

Urban Laboratory Addis Ababa

Design Research on the Sustainable
Transformation of Territories

By : Marc Angéilil

The future is not what it used to be. Paul Valéry

A recent installation at the Swiss pavilion of the Venice's Biennale, under the heading «*Explorations in Architecture: Teaching, Design, Research*» depicts the conceptual diagram of a particular academic collaboration, involving the Addis Ababa University and the Swiss Federal Institute of Technology, Zurich.

Prominently displayed in the middle of the exhibition space is a large semi translucent screen, on which images are projected from two opposite sides. Standing on one side of the screen, viewers simultaneously see the two projections, though one is inverted as if looking in a mirror. Form and content of the exhibition are aligned. The double projection registers two sides of one and the same research

undertaking, addressing the potential development of contemporary urban territories: on one side of the screen a series of rapidly transforming sites in Addis Ababa, Ethiopia, and on the other side, an equally fast changing agglomeration in Switzerland, known as the Schwyz Valley. Notwithstanding the differences of the two case studies, similarities are identified and transfers of strategies from one location to the other investigated. What can one culture learn from the other?

Located on each side of the screen are physical models, three-dimensional representations of the territories in question, on which design scenarios and their attendant processes are digitally projected and superimposed onto the models' surfaces – a kind of time-based four-dimensional display for the

simulation of urban patterns. Hypothetical but nonetheless real design propositions for developing territories are shown, putting the emphasis on the gradual transformation of current urban and suburban conditions. Although they project a prospective future, the projects yet acknowledge, to borrow an aphorism by Paul Valéry, that «the future is not what it used to be.»

On the far end wall of the exhibition hall is a large panorama offering views of the two territories. With a closer look, a peculiar scene unfolds for the sites are not kept apart but gradually merge into an integrated image. As imaginary as such a proposition might be, it nonetheless begins to suggest that the differences between the ostensibly antithetical conditions – as upheld by the juxtaposition of opposites such as north vs.





1. Exhibition installation based on comparative case studies of rapidly changing territories in Ethiopia and Switzerland, 11th International Venice Architecture Biennale, Swiss Pavilion, Venice 2008

2. Film stills of the two-sided projection showing retail and market activities in Addis Ababa and Schwyz, Venice Biennale 2008 (Noboru Kawagishi)

3. Panorama montage merging the territories of Addis Ababa and the Schwyz Valley, Venice Biennale 2008. (Dirk Hebel, Sascha Delz, Lukas Kueng)

south, rich vs. poor, developed vs. developing – rely, more often than not, on tacit clichés that often maintain an unambiguous hierarchy of realities. Whereas differences undoubtedly exist, what is here of interest are the mechanisms at work in the production of space, their characteristics, causes,

Urban Laboratory

The installation presented at the Venice Biennale shows but one facet of an ongoing research project – done within the context of the recently founded «Urban Laboratory – Addis Ababa,» – comprising faculty members from both Ethiopia and Switzerland as well as students of architecture, landscape design, and urban planning from all over the world. The laboratory is conceived as an interdisciplinary think tank dedicated to sustainable development and the advancement of knowledge in the key disciplines relevant to the formation of the urban environment. Through a combination of different formats such as colloquia, conferences, design studios, exhibitions, lectures, project reviews, and publications, the laboratory aims to establish a link between research, teaching, and practice.

