

**Habitat
H**

**Research
R**

**Center
C**

Report

**2017
2020**

**EPFL
ENAC**

Habitat H Research R Center C

Nov 7
2-5:30PM
EPFL, Foyer SG
(SG 294.22)

Healthy Habitats Initiative

The Future of Urban Health, visions and perspectives

Habitat H Research R Center C

4 Dec 2018
10AM-2PM
EPFL, Foyer SG
(SG 294.22)

Digital Habitats Initiative

Digital Futures Network Day
Connecting research projects on digital traces & society

digitalfutures.epfl.ch

Habitat H Research R Center C

9-10 Septembre 2019
Salle de conférence
Faculté de Médecine
et Pharmacie, Université
Ibn Zohr Agadir

DESSINER DES
(ECO)SYSTEMES
AGRO-URBAINS
RÉSILIENTS

Urbanisme, architecture
et agriculture au défi
du changement climatique

EPFL
Global Change Field

Habitat H Research R Center C

12-14 Jun 17
EPFL, Lausanne
Maison d'Igor, Morges

Comparing Habitats

International PhD seminar

Habitat H Research R Center C

Mar 4
6-8 PM
EPFL-MXF 1

Grand Genève Initiative

CINÉ-CLUB
La salamandre
Alain Tanner (1971)

Habitat H Research R Center C

Feb 18
6-8 PM
EPFL-MXF1

Grand Genève Initiative

CINÉ-CLUB
Jonas qui aura 25 ans en l'an 2000
Alain Tanner (1976)

Habitat H Research R Center C

30 April 19
22 Jun 19
Archizoom, EPFL

THE LIVING CITY

Park Systems from Lausanne to Los Angeles

Habitat H Research R Center C

21-23 May 19
FBA / Site Battelle
Bat A

INVENTION OF CAROUGE
50 YEARS AFTER

Crossing history, theory
and urban ethnography

Habitat H Research R Center C

12-14 Dec 2018
Launch 12th
Room SV1717
EPFL

Habitats in Time

Mapping Palimpsest Horizons

Habitat H Research R Center C




3 Dec 2018
9:30AM-12:30
EPFL, MXF1

Économie
circulaire dans
la construction
de la ville

prof. Walter R. Stahel (Product-Life Institute)
prof. Corentin Fivet (EPFL, SXL)

habitat.epfl.ch

Habitat H Research R Center C



2 Dec 2019
12:30PM - 14:30PM
Foyer SG Sud

Urban Bytes:
How Digitalization will change
the Urban?

Workshop #1

Habitat H Research R Center C



19 Feb 2020
12:30PM - 3:00PM
BC 133
EPFL

Urban Bytes:
How the Digitalization
will change the Urban?

Workshop #2

Habitat H Research R Center C



18 Dec 2019
12:30PM - 14:30PM
EPFL BP3127

Seed Money "One Health"

Workshop #1

Habitat H Research R Center C



26 Feb 2020
12:30PM - 14:30PM
EPFL BP3127

Seed Money "One Health"

Workshop #2

Habitat H Research R Center C



11 June 2019
Foyer SG
EPFL

HRC Day
A day of debates to enrich
exchanges among research
centers and laboratories

Habitat H Research R Center C



New
Climates
in...
Lausanne

Lancement des rencontres

4 mai 2020
18h00 - 20h00

Via Zoom

Habitat H Research R Center C



New
Climates
in...
Lausanne

Pre-launch

30 mars 2020
dès 18h00
Rejoignez-nous avec
zoom us/join

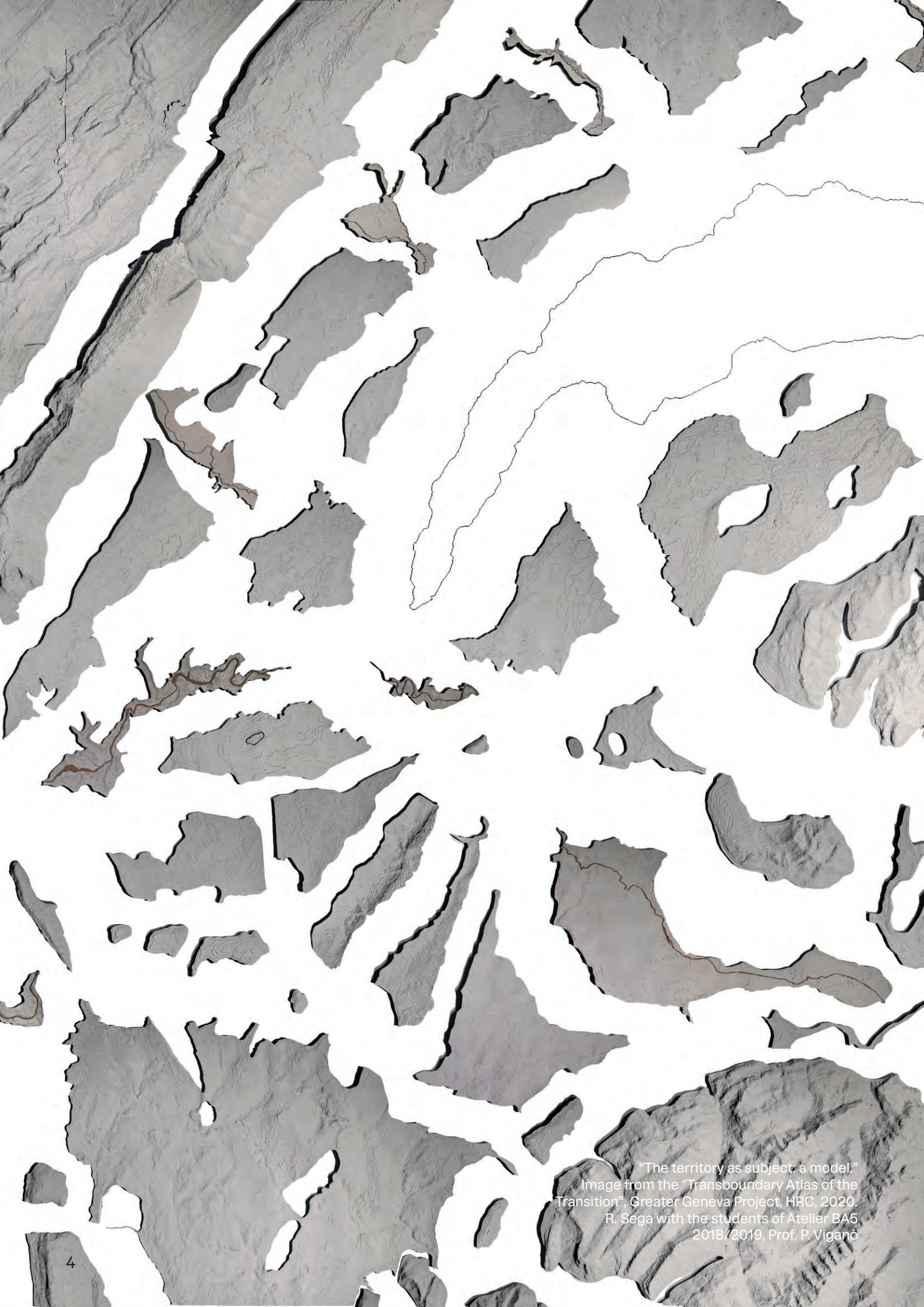
Habitat H Research R Center C



New
Climates
in...
Lausanne

Corniches
pandémie, littérature et topographie : une lecture

8 juin 2020
18h00 - 20h00
Via Zoom



"The territory as subject: a model."
Image from the "Transboundary Atlas of the
Transition", Greater Geneva Project, HRC, 2020.
R. Sega with the students of Ateller BA5
2018/2019, Prof. P. Viganò

Summary

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0. *AVANT PROPOS*

Around a table, four people, coming from architecture, urbanism and social sciences (professors, indeed, at the EPFL), repeatedly discussed and merged their ideas about the foundation of a new research centre. The ambitions were multiple: to address the “urban” as a category to be redefined in relation to the practice of inhabiting a territory, to place the “project” at the heart of an interdisciplinary research, coupling Science with Design, to develop a future oriented gaze, between “Principle of Hope” and “Imperative of Responsibility”. To renew the “genres”, to develop new research tools through interdisciplinarity, to build an innovative platform for discussion, exchange and imagination on the frontier of the urban issue were our strategic goals. It was 2015. The conversation rapidly enlarged and gave rise to several seminars about interdisciplinary research, while exploring the interest to collaborate from the Laboratories within ENAC and EPFL faculties. It was 2016. In September 2017, HRC was funded by ENAC and started its official life as a faculty research platform.

The Centre is today at the conclusion of the first three-year cycle and is being submitted to a first evaluation. The Report here included is the accurate witness of all the activities done: it shows the effort to maintain the initial ambitions and to translate them into concrete research initiatives and actions. It also shows limits and potentials of the chosen formula: the need to pour more energies and resources into it, while consolidating its strengths.

Habitat Research Centre (in this document also HRC or HABITAT) is a faculty research platform involving the laboratories whose competences are oriented towards the analysis and transformation of the urban habitat. The platform seeks to foster collaborations with other laboratories of ENAC and EPFL, based on their own research fields.

The organization of the Centre is shown in these pages. A Scientific Board is advised by two wise persons and directed by Paola Viganò. The Executive Board is coordinated by Martina Barcelloni Corte, working on the research development and funding. The Administrative Collaborator, Valérie Pahud, follows the administration of the Centre. The four founders (Vincent Kaufmann, Jacques Lévy, Luca Ortelli and Paola Viganò) are all part of the Centre, holding different positions and roles within the current organization. During the three years, the needs of HABITAT have been limited to an office space. From the integration and rationalization with other initiatives, a more efficient use of the resources can be imagined.

Founding date: 01.09.2017

1. CURRENT ORGANISATION OF THE CENTRE

DIRECTOR



Paola Viganò

ADVISORS



Jacques Lévy



Saskia Sassen

SCIENTIFIC BOARD



Marilyne Andersen



Elena Cogato-Lanza



Béla Kapossy



Vincent Kaufmann



Luca Ortelli

EXECUTIVE BOARD



Martina Barcelloni Corte
Coordinator



Derek Christie



Shin Alexandre Koseki



Qinyi Zhang

Executive Board Former Members: Chiara Cavalieri, Farzaneh Bahrami; Roberto Segà; Matthew Skjonsberg

ADMINISTRATIVE STAFF



Valérie Pahud

Involved Laboratories



ALICE

Atelier de la Conception de l'Espace



CEAT

Urban and Regional Planning
Community



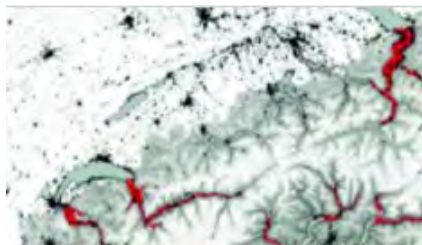
DLAB

Data Science Laboratory



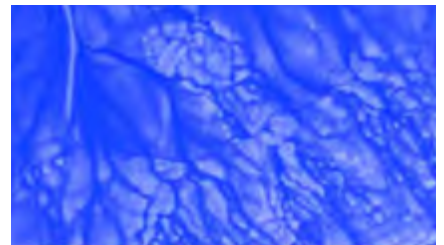
IMAC

Applied Computing and Mechanics
Laboratory



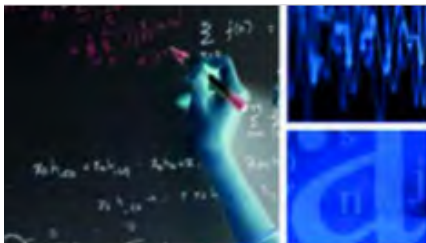
LAB-U

Laboratory of Urbanism



LASIG

Laboratory of Geographic Information
System



LIDIAP

Laboratory of the Idiap Research
Institute



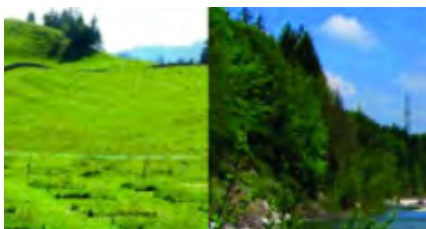
LIPID

Laboratory of Integrated Performance
in Design



MCS

Structural Maintenance and Safety
Laboratory



EcOS

Ecological Systems Laboratory
(involved until July 2019)



DHLAB

Digital Humanities Laboratory



HERUS

Laboratory for Human-Environment
Relations in Urban Systems



IAGS

Institute for Area and Global Studies



LASUR

Urban Sociology Laboratory



LAST

Laboratory of Architecture and
Sustainable Technologies



LCC

Conservation and
Construction Laboratory



PERL

Plant Ecology Research Laboratory



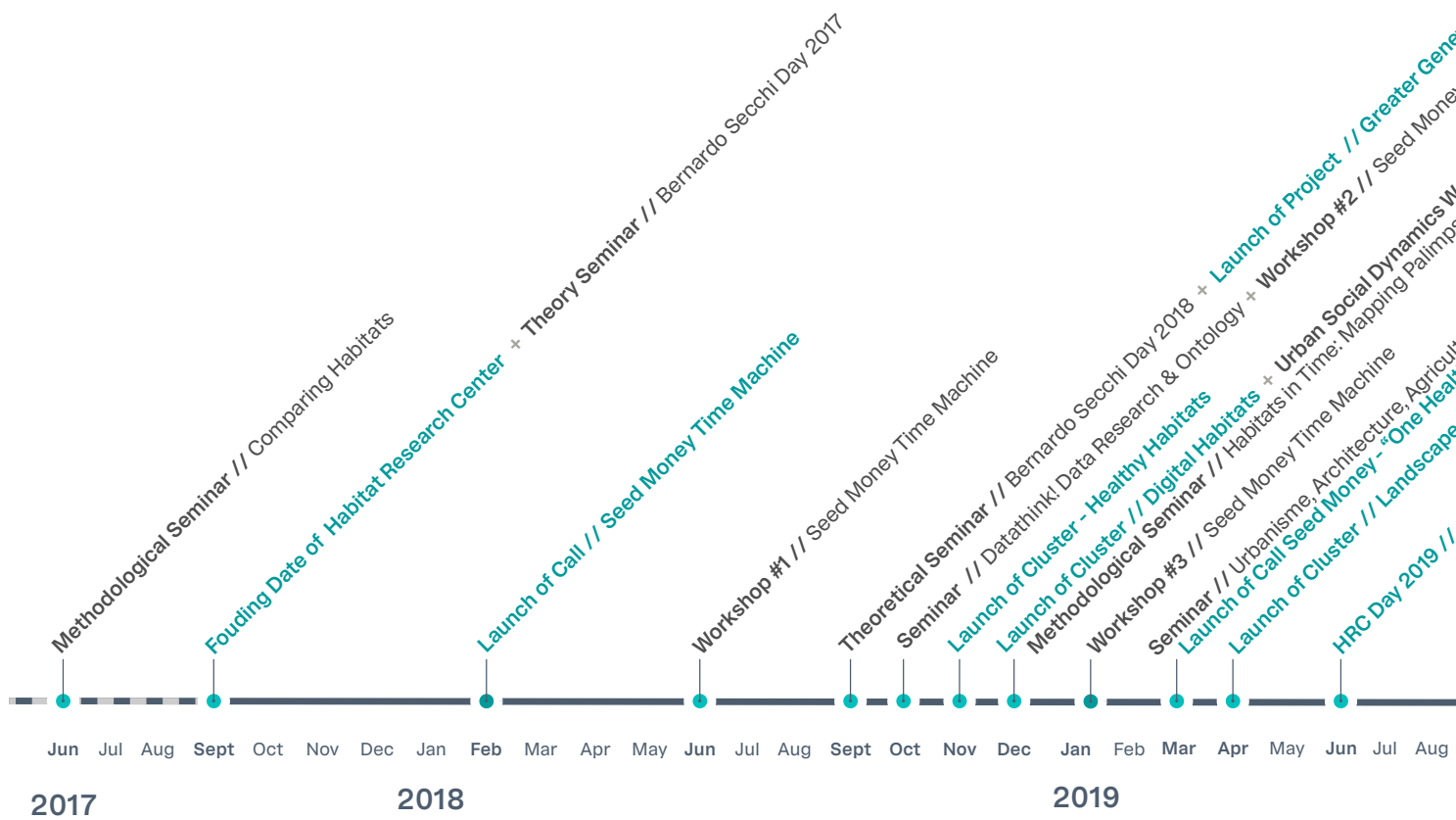
SBER

Stream Biofilm and Ecosystem
Research Laboratory



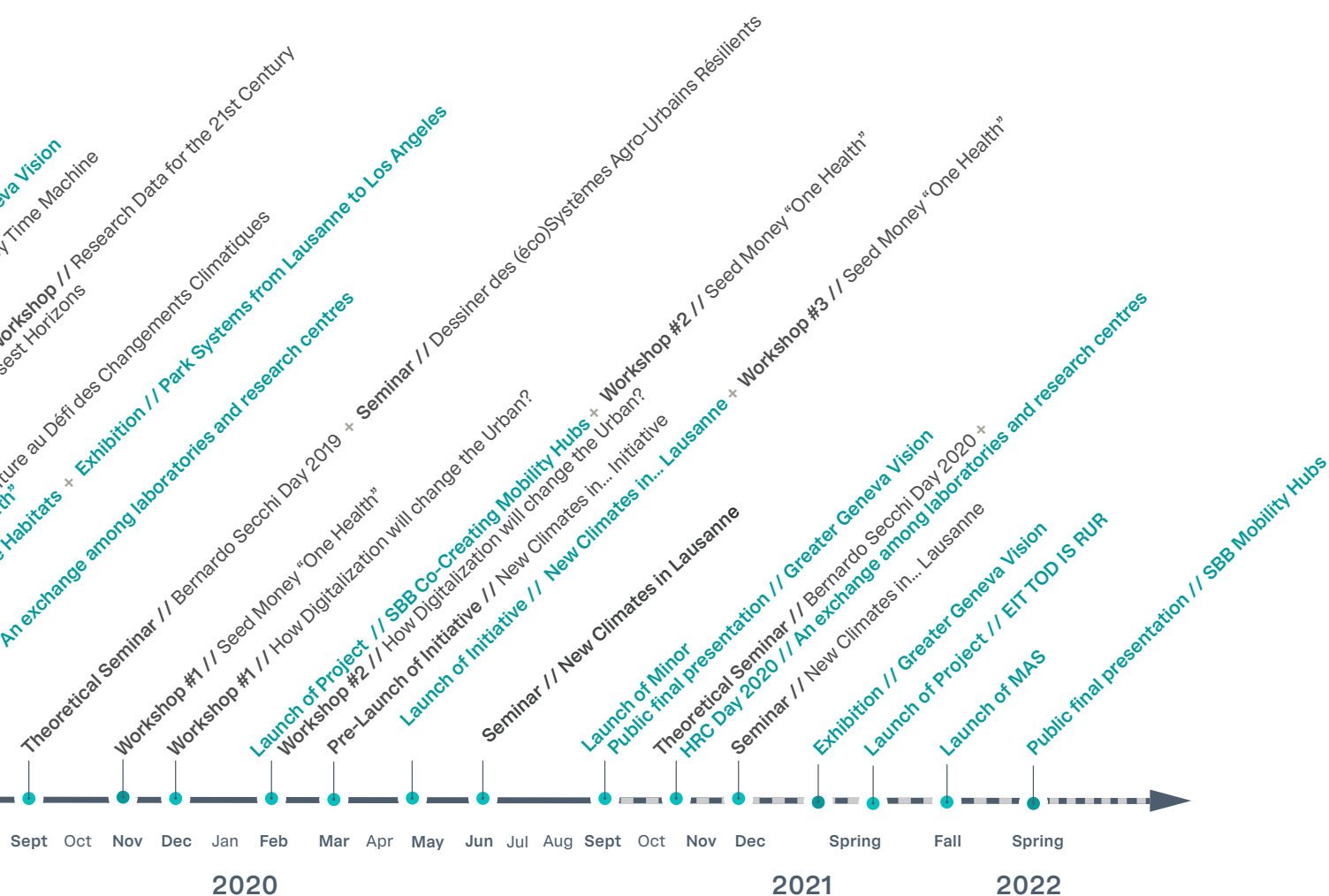
TSAM

Techniques et Sauvegarde de
l'Architecture Moderne



2. IMPORTANT DATES

Since its foundation in September 2017, HRC has been developing several initiatives involving research, teaching and projects, creating a bridge between Academia and Society.



