Time Catalysts

Research by Design in the Loose Ends of Barcelona

Pau Bajet
PhD 'by design'
July 2023

School of Art, Architecture and Design
at London Metropolitan University.

Supervised by
Prof. Matthew Barac
Prof. Florian Beigel
Prof. Philip Christou
Prof. Pere-Joan Ravetllat

Time Catalysts: Research by Design in the Loose Ends of Barcelona

Pau Bajet
PhD 'by design'
July 2023

Thesis submitted in fulfilment of the requirements for the degree of European Doctor of Philosophy (Doctor Europaeus) at the School of Art, Architecture and Design, at London Metropolitan University.

Supervised by
Prof. Matthew Barac
Prof. Florian Beigel
Prof. Philip Christou
Prof. Pere-Joan Ravetllat

I, Pau Bajet, hereby declare that the work presented in this thesis is my own. Where information has been derived from other sources I confirm this is clearly stated.

Abstract

The passage of time, understood as the duration of becoming in space, offers playful yet serious liberating potentials concerning individual and collective, human and nonhuman rights of appropriation and transformation. This research enquires about the use of time as a design tool in pursuit of such potentials. Drawing upon theoretical frameworks and architectural precedents, it establishes a critical understanding of the capacity of a deep, cross-scalar territory of ever-changing spatial configurations, with openly interpretable supports gathered from specific physical and cultural pre-existence, loosely suggesting delightful habitation over time. The 'time catalysts' at the heart of this thesis seek to embody these promises. They set out to deal with urban fringes damaged by the rise and fall of industrialisation, locating the investigation in the southern 'loose ends' of Barcelona. In opposition to the widespread tendency towards tabula rasa urbanism, time catalysts are assembled as situated alterations to found contexts. Their slow-changing rhythms are rooted in a fractal field, amidst consecutive infrastructural space (resistance) and its capacity to stimulate successive appropriation (change). They strive for a multiplicity of spatial, political and ecological purposes.

In its approach to architectural and urban investigation, this doctorate mobilises its core argument 'by design'. This methodological pathway bridges practice and theory by using design speculation as a medium of critical and prospective qualitative enquiry. Transdisciplinary relevance is prioritised in this outlook above scientific verification; instead, the uncertain interrelations of explicit and tacit awareness are of primary interest. The design outputs of this investigation distinguish between 'artefacts' (situated spatial prototypes) and 'artifices' (ambiguous design strategies)—the former containing irreducible yet ineffable knowledge embeddedness, the latter attempting to communicate designerly ways of knowing that demand, for their meaningful mobilisation, practical wisdom and intention.

Behind the hill of Montjuïc, in a former agricultural terrain of decayed industrial developments near the sea, specific places are approached at different scales—city edge, urban fabric, and room ensemble—providing a context for design speculation in a two-step research process. Firstly, design appears as an interpretive method for defining subjective contexts, identified as found-time catalysts, by means of unveiling fragmentary situations with the potential of stimulating upcoming change. In a second step, design provides a vehicle for speculation. The design research process launches and tests the potential of time in a constellation of projects that both enhance previously found situations and creatively release new-time catalysts in fresh forms. From furniture to landscape, these projects provide gradients of infrastructural support in-between typical categories, scales and disciplinary convention. Their purported insight is made evident in their capacity for overcoming simplistic dichotomies through manifold tectonic, social, climatic, metabolic and temporally nuanced interrelations. These interrelations engage with a deep awareness of the past (pre-existence), as well as producing new spatial resistance to catalyse futurity (in open-ended, slow durations of becoming), awakening a profound civic and ecological sense of coexistence in solidarity, that curates their aesthetics and meaning. Finally, a loose cohort of interconnected visual-written design strategies—the artifices—intends to articulate situated typicality, rather than objectified type, in the search for deeper structures that may trigger ambiguous, perhaps unexpected forms of liberating spatial praxis.

Acknowledgements

Developing and finishing a thesis is a tremendous endeavour; writing it in a non-native language (for me, English) is especially challenging. But it is with this tiny portion that I feel speechless: I simply cannot find the words to express my gratitude for those who have had the patience and care to walk with me along this slow, tortuous journey—so, I will speak from the gut. In truth, I can only begin by thanking Maria. It is strange referring to her as a sort of distant third-person—Maria Giramé—because she is always part of our shared undertaking: together we have built a diffuse territory of kinship, home, profession, struggle, love, fun and discovery. Without her, this PhD would not exist, because she pushed me to start it in the first place and has been its closest critical observant and everyday supporter all the way.

After months of casual conversations with Prof. Florian Beigel and Prof. Philip Christou, this PhD started in 2015 as a full-time research project for a period of two years, funded by "La Caixa" fellowship program. Florian's intellectual force and deep, humane observations established the foundations and direction of this investigation during its effervescent early stages, largely focused on design explorations. After three years of close involvement, his loss left an unfulfillable void. Philip has been the most valuable, enduring counsellor for the core development of this thesis, where design and research were intertwined. I am deeply grateful for his knowledgeable insights, cultural and aesthetic sensitivity as well as his attentiveness over many years. Next to Florian and Philip, the initial supervisory team was completed by Prof. Peter Carl, who brought for me an unexpected phenomenological awareness. By 2017, coinciding with my change to part-time, distant mode of study, Prof. Matthew Barac was appointed supervisor, after Peter's retirement. Matthew's contribution has been fundamental: without his acute guidance this thesis would never have been written. From hypothesis to conclusion, his precise remarks and profound judgments have reshaped this entire body of work, sentence by sentence. Later, mid-way through the writing process, Prof. Pere-Joan Ravetllat became an additional supervisory member of the PhD, to whom I am grateful for pursuing clearer research enquiries, theoretical positions and findings, and for his never-tiring commitment in seeing this thesis completed.

I would like to extend my gratitude to a number of academics, colleagues, institutions and friends, across London and Barcelona. Over these years, Prof. Maurice Mitchell has provided useful critical feedback to work in progress. As an early advisor, Prof. Eduard Bru helped in shaping the topic of enquiry and encouraged its first design instincts. Prof. Estanislau Roca helped me to devise the area of investigation near Montjuïc. Priceless site and background information was provided by individuals from the Barcelona Regional Agency (BR), the Àrea Metropolitana de Barcelona (AMB), the Barcelona Chamber of Commerce, and the local community Unió d'Entitats de la Marina. Input from other PhD candidates was inspiring; in particular, I benefited from the experience of Lucy Pritchard and her design investigation on landscape infrastructure. I am grateful to Victoria Addis who has proofread this thesis. Special thanks to my dear friends Pol and Judit, graphic designers, who have helped in shaping the layout of the booklets, and to Sara and Joel who have assisted me brilliantly with presentation drawings over the last stretch. Shared discussions with colleagues from the profession and other good friends have influenced my work in subtle yet decisive ways—although, unfairly, there is no space here to list all your names. Finally, on a personal level, I would like to thank my parents Clara and Jordi for their tireless trust, council and help.

Introduction
A Road Map through the Promise of Time

Chapter 1
The Awareness of Time

Chapter 2
Spatial Stimulants of Delightful Change

Chapter 3
Research by design in the Loose Ends of Barcelona

Chapter 4
Unveiling 'Actant' Contexts

Chapter 5
Making Time Catalysts

Chapter 6
Towards a Family of Artifices

Conclusion as Opening

Bibliography

Table of Contents

Time as a Design Tool, Design as a Research Vehicle, Situated Urban Prototypes and Strategies, Navigating through this Thesis — p. 24 – 36

I. Time as Becoming: The Phenomena of Duration, 'Actant' Contexts
II. Ethics of Change: Space-Time-Politics of Change, Freedom of Delightful Appropriation, Ecological Awareness
III. Lived Places: The Pleasure of Spatial Phenomenology, Politics of Space, The Play of Place Resistance
Conclusion: From Alteration to Transformation — p. 37 – 68

I. Everyday Rooms of Becoming: Flexibility in Modernity, Specific Indeterminacy, Atmospheric Generosity
II. Levels of Permanence and Appropriation: Aesthetics of the Open Form, Megastructure Fun and Utopia, Spatial Agency, Habraken's Supports
III. Land Resilience: Prosaic Land Traces, The Infrastructural Capacity of Land, Politics of Land, Generative Ecologies
Conclusion: Propositions for Cross-scalar Design Speculation — p. 69 – 112

I. Design as a Medium for Research: Subtle Ways of knowing, The Role of Designing, Towards Speculative Research
II. Site and Background: The City of Barcelona, Montjuïc as Ancestor, Agrilogistics of The Delta Plain, Current Plans and Opportunities
Conclusion: A Vivid Setting for Design Speculation — p. 1 13 – 156

I. City edge: Witnesses of the Delta, An Artificial Mound as a Civic and Ecological Infrastructure
II. Urban fabric: Ordinary Streetscapes and Yards, Plot Tissue of Activity Fields, Familiar City Structures
III. Room ensemble: Struggle and Vitality of the Warehouse and Rowhouse, Image Memories Actant Supports
Conclusion: Actant Contexts as Design Sites — p. 157 – 220

I. City edge: Distorting a Human-made Plateau, Generative Wetlands of the *Estany del Port*, A tapestry for Human and Nonhuman Delight
II. Urban fabric: An Accidental Street Becoming, Street Social and Atmospheric Interactions, Breaking Up the Field
III. Room ensemble: A City Base for Row Habitation, Pop-up Three-dimensional Framework
Conclusion: Prototypes and Apprehensions — p. 221 – 314

I. Design Interpretation: Enhancing as Making, Edges as Catalytic Ambivalences, In-between Typicalities
II. From Artefacts to Artifices: Making Apparent the Actant Contexts, Ushering in Adaptation and Enhancement, Crafting Fresh Catalyst
Conclusion: Prototypicalities for Futurity — p. 315 – 364

A Research Workshop of Time Catalysts, Knowledge Embeddedness, Meaningful Endeavours for Further Investigation, Afterword: Live Interrelations — p. 365 – 387

p. 388 – 403

List of Figures

Chapter 1

Fig. 1
P. Ribas, ‘Croquis B: Reseña histórica del Puerto de Barcelona desde su origen hasta la actualidad’ (1935).

Fig. 1 and 2
Oskar Hansen, Lech Tomaszewski, Stanisław Zamecznik, Project for a Building of Exhibitions of Art, Warsaw, (1958).
Souce: Zofia and Oskar Hansen Foundation
http://83.0.101.53/hansen/index.htm

Fig. 3
Paul Klee, Angelus Novus (1920)
The Israel Museum, Jerusalem
https://commons.wikimedia.org/wiki/File:Klee-angelus-novus.jpg#filelinks

Fig. 4
Fra Giocondo, Illustrated edition of De Architectura by Vitruvius (1511), p.13.
https://books.google.nl/books?id=0GtQAAAcAAJ&printsec=frontcover&hl=ca&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false

Fig. 5
Emanuel de Witte, Interior with a Woman at the Virginals (ca 1660)
Museum Boijmans Van Beuningen collection
https://commons.wikimedia.org/wiki/File:Emanuel_de_Witte_006.jpg

Fig. 6
John Cecil Clay, A cover of “Good Housekeeping” magazine, 1908.
https://commons.wikimedia.org/wiki/File:Good_housekeeping_1908_08_a.jpg

Fig. 7
Fragment of plan of Saint Gall. Switzerland, early 9th century (ca.820–830). Ms. 1092. St. Gallen, Stiftsbibliothek, Codex 1092
https://digital.library.ucla.edu/catalog/ark:/21198/zz002kp2b7

Fig. 8
Cathedral of Syracuse (2018).

Chapter 2

Fig. 1
Cedric Price, Fun Palace for Joan Littlewood Project, Stratford East, London, England
Perspective (1959–1961).
https://www.moma.org/collection/works/845

Fig. 2
Le Corbusier, Dom-ino scheme (1914).
Le Corbusier, Towards a new architecture, trans. By Frederick Etchells (London: John Rodker, 1927 repr. 1931), p. 244. Originally published in 1923 under the French title Vers une architecture.

Fig. 3
Louis Kahn, Servant and served areas in the Goldenberg house (1961).
Perspecta, Vol. 7 (1961), pp. 9-28
Published by: The MIT Press on behalf of Perspecta.
Stable URL: https://www.jstor.org/stable/1566863
Accessed: 25-04-2020 21:10 UTC

Fig. 4
Alison and Peter Smithson, sketch plan for the Snowball Appliance House, (1957)
CCA

Fig. 5
OMA, Parc de la Villette, model of the Second Phase competition (1982). Picture by Hans Werlemann.
https://www.oma.com/projects/parc-de-la-villette

Fig. 6
ARU, Stadtlandschaft Lichterfelde Süd, Berlin.
Three collage drawings on tracing paper, by Peter Beard, ARU.
-Existing trees in the landscape.
-Proposed landscape infrastructure, establishing field structure.
-Early stages of field settlement.
Florian Beigel and Philip Christou, Translations (Basel: Christoph Merian Verlag and Swiss Architecture
Museum, 2014), p.13.

Fig. 7
Frank O. Gehry, Davis Studio and Residence, Malibu, California (1968-72). Picture by T. Kitajima.
Francesco Dal Co and Kurt W. Foster, Frank O. Gehry: the complete works (Milano: Mondadori Electa, 2003), p.99.

Fig. 8
Lacaton & Vassal, Maison Latapie, Floriac (1993). Image by Lacaton & Vassal.
https://www.lacatonvassal.com/index.php?idp=25

Fig. 9
Philippe Rahm, Domestic Astronomy (2009).
http://www.philipperahm.com/data/projects/domesticastronomy/index.html

Fig. 10
Alison and Peter Smithson, original manuscript of the Doorn Manifesto (1954).
Het Nieuwe Instituut Collection
https://zoeken.hetnieuweinstituut.nl/en/objects/detail/?q=Doorn%20Manifesto&page=1

Fig. 11
Aldo van Eyck, Orphanage: initial iteration of final design (ca 1955).
Robert McCarter (ed), Aldo van Eyck (New Haven and London: Yale University Press, 2015), p.87.

Fig. 12
Yona Friedman, Agglomérations spatiales: disponibilité pour la vie urbaine et pour l'agriculture (1961).
Centre Pompidou, MNAM-CCI /Dist. RMN-GP https://www.centrepompidou.fr/es/ressources/oeuvre/c9ngezL

Fig. 13
Kiyonori Kikutake, Sky House (1958), picture by Kawasumi Akio.

Fig. 14
Cedric Price, Fun Palace for Joan Littlewood Project, Stratford East, London, England Perspective (1959–1961)
https://www.moma.org/collection/works/842

Fig. 15
Andrea Branzi (Archizoom Associati), Residential Park, No-Stop City project (1969)
https://www.moma.org/collection/works/794?artist_id=8108&page=1&sov_referrer=artist

Fig. 16
Superstudio, Supersurface (ca 1971-72)
Centre Pompidou, MNAM-CCI /Dist. RMN-GP https://www.centrepompidou.fr/es/ressources/oeuvre/cgzj4XA

Fig. 17
Lucien Kroll, Coabita project for 450 dwelling units. Workshop with neighbours (1970).
Einleitung Wolfgang Pehnt (ed), Lucien Kroll: Bauten und Projekte (Stuttgart: Verlag Gerd Hatje 1987), p.35.

Fig. 18
Walter Segal on site with Jon Broome and Ken Atkins. Photos by John McKean.
Alice Grahame and Taran Wilkhu (ed), Walters Way & Segal Close (Zurich: Park Books, 2017), p.24.

Fig. 19
N. John Habraken et al., Variations: The Systematic Design of Supports (Cambridge: MIT Laboratory of Architecture and Planning, 1976)

Fig. 20
Erik Friberger, Däckhuset housing project in Göteborg (1959)
DigitaltMuseum, from the Swedish Centre for Architecture and Design https://digitaltmuseum.se/011024920622/ritning

Fig. 21
Frei Otto, Öko-häuser, Berin (1987-91)
https://www.solidar-architekten.de/oekohaus-berlin-mitte-tiergarten-corneliusstrasse-11-12/

Fig. 22
Stewart Brand, "six S's".
Stewart Brand, How Buildings Learn: What Happens after they are Built. (New York: Penguin, 1994), p.13

Fig. 23
N. John Habraken, Deep (a) and Shallow (b) territorial structures.
N. John Habraken, The Structure of the Ordinary. Form and Control in the Built Environment (Cambridge: The MIT Press, 1998) p.204.

Fig. 24
Patrick Geddes, Section from S. to N. across Head of Old Town, showing General Contours and Situation of walls (on old cultivation terraces).
Patrick Geddes, The Civic Survey of Edinburgh (Ediburgh: Town Planning Conference Civics Department, 1911), p.547.

Fig. 25
Patrick Geddes, "King's Wall Gardern," an example of the Reclamation of Neglected Areas and Renewal of Ancient Cultivation Terraces.
Patrick Geddes, The Civic Survey of Edinburgh (Ediburgh: Town Planning Conference Civics Department, 1911) p.568.

Fig. 26
Stan Allen, Logistical Activities Zone, Barcelona, Plan: montage of scenarios (1996)
Stan Allen, 'Infrastructural Urbanism' in Points + Lines (New York: Princeton Architectural Press, 1999), p. 75.

Fig. 27
Philip Christou, Sammegaum Island projecte, sketch exploring the form of the new island plates (2008).
Courtesy of Philip Christou

Fig. 28
Florian Beigel, Sammegaum Island projecte, sketch of potential island positions (2008).
Courtesy of Philip Christou

Fig. 29
Fra Giocondo, Illustrated edition of De Architectura by Vitruvius (1511), p.12.
https://books.google.nl/books?id=0GtQAAAAcAAJ&printsec=frontcover&hl=ca&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false

Fig. 30
Gerardus Mercator, Atlas sive Cosmographicae Meditationes de Fabrica Mundi et Fabricati Figura (1596)
https://commons.wikimedia.org/wiki/File:Atlas_Cosmographicae_(Mercator)_033.jpg

Fig. 31
H+N+S, Rooms for the River, Jssel Delta Project. Reevediep: a new river arm.
Picture by Siebe Swart.
https://www.hnsland.nl

Chapter 3

Fig. 1
Charles Clifford. Muralla del mar i Castell de Montjuïc (1852).
Arxiu Fotogràfic de Barcelona.

Fig. 2
Andrea Palladio, Studies of architectural details of the Forum of Nerva and the Temple of Minerva, Rome and sketch designs for the Palazzo Thiene, Vicenza (1560).
RIBA Collections https://www.ribapix.com/#

Fig. 3
Marie-José Van Hee, Tentative loose sketch of House Van Hee. (2019).
Courtesy of Marie-José Van Hee

Fig. 4
Cover of Christopher Frayling, 'Research in art and design', Royal College of Art Research Papers, 1.1 (1993).

Fig. 5
View from Montjuïc towards the southern periphery of Barcelona and the Llobregat delta (2015).

Fig. 6 (opposite page)
Montjuïc hill from the motorway (2015).

Fig. 7 (opposite page)
Empty plots next to the train tracks (2015).

Fig. 8
P. Ribas, 'Croquis A: Reseña histórica del Puerto de Barcelona desde su origen hasta la actualidad' (1935).
Institut Cartogràfic i Geològic de Catalunya
http://cartotecadigital.icgc.cat

Fig. 9
Moulinier, Map of the city and harbour of Barcelona (ca 1806).
Institut Cartogràfic i Geològic de Catalunya
http://cartotecadigital.icgc.cat

Fig. 10
Unknown, drawing of the dock built between 1590 and 1602 (ca 1600).
Junta de Obras del Puerto de Barcelona, Memoria (Barcelona: Industrias C. Cornet, 1935), p.24. from Rafaela Puig manuscript no. 450 at the Biblioteca de Catalunya.

Fig. 11
P. Ribas, 'Croquis B: Reseña histórica del Puerto de Barcelona desde su origen hasta la actualidad' (1935).
Institut Cartogràfic i Geològic de Catalunya
http://cartotecadigital.icgc.cat

Fig. 12
J. Anglada, 'Construcció de l'Eixample, pas del tren a vapor' (ca 1900).
Arxiu Fotogràfic de Barcelona
https://catalegarxiumunicipal.bcn.cat

Fig. 13
Pardo de Figueroa and others, 'Carta desde el río Llobregat al río Besós con el puerto de Barcelona' (1892).
Institut Cartogràfic i Geològic de Catalunya
http://cartotecadigital.icgc.cat

Fig. 14
Gilbert Fastenaekens, outskirts of Barcelona near Besòs (1990).
Quaderns d'Arquitectura i Urbanisme, No. 187 (1990), p. 100.

Fig. 15
Institut Cartogràfic de Catalunya, Orthophoto of Barcelona (2015).
Institut Cartogràfic de Catalunya
http://www.icc.cat/vissir3/

Fig. 16
Anthonis van den Wyngaerde, Engraving of Barcelona from the sea (1563).
https://commons.wikimedia.org/wiki/File:Barcelona_el_1563,_Anthonis_van_den_Wyngaerde.jpg

Fig. 17
L. Solé, Evolution of the shoreline of Barcelona.
Joan Alemany, El port de Barcelona: Història i actualitat (Barcelona: Port Autònom de Barcelona, 1984).

Fig. 18
Domingo Estruch, View of Barcelona being bombed from Montjuïc in 1842.
Biblioteca Nacional de España

Fig. 19
View of the Olympic ring of Montjuïc from the cemetery (2015).

Fig. 20
Jaume Almera, Geological and topographical map of Barcelona (1891).
Institut Cartogràfic de Catalunya
https://cartotecadigital.icgc.cat/digital/collection/catalunya/id/2174/rec/16

Fig. 21
M. Tomás de Barba, 'Real Canal de la Infanta Doña Luisa Carlota de Borbón' (1908)
Museu de l'Hospitalet de Llobregat.

Fig. 22
Unknown, View of Canal de la Infanta (1906).
Arxiu fototeca.cat
http://www.enciclopedia.cat

Fig. 23
Unknown, El Prat Vermell factory (1934).
Arxiu Fotogràfic de Barcelona
https://catalegarxiumunicipal.bcn.cat/ms-opac/doc?q=%28+%28%22Bertrand%22%29%29+AND+%28mssearch_doctype%3A%22Fotogràfic%22%29+AND+%28media%3A%22true%22%29+AND+%28mssearch_fld05%3A%5B1898-01-01T00%3A00%3A01Z+TO+1946-12-31T23%3A59%3A59Z%5D%29&start=2&rows=1&sort=msstored_typology%20asc&fq=norm&fv=*&fo=and

Fig. 24
Frederic Ballell, Neighbours rescuing a boat at the beach of Can Tunis (1911).
Arxiu Fotogràfic de Barcelona
https://catalegarxiumunicipal.bcn.cat/ms-opac/doc?q=%28Can+AND+Tunis%29+AND+%28mssearch_doctype%3A%22Fotogràfic%22%29+AND+%28media%3A%22true%22%29&start=98&rows=1&sort=msstored_typology%20asc&fq=norm&fv=*&fo=and

Fig. 25
El Consorci, 'Pla minim d'obres aprovat el 1932' (ca 1932).
El Consorci, El Consorci de la Zona Franca 1916 – 1998 (Barcelona, 1998), p.40.

Fig. 26
Brigada Topográfica de Ingenieros del Ejército, 'Plano de la zona del Puerto Franco de Barcelona y terrenos adyacentes' (1926).
Institut Cartogràfic i Geològic de Catalunya
http://cartotecadigital.icgc.cat

Fig. 27
Àngel Toldrà Viazo, '158, Barcelona, Carretera de casa Antúnez, El Morrot' (1919).
Col·lecció Àngel Toldrà Viazo

Fig. 28
Trabajos Aéreos y Fotogramétricos, SEAT factory (1955).
Arxiu Nacional de Catalunya
https://arxiusenlinia.cultura.gencat.cat/#/cercaavancada/detallunitat/ANC1-564-N-8870

Fig. 29
Unknown, Passeig de la Zona Franca (1932).
Arxiu Fotogràfic de Barcelona
https://catalegarxiumunicipal.bcn.cat/ms-opac/doc?q=%28+%28%22Zona+Franca%22%29%29+AND+%28mssearch_doctype%3A%22Fotogràfic%22%29+AND+%28media%3A%22true%22%29+AND+%28mssearch_fld05%3A%5B1898-01-01T00%3A00%3A01Z+TO+1965-12-31T23%3A59%3A59Z%5D%29&start=55&rows=1&sort=msstored_typology%20asc&fq=norm&fv=*&fo=and

Fig. 30
Trabajos Aéreos y Fotogramétricos, Housing for SEAT factory (1955).
Arxiu Nacional de Catalunya
https://arxiusenlinia.cultura.gencat.cat/#/cercaavancada/detallunitat/ANC1-564-N-9275

Fig. 31
US Army Map Service, photometric flight, detail of Mountjuïc and Zona Franca (1956-57).
Institut Cartogràfic de Catalunya
http://www.icc.cat/vissir3/

Fig. 32
Institut Cartogràfic de Catalunya, Orthophoto of Mountjuïc and Zona Franca (2015).
Institut Cartogràfic de Catalunya
http://www.icc.cat/vissir3/

Fig. 33
Unknown, railway bridge at the end of Passeig de la Zona Franca (1968).
http://www.lamarina-zonafranca.com

Fig. 34
Enric Masana, artificial lake to extract sand in Can Tunis as part of the process of Land reclamation (1965).
Arxiu Fotogràfic de Barcelona
https://catalegarxiumunicipal.bcn.cat/ms-opac/doc?q=%28+%28%22Zona+Franca%22%29%29+AND+%28mssearch_doctype%3A%22Fotogràfic%22%29+AND+%28media%3A%22true%22%29+AND+%28mssearch_fld05%3A%5B1898-01-01T00%3A00%3A01Z+TO+1965-12-31T23%3A59%3A59Z%5D%29&start=54&rows=1&sort=msstored_typology%20asc&fq=norm&fv=*&fo=and

Fig. 35
Railway and motorway bridges at the end of Passeig de la Zona Franca (2015).

Fig. 36
Port de Barcelona, view of Montjuïc and Morrot area (2015).
Port de Barcelona

Fig. 37
Ajuntament de Barcelona, 'MPGM la Marina de la Zona Franca', Implementation phases (2006).

Fig. 38
Ajuntament de Barcelona, 'MPGM la Marina de la Zona Franca', Compatible and listed buildings (2006).

Fig. 39
Ajuntament de Barcelona, 'MPGM la Marina de la Zona Franca', Approved building volumes (2006).

Fig. 40
Ajuntament de Barcelona, 'MPGM la Marina de la Zona Franca', Uranization of new streets and demolition of existing fabric (2006).

Fig. 41
Ajuntament de Barcelona, 'MPGM la Marina de la Zona Franca', Approved new volumes for the Sector 10 area (2006).

Fig. 42
Orthophoto of the area before its demolition.

Fig. 43
View of La Marina del Prat Vermell from Montjuïc.

Fig. 44
Eusebi Bertrand with Enric Granados, among others, next to La Ricarda pond (ca 1908-15).
Fons Bertrand i Serra, Museu del Disseny de Barcelona http://hdl.handle.net/10970/media/29fcab17-62f2-975d-a0a5-8f8ab8d44bb3.jpg

Chapter 4

Fig. 1
SACE Servicios Aéreos Comerciales Españoles, Zona Franca: Men-Par S.A. (1964).
Institut Cartogràfic i Geològic de Catalunya
http://cartotecadigital.icgc.cat

Fig. 2
Barcelona southern city edges and the Llobregat delta (2015).
www.eltranvia48.blogspot.com

Fig. 3
Pond of Can Tunis as a popular destination for bath next to the beach (c. 1960).
www.eltranvia48.blogspot.com

Fig. 4
Beach of Can Tunis portrayed as leisure destination in Destino magazine, article by Paco Candel (1958).
Destino, No. 1096 (9 august 1958).
https://arca.bnc.cat/arcabib_pro/ca/catalogo_imagenes/grupo.do?path=1338700&idBusqueda=66462&posicion=7&presentacion=pagina

Fig. 5, 6 and 7
Plan of the Llobregat Delta over centuries, indicating agricultural and urbanised land.
First drawing 1st to 10th c.
Second drawing 11th to 20th c.
Third drawing 21st c.
Scale 1:200,000

Fig. 8
Chlorides contamination in the aquifer of the Llobregat Delta.
Josep Germain and Joan Pino Vilalta (ed.), Els sistemes naturals del deta del Llobregat (Barcelona: Institució Catalana d'Història Natural, 2018)

Fig. 9
Map of surface temperature in Barcelona.
Ajuntament de Barcelona, 'Pla Clima: Efecte illa de calor,' https://www.barcelona.cat/barcelona-pel-clima/sites/default/files/documents/re_illa_de_calor_placlima.pdf [accessed 6/12/2021]

Fig. 10
Current urban section of Marina del Prat Vermell, the motorway and the port.
Scale 1:3,000.