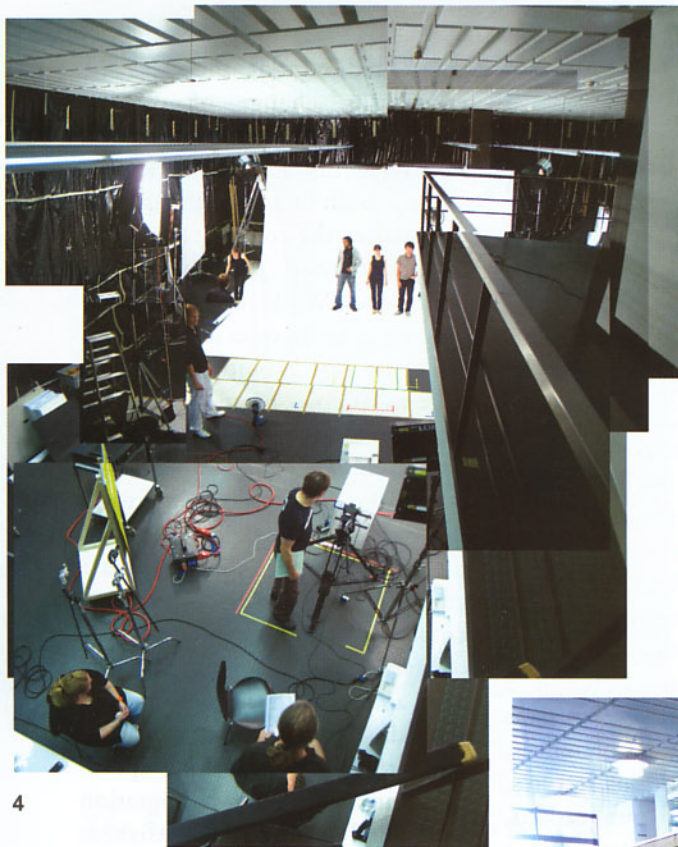
Using Addis Ababa and other cities as case studies, the motivation of the laboratory is to combine competencies from a broad range of fields – via interdisciplinary collaborations and by means of integrated design processes – in order to promote strategies for achieving sustainable settlements. Reaching beyond the realm of academia, the research is inspired by a mandate for innovation in practice and offers solutions for implementation: an inquiry directed toward practical performance.

As cities are in a constant state of flux, the design of anticipated developments offers a viable means to identify and possibly direct forthcoming urban

as a predominant practice, the continuing change of existing urban structures is foregrounded. Following the adage that «Rome was not built in a day,» the inquiry emphasizes the role of time-based techniques and process-oriented approaches. While research can use diagnostic techniques of analysis to trace the past evolution of urban systems in order to understand the status quo, it must also anticipate future developments. Accordingly, one of the key aspects of the work encompasses scenario planning: designing potential future conditions according to varying constraints. The long-term effect of changing parameters are tested and analyzed. Examples include shrinking and growing scenarios, the rate of developmental speed, questions of density, migration from rural to urban areas, changes in the demographic constitution of the social body, the allocation or lack of energy and monetary resources, the impact of the forms of governance, and the like.

Accordingly, the laboratory conducts its research along two different but nevertheless related methods of investigation. The first trajectory – on questions of urban sustainability – follows the principle of in-depth academic work done in specific fields of enquiry, highlighting particular themes and integrating input from supporting disciplines. The second trajectory – on questions of urban design – places the work in the context of design research studios, a type of workshop setting in which concepts are tested through specific design propositions, aiming at the synthesis of findings from an array of fields. Both approaches take





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4. Urban Laboratory – Addis Ababa, workshop space temporarily transformed into a film studio, Swiss Federal Institute of Technology Zurich

5. Design review boards of a project proposing a series of green public spaces along existing creeks in Addis Ababa – the stocks and flows of water (Matthew Skjonsberg, Sebastian Fuscaldò, Noburu Kawagishi)

advantage of the transdisciplinary disposition of the laboratory and rely on empirical data gained from comparative analysis.

Urban Sustainability

Central to the undertaking of urban design or planning is the involvement of various experts and stakeholders. A network of collaborators – members of the academic community, professionals from a range of disciplines, and representatives of governmental agencies – frames the dialogues and negotiations pertaining to aspects and features of the built environment. These are guided by the mandate to promote means for achieving socially, ecologically, and economically balanced urban conditions. What feasible means, techniques, and methods can be brought into play to increase the sustainable performance of cities?

In order to address this question, the laboratory exercises its focus on a particular theoretical framework – identified as the Flux Model. This model considers