3. MISSION, OBJECTIVES AND STRATEGY

Habitat Research Centre is an interdisciplinary research platform. Its mission is to explore the urban phenomena and to produce visions and projects on this primary topic. Allying basic research and research by design, Habitat Research Centre is a logical and fruitful development of the EPFL's mission, offering a unique aggregation of architects, engineers, urban ecologists and social scientists. Cities are at the same time complex societies, material sedimentations, technical systems and ecological organizations. The four aspects, indivisible, are at the foundation of the research platform.

HRC aims at an international leading position addressing inter-pluri-transdisciplinarity as a core value; to promote both local and international initiatives; to identify places of innovation at international level. HRC aims to position itself at the frontier of the urban phenomena assuming the future as a “research habit”, to link Academia and Society and to explore, through design, the ecological, technological and socio-economic transition in the urban space. HRC aims at bridging research, teaching and design.

The City-Territory is going through a widespread metamorphosis. This is the moment to think about extensive research that looks at the ordinary city in a new and radical way. On the one hand, the commitment to different projects stimulates the production of knowledge. Here research through design has proven itself. On the other hand, urban projects are deeply established in empirical and theoretical analysis of the present. Urban dynamics are technically and politically hard to grasp due to their complexity and temporality. It is thus necessary to join observation and action, reasoning and intention.

In cooperation among the different orientations, the research makes use of various cognitive strategies, tools and methods to produce:

- *Environmental and Social Analyses*
- *New Cartographies*
- *Visions and Scenarios*
- *Projects and Prototypes*

Furthermore, HRC develops an original approach to explore the ecological, technological and social transition, based on three main working hypotheses:

Inhabiting

The urban is an environment with a powerful material framework: architecture, landscapes, complex relations with natural dynamics, history, not to mention culture. It is also a sum and an association of practices, ways of life, spacialities, imagery, desires and expectations. These two research fields often neglect each other: HABITAT positions itself at a crossroads between all of these.

Cities are manufactured by a multiplicity of components, where ordinary citizens are relevant actors of change. Their models of urbanity and of society play a decisive role in shaping urban planetary dynamics. This position requires reflections at all scales and at multiple levels: from imagery to the concrete detail of the sidewalk, to the City-Territory world, from the interaction of people in the public space to flows and mobilities.

The City Territory as a Renewable Resource

All over the world, extremely stratified territories have generated specific forms of urbanity. The City-Territory has been shaped by the slow accumulation of infrastructures, ecological and agrarian manipulations, fine settlement grains, distribution of services, fully productive landscapes, as well as urban life-styles. More than a problem, HABITAT looks at the City-Territory as an enormous spatial and natural capital. Its space, with its inner characteristics and stratification, can be designed as a renewable resource.

In this crucial transition where unknown or neglected urban phenomena become fully recognized and acquire the new status of cultural and political objects, rationalizations are always provisional, expressions of power, of technological evolution, led by historical

and cultural values. The understanding of the City-Territory different rationalizations and life-cycles (water management, agriculture techniques, extended mobility, energy production, social structures, urban metabolisms...) is key to the future.

How to Live Together: A New Biopolitical Project

The investigation of the future, or better, the future as a research habit, is at the core of HABITAT research platform. Pressure is on adaptability to climate change, socio-demographic shifts, economic and energy transitions, massive delocalization of populations, new or higher levels of risk. We can follow the return of life's course into the debate about the city and the territory. In the dense sedimentation of rationalizations at work, dismantled or forgotten, the City-Territory contains potentials and possibilities that are crucial in a future of increasing migrations, demographic and sanitary crises, when the flexibility of space and its productivity become strategic. New coexistences and "space as a renewable resource" must be explored. The contemporary spatial, social and economic context asks for a redefinition of the modern biopolitical project, that is to say a project whose goals were to maintain, secure and render productive life. Today, multiple questions are raised by the ecological transition, the technological and urban economic transformations, the life course changes that largely intersect with space and urbanization issues. If the ordering of the urban environment, the spatial organization of resources and the medicalization of space were the main fields of the modern biopolitical project, we are today in need of redefining new conditions of "living together", enlarged to human and nonhuman agencies. HRC aspires to contribute and clarify the enormous conceptual, material, and value-based arising issues.

4. CLUSTERS

Four Interdisciplinary Research Clusters have been launched to federate EPFL's existing research excellences, while fostering original and well-addressed research trajectories:

Healthy Habitats, which aims to make cities healthier places for human and non-human beings;

Digital Habitats, which explores the fallouts (challenges/opportunities) of digitalisation on the inhabited space;

Landscape Habitats, which aims to rethink the relation between the natural and the built environments;

Productive Habitats, which seeks to understand how new work paradigms will transform the urban landscape and our ways to inhabit.

Within each Cluster's activity and in direct and strong relation to each Cluster's topic, each year a set of research, teaching and/or networking activities have been conceived and articulated.

The four clusters do not cover all the research topics investigated by HRC in these years and they may evolve during time. Other themes are tackled, focusing for example on mobility issues (described in 6.4 Other projects and Initiatives). Far from a sectorialization of research, the clusters have worked as interdisciplinary organizational devices which have been extremely useful to set a multidimensional discussion, also inside the team (executive and scientific boards).

Productive Habitats

Launched on Sep 2018, in parallel with the “Greater Geneva Vision”

Responsible person: Qinyi Zhang (succeeded to Roberto Segal)

In the relationship between production activities and the territory, labour has profoundly changed in recent decades. The big transformation of the world economy and the impact of new technology related to digitalization and automation are pervasively changing the relation between work, human capital and spatial capital. This Cluster, more than the others, implies to open ENAC and EPFL to collaboration with disciplines (e.g. economics) that are not present on the Campus. Far from a limitations, HRC considers this an opportunity to enrich its interdisciplinary character.

New types of working spaces are emerging and the relationship between such transformation and the social, environmental and economic transition of our cities is a central issue. In this moment, when there is not yet a model for reference that can help advance the understanding of real phenomena, it becomes essential to go back “in the field” to observe the spaces of production. The Productive Habitats Cluster proposes to work on new hypotheses to understand how the new paradigms of labour, even when inserted into old models of territorialisation, can contribute to human settlements evolution of the City-Territory. New working spaces have become part of a larger urban debate on overcoming the concept of the zoning paradigm of the functionalist city, highlighting how, through space, and space of production in particular, ecological balance and social equity can be addressed.

More specifically, Habitat Research Centre is interested to research on the material conditions of a specific type of work – production – and its role in structuring the contemporary and future urban space. This central role of productive space is strictly linked to local economy and social space, as well as to the contemporary, urgent environmental transition, developing a link between energy and resources within the framework of circular economy.

The general guiding hypothesis is that, differently from the modern industrial city, “production does not shape the city anymore”, especially in the European case. However, this does not mean that production does not “design the city”. It remains a strong agent, spatially present and active. The recent pandemic conditions have made the necessity to reconsider places and spaces of work in relation to a more general reflection on “Habitats”.

Seminars

- Circular Economy in the construction of the city (Dec 2018)

Design Research Projects

- Greater Geneva 2050 Vision (Sep 2018- Sep 2020)

Healthy Habitats

Launched on Nov, 2018

Responsible person: Derek Christie (succeeded to Farzaneh Bahrami)

The preservation of the “quality of life” represents a fundamental challenge to investigate the future of urban space. Urban space will need to guarantee healthy, secure and comfortable places to live/work, where clean air and water, access to fertile soils and healthy food, social/territorial connectedness, accessible public transportation systems, use of sustainable and safe building materials are secured.

Today, on the contrary, the nature of the relation between urban form and health seems still largely inconclusive. EPFL's existing research expertise represent a strong potential to develop this Research Cluster in an interdisciplinary manner.

In this regard, developing visionary and innovative solutions implies an understanding of various socio-spatial, economic and environmental determinants of wellbeing in cities, and calls for an integrated interdisciplinary research agenda. The Healthy Habitats Cluster was set up by Farzaneh Bahrami, PhD, in 2018-2019. Upon her appointment at a University of Groningen, the position was taken over by another former EDAR doctoral student: Derek Christie, who holds Masters' degrees in biology, statistics and public health. The main objective of this Cluster is to associate emerging research areas within the EPFL with cutting-edge approaches from the field of public health (environmental health and health promotion in particular). In practice, the activities of the Healthy Habitats Cluster have ranged from organizing trans-disciplinary conferences and workshops to submitting ambitious research projects to various Swiss and international funding schemes. One of the landmark activities has been the presentation and introduction of the One Health concept to selected research teams within EPFL (see section 6.2. Seed Money Initiative). In the future, the plan is to integrate more public health concepts into the mainstream of teaching and research, across the spectrum of environmental engineering, civil engineering, architecture, and beyond. The recent pandemic of Covid-19 makes this perspective even more urgent than before.

Seminars

- The future of Urban Health, visions and perspectives (Nov, 2018)

Workshops

- Seed Money “One Health” Workshops (Dec 2018- May 2019)

Initiatives

- Seed Money “One Health”, in collaboration with the Landscape Habitats Cluster (Nov 2019)

Funding Proposals

- SNSF Sinergia “Cities of Extended Walks” Proposal (Dec 2019)

Digital Habitats

Launched on Dec, 2018

Responsible person: Shin Koseki

Digital technology can be an important tool to improve the knowledge of the urban phenomena. The impact of digitization on sustainability and social justice remains uncertain. New technology offers a tremendous potential for our habitat, but not without risks.

In the last five years, spatial and urban planning research and practice have increasingly integrated digital tools and methods as means to analyse and design sustainable urban environments. They have also been increasingly active in monitoring the negative impacts of AI, tracking and swarm computing on social justice and equality, privacy and energy consumption. Digital Habitats took the leadership to federate digital research and innovation, delivering strategic planning, scientific counsel, pedagogic training and research in the field of digital urban planning and studies in Switzerland. Over 2 years, Digital Habitats has hosted one Visiting Professor from the US, took part in three international research projects, hosted three international conferences, organized five international workshops, delivered three interdisciplinary courses, presented one public science event, and coordinated one transdisciplinary research proposal. The Digital Habitats Cluster federated ten laboratories across EPFL and tied close relationship with other research centres of the university, as well as with researchers and research organizations across and outside Switzerland. Open and transversal, the Digital Cluster gathered people from all regions of the world, representing over fifty universities, cities governments, companies and organizations. In the upcoming months, Digital Habitats will continue its mission by setting up a co-laboratory between EPFL and a major French telecom company, continue supporting the School's Digital City and Sustainability Clusters, take part in advocacy activities of cities and AI with the IEEE and the AIIA, help organize the first International Congress on the Governance of AI, and edit a special issue of Frontiers in AI Cities. In addition, the Digital Habitats Cluster will intensify its focus on sustainability, open science and citizen science. Together with the other HRC Clusters, Digital Habitats aspires to create a bridge between science, education and citizenship in order to achieve a sustainable transition into the digital age. Since 2019 the Cluster collaborates with the new research centre DHCenter Unil-EPFL.

Initiatives

- Seed Money "Time Machine" (Feb 2018)

Seminars

- Datathink! Data Research & Ontology (Oct 2018)
- Digital Futures Networking Day (Dec 2018)
- Digital Habitats working seminar (Jan 2019)

Workshops

- Workshop #1, #2 How digitalization will change the urban? (Dec 2019 - Feb 2020)

Funding Proposals

- FNS - NRP77 (Apr 2019)

Landscape Habitats

Launched on Apr, 2019

Responsible person: Martina Barcelloni Corte (succeeded to Matthew Skjonsberg)

The Cluster addresses elemental habitats of soil, water and air – first for their own sake, then as the basis for regional conservation efforts, and finally as material and energetic cycles enabling the creation of a ‘second nature’. It aims at identifying natural and cultural landscape patterns as a continuous and mutually reinforcing network relating rural, natural and urban territories.

Such a focus becomes increasingly relevant within the new form of the contemporary city, a City-Territory, in which the new relations established between built and open space and between urban and non-urban domains risks fragmenting and thus threatening ecological as well as human habitats, at large. Biodiversity decline, as a result of increased urban and infrastructural development, while being an issue itself could also reduce the benefits that people derive from functioning ecosystems, i.e. ecosystem services, described as the ecological characteristics, functions, or processes that directly or indirectly contribute to human well-being. Water, soil, air...have re-emerged as fundamental actors that will be even more important in the future of Climate Change adaptation, they are at the same time resources and threats for our cities and our lives. The theme of coexistence of different forms of life, so central in the actual societal debate, is at the core of a new pact among living and non-living systems. In this respect, the Cluster promotes interdisciplinary projects going beyond traditional concepts and focusing on the transformation of the urban environment, connecting ecologists, pedologists, hydraulic engineers and environmental engineers... with architects, urban and territorial designers. The aim is to improve the resilience of human and non-human populations as well as living and non-living systems. Habitat Research Centre, interested in the ecological, socio-economic and spatial transitions, is interested in developing research on such topics.

Exhibitions

- Park Systems from Lausanne to Los Angeles (Apr, 2019)

Seminars

- Urbanism, Architecture, Agriculture Facing the Challenge of Climate Change (Mar 2019)
- Designing Resilient Agro-Urbains (Eco)Systems. (Sep 2019)

Education

- ENAC Week Hidden Rivers (Apr 2019)

Initiatives

- Seed Money “One Health”, in collaboration with the Healthy Habitats Cluster (Nov 2019)

Design Projects

- Greater Geneva Vision (Sep 2018- Sep 20)

5. PROJECTS AND INITIATIVES

The Means of Action by which HABITAT has intended to implement its mission are diverse and concern the research, the teaching and the dissemination ambits. A set of research activities (e.g. PhD thematic cycles), seminars and projects have been organized to develop new research flows. Among them we can highlight three main initiatives:

- “Vision for Greater Geneva 2050”: HABITAT has been involved in a concrete interdisciplinary design activity with its participation as one of the seven international teams selected for the development of a vision of Greater Geneva at the horizon 2050.
- “Seed Money” Initiative: HABITAT’s activity lies at the intersection of the three ENAC Institutes and their respective disciplines: Civil Engineering (IIC), Environmental Engineering (IIE) and Architecture (IA). The platform supports collaborations among ENAC and EPFL laboratories based on their own research fields. The Seed Money Initiative has launched research themes involving laboratories at ENAC and EPFL, beyond disciplines to construct original knowledge.
- Theoretical Seminar Series “Bernardo Secchi Days”: in collaboration with the Brillard Foundation, HABITAT has organised a series of International Seminars on fundamental urban issues dedicated to the memory of urbanist Bernardo Secchi.

