Modes of Visual Control: Stan Allen's Diagrammatic Cartography of Spatial Production

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DIAGRAMMATIC CARTOGRAPHY IN CONTEMPORARY PRACTICE

Recent experiments with visual techniques respond to the need to reconnect design thinking with changing theoretical attitudes towards space, particularly how it is conceptualized and constructed.[1] The efficiency of involvement in the complex processes of spatial production is directly proportional to the versatility of representational techniques, yet one of the most potent modes of projection - mapping – is notorious for its graphic inflexibility and rigid convention. In the meantime, the diagram as both a theoretical construct and design tool has recently enjoyed a revival, due primarily to its capacity to span between algorythms of datascapes, key nodes of networks and flows, processes of emergence, as well as interactions of space and programs.[2] A number of experimental practices have attempted to reposition cartography within the architectural toolbox by injecting it with the organizational principle of the diagram. Such designers as Rem Koolhaas / OMA, Bernard Tschumi, Jim Corner / Field Operations, and Raoul Bunschoten / CHORA favor the diagram as a performative instrument that is particularly appropriate for current challenges within design process.

Stan Allen, the principle of the avant-guarde firm and formerly the partner of Field Operations with Jim Corner, is one of the most active promoters of diagrammatic representation as an imperative for the contemporary design. Experimental design approaches in Stan Allen's work rely on diagramming as a means of representation fully deploying digital capacities for data collection and analysis, taking into account the conceptual formulae of space-time, while preserving the original specificity and space-making instrumentality of the map. Diagram's capacity to maintain reciprocity between dissimilar representations and chart the project's development significantly affects the original apparatus of the map. With the inclusion of the diagrams, the map converts into a complex visual database far superior to a single topographic and thematic map or a set of discreet projection drawings. The design process occurs along several parallel tracks, switching freely between order and disorder, authorial imposition and bottom-up emergence. However, a closer look at such liberated representations suggests that graphic diagrams also act as powerful control devices. Diagrams allow designers to systematically re-interpret contextual constraints, efficiently manage multiple design parameters, and most importantly, make specific decisions regarding changes to the project. This would imply that the diagram could also suppress the visual flexibility and dynamism of the map. Diagrams command the development of the project, limit social participation to the prescribed scenarios, and trigger literal translation of graphic structures into built form.

In view of the dual influence of the diagram, as a tool for linking material aspects of design with abstract concepts and affecting how such concepts could be materialized, claims regarding the power of diagrammatic mapping must be re-examined. This paper evaluates the new approach through the case study of Stan Allen's symptomatic design project, Logistical Activities Zone in Barcelona. Since the bewildering complexity of its project map complemented with the diagrammatic manual has close affinity with other maps by avant-guarde practices, the Barcelona project offers a perfect opportunity to locate the specific shifts in diagrammatic techniques that had the most

significant general repercussions. The following investigation attempts to explore the disjunction between the theoretical references and the practice of diagramming, or in other words, the abstract sensitivity of the diagrammatic machines and the concrete predictability of their graphic counterparts. Both positive and negative effects of the emergent mapping systems are related to the contemporary problematic of visual tools in design conceptualization and production.

CARTOGRAPHIC ANXIETIES AND THE PRODUCTION OF SPACE

Logistical Activities Zone (ZAL) is an entry for the international design competition. The Barcelona municipality solicited designers' ideas regarding how to divert the Llobregat River and extend existing post facilities and newly vacant lots into a multi-functional urban development. [3] The project consists of two dissimilar parts - the montage map and the user's manual - mirroring the expansion and contraction of Stan Allen's design tactics. The "Montage of Scenarios" is a dense composite that simultaneously presents alternative possibilities and consecutive phases of site development. The map delivers its enigmatic message via idiosyncratic visual codes. Unlike most urban design maps or architectural drawings, the "Montage" utilizes a stunning variety of graphic types: abstract symbols, schematic line drawings, texture patterns, abstract diagrams, score notations, collaged images as well as textual markings and inscriptions. The visual architecture of the map, with its arbitrary frame, multi-layer structure, lack of organizing grid and overlapping of graphic elements, makes its virtually illegible as the "plan" for the project. Apparently, it serves another purpose. The provisional arrangement of loosely positioned graphic components implies the diminished designer's control over the interpretation and subsequent construction of the project.

The key to the ZAL content is included in the accompanying "User's Manual" that both anticipates the appearance of the montaged elements and serves as an extended map legend. The manual helps to unravel the cobweb of visual references woven into the map and lends its structure to the design. Six plates combine theoretical references, borrowed and adapted diagrams, photographic illustrations and drawings in order to adequately compose the "structure" of the project, designate its "function" and anticipate its future "change".