Fig. 11
Site plan of the city edge.
Scale 1:20,000.

Fig. 12
Pere Surribas, Casas baratas de Can Tunis (1963).
Arxiu Fotogràfic de Barcelona.

Fig. 13
Brigada Topográfica de Ingenieros del Ejército, 'Plano de la zona del Puerto Franco de Barcelona y terrenos adyacentes' (1926).
Institut Cartogràfic i Geològic de Catalunya
http://cartotecadigital.icgc.cat

Fig. 14
View of leftover land between lanes.

Fig. 15
Section of the infrastructural corridor (2016).

Fig. 16
Loose sketch of the corridor as an ecological infrastructure (2016).

Fig. 17
Topographic model with curves every meter.
Scale 1:5,000 (50 × 50 cm).

Fig. 18
Sketch of Montjuïc before the sea (2016).

Fig. 19 and 20
Topographic model with curves every meter.
Scale 1:5,000 (50 × 50 cm).

Fig. 21
Plan of urban fabric next to Montjuïc (2017).
Original scale 1:3,000 (reduction at 1:6,000).

Fig. 22
Shaping forces of the place before 1950 (2017).

Fig. 23 (above)
J.M. Serra, detail of Plan of Barcelona (1890).

Fig. 24 (above)
Brigada Topográfica de Ingenieros del Ejército, 'Plano de la zona del Puerto Franco de Barcelona y terrenos adyacentes' (1926).

Fig. 25 (below)
US Army Map Service, photometric flight (1956-57).

Fig. 26 (below)
Comisión de Urbanismo y Servicios Comunes de Barcelona, orthophoto (1965).

Fig. 27
Gabriel Miró Street towards Montjuïc (2017).

Fig. 28
Torres de Marina Street towards Montjuïc (2017).

Fig. 29
Public space as found spatial infrastructure (2017).
Scale 1:4,000.

Fig. 30 (opposite page)
Loose sketch of Torres de Marina Street (2017).

Fig. 31 (opposite page)
Loose sketch of Gabriel Miró Street (2017).

Fig. 32
Line drawing of Torres de Marina Street (2022).

Fig. 33
Loose sketch of DAMM yard (2017).

Fig. 34
DISCER and DAMM yards (2017).

Fig. 35
Yards and alleys as found spatial infrastructure (2017).
Scale 1:4,000.

Fig. 36
View of the urban block from Montjuïc (2015).

Fig. 37
Plot tissue and activities (2017).

Fig. 38
Casa Santiveri (c. 1930).
www.santiveri.com

Fig. 39
Natura vegetarian magazine by Casa Santiveri (c. 1930)
www.santiveri.com

Fig. 40
Loose sketch of medieval Gòtic.

Fig. 41
Figure/ground plan of medieval Gòtic.

Fig. 42
Loose sketch of 19th c. Gràcia.

Fig. 43
Figure/ground plan of 19th c. Gràcia.

Fig. 44
Figure/ground plan of 19th c. Eixample.

Fig. 45
Loose sketch of 19th c. Eixample.

Fig. 46
Figure/ground plan of 20th c. Besòs housing estates.

Fig. 47
Loose sketch of 20th c. Besòs housing estates.

Fig. 48
Typical pedestrian-street in Gràcia quarter.

Fig. 49
Figure/ground plan of Gràcia showing pedestrian (grey) and vehicle (black) streets.

Fig. 50
Plot tissue of Eixample.

Fig. 51
Plot tissue of Poblenou.

Fig. 52
Communal celebration in Gràcia pedestrian-streets.
Unknown.

Fig. 53
Àrea Metropolitana de Barcelona, Metropolitan Metabolism Networks.
Àrea Metropolitana de Barcelona, 'Metropolitan Metabolism Networks' in Atles Barcelona Metropolis: Cartografies Contemporànies, edited by Carles Crosas (Barcelona: AMB, 2015), 02.

Fig. 54
Àrea Metropolitana de Barcelona, Use of taxis at 6:10 am.
Àrea Metropolitana de Barcelona, 'Taxis' in Atles Barcelona Metropolis: Cartografies Contemporànies, edited by Carles Crosas (Barcelona: AMB, 2015), 05.A2.

Fig. 55
Àrea Metropolitana de Barcelona, Tweets interaction at 9:03 pm.
Àrea Metropolitana de Barcelona, 'Tweets' in Atles Barcelona Metropolis: Cartografies Contemporànies, edited by Carles Crosas (Barcelona: AMB, 2015), 05.B4.

Fig. 56
Urban context in 2016.
Scale 1:1,100.

Fig. 57
Existing Room Ensemble.
Scale 1:750.

Fig. 58
Unknown, Ca l'Agut house, in today's Motor Street (1932).
Arxiu Fotogràfic de Barcelona
https://catalegarxiumunicipal.bcn.cat/ms-opac/doc?q=%28+%28%22Prat+Vermell%22%29%29+AND+%28mssearch_doctype%3A%22Fotogràfic%22%29+AND+%28media%3A%22true%22%29+AND+%28mssearch_fld05%3A%5B1868-01-01T00%3A00%3A01Z+TO+1955-12-31T23%3A59%3A59Z%5D%29&start=3&rows=1&sort=msstored_typology%20asc&fq=norm&fv=*&fo=and

Fig. 59
Loose sketch of Interior qualities in Mare de Déu de Port Street and Gabriel Miró Street (2016).

Fig. 60
'Architecture by substraction' in Les Baux-en-Provence.
Bernard Rudofsky, Architecture Without Architects. A Short Introduction to Non-Pedigreed Architecture (New York: Museum of Modern Art, 1964), Illustration No. 22.

Fig. 61
Erik Friberger, Däckhuset housing project in Göteborg (1959)
Arkitekturmuseet.

Fig 62
Jean Baptise Guibert, Engraving of 1st century Roman amphitheatre in Arlés (1686).
https://commons.wikimedia.org/wiki/File:ArlesGuibert.JPG

Fig. 63
Mosque of Cordoba.
Carlos Fernandez-Casado, 'La estructura resistente de la mezquita de Córdoba' in Quaderns d'Arquitectura i Urbanisme No 149 (Barcelona: COAC, 1981), p.1.

Fig. 64
Miguel Fisac, housing in Damiel (1977).
Ricardo Sánchez Lampreave (ed.), Miguel Fisac: Premio Nacional de Arqutiectura 2002 (Madrid: Ministerio de Vivienda, 2009).

Fig. 65
Gilles Perraudin, Vauvert wine cellars (1998).
Alfonso Acocella, Stone Architecture: Ancient and Modern construction skills (Milano: Skira editore, 2006), p. 297.

Fig. 66
Katsura Palace, Column/floor post (17th c.).
Drawing by Eiji Musha, Research Room at Hosei University, published in Katsura (Tokyo: Shinkenchiku-Sha, 1983) p. 81.

Fig 67
Castle Hedingham, Essex (12th c.).
J. Alfred Gotch, The Growth of the English House (1909), via https://www.fromoldbooks.org/Gotch/pages/08-Castle-Hedingham-Essex-the-Keep/

Fig. 68
Oswald Mathias Ungers, First proposal for the 'Neue Stradt' in Köln (1961).
Casabella magazine No. 305 (1966), p.45

Fig. 69
Adolf Loos, Müller House (1930).
Roberto Schezen (ed.), Adolf Loos: Architecture 1903-1932 (New York: The Monacelli Press, 1996), p. 155.

Fig. 70
Sam Jacob, Empire of Ice Cream No.16 (2011).
https://www.samjacob.com/portfolio/empireoficecream/

Fig. 71
Charles Moore, Moore House in Orinda, California (1962).
Eugene J. Johnson (ed.), Charles Moore: Buildings and Projects 1949-1986 (New York: Rizzoli, 1986) p. 99.

Fig. 72
Casa delle Nozze d'Argento (300 BC).

Fig. 73
Dom Hans van der Laan, Axonometric of the entrance hall and adjacent blocks. Extension of St. Benedict's Abbey at Vaals (1956-86)
Alberto Ferlanga and Paola Verde (ed.), Dom Hans van der Laan: Works and words. (Amsterdam: Architectura & Natura, 2011), p. 64.

Fig 74
Gio Ponti, Drawings for a courtyard villa on Procida island (1938).
Domus magazine, No. 123 (1938).

Fig. 75
Ricardo Bofill Taller de Arquitectura, 'The City in Space' (1970)
https://ricardobofill.com/projects/city-in-the-space/

Fig 76
Kazuo Shinohara, House Under High Voltage Lines Tokyo (1981), photograph by Tomio Ohashi.
Keneth Frampton and Silvia Kolbowski (ed), Kazuo Shinohara (New York: Rizzoli, 1982), p.78

Fig. 77
H. J. Hardenbergh, Waldorf Hotel in New York City (1893).
Unknown author, https://commons.wikimedia.org/wiki/File:Waldorf_Hotel_1893.jpg

Fig. 78
Herman Hertzberger, De Drie Hoven (1966-72)
Herman Hertzberger, Lessons for students in architecture (Rotterdam: Uitgeverij 010 Publishers, 1991), p. 40.

Fig. 79
Marten van Cleve, Kitchen interior (c. 1565).
https://commons.wikimedia.org/wiki/File:Måleri,_genrebild._Köksinteriör_-_Skoklosters_slott_-_88962.tif

Fig. 80
Aldo van Eyck, Municipal Orphanage, 'the Children's Home,' Amsterdam (1955-60).
Robert McCarter (ed.), Aldo van Eyck (New Haven and London: Yale University Press, 2015), p. 112.

Fig 81
Plan of the Abbaye de Mont d'Hor (17th c.).
Bibliothèque nationale de France, https://commons.wikimedia.org/wiki/File:Abbaye_de_Saint-Thierry_Mont_d'Hor.jpg

Fig. 82
Jean-Baptiste André Godin, Familistère de Guise (1859), photograph by Marie-Jeanne Dallet-Prudhommeaux (c. 1897).
Collection Familistère de Guise (inv. n°2006-33-1). https://www.familistere.com/fr/decouvrir/collections-ressources/les-collections/le-bal-de-la-fete-de-lenfance-dans-la-cour-du-pavillon-central-du-palais-social

Fig. 83
Bernard Rudofsky, Pigeoncots in the Nile Valley.
Bernard Rudofsky, Architecture Without Architects. A Short Introduction to Non-Pedigreed Architecture (New York: Museum of Modern Art, 1964), Illustration No. 103.

Fig. 84
Henri Gascar, Mme de Montespan allongée dans son château de Clagny (c. 1675-1680).
https://es.wikipedia.org/wiki/Archivo:Mme_montespan_gascar_clagny.jpg

Fig 85
Frei Otto, Wohnhaus and atelier in Stuttgart (1968-69).
Winfried Nerdinger (ed.), Frei Otto Das Gesamtwerk: Leicht Bauen Natürlich Gestalten (Basel, Boston and Berlin: Birkhäuser – Verlag, 2005), p. 254.

Fig. 86
Félix Trombe, Experimental solar house in Odeillo, France (1962-1963).
Félix Trombe's papers, private collection of Michèle Lhermitte, Paris (France); cited in Paul Bouet, 'A Silent Graph. Tracing the Algerian Past of French Solar Experiments,' ABE Journal [Online], 18 | 2021, http://journals.openedition.org/abe/8913.

Fig. 87
Katsura Palace, section of the Middle Shoin (1642).
Drawing by Eiji Musha, Research Room at Hosei University, published in Katsura (Tokyo: Shinkenchiku-Sha, 1983) p. 96.

Fig. 88
Postcaed of the Murs à pêches in Montreuil, Paris.
Société Régionale d'Horticulture de Montreuil http://www.srhm.fr/ALBUMmurs.html

Fig. 89
Lina Bo Bardi, Casa de Vidro in Sao Paulo (1950-51).
Olivia de Oliveira (ed.) Lina Bo Bardi: obra construída Built work (Sao Paulo: Gustavo Gili, 2014), p. 30.

Fig 90
SITE, James Wines, highrise of homes (1981)
Collection of the Museum of Modern Art, New York. https://www.moma.org/collection/works/709

Fig. 91
Frei Otto, Öko-häuser, Berin (1987-91)
https://www.solidar-architekten.de/oekohaus-berlin-mitte-tiergarten-corneliusstrasse-11-12/

Fig 92
Yona Friedman, Ville spatiale (1959-65).
Centre Pompidou, https://www.centrepompidou.fr/es/ressources/oeuvre/coXyrz6

Fig. 93
Masati Otaka, Sakaide Housing Complex (1964-74).
Mami Hirose and others, Metabolism, the City of the Future: Dreams and Visions of Reconstruction in Postwar and Present-Day Japan (Tokyo: Mori Art Museum, 2011), p. 137.

Fig. 94
Kiyonori Kikutake, Stratiform Structure System (1972).
Mami Hirose and others, Metabolism, the City of the Future: Dreams and Visions of Reconstruction in Postwar and Present-Day Japan (Tokyo: Mori Art Museum, 2011), p.135

Fig. 95
Georges Candilis, Alexis Jossic and Shadrach Woods, 'Proposition pour un hábitat evolutif' (1959)
Le Carré Bleu, 2 (1959), pp. 3-6.

Fig. 96
A. B. Walker cartoon 'Celestial Real Estate Company' (1909).
'Real Estate Number' in Life Magazine No. 1375 (March, 1909).

Fig 97
Frei Otto, Ideenskizze für ein Baumhaus (1980).
Winfried Nerdinger (ed.), Frei Otto Das Gesamtwerk: Leicht Bauen Natürlich Gestalten (Basel, Boston and Berlin: Birkhäuser – Verlag, 2005), p. 56.

Fig 98
Ludwig Leo, Umlauftank 2 (1967-74).
Wüstenrot Stiftung and Philip Kurz (ed.), Ludwig Leo: Umlauftank 2 (Leipzig: Spector Books, 2020), p. 29.

Fig. 99
Renzo Piano and Richard Rogers, Beaubourg under construction, photograph by Bernard Vincent (1977).
Francesco dal Co (ed.), Renzo Piano (Milano: Mondadori Electa, 2014), p.85.

Fig. 100
James Stirling, PREVI Low Cost Housing, Lima (1969).
https://hiddenarchitecture.net/previ-low-cost-housing-i/

Fig. 101
Kiyonori Kikutake, Sky House (1958), Movenett addition for a children's room.
JA magazine No. 73 'Renovation: Beyond Metabilism' (2009), p. 23.

Fig. 102
Bernard Kohn and Georges Maurios, Housing Les Marelles (1975).
Guy Lambert, 'Quand l'habitant expérimente par la maquette la conception: au cœur d'une expérience de logements "à la demande" de Georges Maurios et du Plan Construction (1971-1975)' in La maquette, un outil au service du projet architectural, (Paris: Éditions des Cendres, Cité de l'architecture et du patrimoine, 2015), pp. 148-161.

Fig. 103
Yves Lion, Domus Demain. Research of a habitat for the beginning of the 21st century (1984).
Gustau Gili Galfetti, Model Apartments: Experimental domestic cells (Barcelona: Gustavo Gili, 1997), p. 47.

Fig. 104
W.J. Neutelings, A. Wall, X. de Geyter, F. Roodbeen, Apartments for the competition Habitatgte i Ciutat (1990).
Gustau Gili Galfetti, Model Apartments: Experimental domestic cells (Barcelona: Gustavo Gili, 1997), p. 41.

Fig 105
Marcel Duchamp, Porte: 11, Rue Larrey (1927)

Fig106
Andy Warhol, the Factory (1965), photograph by Stephen Shore
http://stephenshore.net

Fig. 107
Karel Van Mallery, 'The Incubation of The Silkworm Eggs,' Plate 3 from 'The Introduction of The Silkworm' (c. 1595)
Collection of The Metropolitan Museum of Art https://www.metmuseum.org/art/collection/search/659739

Fig. 108
Florian Beigel and Philip Christou, support for a washing machine (2004).
At Home with Open House: Tanza Road, Hampstead designed by Florian Beigel and Philip Christou (Wednesday, February 24, 2021) https://open-city.org.uk/events/open-house-at-home-tanza-road-hampstead

Fig. 109
Fernando Bendito, Carlos Ferrater and José M. Prada, Instant city in Ibiza (1970-71).
https://ferrater.com/es/project/instant-city/

Fig 110
Frederic Ballell, Urgell Street, Barcelona (c.1960)
Arxiu Fotogràfic de Barcelona.

Fig. 111
Superstudio, 'Italy: The New Domestic Lanscape' (1972).
Gabriele Mastrigli (ed.), Superstudio Opere 1966-1978 (Macerata: Quodlibert, 2016), p.377

Fig 112
Katsura Palace, tatami detail (17th c.).
Katsura (Tokyo: Shinkenchiku-Sha, 1983) p. 54.

Fig. 113
Bernard Rudofsky, 'Skeletal architecture' in Lake Garda.
Bernard Rudofsky, Architecture Without Architects. A Short Introduction to Non-Pedigreed Architecture (New York: Museum of Modern Art, 1964), Illustration No. 112.

Fig. 114
Otto Steidle, Genter Strasse Housing, Munich (1969-1975).
Florian Kossak (ed.), Otto Steidle: Structures for Living (Zürich, Münichen, London: Artemis Verlags-AG, 1994), p.59.

Fig. 115
Walter Segal's Method, General arrangement.
The Architectural Review, (March 1987, republished online in May 2019)

Fig. 116
Franco Albini and Franca Helg, Salone D'Onore X Trianale de Milano (1954).
Antonio Piva, Franco Albini: 1905-1977 (Milano: Electa, 1998), p. 101.

Fig 117
Kiyonori Kikutake, Sky House (1958), later additions photographed in 2009.
JA magazine No. 73 'Renovation: Beyond Metabilism' (2009), p. 19.

Fig 118
Montjuïc Backsides and city edge and shoreline (2015).

Fig. 119
Beach of Can Tunis portrayed as leisure destination in Destino magazine, article by Paco Candel (1958). See Fig. 4.

Chapter 5

Fig. 1
Dense carbon nanotube forest formed after de deposition of metal, buffer layer and catalyst in the CMi (EPFL Centrer of MicroNanoTechnology), with accidental salts deposited on the surface.

Fig. 2
The edge as a virtual shoreline reclaiming the silhouette of Montjuïc before the ocean and the port (2017).

Fig. 3
The edge as an ecological corridor towards the delta (2017).

Fig. 4
Study of the city edge park, integrating the motorways (2017).

Fig. 5
Detail of existing and distorted accidental orography. Topographic model with curves every meter. Scale 1:5,000 (50 × 50 cm).

Fig. 6
The urban park as a civic threshold both connecting and separating (2021).

Fig. 7
Study of a new generative landscape of water streams and wetlands (2021).

Fig. 8
City edges around the new urban park and wetlands (2021).

Fig. 9
Plan of the Llobregat delta, with a reclaimed continuity of the Canal de la Infanta and the pond of Estany de Port (see correlative drawings in Chapter 4).
Scale 1:200,000

Fig. 10
Proposed urban section of the city edge.
Scale 1:3,000.

Fig. 11
Study drawing with the traffic lanes crossing the wetlands before the city.

Fig. 12
Site plan of the proposed city edge.
Scale 1:20,000.

Fig. 13 (opposite page) and Fig. 14
Generative landscape of small embankments. Topographic model with curves every meter.
Scale 1:5,000 (50 × 50 cm).

Fig. 15
Design input: Habitation of the urban park.

Fig. 16
Possible stage 1 of development.
Scale 1:20,000.

Fig. 17
Possible stage 2 of development.
Scale 1:20,000.

Fig. 18
Possible stage 3 of development.
Scale 1:20,000.

Fig. 19
Topographic model.
Scale 1:5,000 (50 × 50 cm).

Fig. 20
Generative wetland of the Estany de Port.

Fig. 21
City edge situation 1: Wetlands.
Scale 1:175.

Fig. 22
City edge situation 2: Seaside.
Scale 1:175.

Fig. 23
City edge situation 3: Pinewoods.
Scale 1:175.

Fig. 24
City edge situation 4: Agricultural mosaic.
Scale 1:175.

Fig. 25
City edge situation 5: Urban square.
Scale 1:175.

Fig. 26
City edge aerial view.

Fig. 27
Suggesting a continuity of Torres de Marina Street towards Montjuïc, currently a dead end (2017).

Fig. 28
Design input: Enhancing the accidental perimeter of the city block.

Fig. 29
Design input: Carving a street continuity through existing fabric.

Fig. 30
Design input: Basic criteria to mitigate demolitions of existing fabric.

Fig. 31
Loose axonometric projection and perspective of DAMM and DISCER yards turned into public space (2017).

Fig. 32
Design input: In plan, overlay of vehicle and pedestrian grids; in section, minimum suitable dimension.

Fig. 33
Design input: Square as a civic core for each super-block.

Fig. 34
Design input: Increasing street access on each corner of both squares to enhance urbanity.

Fig. 35
Design input: Qualities of tortuous, accidental continuities, avoiding imposed alignments.

Fig. 36
Opportunities for additional connections between squares 'A' and 'B.' Red colour indicates enhancement of found space and yellow a necessity of partial demolition (2017).

Fig. 37
Current urban grain and minimised demolitions (in yellow) for a possible urban transformation (2017).
Scale 1:3,000.

Fig. 38
Studying possible continuities that could be developed over time, in a found street structure. Red colour indicates enhancement of found space. Blue colour indicates new traces (2017).
Scale 1:3,000.

Fig. 39
View from Gabriel Miró St. towards a particular street junction with SANTIVERI alley (2017).

Fig. 40
Design input: Enhancing found oblique intersections along Montjuïc.

Fig. 41
Design input: Enhancing found façade meanders.

Fig. 42
Initial stage of site transformation. Red colour indicates enhancement of found space. Blue colour indicates new traces (2017).

Fig. 43
Existing.

Fig. 44
Step 1.

Fig. 45
Step 2.

Fig. 46
Step 3.

Fig. 47
Further break down 1.

Fig. 48
Perhaps an excessively fragmented street structure (2017).

Fig. 49
An accidental street structure plan.
Scale 1:3,000.

Fig. 50
Axonometric projection of human and nonhuman street interaction.
Scale: 1:750.

Fig. 51
A situation of atmospheric, human and nonhuman street interactions.

Fig. 52
Axonometric projection of enhanced atmospheric street interactions.
Scale: 1:750.

Fig. 53
Design input: plots of specific indeterminacy.

Fig. 54
Existing plot tissue after being crossed by the proposed street structure. Red indicates enhancement of existing traces, while blue suggests new lines.
Scale 1:3,000.

Fig. 55
Design input: plot dimension related to affordability and mutability.

Fig. 56
Design input: the necessity of depth.

Fig. 57
Design input: plot size depending on location (centre vs. periphery).

Fig. 58
Design input: plot size depending on location (street corners).

Fig. 59
Design input: plot orientation depending on location.

Fig. 60
Line drawing of Torres de Marina Street and its adjacent plots in a first stage of urban transformation (see correlative drawing in Chapter 4).

Fig. 61
Design input: plot dimension in relation to habitation potential.

Fig. 62
Addition of medium and large new plots as urban time catalysts.
Scale 1:3,000.

Fig. 63
Addition of small and large new plots as urban time catalysts.
Scale 1:3,000.

Fig. 64
Plot tissue site plan, suggesting the necessity of 'tiny' plots, responding to current common households.
Scale 1:3,000.

Fig. 65
Line drawing of Torres de Marina Street and its adjacent plots in a second stage of urban transformation.

Fig. 66
Line drawing of Torres de Marina Street and its adjacent plots in a third stage of urban transformation.

Fig. 67
Initial speculation of 'support' prototypes in different locations of the urban tissue (2018).

Fig. 68
Studies of an infrastructural façade conceived as a scaffolding (2018).

Fig. 69
Prototype of an active and passive ring-thickness as an infrastructural gradient (2018).

Fig. 70
Finding an accidental geometrical pattern for the support plots, while sustaining urban depth (2022).

Fig. 71
The support as a geological feature (2022).

Fig. 72
Testing the potential of row habitation on top of the urban support (2022).

Fig. 73
Plan of a city base for row habitation.
Scale 1:1,000.

Fig. 74
Studying how to use earth as a formwork, after digging 2m of anthropic landfill to recover the delta level in some areas of the support (2022).

Fig. 75
Studying a permeable foundation in the delta subsoil: piled raft foundations embedded in a deep rock layer (2022).

Fig. 76
The support as a grid of foundations and infrastructure for unplanned lightweight architectures (2022).

Fig. 77
Plaster cast model process: earth used as a formwork of the vaulted ceiling and piles, just before pouring the plaster.

Fig. 78
Cast model during the process of digging under the vaulted platforms.

Fig. 79
Process of casting the base beams.

Fig. 80
A situation of early settlement, where exceeding landfill has been used to shape artificial mounds, vegetation has started to bloom and human habitation begins its course.
Scale 1:60, (100×25cm).

Fig. 81
Appropriated section of a city base for row habitation.
Scale 1:200.

Fig. 82
Details of a delightful habitat for flora, fauna, humans and small architectures.

Fig. 83
Details of a delightful habitat for flora, fauna, humans and small architectures.

Fig. 84
Details of a delightful habitat for flora, fauna, humans and small architectures.

Fig. 85
Grand vaulted basement as an unexpected ambiguous and atemporal space under unplanned city developments.

Fig. 86
View of the artificial cracked plateau slightly emerging above street level.

Fig. 87
Habitation of a red timber frame house with a generous garden.

Fig. 88
The support being gradually covered by lightweight structures.

Fig. 89
Cast plaster model.
Scale 1:60, (100×25cm).

Fig. 90
Suggested play-rules to enhance commoning practices of coexistence during development.

Fig. 91
A view of the urban support next to Santiveri house towards Montjuïc (2022).

Fig. 92
Investigating the potential of an open plan of quasi-rooms in relation to M&E central risers (2018).

Fig. 93
Following a legacy of frame/infill interrelations (2018).

Fig. 94
Exploring the potential of double-height primary spaces and a stepped section of the support (2018).

Fig. 95
Initial sketches for a plug-in three-dimensional framework, where services and frame structure are integrated. The table suggests a variety of lifespan and agency according to each layer (2021).

Fig. 96
Structural scheme.

Fig. 97
Detail of the frame structure, services and a variety of possible infill floors.
Scale 1:50.

Fig. 98
Shared concrete frame with infill pre-cast slabs, services, access cores and envelope, before individual appropriation begins.
Underground floor (former delta level).
Scale 1:1,000.

Fig. 99
Ground floor.

Fig. 100
First floor.

Fig. 101
Second floor.

Fig. 102
Third floor.

Fig. 103
Fourth floor.

Fig. 104
Fifth floor.

Fig. 105
Top roof.

Fig. 106
Appropriated section of the plug-in three-dimensional framework.
Scale 1:200.

Fig. 107
First floor, a situation of appropriation.
Scale 1:750.

Fig. 108
Concrete layers.
Scale 1:500.

Fig. 109
Added appropriation.
Scale 1:500.

Fig. 110
Exploring the potential of stepped rooftops and layer stratification through the appropriation of a variety of interior and exterior rooms (2022).

Fig. 111
View of an individual unit enhancing a generous interior life. The image intends to suggest a finer scale of everyday supports such as curtains, wooden units, service connections, shades, gardens, etc.

Fig. 112
Early stage of urban transformation. Scale 1:1,100.

Fig. 113
Later stage of urban transformation. Scale 1:1,100.

Fig. 114
Cast plaster model.
Scale 1:60, (100×25cm).

Chapter 6

Fig. 1
Redrawing Geological and Historical Times

Fig. 2
Representing Metabolics of Anthropized Landscapes

Fig. 3
Revealing Past Wounds, Milestones and Memories

Fig. 4
Unveiling Subtle Material Witnesses

Fig. 5
Characterizing Found Infrastructural Space

Fig. 6
Grasping the Varying Subdivision of the Field

Fig. 7
Portraying a Cartography of Agency and Purpose

Fig. 8
Finding Opportunities in Normative, Political and Economic Contingency

Fig. 9
Recollecting Architectural Typicality

Fig. 10
Carving Through Loved Wrinkles and Scars

Fig. 11
Enhancing Found Resilient Landscapes

Fig. 12
Boosting Found Social Metabolisms

Fig. 13
Reclaiming Fragile Cultural Landmarks

Fig. 14
Distorting the Field in Suggestive Lots

Fig. 15
Transposing Architectural Typicality

Fig. 16
Intensifying the Infrastructural Capacity of Archetypical Elements

Fig. 17
Tracing Phenomenological Differences of Open Interpretation

Fig. 18
Outlining Diffuse yet Sharp Edges for Threshold Spatiality

Fig. 19
Enabling Step-by-Step Meanwhile Manoeuvrings

Fig. 20
Designing Islands of Cross-scalar Infrastructural Temporal, Spatial and Social Interrelations

Fig. 21
Mobilising Tectonics of Permanence and Change

Fig. 22
Animating Soft Techniques of Daily Alteration

Fig. 23
Heating up Thermodynamic Interactions

Fig. 24
Seeding Generators of Ecological Resilience

Fig. 25
Commending Spatial Stimulants of Interpersonal Solidarity

Fig. 26
Interweaving Playfully-serious Shared Constraints.