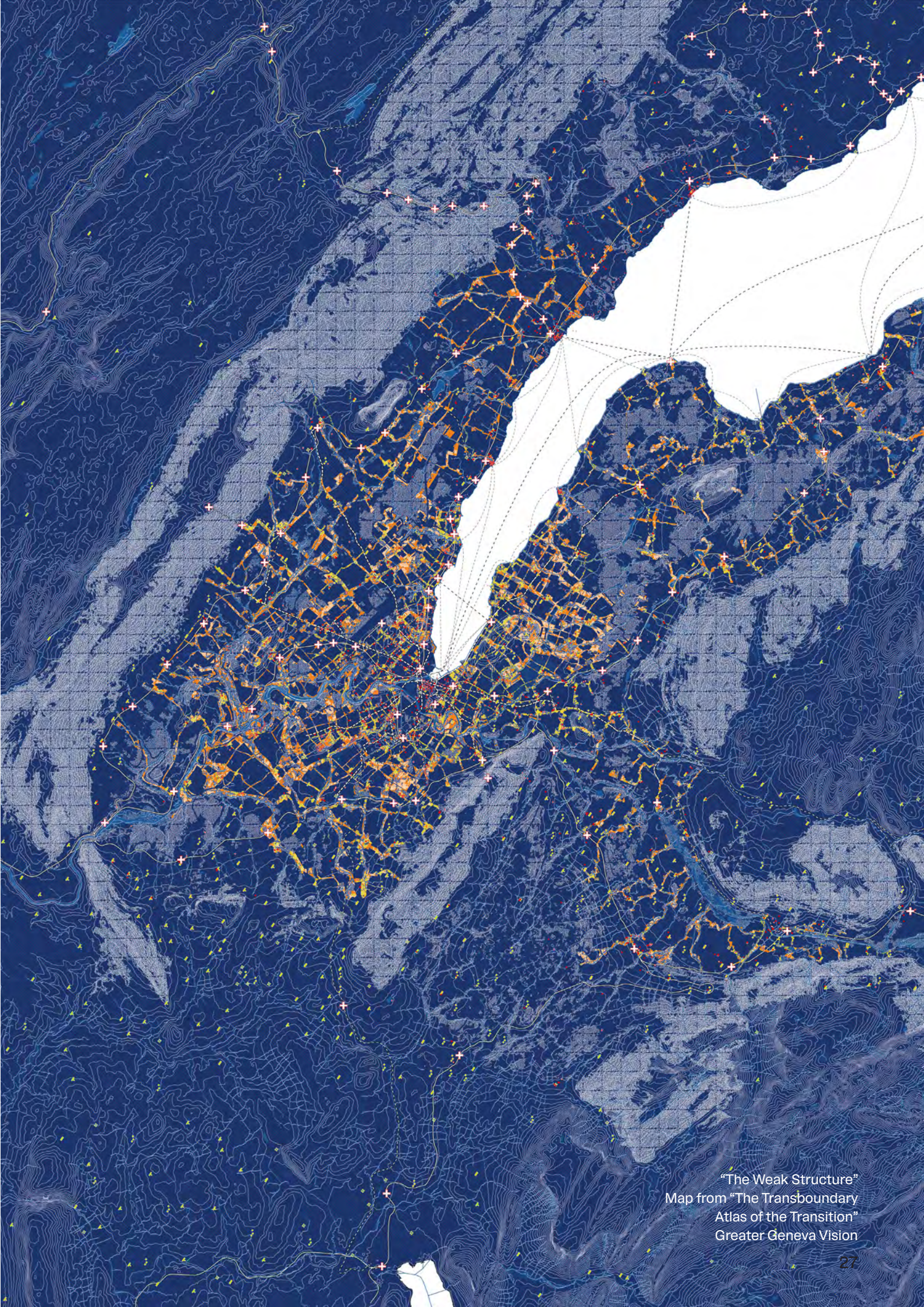
5.1 Greater Geneva Vision

The Urban-Architectural and Landscape Consultation “Prospective Visions for Greater Geneva. Inhabiting the City-Landscape of the 21st Century” was launched, on the initiative of the Brillard Foundation, on September 2019.

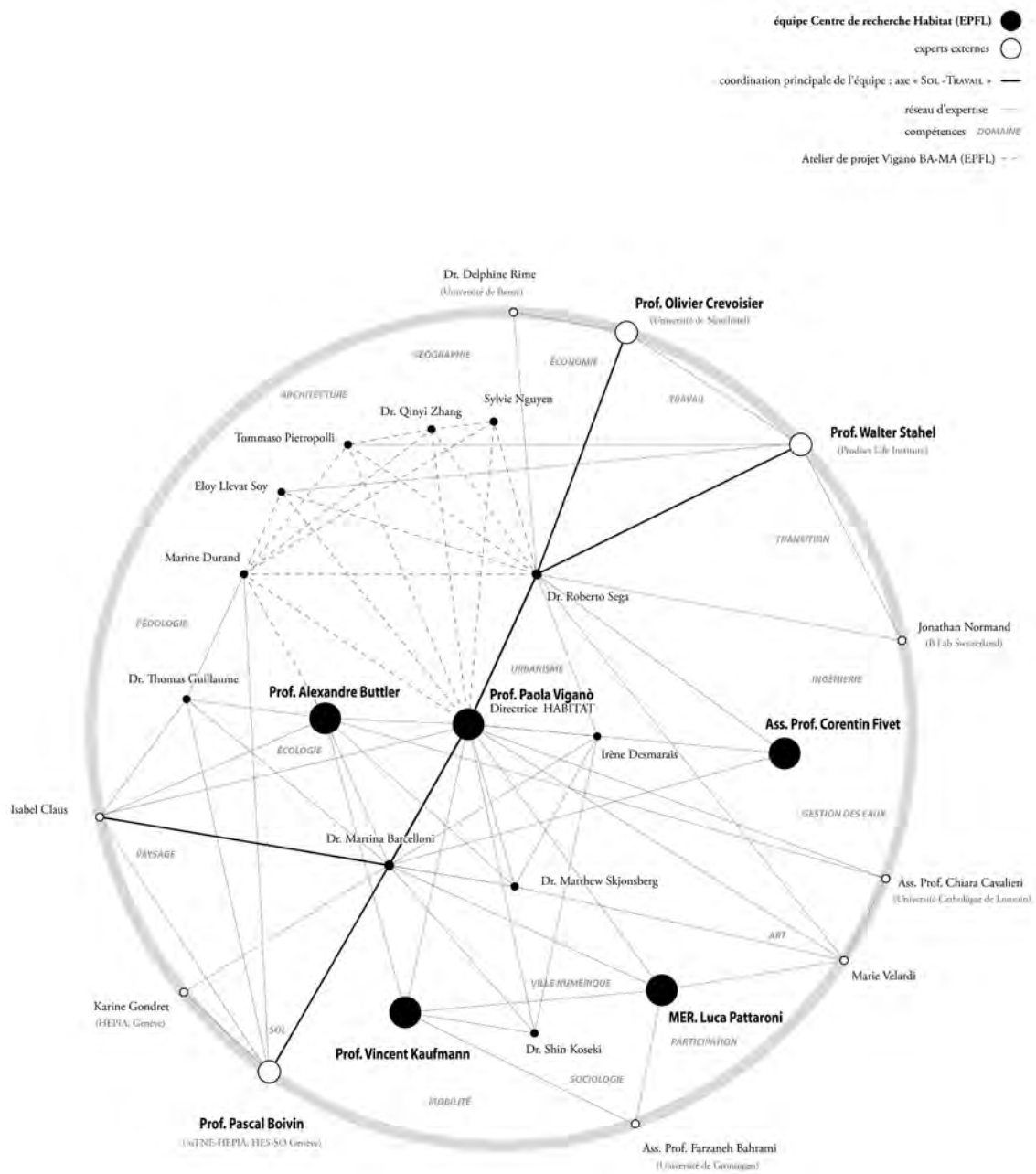
International and interdisciplinary, its ambition was to gather elements of knowledge and to develop a 2050 design scenario for the Franco-Valdo-Geneva agglomeration. Its character was based on the three pillars of sustainable development: environment, society and economy. The Consultation was under the aegis of the United Nations for the Environment and under the high patronage of the Federal Office for Territorial Development.

Thanks to this project HRC was able to:

- strengthen existing relations among its members/create new relations (develop its network)
- promote itself both internationally and locally (State of Geneva)
- test original design hypotheses (interdisciplinary) on a concrete territory
- create new interdisciplinary knowledge



"The Weak Structure"
Map from "The Transboundary
Atlas of the Transition"
Greater Geneva Vision



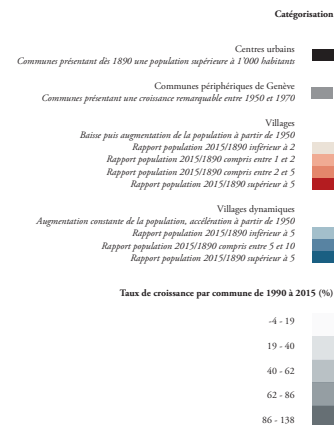
Composition of the core team:

Prof. Paola Viganò (HRC director, LAB-U), Prof. Vincent Kaufmann (HRC-LASUR), Prof. Alexandre Buttler (HRC-ECOS), MER. Luca Pattaroni (HRC-LASUR), Ass. Prof. Corentin Fivet (HRC-SXL), Dr. Roberto Segal (HRC e.b., LAB-U, coordinator of the team), Dr. Martina Barcelloni Corte (HRC coordinator of the executive board), Dr. Qinyi Zhang (HRC e.b., LAB-U), Tommaso Pietropolli (LAB-U, co-coordinator of the team).

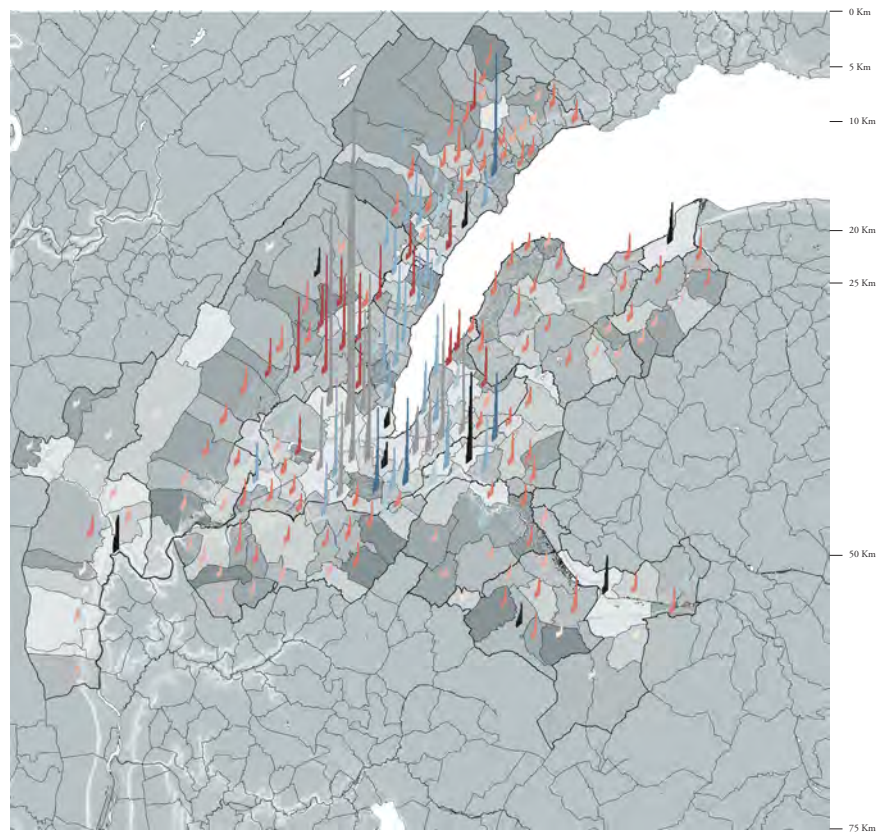
Evolution de la population par commune dans le Grand Genève

Ech. d'origine de la carte - 1 : 100'000

L'étude de l'évolution de la population communale du Grand Genève entre 1890 et 2015 nous permet d'identifier quatre types de croissances différentes et de distinguer ainsi les centres urbains (population supérieure à 1000 habitants en 1890) des communes périphériques de Genève (croissance remarquable entre 1950 et 1970), des villages (perte puis regain de population à partir de 1950) et des villages dynamiques (croissance linéaire voire exponentielle depuis 1890). On remarque aussi que les communes présentant le taux de croissance le plus élevé au cours des dernières décennies se situent majoritairement en France le long du pied du Jura, de la côte du Chablais ou encore dans les hauteurs de la vallée de l'Arve mais également en Suisse dans le Jura vaudois soit en dehors des agglomérations.



Etat et structure de la population dans le Territoire franco-suisse-génévois, de 1968 à 2010 : T01.04 - Observatoire statistique transfrontalier
Système d'Information du Territoire à Genève (SITG)
Institut national de l'information géographique et forestière (IGN)



Une métropole de villages

Ech. d'origine de la carte - 1 : 100'000

La carte ci-contre présente le relevé des villages et hameaux du Grand Genève et au-delà. Ce relevé empreinte sa légende au rapport intitulé "Démarche identité et patrimoine, le rôle structurant du patrimoine bâti : connaître, préserver, créer" rédigé par L. Jaunin, sous la direction de M. Iglesias et avec l'appui de Mayor et Beusch architecture et urbanisme. Sont ainsi distingués cinq types d'implantation historique sur le territoire : le village dit "rue" (le long d'une rue unique), "ramifié" (le long de plusieurs rues entrecroisées), "tas" (de façon compacte généralement sur un croisement de deux routes), "éclaté" (dispersé sur un rayon d'environ un kilomètre) ainsi que les hameaux (groupement d'une dizaine de maisons sans morphologie particulière).

Une sélection des infrastructures routières actuelles cherche à mettre en lumière les connexions les plus directes entre les différents villages afin de représenter le maillage territorial découlant de cette implantation. Cette carte met en avant le caractère dispersé de l'implantation humaine sur le territoire genevois, en complément de représentations territoriales plus classiques mettant en avant les centres urbains majeurs, ici volontairement effacés. Elle constitue également une base d'analyse typologique en vue de projets de développement bâti exemplaires pour le Grand Genève.



Carte de l'Etat major (1820 - 1866)

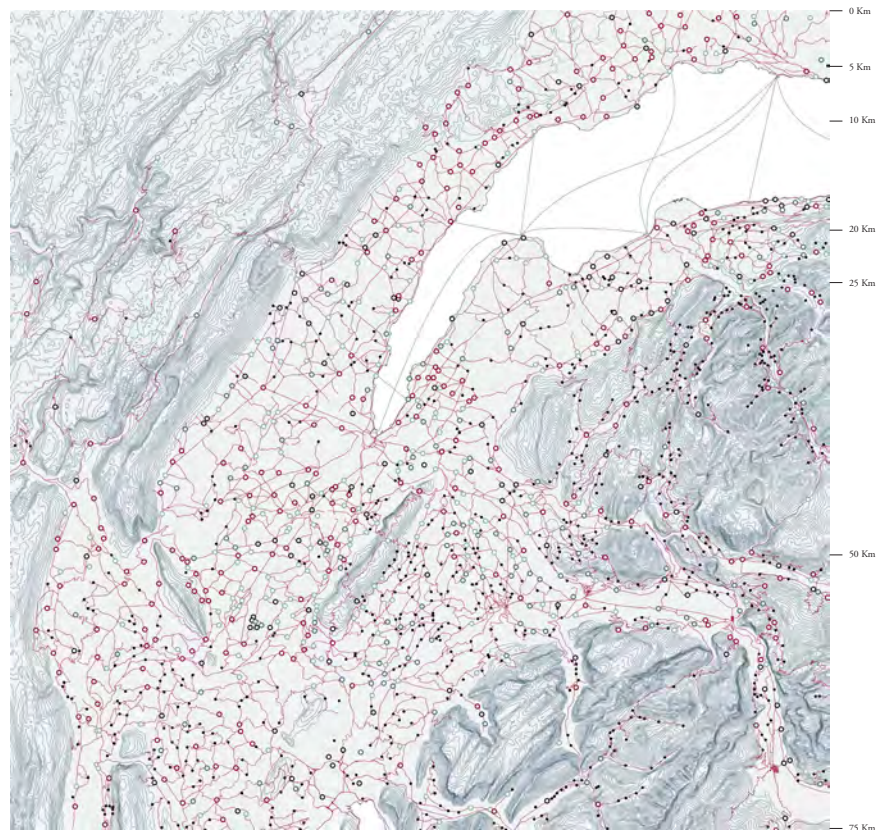
Carte Dufour (1864)

Pour la légende/identification des types:

Cahier n°13-72 : Démarche identité et patrimoine, le rôle structurant du patrimoine bâti : connaître, préserver, créer, juin 2016, L. Jaunin sous la direction de M. Iglesias et équipe Grand Genève, avec l'appui de Mayor et Beusch architecture et urbanisme

Système d'Information du Territoire à Genève (SITG)

Institut national de l'information géographique et forestière (IGN)