Allen's deviation from architectural convention questions the assumptions behind widely used drawing formats, how such format dictate the production of space, and how representation affects the transition of an architect's agenda into the actual space of the city. His preoccupations fit into the general theoretical framework defined by Henri Lefebvre regarding the social production of space as a diverse continuity.[4] Lefebvre stresses the importance of multivalent spatial thinking: natural (physical), mental and social spaces should not be viewed in isolation but as multiple dimensions of the same phenomena. Concurrent explorations of various modes of production, such as absolute space of nature and science, "abstract" space of the capitalist economy, and "differential" space of social heterogeneity reinforce the new status of space as a process of polyvalent, dynamic emergence. It is an inherently fluid, contradictory and multifarious environment. Consequently, Lefebvre stresses the need for architecture and urban

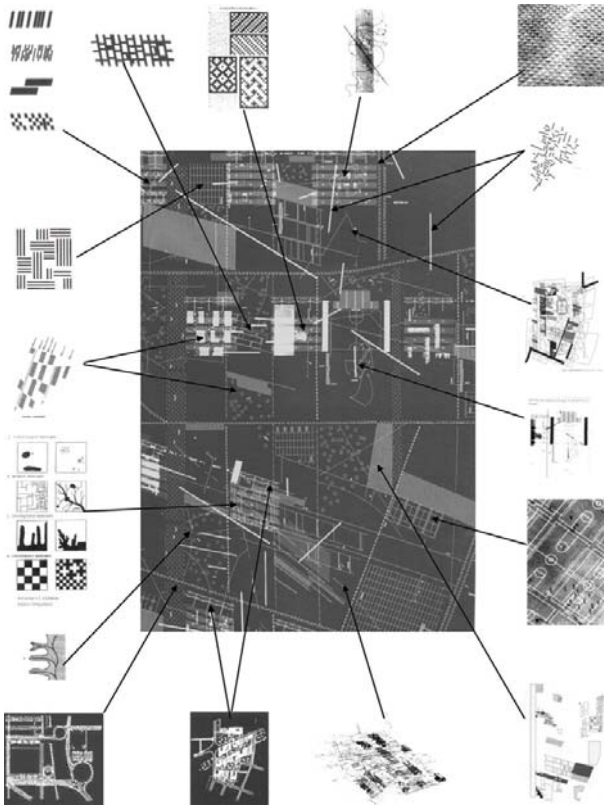

Fig. 1: Assemblage of diagrams in the "Montage of Scenarios" (graphic analysis).

Fig. 2: Selected Plates from the "Barcelona Manual".

geography to reconsider their conceptual frameworks and visual instruments.[5] He expresses particular disappointment with isolated consideration of multiple spaces. Lefebvre's combined sets of ontological transformations of space – "perceived, conceived, and lived" space - constitute a search-in-progress for an alternative, unitary mode of thinking about reality.[6] Unfortunately, design professionals and urban scholars continue to operate across the wide gap between verbal concepts and material construction, between abstract theory and realistic practice. Selective emphasis on form or communication results in double illusion, dubbed by Lefebvre as spatial "transparency" and "opacity".[7] With regards to cartography, maps perform as perfect instruments of illusion when they use the raw material of nature to construct space as a direct extension of political, economical and strategic realms. Currently, maps remove visual space from complex reality and operate either through deceptive selection of "beauty spots" or narrow corridors of communication.[8] In order to deal exhaustively with any given space, it is necessary to change the viewing lens, conventional signs, as well as approaches to reading maps.

Lefebvre's critique aligns with other alarming investigations into the visual power of the map. Continuing multi-disciplinary debate centers on the map's current rigid selectivity and few optimistic explorations offer potential updates to ingrained ideological filters.[9] Maps are exposed as visual manifestations of knowledge and power, selecting what is to be seen and how it is to be seen.[10] Coercive cartography controls access to space and limits the possibilities of its alteration. Through mapping, space is not simply visualized, but also recoded and distorted. The surveying limitation of a map is further reinforced by the way in which it is graphically constructed, making suspect all the conventional mapping operations. Stan Allen himself has called the attention of architects to the inadequacy of urban mapping techniques. Mapping deficiencies render the city illegible and architecture incapacitated. Allen diagnoses the contemporary situation as the impending crisis of representation.[11]

In this context, Allen's experiments represent a concentrated effort to rethink mapping in relation to perceived urban organizations, contemporary conceptions of space, and lived aspects of a project's occupancy. First, Allen's mappings are direct applications of his theory of "infrastructural urbanism" that calls for new alignment of architecture with operational diagrams of material and informational networks.[12] If multiple infrastructures are responsible for the cohesiveness of relations within contemporary spatial practices, then architecture can achieve maximum effect with minimum intervention if it is converted into a dynamic system of collection and distribution. To shift attention to

uses rather than boundaries, infrastructural urbanism focuses not on autonomous objects, but rather on the modes of assemblage of directed programmatic fields.[13] Since the crisis of representation is associated with our inability to relate architectural production to immaterial networks and invisible processes of abstract global space, Allen's diagrammatic cartography attempts to meet the demands for increased incisiveness and versatility. Barcelona project diagrams subsume infrastructural networks and patterns of movement and occupation. Experiments with several representational modes (the "Manual") and their combination (the "Montage" map) construct the infrastructure of the project through visible negotiation between "conceived" space, "perceived" form and the "lived" space of program. Conceptual changes find their way into diagrammatic representations, offering alternatives to conventional maps.

DIAGRAMMING URBAN MODELS, ELEMENTS AND GEOMETRIES

Exemplified by the ZAL representations, diagrams provide visual expressions for the most recent models of urban space and thus re-establish the connection between the spatial processes in the context and the content of the project. In particular, diagrams update the geometric link between contextual tactics and design strategies. For centuries, certain dominant geometries, such as the circle with radial axes or orthogonal grid, have underpinned both cartographic and urban models.[14] Representing both spatial and social orders, such "shared" geometries correlated universal geographic and ideological principles with local designs.[15] Once geometric maps were viewed as scientifically objective transmitters of spatial information, the graphic typologies of master plan, zoning patchwork and social striations were quickly naturalized as analogs for urban space.[16] Increasing fixation with a few geometric models, along with the priority of "natural" space, contributed to inertia in cartographic methods. "Alternative legibilities" of the contemporary urban space emphasize the role played by the map's appearance. Unlike the explicit geometric orders of the master-plans and utopian diagrams, new mappings expand the relation between social organizations and their literal translation into geometric form.[17] The geometric materialism of the social diagram is no longer useful to the coincident production of multiple spaces and programs.

