: Deleuze, Guattari 2007.

[4] See Note 1.

[5] The proposal for MELUN-SENART is found in several publications. See: Lucan 1990; *El Croquis*, No. 53, 1992; *Quaderns*, No. 183, 1989, pp. 94-95.

[6] See: https://es.wikipedia.org/wiki/Fab_lab (accessed 2019, October 16). In 1980, Chuck Hull developed the first 3D printer, whose performance was improved in 1992 with DTM (the first selective laser sintering machines) and was perfected in the late 1990s. From 2001 to 2005, the development of Fab Labs continued its improvement. The incorporation of the first European Dab-Lab into the IAAC dates back to 2003/2004.

[7] 1996-2000, Yahoo; 2000-2002, Google; 2002, LinkedIn; 2004-2007, Facebook; 2005-2006, Youtube; 2006, Twitter; 2011, Snapchat; 2016, Uber; etc.. For the history of mobile telephony and networks, see: <https://en.wikipedia.org/wiki/History_of_mobile_phones> (accessed 2019, Oc-

tober 16). For the history of the Internet see: <<http://www.fib.upc.edu/retro-informatica/historia/internet.html>> (accessed 2019, October 16). See also: Mueller 2010.

[8] See Note 7.

[9] See Note 7.

[10] It is enough to remember the 15th Venice Architecture Biennale, 2016 –*Reporting from the front*– curated by Alejandro Aravena and entitled Unpostponable Dialogues, the Valparaíso Biennale, 2017, dedicated to social activism in Latin America, curated by Felipe Vera and Jeanette Sordi

[11] The importance of new communities, networked, or in common, has increased over the last decade. This refers to the birth of new, (inter)active and collective social communities, but also to a common creativity, obtained from the growing ability to share open source software and programs. See: Markopoulou 2015. See also: Baricco 2018, p. 218.

[12] See: "*agencement*" in: Deleuze, Guattari (2007); and "*engagement*" in Hessel 2011a; e Hessel 2011b.

[13] See: José Ortega y Gasset: "*yo soy yo y mis circunstancias*". See: <https://es.wikipedia.org/wiki/José_Ortega_y_Gasset> (accessed 2019, October 17). See also: <<http://memoriamagica.com/yo-soy-yo-y-mis-circunstancias-jose-ortega-y-gasset/>> (accessed 2019, October 17).

[14] Original version in Italian with corrections and general revisions by Matilde Pitanti (with the excellent collaboration of Sabrina Leone, Alessia Calabrò and Georgia Tucci).

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Reference List

Allen, S. (2001). La materia de los diagramas. In *Pasajes*, n. 26, pp. 36-38.

Asher, F. (1995). *Métapoles ou l'avenir des villes*. Paris: Odile Jacob.

Barahonda, M., Ballesteros, J. (1997). La ciudad que no se ve. In *Fisuras de la cultura contemporánea*, n. 5, p. 118.

Baricco, A. (2018). *The Game*. Torino: Einaudi (trad. spagnola Barcelona: Anagrama).

Batty, M. (1997). Sobre el crecimiento de la ciudad. In *Fisuras de la cultura contemporánea*, n. 5, p. 4.

Bijlsma, L., Garritzmán, U., Deen, W. (1998). Diagrams. In *OASE*, n. 48, p. 1.

Brillembourg, A., Klumpner, H. (2014). Scarcity as a design tool. In *IAAC Bits*,

n. 2, cap. 2.2.1, pp. 1-15.

Deleuze, G., Guattari, F. (1987). *A Thousand Plateaus*. Minneapolis: University of Minnesota Press.

Deleuze, G., Guattari, F. (2007). *Mille Plateaux*. Paris: Les Éditions de Minuit.

Fargas, J.M., Papazian, P. (1992). Territori i modelatge / Territory and Modeling. In *Quaderns*, n. 194, pp. 90-95.

Gausa, M. (2001). *Metrópolis>Metapolis: nuevas mapificaciones*. En M. Arraiz García (ed). *Ciudad para la sociedad del siglo XXI*. Valencia: Icaro.

Gausa, M. (2009). *Multi-Barcelona, Hiper-Catalunya. Estrategias para una nueva Geo-Urbanidad*. Roma-Trento: List Ed.