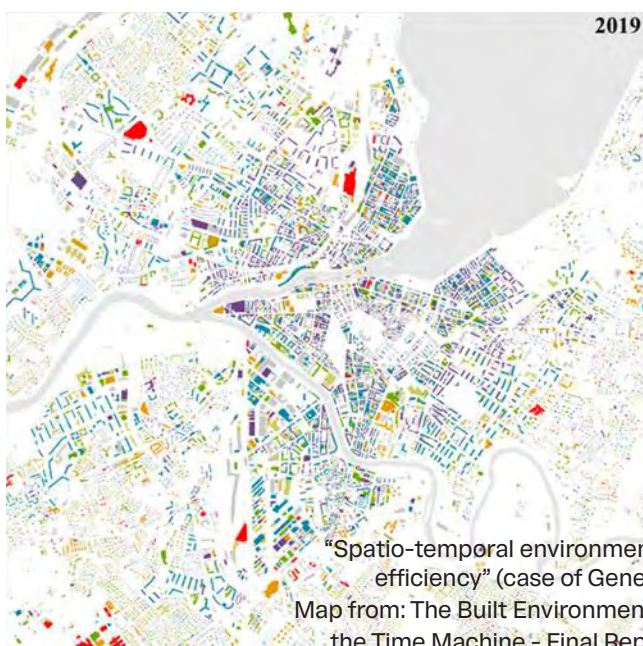
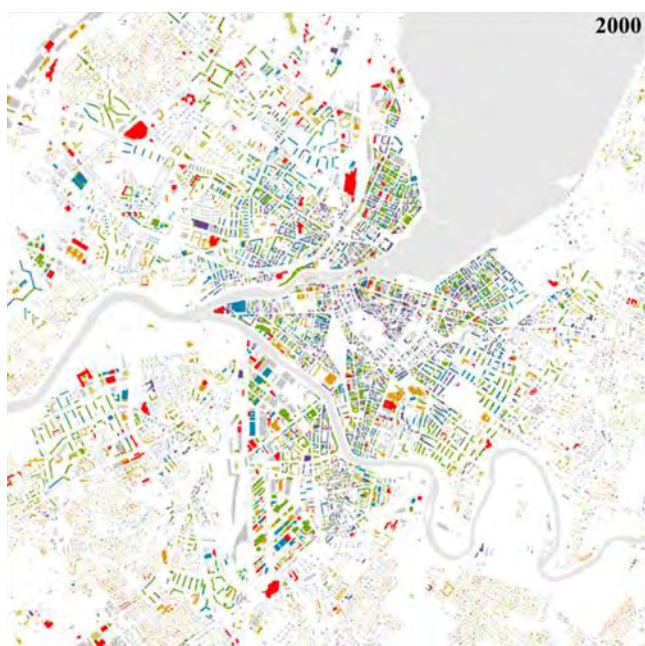
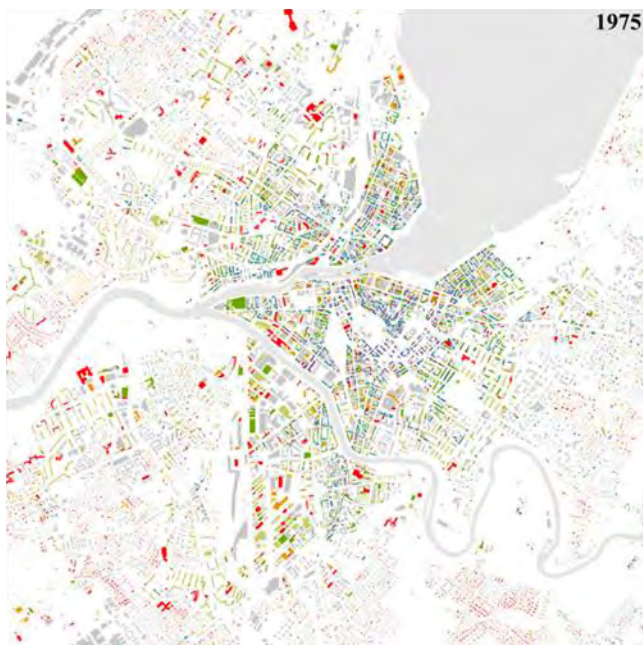
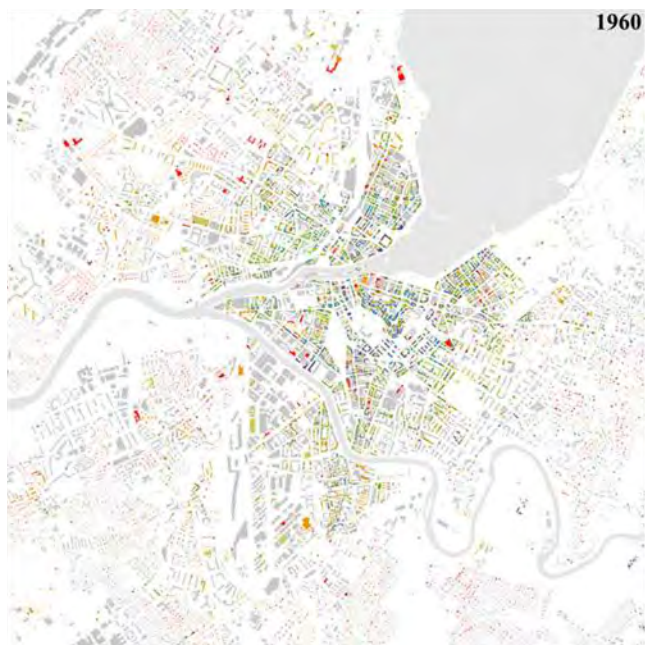
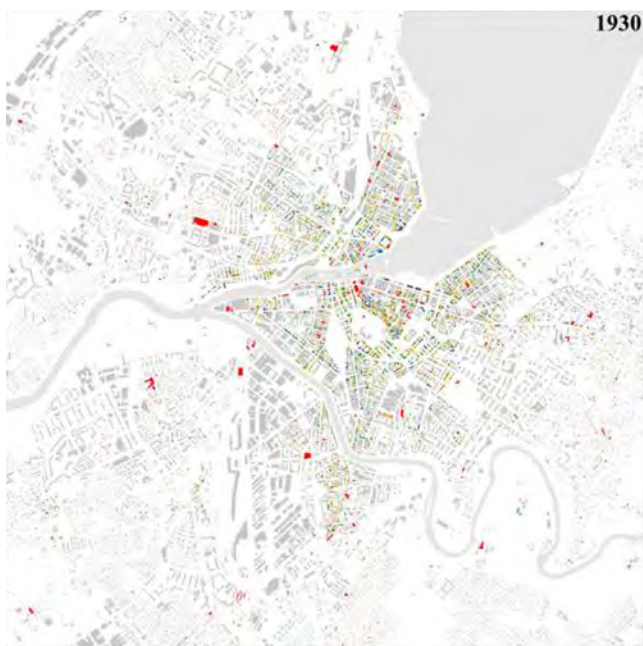
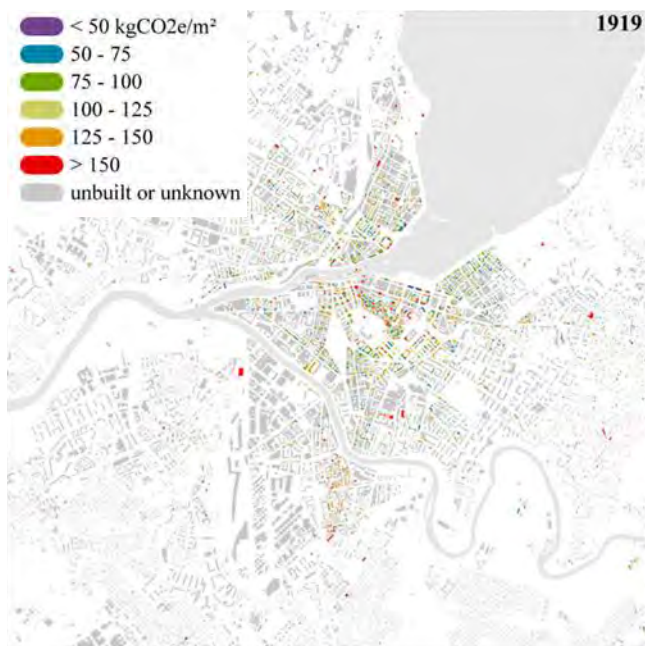
"Evolution of Greater Geneva's polulation" (above);
"A Metropolis of Viillages" (below).
Pages from "The Transboundary Atlas of the
Transition" Greater Geneva Vision

5.2 Seed Money Initiative

Nowadays, cities and territories have to face economic, environmental and social crises with multiple and complex dynamics that are replacing processes that were thought to be more predictable. The objective of the Seed Money Initiative has been and is to encourage and promote interdisciplinary collaboration and research among EPFL laboratories and to create new interdisciplinary knowledge at EPFL. Current funding schemes make it more of a challenge to secure third-party funding for research projects that are based on interdisciplinary approaches, HRC has created the Seed Money Initiative also to overcome this barrier, while promoting the seeding of interdisciplinary approaches of research. During the Centre's first two years of activity (2018, 2019), two calls have been successfully launched: the "Time Machine Prototype" and the "One Health" Calls. A third Call will be launched before the end of 2020.

Thanks to this project HRC was able to:

- strengthen existing relations/create new relations within and outside EPFL
- promote itself both internationally and locally (State of Geneva)
- create new interdisciplinary knowledge
- test original interdisciplinary design hypotheses on concrete cases (e.g. case of Geneva)



"Spatio-temporal environmental efficiency" (case of Geneva)
 Map from: The Built Environment in the Time Machine - Final Report
 (see following pages for credits)

5.2.1. Seed Money - “Time Machine Prototype” (2018-19)

The “Time Machine Prototype” Call aimed at building “Time Machine Prototype(s)” experimenting a new approach (4D data modelling) for integrating multi-scalar spatio-temporal phenomena.

Such a prototype served to build multidisciplinary images (and questions) exploring the multiple dimension of time: the historical (the long-term); the present (contemporary dynamics and flows) and the future (both short and long-term scenarios). Within this framework the Call aimed at building spatial prototypes of chronological interconnections between: the history of the territory, the cultural heritage, the dynamics of mobility, energy, air, hydrology, the evolution of land-use and territorial infrastructures. The goal of the Call has been to test the Time Machine Prototype applied to spatial and natural sciences, the project demonstrated how individual research, if linked to other research and placed in time/space, can produce additional knowledge while revealing new research questions. Two projects were selected and financed with 30k CHF each:

SWISS TOPICITY

The case of Montreux Jazz Festival from 1967 to 2018

Luca Pattaroni (LaSUR, EPFL), Lucien Delley (LaSUR, EPFL), Thibault Romany (LaSUR, EPFL), Alexandre Alahi (VITA, EPFL), Dario Negueruela (ALICE, EPFL)

“Even if they have accompanied the whole history of cities, major public events have acquired in recent decades an increasingly important dimension in the development and attractiveness of urban centres. During their unfolding, these events induce major reconfigurations of urban forms, whether in the use of buildings and public spaces, flows or even individual and collective behavior. Their resonance however often extends beyond the time of their performance through the constitution of various traces, institutional, memorial and spatial. In the case of a festival like that of Montreux, which is at the heart of the project, the destiny of the city has gradually merged - symbolically and spatially with that of the event. With each rehearsal, the sphere of influence of the festival extends over the city, through new constructions, but also by the expansion of the regions of the city affected by the influx of visitors and the multiplication of stages. These questions do not arise only for major events, but they concern all situations where infrastructures and urban spaces have to contend with significant variations in attendance and densities, whether ski resorts, large spaces audiences sized on the scale of a weekly market or the occasional reception of an international fair.

These challenges call for an interdisciplinary work of description and modeling aiming to articulate the multiplication of urban rhythms - individual and collective - and the spatial and social development of the city. This articulation relates as much to the micro and macro dynamics of human flows as to the systems for spatial management of public events or even the evolution of accommodation policies.”

The Built Environment in the Time Machine

A retrospect of territorial sustainability Prototype: 4D-Mapping the Environmental Impacts of Road Infrastructure in Geneva

Corentin Fivet (SXL), Catherine De Wolf (SXL), François Golay (LASIG)

“We propose the 4D-mapping of the environmental impacts related to human production in the Swiss territory. We believe that such mapping onto a uniform spatial and chronological referential is a necessary, yet inexistent tool to synthesize the complex interactions at play, their past evolution, and their future prospects. The mapping has the potential to trigger unique, multidisciplinary, multiscale research questions involving a large number of labs within the Habitat Research Center.

The suggested prototype is more focused in scope. It addresses cataloguing the embodied carbon of the transport infrastructure of the state of Geneva from the first maps until today. The research project will solve original questions at multiple levels: How does the need for construction materials for transport infrastructure evolve over time? How does it differ from one construction system to another one? What is the measured obsolescence of the current road network and how did it evolve? How is the cumulative environmental impact of a road section related to its age and to its surrounding urban density? How to represent 4D infrastructure data to allow for effective visualization and exploration of their energy consumption?

The requested funding will be mainly used to complement existing GIS datasets: digitalization of historical maps and of communal and cantonal bill of quantities. Missing data will be simulated similarly to state-of-the-art strategies in the life cycle assessment of building stocks. The preparation of the datasets and the analysis of the results are in-kind contributions from the participating research groups.”

The Seed Money Time Machine Initiative produced -for both teams- a series of outputs related to the publication of journal articles and the successful participation to funding calls:

Rhythms of the Eventful City: Elements for a Spatiotemporal Mapping of the Montreux Jazz Festival

Article published in: Urban Planning (5) 2, 2020

Guillaume Drevon, Luca Pattaroni, Lucien Delley, Nils Hamel

This article proposes an original approach to urban events mapping. At the theoretical level, the article is based on rhythm analysis and recent research on urban rhythms. It contrasts with previous research by departing from everyday rhythms to tackle the specific rhythms of urban events. Drawing on this theoretical framework, the article proposes to analyse the rhythms of the Montreux Jazz Festival. The article proposes two main types of rhythmic scales, linked with the historical development of the Festival and its annual performance. The methodology is based on a mixed method of data collection and an original analysis framework. The analysis of the historical rhythm is carried out based on the analysis of the festival archives and interviews with experts. The analysis uses the Time Machine visualisation device that reveals three processes of urban resonance: the spread, which shows how the festival is integrated into the existing urban fabric; the openness, which shows accessibility; and the grip, which seeks to evaluate the urban sphere of influence of the event.

Swiss in motion: analyzing and visualizing daily rhythms

CROSS project (accepted) between UNIL, DH Lab and LaSUR

Patrick Rérat, Yann Dubois (IGD UNIL); Frédéric Kaplan, Nils Hamel (DHLAB DHI CDH EPFL); Vincent Kaufmann, Guillaume Drevon (LASUR ENAC IA EPFL).

Over the past 50 years, technological developments in the field of transport and telecommunications have contributed to the reconfiguration of mobility practices which have become more complex, implying an acceleration of daily rhythms. An abundance of critical literature has described the harmful effects of acceleration on individuals, social structures, inequalities, modal practices and territories. Beyond an acceleration considered to be linear, recent research developed on the case of Switzerland suggests that daily rhythms present an important diversity in terms of spatio-temporal configuration and density of activity. As the literature shows, the analysis of daily rhythms becomes a central question. The project aims to develop new analytical devices that meet the social and computer sciences to improve understanding of daily rhythms.

Spatio-temporal Analysis of Material Efficiency and Embodied Greenhouse Gas Emissions in Building Structures: Method and Application to Geneva, 1850-2018

Article submitted to the “Building & Environment” Journal (Elsevier).

Corentin Fivet (SXL, EPFL), Catherine De Wolf (SXL, EPFL), Thibaut Menny (SXL, EPFL), Serena Vanbutsele (GDTE, UNIGE), André Stephan (UCLouvain)

Although load-bearing systems in buildings contribute to a large portion of raw material processing and greenhouse gas emissions (GHGE) worldwide, they are not sufficiently studied with respect to spatio-temporal relationships between environmental footprint and use value. This paper presents a method to compute adverse upfront environmental effects of selected building structures and interpolate them onto a large GIS-based building stock using a similarity-weighted function and a parameterization by structural component type. The method is applied to 48 archetypal buildings and 84'477 stock buildings in the canton of Geneva, Switzerland, built between 1850 and 2018. Results show that: since 1850, structural volume per gross floor area (m^3/m^2) decreased by 37% and structural mass (kg/m^2) increased by 10%; reconstructing today building structures from prior to the masonry-to-concrete industrial transition would increase GHGE ($\text{kgCO}_2\text{eq}/\text{m}^2$) by 7% compared to reproducing recent ones; GHGE ratios between horizontal and vertical supports in buildings increased from 0.17 to 1.65 between 1900 and 2000; the same ratio is twice larger in office buildings than in single-dwelling housing; on average, the production of multi-residential buildings presents 14% less GHGE ($\text{kgCO}_2\text{eq}/\text{m}^2$) than single-dwelling housing. The paper also synthesizes the amortization of upfront environmental effects over the building service life to compare building stocks at various stages of their historical development. In conclusion, the paper exposes how the mapping of environmental effects due to building structures across space and time constitutes a necessary prerequisite to understand complex industrial and cultural interplays across the scales of the built environment.

5.2.2. Seed Money - One Health (2019-20)

The “One Health” Call had a combined focus on human health, biodiversity, and the concrete interventions and infrastructures that can be developed in urban areas in order to promote the emerging “One Health” agenda, i.e. the simultaneous and integrated taking into account of the interests of humans and other species, who live together in a given (e.g. urban) environment. This Call promoted interdisciplinary projects focusing on how the contemporary urban environment may be modified to improve the health of the human populations as well as the survival and thriving of plant and animal species whose co-presence is not only compatible with human health, but favourable to it and vice versa. The Call was aimed for projects going beyond traditional concepts of parks and green areas, or hub-and-spoke park systems, and towards innovative whole-city concepts integrating human activities with those of other species, wild and/or domestic. Three projects (ongoing) were selected and funded with 20k CHF each:

Metropolitan Ecotone: An analytical and prospective device for designing a healthy and sustainable city

Elena Cogato Lanza (Lab-U), Marine Villaret (Lab-U), Luca Pattaroni (LaSur)

In Switzerland, legal instruments relating food, environmental or density issues govern the agricultural, natural and urban environments in isolation. The latter are in competition because they depend on the same resources (space, water, soil), with increased risks for the health of living beings. How to establish the conditions for a multi-sectoral projective approach with the aim of ensuring a healthy city for humans and non-humans? By considering the three environments as belonging to the same metropolitan ecosystem, the ecotone concept will make it possible to construct an interdisciplinary view of their interface spaces, places of major health risks but also places that are precursors of synergies.

Risk evaluation of mosquito-borne disease transmission through urban commutes pathways

Claudia Binder, Emanuele Massaro (HERUS), Andrea Rinaldo (ECHO)

More than 80% of the world's population is at risk from at least one vector-borne disease, and more than half at risk from two or more. At city scale level, most of the studies tend to restrict their analysis to the individuals' risk to acquire the disease, the incidence and prevalence of the disease, its severity and long-term impact on the health of the population. This is the obvious first step, but it does not consider many important aspects that characterize the impact of the mobility at the city scale level. We propose to integrate both stylized and data driven model of mobility in an agent-based transmission model in which humans and mosquitoes are represented as agents and go through the epidemic states of dengue. We also propose monitor with numerical simulations the system-level response to the epidemic by comparing our results with the reported cases during the recent dengue outbreaks in Singapore.