Several plates of Allen's "Manual" include imported and generated diagrams that ultimately reconfigure the maps according to the geometries of "organization". Diagrams as diagnostic devices extract the forces that make possible the functioning of urban space. Notably, the most influential analytical model is ecology. It is both a primary source of spatial models and conceptual frameworks.[18] Consistent with the practice of "landscape urbanism", Stan Allen's maps are based on "patches", "corridors", "edges" and "matrices" – a refurbished arsenal of key elements of the ecological "image of the city".[19] It is worth noting that unlike Kevin Lynch's visibly prominent and material stable components, Allen's elements are chosen for consistency of operation. "Artificial ecology" of the urban site is produced through interaction between the diagrams of each new element. As a graphic result, programmatic patches, dynamic trajectories, and distributed fields of the "Montage" depart from the established geometries of gridded plan, rigid boundary, and prescriptive outline. To a certain extent, discharging the current spatial geometries into the project, the diagram sustains bi-directional exchange between perceived and conceived spaces.

The second analytical model - the network – also triggers various geometric interpretations of stations, links, clusters and switches. In line with infrastructural urbanism's concern with systems of material and electronic communication, Barcelona "site networks" absorbs existing service nodes on the site surface and "links" them to the projected patches of program.[20] Most flow diagrams present the project as a viable contributor to the "smooth space" of flow and exchange. However, the representations of integrated networks and continuous surfaces contrast the discontinuous zones of permanent "passive programs" or fragments of structural skeletons.[21] The irregularities within the plates of the "Manual" accentuate the contradictions befitting the "differential" space of Lefebvre. The "Montage" as an assemblage of shifting programmatic "fields" also suggests ways to open up the map to the dynamic processes of continual reorganization. The urban geometry evolves through conflicts between vectors of flow, program zones, blurry

boundaries as well as patterns of repetitive spatial types.

However, as with any application that attempts to represent evasive spatial dynamics through geometric structures, the diagram exercises its power over space through selection, schematization and synthesis of elements.[22] The representation is the key to physical structures of the milieu that remain hidden until they are mapped.[23] The space is not deemed comprehensible until the discovery or imposition of the geometric form casts it into manageable and visible models.[24] As analytical instruments, diagrams consume and distill dynamic reality into a series of static representations. The relational structure produced by the analytical diagrams constructs space as geometrically 'conceived', not derived from social contexts. In Lefebvre's terms, diagrammatic maps continue to support the "geometric formant" of abstraction by remaining within the limits of Euclidian space and reducing multi-dimensional social realities to two dimensions.[25] Charting out conceptual diagrams is the visual ordering procedure. Despite new graphic possibilities, the diagram installs its control regime over the evolution of the project.

VISUAL FRAMEWORKS FOR SPATIAL EMERGENCE

The tension between control and emergence is further complicated by the way diagrammatic maps relate the analyzed, the represented and the projected spaces. Their relationship goes beyond the opposition between documentation and innovation. Unlike reproductive tracing, the diagrammatic map allows the designer to experiment with real objects within its "plane of consistency".[26] The appearance of the map is exempt from being strictly mimetic and its graphic capacities are liberated for simultaneous reflection and intervention. As the tool of the virtual, the diagram both visualizes existing organizations and projects alternative worlds onto it. [27] With "abstract machines", it is possible to register contextual forces, dissect them into formal and functional "traits", and produce new objects through an extended process of assembly.

Stan Allen's project treats diagrammatic design as a non-linear process of "emergence". Subtle direction of future adjustment takes the place of the determinism of a finished object. Leaving behind fixed shapes and linear progressions, the "Montage" and the manual present ZAL as a gradual unfolding of spatial mosaics within the context of service grids and green corridors. The contextual diagrams provide the "event scaffold" for a complex series of active programs, movements and flows.[28] This methodology is related to the general "framework" sensibility in contemporary practice, whereas space is conceived through a set of diagrams that fix key operational principles and spatial boundaries while letting the final form be susceptible to growth and change over time.[29] Therefore, it is no coincidence that the "Montage" contains overarching mega-grids and general patterns, while the "Manual" offers multiple options for the locations of program and formal appearance.

The diagrammatic representation is deemed performative in order to accommodate both dynamic organization and static form. Ecology also serves as a model for the material practice that works not with objects but with performance. "Natural" matrices and frameworks are transferred into the project and manipulated to produce new design material. Normally, through direct engagement with physical space, "productive mappings" can re-present previously naturalized geometric figures and rearrange the extracted parts of the natural material into new organizing patterns.[30] Such mappings also re-embody the mapmaker in the process, depriving him of a stable control position.[31] In Allen's view, material practice is not limited to direct handling of the physical material, but can also operate by means of abstract techniques such as notation and simulation.[32] So the material re-implacement is simulated by the manipulation of the ecological diagrams. Patches, links and edges become the new material of architecture. By analogy with existing material systems, the diagrammatic maps feature multiple "patch typologies" and "spreading margins", governed by the "transition matrix"[33]. The designer's control point is continuously shifting from above-the-earth surveying, to ground-level perspective, and finally, to the introversion of the diagrammatic analysis.