Conclusion

Fig. 1
bg032 Quiró. Perspective section.

Fig. 2
Bajet Giramé's stamp.

Fig. 3
bg032 Quiró. Interior courtyard visual.

Fig. 4
bg034 O'Connor. Axonometric perspective of a third stage of urban development.

Fig. 5 and 6
bg021 Les 3 Maries. Axonometric and view of a sequence of thresholds.

Fig. 7
bg035 Outdoor Pavilions. View of the new rammed-earth pavilion.

Fig. 8 and 9
bg017 Montparnasse. Elevation/plan drawing and interior view.

Fig. 10
bg058 Poblenou Attics. View of one of the domestic supports.

Fig. 11
bgc18a A-simetries. Axonometric perspective.

Fig.12
bg047 EVSA. View of the façade corner as a window display.

Fig. 13
bg047 EVSA. Axonometric perspective.

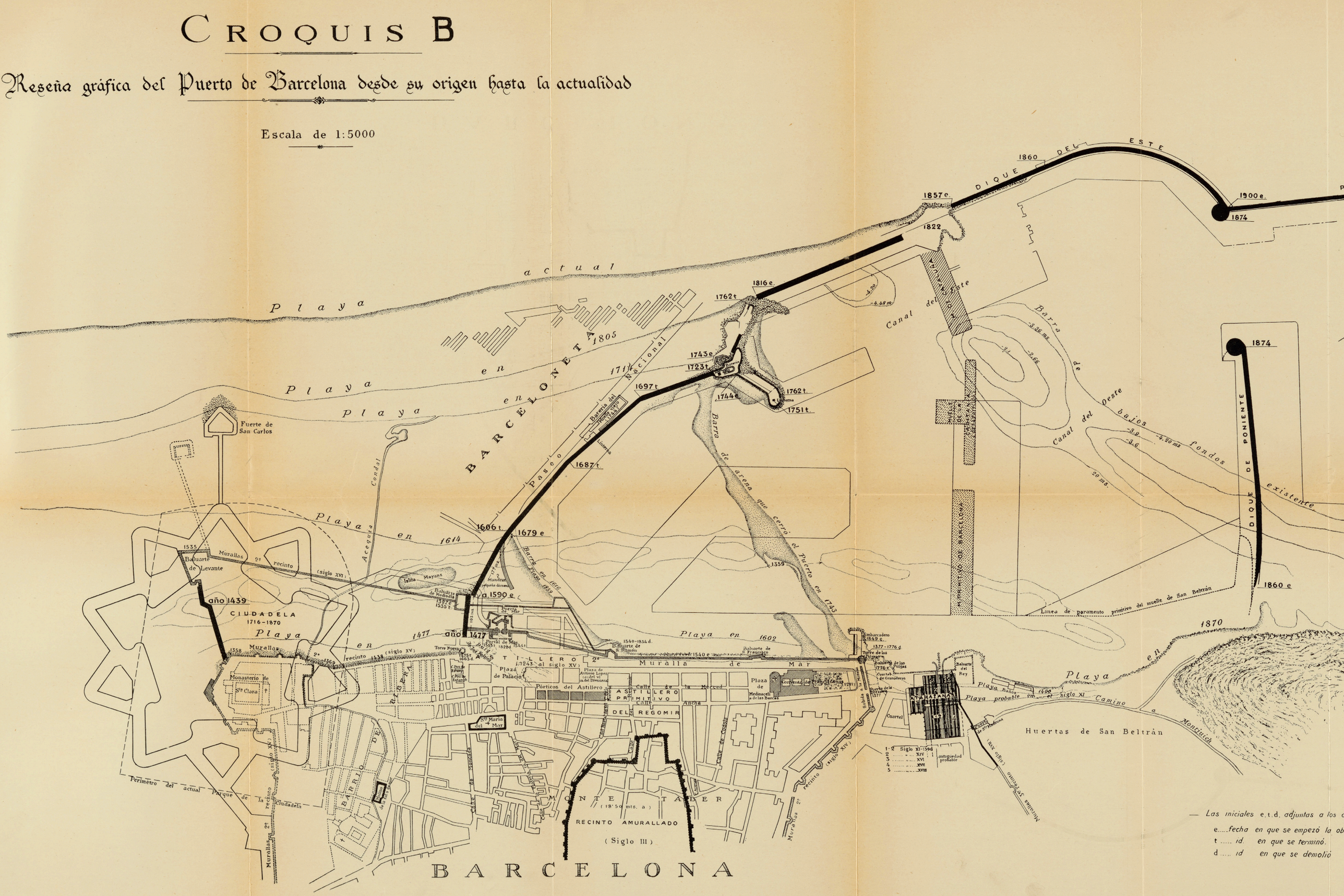
Fig. 14 and 15
bgc19b Cases de Cós. Plan diagram and exterior visual.

Fig.16
bg068 El Prat. Section through the public and private realm, exported from Revit.

CROQUIS B

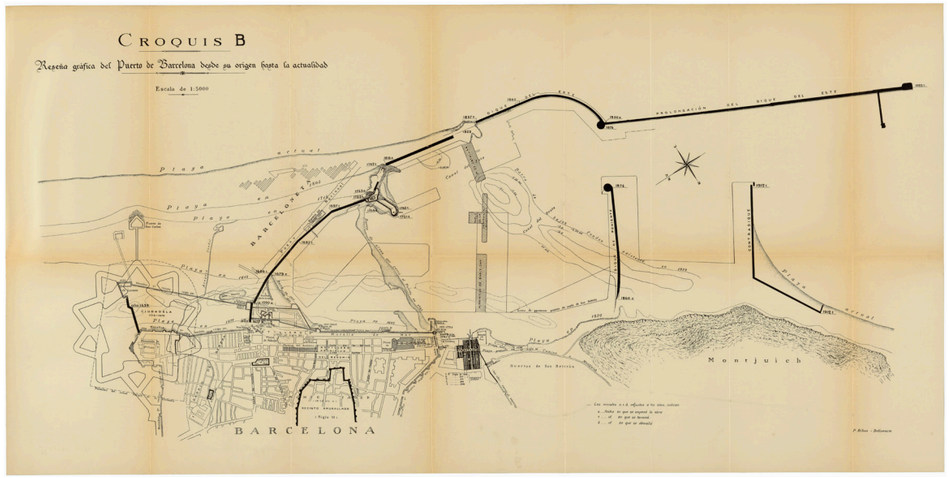
Reseña gráfica del Puerto de Barcelona desde su origen hasta la actualidad

Escala de 1:5000



BARCELONA

Fig. 1
P. Ribas, 'Croquis B: Reseña histórica del Puerto de Barcelona desde su origen hasta la actualidad' (1935).



Introduction
A Road Map through the Promise of Time

Published in a 1935 report of the Port of Barcelona building committee, this 'sketch' plan (*croquis*) depicts a chronology of the port's developments over centuries.[1] On the left (north) side, overlaid dotted lines describe a kilometre of progressive shoreline reclamation between the 15th and 18th centuries where the popular quarter of Barceloneta would later be built. This immense land extension appeared accidentally as a consequence of the arduous task of constructing a dike that would preserve a navigable body of sea water—the city's new port—safeguarding it from sand barriers persistently formed and reformed by the prevailing north to south sea current. This was a slow endeavour, gradually advancing and failing over more than two hundred years. Unwittingly or not, the artifice of the dike in its design to conceal the port combined with meteorological dynamics and patterns of sedimentation, including increased alluvial deposits from the Besòs river—both naturally and anthropically produced—to support the formation of a new plateau onto which the city would later expand. In other words, the dike functioned as a catalyst in the slow generation of a new human and nonhuman landscape. It may be seen, retrospectively, as an instrument that made use of a long passage of time to stimulate urban transformation. This thesis sets out to ask: might such instigatory, catalytic, evolutionary triggers for manifold civic development be deliberately designed?

My decision to start the thesis with this drawing is apposite for several reasons: because the sketch plan illustrates the potential of progressively urban transformation over time; because as a representation, the drawing succeeds in depicting an accumulation of

1 Junta de Obras del Puerto de Barcelona, *Memoria* (Barcelona: Industrias C. Cornet, 1935), p.50. Drawing by P. Ribas.

intervals and changing situations; because I enjoy its combination of sharp precision and loose ambiguity; because the drawing is not oriented according to a universal rule or grid (cardinal directions) but organised from the inside-out, facing the sea from the city—as we inhabitants do—while coinciding with the Roman geometrical layout of the *urbs* traced more than two thousand years ago; and, perhaps most importantly, because by introducing the promise of time through this drawing, I reveal a key factor in the attitude or stance adopted in my thesis: a form of knowing through phenomena that I can directly experience in my everyday life—a life lived as an architect in Barcelona, near Montjuïc, culturally and physically embedded in the site of this research project.

The thesis introduction is organized in order to address a threefold purpose: thematically it aims to formulate a deeper understanding about treating time as a design tool in spatial practice; methodologically it investigates an approach to architectural research that deploys design speculation as a vehicle of enquiry; and in ethical and practical terms, it cares for the elaboration of specific outputs—in the form of situated urban prototypes and design strategies—that serve to explore the thesis topic and procedures, while at the same time emerging as outcomes on their own terms. That is to say, they come into being as distinctive civic artefacts, embodying and yet transcending the origin of their monographic investigation. Finally, the introduction concludes with an explanatory note that explains the layout of the thesis and guidance regarding its navigation by the reader.

Time as a Design Tool

How may we understand and appropriately exploit the potential of time in spatial practice? This study investigates the use of time as a design tool through a cohort of interwoven projects that explore a threshold in scale and in practice between architecture and urbanism, aiming to carefully transform pre-existing, fragile urban environments. Building upon an awareness of the immense tradition of the study of time in the humanities, this topic will later be approached through specific philosophical frameworks. From that angle, the passage of time will perform liberating and affective potentials of individual and collective rights of appropriation and transformation.[2] Particular ecological and political awareness will trigger playful yet serious practices of change, caring for manifold human and nonhuman contexts.[3] This approach to change will be phenomenologically situated, therefore reclaiming the resistance of mundane rhythms rooted in ordinary places and, in this way, taking delight in slow durations of progressive transformation.[4] Besides philosophical context, an array of selected architectural precedents and critique will establish the grounds for discussion in the lead-in chapters of the thesis. This literature review will start by portraying the freedom of spatial appropriation on an everyday basis, not being enhanced by harmless neutrality, but by physical and cultural specificity, yet remaining indeterminate and openly interpretable.[5] Then, amid post-war paradigms of the open form and participation, a wide reading of Habraken's approaches will unfold—beyond objectual buildings—a deep territory of live configurations, with generative supports and interpersonal capacity for habitation and transformation over time.[6] Following the design concept of 'landscape infrastructure' developed by Florian Beigel and Philip Christou since the 1990s, these live configurations (or infrastructural levels) will be gathered from situated traces of specific material and cultural contexts, engaging with found pre-existence, to loosely suggest future habitational delight, at any scale from landscape to furniture.[7] In dialogue with all this literature, the thesis identifies gaps for research speculation in-between scales and typical situations, concerned with a wide notion of habitation beyond programmatic and typological reductions, while bringing current poetic, tectonic, political and ecological concerns.

Thematically, the thesis posits the following research question: what sort of architectural procedures may foster the design of cross-scalar spatial catalysts for delightful appropriation and transformation over time? In line with a sensibility expressed above, the thesis is concerned with—and intends to enjoy—mundane situations and wicked problems of our ordinary civic environments. In particular, it cares for damaged urban fringes that have suffered the rise and

2 Henri Lefebvre, 'Perspective or Prospective' in *Writings on Cities*, trans. and ed. by Eleonore Kofman and Elizabeth Lebas (Oxford: Blackwell, 1996), p. 171-174. Originally published in 1968 under the French title 'Perspective ou Prospective?' in Lefebvre's book, *Le droit à la ville*.

3 Timothy Morton, *Being Ecological*, (London: Pelican Books, 2018), p. 186.

4 Matthew Barac, 'Place Resists: Grounding African Urban Order in an Age of Global Change, *Social Dynamic*s, 37: 1 (2011), 24-42.

5 Florian Beigel and Philip Christou, 'Brikettfabrik Witznitz: specific indeterminacy – designing for uncertainty', *arq: Architectural Research Quarterly*, 2 (1996), 18-38.

6 See both: N. John Habraken, *Supports: an Alternative to Mass Housing*, ed. by Jonathan Teicher (UK: Urban International Press, 1972; repr. 2011). Originally published in 1961 under the Dutch title*, Dragers en de Mensen, het einde van de massawoningbouw*; and N. John Habraken, *The Structure of the Ordinary. Form and Control in the Built Environment* (Cambridge: The MIT Press, 1998).

7 Florian Beigel and Philip Christou, 'Time architecture: Stadtlandschaft Lichterfelde Slid, Berlin', *arq: Architechtural Research Quarterly*, 3 (1999), p. 204.

fall of urbanisation and industrialisation in the borderlands of civic cores, the often unravelling or neglected 'loose ends' of the city. In this regard, an initial working hypothesis suggested that the notion of 'time catalysts' may embody the potential of spatial stimulants of joyful change. But these time catalysts could not depart from decontextualized *tabula rasa* or isolated laboratory experiments. Instead, they should only be gathered as architectural or urban enhancements and additions to a found topography, already rich in physical and cultural terms, taking advantage of their unique situated contexts. Moreover, according to this hypothesis, the architectural configuration of time catalysts departs from an understanding of a fractal field of ambivalences between permanence and change—amidst consecutive infrastructural spaces and their capacity to stimulate successive appropriation at multiple scales—incorporating not only spatial qualities from autonomous architectural parameters (even if these too), but embracing diverging purposes and meaning from transdisciplinary concerns. While learning from literature and precedents, as well as by delving into the investigation of specific designs in the 'loose ends' of Barcelona, I was surprised to realise how naturally these localised concerns easily expand into multifaceted matters, thus enriching their architectural ground and stimulating unexpected tectonic turns at multiple scales. Before introducing the design products of this investigation, outlining their purposes, scope and character, the next section aims to address 'how' this research is undertaken.

Design as a Research Vehicle

This thesis navigates the methodological terrain of architectural research which, one might argue, is at times swampy or at least murky, freighted in some quarters by controversy and sometimes by dispute. The design-led approach adopted is relatively familiar in Anglo-Saxon and Northern European universities—even if still a young and comparatively uncertain method at a doctorate level, as I will later discuss—and yet a methodological pathway to architectural research that remains largely unseen in institutions with a deep tradition of doctoral study (including the Polytechnic Universities of my homeland). This approach to architectural investigation asks: why shouldn't architects rely on their own praxis as a core instrument of doctoral investigation? Why can't the process of design speculation be embedded as pivotal to critical and prospective qualitative enquiry? These questions point to the potential of a speculative area of architectural research, an angle concerned with insecure, or better said 'designerly' ways of knowing.[8] This angle prioritises relevance above verification, enquiring uncertain interrelations of explicit and tacit, even ineffable, forms of connoisseurship.[9] This methodological journey attempts to bridge architectural practice and theory, bringing together 'the intuition of making' with the critical distance of 'proper thinking'—a traumatic disjunction related to the split between artistic and scientific spheres in the 18th century.[10]
For a long time, architectural research has departed from analysis, interpretation and theorisation of physical or cultural phenomena fixated in the past, establishing a safe critical distance with its objects of study. Undoubtedly, this remains a sound and fruitful pathway to architectural knowledge that I do not intend to undermine. Nonetheless, my suggestion is that a procedure that uses design speculation as a research vehicle, may offer an additional stratum, further enriching and expanding a wider field of architectural research.

Later in the thesis we will outline a philosophical and scholarly context for this epistemological pathway, establishing conditions and purposes for the role of design in the context of doctoral investigation. In addition, given my initial unacquaintance with this type of research—and looking for methodological stability—over the course of the thesis, I have mapped out an array of PhD programmes around the globe that have forged the first steps of this approach in the past 30 years. This contextualisation has been published elsewhere in a condensed format, yet not included in this thesis to avoid an excess of methodological materials.[11] Within this research territory, the thesis follows a phenomenological sensibility, one that embraces the act of designing as a medium for research, enjoying its depth, uncertainty and ambiguities. The hermeneutical principle of knowledge production and reflection from within the context of experience and creativity is here brought into being in an architectural premise. This sensitivity is deeply influenced by ARU (Architectural Research Unit) at London Metropolitan University, a design laboratory that for decades has used 'design as research' as a method of enquiry.[12] Their investigations—even if rarely at a doctoral level—have focused on spatial and design concepts, explored as monographic enquiries, tested and unfolded through live projects at varying scales, enjoying

8 Nigel Cross, 'Designerly ways of knowing', *Design Studies*, 3.4 (1982), pp. 221–227.
9 Michael Polanyi, *Personal Knowledge: Towards a Post-critical Philosophy* (Chicago: University of Chicago Press, 1958), p. 92.
10 Alberto Perez-Gomez, *Architecture and the Crisis of Modern Science* (Cambridge: The MIT Press, 1983), p. 324.
11 Pau Bajet, 'PhD: Grasping Knowledge Through Design Speculation' in *IX Workshop on educational innovation in architecture: JIDA'21*, ed. by Daniel García-Escudero and Berta Bardí Milà (Barcelona: GILDA, 2021), pp. 424-437.
12 Florian Beigel and Philip Christou, *Translations* (Basel: Christoph Merian Verlag and Swiss Architecture Museum, 2014), p.7.

vivid situations, while sustaining a deep dialogue with literature, architectural precedents and everyday observation. Doctoral study in the context of ARU has produced one graduate to date who developed her research 'by design' in an expansion of the spatial concept of 'landscape infrastructure' through a project in the *bastide* village of Monpazier, France.[13] In terms of methodology, my contribution intends to articulate this sensibility in a more urban setting, in dialogue with a scholarly context of research through design, by proposing a particular methodological structure and output.

Methodologically, this PhD asks: what is the role of designing and its production—projects or artefacts—as a pivotal vehicle of a doctoral investigation in architecture? What is the interaction between design speculation and standard academic procedures? What should be the structure of this kind of doctorate and its balance between literature, background material, and core 'by design' content: between words and drawings? What sort of forms may embody the apprehensions gathered from the process of designing, in order to make them communicable for others? This research journey has not been easy. From the beginning it has encountered a thorny contradiction between the necessity to formulate monographic enquiries—as in any doctoral research—and the expansive, manifold and transdisciplinary nature of designing specific, situated architectural and urban projects. Later, I will argue that from this inherent difficulty and contradiction, distinct (perhaps rather relevant than verifiable) and unexpected findings have arisen. During the early steps of the doctorate, in a conversation sustained with Florian Beigel, Philip Christou and Peter Carl, a methodological hypothesis took form: it departed from a differentiation between 'artefact' and 'artifice', the former understood as the output of personal design speculations (carrying ineffable knowledge in itself) and the latter as a necessary subsequent intent to propose explicit and communicable—even if ambiguous—formulations that could embody design strategies or concepts learned from the projects. These artifices should not be confused with abstract principles unrooted from the material world to be automatically generalised elsewhere. On the contrary, approached by means of designerly ways of knowing, the artifices implied the necessity of practical skill and intention from designers to be subjectively interpreted in anticipation of the future.[14] Artifices cannot be read by themselves, but only interpreted by designers in relation to their personal dexterity and experiences, as well as in relation to the specific projects that suggested them in the first place. My hypothesis was that these artifices would result in a family of nuanced visual-written design strategies embodying insights compiled during the design journey.

13 Lucy Pritchard, 'Bastide City Territory: Landscape Infrastructure Design, Monpazier, France' (unpublished doctoral thesis, London Metropolitan University, 2019).

14 Joseph Rykwert, *The Necessity of Artifice* (London: Academy Editions, 1982), p.59.

Situated Urban Prototypes and Strategies

The core and final chapters of the thesis are devoted to situated design speculations developed on my own as the core vehicle for this study. The site for the research project is in the Barcelona southern loose ends, behind the hill of Montjuïc near the sea, in a former agricultural terrain now absorbed by decayed early industrial developments and wasteland, all seemingly besieged by vast metropolitan infrastructures including the main port of the city. This place is approached at different scales, starting with a city edge landscape project, continuing with an urban grain transformation, and concluding with smaller-scale city interior proposals, always with the intention of gathering cross-scalar design strategies. It is important to make clear that both my subjective recollection of contextual data (containing biological, geological, climatic, historical and economic, among many other concerns), as well as the urban and architectural proposals (entailing environmental, thermodynamic, sociological, services and structural specialities) have been approached at an individual scale, based on information obtained between 2015 and 2020 from public sources, with the purpose of establishing a vivid context for a modest yet meaningful doctoral investigation. Therefore, its specific urban analyses and proposals cannot be taken as comprehensive developments, that in professional practice would have required broader interdisciplinary team efforts. By exploring the concept of time catalysts through design speculation and, therefore, enjoying vivid situations anchored to this specific place, the thesis produces a cohort of projects that carry on their monographic investigation—maintaining a dialogue with historical and modernist precedents as captured in the literature cited—and, still, they go beyond in offering fresh urban and architectural propositions, with singular qualities of their own, responding to grounded social, ecologic and poetic matters.

This situated exploration addresses design-speculative research in a two-step process. Firstly, design appears as a method of interpretation for seeing and constructing subjective places, through selecting and sketching fragmentary situations of potential. Investigated at different and sometimes overlapping scales, this operation unveils unexpected qualities from marine and agricultural memories,

industrialist infrastructures, accidental streetscapes and yards, a haphazard plot division, and a prosaic city grain of sheds and rowhouses. These interpretations make apparent fragile physical and cultural topographies that already suggest directions of future change. Appearing as instigators of upcoming appropriation and transformation, these spatial situations are identified as 'found-time catalysts.' In a second step, design appears as a vehicle for wider speculation, launching and testing the potential of time into novel spatial form. In the research, this process takes place through a constellation of projects at varying spatial, social and temporal scales, by enhancing the previously found situations and, at the same time, by creatively releasing 'new-time catalysts' in distinct, fresh forms.

- At a larger scale, a human-made geological shoreline is proposed as a socio-ecological threshold that connects Montjuïc and the delta, while catalysing horticulture, leisure, workspace, living and collective memory, as well as improving the water cycle, biodiversity and microclimatology.

- At an intermediate scale, an accidental street structure is proposed, by gradually altering ordinary found urban situations. This proposal radically opposes a *tabula rasa* approach, in this way enjoying and carefully distorting historical differences, while avoiding local displacement.

- At a smaller scale, a cohort of projects explores the potential of shared urban supports to house a changing, non-programmed diversity of belongings and biographies, including: a city base for row habitation, a plug-in three-dimensional framework and active and passive habitational thicknesses.

These projects have been explored as live configurations in-between typical built categories, seeking at varying relationships between permanence and performance, with the aim of transcending simplified support and infill dichotomies; hence opening up ambiguous infrastructural gradients that follow temporal, cultural and spatial scalar relativity.

Clearly, this study is concerned with a two-fold output that emerges from the process of design speculation: on the one hand the projects or urban artefacts in themselves and, on the other, a series of design strategies apprehended from the design work and articulated as a family of artifices. From territorial proposals to interior explorations, each project has served to both test previously formulated conjectures, as well as launch unexpected hypotheses, always enquiring the aforementioned thematic and methodological research purposes.

Conceived with the purpose of further investigation and the proliferation of future designs, the projects are here referred to generically as 'prototypes.' By qualifying the urban artefacts as prototypical, the thesis recognises their role and contribution in knowledge embodiment, in accordance with widely endorsed research standards.[15] Towards the end of the thesis, a critical exegesis of the design chapters is followed by a proposition of an open-ended family of artifices. This family is formed of around twenty composed categories, that formulate nuanced design strategies, as an attempt to contribute to a rather explicit knowledge production. This group of strategies are expressed through the combined format of a speculative written language, together with small drawings that intend to express their purposes, all related to the will of finding, enhancing and making time catalyst designs.

Navigating through this Thesis

This dissertation is structured in six chapters of approximately 8,000 words each, intending to balance and articulate lead-in and core materials, including a comprehensive portfolio of design work of equivalent pre-eminence to the text, while building upon a research argument that aims to gently guide its reading. Each chapter is usually split in three sections, sometimes two, organising the narrative according to key thematic territories. Similarly, the sections are generally split in three headings, each of which contains a reduced number of paragraphs to tackle specific sub-topics. The introductory and conclusive paragraphs of each chapter provide a brief synthesis of their contents, arising key research questions, problems, hypotheses and findings, in relation to the overall thesis discussion; in this way allowing to quickly skim through the entire book. The order of the thesis, however, does not reflect a true chronological account of the research journey, which has indeed followed non-linear, usually erratic, intervals of design speculation in the midst of literature and background studying and refinement. As an attempt to reflect this serendipitous course of events, each chapter has been given the format of a modest booklet—within a collection box—allowing for individual readings and the potential of diverging narratives.

The initial three chapters of the thesis—mainly textual—are largely devoted to literature, background and contextual revision. Chapter

15 OECD, *Frascati Manual 2015: Guidelines for Collecting and Reporting Data on Research and Experimental Development, The Measurement of Scientific, Technological and Innovation Activities* (OECD Publishing: Paris, 2015), p. 60-61.

1 starts by critically addressing philosophical frameworks embedded in the realisation of time within the practice of making spatial propositions. Emerging from such notions, the chapter continues by rendering an ethical discussion, involving aesthetic, political and ecological shades. It concludes with a theoretical revision of specific material and immaterial conditions that mediate the experience of spatial practice. Chapter 2 provides a cross-scalar revision of architectural precedents and literature, mainly focusing on a debate initiated in the 1950s Western countries. This debate begins with an examination of interior spatial arrangements that stimulate everyday alterations, followed by a discussion of greater urban supports that trigger expansive building transformation. It concludes by reviewing the role of landscape urbanization in the production of our changing urbanities. Chapter 3 is introduced as a break that provides methodological and setting materials. In one section it examines the scholarly context for the epistemological pathway of research through design and, in the other, it subjectively provides historical and geological site information to characterise the southern fringes of Barcelona as a design setting.

The later three chapters of the thesis contain the bulk of core and interpretative materials, with equivalent written portions to the former ones, but including the totality of creative work—mainly drawn—and, therefore, in sum implying at least a doubled weight to the overall discussion. Chapter 4, devoted to interpreting pre-existing urban situations, which are characterised as found-time catalysts, establishes a triad scalar research approach: city edge, urban fabric and room ensemble. Each of these categories is explored in a different section with a variety of interrelated design exercises. By answering to the same threefold scalar structure, Chapter 5 aims to unfold the creative task of enhancing and producing a constellation of prototypes, investigating landscape, urban and architectural catalysts of change. Chapter 6 contains two sections: the first, provides a self-critical, theoretical interpretation of pivotal aspects of the design chapters, in dialogue with literature and precedents. Finally, the last section takes again a rather speculative mode, to propose an extended family of design strategies, each formulated as a complex, ambiguous artifice, to be openly interpreted in the future.

This introduction may be seen as a compass to provide orientation in navigating the different chapters, and a view of the doctorate as an entirety. I have aimed to situate the territory for investigation within a wider research context and to carve out niches for new areas of enquiry within my research, explaining its specific aims and contribution to knowledge, its methods of investigation and limitations. Research questions and problems, including central and secondary hypotheses, have been illustrated for both thematic and methodological enquiries. Findings from the interpretation to be carried out in the later part for dissertation have been briefly introduced, as well as the main outputs arising from the investigation, in the form of civic prototypes as well as design artifices. As a summary, the introduction naturally cannot reduce every substance researched and discovered along the journey. From this point forward, each chapter, each detailed discussion, each stroke on paper will demand its own voice.