Activity-based HVAC control for enhanced indoor air quality and thermal comfort

Dusan Licina (HOBEL), Alexandre Alahi (VITA)

Human indoor activities are directly linked to levels of various indoor air pollutants and thermal comfort experience. Therefore, accurate assessment of occupancy metrics (e.g., occupancy number and their activities) is important for better control of indoor environments. It is evident that sustainable buildings of the future will increasingly rely on sensors to control heating, ventilation and air-conditioning (HVAC) systems to manage indoor air quality and thermal comfort. However, there is limited information available on means to cost-effectively characterize occupant metrics in all types of buildings. With advancements in Artificial Intelligence, more precisely Computer Vision, an opportunity has been opened up for better control of HVAC systems. This project aims to investigate a novel vision-based human activity detector in order to improve the control algorithm of HVAC system. Better HVAC control is ultimately important for improved human comfort, health and well-being.

5.3 Theoretical Seminar Series

Bernardo Secchi Days

In collaboration with the Braillard Foundation, HABITAT has organised yearly international seminars on fundamental urban issues to offer moments of regular and interdisciplinary study in the era of the ecological transition. The Study Days are dedicated to the memory of Bernardo Secchi, who was Professor at the School of Architecture in Geneva and internationally known urbanist who, with his books and projects, has always vehiculated a critical approach and the need of deep understanding and research on urban habitats.

Thanks to this project HRC was able to:

- strengthen and develop its international network
- promote itself both internationally and locally
- test original hypotheses and create new interdisciplinary knowledge

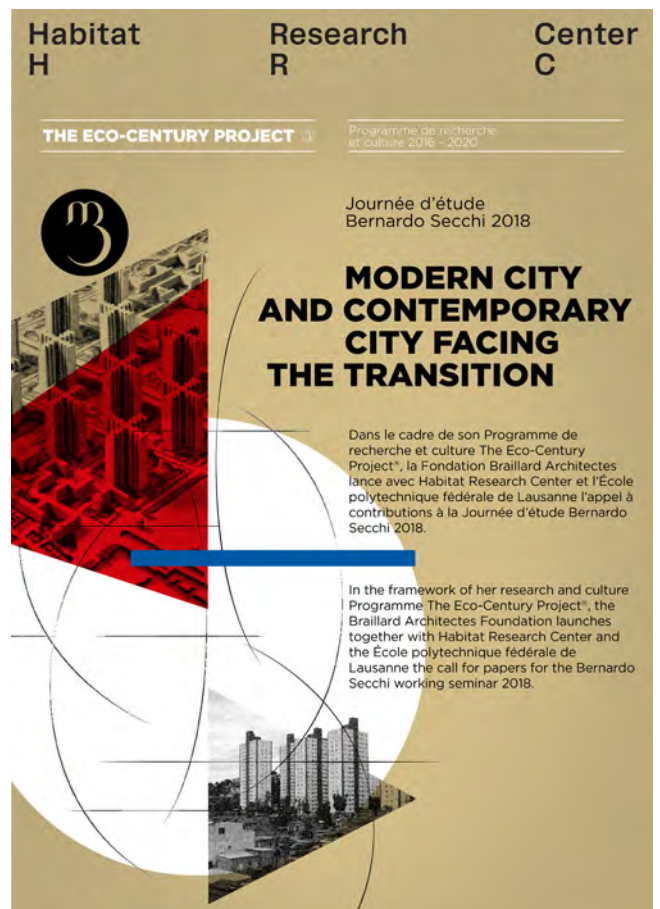




Urbanism of Hope. Designing horizons of expectations (2017)

At the core of this Seminar lied the role of design, namely the design of cities and territories as an agent in the social construction of hope.

"Our forecasts are extremely limited, as limited are, in a pluralist society, the individual and collective capability to coordinate the actions of the different subjects that contribute to the city construction, transformation and modification. Who builds 'scenarios' is a disenchanting person that has no certainty and, for this reason, only proposes possible lines of reasoning." (B. Secchi, 1996). A project aims to change the reality. For this reason it explores the frontier of what is concretely possible in its multiple dimensions: institutional, economic, technical and political. Any project is accompanied by an act of hope. "What may I hope?" The third interrogation of Immanuel Kant's Critique of Pure Reason admittedly designates a controversial field. This is particularly true in a period, such as the contemporary one, of drastic social, economic and environmental mutations; of deep re-adjustment of values and critiques to simplified ideas of progress. Indeed, those fundamental social long-term aspirations fuelled by modern urbanism, engineering and architecture, in other terms the "great modernization project", are not widely shared any more.



Modern City and Contemporary City Facing the Transition (2018)

The 90th anniversary of La Sarraz Declaration would have gone unnoticed if Bernardo Secchi were still with us. Not because of nostalgia, and not to pro-long a battle against an enemy to be definitively destroyed. Rather, it is an occasion for critical reflection on the distances, the inadequacies, the abuses, or on the contrary, the trajectories and continuities between the Modern City and the Contemporary City that remain open in a time of ecological, economic and social transition. In view of this foundational moment for the 20th century avant-gardes, the Working Seminar intends to focus on our own transition characterised by what Bernardo Secchi ten years ago described as an "absence of clear and integral vision of the urban future, leading to incoherent choices regarding new design projects": the context in which issues of ecological compatibility, sustainability and resilience oblige architects, planners and stakeholders to question anew the main principles of contemporary design.



Existenzminimum. 90 Years from 2nd CIAM (2019)

The fifth Bernardo Secchi Day of Study is jointly organized by three entities: the Brailard Architects Foundation, in the framework of its Culture and Research Programme The Eco-Century Project ®; the Habitat Research Centre of the Swiss Federal Institute of Technology in Lausanne; and the Albert Hirschman Centre on Democracy of the Graduate Institute of International and Development Studies in Geneva. This day continues the momentum established during the critical commemoration of the Sarraz Declaration. Ninety years after the Second International Congress of Modern Architecture (CIAM, Frankfurt am Main, 1929), which set the goal of a minimum but dignified standard of living for urban populations under the term “existenzminimum”, we find ourselves in the midst of a debate on the conditions necessary for the habitability of urban territories. On the one hand, because the recurrent social demands are a reminder that no rights are guaranteed without citizen vigilance; on the other hand, because the ceiling of resources to be consumed on the “day of overspending” now meets with a broad consensus both among specialists and in civil society; finally, because the city and the local level now constitute the space in which it is possible to act to revitalize our democracies. Thus, the art of urban planning, closely linked to the art of governance, is confirmed as the search for a balance, a golden mean, an optimal spatial framework that could be described as “existenzoptimum”, as demonstrated in the recent work of the English economist Kate Raworth.

Poster in Preparation

Conditions have changed (2020) *In preparation*

2020 has been a tragic and unexpected year. It has produced loss and suffering in many parts of the world, at the same time many have appreciated a different rhythm and life-style. Today several phenomena intersect and contradict each others: the acceleration of change, while pushing to go back “as usual”, catastrophism as well as precautions and freedom limitations. In any case “conditions have changed” and space is at the centre of a new interest. Distances and proximities, densities and urban morphologies are questioned again. The seminar will gather a group of international research centres to discuss the new conditions into which research and design are called to bring a contribution.

5.4 Other Projects and Initiatives

Beyond the three initiatives highlighted in this chapter, Habitat Research Centre is today developing a wide range of research, teaching and networking initiatives. Together with the Theoretical Seminar Series organised with the Brillard Foundation, HABITAT also develops Methodological Seminars, mainly directed to Swiss and International PhD students (funded by Swiss Universities). The four Clusters have launched several thematic initiatives; the “New Climates in....” initiative opens to cities, professionals of space, citizen associations and academics, tackling the relation between Academia and Society. Finally and most importantly, research funding on mobility and urban issues have just been obtained by the Centre, which connect HABITAT to wider partnerships, both in Switzerland and in Europe.



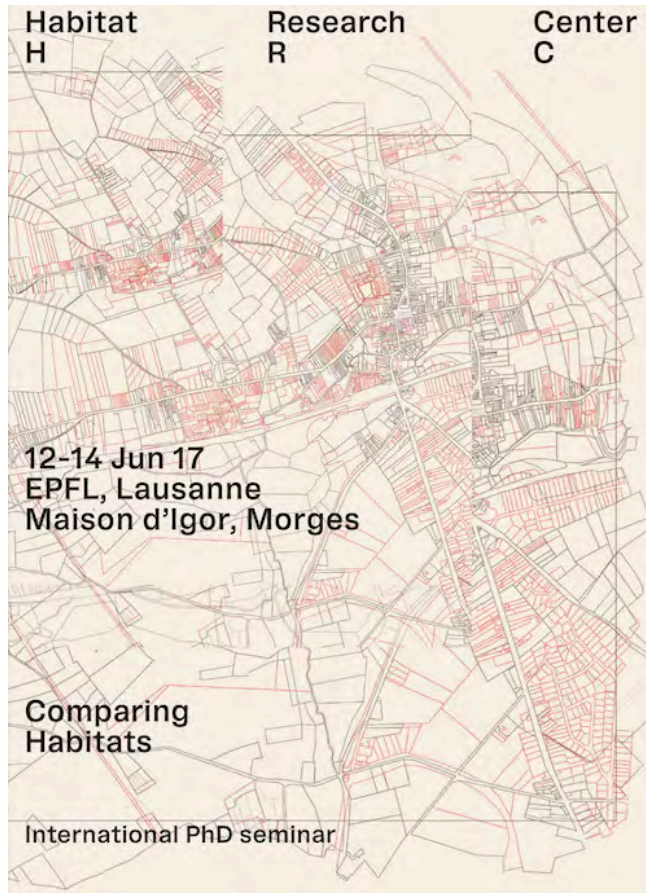
AMS
ADVANCED METROPOLITAN SOLUTIONS

Cities' dynamic systems engineering: integrating complex

FACING 'HYPER DIGITAL ENVIRONMENTS'

Follow the Digitalization with change the Urban - 2nd workshop EPFL - February 20

5.4.1. Methodological Seminars Series



Comparing Habitats
International PhD Seminar (2017)

The Seminar aimed to discuss the actuality and the problems related to Comparison as a Scientific Method and its heuristic efficiency, while focusing on its devices, purposes and challenges. From the thematic point of view, the students have been encouraged to position their contribution in relation to two ways (specific to the Comparative Approach) of orienting the play between differences and similarities: a) the Idiographic Approach (tendency to specify) where the comparative effort is directed towards understand the meaning of contingent, unique, and often cultural or subjective phenomena – typical of the Humanities; b) the Nomothetic Approach (tendency to generalize) where the comparative effort is directed towards the derivation of laws that explain types in general, where the pursuit of recurrences among different contexts is taken as a sign and proof of the same phenomenon – typical of the Natural Sciences. The seminar was organized by the Laboratory of Urbanism EPFL, HRC EPFL, Institute for Geography and Sustainability UNIL in the frame of Swissuniversities Program for the Doctoral Program of Architecture and Sciences of the City EDAR EPFL.



Habitats in Time
International PhD Seminar (2018)

The Seminar aimed at discussing the operation of “mapping palimpsests”, its tradition and future developments, as a scientific and methodological question. From the thematic point of view, the three categories of permanence, persistence and disappearance could be seen as clues of today’s discourses about preservation, recycling and demolition processes. Within this framework, this Call welcomed papers reflecting on the chronological interconnections between: the history of the territory, construction, materials, processes, practices; the cultural heritage (both built and unbuilt); dynamics of mobility, energy, air, hydrology; evolution of land use or land cover (soil and subsoil); territorial infrastructures (visible and invisible). The understanding of the “territory as palimpsest” and the related cartographies inspired by it are today part of the renewed systemic and metabolic approaches to territorial phenomena, paradigms that broaden and open new opportunities for a redefinition of the notion of palimpsest as a lens through which to cope with contemporary challenges.



Invention of Carouge

International PhD Seminar (2019)

The PhD Seminar “Invention of Carouge, Fifty Years after” was organized on the occasion of the 50th anniversary of the book by Swiss historian of art, architecture and urbanism André Corboz that was published in 1968. Focused on the study of the new town of Carouge (planned and built by the Savoyard state in the 18th century near Geneva and later incorporated as a borough of the latter), “the invention of Carouge”, was an ambitious attempt to combine a historical case study, urban analysis and planning theory. The topic of the book also represented a vector of cultural exchange between Turin and Switzerland in the following years, most notably on the occasion of the exhibition on Carouge organized by Turin’s State Archives in the mid-1980s.

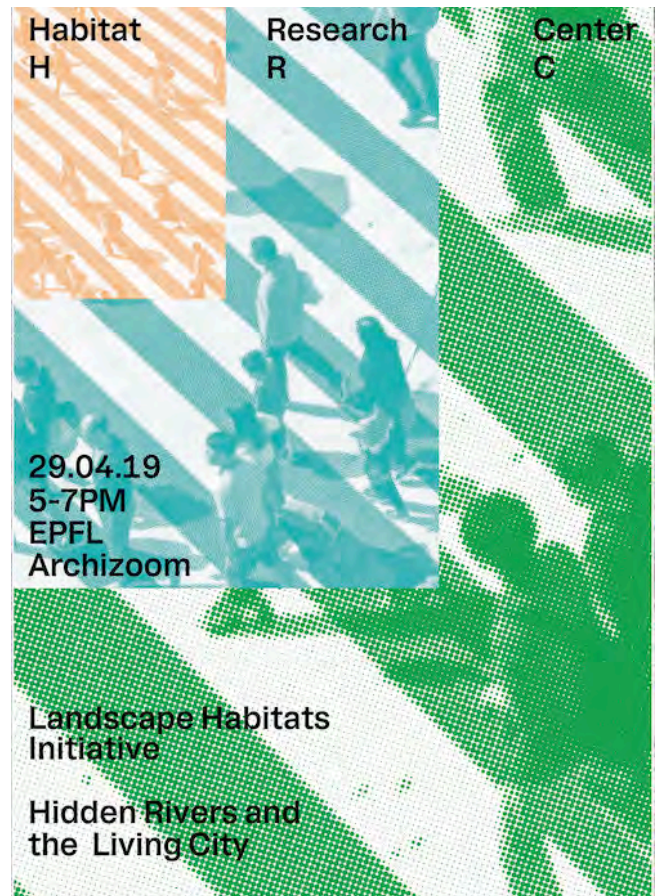
5.4.2. Clusters' Initiatives

Landscape Habitats



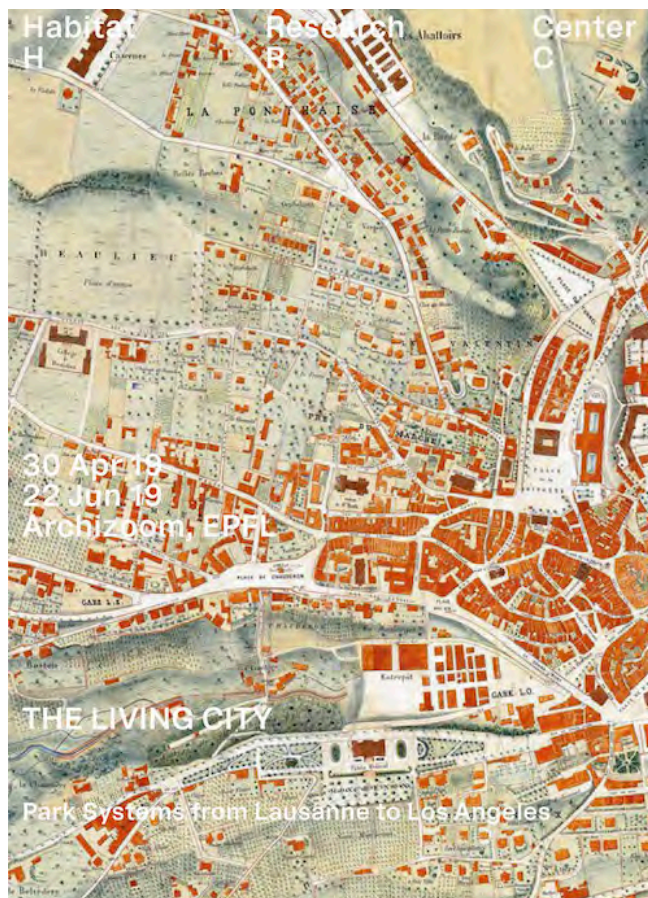
Urbanism, Architecture, Agriculture facing the Challenge of CC
International PhD Seminar (2019)

In the context of increasing exposure to climatic and environmental risks, the category of high-constraint environments is now being extended to all inhabited areas. The concepts, instruments and figures of urban planning need to move away from an approach focused on the needs and aspirations of human beings alone, to deal with the world of vital connections. If, in the 1970s, the concept of the ecosystem offered itself to the disciplines of the project as a strong and reassuring paradigm, on the verge of positivism, it is once again returning to the fore in order to apprehend the specificities of complex socio-ecological situations, for which there are increasing demands for design sustainability strategies. The aim of this seminar was therefore to initiate a dialogue between Morocco and Switzerland, mobilising researchers from different horizons who, by leveraging project issues, initiate (re) implementation trajectories in a holistic and non-sectoral approach. Organised by the Centre Jacques Berque in Rabat, the seminar was part of a partnership between the Ecole Polytechnique Fédérale de Lausanne, the Global Heritage Fund, and the Institut National d'Aménagement et d'Urbanisme.



Hidden Rivers and the Living City
Open Seminar (2019)

This seminar has represented the inaugural event of HRC's Landscape Habitats Cluster launch, featuring members of the community – academics and others – who are involved with the well-being of the Sorge and Chamberonne rivers bordering EPFL and UNIL campuses. The objective of this event was to bring these sensitive waterways – which harbour some of the region's most delicate ecological niches, and slopes subject to erosion at the heart of the region's hydrological system – into the public mind by bringing these hidden rivers to light. To this end, Habitat Research Centre initiated this first "Hidden Rivers" research-by-design project in cooperation with the journalist who broke the story, starting with the causes of the recent disaster and public responses to it, while looking closely at these waterways and their implicit ecological qualities – and finally considering how these can be conserved and further cultivated. The research was organized so as to address pedagogical, practical and policy objectives working together to create design scenarios for ecological coherence, while simultaneously providing enhanced public access, bicycle paths, and space for community interactions: all of which will bring eyes on the river. The basic premise of the research was first-hand 'nature study', collectively producing an inventory of social and biological diversity along the riverways – but also within them, revealing microbial life otherwise hidden.