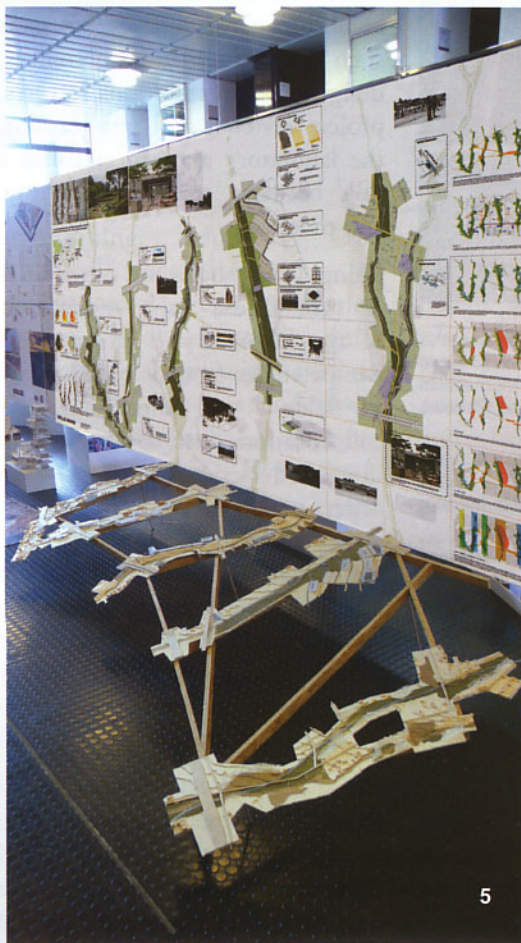
the city as a dynamic system, one delineated by stocks of resources and interrelated networks of material flows, including input and output cycles relative to long-term development. Considering that stocks, flows, and their transfer coefficients are time-dependent, the research thus models the behavior of urban systems according to changing parameters in time. At the core of the research is an investigation of the flux of people, energy, water, material, capital, space, and information. These resources are considered both in terms of their physiological demands and morphological consequences. Ultimately, the impact of stocks and flows on the constitution of cities and the potential for steering their performance in view of sustainable development form the main thrusts of the endeavor. Based on the Flux Model, seven research streams have been identified acknowledging transitions in urban physiologies and morphologies worldwide – thereby situating the particular case of Addis Ababa within an international context.

Stocks and Flows of People: Since cities are human settlements for their inhabitants, the role of individual subjects within the framework of social collectives must be at the forefront of urban research. Sociology offers herein insights into the relation between social and physical space. Developments in the demographic make-up of communities and their impact on the forms of urbanization are considered.

Stocks and Flows of Energy: With sustainable city development forming a primary investigatory armature of the laboratory, energy – both

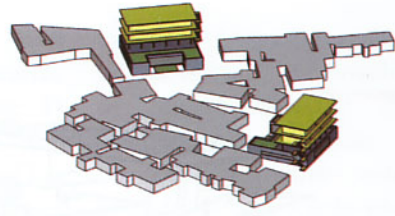
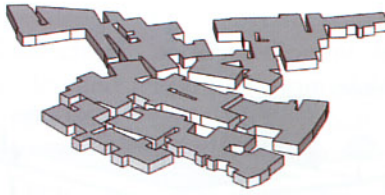
in terms of resources and their attendant emissions – plays a prominent role in the research. Taking into consideration that the ecological footprint of cities must be minimized, renewable energy sources and technologies for reducing emissions are promoted.

Stocks and Flows of Water: This increasingly contested resource has a significant impact on the future

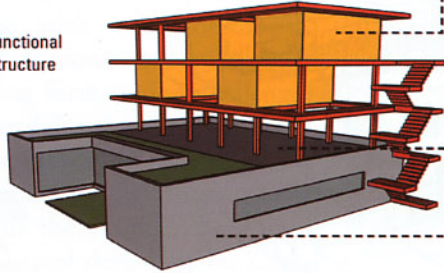


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context



functional structure

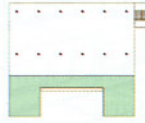


L2-3



self infill housing

L1

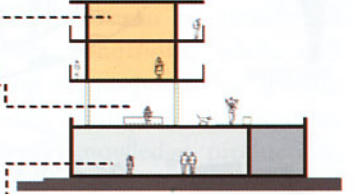


open communal space

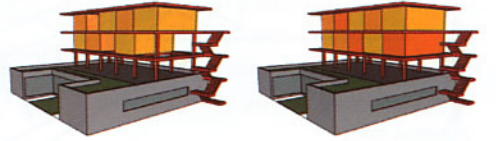
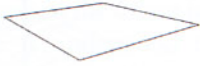
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public functions facilities



timeline



development of cities. Thus, the environmental aspect of water in urban ecosystems is addressed. Particular emphasis is placed on the management of water, including retention, collection, reuse, and sewage, in order to minimize consumption and maximize the efficient utilization of water and vegetation.