Introductory Materials

Chapter 1
The Awareness of Time

Pau Bajet
PhD 'by design'
July 2023

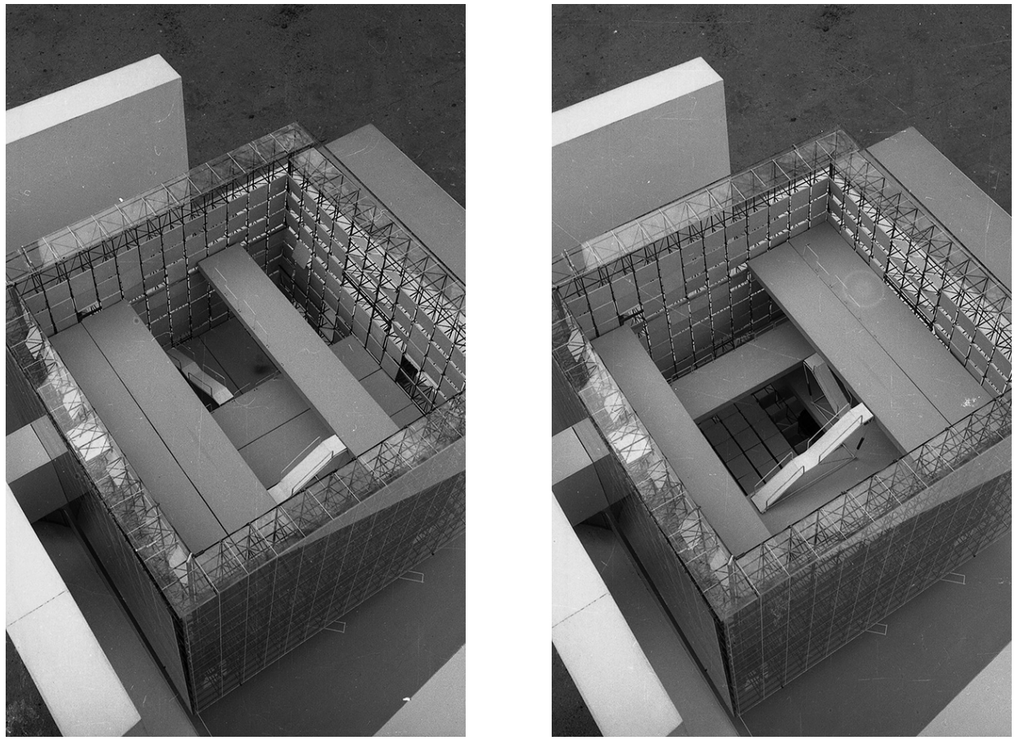


Fig. 1 and 2
Oskar Hansen, Lech Tomaszewski, Stanisław Zamecznik, Project for a Building of Exhibitions of Art, Warsaw, (1958).

> The city of Sophronia is made up of two half-cities. In one there is the great roller coaster with its steep humps, the carousel with its chain spokes, the Ferris wheel of spinning cages, the death-ride with crouching motorcyclists, the big top with the clump of trapezes hanging in the middle. The other half-city is of stone and marble and cement, with the bank, the factories, the palaces, the slaughterhouse, the school, and all the rest. One of the half-cities is permanent, the other is temporary, and when the period of its sojourn is over, they uproot it, dismantle it, and take it off, transplanting it to the vacant lots of another half-city.
>
> And so every year the day comes when the workmen remove the marble pediments, lower the stone walls, the cement pylons, take down the Ministry, the monument, the docks, the petroleum refinery, the hospital, load them on trailers, to follow from stand to stand their annual itinerary. Here remains the half-Sophronia of the shooting-galleries and the carousels, the shout suspended from the cart of the headlong roller coaster, and it begins to count the months, the days it must wait before the caravan returns and a complete life can begin again.[1]

This thesis is an enquiry concerning concepts of time in architecture. However, the theme of time, generally speaking, is a colossal subject that requires selective focus to avoid becoming ungraspable. In this sense, a few questions should be considered in order to demarcate a specific understanding: to what may we refer when we evoke time? What shall be the scope of such time in the context of architecture? And, especially, what could be the values, if any, of working with time as a raw material or as a design tool? Prior to displaying research through design explorations, and even to focusing on disciplinary architectural literature and precedents, this chapter attempts to grasp an explanation of these questions by critically addressing

1 Italo Calvino, *Invisible Cities*, trans. by William Weaver (New York: Harcourt Brace Jovanovich, 1974). Originally published in 1972 under its Italian title, *Le città invisibili*.

philosophical and ethical theoretical frameworks embedded in the realisation of time in spatial practice.

The chapter is organized in three sections. The first—Time as Becoming—critically discusses different philosophical comprehensions of the notion of time. The second section—Ethics of Change—intends to draw an ethical understanding which emerges from these comprehensions. The third section—Lived Places—explores specific material conditions which enable temporal experiences in the praxis of space. The chapter will conclude by suggesting a primal distinction between modes of time—From Alteration to Transformation—and this will be established as a route map from this point forward in this research. These critical frameworks intend to open up a nuanced awareness of time that cannot be simplified by straightforward assertions. Instead, as Italo Calvino's beautiful passage above recalls, even if through apparent contradictions, ambiguous and unexpected temporal relationships may be traced between a myriad of physical and non-physical topographies.

I Time as Becoming

Interpretations of time in architecture have expanded over the past century. In 1941, Siegfried Giedion—a prominent narrator of the Modernist Movement—introduced an approach based on both physics and art.[2] Beyond the Newtonian absolute and static conception of space, Giedion claimed the unbreakable existence and therefore unity of time and space, a notion disseminated in 1908 by the celebrated mathematician Minkowski. Likewise, surpassing the motionless rules of Euclidian geometry and Renaissance three-dimensional perspective, Giedion pointed primarily at Cubism for its many-sided interpretation of reality, adding a fourth dimension: time. This new aesthetic sensitivity represented the pace of change, relativity and simultaneity of modern life; according to Giedion, an expressive purpose essential for Le Corbusier's early principle of 'free plan' or '*plan libre*.'[3] In the post-war period, particularly in the late 1950s and early 1960s, artistic and architectural currents addressed an intensified, living dimension of the notion of time. Amongst others, a striking example could be seen in the Hansen's proposal of 'The Open Form' defined as 'the art of events' as presented in the Otterlo meeting in 1959.[4] However, before delving into a genealogy of these various architectural approaches, it is necessary to call upon the scholarship of key philosophers, anthropologists and sociologists who have remarked upon the possible understandings of time.

2 Sigfried Giedion, *Space, Time and Architecture. The Growth of a new Tradition* 3rd edn (Cambridge: Harvard University Press, 1941; repr. 1959) pp. 426-446.
3 Ibid., p. 514.
4 Oskar Hansen and Zofia Hansen, 'The Open Form in Architecture: The Art of the Great Number', in *CIAM '59 in Otterlo*, ed. by Oscar Newman (Stuttgart: Krämer, 1959; repr. 1961) pp. 190-191.

According to Peter Osborne, three perspectives of time can be drawn within the philosophical convention.[5] The first is the 'objective, cosmological or "natural" time', which essentially serves to measure movement. As the author recalls, this paradigm of time—identified with Aristotle—has been depicted by Heidegger as the 'ordinary' conception of time and by Benjamin as an 'empty homogeneous' time.[6] The second perspective is the subjective or phenomenological: the time of lived personal experience and relative perception of every subject, a notion of time subordinated to consciousness. This paradigm is associated with St Augustine, Husserl, Bergson and Heidegger.[7] The third perspective is the intersubjective or social time, a notion associated with an interlinked human experience, a multiplicity of collective time-consciousness. Its main characteristic is 'its social composition through struggle over the conflicting rhythms of different definitions of social practice (right down to the micro level of struggles over television schedules in domestic living rooms), or the objectification of subjective, phenomenological forms of time in collective institutionalised forms.'[8] This notion of time—the time of politics—sits in a conflicting threshold between the objectivity of cosmic time and the subjectivity of the phenomenological, writing perhaps 'properly historical time.'[9] In fact, Benjamin opposes the empty homogeneous time of linear historicity with his materialistic notion of history which is 'based on a constructive principle.'[10] He states:

> A historical materialist cannot do without the notion of a present which is not a transition, but in which time stands still and has come to a stop. For this notion defines the present in which he himself is writing history.[11]

5 Peter Osborne, 'The Politics of Time', *Radical Philosophy* 68 (1994), 3-9.
6 Osborne refers to Aristotle [*Politics* Book IV, 350 BCE], Heidegger [*Being and Time*, 1927] and Benjamin [*Theses on the Philosophy of History*, 1940].
7 Osborne identifies phenomenological origins with St Augustine [*Confessions* Book XI] and paradigmatically with Husserl [*Lectures on the Phenomenology of Internal Time Consciousnes*s, 1905; published 1928]; being further developed by Bergson and Heidegger in the following years.
8 Ibid., p. 5.
9 Osborne refers to Ricoeur's notion of 'properly historical time' [*Time and Narrative*, 1988; *Temps et Récit*, 1985]
10 Walter Benjamin, 'Theses on the Philosophy of History', trans. by Henry Zohn in *Illuminations: Essays and Reflections*, ed. by Hannah Arendt (London: Fontana, 1973) p. 262. Originally published in 1940 under its German title "Über den Begriff der Geschichte."
11 *Op. cit.*

Attempting to explore a threshold between architecture and philosophy, Grosz reflects on a notion of time which carries on and critically discusses the experiential concept of duration firstly developed by Bergson and later by Deleuze.[12] The author is interested in the time of the emergence of space: that of the duration of the interval of becoming. This notion of time, 'enables space to emerge as such and is that to which space is ineluctably driven, the "fate" of space.'[13] Grosz observes that architects have understood time, with a few exceptions, through the static form of continuous historicity—rather than conceiving time as becoming. By providing an intersubjective perspective, the author defines duration as the multiplicity of unique events which occur simultaneously through heterogeneous moments of becoming, where specific differences and qualitative differentiations direct space towards events, eruptions or transformations through action. Grosz clarifies:

> It is to refuse to conceptualize space as a medium, as a container, a passive receptacle whose form is given by its content, and instead to see it as a moment of becoming, of opening up and proliferation, a passage from one space to another, a space of change, which changes with time.[14]

This notion of duration, however, cannot only be concerned with an isolated present moment of becoming; it requires time before (past) and time after (future). However, rather than referring to the existence of a true past, Grosz asserts that the past—detached from our body—only lives as a virtual fleeting existence, experienced and accessible as memorial recollections in time present. The past is only accessed through a jump into virtuality during each present moment: a present which inescapably carries a virtual past. This way, the author states that 'it is the past which is the condition of the present' and 'it is only through a pre-existence that the present can come to be.'[15] Grosz implies a similar virtual condition for futurity, asserting the necessary struggle and coexistence of past, present and future to make possible 'the divergence of the present from the past, and the

12 Elizabeth Grosz, 'The Future of Space: Toward an Architecture of Invention' in *Anyhow* ed. by Cynthia C. Davidson (Cambridge: MIT Press, 1998), (repr. in Elizabeth Grosz, *Architecture from the Outside. Essays on Virtual and Real Space*, Cambridge: The MIT Press, 2001), pp. 109-130. In this essay, Grosz largely discusses Bergson [*Matter and Memory*, 1896] and Deleuze [*Bergsonism*, 1988].
13 Ibid., p.110.
14 Ibid., p.119.
15 Ibid., p.124.

future from the present.'[16] Following this notion of becoming, the future is triggered from a virtual past in actuality. In other words, the past—its virtuality—appears as a condition for open-ended futurities.

'Actant' Contexts

A parallel may be traced between Grosz's concept of virtual past and a wide understanding of the notion of context in architecture—or perhaps one could say the inescapable pre-existence of a 'virtual context.' Quite similarly, against a static, deterministic and fixed conception of context, and in response to Koolhaas famous 'fuck context,'[17] Latour and Yaneva propose the notion of 'moving context.' They state: 'What is a context in flight? It is made of the many dimensions that impinge at every stage on the development of a project.'[18] An intersubjective notion of context embodying many-sided qualities beyond the obvious external attributes, usually related to location. This expanded understanding of context—its virtuality—seems to appear, again, as a condition of the present, as well as an inescapable catalyst of unpredictable futurity. The authors conclude:

> 'Context' is this little word that sums up all the various elements that have been bombarding the project from the beginning—fashions spread by critiques in architectural magazines, clichés that are burned into the minds of some clients, customs entrenched into zoning laws, types that have been taught in art and design schools by professors, visual habits that make neighbours rise against new visual habits in formation, etc.[19]

The awareness of this inescapable performative condition of context, as an experienced unique explosion of manifold interrelations, opens up a world of things (of material embodiment) which is not simplified by disjunctive dualisms such as subject-object, human-nature or soul-body—context is not a flat true screen that I can see outside of myself. Instead, such an awareness unfolds a deep and fertile ground where phenomena are experienced through what Timothy

16 Ibid., p.126.
17 Rem Koolhaas and Bruce Mau, 'Bigness or the Problem of Large' in Rem Koolhaas and Bruce Mau, *S,M,L,XL*. (New York: The Monacelli Press, 1995) p. 502.
18 Bruno Latour and Albena Yaneva '"Give me a gun and I will make all buildings move"': an ANT's view of architecture' in *Explorations in Architecture: Teaching, Design, Research*, ed. by Reto Geiser (Basel: Birkhäuser, 2008) pp. 80-89.
19 Ibid., p. 88.

Morton terms 'truthfeel' [20] (apprehended, made apparent and produced through experience) by a multiplicity of actant contexts which include all of us, physical and nonphysical, human and nonhuman agencies. In other words, it unravels a non-anthropocentric intersubjective phenomenological approach to the discussed philosophical perspectives of becoming over time. As the next section will point out, the realization of this lived, interconnected and actant multiplicity of nuanced contexts is what Morton refers as 'ecological awareness,'[21] which in turn is grounded in object-oriented ontology (OOO), as formulated by Harman.[22] Morton states:

> I adhere to a philosophical view (…) which holds that, in many ways, everything is like a black hole: a rubber ball, an emotion, a sentence about an emotion, an idea about a sentence, the sound of that sentence as spoken by a computer, the computer's glass screen, the beach from which the sand that made the glass screen was extracted, ocean waves, salt crystals, whales, jellyfish and coral. You have to study the phenomena these things emit—the philosophical term is phenomenology—because you're never going to get at them in themselves. No access mode will work properly: thinking, stabbing with scissors, earing, ignoring, writing a poem about, crawling across (if you are a fly), kicking (if you are a football player), eating (if you are a dog), irradiating (if you are a gamma ray).[23]

In architecture, this could mean understanding that there isn't such a thing as a disciplinarily isolated individually human authority of utilitarian space. Instead, spatial practice shall open up to an uncanny and ambiguous, yet irreducible and explosively flavourful geological and meteorological pulse, creating habitations to delight all sorts of lifeforms, and fulfil a vast array of political and ecological purposes. It will manifest spaces informed by an awareness of the accidentality of things like precedence, disciplinary costumes and taste, normative and constructional constraints, people's wishes and hopes, organic metabolic processes, etc. and, of course, be open to experiencing the architectural project as a sentient thing in itself,

20 Timothy Morton uses the term '*truthfeel.*' He states: 'I am experiencing the texture of cognitive or emotional or whatever phenomena. I'm experiencing *thinkfeel*, or better since I can't tell whether it's about thinking or feeling but I know it's real and it's happening, it's *truthfeel* that I'm experiencing.' Timothy Morton, *Being Ecological* (London: Pelican Books, 2018) pp. 122-123.
21 Ibid,. pp. 87-88.
22 Graham Harman, *Object-Oriented Ontology: A New Theory of Everything* (London: Pelican Books, 2018).
23 Timothy Morton, *Being Ecological*, pp. 33-34.

with its own inherent rules, habits, mistakes, desires and catalytic yet unpredictable futures.

In this section I have portrayed time as an intersubjective duration of becoming, rather than a cosmological historical linear process, nor as individually subjectively understood. I have argued that, during the emergence of space, the multiplicity of duration is heterogeneously produced by a myriad of actant contexts, directing space towards unique events of transformation and becoming. These actant contexts are the result of intersubjective contingency between physical, political and ecological conflicting rhythms, including our bodies, our interpretations and actions, but also nonhuman substances or topographies. Hence space may not be seen as a temporally passive container with a historically frozen shape. Instead it shall be seen as unique passages of intersubjective moments of becoming: events of spatial change that we feel and perform in our everyday life, over time. This understanding of time as becoming and spatial change carries on ethical, political and ecological drifts which will be discussed in the next section.

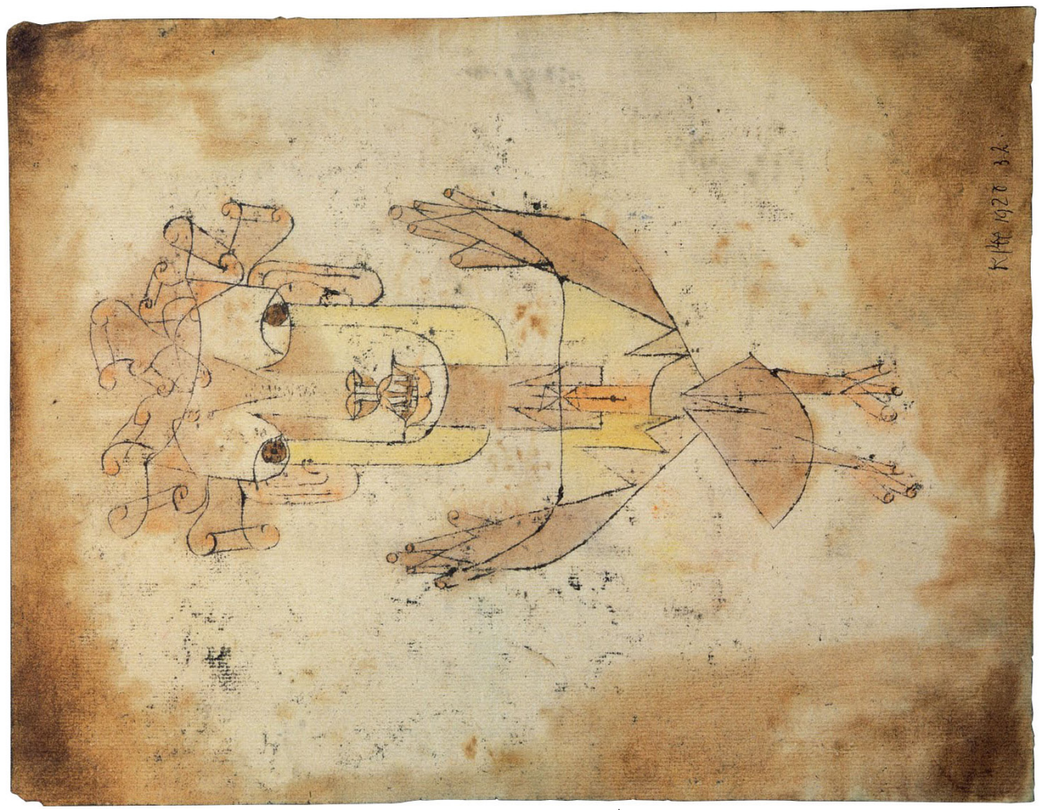


Fig. 3
Paul Klee, Angelus Novus (1920)

II Ethics of Change

> This is how one pictures the angel of history. His face is turned towards the past… The angel would like to stay, awaken the dead, and make whole what has been smashed. But a storm is blowing from Paradise; it has got caught in his wings with such violence that the angel can no longer close them. This storm irresistibly propels him into the future to which his back is turned… This storm is what we call progress.[24]

The passage of time carries out the living multiplicity of change. However, it could be argued that change, *per se*, might be neither good nor evil. Nevertheless, it seems clear that change cannot be innocuous either. As Henri Lefebvre insists, 'when we evoke "time," we must immediately say what it is that moves or changes therein.'[25] The empty abstraction of time in isolation may not be judged. Therefore, when change occurs in a certain specific situation, it carries on concrete spatial and political transformations—that is, the interrelation of space-time-politics. These particular transformations shall be considered in order to estimate its value. In this research, the projects—the making of concrete situations—will be judged considering the cultural and physical specificities of architectural propositions in the context of contemporary Barcelona.

Space-Time-Politics of Change

Several authors observe problems and risks associated with change in the modern world. Guy Debord warns about the danger of temporality and rapid change in relation to capitalist production or, simply put, the industrial generic standardization producing static

24 Walter Benjamin, 'Theses', p. 257.
25 Henri Lefebvre, *The Production of Space*, trans. by Donald Nicholson (Oxford: Basil Blackwell Ltd, 1991). Originally published in 1974 under the French title, *La Production de l'Espace*.

monotony. The philosopher asserts that 'the free space of commodities is subject at every moment to modification and reconstruction, this is so that it may become ever more identical to itself, and achieve as nearly as possible a perfectly static monotony.'[26] More recently, David Harvey has observed this problem in relation to the 2004 waterfront development in Barcelona which looks the same as any other capitalistic development: 'multinational stores replace local shops, gentrification removes long-term residential populations and destroys older urban fabric, and Barcelona loses some of its marks of distinction. There are even unsubtle signs of Disneyfication.'[27] In parallel, Manuel Castells exposes how the rising era of information, characterised by flexibility as a fundamental feature, does not seem to be exempt from the risks related to 'unrestrained flexibility' of organizations, institutions or labour. The sociologist states:

> The information technology paradigm is based on *flexibility*. Not only processes are reversible, but organizations and institutions can be modified, and even fundamentally altered, by rearranging their components. What is distinctive to the configuration of the new technological paradigm is its ability to reconfigure, a decisive feature in a society characterized by constant change and organizational fluidity. (…) However, we must stop short of a value judgment attached to this technological feature. This is because flexibility could be a liberating force, but also a repressive tendency if the rewriters of rules are always the powers that be.[28]

Notwithstanding the inescapable judgment of concrete situations and their associated risks, Walter Benjamin's introductory quote above recalls deeper value founded upon the promise of change—namely, its potential for redemption.[29] The 'angel of history' is violently propelled into the future by the 'storm of progress,' the philosopher claims. Benjamin's constructive notion of 'writing history' is enough to empower the present duration of becoming—the storm—with the potential for progress or, said otherwise, the unforeseen choice for revolution. Bruno Latour has criticised Benjamin's 'angel of history' for facing backwards while violently feeling ahead, rather than looking ahead into the future, therefore never realising

26 Guy Debord, *Society of the Spectacle* (New York: Zone Books, 1994) Theses 165, 166 and 173. Originally published in 1967 under the French title, *La société du spectacle*.
27 David Harvey, *Rebel Cities. From the Right to the City to the Urban Revolution* (London: Verso, 2012) p. 105.
28 Manuel Castells, *The Rise of the Network Society*, 2nd edn, The Information Age: Economy, Society and Culture, 1 (Oxford: Blackwell, 1996; repr. 2010). p. 71. See also p. 299. In the 2010 preface, Castells emphasizes the growing of flexibility as a characteristic feature over the first decade of this century.
29 Walter Benjamin, 'Theses', p. 254.

how much destruction is caused by its sudden and destructive *Modern* progress towards an unrealistic, utopic future—provoking, for instance, the ecological crisis.[30] Latour suggests a nuanced constructive notion of time differentiating *'le futur'* from *'l'avenir'*: the latter, a time empowered to move, progressing however slowly, cautiously looking ahead to compose and take care of our new yet realistic prospects.[31] Politics, Osborne sustains, 'depends upon what we might call the social production of possibility at the level of historical time-consciousness.'[32] Against a notion of a dead philosophy of history, where time just goes on endlessly, the author urges that it is for the Left of cultural politics to engage with a notion of time as an intersubjective possibility to proceed differently, 'engaging in the willed transformation of the social forms of subjectivity at their deepest structural levels.'[33] This doctorate engages with this value of open political possibility: the potential of careful change as a social opportunity for betterment. Therefore, its design prototypes shall be judged, as well, for their potential to catalyse slow-changing prospects and open-ended futurities.[34]

Freedom of Delightful Appropriation

A primary potential for intersubjective spatial change is the prospect of its delightful appropriation by inhabitants and civic life. That is to say, change enables appropriation as value. Such change might embody social progress at a political scale but it can also carry everyday doses of comfort, pleasure or joy for a little group of inhabitants. Comparing the exclusive rationalist housing models in Ciudad de México with the preponderant informal self-built homes, Ángela Giglia observes that in the former, spatial alteration is almost not possible, while the latter are less rigid, allowing scope to be adjusted following people's desires, necessities or dreams 'as a mode of capturing in space something of our identity by means of seeing ourselves reflected on it.'[35] In this way, appropriation opens a passage to allow inhabitants to be themselves or, better said, to become themselves.

30 Bruno Latour, *An Attempt at a "Compositionist Manifesto"* (Mexico City: Gato Negro Ediciones, 2016), p. 43.
31 Ibid., p. 45.
32 Peter Osborne, 'Politics of Time', p. 7.
33 Ibid., p. 8.
34 Difference between 'the future' and an open-ended notion of 'prospects,' 'futurity' or even 'futurality' has been raised by many. Besides Bruno Latour's citation above, see for example: Timothy Morton, 'Ecology without the Present' in 'Deconstruction in the Anthropocene,' Oxford Literary Review, 34: 2 (2012) 235.
35 Ángela Giglia, *El Habitar y la Cultura. Perspectivas Teóricas y de Investigación* (Barcelona: Anthropos Editorial, 2012). p.20. (My translation.)

50 Tomeu Vidal and Enric Pol suggest that the phenomenon of spa-
51 tial appropriation reveals the origin of the bonds between people and space, usually referred as place-attachment and place-identity, which may be understood as facilitators of respectful environmental behaviours and may result in civic re-appropriation of the public sphere.[36] The authors assert that individual, group and community spatial appropriation are developed by means of a two-fold process: transformation-action—related to territoriality as well as personal space—and symbolic identification—bound to affective, cognitive and interactive processes.[37]

The everyday notion of appropriation brings the issue of the centrality of play observed by Lefebvre who reflects on the importance of play, *ludo*, to prioritize time over space or, said otherwise, to replace spatial domination by inhabitant appropriation. Playfulness is seen as a rising political and social quality: 'there will be play between the parts of the social whole (…) to the extent that play is proclaimed as supreme value, eminently solemn, if not serious, overtaking use and exchange by gathering them together.'[38] By this understanding, ordinary intervals of duration such as play, love, rest or poetry emerge as crucial modes of becoming in life:[39] everyday modes of delightful appropriation to be catalysed by architectural practice. In this sense, Lefebvre reclaims spaces for all sorts of (even sensual) delight. He states: 'An architecture of pleasure and joy, of community in the use of the gifts of the earth, has yet to be invented.'[40] A few months before the May 1968 student revolts, the French philosopher, who was a Marxist intellectual and indeed one of the philosophers in the second half of the past century who devoted much attention to the urban phenomena, claimed:

> The right to the city manifests itself as a superior form of rights: right to freedom, to individualization in socialization, to habitat and to inhabit. The right to the *oeuvre*, to participation and appropriation (clearly distinct from the right to property), are implied in the right to the city.[41]

The right to freedom of choosing a way of becoming implies the acknowledgement of collective participation. Giancarlo De Carlo's seminal essay 'Architecture's public,' which according to Blundell Jones started its life as a lecture in Liège a year after 1968 events,[42] asserted that in architecture, 'collective participation introduces a plurality of objectives and actions.'[43] In particular, De Carlo claimed that, through participation, by opening the possibility of planning 'with' people—as opposed to planning 'for' people—'consensus remains permanently open, (…) the act becomes liberating and democratic, stimulating a multiple and continuous participation.'[44] But what is the purpose of such participation, one may wonder. According to Harvey, 'the question of what kind of city we want cannot be divorced from the question of what kind of people we want to be,'[45] including our desired social modes, relations to nature, life style or aesthetic values. In this way, the author concludes that 'the right to the city is, therefore, far more than a right of individual or group access to the resources that the city embodies: it is a right to change and reinvent the city more after our hearts' desire.'[46]

The urban sociologist Richard Sennett has stated that freedom is a fundamental value of the 'open city'—a city open to change—since it allows its citizens to be freed from prefixed economic and social positions, opening a broad field of possibilities and alternatives to what people's wants are. The author adds: 'Ethically, an open city would of course tolerate differences and promote equality, but would more specifically free people from the straitjacket of the fixed and the familiar, creating a terrain in which they could experiment and expand their experience.'[47] In the context of the rising information era, Castells explains that change, mobility and flexibility can also bring positive aspects to civic life, by means of 'new work

36 Tomeu Vidal, Enric Pol, 'La apropiación del espacio: una propuesta teórica para comprender la vinculación entre las personas y los lugares', *Anuario de psicología,* 36: 3 (2005), 281-298.
37 Ibid., p.283.
38 Henri Lefebvre, 'Perspective or Prospective' in *Writings on Cities*, trans. and ed. by Eleonore Kofman and Elizabeth Lebas (Oxford: Blackwell, 1996) p. 171. Originally published in 1968 under the French title 'Perspective ou Prospective?' in Lefebvre's book, *Le droit à la ville*.
39 Eleonore Kofman, Elizabeth Lebas, 'Lost in Transposition—Time, Space and the City' in *Writings on Cities*, trans. and ed. by Eleonore Kofman and Elizabeth Lebas (Oxford: Blackwell, 1996) p. 30.
40 Henri Lefebvre, *The Production of Space*, p.379.
41 Henri Lefebvre, 'Perspective or Prospective', pp. 173-174.
42 Peter Blundell Hones, 'Editor's note' in *Architecture and Participation*, ed. by Peter Blundell-Jones, Donia Petrescu, and Jeremy Till (London: Spon Press, 2005).
43 Giancarlo De Carlo, 'Architecture's Public', in *Architecture and Participation*, ed. by Peter Blundell-Jones, Donia Petrescu, and Jeremy Till (London: Spon Press, 1992; repr. 2005). pp. 3-22.
44 Ibid., p. 15.
45 David Harvey, *Rebel Cities*, p. 4.
46 Ibid.
47 Richard Sennet, *Building and Dwelling: Ethics for the City* (London: Penguin Random House, 2018) p. 9.