The Living City Park systems from Lausanne to LA Exhibition (2019)

Before the industrial agenda of urban design, broadly promoting technology and economy, there was the social agenda of Civic Design, creating ecology and community. This exhibition presented a chronological overview of the evolution of Civic Design as evidenced in the work that was central to it: the creation of regional park systems. Over a period of three centuries – from 1770 to 2070 – the exhibition presents a sequence of projects, from Wolfgang von Goethe's Park an der Ilm in Weimar (1778), to Paxton's People's Park in Liverpool (1857), to the Olmsted Brother's Regional Park System for Los Angeles (1928). Correlating and comparing historic park system projects in Lausanne and Los Angeles, and highlighting ongoing community-based projects in these two cities, the exhibition also features two major discoveries: a previously unknown park system Frank Lloyd Wright designed for his own community in Spring Green, Wisconsin (1942) – the closest thing we have to a built version of his 'broadacre' plans for 'The Living City' (1934-58) – and Frank Lloyd Wright Jr.'s previously unpublished multi-modal park system for Los Angeles County (1962). The projects featured in the exhibition demonstrated the historic effectiveness of park systems, shed light on challenges faced by communities implementing contemporary park systems, and encourage the re-evaluation of the intergenerational discipline of Civic Design.



Designing Resilient Agro-urban (Eco) Systems International PhD Seminar (2019)

This seminar focused on the relationship between urban and rural dynamics, in a situation of competition in the use of the same resources – soil, water and energy. The confrontation between the need for density and food security, the abandonment of traditional agrarian structures in a context of climatic resurgence or the pressure on biodiversity in territories subject to exponentially growing material and energy flows, threaten vital, organic and societal connections. However, from these rapidly changing contexts emerge potential synergies that risk escaping the all too often segmented and specialized descriptions of inhabited territories, and which make it possible to envisage repair and revitalization trajectories.

Digital Habitats



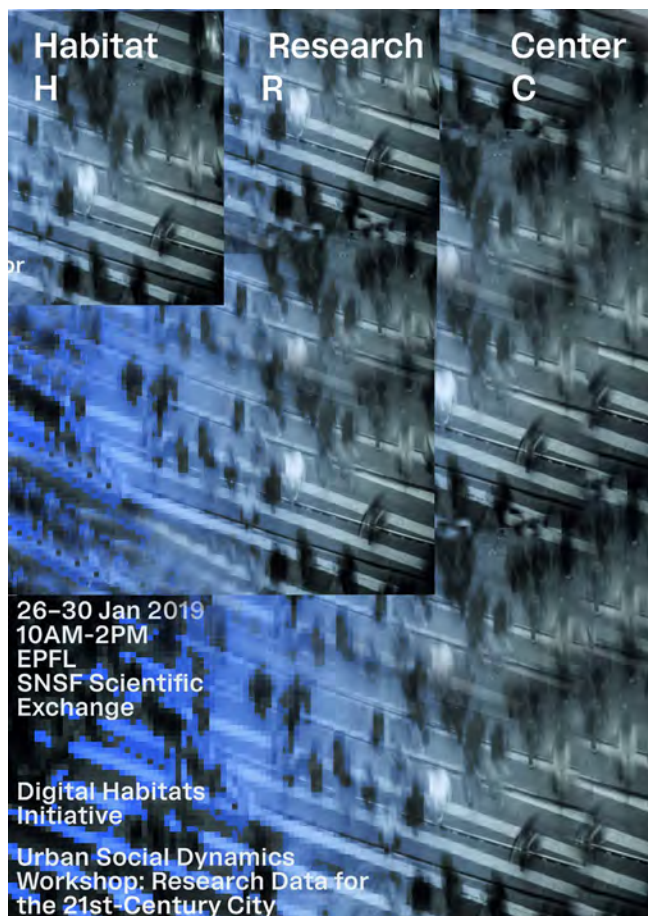
Datathink! Data Research & Ontology
PhD Block Course (2018)

Every discipline of human knowledge has developed its own method, language and epistemological narrative with respects to the materials it uses, reflects upon and produces. In the research tradition of the sciences, data, and more specifically, empirical data, are of unavoidable importance. However differently, other disciplines such as humanities also gather and work with data. To train PhD candidates to address these pressing questions, Data Think! offered a five-day research seminar that included keynote lectures, presentations by the doctoral students, writing workshops, and general discussions and debate over research data. Lecturers' institutions were: ETH Zurich, The Bibliotheca Hertziana – Max Planck Institute for Art History, University of Lucern, Tilburg University, National Swiss Archives, University of Neuchatel, Humboldt University of Berlin, Collegium Helveticum, Ideap. The course was realised with the support of Swissuniversities.



Digital Futures Networking Day
Networking Day (2018)

Digitization has an increasing impact on society and research. Digital tools and concerns create their own scientific ecosystem. Given the strategic importance of digitization for social economic development, national science funds provide growing share of their funding to projects concerned with digitization. In order to get a sense of the current research ecosystem on digitization, Digital Future Network Day gathered over sixty Swiss researchers, delegates of the Swiss National Science Foundation (SNSF), and member of the EPFL research community to discuss the future directions of scientific in digital and computational research. The event marked the launch of the Call for the SNSF National Research Project 77: Digital Transformation.



Urban Social Dynamics Workshop Research Data for the 21st Century Workshop (2019)

Digital traces and tracking are at the core of research, innovation and concerns. While we often speak of the data, the real interest lies in understanding how the data can inform us on urban social dynamics. The Urban Social Dynamics workshop took place in Lausanne with the core participation from seven leading institutions. The workshop revolved around a series of discussion and exchanges on the risks and potential associated with new types of data for scientific research and its operationalization towards urban planning and governance. The workshop served to define future directions in the study of social urban dynamics through the lens of computational social science, urban governance and civic society. Participant institutions were: EPFL, MIT, Harvard University, The World Bank, the University of North Carolina in Chapel Hill, The Turing Institute, and the Artificial Intelligence Impact Alliance. The workshop was organised with the support of Swissuniversities.



How Digitalization will change the urban? 2 Workshops (2020)

The impact of digitization on the urban remains largely uncertain. Just like with previous technologies, digital innovation will have a tremendous impact on social, economic and ecological systems through its influences on 21st-century urban development. Digitization has already changed our ways of communicating, moving around and interacting. It has profoundly reorganized management, production and modified our relationship to work. "How Digitization Will Change the Urban" was a series of two workshops which aimed at addressing these concerns from an interdisciplinary perspective. Each session gathered scientific experts from Switzerland and abroad, who discussed how their respective fields address the topic. A mix of professors, scientists, junior researchers and students then defined core interdisciplinary and transdisciplinary concepts. The outcome of the workshop should feed individual and collaborative projects that seek to find innovative and foreseeing solutions to one of the 21st century's biggest challenge. Participants' institutions were: EPFL, UNIL, TU Delft, Amsterdam Institute for Advanced Metropolitan Solutions. The workshops were organised with the support of dhCentre UNIL-EPFL.

Healthy Habitats



The Future of Urban Health, visions and perspectives
Seminar (2018)

The preservation and pursuit of “quality of life” in cities represents a fundamental challenge for the future regarding which, developing visionary and innovative solutions requires an understanding of various socio-spatial, economic and environmental determinants of well-being in cities, and calls for an integrated, interdisciplinary research agenda. The Healthy Habbitats Cluster launched its activities on the theme by bringing together researchers in Switzerland working on various aspects of health in urban contexts with the ambition of fostering collaboration, exploring future perspectives, and creating new research synergies. A set of presentations was followed by a panel discussion gathering the invited researchers to exchange their views about the future of health challenges in cities, and interdisciplinary research directions to address them. The seminar has also invited the researchers to reflect on the validity and potential of an ambitious interdisciplinary research project on the theme of urban walking, as a fundamental component of a healthy city.



Seed Money One Health
3 Workshops (2020)

In occasion of the “One Health” Seed Money Initiative (see section 6.2.2.) three workshops have been organised with the selected teams to follow-up and coordinate their work in process.

5.4.3. Workshops & Networking Events

Borde-Bellevaux

Workshop (2019.05.09–15)

Lausanne's topography presents a major challenge for planning public spaces. This task is especially difficult in the Borde-Bellevaux area, which is confronted with the city's highest concentration of traffic noise, air pollution and poverty. The area presents, however, many qualities such as the diversity of built typologies and many woods, the steep slopes of which have been preserved from urbanization. In order to define a strategy to improve public space and mobility in the area, the City of Lausanne mandated the Habitat Research Centre to conduct a site analysis in the format of a workshop.

Urban Social Dynamics

Workshop / HRC + DH Center (2019.01.26–30)

Digital traces and tracking are at the core of research, innovation and concerns. While we often speak of data, the real interest lies in understanding how data can inform us on urban social dynamics. The Urban Social Dynamics workshop took place in Lausanne with the core participation from seven leading institutions. The workshop revolved around a series of discussion and exchanges on the risks and potential associated with new types of data for scientific research and its operationalization towards urban planning and governance. The workshop served to define future directions in the study of social urban dynamics through the lens of computational social science, urban governance and civic society.

Women in AI & Cities

Networking Event (2020-01-28)

Technology is not blind to gender and may impact women more negatively than men. There are also fewer women in STEM research and innovation social ecosystems, making it more difficult for their voices to be heard and the work to be valorised. Real social and technical innovation may only come through the abolition of such gender bias. Women in AI & Cities was a networking event, during which women researchers, entrepreneurs and policymakers presented their work to fellow women and men colleagues. The event concluded a series of presentations at the Applied Machine Learning Days where women participants received additional financial support from a Swiss organization dedicated to promoting the contributions of women in Big Data research and application.

Public Space in the City of Lausanne

Workshop (2019–2020)

Public spaces in cities are the locus of many social and commercial practices and must be carefully planned for future generations. The quality of public space contributes greatly to the quality of life and the economy of cities. In Lausanne, the City wants to improve these qualities, but first must understand how its people use public space. From the impulse of the City's Service des Espaces Publics, and in collaboration with Gehl Architects, HRC took part in the analysis of the "public spaces and the public life" of the central area of Lausanne. Results of the workshop and research, which will be published in September 2020, highlight how Lausanne could take advantage of its topography to increase the quality of its public space system.

How Digitization Will Change the Urban

Two Workshops (2019.12.02 & 2020.02.19)

The impact of digitization on the urban remains largely uncertain. Just like with previous technologies, digital innovation will have a tremendous impact on social, economic and ecological systems through its influences on 21st-century urban development. Digitization has already changed our ways of communicating, moving around and interacting. It has profoundly reorganized management, production and modified our relationship to work. “How Digitization Will Change the Urban” was a series of two workshops which aimed at addressing these concerns from an interdisciplinary perspective. Each session gathered scientific experts from Switzerland and abroad, who discussed how their respective fields address the topic. A mix of professors, scientists, junior researchers and students then defined core interdisciplinary and transdisciplinary concepts. The outcome of the workshop should feed individual and collaborative projects that seek to find innovative and foreseeing solutions to one of the 21st century's biggest challenge.

Deep Edge — Data Empowerment in Ecological Participator Democratic

Governance Events / HRC + DC Center (2019)

Participatory democracy offers a novel avenue for planning a more sustainable and just territory. By empowering citizens, these processes allow for a greater reflexivity and a greater legitimacy than traditional politics. “Data Empowerment in Ecological Participatory Democratic Governance Events” (Deep Edge) is a research-action project, which aims to transport citizen aspirations to planning practices through open digital tools. Deep Edge follows two national events of participatory democracy in France whose mission is to define applicable measure to make France more sustainable and more just: the “Convention citoyenne pour le climat,” and the “Débat national sur la Politique agricole commune.” These experiences highlight the importance of multimodal spatial data and their visualization in participatory democracy. Moreover, in the context of the 2020 sanitary crisis, the events illustrate the central role that multimedia platforms can have in creating an interface between members' assemblies, governance committees, researchers and the civil society. Digital tools do not simply serve an organizational purpose but become an integral part of the democratic process and transition towards social, economic and ecological sustainability.

5.4.4. New Initiatives

New Climates in... Lausanne

2020 - 2021

The New Climates in... initiative aims to create alliances between local actors from professional, academic, public administration and citizen engagement circles, in order to think transversally across scales and disciplines, regarding spatial projects inspired by climate and structural resilience of our societies. The initiative, imagined before the lock-down, but realized during this period, wants to offer situated moments of debate and co-construction to institutions, professionals, civil servants, citizen associations, students etc...about local and localized themes which, nevertheless, touch general issues. The climate -as referred to in the title- not only comprises the new temperatures, but also concerns a larger and metaphorical idea of the “atmosphere” which can be supported and encouraged, even constructed, in order to attain the acquired changes and adaptations. Research is carried out in the field, especially when it comes to testing and discussing received ideas. The civic fibres, in which everyone comes together from all different backgrounds, help to weave these necessary links, and thus provide a backdrop in which to project collectively. As a result, New Climates in... aims to develop a detailed knowledge of the existing situation (geographical and socio-spatial characteristics, current projects, the interplay of actors, current mechanisms, room for manoeuvre, levers for action, potentials, brakes, limits) and, to this end, organises common fields of action, using various and complementary formats, ranging from the sharing of knowledge, visions and readings, to the exploration of imaginary possibilities and prototypes to be implemented.

The activities will be channelled into four trajectories.

- *Counterpoints*: meetings-debates allowing to present and deepen the themes identified by the various circles (professionals, academics, public administrations, citizen engagement). The aim of these meetings is to clarify “problematic issues” so that they can be shared and understood from one *milieu* to another, and to contribute to the framing of potential areas for further study (via seminars, academic research, experiments, etc.).
- *Readings*: the pooling of literary, artistic, cartographic, photographic, cinematographic, musical, etc. resources, allowing the sharing of readings and inspirations. These readings are shared in the sense of pooling and advising, but also in the sense of their federative and membership potential. Their purpose is to highlight the readings inspired by the region in the light of the reflections and actions proposed, and more generally, to bring together the works of imagination of authors who cultivate common values throughout history and civilizations.
- *Workshops*: interdisciplinary workshops focusing on a theme or problem to be explored in greater depth, in the form of explorations of illustrative scenarios of spatial and living environment developments. Variable in size and composition, these workshops aim to draw new images and inspire new imaginations, “exhibits”, supports to argue and make explicit different facets of the vision. These elements will thus constitute resources to engage in collective discussions on desirable evolutions of our living environment.
- *Laboratories*: experiments on a 1:1 scale, allowing the transposition into local reality of the first transformation tests in the form of a pilot project, which will be monitored. These are intended to reinforce the presence of an existing network of proof-of-concept demonstrations. These “prototypical” efforts thus focus on creating the conditions necessary for the effective implementation of new initiatives, but also on identifying, analysing and possibly strengthening those already in operation in the area.

Three moments have been organised during the pandemia period: the Pre-Launch on March the 30, the official Launch on May the 4th and the first Reading on June the 8. The next event will take place in September.



Habitat
H

Research
R

Center
C

New
Climates
in...
Lausanne

Pre-launch
30 mars 2020
dès 18h00
Rejoignez-nous avec
zoom.us/join

EPFL



Habitat
H

Research
R

Center
C

New
Climates
in...
Lausanne

Lancement des rencontres
4 mai 2020
18h00 - 20h00
Via Zoom

EPFL



Habitat
H

Research
R

Center
C

New
Climates
in...
Lausanne

Corniches
pandémie, littérature et topographie : une lecture
8 juin 2020
18h00 - 20h00
Via Zoom

5.4.5. New Research Projets

SBB Co-creating Mobility Hubs

Research & Design Project (2020 - 2023)

The Swiss Federal Railways (SBB-CFF-FFS) intends transforming its railway station system into a system of mobility hubs, places of connectivity where different modes of transportation come together not only with each other but also with the surrounding areas where people work and live. These transformations are cross-sectoral as they cut through transportation and urban planning issues and affect commerce, mobility providers, local residents, commuters and the whole of urban life. The project is financed 100% by the SBB-CFF-FFS itself and involves deep dives at 3 emerging secondary stations: Basel Bad, Bern Wankdorf and Nyon. It brings together the HRC and leading interdisciplinary researchers at the ETH in Zurich: Michael Stauffacher of the TdLab (Transdisciplinarity Lab / Science-Society Interface), and Thomas Bernauer and David Kaufmann of the ISTP (Institute for Institute of Science, Technology and Policy). The project is in the process of being launched in 2020 and is set to last two years.



The three cases that will be analysed for the Research Project: SBB secondary train stations of (from top to bottom) Basel Bad, Bern Wankdorf and Nyon.

EIT Urban Mobility Matchmaking

Innovative Training Networks Event (March 2020)

The EIT Urban Mobility Matchmaking event for the Call for projects of 2021 took place on 03-04 March 2020 in Eindhoven, the Netherlands. The 2-days event consisted of different kinds of meetings and working sessions as well as networking opportunities. HRC participated in the event and presented the initiative “The Sustainable Mobility in Diffuse Urban Areas in the Digital Era”.

TOD-IS-RUR Transit Oriented Development for Inclusive and Sustainable Rural-Urban Regions

Marie Skłodowska-Curie Actions Project (2021 - 2025)

HRC involved laboratories: Lab-U; LASUR

This European Training Network (ETN) focuses on Transit Oriented Development (TOD) conceiving public transport as a backbone for inclusive and sustainable urbanisation in rural-urban regions (RURs). The overall objective of the innovative training is to go beyond the urban focus of current TOD research and practices, and extend TOD to RURs. If Europe is to make a transition to sustainable urbanisation, this extension of TOD is essential, as most Europeans live across RURs, not just in urban cores.