Therefore, it seems that productive diagramming of the spatial ecology allows for the coexistence of small-scale deviations and large governing patterns, or uncontrolled emergence and strict design

order. Ironically, as soon as the abstract diagram is used as a tool for visual simulation, most open-endedness and uncontrolled emergence is foreclosed. Literally mapped, immaterial relations are converted into the concrete material for the "composition" of space. In addition, if infrastructural urbanism aims to devise "new technical and social means to organize and manage complex systems of flow, movement and exchange", then the diagrammatic map becomes the primary device for such management.[34] Spatial flows of reality are stabilized by the diagrams in order to make them amenable to productive mapping "by proxy". Intangible processes are converted into tangible geometric patterns, thus re-asserting the ability of representation to control the project's space.

Regrettably, while Allen's conceptual approach to the diagram takes into account the contradictions inherent in bottom-up emergence, the geometric applications of specific diagrams exercise top-down control over multiple elements. Local heterogeneity is dominated by the overall homogeneity of composite drawings and standardized layouts, in line with the principles of the contemporary "abstract space".[35] To a certain extent, re-aligning the mode of representation with contemporary spatial organizations enhances the controlling mechanism of the map. The updated geometries are still subject to the concealing homogeneity of the mathematical space (in terms of both digital computation and abstract ordering); conflicts and oppositions are subsumed by the continuous surface of representation.[36] The diagrammatic master-plan detracts from theoretical arguments for the local adjustments within the shifting "field conditions" (a non-hierarchical spatial matrix capable of unifying diverse elements while respecting their individual identities).

DIAGRAM DATABASE AND GAME SURFACE FOR THE SOCIAL SPACE

Mediation between form and program by the complimentary formats of the "Manual and the "Montage" further demonstrates the ambiguous effects of the surface-based representation. Initially, the breakdown of the project into numerous diagrammatic plates creates a productive gap between programmatic problems and formal solutions. James Corner argues in favor of diagrams as more "performative" forms of imaging that can reflect the production of flows, processes and forces within formal structure.[37] In place of synoptic master planning and perspectival scenography, diagrams are the "eidetic operations" that enable new strategies of spatial / social construction based on interaction between various agents.[38] Accordingly, Allen creates separate plates of the manual and layers of the map to accommodate not only formal fragments but also individual program parts as independent design agents. The "Montage" indexes inclusion and participation of various programmatic components through outlines, footprints, tracings, and vectors. To approximate the dynamism of social space, Allen combines the movement notations transposed from cinematography, choreography and simultaneous musical scores.[39] The overlapping symbolic languages promote diagrammatic assemblages - alignments of structures with programmatic scenarios. The "Montage" assemblage includes movement diagrams and programmatic "scores" as well as building plans and sections.

Allen's cartographic play with various diagrams on the map's surface can be related to other composite representations from contemporary practice relying on simultaneous formal and functional mappings, such as OMA's layered plans, ideograms and charts as well as "urban stirrings" by CHORA / Raoul Bunschoten. James Corner evaluated the capabilities of such hybrid graphic typologies and defined them as "game-boards". Game-boards are working surfaces upon which various constituencies are invited to play out their scenarios.[40] The principle of play is key to this design tool, which liberates architecture from the necessity of close fitting and hierarchical composition of the design components. The gaming surface of the eidetic map is converted into an "efficacious operational field", where tactical disposition of parts can be used to stage the conditions "necessary to precipitate a maximum range of opportunities in time".[41]

Without denying the obvious advantages of such constructions, it should be noted that the particular set-up of a game-board – the choice of a field, frame, extracts and graphic codes – not only instigates interactions between diagrams of form and diagrams of program, but also largely predetermines the designer's focus on particular aspects of the "social space". The productivity of the

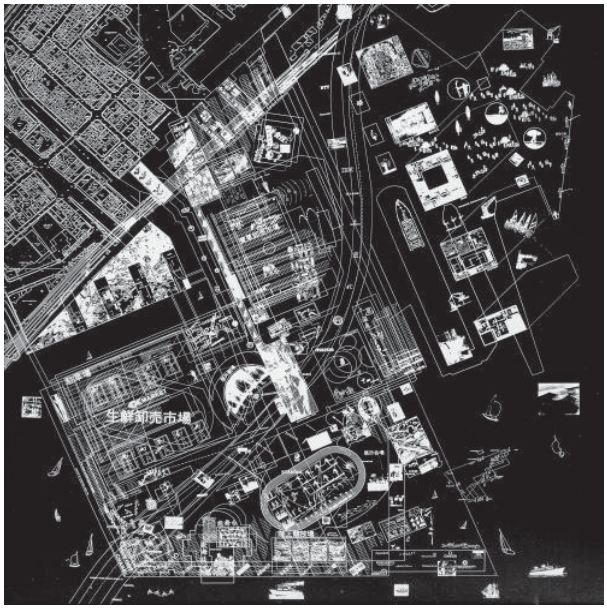

Fig. 3: OMA, "Schematic rendering of activities", Yokohama Urban Ring.