52 arrangements for social life, and particularly for improved family
53 relationships, and greater egalitarian patterns between genders.'[48]

At this point one may wonder if the spatial capacity of 'total change' in cities shall be a desired value as well. In the late sixties, influenced by the post-war artistic and architectural currents and, particularly, by Constant,[49] Lefebvre wrote that 'the ideal city would involve the obsolescence of space: an accelerated change of abode (…). It would be the *ephemeral city*, the perpetual *oeuvre* of the inhabitants.'[50] However, even if in apparent contradiction, in the same essay the author stressed that such an attitude did not consist of literal demolition and replacement by the new, as a kind of perpetual *tabula rasa* of human experience. He clarified that it 'does not consist in suppressing qualified spaces as existing historical differences. On the contrary, these already complex spaces can be further articulated by emphasizing differences and contrasts, and by stressing quality which implies and overdetermines quantities.'[51] This struggle and contradiction between embedded persistence and liberating transformation brings back the inescapable yet joyful acceptance of actant contexts discussed a few paragraphs above. We do not display our total free will in a blank canvas, but through a beautiful conflict incorporating context. It is in this regard that Morton has recently: 'free will is overrated.'[52]

Ecological Awareness

> Coexisting non-violently with nonhuman beings (…) is roughly what I take ecological ethics and politics to mean. This nonviolence doesn't have to be as extreme as Jainism, perhaps. And perhaps it can't pretend to be perfect or pure. It's fraught with ambiguities (…).[53]

Intersubjective change must also be considered in a geological scale beyond human interrelation. American philosopher Timothy Morton has coined the term 'agrilogistics' to describe the logistics that started with the agricultural revolution around 12,000 years ago,

48 Manuel Castells, *Network Society*, p. 290.
49 According to Kofman and Lebas, both Constant's essay '*Pour une architecture de situation*' (1953) and his long-lasting utopian project for a city of the future 'New Babylon' (1959-74) influenced Lefebvre's ideas on the city. See Eleonore Kofman and Elizabeth Lebas, *Writings on Cities*.
50 Henri Lefebvre, 'Perspective or Prospective', p. 172.
51 Ibid., p.171.
52 Timothy Morton, *Being Ecological*, pp. 110-115.
53 Ibid., p. 108.

which are based on survival and deterministic efficiency: settlement and urbanization appeared as a means to store grain and control subsistence over time. According to the scholar, the agrilogistics programme fuelled monotheistic religion, patriarchy and social stratification through class systems and, beyond human politics, led to industrial processes requiring fossil fuels, hence starting global warming, which in its planetary scale is currently bringing a huge global decrease in biodiversity, namely Mass Extinction.[54] While scientists identify a number of mass extinction events in the history of life in our planet—most notoriously the 'Big Five'—which killed massive portions of living species in rapid events usually related to volcanism, glaciation or asteroid impact, it is widely accepted that life on Earth is now confronting a sixth event of mass extinction as a result of human activity, opening a new geological period usually known as the Anthropocene.[55] Even if the imperative message is clear (data is telling us that the world is shrinking), certain philosophers, ecologists and even architects emphasize that, rather than being paralyzed by traumatic information, there are paths to open up this change towards enhanced ecological prospects.

Ecological 'information dump mode'—as Morton calls it—tends to idealize naturalistic pasts, as if we should choose between either fictionally going back in time before global warming or be paralyzed in a dreadful present.[56] This concept of Nature as something distinct from us—a rigid break between humans and nonhumans—is intrinsic to agrilogistics, he sustains.[57] For Morton, being ecological requires acknowledging (or, perhaps experiencing as a form of "truth-feel") the biosphere and its interrelations as a flat ontological realm,[58] without an exclusive division between subjects (us) and objects (not us). Hence, he states that the biosphere is 'a total system of interactions between lifeforms and their habitats (which are mostly just other lifeforms),'[59] including a 'network of relations between beings such as waves, coral, ideas about coral and oil-spewing takers, a network that is an entity in its very own right.'[60] This biosphere 'includes all the thoughts (and nightmares) we are having too. (…) It's not exactly physically located precisely on Earth. It's *phenomenologically* located in our projects, tasks, things we're up to.'[61] This mashup of experienced interrelations of the biosphere, built out of

54 Ibid., pp. 49-50.
55 Elizabeth Kolbert, *The Sixth Extinction: An Unnatural History* (New York: Henry Holt and Company, 2014).
56 Timothy Morton, *Being Ecological*, p. 13-14.
57 Ibid., p. 153.
58 Ibid., p. 99.
59 Ibid., p. 75.
60 Ibid.
61 Ibid.

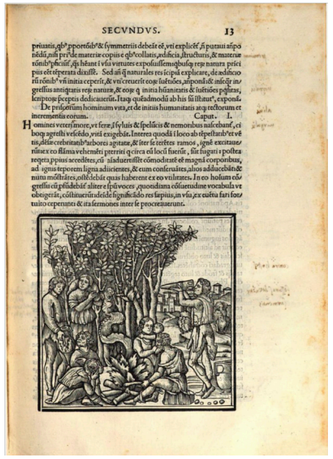
substances that cannot be reduced, is what Morton calls 'ecological awareness,' which as he says is just another term for this 'context explosion.'[62] This way, the awareness of context appears again as an ethical quality for action of any sorts—now ecological and, of course, political too. An action which consists of caring for this manifold human-and-nonhuman changing context, non-violently coexisting with it, in solidarity. This coexistence is tinged by joyful shadowy ambiguities rather than bright certainties:[63] the kind of uncertainties that require action with a sense of 'playful care' or 'playful seriousness.'[64]

In the preceding, while acknowledging change as a neutral phenomenon which can bring either chains of unrestrained evil flexibility or liberating living patters, I have tried to underline the ethical, political and ecological ambiguous values of change. Change as an empowering individual and collective right of human and nonhuman interdependent choice, freedom, delight of appropriation, participation and playful care. The ethical ambiguities of change open up a terrain of joyful situations of becoming that we need to embrace. The intricate relationships of this spatial practice—between the mash-up of us and our actant contexts—which make possible change, appropriation and becoming, will be further discussed in the next section.

62 Ibid., pp. 87-88.
63 Ibid., p. 108.
64 Ibid., p. 186.

III Lived Places

> The men of old were born like the wild beasts, in woods, caves, and groves, and lived on savage fare. As time went on, the thickly crowded trees in a certain place, tossed by storms and winds, and rubbing their branches against one another, caught fire, and so the inhabitants of the place were put to flight, being terrified by the furious flame. After it subsided, they drew near, and observing that they were very comfortable standing before the warm fire, they put on logs and, while thus keeping it alive, brought up other people to it, showing them by signs how much comfort they got from it...[65]


SECVNDVS. 13

priuatis, qb⁹ ꝓponẽdis & symmetriis debeāt, vti explicāt, ſi parum aſpo
nẽdū, nihil prꝰ de materiæ copia e qb⁹ collatus, ædificia ſtructuris, & materiæ
rõnẽ p̃fecturi, ſꝑ habuerī ſe virtutes expoſuiſſe mihi ſpes erit: qm̃ natura priꝰ
pios edit & prærata diuiſit. Sed ut ſi naturales res ſi cipiã explicare, de ædificio
rũ ordĩe⁹ vꝫ initia ceperīt, & vnde creuerīt eoꝝ ſubtilies, aſſequi & adiicere in
greſſus antiquatis vtq; naturæ, & eoꝝ q̃ inuita hũanitate & ſubtilies poſteri,
ſemꝑ ſuꝑ ſcripſi dedicauerīs. Itaq; quẽadmodũ ab his ſi illitur, exponã.

De progreſſibus hominum vita, et de initiis humanitatis aeq; rectorum et
inuentoribus eorum. Caput. I.

Homines veteres more, vt feræ ſylvis & ſpelæis & nemoribus naſcebantur, et
boq; agreſti victu victitãdo, vitã exigebãt. Interea quodã loco ab ſpõtaneo ꝑcuſſo
ui, ſilice cæteraue ſ⁹ arboreꝝ agitatæ, & inter ſe tritæ ramoꝝ, ipſæ exercitatæ
nũc ex eo ſtãma vehemẽti percuſſi ci ea ob locũ fuerãt, ſũt ſugũti a poſtea
nequã pyaui accedẽtes, cũ idiuturnitate cõmodarãt et magna corporibus,
ad ignis ꝓpoſitũ ligna adiicientes, & cum conſeruãtes, alios ad hæc cohibẽt, &
nutu mõſtrãtes, q̃ibꝰ ibi quæ haberent ea ea vtilitates. In eo hoĩum cõ
greſſu cũ ſi gẽdebãt, alĩter a ſe inuicẽ, quotidiana cõſuetudine vocabula ve
lobegerãt, cõſtituerũt ea de re ſignificãdo res ſapius, in vſu, ex eadẽ fari ſoꝝ
tuito orpetentes & ita ſermones inter ſe procreauerunt.

Fig. 4
Fra Giocondo, Illustrated edition of De Architectura by Vitruvius (1511), p.13.

It is not clear yet what are the specific material conditions that make possible the phenomenon of playfully serious non-violent change, opening up to intersubjective appropriation and care of our spatial contexts. Between our bodies and the sky there seems to be a territory of possibilities mediated by air, tools, belongings, textiles, furniture, walls, roofs, land, clouds, memories, struggles, rules, desires. Or, as Vitruvius puts it, storms, winds, branches catching a furious flame, its unexpected comfortable warmth, people gathering around, their wish for further comfort... The following paragraphs will explore the ambiguous relationships between such mediating elements, our bodies and space in everyday life: heterogeneous interrelations which make possible the joy of daily spatial change as ordinary passages of becoming in space. This will be done, first, by tracing a phenomenological understanding, later by critically discussing their political embedded connotations and, finally, by underlining the persistence of situated contexts.

65 Marcus Vitruvius Pollio ca.30-15 BC, 'The origin of the dwelling house' in *The Ten Books on Architecture*, trans. by Morris Hicky Morgan (Cambridge: Harvard University Press, 1914).

It should be clear by now, that as with time or politics, space in isolation does not exist—even if such an illusion might be possibly inspiring in fragmentary situations of praxis. Heidegger contributed crucially to the understanding of the interconnections between space and human existence. He claimed: 'We do not dwell because we have built, but we build and have built because we dwell, that is, because we are *dwellers*.'[66] According to the German philosopher, dwelling 'is the manner in which mortals are on the earth,'[67] and building, which is in fact an essential form of dwelling, does not only mean to erect edifices, but carries on the fundamental character of caring, cultivating and preserving in 'our everyday experience, which is from the outset "habitual"—we inhabit it.'[68] This way, the making of space—building—implies a form of dwelling and vice versa, being on earth—dwelling—implies a form of spatial practice and production. Influenced by Heidegger's phenomenologist notion of dwelling, architectural theorist Christian Norberg-Schulz wrote: 'Man dwells when he can orientate himself within and identify himself with an environment, or, in short, when he experiences the environment as meaningful.'[69] The author brought the notion of character, atmosphere and meaning to the three-dimensional organization of space, to claim the concrete phenomenon of place, locus, or *genius loci* (i.e. spirit of place): a space where the concrete substance of our everyday life occurs, precisely because we can identify and understand it in its total concreteness.

The human perception and interpretation of such spatial concreteness is, however, a thorny matter. Norberg-Schulz referred to Gestalt principles of organization to observe a series of spatial proprieties to particularize such phenomenon: inside, outside, natural, man-made, extension, enclosure, centralization, direction, rhythm, proximity, and so on.[70] American anthropologist Edward T. Hall highlighted that five thousand terms—twenty percent of the words listed in a pocket dictionary—may be characterized as referring to space.[71] This provides a sense of the vast, unreachable universe that the study of spatial interpretation unfolds. The author coined the term

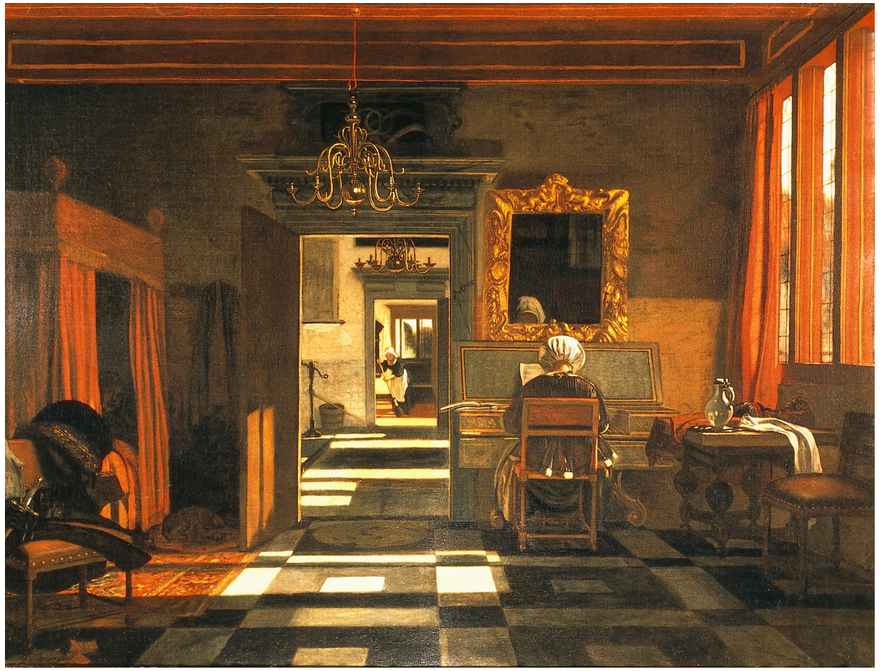
66 Martin Heidegger, 'Building Dwelling Thinking' in *Poetry, Language, Thought*, trans. by Albert Hofstadter (New York: Harper Colophon Books, 1971). Originally delivered as a lecture in 1951 under the German title, 'Bauen Wohnen Denken.'
67 Ibid.
68 Ibid.
69 Christian Norberg-Schulz, *Genius Loci. Towards a Phenomenology of Architecture*, (New York: Rizzoli, 1979; repr. 1980) p. 5.
70 Ibid., pp. 12-13.
71 Edward T. Hall, *The Hidden Dimension*, (New York: Anchor Books, 1966; repr.1990) p. 93.

'proxemics' for the study of human perception and use of space 'as a specialized elaboration of culture.'[72] He argued that spatial practice is perceived multisensorially, while it is also a 'captive' of our cultural and linguistic worlds. Hall observed spatial patterns of behaviour in relation to cultural and sensorial factors in order to characterize features such as intimate, personal, social and public distances, that is, interpersonal distances between humans which are related to the awareness of perceived 'territories.' While Hall's insights were largely based on sensory experience, measurements, psychological and scientific findings, other authors have explored spatial interpretation through linguistic form. This is the case of Gaston Bachelard, who refused to be narrowed down by psychological perception[73] and proposed, instead, a phenomenological journey through the emergence and depth of 'lived in' images by means of 'experiencing the reverberation'[74] of concrete poetry. Such investigations, coloured by manifold nuances, intended to 'determine the human value of the sorts of space that may be grasped, that may be defended against adverse forces, the space we love.'[75] Bachelard's analyses of such loved spaces start with the intimacy and warmth of the house:

> For our house is our corner of the world… it is our first universe, a real cosmos in every sense of the word. If we look at it intimately, the humblest dwelling has beauty…[76] Every corner in a house, every angle in a room, every inch of secluded space in which we like to hide, or withdraw into ourselves, is a symbol of solitude for the imagination; that is to say, it is the germ of a room, or of a house.[77]

The prosaic and even physical pleasure found in the house, seems to be rooted in human ancestry. According to Vitruvius, the coming together of men, originated by the discovery of fire, brought the construction of shelters for refuge and comfort.[78] The historical understanding of comfort sits at the core of Witold Rybczynski's insights.[79] The author provides a positive notion of domesticity and privacy where comfort is rendered by convenience, efficiency, leisure, physical ease, cosiness, pleasure and intimacy: qualities achieved by an interior life which is 'instantly recognizable for its ordinary, human qualities.'[80] Rybczynski's examination of domesticity starts

72 Ibid., p.1.
73 Gaston Bachelard, *The Poetics of Space* (New York: Penguin Books, 1958; repr. 2014) p. 9.
74 Ibid., p. 2.
75 Ibid., p. 19.
76 Ibid., p. 26.
77 Ibid., p. 156.
78 Marcus Vitruvius Pollio, 'dwelling house'.
79 Witold Rybczynski, *Home: A Short History of an Idea* (London: Penguin, 1986).
80 Ibid., p. 230.



with the medieval bourgeois townhouse of the fourteenth century, even if for that house personal privacy was unknown, given that it combined living and working in a couple of polyvalent large rooms, inhabited by households of up to twenty-five people, including servants, apprentices, friends, protégés, etc.[81] The Dutch house in the seventeenth century provided a great shift. The first bourgeois state in Europe saw a growing middle class owning their own small houses, inhabited by a nuclear family of up to five persons. The husband would have his workplace outside, thus splitting the relation between work and family life, while the house became the realm of the housewife, who was exclusively devoted to domestic and reproductive labour. According to the author, the institution of the family, the feminization of the house, personal privacy, intimacy and comfort in such small, cosy interiors introduced the notion of

81 Ibid., pp. 26-35.

Fig. 5
Emanuel de Witte, Interior with a Woman at the Virginals (ca 1660).

Fig 6 (Opposite page)
John Cecil Clay, A cover of "Good Housekeeping" magazine, 1908.



domesticity.[82] The idea of domestic comfort kept evolving: 'The eighteenth century shifted the emphasis to leisure and ease, the nineteenth to mechanically aided comforts—light heat, and ventilation. The twentieth-century domestic engineers stressed efficiency and convenience.'[83]

Politics of Space

Discussing the spatial qualities of domesticity without critically analysing their embedded political roots would be misleading. The same key period of transition between feudalism and capitalism, with the beginning of the bourgeois and the emergence of feminized domesticity—as characterized by Rybczynski—has been portrayed by Silvia Federici as crucial, not only for the establishment of capitalistic modes of production (the process of primitive accumulation in Marxist terminology), but also for recalling that one of the secrets of its productivity was women's unpaid labour.[84] With the capitalist division of work and family life, housewives became domestic slaves sustaining and raising the precious male working force—husbands and children—by the perverse virtue of love and care.[85] Primitive accumulation, as Harvey's recalls, consisted of violently 'taking land, say, enclosing it, and expelling a resident population to create a landless proletariat'[86] or exploited wage earners. The key spatial phenomenon consisted in enclosing and separating: private from public, personal from social, production from reproduction, men from women, work from family, the factory from the house.

Such privatization would not come harmlessly. Pierre Vittorio Aureli and Maria Shéhérazade Giudici have reflected on the ideology of domestic space since late Neolithic dwellings until the 19th century hygienist reformers.[87] According to them, domesticity has emerged over the centuries as an ideology for the spatial arrangement of the household functions, where the house performs as a 'highly choreographed machine'[88] for the purpose of domestic control, labour

82 Ibid., pp. 55-75.
83 Ibid., p. 231.
84 Silvia Federici, *Caliban and the Witch: Women, the Body and Primitive Accumulation* (Brooklyn: Autonomedia, 2004).
85 Nicole Cox and Silvia Federici, *Counter-planning from the Kitchen* (Bristol: Falling Wal Press. 1974; repr. 1975) p. 9.
86 David Harvey, 'Accumulation by Dispossession' in *The New Imperialism* (Oxford: Oxford University Press, 2005) p. 149.
87 Pierre Vittorio Aureli and Maria Shéhérazade Giudici, 'Familiar horror: Toward a Critique of Domestic Space', *Log*, 38 (2016), 105-129.
88 Ibid., p. 117.

institutionalization as well as gender and class segregation and exploitation: an ideology nourished by 'familiar horror.'[89] According to Robin Evans, the use of architecture to shape the morals of society reached a new height with the English puritans of the nineteenth-century. Indecency, promiscuity, social degeneration and poverty were related to the living conditions of pre-capitalistic large, shared, connected rooms.[90] Such reformers, the author sustains, normalized 'the corridor plan, which is appropriate to a society that finds carnality distasteful (…) and in which privacy is habitual.'[91] The corridor, as a tool to separate spaces and route circulations, along with greatly hierarchized rooms according to deterministic standardized functions, eventually provided a functional and frictionless way of planning the house in the early twentieth-century.[92]

Opposing such repressing ways of dwelling, Evans proposed a return to the 'matrix of interconnected rooms;' a sort of open plan of rooms, a permeable ensemble of generous chambers without specific functions, with multiple doors and routes, where inhabitants shall enjoy the freedom of choice in their everyday life. The author suggested a gregarious form of living opposed to one based on privacy. However, no matter how much the ideology of privacy may be exposed as a political evil, it seems that intimacy, hiding, or simply the choice of being alone, is very much rooted in a human condition phenomenologically expressed before. Likewise, we have seen that Lefebvre claimed the right to 'individualization in socialization'[93] as a fundamental right to the city. It is perhaps key to understand that individualization does not come about by itself, but as a key factor of socialization. In this regard, Aureli has described early Carthusian monasticism as a 'structure where individual and collective life are juxtaposed without being merged.'[94] Monastic life was rendered by the individual cell—a place of solitude and concentration—around the central cloister and many other collective spaces. The individual cell—not as independent as the modern apartment—would not function by itself, but by sharing the rest of the monastic ensemble. Unlike bourgeois' privatization, here, privacy does not mean property

89 Ibid., pp. 126-129.
90 Robin Evans, 'Rookeries and Model Dwellings: English Housing Reform and the Moralities of Private Space', *Architectural Association Quarterly*, 10 (1978), 25-35 (repr. in Robin Evans, *Translations from Drawing to Building and Other Essays* (London: Architectural Association Publications, 1997).
91 Robin Evans, 'Figures, Doors and Passages', *Architectural Design*, 48 (1978), 267-278 (repr. in Robin Evans, *Translations from Drawing to Building and Other Essays* (London: Architectural Association Publications, 1997) p.88.
92 Evans points at Alexander Klein's 'Functional House for Frictionless Living' of 1928 as a modern paradigm of the 'corridor plan.'
93 Henri Lefebvre, 'Perspective or Prospective', pp. 173-174.
94 Pierre Vittorio Aureli, *Less is Enough: On Architecture and Asceticism* (Strelka Press, 2013) p. 21.

but the freedom of being alone within a collective whole. Against the capitalistic hunger for possession, the author recognizes asceticism as an essential quality of monastic life. Asceticism is not just depicted as a contemplative condition but, fundamentally, as 'a way to radically question given social and political conditions in search for a different way to live one's life.'[95] Shortly after the 2008 world financial crisis, Aureli wrote:

> So capitalists tell us that the only way we can counter the recession is to invest more in possessions at the same time as we are deprived of the most basic social welfare. In the face of this scenario, asceticism

95 Ibid., p. 15.

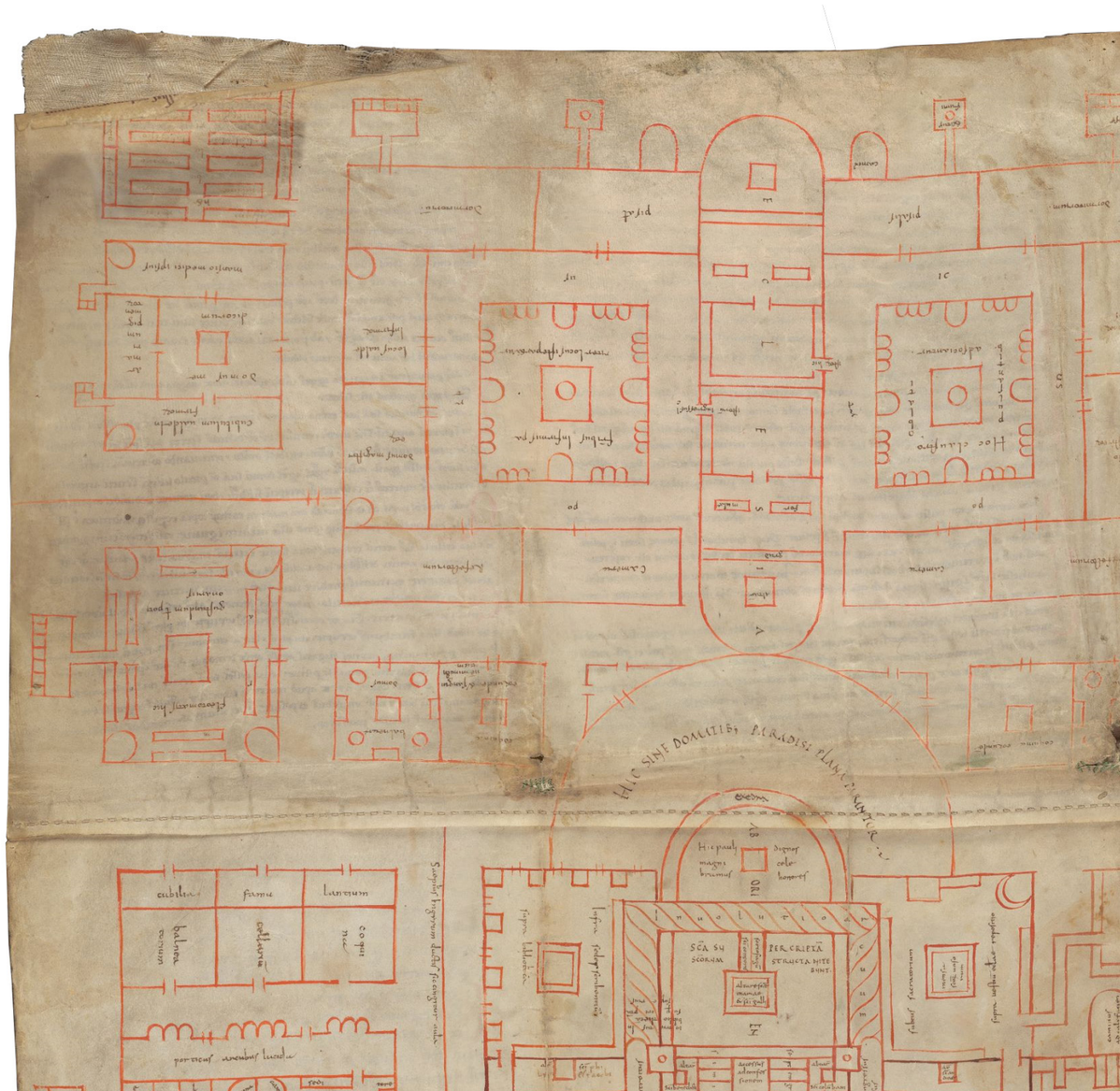


Fig. 7
Fragment of plan of Saint Gall. Switzerland, early 9th century (ca.820–830). Ms. 1092.

> is perhaps an ironic stance, because it not only gives us a proper picture of our condition, but also makes it possible for us to redefine what is really necessary and what is not, outside the regime of scarcity imposed by the market. Asceticism is thus the possibility of reclaiming a *good life* and with it the hope that we can live—and live better—with less. However this *less* should not be transformed into an ideology: less is *not* more, less is just less.[96]

In light of previously discussed notions of delightful appropriation, and paraphrasing Lefebvre, it seems reasonable wondering if these communal experiments and beautiful cloisters could have had, as their *raison d'être*, enjoyment and delight, in addition to ascesis and retreat.[97] Anyhow, if a gregarious way of living may be sustained by the freedom of certain individuals to take pleasure in withdraw, the question shall be, what spatial qualities may possibly establish a suitable level of juxtaposition between social and personal? According to Stavros Stavrides, 'threshold spatiality, a spatiality of passages which connect while separating and separate while connecting, will be shown to characterize spaces produced in common and through commoning.'[98] Stavrides understands common spaces as distinguished both from public spaces—those with top-down rules by authorities—and private spaces—enclosures where private ownership replaces state authority by means of imposing legal exceptions as a normality in our everyday lives. Instead, threshold spatiality unfolds practices of commoning. That is, 'practices which define and produce goods and services to be shared, (…) [whilst] essentially create new forms of social life, forms of life-in-common.'[99] The author seizes the importance of active agency, as opposed to passive usage, in the production of the rules and spaces of our shared world:

> Worlds of commoning are (…) strongly connected to ways of sharing that open the circle of belonging and develop forms of active participation in the shaping of the rules that sustain them. Worlds of commoning are worlds in movement.[100]

Before delving into the changing intersubjective production of our everyday world, it shall be necessary to recall that the digital platforms of our network society have also blurred the limits between private and public, house and workplace. According to Anna Puigjaner, the house has become a diffuse entity, from which people can work as well as market their services and possessions. In this

96 Ibid., p. 58.
97 Henri Lefebvre, *The Production of Space*, p.379
98 Stavros Stavrides, *Common Space: The City as Commons* (London: Zed Books, 2016).
99 Ibid., pp. 1-2.
100 Ibid., pp. 31-32.

sense, the author warns that, in certain circumstances, technological connectivity and the blurring of reproductive and productive space 'can contribute to new symmetries, new forms of reconciliation, and reduced demands placed on energy and time. In others, however, it only makes further visible the precarity upon which daily life depends.'[101] At this point it should be noticed that, against an understanding of space as a fixed, enclosed and predeterminate territory or product, a diffuse dwelling topography, rendered by threshold spatiality and spaces of indeterminate use, seems to be a suitable landscape for the Heideggerian notion of dwelling as building. This implies a form of habitation that embodies subjective spatial practice and production as well as the Lefebvrian notion of a civic right to the oeuvre; both take us back to the paramount value of delightful appropriation, understood as a playful intersubjective mode of becoming in space.