TOD-IS-RUR will provide innovative, expert-level training to young researchers in becoming professionals that develop much-needed methods to counter urban sprawl and implement social inclusive and environmental sustainable planning schemes for RURs. More specifically, the ETN will address RURs in terms of rural-urban functional relationships as well as morphological rural-urban hybridity on the level of the regional network (macro) and at the locality (micro) as to advance innovative multi-scalar, integrated and situated approaches to TOD in RURs.

Nine interdisciplinary institutes, working on a variation of European RURs, will produce cutting-edge research and training on both the analysis and improvement of environmental and social traits of mobility-urbanisation processes in RURs. Existing and future collaborations among the Antwerp, Amsterdam, Berlin, Eindhoven, Lausanne, Paris, Stockholm and Uppsala academic partners together with 12 non-academic partners, create a platform for ten Early Stage Researchers (ESRs), providing training in cutting-edge methods and know-how. Training of ESRs will be done through in-depth research projects, secondments, local and network-wide advanced courses, network-wide workshops and project work as well as an online forum. In addition to an interdisciplinary state-of-the-art training on TOD in RURs, ESRs will be trained in complementary transferable skills required for leading positions inside and outside academia. The research and training activities will prepare a new generation of experts that is able to meet the scientific and societal challenge of extending TOD to RURs as well as creating a conceptual and methodological toolbox from which academic and non-academic partners – both governmental and private agencies – can make use to further develop TOD for specific rural-urban regions.

Consortium Member	Legal Entity Short Name	Academic	Non-academic	Awards Doctoral Degrees	Country	Dept./ Division / Laboratory	Scientist-in-Charge	Role of Partner Organisation
Beneficiaries								
Universiteit Antwerpen	UAntwerpen	✓	-	✓	BE	Urban Studies Institute	Greet De Block	
École des Ponts ParisTech	ENPC	✓	-	✓	FR	LATTS, Technologies, Territories and Societies Laboratory	Nathalie Roseau	
Ecole Polytechnique Federale de Lausanne	EPFL	✓	-	✓	CH	Habitat Research Center	Paola Viganò	
Institut Français des Sciences et Technologies des Transports, de l'Aménagement et des Réseaux	IFSTTAR	✓	-	✓	FR	LMVT, Institut français des sciences et technologies des transports, de l'aménagement et des réseaux	Caroline Gallez	
Kungliga Tekniska Högskolan - KTH Royal Institute of Technology	KTH	✓	-	✓	SE	Department of Urban Planning and Environment	Jonathan Metzger	
Sveriges Lantbruks-Universitet	SLU	✓	-	✓	SE	Department of Urban and Rural Development	Mattias Qviström	
Technische Universität Berlin	TUB	✓	-	✓	DE	Center for Metropolitan Studies	Dorothee Brantz	
Technische Universiteit Eindhoven	TUe	✓	-	✓	NL	Innovation & Society Group	Hans Jeekel	
Universiteit van Amsterdam	UoA	✓	-	✓	NL	Department of Human Geography, Planning and International Development	Luca Bertolini	

List of participating organisations

EPER – Espaces pour l'école de la réussite

Research Project / Chôros + HRC (2019—present)

Educational buildings and mobility emit large shares of green gas in France. Their governance therefore offers an important lever to the State in order to engage in a sustainable transition of the territory. But how can one balance the planning of educational infrastructure and the individual aspirations of fifteen million students? During its first year of existence, the research project “Espaces pour l'école de la réussite” (EPER) focused on the methodological foundations for a sustainable planning of educational infrastructure that would be compatible with the academic aspirations and capabilities of students. To this end, we combined the data analysis of six million middle- and high school students currently registered in Metropolitan France, and semi-directive interviews of students and parents in the Grand Est region. Our results showed that the distance between home and schools did not have a significant effect on students' grades, but that their academic and professional aspirations remained strongly bonded to the type of urban context in which they lived and studied. In confronting these two realities, EPER offers some ground for the planning of a more sustainable territory in a better-educated society.

6. RESEARCH OUTPUT

In the first three years of the Centre, the activities have been multiple and the research outputs are related to a wide range of occasions. As will be explained in more detail later, HRC has worked focusing on the three main pillars of its mission: to address the “urban” as a category to be redefined in relation to the practice of inhabiting a territory, to place the “project” at the heart of an interdisciplinary research – coupling Science with Design, Academia and Society and to develop a future oriented gaze. An important activity of methodological seminars and theoretical seminars “on fundamentals” have punctuated the three years, bringing international PhD students and scholars to the EPFL, merging their different disciplinary horizons into an open and fruitful debate. The results of these interactions have been a series of publications (books and international journals described below). Beside this activity, HRC has launched two interdisciplinary “Seed Money” Calls: the first on the 4D dimension, where time and space stratifications interact (embedded in any representation of the urban) and the second on the “One Health” paradigm launched by the WHO, which brings radical ecological issues to the fore. On these occasions HRC has proved its capacity in guiding research teams (organizing regular exchanges with them and valorising their results in public seminars, master classes and publications).

Finally, HRC has developed its own research contribution in leading an interdisciplinary team that has been selected in 2018 for the Greater Geneva Vision (coordinated by the Fondation Brillard in Geneva). The design activity has been the connective ground for an interdisciplinary work by a large team, partly internal to the EPFL and partly external, bringing innovative ideas about the future of the urban transition. The results will be publicly presented in Geneva at the end of September 2020 and an international publication will be coupled with the exhibition of the results in Spring 2021.

The publications, exhibitions, and research production are, we believe, good indicators of the impact of HRC research. They have been fed by the four thematic Clusters which have helped to tighten the links with the different EPFL Laboratories and created a platform for discussion.

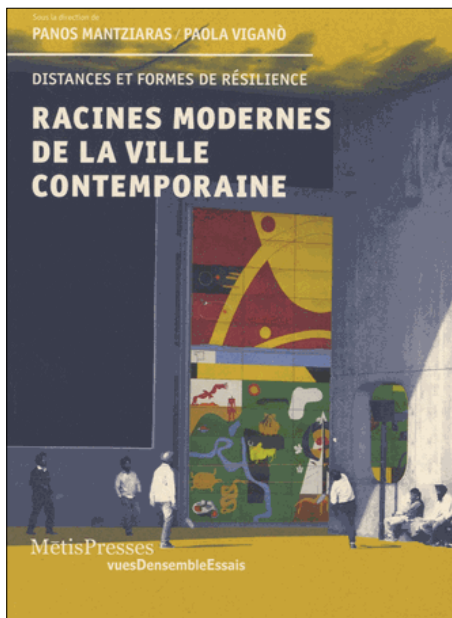
6.1 Highlighted Publications



Urbanisme de l'Espoir Projeter des Horizons d'Attente

Edited by Panos Mantziaras and Paola Viganò.
MétisPress, 2018

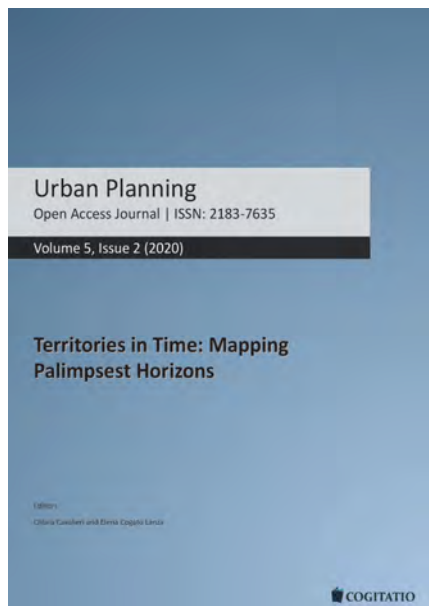
This book proposes to redefine the role played by the project – a project of cities and territories – in the social construction of hope. The disciplines of spatial transformation have always contributed to the development of shared world visions and value systems. Yet their participation in the construction of hope is being called into question today, mainly because of their difficulty in being part of a convincing collective narrative about the future. The contributions collected in this book aim to identify the theoretical and practical conditions necessary for the constitution of an urban planning of hope: grasping the socio-economic configurations of the territory outside the dominant theories; apprehending the territory as a palimpsest, considering its historical depth and its evolutionary potentialities; favouring a descriptive and qualitative approach to address, from the angle of climate and energy issues, such crucial problems as soil regeneration, landscape structures, buildings or forms of industrial and agricultural production. A paradoxical stance must be taken: to reanimate the indissoluble link that modernity has established between project and hope, while reversing its foundations.



Racines Modernes De La Ville Contemporaine Distances et Formes de Résilience

Edited by Panos Mantziaras and Paola Viganò.
MétisPress, 2019

Almost a century after the Declaration of La Sarraz, the founding act of the International Congresses of Modern Architecture and, by extension, of Modern Urbanism, new questions arise for the future of a predominantly urban planet. Widely known and partly justified, criticism of the principles of CIAM, the projects and the concrete results derived from them have never sufficiently taken into account their discrepancy with the environmental and social challenges of the contemporary city. Designed to achieve social emancipation objectives, the urban framework of the last hundred years needs to be evaluated in terms of its resilience in the face of the ecological crises that lie ahead. In short, what about the modern city as a relay between the first modernity and the ecological transition project? This book addresses this issue both from a theoretical and critical angle, and through the study of the evolution of the modern city in its European geographical epicentre and outside it. Original research themes are thus sketched out between global visions and case studies, diagnoses and prospective studies, by reconstructing the trajectories of eminent personalities and dynamic collectives. A striking disciplinary aporia emerges, that of the trajectory taken by the city in the 20th century, undoubtedly promising for individuals, but highly ambiguous for communities and certainly too demanding for the biosphere.



Territories in time

Mapping Palimpsest Horizons

Edited by Chiara Cavalieri and Elena Cogato Lanza

Urban Planning Vol. 5, Issue 2, 2020

In the early 80s André Corboz, in describing the territory as being the re-sult of slow and long-term processes involving multiple transformations, implicitly declares the onset of a new paradigm for understanding cities and territories: a new gaze attentive to the chronological dimension of spaces, aware of the long history of places, interested in that ensemble of signs, traces and voids so tangible, and yet ignored by the paradigm of tabula rasa. To describe this complexity, Corboz proposes the metaphor of territory as palimpsest: A palimpsest is a two-dimensional writing board bearing a three-dimensional matrix of signs, which, as a metaphor, allows for a contextual, four-dimensional apprehension of territory, por-traying space in its chronological evolution. This text re contextualizes the notion of palimpsest—both as a methodological and a theoretical question—in the light of two main conceptual ‘shifts’: the ‘territorial turn,’ which increased interest among different disciplines, projects, and poli-cies for the dimension of cities as territory, and the ‘digital turn,’ namely the rapid evolution of data recording, archiving, and mapping technologies.

6.2. Other Publications

- Cogato Lanza, E., Barcelloni Corte, M., & Graezer Bideau, F. Eds. (2019). Comparing Habitats. Contour Journal, Issue 2(4). <http://contourjournal.org/index.php/contour/issue/view/36>
- Drevon G., Pattaroni L., Delley L. Hamel N., (2020) “Rhythms of the Eventful City: Elements for a Spatiotemporal Mapping of the Montreux Jazz Festival », Urban Planning, accepted. in: Territories in time: Mapping Palimpsest Horizons, Urban Planning (5) 2.
- Koseki, Shin Alexandre, Jacques Lévy, and Irene Sartoretti. (2020). “De l’espace pour la réussite scolaire.” Research report. Paris: Ministère de l’Éducation nationale et de la Jeunesse. <https://doi.org/10.5281/zenodo.3773955>.
- Koseki, Shin Alexandre, Paola Viganò, Derek Christie, Martina Corte Barcelloni, Claire Guenat, Roberto Segal, and Matthew Skjonsberg. (2019). “Cadres de référence et expertise requise pour une réfection des espaces publics dans le secteur de la Borde-Bellevaux à Lausanne.” Research report. Lausanne: École polytechnique fédérale de Lausanne. <https://doi.org/10.5281/zenodo.3813656>.
- Yang, Y., Viganò, P., Zhang, Q., et al. (2020). Waterfront Analysis and Design Comparative Report of Beijing, Suzhou and Yinchuan. TU Delft Open.

7 EDUCATION

HABITAT aspires to create a set of experimental educational programs to reconfigure the interdisciplinary designer of future cities and territories. These should feature strong relationships with the Centre's research activity, open to local and international case studies. The recent pandemic demands to rethink traditional teaching methods, translating old ones in unexpected configurations, inventing new methods innovating at all levels. The potential of internationalization of both teaching staff and students can be enlarged.

7.1. MAS: Master of Advanced Studies in Urban and Territorial Design (ETHZ-EPFL)

The MAS ETH EPF in Urban and Territorial Design (UTD) is a post-graduate master in urban and territorial design as a joint program with the ETHZ fully held in English (1 year, to be further developed in a two years program). The importance of this initiative has been recognized by the ENAC direction, that considers it a strategic project for the school in the coming future.

Today the urban and territorial project defines an urgent and critical field. The increasing urbanization of the planet, the empirical realities of climate change and ecological crises, the transformation of society and labour, all have profound spatial implications that need to be addressed. It is at the territorial scale that these implications can best be understood in relation to each other- a scale that captures urban and landscape transformations in many diverse configurations and typologies, including but also beyond the city itself. Such a perspective and ambition calls for a fundamental re-discussion of traditional design and interpretative tools. Through the application of these tools in design, the territorial project is capable of producing new knowledge. Cities and territories face social, environmental and economic challenges with multiple and complex dynamics that are replacing processes that were thought to be more predictable. Both cities and territories involve diverse societies, material sedimentations, technical systems and ecological organizations. The effort to address these four interdependent aspects through an integrated, interdisciplinary design approach, lies at the foundation of the new Master in Advanced Studies program. The goal of the program is to create an experimental educational platform, and to build an innovative curriculum able to test new modes of interdisciplinary teaching, research and practice in urban and territorial design. The program aims to establish the foundation of a new, much-needed epistemology which can equip professionals in the built environment disciplines for the challenges of 21st century urbanization processes. The program offers a broad view on the state of contemporary cities and territories, also serving as an international forum for the urban debate around the notions of “transformation”, “modification”, “reparation” of the urban Habitat.

Bridging research, teaching and design, the program offers a unique aggregation of urban and landscape design, architecture, urban ecology, social and environmental sciences and civil and environmental engineering to explore the spatial, ecological and socio-economic transition, based on a future-oriented and interdisciplinary design approach. The program is organized by Habitat Research Centre (HRC) directed by Prof. Paola Viganò and by the Department of Architecture (D-ARCH) at ETH Zurich (the Professorship of Architecture and Territorial Planning led by Associate Prof. Milica Topalovic). Coordinators of the project are Martina Barcelloni Corte (EPFL) and Nancy Couling (ETHZ). The launch is planned for the beginning of 2021 and the kick-off for the Fall semester 2021.



Teaching activities at EPFL
under the supervision of
Paola Vigano

7.2. MINOR : Urbanism in transition (UT)

“Urbanism in Transition” (UT) is a major restructuring of the Minor “Urban Planning and Territorial Development” (DTU), under the direction of Habitat Research Centre (HRC). The aim of UT is to raise the student’s awareness and capacity to deal with the ecological, societal and technological transition that urbanized and urbanizing territories are experiencing and will increasingly experience in the next future, in Europe and globally.

Climate change (especially in extreme environments facing rapid alterations of the ecosystem), the depletion of energy resources, growing migrations, the emergence of new forms of work and life-styles or the growing impact of digital technologies, are just some of the dynamics that are radically transforming the ways in which our urbanized territories are rapidly developing and with which upcoming generations of architects and engineers will increasingly deal with in the next future. Such novel ecological, energetic and socio-economic contexts call for a radical redefinition of the role of the professional for which new knowhow related to cross-scalar and cross-disciplinary research and practice will increasingly represent a fundamental asset to interpret change and trigger innovation in urban contexts. New and common problems bridging different scales and disciplines are already articulating an innovative research agenda for which the new generations of professionals must be ready and responsive.

Three main aspects characterize the UT Minor:

- The central importance of a “Research by Design” approach. Around the idea of “Project”, teaching can be conceived as fully part of the research experience towards innovation and “Design” understood a “producer of knowledge”.
- The strong connection with International contexts. ENAC students’ academic milieu should be expanded and connected to innovative research tracks and international contexts where the ongoing urban transition is more evident. The mandatory program of on-site International Workshops has the ambition of developing and fostering the student’s knowledge through a strong international exchange. Contextualizing themes and concepts addressed during theoretical courses, the International Workshops will represent a fundamental experience and test base for all students; they will mainly focus on the Global South where the urban transition’s social, economic and environmental dimensions are taking an exceptional character and where intervention is more urgent.
- The possibility to be part of HRC’s research program. Stressing the experimental character of any research is fundamental to structure teaching as a “research occasion”. The topics and frameworks addressed yearly by HRC’s Research Clusters both locally and internationally, might be proposed through an ad hoc ENAC Project plan.



8 PARTNERSHIPS

Habitat Research Centre has been developing national and international partnerships with other research centres, renowned institutions and other local collaborations to discuss and propose -together- new horizons for research and design.

Brillard Foundation Geneva

HABITAT collaborates since the beginning of its foundation (2017) with the Brillard Foundation in Geneva. To date, the most important collaborations have been: The Bernardo Secchi Days Initiative (See section 5.3 Theoretical Seminar Series - Bernardo Secchi Days) and the Greater Geneva Design Project (See section 5.1 Greater Geneva Vision).