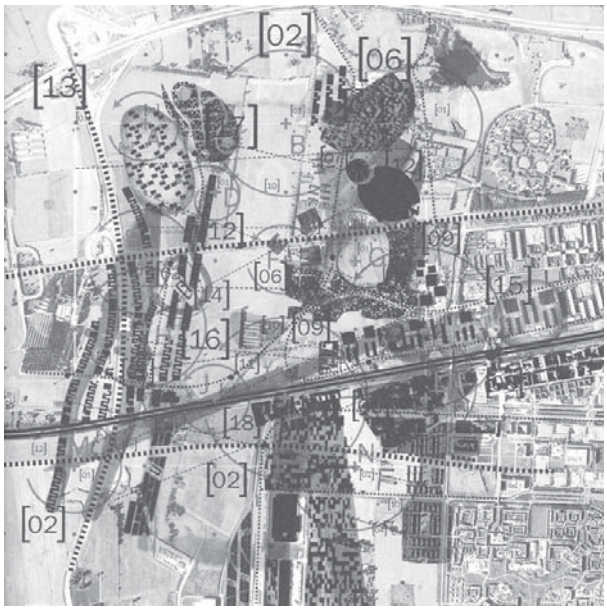

Fig. 4: Raoul Bunschoten / CHORA, Gameboard with Centers, Prototypes and Communities for Hoje Taastrup New Suburb City.

game-board operations depends on the possibility of embedding diagrams into different project "layers", yet allowing them to remain self-consistent agents. The cartographic "stage" is most dynamic when it is able to accommodate a wide range between the "collage" compressions of layers into a surface and their distanced interaction.[42] In the case of "Montage", the diagrams are intended to express the simultaneity of multiple social interactions. The notations used imply the discontinuity of temporal performance and the possibility of alternative interpretations. However, once multiple scenarios are "montaged" into a single continuous object, the alleged freedom of non-synchronized performance is lost. Previously independent agents dissolve into an artificially created continuum.[43] At a certain moment, the diagrammatic board meant to defy the authority of the institutionalized mapping firmly emplaces specific patterns of movement and distribution.

As a partial relief, the controlling continuity of the map is counterbalanced by the variegated sources of the "Manual". The fragments of the project are collected from photographic images, systems diagrams, drawings and maps, thus opening the space of design to multiple modes of conception (see *Fig. 2*). Switching between different visual references renders the relationship between space-making function and cartographic form more dynamic and bi-directional. Allen's sampling correspond to Matthew Edney's attitude towards cartography as a continuous coexistence of several visual "modes" in interaction, rather than a linear progression to more advanced and accurate representations.[44] Each cartographic mode references specific cultural, social and technological relations, which implies that it shouldn't be deployed as a strictly functional system for the transmission of data or organized into a single sequence of descendants.[45] In correspondence with various relations with context, each plate of the eclectic "Manual" uses from five to seven dissimilar modes. Imported techniques of representation are treated as productive as conventional drawing. Architectural diagrams of the "manual" are nearly outnumbered by the excerpts of the spatial systems imported from other fields. Allen joins borrowed diagrams with many previously naturalized modes of representation such as aerial photography, physical modeling, orthographic projection, topographic mapping and functional zoning.

Unlike the unified "Montage", the diagrammatic manual switches between various scopic regimes according to the cartographic principle of "bricolage".[46] While montage implies grafting of fragments onto the dominant framework and articulation of a pre-constructed whole, bricolage

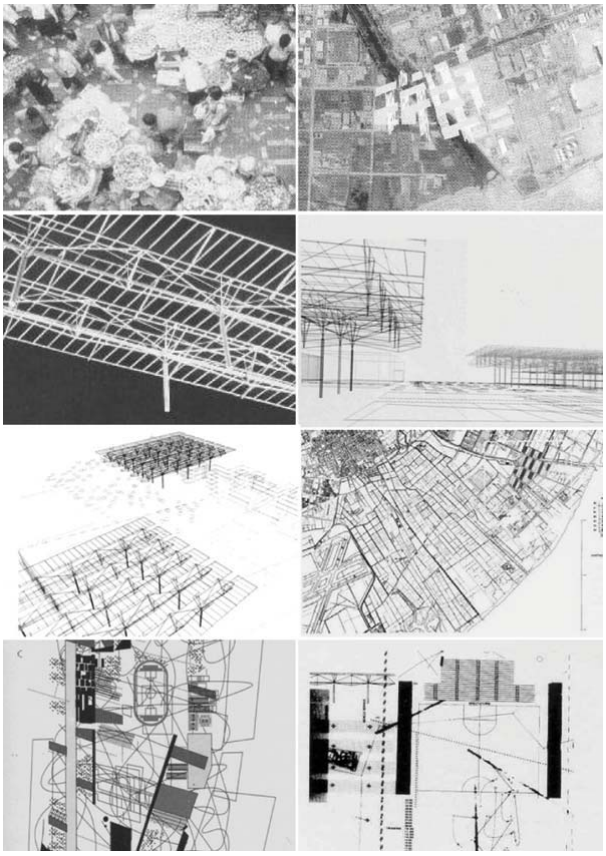

Fig. 5: Modes of visual representation from the "Barcelona Manual": Photography; Aerial Photography; Physical Model; Linear Perspective: Axonometric projection; Topographic Map; Program Diagram; Movement Score.

acts against the desire to smooth out the differences between contradictory forms and inevitable traces of past representations. Facilitated by digitized storage and filing, the database of the "Manual" promotes a multiple-entry, open system that adjusts to many conceptual categories and graphic codes. In particular, as already demonstrated by coupling of the framework maps (descendents of the bubble diagrams) and photographic collages (or landscape scenes) in such projects as OMA's "Tree City", the abstraction of the diagram does not necessarily exclude the visual clarity of the image.[47] Perhaps, Stan Allen's disciplined correlation of the imported scheme, reworked diagram, design volume and illustrative image within each manual plate is one of his most "liberating" decisions.