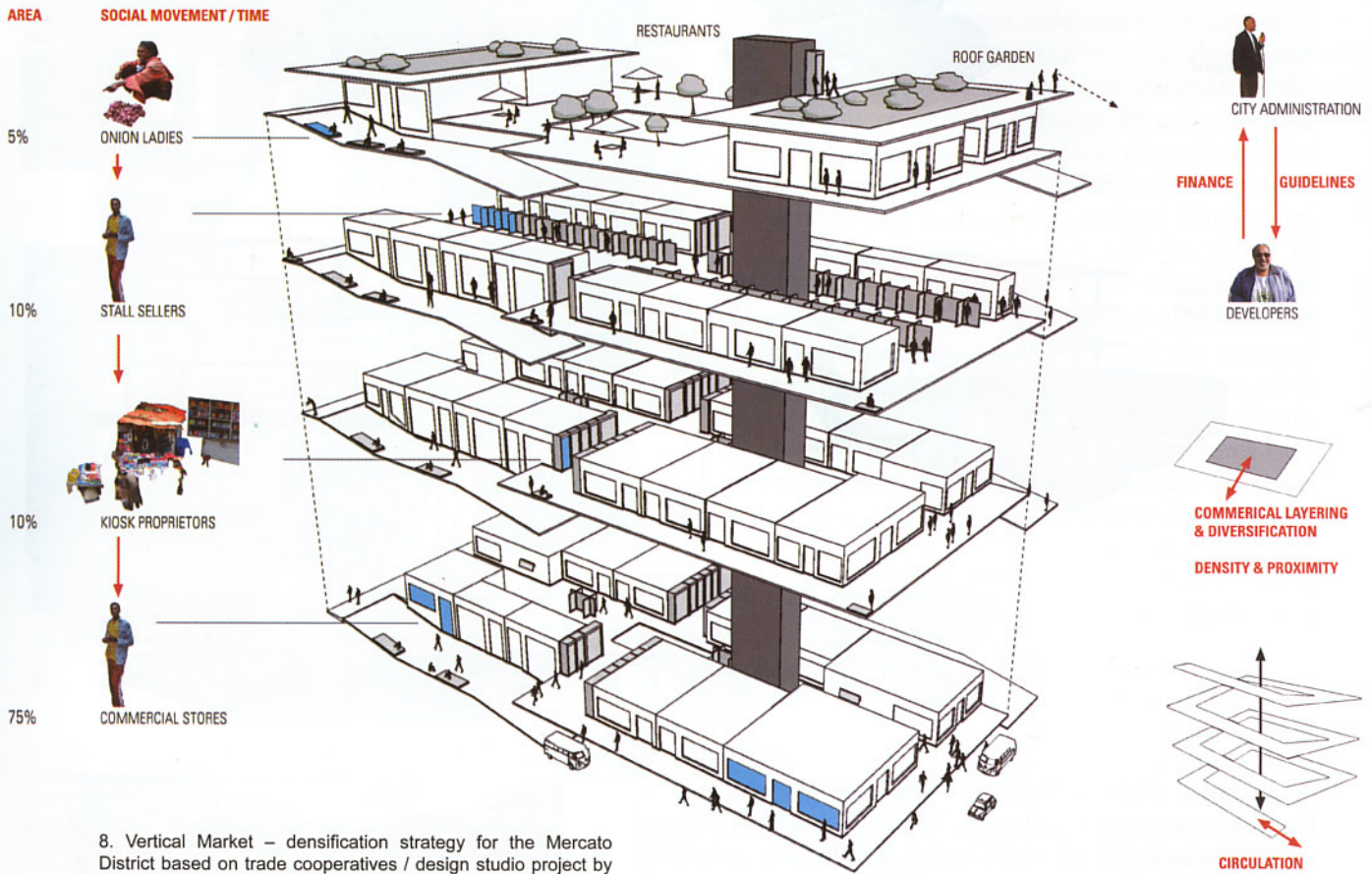
Stocks and Flows of Materials: As cities are physical creations, investigations into the performance of materials and means of construction play a considerable role within the research. Reframing questions of recycling and waste management, in view of circular metabolisms, the impact of materials throughout the life cycle of structures as well as the material stocks embedded in cities are taken into account.

Stocks and Flows of Capital: While cities generate money, they simultaneously require significant financial investment. By bringing together questions of urbanism with those of economics, the ramifications of financial models on the constitution of cities are assessed – in an effort to strike a balance between the public and private sectors, local and global economies, and formal and informal structures.