Institute of Global Health, University of Geneva

The collaboration with the Institute of Global Health, which is part of the Faculty of Medicine at the University of Geneva, is one of the highlights of this initial period of the Habitat Research Centre. The collaboration is concentrated on the Division of environmental health, led by Jean Simos, PhD, and Nicola Cantoreggi, PhD. The former is an EPFL civil engineer by training and the latter a geographer. Both are highly skilled at urban health, especially the interconnections between environmental health and health promotion at the urban level. Dr Simos has been a key player in the WHO Healthy Cities movement for over 20 years. The collaboration, brokered by Derek Christie, PhD, began with an invitation for Dr Cantoreggi to speak at an event on urban health organized at EPFL by Farzaneh Bahrami, PhD, in 2019. Then, Dr Simos' team participated in several submissions, notably to Horizon 2020 and to a SNSF Sinergia. A further member of the team, biologist Isabelle Bolon, was then included in the "One Health" Seed Money Initiative. With her colleague Rafael Ruiz de Castaneda, she is one of the most recognized proponents of the "One Health" approach in Switzerland. The Institute of Global Health is a strategic partner and there are plans for the collaboration to be pursued and reinforced in the coming years. Apart from research, there is a strong potential for a collaboration to be set up for teaching. Indeed, Dr Simos and Dr Cantoreggi are already involved in extensive teaching activities at the University of Geneva, across two faculties, for the Master's degree in public health and the Master's degree in environmental science (MUSE).

City of Lausanne

The collaboration with the City of Lausanne has been launched in occasion of the Borde-Bellevaux Workshop (see section 6.4.3.) for which the City mandated the Habitat Research Centre to conduct a site analysis in the form of a Workshop in order to define a strategy to improve public space and mobility in a specific area. The collaboration has been pursued in occasion of other initiatives as the New Climates in... initiative (see section 6.4.3. - New Initiatives).

ETH Zurich

A strong collaboration with the Department of Architecture (D-ARCH) at ETH Zurich has been launched in 2019 in occasion of the conceptualisation and organisation of the Master of Advanced Studies in Urban and Territorial Design (see section 7 - Education).

In addition, HABITAT has developed fruitful collaborative relationships with: LCAU (Leventhal Centre for Advanced Urbanism, MIT), the Ecole Urbaine of Lyon, the AMS (Amsterdam Institute for Advanced Metropolitan Solutions), the Metrolab in Brussels, the Future Cities Lab at the ETHZ and -thanks to the "Tod is Rur" Marie Curie Project- the members of the ITN network (Universiteit Antwerpen, École des Ponts Paris Tech, Institut Français des Sciences et Technologies des Transports, de l'Aménagement et des Réseaux, Kungliga Tekniska Högskolan – KTH Royal Institute of Technology, Sveriges Lantbruks-Universitet, Technische Universität Berlin, Technische Universiteit Eindhoven, Universiteit van Amsterdam, Antwerp Management School, Atelier Parisien d'Urbanisme, AREP, European Passengers' Federation, BMW Group/Institute for Mobility Research, Institut d'Aménagement et d'Urbanisme Ile-de-France, IQ, Samhällsbyggnad, Provincie Noord-Holland, Studio Paola Viganò, UUM | Unlimited Urban Management, Vlaamse Vereniging Voor Ruimte en Planning, WSP SVERIGE AB, Société du Grand Paris).

9 RELEVANCE AND IMPACT

The relevance and impact of HRC on the local and International context are at their beginning but have been strengthened by the initiatives described in the previous pages and will be multiplied by the participation to European Research projects as in the case of recently won Marie Curie grant with the ITN consortium.

It is important to outline the academic landscape in which HRC has developed its missions and program. In fact, in the last years an important number of new Research Centres dedicated to the urban and to urbanization have been created in Europe and internationally. The reasons are obvious: the planetary challenge of urbanization, the challenge of Climate Change on the urban and all the radical shifts we are facing which place cities and urbanism at the centre of any imagination of our future lives. A character of centres as the LCAU (Leventhal Centre for Advanced Urbanism, MIT), the Ecole Urbaine of Lyon, the AMS (Amsterdam Institute for Advanced Metropolitan Solutions), the Metrolab in Brussels, or the Future Cities Lab at the ETHZ – to cite some of them with which HRC has already started to create links – is to pursue this mission, to be both locally rooted and internationally oriented, and to place the transition as the main focus, in its different ecological and societal dimensions. Among them, HRC has the specificity to have design as the central tool to construct interdisciplinary research and exploration of the future.

Given this context, the presence of the HRC at EPFL brings a clear and tangible added value in terms of reputation and impact. First of all, it brings urbanism and urbanization as crucial interdisciplinary issues inside the EPFL. This was missing, although considered crucial. Secondly, the academic initiatives open to international PhD students and scholars have generated a new “tradition” and a reference point, already recognizable, thanks to a high quality level of exchange. Finally, the recent initiative “New Climates in...” places the relation between Academy and Society as a specific research question. The position of HRC is that these activities are not only socially important, but epistemologically necessary to implement research which includes on-site scale 1:1 experimentation. The transition will only become a “research object” if experimentation, pilot cases and

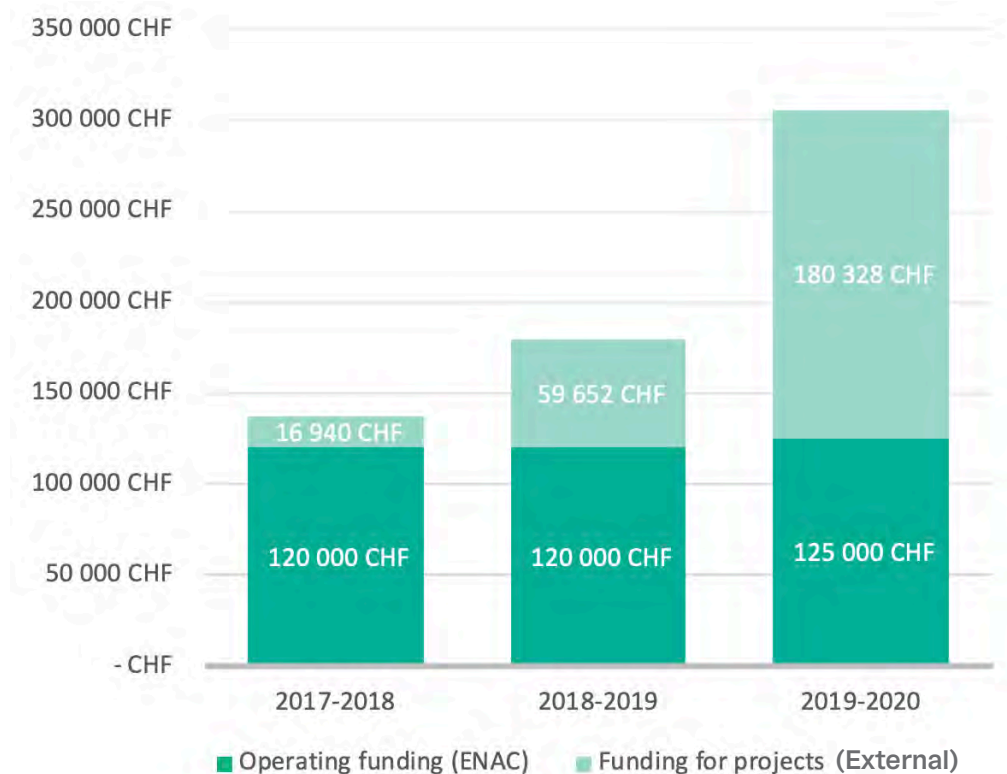
prototypes can be conceived, discussed and tested in a collective and collaborative way: between Academy and Society.

At the end of this short overview of the relevance and impact of the first cycle of HRC activities, we can confirm that an inter-pluri-transdisciplinary approach open to society has been fundamental, as the analysis of the background of the involved research groups (Grand Genève, Seed-Money, New Climates...) and the invited speakers or PhD students demonstrate. The goals with regard to the inter-pluri-transdisciplinary approach have been met -or will be met in the next future- in research and teaching. The new MAS shows it extensively in its educational program and ambitions.

However, we see scope for improvements on different levels and initiatives which are also related to availability of resources. We will continue to work on the encountered difficulties in the next future, considering essential the support of ENAC and EPFL.

10 RESOURCES

During its first three years of functioning, Habitat Research Centre has mainly relied on the “operating funds” guaranteed yearly by the ENAC (120K CHF). However, thanks to the numerous activities and initiatives launched each year, the Centre has been able to incrementally increase its own funding.



10.1. Invested Resources

Administrative Staff

Valerie Pahud 20% (Sep 2017 - today)

Scientific Collaborators (with the support of Lab-U)

Monique Ruzika Rossier	20% (Sep 2017 - Aug 2018)
Martina Barcelloni Corte	20% (Jan 2018 - May 2020)
Matthew Skjonsberg	40% (Jan 2018 - Oct 2019)
Farzaneh Bahrami	40% (June 2018 - Dec 2018)
Qinyi Zhang	20% (Jan 2019 - Dec 2019)
	30% (Jan 2020 - today)
Shin Koseki	40% (Jan 2018 - Aug 2019)
	10% (Sep 2019 - today)
Derek Christie	10% (Aug 2019 - today)

10.2. Obtained Resources

Operating Funding (ENAC)

Period 2017-2018	CHF 120'000.—
Period 2018-2019	CHF 120,000.—
Period 2019-2020	CHF 125,000.—
<i>Total</i>	<i>CHF 365,00.—</i>

Funding for Individual Projects (EPFL)

DH - Digital Studies Seminars (2020)	CHF 2,950.—
Campus Durable (2020)	CHF 26,200.—
MAS (2020-2021)	CHF 50,000.—
<i>Total</i>	<i>CHF 79,150.—</i>

Funding for Individual Projects (External)

All taxes included

Ville de Lausanne (2019)	CHF 5,500.—
Ville de Lausanne (2020)	CHF 33,600.—
F. Braillard - JBS (2017-2019)	CHF 15,000.—
F. Braillard - GG (2019-2020)	CHF 56,000.—
Swissuniversities (2017-2019)	CHF 33,092.—
FNS - Agadir Seminar (2019)	CHF 11,978.—
SBB (2020- 2023)	CHF 86,400.—
<i>Total</i>	<i>CHF 241,570.—</i>

Donations

MER Elena Cogato Lanza (2019)	CHF 1,000.—
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Grand Total (2017-2020) CHF 686,720.—

Funding 2020-202..

FNS Marie Curie (2020-2024)	CHF 281,277.—
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11 PERSPECTIVES

Designing Habitats is deeply established in empirical and theoretical analysis of the present, of the past and of the future. This is why research through design projects utilises and develops specific epistemologies and operations and can be strong agents to innovate multi-interdisciplinary approach. Urban and natural dynamics are technically and politically hard to grasp in the extended urbanized territories, due to their complexity and temporality. New “urban questions” are raising which place inequalities (socio-political and ecological) and biopolitics (health, work, life...) as the fundamental background of HRC explorations. We consider the need for a research on such topics and its development paramount.

In the short term, HRC will work in continuity with the initiatives already proposed: the scope is to embed them into the local and international landscape, to give them more visibility, to publish regularly about their outputs. For this, HRC will continue to develop various cognitive strategies, tools and methods to produce new ideas. Before the end of the year a “HRC Day” will bring together several representatives of international research centres for an open debate about the new conditions and challenges for the research activity (“Conditions have changed”, JBS and HRC day, in collaboration with the Fondation Brillard).

The two funded interdisciplinary research programs (“The Hub of the Future”, launched by SBB and in partnership with ETHZ and the ETN research with EU Partners) will develop in the next years a wide range of new relations with European Institutions and exchange of PhD students. Observation and action, reasoning and intention, cooperation among the different orientations will be further developed. Knowledge is dependent on action.

Finally, the completion and the launch of the new MAS program will guarantee the starting of an international program in the fall of 2021. “New Climates in...” will be extended to other contexts and will be an important tool to bring HRC and EPFL research questions to the public debate and action. All these activities will demand energy and support from the ENAC and the EPFL laboratories and boards.

In the longer term, HRC will have to rethink the Cluster structure which will find synergies with the recently launched ENAC “Clusters”

and will work in a deeper way on the involvement of the ENAC and EPFL Laboratories

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More fundamentally, HRC has four long term ambitions:

1. To develop strength and visibility to become a reference point in the local and international debate about cities and territories in the age of the Transition.
2. To embed a culture of the urban and of the ecological shift in the ENAC/EPFL research, merging social science, spatial design and hard sciences.
3. To develop an international education and well rooted program that can give a new epistemological and interdisciplinary foundation to the idea of “urban and territorial designer” (the one year/two year MAS in partnership with the ETHZ).
4. To maintain –through the project– a strong relation with the outside world, at the same time pragmatic and visionary, both locally and internationally to rethink the Project of the City.

In the next pages the Scientific Committee expresses its evaluation and ambitions for the future of Habitat Research Centre. To develop these ambitions in the short and long term, HRC needs to be supported: both institutionally and financially.

LUCA ORTELLI

Professor, LCC, ENAC

Founder of HRC

The dual objective of HRC is to promote initiatives aimed at inter and trans-disciplinarity and to develop studies and researches on the future of inhabited space. In this sense, HRC has promoted, in the past three years, a series of initiatives aimed at building a common discussion and research area within ENAC and EPFL.

In relationship to other research centres focused on urban and territorial studies, HRC favors and promotes a design approach as an inseparable complement of different types of cognitive investigations. Convinced of the need to involve the professional and civil world, together with the academic domain, HRC has recently organized a series of meetings and discussion fora around the theme of the climatic emergency (New climates in ... Lausanne) and, more particularly, about the necessary operations to be taken for the transition towards new ways of organization of human and non-human habitat. HRC's very intention is to expand this kind of symposia to other cities.

During its first three years, HRC has launched a series of research clusters dealing with crucial topics as landscape, health, digital and productive dimensions in direct relation with habitats in the largest sense of the word. HRC's design-oriented components have been recently proved with the participation to the call "Greater Geneva".

Taking advantage of the richness and variety of the disciplines within ENAC, HRC offers the possibility of founding a common language and of realizing concrete interactions, definitely aimed at the production of visions and projects.

HRC's weakest point are dealing with the lack of support from EPFL Direction and with the objective difficulty to involve more substantially the affiliated labs. In fact, their affiliation is in a large majority of cases purely formal and lacking of real, continuous engagement.

These points are crucial for defining the strategy for the next years. From one hand, it would be obviously very useful to have more explicit support from EPFL Direction, from the other, a more solid participation of the 22 affiliated labs is probably the only possibility to expand HRC and to gather other participants.

Some measures have to be taken in the next future, due to the centrality of topics concerning the reality of our habitats. Within the possible actions, it is useful to mention, among others, the EPFL-ETHZ joined Master (under construction) as well as the direct participation of HRC in Climact (to be defined).

BÉLA KAPOSSY

Professor and Dean, CDH

In these last three years the Habitat Centre has developed various cooperation activities, research projects and dissemination actions focusing above all on the urban environment understood as "architecture, landscapes, complex relations with natural dynamics, history, and culture" but also as an "association of practices" to experience habitats.

The theme of the relationship with the urban space has been analysed thanks to multiple initiatives and interactions with affiliated laboratories, their ongoing research and the inputs provided by the latest research activities of students, Ph.D, Post Doc and Researchers.

The concept of Future is the common thread for understanding metropolis transformations, the Urban Social Dynamics, and how transforming the analysis provided by research into concrete options of actions, through the implementation of social and planning policies.

More recently the Centre has focused its attention on the digital turn and the new challenges for the urban landscape. The macro concept of "Cities and AI" or more generally "Habitats and AI" has inaugurated a new horizon of research and dissemination activities. On this track further inputs have been addressed such as ecosystem management thanks to algorithmic optimization, climate change management and the impact assessment of policies and practices conducted on the residential area to define future actions. At the same time, moments of reflection on the analysis of the historical palimpsest have made it possible to codify some AI developments around the more general concept of inhabited space as well as

digital heritage. Sustainability is one of the key concepts of the Centre's investigation and it is already a distinctive element of research of some affiliated laboratories, HRC could imagine fixed annual initiatives around the exploration of this concept made by several scientists.

The definition of research clusters on interdisciplinary topics is very promising. Given the uncertainties of the Covid pandemic, the concept of optimized living spaces, with a quality of social exchanges and the simplicity of circulation is crucial.

The perspectives to be reinforced would include a stronger and more active relationship with local stakeholders and administrations responsible for managing and redesigning the city. The horizon of this type of collaboration could be broadened adding several cases on a European and international scale. Another aspect, which concerns joint research actions, is the strengthening of the algorithmic approach. The collaboration with laboratories of Data Science, Digital Humanities and CDH for pilot projects could be coordinated, as was hypothesized during the seminar "How the Digitalization will change the Urban?" to be able to analyse concrete cases of algorithmic planning.

ELENA COGATO LANZA

MER, Lab-U, ENAC

Director, EDAR Doctoral Program

Habitat Research Centre is based on an original working hypothesis with great interdisciplinary potential: the hypothesis that the city-territory is a renewable resource. This means that this form of urbanisation, with its varied and specific morphologies all over the world, constitutes an enormous spatial and natural capital to be replanned in light of the big transition (climate, mobility, energy, social). The shift of perspective induced by the notion of resource is undoubtedly very clear, and at the same time opens up a very open field of experimentation, favouring an informed abandonment of conventional models of analysis and transformation. The understanding of the city-territory's different rationalization and life-cycles (water management, agriculture techniques, extended mobility, energy production, social structures, metabolisms, ...) is key to the future - but already in progress - transition. The expected diversification of disciplines and researchers, primitive by this hypothesis, has not yet been achieved in the centre, whose intense activity of seminars, debates, publications, and research projects has interested a relatively small circle of the laboratories that created it. The challenge facing HRC is to go beyond its present identity as an enlarged urbanism laboratory, to function as a real platform. From this point of view, the project of a new MAS in partnership EPFL-ETHZ, launched by the HCR, is a unique opportunity. It would not be disproportionate to bring together all the forces and means available to the centre in the realisation of this project. This should make it possible to bring together a much more diverse group of excellent researchers and actors in the field of urbanization; to demonstrate the operational potential of this hypothesis in equally diverse fields and scales; to take advantage of the avant-garde requirement of advanced teaching; and to venture into high-risk and high-benefit hypotheses.