- Gausa, M. (2010). *Open. Espacio-Tiempo-Información*. Barcelona: Actar Publishers.
- Gausa, M. (2011). Diagram as a Battle Map. In AAVV, *Program Diagrams*, pp. 13-17. Seoul: Damdi Publishers.
- Gausa, M. (2012a). The diagram as a map of battle and negotiation. In M. Young Pyo, K. Seonwook, *Architectural and Program Diagrams (Construction and Design Manual)*, pp. 216-247. Berlin: DOM Publishers.
- Gausa, M. (2012b). City Sense: Territorializing Information. In AAVV, *City Sense, 4th Advanced Architecture Contest*, pp. 6-13. Barcelona: Actar Publishers / IAAC.
- Gausa, M. (2013). City Sense. Territorializing information. In L. Capelli, *City Sense. Shaping our environment with real-time data*, pp. 6-13. Barcelona: Actar Publishers / IAAC.
- Gausa, M. (2015). Il paesaggio agrario come infra/eco struttura territoriale. In G. Pellegrini (a cura di), *Patrimonio artistico culturale paesaggistico. Atti della giornata di studi*, Genova, 11 maggio 2015, pp. 164-180. Genova: GS Digital.
- Gausa, M. (2016). Diagrammaticities. Nuove rappresentazioni analitico-sintetiche per la città e il territorio. In G. Pellegrini (a cura di), *Di-Segnare Ambiente Paesaggio Città. Atti della giornata di studi*. Genova, 11 maggio 2016, pp. 207-224. Genova: GS Digital.
- Gausa, M. (2018). *Open(ing). Space-Time-Information*. Barcelona: Actar
- Gausa, M. et al. (2001). *Diccionario Metápolis de la Arquitectura Avanzada*. Barcelona-New York: Actar Publishers.
- Gausa, M. et al. (2003). *The Metapolis Diccionary of Advanced Architecture*. Barcelona-New York: Actar Publishers.
- Gausa, M., Ricci, M. (2013). *AUM.01 Atlante Urbano Mediterraneo 01. MED. NET.IT.1.0 Ricerche urbane innovative nei territori della costa italiana*. Con P. Scaglione, a cura di N. Canessa, M. Marengo, E. Nan. Trento: List.
- Gausa, M., Andriani, C., Fagnoni, R. (eds.). (2017). *AAVV. International Forum MED.NET 3 Resili(g)ence: intelligent cities / resilient landscapes, add scientific meeting. Conference proceeding*, pp. 11-36. Barcelona: Paper Doc.
- Gausa, M., Guallart, V., Müller W. (1998). Ideas como estrategias, proyectos como mapas. In *MET 01-Barcelona Metápolis*, pp. 1-3. Barcelona: Actar Publisher.
- Gausa, M., Guallart, V., Müller, W. (2003). *HiperCatalunya, Territoris de Recerca*. Barcelona: Generalitat de Catalunya, GENCAT & Actar Publishers (con disegno di R. Prat).
- Hessel, S. (2011a). *Indignez-vous! (Pour une insurrection pacifique)*. Montpellier: Indigène éditions.
- Hessel, S. (2011b). *Engagez-vous!* Paris: Éditions de l'Aube.
- Kleyn, E., Taverne, E. (1997). Painters and satellites. In *Fisuras de la cultura contemporánea*, n. 5, p. 44.
- Krausse, J. (1998). Information at a glance: on the history of the diagram. In *OASE*, n. 48, pp. 3-30.
- Kwinter, S. (1998). The hammer and the song. In *OASE*, n. 48, pp. 31-43.
- Lucan, J. (1990). *OMA-Rem Koolhaas*. Paris: Electa - Le Moniteur.
- Lynn, G. (1995). Formas de expresión. El potencial proto-funcional de los diagramas en el diseño arquitectónico. In *El Croquis*, vol. 1, n. 72, pp. 16-31.
- Markopoulou, A. (2014). In(Form)ation – Architecture of Data & Code. In *IAAC Bits*, n. 1, cap. 1.3.3, pp. 2-13.
- Markopoulou, A. (2015). *Design Behaviors; Programming Matter for Adaptive Architecture*. <https://www.researchgate.net/publication/311516037_Design_Behaviors_Programming_Matter_for_Adaptive_Architecture> (accessed 2019, October 17).
- Markopoulou, A., Gausa, M. (eds.). (2014). *Master in Advanced Architecture 2012-2014, Prospectus & Projects*. Barcelona: IAAC.
- McHug, I. (2014). *Escaping from planning and world building*. <<https://ianmchugh.wordpress.com/2014/06/28/escaping-from-planning-and-world-building/>> (accessed 2019, December 2).
- Mitchell, W.J. (1996). *City of Bits: Space, Place, and the Infobahn*. Cambridge, Mass: The MIT Press.
- Mueller, M.L. (2010). *Networks and States: The Global Politics of Internet Governance*. Cambridge, Mass: The MIT Press.
- Neutelings, W.J. (1992). *Patchwork City*. Rotterdam: O10 Publishers.
- Neutelings, W.J. (1994). Patchwork City. In *Architectural Design*, vol. 64, n. 3-4, pp. 58-63.
- Ramsgard Thomsen, M. (2014): The role of the new technologies. In *IAAC Bits* n. 1, cap. 1.5.1, pp. 2-7.
- Vivaldi J. (2014). Can advanced cities rethink democracy? In *IAAC Bits* n. 1, cap. 1.2.3, pp. 2-13.