Stocks and Flows of Space: Considering space as a resource, urban research must address questions of territorial allocation, organization, logistics, and functional performance. Specific attention is here given to infrastructural systems and the optimization of flows of people, goods, and materials. Means are identified for maximizing the capacity of limited spatial resources in view of qualitative demands. ■



6. Slum upgrading strategy, introducing open public spaces, semi-public facilities, and new housing typologies / design studio project by Charis Chrostodoulou and Hyeri Park
7a-c Scenarios for the transformation of an existing site – introduction of a sports infrastructure and of public transportation infrastructure / design studio project by Ann-Charlotte Malterre-Barthes and Valentina Genini



8. Vertical Market – densification strategy for the Mercato District based on trade cooperatives / design studio project by Lincoln Lewis and Simon Kramer Vrscaj

9. View of the vertical market buildings incorporated within the existing fabric of the Mercato District / design studio project by Lincoln Lewis and Simon Kramer Vrscaj

Stocks and Flows of Information: Acknowledging that the flow of transparent information plays a key role in urban formation, the importance of communication within the social body and the participation of stakeholders in decision-making processes is given due attention. Methods of territorial governance that are oriented toward consensus among various actors are highlighted.

Urban Design

One of the primary objectives of the laboratory is the interaction of disciplines relevant to the formation of the built environment, for it is only through their interface that new aptitudes regarding the sustainable development of cities can arise. Of significance within this framework is the role played by the design research studio,

understood as a platform for knowledge mining, synthesis, and production through design.

Contemporary city design requires distinct methods. State-of-the-art research in architecture, urbanism, and planning has recently advanced the instrument of the design research studio as the place of investigatory work, in which ideas are tested in physical and digital models, plans, diagrams, statistics, renderings, animations, and the like – with design as the core discipline integrating the findings of other fields of inquiry. Such studios provide a forum for teaching, collaborative research, and discussions with and among stakeholders.

In order to tackle the complexity of urban systems, the work is structured according to different

scales of analysis, ranging from the territory of a region to building assemblies – taking into account, however, that the allocation of land, energy, material, capital, and other resources must cut across distinctions of scale. The inquiries specifically move along three vectors: territorial design (large-scale), urban design (medium-scale), and building design (small-scale), aiming at sustainable developments of the city as an entity, of urban neighbourhoods, and of architectural structures. Central to this approach is the intermediate role of urban design as a bridge-discipline between regional planning and architecture. As measures taken at the small scale have an effect at the large scale, and vice versa, the sustained communication among the various levels of the investigation

is paramount. Thus, the design studios pursue a twofold objective: to link the different scales and concurrently synthesize findings from a range of disciplines.

Using Addis Ababa as a case study, various hypotheses and propositions for its future development are assessed. While working with real conditions, the explorations are speculative, predicting forthcoming challenges and identifying potential solutions. An important objective is to foresee how Addis Ababa might evolve in the future. The design of anticipated developments offers a practical means to identify prospective transformations. Acknowledging the proverbial expression that «the only constant is change», the urban fabric of a given site is understood not as a fixed entity in time but as an incessantly evolving system. Herein, design also entails the design of processes. A form of projective investigation is promoted, combining analysis, design, and realization strategies.

Current studio work is structured according to three phases of investigation, each demarcated

by specific methods and understandings of design research. Learning from Addis (Phase 1) builds on Robert Venturi and Denise Scott Brown's analysis of Las Vegas using mapping techniques as design tools to delineate both re-readings and re-writings of Addis Ababa's social and physical spaces. Addis Through the Looking-Glass (Phase 2) explores, as in Lewis Carroll's Alice adventures, the possibilities of viewing the world from another vantage point, through the mirror so to say, to test design propositions as prototypical urban strategies in the different cultural contexts of cities in both the developed and developing world. Quo Vadis, Addis? (Phase 3) seeks, with a nod to Henryk Sienkiewicz's political novel, to generate design projects for implementation at the local level – countering prevalent tendencies to engulf developing countries in the global economic game.

Considering that cities are highly complex amalgamations and the results of multifaceted and, to some extent, contradictory forces at work, design studios

must be driven by a plurality of points of view, as possibly given by interdisciplinary discourse and team work. The crossing of conventionally established boundaries is precisely what needs to be promoted and practiced. In this, research must bring questions of method and procedure to the forefront that can be transferred to other conditions, while still focusing on proposals for specific solutions. Studios are, in this sense, places of knowledge production, exposing design – whether of buildings or entire territories – to an array of methods from other fields of knowledge. The “Urban Laboratory – Addis Ababa” hopes to make a contribution to a discourse on methods by combining the research trajectories of urban sustainability and urban design. ■

Marc Angéll is Professor at the Department of Architecture of the Swiss Federal Institute of Technology in Zurich (ETH). His research at the Institute of Urban Design addresses developments of large metropolitan regions. He is the author of several books, including *Inchoate: An Experiment in Architectural Education*; *Deviations: Designing Architecture*; and *Indizien* on the political economy of contemporary urban territories.