The Play of Place Resistance

The everyday agency of delightful appropriation of space requires, as Giglia recalls, a balance between pre-existing spatial concreteness and the openness towards our ordinary changing ways of habitation.[102] The resistance of spatial concreteness has been pointed out by Matthew Barac, who sustains that, unlike spatial storytelling which may result in a confusing array of disorienting details, the experienced substance, location and character of concrete places are unique, orientated and situated—physically and culturally.[103] The author provides city dwellers with a positive vision of change through the infrastructural figure of slow topography. 'Slow topography highlights the capacity of place for embodiment in relation to the quickening dynamics of informality'[104] or change in our everyday life. Barac insists on slowness—an experienced gradual journey of change—to reclaim the mundane rhythms of typical situations which are rooted in places. The play of resistance in a situation of spatial practice—the interplay between habitation and spatial

101 Anna Puigjaner, 'Towards a Diffuse House', *e-flux Architecture* (2020) https://www.e-flux.com/architecture/housing/333708/towards-a-diffuse-house/
102 Ángela Giglia, *El Habitar y la Cultura*, p. 23.
103 Matthew Barac, 'Place Resists: Grounding African Urban Order in an Age of Global Change, *Social Dynamics*, 37: 1 (2011), 24-42.
104 Ibid., p. 39.

concreteness—inevitably entails the role of architecture as support, a pivotal concept for this doctoral study acutely explained by Dalibor Vesely:

> We can speak of 'resistance' and 'support' when discussing the role of architecture in the communication of order and meaning between the more articulated levels of culture and the more elementary strata of embodiment. However, we need first to see these terms in their dialectical relationship: it is by resistance that architecture supports our intentions and the appropriate meaning of a particular situation. We are aware of this mostly intuitively each time we move up a staircase, travel through uncomfortable corridors, enter rooms with certain expectations, or recognize the purpose of a building from its layout and physiognomy. [105]

Of course, resistance towards fast, uprooted change is not just a matter of space. Several anthropologists have referred to Pierre Bourdieu's conception of 'habitus' to represent the dialectics between permanence and change in daily habitation practice.[106] Habitus entails non-explicit forms of knowledge which perform as generative structures: individual predispositions of the body formed in the multiplicity of experience and socialization which guide, without aiming consciously at it, the agency of subjects.[107] Such an ambiguous stance, which has been criticized by shades of determinism,[108] is acknowledged in recent scholarship precisely because it appears as an inescapable support that 'allows for the possibility of the relative autonomy of the actor in his everyday practices. In other words, habitus appears as the "mediator" through which the individuals comprehend, evaluate and depict reality,'[109] emphasising the dynamic and playful dimension of the concept which carries the potential of invention, creativity, discovery and improvisation. The concrete places of our living experience—lived places—, which are slowly altered along with (as well as through) socio-spatial body practices, incarnate precisely the previously discussed conceptions of a virtual past, a virtual context and actant contexts. Notions

105 Dalibor Vesely, *Architecture in the Age of Divided Representation: The Question of Creativity in the Shadow of Production* (Cambridge, Mass: MIT Press, 2004) p.125.
106 Ángela Giglia, *El Habitar y la Cultura*, p. 16.; see also Blanca Sala Llopart, 'Antropologia y Arquitectura. La Apropiación del Espacio del Hábitat', *Temes de Disseny*, 16 (2000), 84-90.
107 Pierre Bourdieu, *The Logic of Practice* (California: Stanford University Press, 1992), pp. 52-65.
108 See the analysis of the discussion of Bourdieu's concept in Anna Askimaki and Gerasimos Koustourakis, 'Habitus: An Attempt at a Thorough Analysis of a Controversial Concept in Pierre Bourdieu's Theory of Practice', *Social Sciences*, 3: 4 (2014) 121-131.
109 Ibid., p. 124.

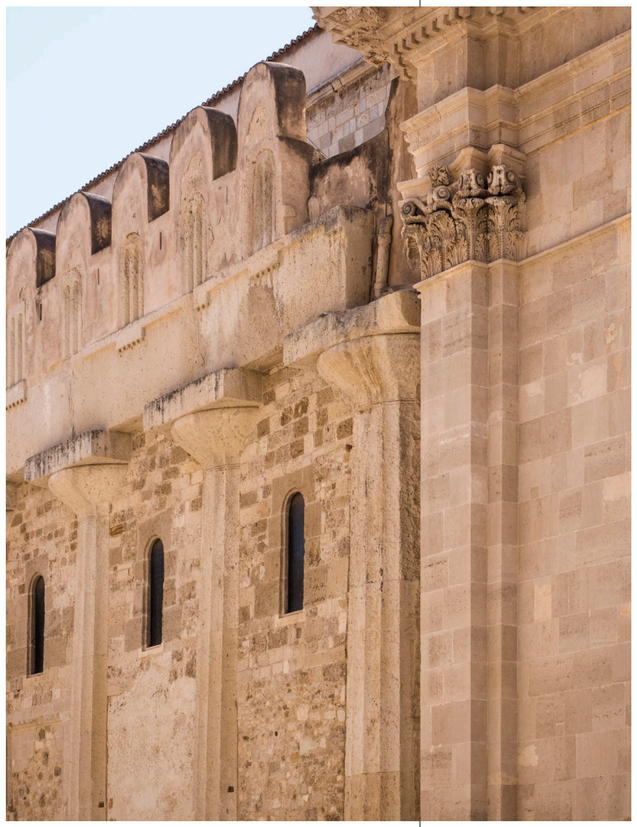


Fig. 8
Slow changes at the Cathedral of Syracuse (2018).

which enable the potential of somewhat freely writing presents and futures. Such potentiality will be further explored in the next chapter through the concreteness of praxis—prior to jumping into design speculation—with the study of precedent architectural proposals sketched over the past century.

In this section I have traced an intersubjective phenomenological notion of habitation, which is based on unique events of constructive interrelations between the contexts of our everyday life. This understanding of habitation acknowledges a deep sense of coexistence, reclaiming slow and gradual journeys of change: events of mundane transformation, which confront and enjoy the resistance of physical and cultural topographies of places and our socio-spatial body practices. The reverberation and depth of such lived and situated intervals of habitation unfold values of the spaces we care for, the spaces we love and enjoy, starting with the humble beauty of a room. However, while spatial comfort, ease and withdrawal may open up experiences of beauty and delight, we have also been warned how this spatial seclusion and determination has been used for centuries by ideologies of domestic control and horror. Opposing such tendencies, gregarious, playful and open-ended ways of habitation have been suggested through passages of diffuse threshold spatiality.

Conclusion
From alteration to transformation

Through philosophical, ethical, political, ecological and architectural theoretical frameworks, in this first chapter I have intended to grasp the multiplicity of time as an intersubjective duration of spatial intervals of becoming. Intervals in which material traces of past and context—their interpreted virtuality—unfold an open-ended futurity through eruptions of becoming in a fleeting actuality. Time, in these terms, is a shared constructive experience of spatial practice, which unfolds the ambiguous potentials of interdependent delightful appropriation, as well as a playfully serious care of our resistant actant contexts, with which we coexist. These practices, as we have seen, can open up commoning and caring modes of spatial change through specific physical and cultural interrelations. And these are moving situations which happen to change slowly, cautiously caring for every lived strata of phenomena.

While this chapter has traced a philosophical review of the understandings of time, the next chapter will research a brief genealogy of architectural literature and precedents which have explored such understandings in the past. However, prior to concluding this chapter, it is necessary to trace a more nuanced awareness of scalar modes of change. As previously discussed, appropriation—becoming in space—implies the potential of change. Change, as experienced and apparent in space, may be revealed in extremely different forms: arrangements to landscape topographies, additions to old buildings, demolitions to open up rooms, reconfiguration by furniture conversion, inhabitation shifts, the movement of a chair. Hence, it seems useful to establish a simple polarization between distinguished modes of change—from subtle to vast—not with the aim of starting a taxonomy with closed labelled categories but, on the contrary, to increase the awareness of a wide spectrum of spatial change, by envisaging a passage between overlaying and ambiguous poles.

On the one hand, subtle change shall be represented by the idea of alteration. Alteration entails an adjustment or modification.[110] In its etymological sense—it is taken from Latin *alter*, meaning 'the other'[111]—alteration means to make it become the other (*alter*-ation). Alteration, then, is about becoming-the-other, while acknowledging a light touch. In the form of spatial experience, alteration could be described as modest habitation changes: the freedom of ordinary movements or adjustments that people produce with their body in their everyday living, usually effortlessly and definitely without the help of building labour. A multiplicity of alterations can be produced by individuals, small cohorts of people, as well as by collective agencies. Likewise, it can occur at the varying scales of furniture, rooms, streets or open landscapes. On the other hand, vast change shall be embodied by the idea of transformation. Transformation is defined as 'a change or alteration, especially a radical one.'[112] Its etymological sense is clear, meaning a 'change of shape'—from the Latin *trans*, meaning 'across, beyond' + *formare* 'to form'[113]—implying a strict change beyond the form (*trans*-form) or a metamorphosis. In spatial practice, transformation could be understood as substantial built changes, producing expansions or significant conversions, usually requiring the means of building labour, along with wider social, political and economic movements. Still, radical transformations can occur at smaller or larger physical scales and in varying heterogeneous conditions.

As we will see, the subject of this research is not change in itself, or in this case the subjects of alteration or transformation in themselves, but the architectural catalysts which make such daily alterations or abrupt transformations possible. With this in mind, we move to the next chapter.

110 'Alteration' in The Collins English Dictionary [online] https://www.collinsdictionary.com/dictionary/english/alteration [accessed 19th July 2022].
111 'Alteration' in Online Etymology Dictionary [online] https://www.etymonline.com/word/alteration#etymonline_v_26142 [accessed 12th July 2022].
112 *Collins Dictionary.*
113 *Online Etymology Dictionary.*

Chapter 1
The Awareness of Time

Chapter 2
Spatial Stimulants of Delightful Change

Pau Bajet
PhD 'by design'
July 2023

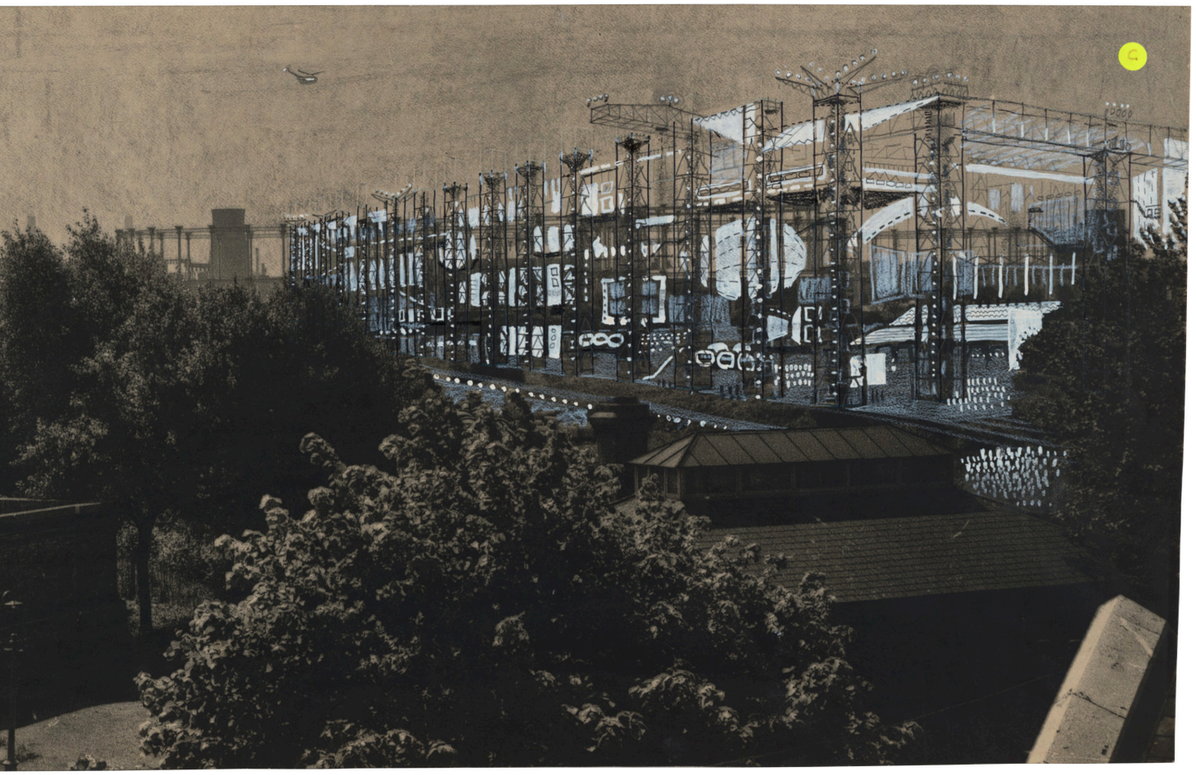


Fig. 1
Cedric Price, Fun Palace for Joan Littlewood Project, Stratford East, London, England. Perspective (1959–1961).

'Using time as a design tool' is exactly what this thesis is about, and yet this may sound too vague. We have learned about the multiplicity of time in the context of architecture and space, but how—precisely—does time perform as a design tool? What does this expression mean? Now, I intend to provide a more specific formulation. This thesis posits a deeper understanding about how one might design spatial stimulants for delightful appropriation and transformation over the course of time: that is, architectural attractors of what I referred to as 'playfully careful intersubjective coexistence.' Simply put, this is an investigation into suggestive spatial catalysts of change—rather than an investigation about change; change as the neutral movement of things or the temporality of conditions of life. Embracing time as a design tool is not a new concern in the field of architecture. Over the past century, architectural propositions with an inherent capacity for change have been explored in architectural and urban design practice and theory—sometimes in the form of a liquid utopia or an ephemeral mobility. In other cases, perhaps more surprisingly, change has come through persistent, robust or even vernacular topographies.

This chapter will provide a critical revision of precedent literature and scholarship on this topic prior to presenting and methodologically framing the process of researching through designing. It should be noted, however, that the research process has not followed this linear order. The struggle of design—and the joy that goes along with it— had started and was underway before these broader themes and investigative pathways began to emerge. Aiming to briefly trace a cross-scalar genealogy of architectural approaches, this chapter is divided into three sections, navigating from room to landscape. The first—Everyday Rooms of Becoming—critically discusses precedents of spatial catalysts which make daily habitational alterations possible. The second section—Levels of Permanence and Appropriation—researches literature which has explored architectural triggers of expansive building transformation. The third section—Land

72 Resilience—acknowledges the generative force of land. The litera-
73 ture review intends to situate this research in a broader architectural context, by critically appraising precedent examples at different scales that are relevant to the topic of enquiry, and by identifying a series of purposes for the design chapters. The chapter does not aim to offer exhaustive theoretical or historiographic analysis, but rather to situate the thesis argument as a whole and contextualise the core contribution of the critical endeavour in a manner that resonates with the principle of what I have called a 'cross-scalar' design awareness.

I Everyday Rooms of Becoming

A complete review of precedents relevant for the freeing of everyday spatial appropriation might start with a deep study of examples such as: Neolithic settlements, nomadistic traces, Mediterranean and Mesopotamian ancient villas, medieval castles, Carthusian monasteries, caravanserais along the Silk Road, alpine and urban vernacular houses or Japanese and Chinese traditional conceptions of space. However, in order to focus the core of this thesis in the design chapters, and in the understanding that this topic sits in the context of a broader academic discussion, such deeper historicist revision has been omitted. Hence, the focus in this section is on architectural precedents developed over the past century, particularly since the moment when such debate became more explicit in Europe and North America in the 1950s. Firstly, concepts of flexibility in modern architecture will be discussed, leading to concepts of indeterminate use that retain spatial specificity. The section will conclude with an introduction of spatial appropriation concepts that promote generous atmospheric interactions.

Flexibility in Modernity

The Modernist response to the European housing urgency after the First World War, was primarily concerned with the search for minimal dwelling standards—*Die Wohnung für das Existenzminimum,* as referred in the 1929 CIAM congress—in order to maximise housing quantity at minimum cost. In such reduced living spaces, the notion of flexibility arose as a liberating tool allied to modernity's dynamism, challenging the stability of tradition amid technical positivism, hygiene movements and artistic vanguards. According

to Tatjana Schneider and Jeremy Till,[1] the development of flexibility took two routes. First, and exemplified by the work of Bruno Taut, a rare approach seeking versatility of space. That is, rooms where use was indeterminate, as opposed to mainstream functionalism where every room was specified with a determinate use. The second way of developing flexibility, following another technological transfer typical of that time, is exemplified by Gerrit Rietveld's Schröder House in Utrecht, which features folding and unfolding architectural elements such as walls, doors, or furniture which could move and adjust to perform various pre-established functions—an approach less favoured by the authors as it tends to over-determine and restrict possibilities of daily change.

At the beginning of the 20th century, new construction technologies, mass production and industrialization in housing production provided another big leap in the search for flexibility, namely the split between interior partition and load-bearing structure, making possible the free plan. By following factory construction methods, Le Corbusier's emblematic Dom-ino scheme of 1914 (and projects by other European modernist architects) brought the iconic image of an empty frame structure in which "lightly constructed walls and partitions [that could] be rearranged at any time and the plan altered at will."[2] In this way, the modernist master unfolded a temporal split between inhabited space and its dormant potential, given by its frame structure.[3] As our current intention is to study spatial alterations performed by our body on an everyday basis, rather than to study in detail the potential of longer-term transformations within these kinds of neutral raw shells, this concept and its manifold architectural outcomes will be discussed in the next section of the chapter. However, following a similar frame structure for his housing project in Weißenhofsiedlung, Ludwig Mies van der Rohe brought attention to the importance of designing certain fixed elements within dwellings—including bathrooms, kitchens and services, in addition to the loadbearing structure—in order to free up the rest of space:

> For the present, I only build the perimeter walls and 2 columns within, which support the ceiling. Everything else ought to be as free as possible. Were I to succeed in producing cheaper plywood walls, I would only design the kitchen and bathrooms as fixed rooms, and the remaining space as variable unit, so that I would be able to subdivide these spaces according to the needs of the occupant. This would also have advantages insofar as it would provide the possibility to change the layout of a unit according to changes within a family, without large modification costs. Any joiner or any down-to-earth laymen would be in the position to shift walls.[4]

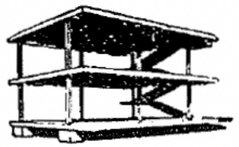


Fig. 2
Le Corbusier, Dom-ino scheme (1914).

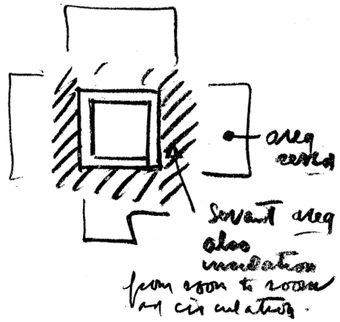


Fig. 3 (Opposite page)
Louis Kahn, Servant and served areas in the Goldenberg house (1961).

In the same period of time, in addition to strategically arranging a frame structure and service areas as fixed elements to embrace the free plan, Le Corbusier and Charlotte Perriand developed a system of modular, industrialised storage units adaptable to a vast array of height, type, colour and usage configurations, known as '*casiers*'. Liberated from surrounding walls, these units could be assembled and detached according to diverging needs over time, intensifying poetic, non-functional changeability in regards to the human relationship with their surrounding landscape.[5] In sum, beyond the neutrality of an open frame structure, the designed specificity of certain fixed elements—loadbearing structure, services, modular cabinets—may become an essential feature for freeing up space. This complex stance was well captured by N. John Habraken in the seventies, who maintained that the greatest architectural support for this purpose 'is probably not one that is neutral in its spatial suggestions,' but a 'support that offers specific kinds of space, which can be recognized, and evokes many different possibilities (…).'[6] But, before delving into Habraken's complex theories, we may return to the spatial conception which produced a clear dichotomy between specific permanencies and changeable living space.

In the fifties, Louis Kahn introduced a disjunction between 'servant space' and 'served space,' which meant that the former—including structure, mechanical services and storage—may characterize and give meaning to the nature of living space. This spatial conceptualisation followed the legacy depicted above, that can be traced to earlier modernist masters such as Le Corbusier, Mies van der Rohe, and others such as Richard Buckminster Fuller. Kahn concluded: 'Long ago they built with solid stones. Today we must build with hollow stones.'[7] Following this principle, Alison and Peter Smithson

1 Tatjana Schneider and Jeremy Till, 'Episodes in Flexible Housing' in *Flexible Housing* (Oxford: Elsiever, 2007), pp. 17-18.
2 Le Corbusier, *Towards a new architecture*, trans. By Frederick Etchells (London: John Rodker, 1927 repr. 1931), p. 244. Originally published in 1923 under the French title *Vers une architecture*.
3 Silvia Colmenares Vilata, 'The Neutral at the Typical Plan: supports and dom-in-o(s)' in *Constelaciones nº2* (2014), 22-42 (p. 33).
4 Mies van der Rohe, 'Zu meinem Block', in *Bau und Wohnung* (Stuttgart: Julius Hoffman, 1927). English translation as quoted in Tatjana Schneider and Jeremy Till, *Flexible housing*, p. 20.
5 Sara de Giles, Espacios de relación y soporte en la vivienda colectiva moderna: Realidades y utopías (Buenos Aires: Textos de Arquitectura y Diseño, 2021), pp. 131-144.
6 N. John Habraken et al., *Variations: The Systematic Design of Supports* (Cambridge: MIT Laboratory of Architecture and Planning, 1976) p. 24. Originally published in 1974 under the Dutch title, *Denken in varianten*.
7 Louis Kahn, 'Architecture is the Thoughtful Making of Spaces', *Perspecta*, 4 (1957), 2-3.

developed the Appliance House in 1958, where permanent cubicles would contain services, storage and ever-obsolescent noisy appliances, freeing up precious living void space between cubicles.[8] Similarly, George Candillis, Alexis Jossic and Shadrach Woods articulated a 'proposition for an evolutionary habitat,'[9] which was based on the distinction between '*Elements determines*' and '*Elements indetermines*,' emphasizing the necessity of certain determinate permanencies, analogous to Kahn's servant space, in order to attain the indeterminacy of a living space open for user interpretation over time—a proposition against the deterministic doctrine for which form shall follow function.[10]

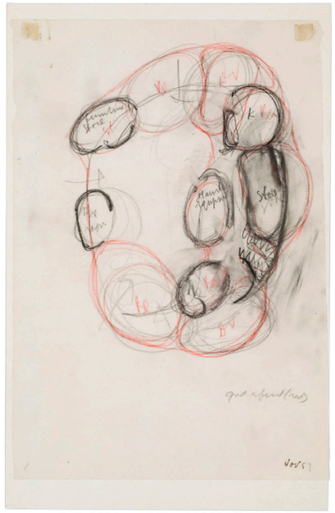


Fig. 4
Alison and Peter Smithson, sketch plan for the Snowball Appliance House, (1957).

Specific Indeterminacy

Over the following decades several architects explored the intriguing relationships between neutrality and specificity. Rem Koolhaas' retroactive observations of the congested, pragmatic American tall office building, brought a relevant theoretical contribution to this topic.[11] Following Koolhaas, Manhattan revealed a stacking of ever-changing turbulent performances within stable monumental envelopes to produce a liberating 'divorce between appearance and performance.'[12] OMA's early proposals following such concepts embraced ambiguous positions aiming at both specificity and indeterminacy. The OMA entry to the Parc de La Villette competition, for instance, combined in their words 'architectural specificity with programmatic indeterminacy' through the superimposition of different layers or projections—a layering similar to the high-rise building, would provide accidental clusterings of unique configuration and character—to design 'a social condenser, based on horizontal congestion, the size of a park.'[13] A phenomenological approach to such debate—which carefully explored situated spatial configurations—was sketched later on by Florian Beigel and Philip Christou. In order to 'make room for the unfolding of human imagination,' they proposed the concept of 'specific indeterminacy.'[14] This meant that specificity would be characterized by a concrete context, place, presence of materials and sense of beauty. However, such specificity shall be open for interpretation, being indeterminate with regards to its habitation practice or programme: 'Specific indeterminate space has an enigmatic emptiness, it is a space that is waiting for something to happen (…).'[15] Regardless of its scale, any spatial artefact should embody these qualities of specificity and indeterminacy:

> The design of a table comes to mind. It should be designed with potential. It could be a social attractor, gathering people around it, a platform to stand on, a house for a child to huddle under, a table to dine on, to write on, to present things on, to make things on, to reflect on. It should have the potential for use and meaning which one hasn't necessarily thought about when designing it.[16]

In the early sixties Dutch architect Herman Hertzberger introduced the notion of 'polyvalence' as distinguished from—and more



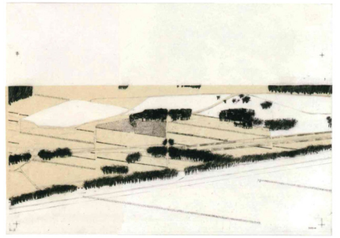




Fig. 5
OMA, Parc de la Villette, model of the Second Phase competition (1982). Picture by Hans Werlemann.

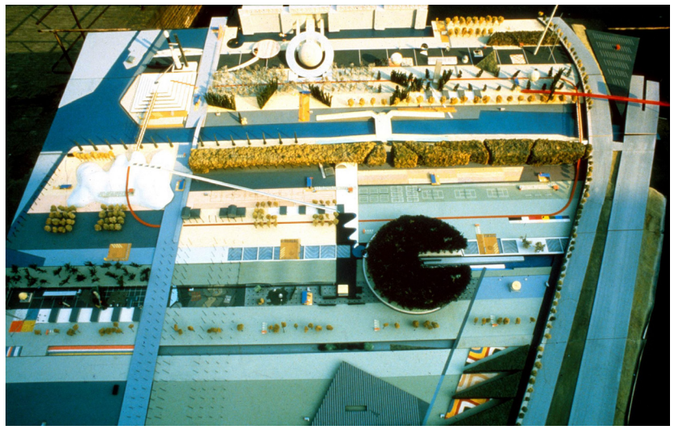


Fig. 6 (opposite page)
ARU, Stadtlandschaft Lichterfelde Süd, Berlin. Three collage drawings on tracing paper, by Peter Beard, ARU. Existing trees in the landscape; proposed landscape infrastructure establishing field structure; and early stages of field settlement.