"LOOSE CONTROL", OR CONCEPTUAL PROLIFERATIONS AND GRAPHIC LIMITATIONS

Stan Allen's cartographic strategies assimilate numerous aspects of contemporary spatial theories through various uses of the diagram. The key to the methodological breakthroughs is the ability of the diagram to perform as both theoretically abstract and visually concrete design instrument. The diagrams make it possible to work in-between perceived reality, conceived propositions and lived domains of programming. The diagrammatic maps support analysis, visualization, and production of new spaces. Analytical diagrams of urban systems expand the material basis for productive mapping of the future project. To emphasize the active element of time in spatial production, visualizations include not only static objects, but also dynamic processes. Hybrid representations subsume multifarious models of spatial organization and their geometric analogs. Reconfigured geometries align the map with its dynamic spatial context. The heterogeneity of the space-in-progress is supported by the urban games between formal and functional diagrams within the same cartographic surface.

The architect actively uses external models of ecology and network at the level of conceptual organization and graphic conventions. The expanded arsenal of analytical categories and visual techniques is combined into a synthetic manual. Indexical representation of the elements gradually merging into another underlies the spatial organization into the project. At the same time, the multiple entry system of the "Manual" leaves deliberate gaps for the free-flow of spatial information. Various mapping typologies construct a dense registry of design possibilities and avoid the ubiquitous reduction of space to a single visual mode. Alternating diagrams of analysis, conception and representation partially address the critiques of architectural conventions. Mapping is made truly performative by the diagram's operation across the existing schism between the ideas of mental space, the forms of natural space and the action of social space.

Although diagrammatic maps sustain the multi-dimensional, dynamic mode of designing, they also advance a new means of cartographic control. The diagrammatic project upholds the visual "power"

of the map, and demonstrates new potential for spatial management via representation. Possibly, the desire to monitor all the design components drives the detailed matrix of the manual. The decision to integrate multiple aspects of the project into a single coherent representational object (plan) speaks of continued visual control. Smoothing out the disjunctions between spatial and social diagrams is implicit in the synthetic character of the composite map. The generative "frameworks" turn into rigid containing frames of the megastructure, fixed transportation network or the program checkerboard. As the prescriptive montage of the continuous scenario, the diagram can also close the gap between the conceived design and its perceived materialization. Paradoxically, diversifying visual simulations of social and spatial processes widens the range of control techniques.

Despite the ambiguous role of the diagram in spatial production, the main goal of this analysis is not to suggest a retreat to traditional forms of architectural drawing, but to expose the underutilized potential of diagrammatic representation. Apparent contradictions involved in mapping out the conceptual formulae of contemporary space notwithstanding, Allen's visual experiments show the future promise of hybrid design methods. The exposed gaps in the scope of the diagram's control regime - miscommunication between concepts and their graphic translations, autonomy of formal and functional traits, as well as easy substitution of mediated graphic modes – can be further explored. Future theoretical explorations and practical experiments can fine-tune diagrammatic cartography into an advanced design tool capable of withstanding the complex demands of the architectural production of space.

ENDNOTES

1 Henri Lefebvre, *The Production of Space* (Oxford, UK and Cambridge, MA: Blackwell, 1991); Edward Soja, *Postmetropolis: Critical Studies of Cities and Regions* (Oxford: Blackwell Publishing, 2000)

2 Sanford Kwinter, "The Hammer and the Song", in *OASE* 48, 31-44

3 Stan Allen, *Points and Lines: Diagrams and Projects for the City* (New York: Princeton Architectural Press, 1999), 73-89

4 Lefebvre's calls for the abandonment of space as a series of abstract and concrete elements studied in disciplinary isolation. Interest must shift from abstract thoughts about space and physical things in space to the processes of production of space that consider both its mental, natural and social aspects. Henri Lefebvre, *The Production of Space* (Oxford, UK and Cambridge, MA: Blackwell, 1991)

5 *Lived* space is an unconscious, non-verbalized, direct experience of participation that functions as the experiential intersection of the other two: *perceived* and *conceived*. Most design operations are dominated by the scientifically *conceived* space that generates a "mental" abstract context for the imposition of planned content. There are conspicuously few means available within the profession to account for the *lived* space of the city.

6 *Spatial practice* (or *perceived* space) produces space as it also masters and appropriates it; appropriated space gains cohesiveness through production of relations between objects. *Representations of space (*or *conceived* space*)* refer to the production of relations (ideological, linguistic, and symbolic) within a conceptual framework. *Representational space* refer to spaces directly *lived* through associated images and symbols, the space of inhabitants and users. This social, *lived* space is of particular interest to Lefebvre, for it defies the regulatory power of the *representations of space* and *spatial practice*. His emergent "new science" aims to unite these "various kinds of space and the modalities of their genesis" within a single theory. Ibid., 38-39

7 The first assumes a "miraculous quality" of thought and written word that renders space unrealistically intelligible, while the other suggests "substantiality" and "naturalness" of measurable and describable things that have dominance over thoughts. Taken in isolation, visible / tangible and logically constructed mental representations are dangerously exclusive. Ibid., 27-30

8 Ibid., 84

9 See Denis Wood, *The Power of Maps* (New York and London: The Guilford Press, 1992)

10 As powerful instruments of selection, assembly and exhibition, maps affect the way reality is interpreted and altered. Maps are highly controlling forms of representation: they put heterogeneous space through a single ideological filter. J.B. Harley, "Maps, Knowledge and Power", in Denis Cosgrove and Stephen Daniels, eds., *Iconography of Landscape: Essays on the Symbolic Representation, Design, and Use of Past Environments* (Cambridge and New York: Cambridge University Press, 1988), 277-312

11 Stan Allen, "Mapping the Unmappable: On Notation" in *Practice: Architecture, Technique and Representation* (Amsterdam: G+B Arts International, 2000), 31-46

12 Stan Allen, "Infrastructural Urbanism", in *Point and Lines: Diagrams and Projects for the City* (New York: Princeton Architectural Press, 1999), 46-90

13 Within the field, overall shape and extent are less important than the internal relationship between focal points and vector lines: forms matters, but not so much the form of things as the form between things. Ibid., 46-90

14 In discussing historical links between cartographic and urban spaces, Denis Cosgrove points out that the power of the map to participate in spatial configurations stems from its ability to constantly shift between preceding, reflecting, and regulating urban space and urban life. Moreover, such ability is closely tied with geometric definition and ability to shift between dominant geometric models. Denis Cosgrove, "Carto-City: Mapping and Urban Space" in *Mapping a City* (Ostfildern: Hatje Cantz, 2004), 53

15 While traditional geometric orders still dominate urban maps, they no longer assist with disciplining the disorderly complexity of the city into legible representations. Persistent cartographic geometries of institutionalized urban planning impose onto spatial flow the particular visual models based on the unquestioned priority of material objects. Ibid., 53

16 Ola Södeström, "Paper Cities: Visual Thinking in Urban Planning" in *Ecumene*, 3 (1996), 249-281

17 Geometric diagrams of utopias imply their use as the maps for actual physical structures, equating spatial apparatus of the diagram with its "social machine". Today's correlated yet distinct perceived and lived spaces demand multi-dimensional geometric systems. Anthony Vidler, "Diagrams of Utopia" in *Daidalos* 74 ("Diagrammania"), 2000. Original "materialism" of the geometric diagram can be related to such spatial / social machines as Howard's "Garden City" or Filaret's "Ideal City of Sforzinda".

18 Allen's work demonstrates the renewed interest in "ecology" as the most appropriate formal model for urban process. Re-thinking the relationship between city and nature integral to the "environmental" planning approaches from such canonical sources as Ian McHarg's *Design with Nature*, ecological model of the city is now being expanded on both material and conceptual levels. The emerging landscape / urban practices focus on processes that occur over time, staging of horizontal surfaces and the operational methods founded in natural complexity. See Charles Waldheim, ed., "Landscape as Urbanism" and James Corner "Terra Fluxus" in *Landscape Urbanism Reader* (New York: Princeton Architectural Press, 2006)

19 Allen's taxonomy can be seen as a critical update to the set of urban elements defined by Kevin Lynch as instrumental in constructing the "image" of the city. Lynch's elements relied on the immediate visual imprint of the urban structure. In contrast, Allen's diagrams are abstracted by analysis of operation and not of appearance; they are also independent from any "lived" context. See Kevin Lynch, *The Image of the City* (Cambridge, MA: MIT Press, 2000).

20 See "User Manual" plates 3A ("Organization") and 2D ("Service Grids").

21 See "User Manual" plates 1A and 6A.

22 Ola Södeström, "Paper Cities: Visual Thinking in Urban Planning" in *Ecumene*, 3 (1996), 253

23 Arthur H. Robinson and Barbara Bartz Petchenik, *The Nature of Maps: Essays Towards Understanding Maps and Mapping* (Chicago: University of Chicago Press, 1976), 74

24 Rudolf Arnheim, *Visual Thinking* (London: Faber & Faber, 1970), 278

25 Lefebvre's critique targets architectural plans, maps, and other graphic abstractions. While there is an attempt to introduce the temporal dimension into Allen's representations, it is generally plotted through multiple diagrams. Infrastructural diagrams have yet to become non-Euclidian, able to compress within their graphic formulae the algorithms of space-time. Henri Lefebvre, *The Production of Space* (Oxford, UK and Cambridge, MA: Blackwell, 1991)

26 "What distinguishes the map from the tracing is that it is entirely oriented towards an experimentation in contact with the real…It fosters connections between fields, the removal of blockages on bodies without organs, the maximum opening of bodies without organs onto a plane of consistency…The map has to do with performance, whereas the tracing always involves an "alleged competence." Gilles Deleuze and Felix Guattari, *A thousand Plateaus: Capitalism and Schizophrenia*, trans. Brian Massumi (Minneapolis: University of Minnesota Press, 1988), 12

27 Such duality of the diagram is noted by Gilles Deleuze, who adopted Michel's Foucault's terms – abstract machine and diagram - and demonstrated diagram's virtual potential as conceptually abstracted from reality, yet concrete as a real machine for assemblage, organization and deployment of various effects. The diagrammatic abstract machine "does not function to represent, even something real, but rather constructs a real that is yet to come, a new type of reality". Ibid., 142

28 Stan Allen, *Points and Lines: Diagrams and Projects for the City* (New York: Princeton Architectural Press, 1999), 77