8 Alison and Peter Smithson, 'Los Smithson' in *Cambiando El Arte de Habitar* (Barcelona: Gustavo Gill, 2001), p. 112. Originally published in 1994 under the English title 'The Smithsons' in *Changing the Art of Inhabitation*.
9 Georges Candilis, Alexis Jossic and Shadrach Woods, 'Proposition pour un habitat evolutif' in *Le Carré Bleu*, 2 (1959) 3-6.
10 The first proposal for the 'Neue Stadt' in Köln by Ungers in 1961 appeared later as a remarkable example of this approach, transcending the scale of the house to unfold a broader civic assemblage. Likewise, Yves Lion proposed in 1984 a radical interpretation with his Domus Demain's 'active bands,' where façade performative thicknesses—permanently conducting fluid and energy supply, could allocate changing kitchens, bathrooms, winter gardens or vegetation—as threshold filters of generous indeterminate interiors.
11 Rem Koolhaas, *Delirio de Nueva York* (Barcelona: Editorial Gustavo Gili, 2007). Originally published in 1978 under the English title *Delirious New York*.
12 Rem Koolhaas, 'Elegy for the Vacant Lot', in *S,M,L,XL*, ed. by Rem Koolhaas and Bruce Mau (New York: The Monacelli Press, 1995) p. 937.
13 Rem Koolhaas, 'Congestion Without Matter', in *S,M,L,XL*, ed. by Rem Koolhaas and Bruce Mau, (New York: The Monacelli Press, 1995) pp. 894-939.
14 Florian Beigel and Philip Christou, 'Brikettfabrik Witznitz: specific indeterminacy – designing for uncertainty', *arq: Architectural Research Quarterly*, Vol. 2, No. 2 (1996), 18-38.
15 *Op. cit.*
16 Florian Beigel and Philip Christou, 'Time architecture: Stadtlandschaft Lichterfelde Süd, Berlin', *arq: Architectural Research Quarterly*, Vol. 3, No. 3 (1999), p. 218.

desirable than—'flexibility,' which would only produce neutral containers.[17] The word polyvalent was taken from the French '*salle polyvalente,*' a kind of multi-purpose hall used for weddings, parties, theatre or cinema that could be found in small villages. In a latter article, Hertzberger explained that pictures of Arles and Luca amphitheatres siting on his table in 1962, made him realize that forms which are permanent, lucid and particular, can 'change in the sense that you can interpret them differently'[18] and therefore use them differently—an awareness of polyvalence captured in the idea of 'interpretable architecture.'[19] Leupen has contributed to a particularly Dutch sensibility for this topic, insisting that polyvalency means that spaces 'can be used in different ways without requiring adaptations of an architectural nature.'[20]

This understanding of polyvalency is usually referred to as 'adaptability' by many authors. Schneider and Till make a distinction between 'soft' and 'hard' tactics, the former relating to adaptability achieved through functional and social indeterminacy, whereas the later relates to architectural elements which physically determine certain flexibility.[21] Adaptability usually requires generosity of space, whereas flexibility requires mechanisms which move, fold or unfold to appear or vanish and change settings. These authors have elaborated adaptability strategies such as 'raw space,' a kind of space which is not fully formed, thus waiting for the user to finish it; 'excess space' as the provision of oversized dimensions ; 'slack space' as unprogrammed space for indeterminate occupation; or 'rooms without labels' as the disjunction between room and function to unfold a loose-fit matrix of interchangeable rooms.[22] Adaptability in buildings has been praised for its capacity to accommodate changing functions over time, increasing durability and reducing the need for wholesale refurbishment or demolition—therefore, improving environmental sustainability.[23] Likewise, it has been acclaimed for its capacity to adjust to changing or combined dwelling and working

17 Herman Hertzberger, 'Flexibility and Polyvalence', *Forum*, 16:2 (1962), 115-118.
18 Herman Hertzberger, 'Time-based buildings' in *Time Based Architecture*, ed. by Bernard Leupen, René Heijne and Jasper van Zwol (Rotterdam: 010 Publishers, 2005), p. 82.
19 *Ibid.*, p. 85.
20 Bernard Leupen and Harald Mooij, *Housing Design: A Manual* (Rotterdam: Nai Publishers, 2012).
21 Tatjana Schneider and Jeremy Till, *Flexible housing*, p. 7.
22 *Ibid.*, pp. 133-148.
23 Gerard MacCreanor, 'The Sustainable City is the Adaptable City" in Time Based Architecture ed. by Bernard Leupen, René Heijne and Jasper van Zwol (Rotterdam: 010 Publishers, 2005), pp. 98-109.



Fig. 7
Frank O. Gehry, Davis Studio and Residence, Malibu, California (1968-72). Picture by T. Kitajima.

Fig. 8
Lacaton & Vassal, Maison Latapie, Floriac (1993). Image by Lacaton & Vassal.

patterns according to transformed lifestyles.[24] Besides adaptability, Fernández refers to qualities such as 'versatility' to suggest more subtle and spontaneous habitation alterations; 'permeability' as spatial threshold capacity to modify interior-exterior relationships; and 'sociability' as spatial potential to increase interrelated practices between inhabitants and community.[25]

Atmospheric Generosity

Before architectural theorists described the concepts of open living that we have just seen, an experience in America had already unveiled their vivid potential. Between the forties and sixties of the past century, the New Yorker 'loft' appeared as occupations of decayed nineteenth century industrial buildings. According to Iñaki Ábalos the loft represents a significant archetype of spatial appropriation, with its origins in Marxist and Freudian thought and influenced by countercultural movements in Europe.[26] Combining living and working, unchained from the privacy of traditional family rules and in exceedingly generous open and inexpensive space; the appropriation of such lofts brought gregarious, playful, sensual and self-poetic

24 Jasper van Zwol, 'The combination of living and working' in *Time Based Architecture*, ed. by Bernard Leupen, René Heijne and Jasper van Zwol (Rotterdam: 010 Publishers, 2005), pp. 30-40.
25 Pablo Lorenzo Fernández, 'La Casa Abierta' ['The open house'] (unpublished doctoral thesis, ETSAM-UPM, 2012).
26 Iñaki Abalos, 'Warhol at the Factory: de las comunas freudomarxistas al loft neoyorkino' in *La Buena Vida: Visita Guiada a las Casas de la Modernidad* (Barcelona: Editorial Gustavo Gili, 2000), pp.109-138.



forms of habitation. As Ábalos reminds us, the same techniques of appropriation have been unfolded in projects ex-novo by architects such as Frank Gehry or, later on, by Anne Lacaton and Jean-Philippe Vassal, approaching ordinary situations with this generous, performative way of living.[27] In a recent article Anne Lacaton states that 'spatial generosity in surface area and height is the prerequisite for freedom of appropriation, personal evolvement and, indeed, a situation-dependent elasticity to absorb different uses'[28] (such as the changing lifestyles exposed by the Covid19 lockdown experienced worldwide in 2020).

Lacaton and Vassal's design of excess space through buffer areas or winter gardens provide much more than spatial generosity, they bring atmospheric strategies to improve temperature, humidity and sensory perception, whilst reducing ecological footprint. These atmospheric qualities remind us of Vitruvius's earlier introductory quote: it was the warmth of fire which brought people together and discovered comfort.[29] Spanish architects such as Javier García-Germán and Iñaki Ábalos use the term 'thermodynamics' to express the potential of energetic interactions, heat dissipation, transmission and absorption between outdoor climate, landscape, built environment, interior atmosphere and human bodies:[30] a fundamental interaction for the possibility of habitation. Advocating for a culturally-inflected qualitative approach to thermodynamics, as opposed to the predominantly quantitative performative technological drive, García-Germán sustains that 'a given atmosphere onsets a succession of neurobiological processes which induce a conscious psychological experience, introducing the potential of atmosphere to produce a multisensory aesthetic environment.'[31] Philippe Rahm is well known for his atmospheric projects, which open a physiological and meteorological dimension. In his terms, rather than coming from memory or analogy, his architecture cares for 'a sensual and immediate

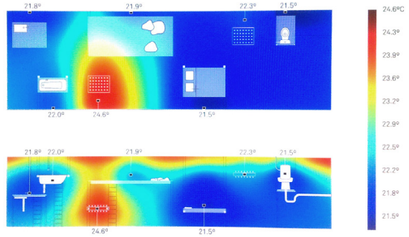


Fig. 9
Philippe Rahm, Domestic Astronomy (2009).

27 Ábalos refers to Gehry's Davis house in 1972, where a shed-covered space offers the loft material values for artist Ronald Davis; and to Lacaton and Vassal house in Floriac built for a conventional family in 1993.
28 Anne Lacaton and Carina Sacher, 'Feeling Well at Home. About the Need to Finally Rethink Housing' TRANSFER Global Architecture Platform (2020), https://www.transfer-arch.com/transfer-next/feeling-well-at-home/ [accessed 21st September 2020]
29 This was picked-up by Galiano in the eighties, who wrote a pioneer essay on thermodynamics in architecture: Luis Fernandez-Galiano, *Fire and Memory: On Architecture and Energy* (Cambridge: MIT Press, 2000). Originally published in 1991 under the Spanish title, *El Fuego y la Memoria: Sobre Arquitectura y Energía*.
30 Javier García-Germán, 'Thermodynamic Interactions' in *Thermodynamic Interactions: An Architectural Exploration into Physiological, Material, Territorial Atmospheres* ed. by Javier García-Germán (New York: Actar Publishers, 2017), p. 12. See also Iñaki Ábalos and Renata Sentkiewicz, *Essays on Thermodynamics, Architecture and Beauty* (New York: Actar Publishers, 2015).
31 Javier García-Germán, 'Thermodynamic Interactions', p. 17.

perception of the odour, the length of a wave, the level of humidity.'[32] If the sixties criticism reversed the modernist deterministic dogma of 'form followed function,'[33] Rahm proposes that both form and function should follow climate. He concludes that a house, for instance, shall 'literally be designed on a current of air, going from dry to humid.'[34]

In this section I have discussed multiple architectural experiences that reveal, in opposition to meaningless expansive neutrality, qualified differences in inter-dimensional ways (physical, atmospheric, temporal and cultural) as essential triggers for vivid passages of becoming in space. Hence, rather than isotropic seamlessness, it shall be an array of ever-changing landscapes of qualified, manifold, open for interpretation, non-deterministic sequences of spatial, social, atmospheric and sensorial situations, which shall catalyse an utmost freedom of individual and social appropriation performed by our body on an everyday basis.

32 Laurent Stalder, 'Philippe Rahm: Form and Function follow Climate', *Archithese*, 10: 2 (2010), 88-93.
33 Rossi criticized this ingenuous functionalism in Aldo Rossi, *The Architecture of the City* (Cambridge: Oppositions books/The MIT Press, 1982), p. 46. Originally published in 1966 under the Italian title, *L'architettura della città*.
34 Laurent Stalder, 'Form and Function', p. 91.

II Levels of permanence and appropriation

The 1950s post-war cultural milieu came to be a turning point with regards to the conception of time and the awareness of change and transformation in architecture and urban design. Challenging functionalist and mechanistic modernist doctrines and with a renewed sensibility for social life, a young group of architects—later on founders of Team X—who attended CIAM IX at Aix-en-Provence, wrote 'The Doorn Manifesto' in 1954, in preparation to the next CIAM. Influenced by biologist, sociologist and town planner Patrick Geddes, in particular by his proposed 'valley section,' the manifesto claimed dynamic relationships between house, community and environment; in varying multi-functional habitats from city to landscape.[35] Dwelling would be considered as part of a community in relation to specific environments—their 'habitat'—at different scales, stressing the role of everyday street life.[36] In a comment following the manifesto, the Smithsons sustained that form shall not be pre-established; instead, it shall be 'generated, in part, by response to existing form, and in part, by response to the *Zeitgeist*—which cannot be pre-planned,'[37] claiming the necessity of embracing change, addition and mobility. Against universal, abstract and mechanical preconceptions, and not starting with a *tabula rasa*, this sensitivity embraced a

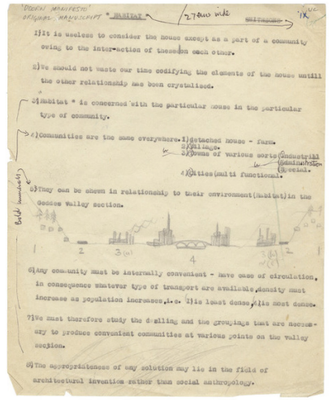


Fig. 10
Alison and Peter Smithson, original manuscript of the Doorn Manifesto (1954).

35 Unsigned, 'The Doorn Manifesto', Holland. Although it is a manifesto without signatories, Kenneth Frampton suggests that it was probably authored by TEAM X founders the Smithsons, Van Eyck, Bakema and Voelcker.
36 This sensibility is exemplified by Nigel Henderson's famous pictures of Bethnal Green street life, which was a crucial influence for the Smithsons.
37 Alison and Peter Smithson, 'Comment following the Doorn Manifesto' in *Team 10 Primer*, ed. by Alison Smithson (Cambridge: MIT Press, 1968).

different way of seeing the ordinary, of engaging with specific pre-existing cultural and physical 'as found' conditions.[38]

The following CIAM X congress, in Dubrovnik in 1956, was devoted to habitat and consolidated the Team X's claims. The congress brought proposals by architects such as John Voelcker, Jaap Bakema, Aldo van Eyck and James Stirling, among others, who provided examples of clusters, mobility, growth and change. Although dismissed by leading figures such as the Smithsons,[39] Yona Friedman presented an intriguing proposition for a centrally organized spatial 'infrastructure'[40] which could be planned and occupied by self-organised small communities. In Friedman's proposal the *Zeitgeist* was not in the architect's hands, but with the inhabitants themselves: 'decisions are made by those who could suffer or benefit from the fall-out of the decisions'[41] rather than by planning experts, anticipating both the upcoming participation movements, as well as the rise of megastructures.[42] Following this sequence, this section will firstly critically discuss aesthetics of this structuralist pulse and, later, it will review the emergence of participation.

Aesthetics of the Open Form

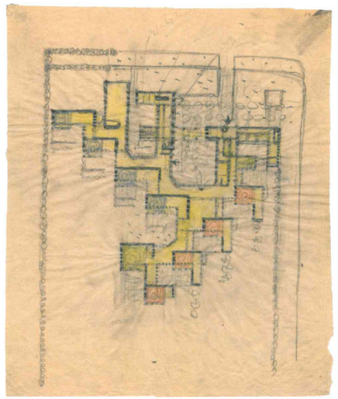
In 1958, the Smithsons articulated their thesis of an 'open city,' after a trip to the US.[43] This urban paradigm was based on the promise of mobility, relying on the liberating and egalitarian force of the 'individually owned motor car.'[44] In the 1959 CIAM meeting in Otterlo, nonetheless, architects such as Shadrach Woods and Ralph Erskine questioned the pre-eminence of the car in favour of walking

38 Alison and Peter Smithson, 'The 'As Found' and the 'Found'' in *The Independent Group: Postwar Britain and the Aesthetics of Plenty* (Cambridge: MIT Press, 1990), pp. 201-202.
39 Kenneth Frampton, 'Team 10, Plus 20: The Vicissitudes of Ideology', *L'architecture d'aujourd'hui*, 177 (1975), 62-5; repr. In *Labour, Work and Architecture* (London: Phaidon Press Limited, 2002), pp. 136-149. In later interviews, Friedman points directly at the Smithsons; see Manuel Orazi, 'The Erratic Universe of Yona Friedman' in *Yona Friedman: The Dilution of Architecture*, ed. by Nader Seraj (Zurich: Park Books, 2015).
40 Yona Friedman, 'Complement to personal statement at experts meeting in Dubrovnik on Policies Concerning Human Settlement' (1956) in *Yona Friedman: The Dilution of Architecture*, ed. by Nader Seraj (Zurich: Park Books, 2015), p.380. Friedman specifically referred to the term 'infrastructure' anticipating many analogous proposals over the following decades.
41 Ibid.
42 Manuel Orazi, 'The Erratic Universe of Yona Friedman'.
43 Kenneth Frampton, 'Team 10', p. 143.
44 Alison and Peter Smithson 'Mobility: Road Systems', *Architectural Design* (November 1958), 385-88..

experience in order to keep human contact.[45] Alison Smithson defended their work in front of worldwide colleagues arguing: 'Our whole conception of urbanism is one of change. (…) Everything is in a state of change; everything is in a state of flux.'[46] Ernesto Nathan Rogers had criticized their proposal of the London Roads Study for excessive destruction of existing contexts and life, stating that 'historically the biology and the morphology of the city are progressing facts. They are facts that are, one after the other, connected in terms of time.'[47] This discussion on the interrelations between change and permanence was also considered on aesthetic terms. The Smithsons would attack Roger's Torre Velasca for its 'closed aesthetic' as opposed to their intent of an 'Open Aesthetic', an aesthetic in which 'one senses that an architect is involved in a changing situation.'[48]

This CIAM meeting brought memorable proposals such as Aldo van Eyck's Children's Home in Amsterdam, which exhibited deep anthropological qualities, beyond its possible depiction as a geometrical cluster with a capacity for growth. The Dutch architect explained the project in Gestalt terms, based on the principle of 'reciprocity' and the image of a 'doorstep' between non-exclusive dual phenomena: 'part and whole, unity and diversity, individual and collective, inside and outside, closed and open (…)'[49] without twisting the meaning of either. With a plan that was both centralised and decentralised, intending to 'achieve diversity through unity and unity though diversity,'[50] where 'all spaces were subjected to the same structural principle, irrespective of their specific function and span,'[51] hence empathically engaging with human experience and suggestive open interpretations. Yet, the Otterlo meeting witnessed another memorable contribution related to the topic of time, namely 'The Open Form in Architecture—the Art of the great number' as presented by Oskar and Zofia Hansen:

> (…) it will mean the preparation of the 'sites' for 'one-family houses' on the first floor, second floor, third floor, fourth floor, etc., up to the top floor in a skyscraper. (…) After the 'site' has been chosen, the tenant decides on the system in which the home is to be built.[52]



45 *CIAM '59 in Otterlo*, ed. by Oscar Newman (Stuttgart: Krämer, 1961), p. 61.
46 Ibid., p. 77.
47 Ibid., p. 78.
48 Ibid., pp. 95-96.
49 Aldo van Eyck, 'Is Architecture Going to Reconcile Basic Values?' in *CIAM '59 in Otterlo*, ed. by Oscar Newman, pp. 27-34.
50 Ibid., p. 33.
51 Ibid.

The Hansens proposed a new aesthetic and meaning of the Open Form as a collective *oeuvre*. Their proposition attempted to respond to the post-war necessity of quantity, by recognizing the individual presence within a collective ensemble. Against dull standardization and closed form unchangeability, the Hansens proposed a city-planning tactic based on the preparation of 'sites' through collective structures where family houses would express individual initiative over time. In this so called 'art of events,' individualities—always led by tenants—may also be designed by individual architects, or clients themselves, within the collective ensemble, expressing an ordinary, mundane and accidental group form.[53] The Hansens proposals were considerably in line with Yona Friedman's ideas, which had been published under the title 'Mobile Architecture,'[54] attempting to explore the paradigm of infinite flexibility through techniques of three-dimensional empty skeletons filled in as desired

52 Oskar Hansen and Zofia Hansen, 'The Open Form' in *CIAM '59 in Otterlo*, ed. by Oscar Newman, pp. 190-191.
53 Ibid., p. 191.
54 Yona Friedman and Roger Aujame, 'Mobile Architecture', *Architectural Design*, 30: 9 (1960).

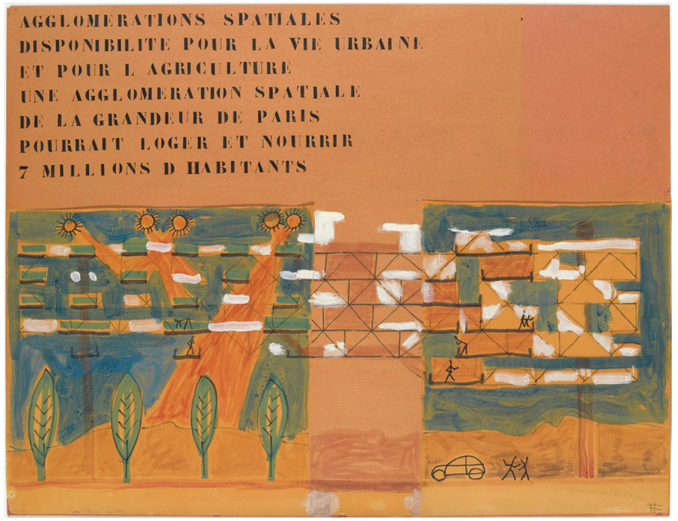


Fig. 11 (opposite page)
Aldo van Eyck, Orphanage: initial iteration of final design (ca 1955).

Fig. 12
Yona Friedman, Agglomérations spatiales: disponibilité pour la vie urbaine et pour l'agriculture (1961).

by users.[55] This search led Friedman to the foundation of the GEAM (*Groupe d'études d'Architecture mobile*) in 1959, together with a cohort of European colleagues; organising meetings with the presence of architects such as Jerzy Soltan, Jan Trapman, Frei Otto, John Habraken, Constant Nieuwenhuys, Erik Friberger, Masato Otaka and the Hansens.[56]

Megastructure, Fun and Radical Utopia



Influenced by this context, the early sixties saw the irruption of worldwide megastructure movements. Launching a manifesto in 1960, Japanese Metabolism aimed to design environments for human vitality, in their words, 'from atom to nebula'[57] with small-scale contributions, such as the Skyhouse by Kiyonori Kikutake—whose epic design enabled habitation versatility and transformation over time—as well as vast-scale utopic urban developments, such as large city expansions in the bay of Tokyo. As a matter of fact, it was a member of this Japanese movement, Fumihiko Maki, who wrote an early definition of the megastructure: 'The megastructure is a large frame in which all the functions of a city or part of a city are housed. It has been made possible by present day technology. In a sense, it is a man-made feature of the landscape. It is like the great hill on which Italian towns were built.'[58] For Maki the aim of the megastructure was to produce form as a 'catalytic agent' of change responding to the dictates of time. As reported by architectural critic Reyner Banham, Le Corbusier's Fort l'Empereur project from his Algiers plan of 1931 should be pointed as the most notorious ancestor of the megastructure. Depicted as a 'giant bookcase' of reinforced concrete for inhabitants free will, Banham reported its fundamental treats: 'on the one hand a massive, even monumental, supporting frame; on the

55 Yona Friedman, 'Ten Principles of a New Architecture' in *Yona Friedman. Structures Serving the Unpredictable* ed. by Sabine Lebesque and Helene Fentener van Vlissingen (Rotterdam: Nai Publishers,1999).
56 Manuel Orazi, 'The Erratic Universe of Yona Friedman', p. 415.
57 Kiyonori Kikutake, Noboru Kawazoe, Masato Otaka, Fumihiko Maki and Kisho Kurokawa, *Metabolism: the Proposals for New Urbanism* (Tokyo: Bitjutu Syuppan Sha, 1960).
58 Fumihiko Maki and Masato Otaka, 'Collective Form—Three Paradigm' *in Investigations in Collective Form*, by Fumihiko Maki (St Louis: Washington University School of Architecture, 1964), p. 8.

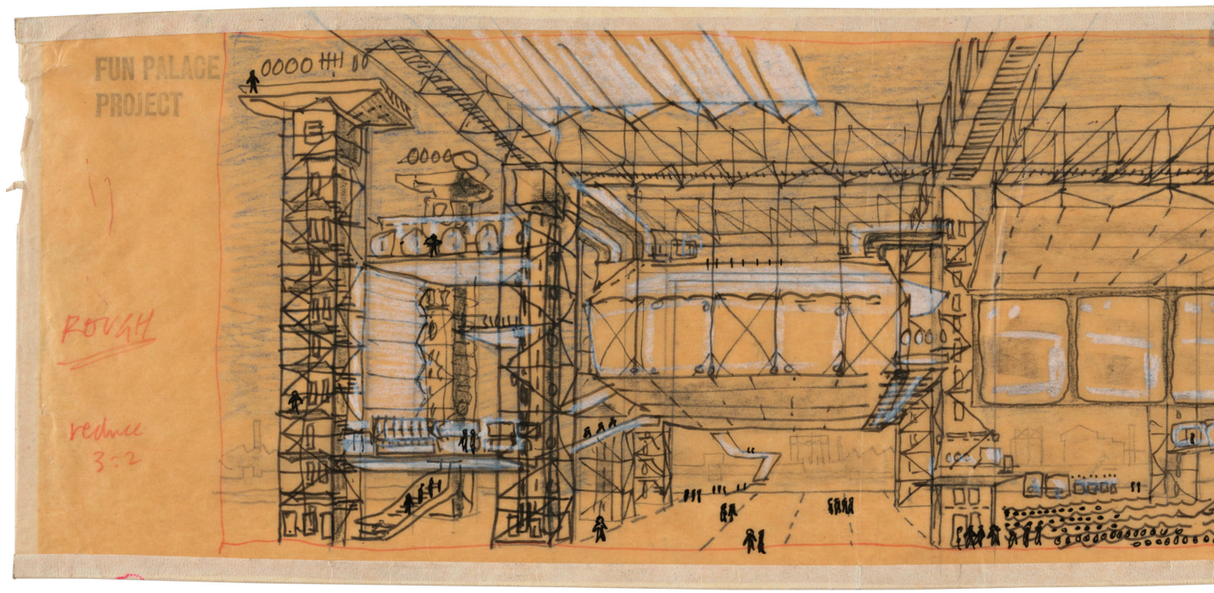


Fig. 13 (opposite page)
Kiyonori Kikutake, Sky House (1958), picture by Kawasumi Akio.

Fig. 14
Cedric Price, Fun Palace for Joan Littlewood Project, Stratford East, London, England. Perspective (1959–1961).

other, various arrangements of habitable containers beyond the control of the architect.'[59]

Following early steps by Yona Friedman, the Metabolists, Team X members, as well as precedent figures such as Buckminster Fuller, among others, a younger megastructuralist generation appeared, fascinated by the potential of engineering, computation and technology applied as tools of industrial production and mass consumerism.[60] Internationally acclaimed in 1964, the Fun Palace designed by Cedric Price for theatre director Joan Littlewood, was conceived as an adaptable three-dimensional massive volume with moving walls, floors, and roofs; with the purpose of enabling experimental, self-participatory education and entertainment. The place was described as 'expendable and changeable', open to user's involvement and control, hence allowing for 'a flow of space and time, in which passive and active pleasure is provoked.'[61] Affinity has been traced with the ludic situations of the *Internationale situationniste*; in particular with Constant, Asger Jorn and Guy Debord, who brought the centrality of ludic activities, identifying the megastructure as a mobile, usable equipment for *Homo ludens*-like citizens, as well as reinforcing a tendency towards ex-novo, utopic and unitarian urbanism.[62] This

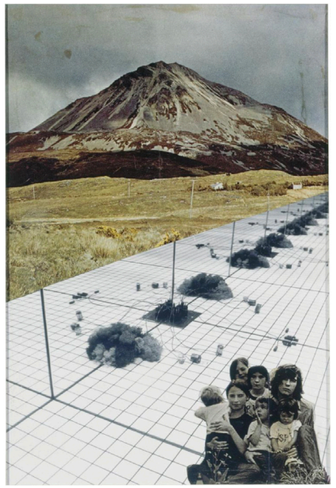
59 Reyner Banham, *Megastructure: Urban Futures of the Recent Past* (New York: Harper and Row, 1976), p. 14.
60 Sara de Giles, Espacios de relación y soporte, pp. 418-477.
61 Joan Littlewood, 'Leisure and the Arts', *New Scientist* (14 May 1964) 433. Cited in Reyner Banham, *Megastructure,* p. 92.
62 Reyner Banham, *Megastructure,* p. 87.

influence was clearer in the Archigram Group broadsheet, which became widely famous in 1964 after their breakthrough issue—'Amazing Archigram 4 Zoom'—including Peter's Cook design of the Plug-In City.[63] Through a series of elaborated drawings at different scales, it proposed a massive network structure, provided with cranes functioning from elevated railways, devised to plug-in or remove obsolescent units that could cater to any human requirement, changing over time. This exploration continued with subsequent publications, international exhibitions and acclaimed projects such as 'The Walking City'.

According to Banham, Price's precision in detailed structural designs to overcome strict building regulations while delivering a 'giant toy' for cultural transformation, contrasts with Archigram's romantic pleasure in an overwhelming proliferation of drawings, reflecting a wild mechanical and technologically futuristic imagery, 'NASA-style', tinged by a shared interest in fashionable Pop culture, sourced from the Beatles to American Comics and science-fiction fantasy.[64] In the following years, this imagery, intertwined with a radical political countermovement against disciplinary barriers in the sixties in Italy, as well as artistic currents such as Land Art and *Arte Povera*,

63 Warren Chalk, Peter Cook, Dennis Crompton (editor), David Greene, Ron Herron and Michael Webb, *Archigram The Book* (London: Circa Press, 2018), pp. 68-91.
64 Reyner Banham, *Megastructure*, pp. 23-38; 90-91.





resulted in an irruption of utopic and critical speculations from the Florentine groups Superstudio and Archizoom Associati.[65] Their vision as an alternative to predominant urban discourses shared a radical, pure and ever-expansive geometrical homogeneity; and yet differed in many aspects.[66] The former's 'Supersurface' consisted of an endless monumental, technological surface to support outdoor living in relation to nature, love and peace. The latter's 'Non-stop City' unfolded a limitless interior landscape conceived as a free, non-hierarchic itinerary to foster an accumulation of self-service functions and objects.[67] In spite of their short built production, as Andrea Branzi claims, the various 'radical' movements from the 1960s have been widely acknowledged by architects from later generations—such as Rem Koolhaas, Frank Gehry and Toyo Ito—as a springboard for new ways of producing architecture.[68]

In the late sixties, the megastructure movement saw portentous built realisations in Japan, Europe and particularly in Canada, where the 1967 Montreal Expo took place. However, by showing that megastructures could actually be built—to unify and cover the earth—this event served to threaten countercultural utopic visions, replaced by the political, military and academic 'Establishment'.[69] The early seventies witnessed a prolific institutionalization of the megastructure as a model for university campuses. These projects offered an unexpected arena to design small 'urban situations' for academic communities, interrelating their spatial configuration with educational awareness, producing a number of attractive 'teaching machines'.[70] Nonetheless, beyond academia, the megastructure realisation as a model for urban centres brought a series of problems acutely reasoned by Banham. The colossal scale of these buildings in 'real life' circumstances, deprived them from their early promises related to adaptability, extensibility and mobility, showing instead static, unchangeable and homogenous constructions. In other words, single buildings overwhelming their context, with exceeding monumentality, concentrations of activity and control were a decadent architectural typology, whose meaning was exhausted.[71]

In short, Banham explained the megastructure failure arguing that the very attempt to produce such vast, monumental and complex

Fig. 15 (opposite page)
Andrea Branzi (Archizoom Associati), Residential Park, No-Stop City project (1969).