29 As noted by Julia Czerniak, such practices as OMA and Bernard Tschumi also create their designs as performative "frameworks" presented via diagrams. Such diagrammatic frameworks offer the possibility to accommodate gradual processes of accumulation, reprogramming and transformativity. Julia Czerniak, "Appearance, Performance: Landscape at Downsview" in *Case: Downsview Park Toronto* (Munich; New York, NY: Prestel; Cambridge, MA: Harvard University, Graduate School of Design, 2001), 15

30 As defined by Edward Casey, the "productive mapping" is distinguished by the active process of engagement with material configurations. In contrast to the "reproductive" mapping, that passively replicates existing orders in redundant repetition, the "productive" mapping *re-presents* reality in unanticipated ways, *re-implaces* spatial parts in a new manner, and *re-embodies* both the mapmaker and the viewer. Edward Casey, "Wherefore Earth-Mapping" in *Earth Mapping: Artists Reshaping Landscape* (Minneapolis: Minnesota University Press, 2005), 181

31 Ibid.

32 Stan Allen, *Points and Lines: Diagrams and Projects for the City* (New York: Princeton Architectural Press, 1999), 73

33 See "User Manual" plates 3D ("Organization") and 1A ("Surface").

34 Stan Allen, "Infrastructural Urbanism", in *Point and Lines: Diagrams and Projects for the City* (New York: Princeton Architectural Press, 1999), 46

35 Lefebvre is critical of the space we are currently occupying, the *abstract space*, with its networked homogeneity at a global level and a fragmented heterogeneity at a local level. See Henri Lefebvre, *The Production of Space* (Oxford, UK and Cambridge, MA: Blackwell, 1991)

36 Both Bourdieu and de Certeau convey the general totalizing aspect of the Western maps. Maps are replacing the discontinuous, "patchy space of practical paths by the homogeneous, continuous space of geometry" and invoking their "repressive rationality" through homogenization or the rich diversity of spatial stories. See the arguments related by David Harvey, *The Condition of Post-Modernity: An Inquiry into the Origins of Cultural Change* (Oxford: Blackwell, 1989), 253. Ironically, Allen's "Montage" also stands as the image of urban space as an "idealized" continuous field that subsumes and disguises all of the internal inconsistencies and contradictions.

37 James Corner, "Eidetic Operations and New Landscapes", in James Corner, ed., *Recovering Landscape: Essays in Contemporary Landscape Architecture* (New York: Princeton Architectural Press, 1999), 153

38 Ibid.

39 In his desire to upgrade the traditional graphic representation of program and to turn it into the active component of spatial production, Allen comes close to the earlier propositions by Bernard Tschumi. Tschumi argued that programmatic unfolding of events in varying contexts can be separated from space and restructured into more operable representations. The instrumentality of program is achieved though initial deconstruction and juxtaposition and disjunction of form and use, separation of events and movements from spaces, followed by synthetic attitudes towards devising new codes of assemblage. Bernard Tschumi, "Spaces and Events", in *Architecture and Disjunction* (Cambridge, MA: MIT Press, 1996), 141-152

40 Ibid.

41 James Corner, "Eidetic Operations and New Landscapes", in James Corner, ed., *Recovering Landscape: Essays in Contemporary Landscape Architecture* (New York: Princeton Architectural Press, 1999), 160

42 Graphically, Allen's "Montage" resembles the simultaneous presentation of overlayed vertical correspondences between diagrams in the projects by Raoul Bunschoten / CHORA. Yet by comparison, CHORA's visual methods are closer aligned with the organization logic of "scenario games", the local centers or programmatic anchors for different constituencies remain rather distinct in the presentation collage and the final variations of their influences is played out in other intermediate boards that act as "stepping stones" to the final set of scenarios. See CHORA / Raoul Bunschoten, "Taxonomy and Unfolding: Diagrammatics" in *Urban Flotsam: Stirring the City* (Rotterdam: 010 Publishers, 2001), 261 – 263 and CHORA / Raoul Bunschoten, *Public Spaces* (London: Black Dog Publishing, 2002)

43 "Montage is the determination of the whole….by means of continuities, cutting and false continuities." Gilles Deleuze cited in Stan Allen, *Points and Lines: Diagrams and Projects for the City* (New York: Princeton Architectural Press, 1999), 10. Perhaps another interpretation of Allen's method is substitution of montage by the "advanced" collage of fragments. The productive possibilities can be found precisely in the cuts between the strands of form and gaps between patches of program, and alternatives can be projected onto the site in-between the designed parts. Then the issue would be the distinction between montage and incomplete design.

44 On cartographic "modes", see Matthew Edney, "Cartography without Progress: Reinterpreting the Nature and Historical Development of Mapmaking', in *Cartographica*, 30, 1993, 54-68

45 Ibid.

46 John Pickles shows that new possibilities emerge from exploring mapping techniques in terms of recurrent shifts from "montage" to "bricolage", for mapping always functions through accretion and re-working of prior cartographic forms and practices. John Pickles, *A History of Spaces: Cartographic Reason, Mapping and Geo-coded World* (London and New York: Routledge, 2004), 88

47 See maps and vignettes for OMA's "Tree City" competition project for the Downsview Park. For vague ideas and clear images, see R. E. Somol, "All Systems GO!: The Terminal Nature of Contemporary Urbanism", in Julia Czerniak, ed., *Case: Downsview Park Toronto* (Munich; New York, NY: Prestel; Cambridge, MA: Harvard University, Graduate School of Design, 2001), 135