Fig. 16
Superstudio, Supersurface (ca 1971-72).

65 Gloria Bianchino, 'Introduction' in *Non-Stop City: Archizoom Associati* (Orléans: Editions HYX, 2006), pp. 135-136.
66 Sara de Giles, Espacios de relación y soporte, p. 484.
67 Ibid., p. 480.
68 Andrea Branzi, 'Postface' in *Non-Stop City: Archizoom Associati* (Orléans: Editions HYX, 2006), pp. 139-140.
69 Reyner Banham, *Megastructure*, pp. 111-133.
70 Ibid., pp. 136-139.
71 Ibid., pp. 170-201.

works designed by one hand, could only result in a 'perilously thin, starved and impoverished environment.'[72] Banham, together with Paul Barker, Peter Hall and Cedric Price, later wrote: 'Non-Plan: An Experiment in Freedom,'[73] a manifesto against the idea of large-scale 'physical planning,' suggesting such planning is anti-democratic: a repressive doctrine that follows aesthetic fashions and bans the freedom of spontaneous life to unfold dynamically. As we have seen, however, a few of those large projects from the sixties and seventies managed to explore rich and ambiguous relationships between infrastructure and the freedom of its occupation, even in the context of the existing city, avoiding *tabula rasa* and utopic monumentality. According to Frampton, the Frankfurt Römerberg 'mat-building' competition entry of 1963 by Woods succeeded in finding these unexpected balances.[74]

Spatial Agency

> Finally, a more coherent understanding of design and participation is emerging—one which recognizes design as the *subject* rather than *object* of community participation, not the result of the process but the means to it.[75]

The 1960s and 1970s saw the rise of participation movements worldwide. As Nabeel Hamdi has pointed out, participation pursued through flexible large constructions, such as the megastructures or Friedman's infrastructures, did not work out given their technological sophistication and unreachable dimension.[76] In that context community participation emerged as a tool to intervene in the built environment embracing political and social aspects of space. Hamdi defined community participation as 'the process by which professionals, families, community groups, government officials, and others get together to work something out, preferably in a formal or informal partnership.' However, warned the author, this process was no guarantee of a positive outcome. Involving everyone and providing them with a certain level of control could be empowering,



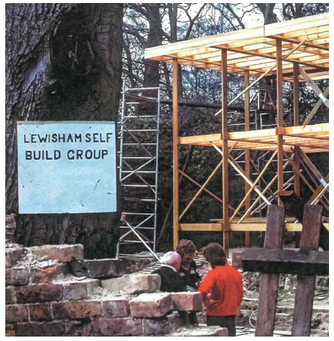


Fig. 17 (opposite page)
Lucien Kroll, Coabita project for 450 dwelling units. Workshop with neighbours (1970).

Fig. 18
Walter Segal on site with Jon Broome and Ken Atkins. Photos by John McKean.

though it could also result in manipulation if control was in the hands of a dominant group. Analysing early experiences in several countries, Hamdi sees community participation in planning processes as widely satisfactory, not only for reasons of equity but largely for its efficiency and its political advantages in shaping decisions, as well as for reinforcing long-term maintenance and management. Contrarily, the author regarded strict participation in the process of spatial design and architectural detailing as usually ineffective, not habitually desired by users, and not ensuring satisfactory results. In fact, experience had revealed that professional acquaintance could not be substituted by participatory processes, but should become an integrated part of it.[77] According to Hamdi, participation programs had proven to be highly valuable in building cooperative coalitions between otherwise detached groups of people, as well as for providing a greater way of collecting and interpreting information; a data that—through participatory methodology—could inform design in order to construct programs, decide on needs, purposes and to take strategic choices.

In recent literature, Awan, Schneider and Till have collected over a hundred examples of spatial practice in which socially engaged processes of spatial production are led by spatial agents rather than self-sufficient architects—that is, by collaborative heterogenous groups who produce space, not necessarily by building.[78] In line with Marxist, feminist and decades of participation tradition, the authors refer to 'agency' as a complex condition in the making of the built environment. They claim that 'spatial agents are neither impotent nor all powerful: they are negotiators of existing conditions in order to partially reform them.'[79] Learning from the practices contained in the book, the authors conceptualize a series of operations of spatial agency such as: 'initiating' projects even before a brief is written by unlocking social, political and economic possibilities; 'expanding briefs' or 'making things visible' as a way of mapping invisible structures and opening up otherwise unexpected possibilities; collaborative non-monetary forms of self-management and fundraising; 'appropriating' underused resources to unsettle the power of the status quo or even 'subverting and opposing' such power structures; 'sharing knowledge' as a mode of collaboratively learning spatial practice not from disciplinary isolation but in negotiation with others; and—still as a disciplinary quality—designing 'delightful indeterminacy' to enjoy the freedom of non-determined habitation of space. In fact, designing delightful indeterminacy as a

72 Ibid., p. 222.
73 Reyner Banham, Paul Barker, Peter Hall and Cedric Price, 'Non-Plan: An Experiment in Freedom', *New Society*, 13:338 (20 March 1969) 435-443; repr. in Paul Barker et al., 'Thinking the Unthinkable' in *Non-Plan: Essays on Freedom Participation and Change in Modern Architecture and Urbanism*, ed. by Jonathan Hughes and Simon Sadler (Oxford: Architectural Press, 2007), 2-12.
74 Kenneth Frampton, 'Team 10', p. 143.
75 Nabeel Hamdi, *Housing Without Houses: Participation, Flexibility, Enablement* (West Yorkshire: Intermediate Technology Publications, 1995), p. 86.
76 Ibid., p. 74.
77 Ibid., p. 86.
78 Nishat Awan, Tatjana Schneider and Jeremy Till, *Spatial Agency: Other Ways Of Doing Architecture* (New York: Routledge, 2011).
79 Ibid., pp. 30-31.

craft of architectural design which conceals what Polanyi regarded as tacit knowledge inherent to the *connaissance* of praxis[80]—whilst undoubtedly being an integrated process of transdisciplinary spatial practice—still has the power and responsibility to catalyse freedom of agency and appropriation.

Habraken's Supports

In this regard, a particularly striking proposition was initially written—rather than exemplified and perhaps spoiled by specific designs—by N. John Habraken, who published 'Dragers en de Mensen' (the Supports and the People)[81] in 1961. The book criticized the post-war mass housing production, describing it as a repetitive consumer article in which users would purchase a finished product, demanding instead an alternative model where inhabitants could have the freedom of choice to make their own homes and change them over time. In the book Habraken proposed a distinction between 'support structures' and 'detachable units'—a stance apparently similar to Friedman and the Hansens' earlier proposals. The book reads:

> We must make constructions which are not in themselves dwellings or even buildings, but are capable of lifting dwellings above the ground; constructions which contain individual dwellings as a bookcase contains books which can be removed and replaced separately; constructions which take over the task of the ground, which provide building sites up in the air, and are permanent like streets.[82]

Habraken, however, emphasized that the supports were under control of the community while the units allowed individual choice. This way, what became crucial in his view was not only the physical (support/unit) and temporal (permanence/change) distinction, but the awareness of their interrelation with people's levels of control, from individual to community decision making—empowering inhabitants at each level. In addition, Habraken made clear that the support structures were neither an unfinished part of a building tied to a single project—like Le Corbusier's Dom-ino skeletons—nor an empty neutral shell for infinite flexibility—like Friedman's infrastructures. The support contained all the permanent components (structure, services and circulation) and were specifically designed with the purpose of suggesting the varying inhabitation of detachable units.[83] Rather than a 'general' condition, the support was 'generative:' it was not a mere load-bearing structure, it was architecture in itself.[84]

In later publications Habraken perhaps tended to overdetermine certain specific designs. He illustrated his theory with a system of parallel bands, forming zones and margins allowing for a series of variations and combinations based on rather functionalist premises.[85] However, beyond these examples, the interpretation of his written approach to the idea of supports remains ambiguous and open even today. Ironically, it could be argued that the first remarkable support of this kind to be built happened before the theory was written in the form of the Däckhuset housing project in Göteborg, designed by Erik Friberger in 1959. The intention of its free and gradual occupation over time did not work out, however, as given its success, all lots were totally occupied since the beginning.[86] Additional endeavours, for instance Jan Trapman's Kristalbouw from 1953, have been pointed as precedents for Habraken's theories.[87] In

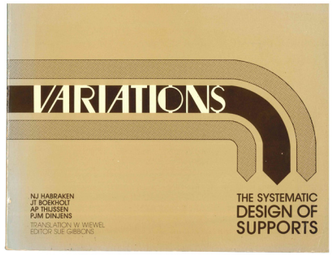
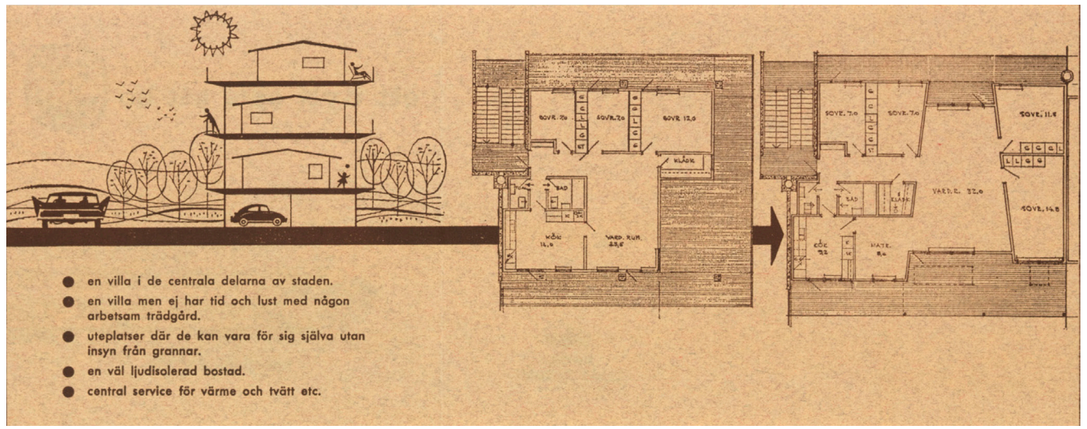


Fig. 19
N. John Habraken et al., Variations: The Systematic Design of Supports (Cambridge: MIT Laboratory of Architecture and Planning, 1976).

Fig. 20
Erik Friberger, Däckhuset housing project in Göteborg (1959).

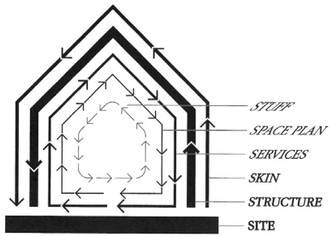


80 Michael Polanyi, *Personal Knowledge: Towards a Post-critical Philosophy* (Chicago: University of Chicago Press, 1958).
81 N. John Habraken, *Supports: an Alternative to Mass Housing*, ed. by Jonathan Teicher (UK: Urban International Press, 1972; repr. 2011). Originally published in 1961 under the Dutch title, *Dragers en de Mensen, het einde van de massawoningbouw*.
82 Ibid., p. 70.
83 *Op. cit.*
84 Silvia Colmenares Vilata, 'Typical Plan', p. 37.
85 N. John Habraken, *Variations*.
86 Israel Nagore, 'La vigencia de los soportes. Cincuenta años de teoría y crítica' in *Open building 2.0: Re-Pensando la Edificación Abierta* ed. by Almudena Ribot, Ignaci Borrego, Javier García-Germán and Diego García- Setién (Madrid: CoLab, 2017).
87 Tatjana Schneider and Jeremy Till, *Flexible housing*, p. 69.

the following years Habraken's methods were strengthened by his position at the SAR (*Stichting Architecten Research*) since its foundation in the Netherlands in 1964, and the potential of the supports was tested in a number of heroic projects.[88] The SAR's methods would subsequently be followed by a research group (OBOM) established in 1985 at TU Delft university and by an international network (CIB) formed in 1996 advocating for the implementation of what today is known as 'open building.'[89]



Over the past decades, dissemination from research groups, educators and architects has continued to expand the potential of the open building. The temporal dichotomy permanence/change initially expressed in the support/unit duality, evolved to an understanding of the built environment as a more nuanced superimposition of layers lasting varying spans of time. Brand's famous "six S's" distinguished between site, structure, skin, services, space plan and stuff: each of them of different longevity, hence questioning the idea of 'building' as a unified entity.[90] In turn, he emphasized the social potential that each layer would correspond to individual, family, community or public agency and control.[91] Schneider and Till have claimed a clear readability of such layers which have to be visibly articulated to be possibly modified or taken apart; they also notice the risk of layering overdetermination as a technical exercise, that could prevent the real dynamism of spatial habitation.[92] In line with open building principles, these authors have attempted to elaborate a series of transformation strategies such as 'adding-on,' 'expanding within,' 'joining together,' 'switching it,' or 'dividing up.'[93] However, beyond physical changeability, other authors have emphasized the importance of designing a long-lasting (almost permanent) base with virtuously designed structure, access, services and skin in order to



88 See projects such as: Otto Steidle's residencial Wohnanlage Genter Strasse (Munich, 1972); Frans van der Werf's Molenvliet project (Papendrecht, 1974); Ottokar Uhl and Josef Weber's Wohnen Morgen project (Hollabrunn, 1976); Bernard Kohn and Georges Maurios' Les Marelles project (Boussy-Saint-Antoine, 1975); or Frei Otto and Hermann Kendel's Ökohaus project (Berlin, 1987).

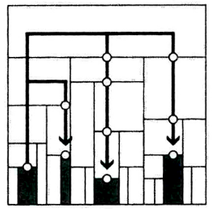
89 Stephen Kendall, 'Reflections on the History and Future of Open Building and the OB Network' (July 2015) http://open-building.org/archives/Reflections_on_the_History_and_Future_of_Open%20Building_and_the_OB_Network.pdf [accessed 30th July 2022]. See also the early publication where pioneer Open Building examples and implementations were gathered in Stephen Kendall and Jonathan Teicher, *Residential open building* (London: E & FN Spon, 2000).

90 Stewart Brand, *How Buildings Learn: What Happens after they are Built*. (New York: Penguin, 1994), pp. 12-13.

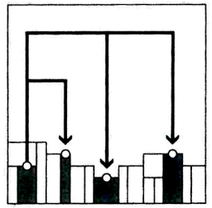
91 Ibid., p. 17.

92 Tatjana Schneider and Jeremy Till, *Flexible housing*, p. 171.

93 Ibid., p. 133-147.



(a)



(b)

Fig. 21 (opposite page)
Frei Otto, Öko-häuser, Berin (1987-91).

Fig. 22 (opposite page)
Stewart Brand, "six S's".

Fig. 23
N. John Habraken, Deep (a) and Shallow (b) territorial structures.

allow for greatest habitation freedom.[94] This long durability of the 'support base' becomes an ecologically urgent claim in the current context of material resource scarcity; it also shows its social and economic capacity to assimilate changing performances.[95] The potential of open building lies in the way it operates in the built environment, not with objectual buildings, but through evolving networks of matter, energy, information and agency.

In 1998 Habraken published 'The Structure of the Ordinary,'[96] a theoretical contribution to blurring even further the limits of conservative architecture and its focus on objectual buildings. From small furniture to agricultural landscape, the built environment shall be seen as a continuous field of 'hierarchies of enclosure'—that is, as gradients of agency and control ranging from large, common and hardly changeable to small, individual and ephemeral—which shall provide a landscape of overlaying 'levels' where 'live configurations,' rather than buildings, would be identified as complex organisms for people's agency to operate.[97] This expanding field responds to perceived territorial hierarchies, rather than functions, as a result of habitation practice; while this practice, not simplified with the illusory private and public dichotomy, crosses sequences of overlaying hierarchies experiencing 'territorial depth.'[98] Habraken's book revealed that most of the material elements of this transformative and evolving built environment, rather than hidden behind grand utopic solutions, were already in our hands: ordinary techniques such as the millenary making of plot divisions, paths, urban façades, gates and windows, room enclosures or the careful placing of woven rugs. Habraken's ordinary and expansive understanding of spatial practice, opens a passage towards the third section of this chapter.

In the preceding paragraphs, this section has navigated through post-war architectural and urban experiences based on the promise of mobility and paradigms of the open form as a collective *oeuvre*, an

94 See 'The frame concept' as explained by Bernard Leupen in *Time Based Architecture*, ed. by Bernard Leupen, René Heijne and Jasper van Zwol (Rotterdam: 010 Publishers, 2005), p.18; and Bernard Leupen and Harald Mooij, *Housing Design: A Manual* (Rotterdam: NAi Publishers, 2012).

95 Javier García-Germán, 'Revisando la Teoría de Soportes. Acerca del potencial del Open Building para desplegar una interacción más intensa con el entorno. Hacia una perspectiva expansiva del Open Building' in *Open building 2.0: Re-Pensando la Edificación Abierta* ed. by Almudena Ribot, Ignaci Borrego, Javier García-Germán and Diego García- Setién (Madrid: CoLab, 2017), p. 60.

96 N. John Habraken, *The Structure of the Ordinary. Form and Control in the Built Environment* (Cambridge: The MIT Press, 1998).

97 Ibid., pp. 5-121.

98 Ibid., pp. 122-221.

96 accidental and mundane art of events led by inhabitants against dull
97 standardization and closed form unchangeability. Meanwhile, criticism was raised against megastructuralist and technologically driven over-deterministic approaches, unfolding the emergence of community participation movements, a complex condition which brings the multiplicity of agency at the centre of spatial practice, through techniques of contingency and negotiation. Empowering individual and collective agency, while still embracing the potential of spatial design, a loose continuous reading of Habraken's approaches—from the supports to the structures of the ordinary—appears as a generative proposition for deep cross-scalar territories of overlaying levels of permanence and appropriation. In other words, an expansive gradient of threshold spatiality, in which each site or live configuration—from the scale of a chair to the open landscape—is interdependently operated and enjoyed by inhabitants and networks of information, matter and energy, changing and evolving over time.

III Land Resilience

After a few millions of years of hunting and gathering, it was only c.12,000 years ago, with the arrival of the Agricultural Revolution, that humankind transited towards settlement, making possible the increase of population in stable communities.[99] The passage of millennia has revealed a profound bond between the working of the land and human settlement, the house and the city. As Heidegger famously suggested, beyond inhabiting buildings, human beings are dwellers inasmuch as they are at peace as mortals on the earth—both inside and outside buildings, under the sky—implying that dwelling also means 'to protect, to preserve and care for, specifically to till the soil, to cultivate the vine.'[100] We have known for decades that, this expansive understanding of habitation acknowledges a world where city and landscape cannot be recognized as disjunctive entities, but it relates to a process of urbanization—and production of space[101]—which spreads across continuous fields of residential suburbia, industrial periphery, forests, old centres, motorways, oceans and farmlands with intrinsic aesthetic and political shades. For centuries, this process of urbanization has been a gold mine of capitalistic exploitation and surplus whose global development has resulted in today's rapid social change and climate emergency. Nevertheless, as Harvey suggests, alternative modes to change and reinvent the world in our times might have to be 'urban—or nothing.'[102] In other words, rather than questioning *what* tools we have, it shall be about *how* to use them. Hence, this section is concerned, first, with spatial techniques of acknowledging and preparing the land for liberating ways

99 Jean-Pierre Bocquet-Appel 'When the World's Population Took Off: The Springboard of the Neolithic Demographic Transition', ***Science***, 333 (2011), 560-561.

100 Martin Heidegger, 'Building Dwelling Thinking' in *Poetry, Language, Thought*, trans. By Albert Hofstadter (New York: Harper Colophon Books, 1971).

101 Henri Lefebvre, *The Production of Space*, trans. By Donald Nicholson (Oxford: Basil Blackwell Ltd, 1991).

102 David Harvey, *Rebel Cities. From the Right to the City to the Urban Revolution* (London: Verso, 2012), p. 25.

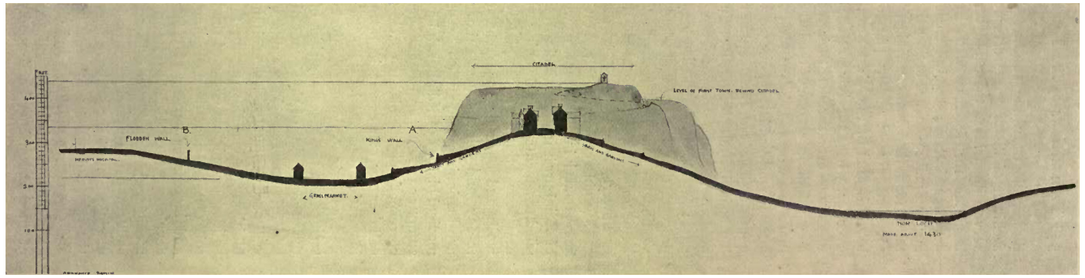
of habitation and, later, it will delve into its political and ecological interwinds.

Prosaic Land Traces

As Javier Castellano Pulido[103] and Lucy Pritchard[104] observe, the acknowledgement of agricultural landscape capacity to structure urban development over time—with its prosaic horticulture, paths, walls, terraces and irrigation channels—shall be traced back to biologist and urban planner Patrick Geddes. Against town planning based on idealized design abstractions, such as the orthogonal urban grid of colonial cities, Geddes advocated for revealing each place's true personality to understand its civic needs and future direction. This 'local character' might be vivified by extensive civic surveys including geological, climatic, geographical, cultural, economic and social conditions. Such historical facts were not presented as frozen data mystifying monumental pasts, but as evolutionary materials to artfully design uplifted futures.[105] This way, Geddes' Civic Survey of Edinburgh revealed that, rather than Roman monuments, the ordinary pre-historic agricultural terraces, which have carried changing activities and purposes over centuries, reveal themselves as meaningful traces of such evolutionary design:

> The Roman occupation had no use for Edinburgh, though its defences and monuments are not far to seek around. Yet at least one far older, indeed pre-historic, survival remains significant through the ages, and is even beginning to renew its old-world life in these present years. (…) Pre-historic cultivation terraces which rise like a gigantic stairway upon its gentle and sheltered eastward slope terraces unmistakably of the same essential build as those which line the Mediterranean coasts from Spain and Portugal to Palestine, and thence run eastward through Persia to Korea. (…) as our survey illustrates, these old terraces have constantly furnished the base-line for fortress walls in the middle age yet how they also developed into the stately Renaissance terrace-gardens of the succeeding and more pleasure-loving time. (…) This is but a small example, yet, I venture to say, a vital one, of the renewing modern life and use of even what may have been a forgotten past: in this case, the very longest forgotten. We shall see, as we proceed, that one survival after another becomes in its turn similarly significant, and thus learn how the soil of the past teems with its dormant seeds, each ready to leap into life anew, be this as weed or flower.[106]

103 Javier Castellano Pulido, 'El Patrimonio Fértil: Transferencias entre el paisaje agrario y la arquitectura en los crecimientos urbanos' (unpublished doctoral thesis, Universidad de Granada, 2015), pp. 329-346.
104 Lucy Pritchard, 'Bastide City Territory: Landscape Infrastructure Design, Monpazier, France' (unpublished doctoral thesis, London Metropolitan University, 2019), pp. 46-48.
105 Patrick Geddes, *Cities in Evolution* (London: Williams & Norgate, 1915), pp. 396-398.




568 *Transactions of the Town Planning Conference, Oct.* 1910

hence this little survey also awaits its natural application and development, like other and larger ones.

From the standpoint of the historic survey, however, note how this vacant land cultivation just outside the town limits throws light upon the origin of the spacious gardens of the old-world friars upon our mediæval town-maps; and these, not only in Edinburgh, but

FIG. 17.—"KING'S WALL GARDEN," AN EXAMPLE OF THE RECLAMATION OF NEGLECTED AREAS AND RENEWAL OF ANCIENT CULTIVATION TERRACES.

in Oxford, in Florence, and other old cities. Hence—the speculation is at least harmless—might not this similarly useful and re-educational type of cultivation again lead us towards some other new and unexpected development of town-growth, in its way also beautiful, as did that of old? May it not have some latent part in that next evolution of our city for the better, which is the happier side of that

Fig. 24 (opposite page)
Patrick Geddes, Section from S. to N. across Head of Old Town, showing General Contours and Situation of walls, on old cultivation terraces.

Fig. 25
Patrick Geddes, "King's Wall Gardern," an example of the Reclamation of Neglected Areas and Renewal of Ancient Cultivation Terraces.

Geddes' surveys intended to unveil specific traces, usually ordinary ones, which were embedded in every place, in order to catalyse future transformations. The post-war interest for the 'as found' in architecture aimed to unfold a comparable specific-to-place aesthetic. Inspired by Nigel Henderson photographs of Bethnal Green, the Smithsons defined it as 'a new seeing of the ordinary, an openness as to how prosaic "things" could re-energise our inventive activity.'[107] Quite similarly, Castellano has underlined how the work of architects such as Siza or Descombres in landscape and urban developments, only a few decades ago, has traced footprints of mundane agricultural pasts—rather than playing with formalist or monumental memory—to engage with and give direction to 'intensified sites.'[108] This way of making apparent ordinary pre-existing qualities of agricultural land and topography to unfold futurity, ties back with the manifold yet inescapable notion of 'actant context' discussed in earlier sections.[109]

The Infrastructural Capacity of Land

> The question today is, where should this idea of ensemble come, that can achieve unity while allowing differentiation, and that can prepare a ground that is understood by developers, other architects and

106 Patrick Geddes, *The Civic Survey of Edinburgh* (Ediburgh: Town Planning Conference Civics Department, 1911), pp. 542-548.
107 Alison and Peter Smithson, 'The 'As Found' and the 'Found'' in *The Independent Group: Postwar Britain and the Aesthetics of Plenty* (Cambridge: MIT Press, 1990), pp. 201-202.
108 Javier Castellano Pulido, 'Infrastructure and Memory: From Geddes' Agricultural Terraces to Beigel's Overlapping Landscapes' *Revista Proyecto Progreso Arquitectura.* 13 (2015), p. 79.
109 The notion of 'actant context' has been discussed in chapter 1.

> those people who will use the space? What control do you exercise, and when do you relinquish control, are critical questions. I think an architectural infrastructure is necessary to support such plurality, and this can take the form of an articulated existing topography.[110]

While the term 'infrastructure' has been broadly used in the past half century referring roads, pipes, factories and other equipment determining countries' economic growth,[111] the original meaning of the term, as a French neologism in the nineteenth century, described the necessary earthworks for the laying of railway tracks—rather than the tracks themselves.[112] Word-for-word, this understanding of infrastructure recovers its deepest sense: the beneath (infra-) manipulation of land, soil, as a support (-structure) for the upcoming. As previously discussed, Yona Friedman used the term infrastructure in the 50s referring to his spatial skeletons for self-planned habitation; a notion continued in the 60s and early 70s structuralist approaches. A few years later, Paco Alonso brought a rather nuanced and manifold understanding of infrastructure to the architectural debate.[113] According to Alonso, a collective field of perception embracing the multiplicity of technical, scientific, aesthetic and cultural conditions could be unified by his understanding of over-layering infrastructures producing continual transformations on every scale. For example, a cohort of people to endeavour a project could be considered an 'appropriate infrastructure of trades,'[114] while the building it produced should not be understood as an isolated unit, but as an ensemble of layers forming at large an 'intimately interwoven city.'[115] He concluded: 'Infrastructure means "unity", unity among parts that are individual in themselves, but in the totality containing them form a universal whole. From this point of view, each thing is infrastructure of the next.'[116] In the nineties, Stan Allen referred to Infrastructural Urbanism beyond—in his words—'stylistic or formal issues' to open up a form of material practice (between architecture and urbanism) which deals with the complexity of the real while engaging with time and process.[117] He stated:

> Infrastructures are flexible and anticipatory. They work with time and are open to change. By specifying what must be fixed and what is subject to change, they can be precise and indeterminate at the same time. (...) They do not profess toward a predetermined state (as with master planning strategies), but are always evolving within a loose envelope of constraints.[118]

Like the Hansens or Habraken had argued, Allen's infrastructures aimed to construct the sites themselves by preparing the ground for upcoming buildings and events to unfold. Its *modus operadi* consisted of making surfaces (by division, allocation or construction); providing services to support unexpected programs; and establishing networks of flows and exchange. In sum, infrastructure offered a flexible and anticipatory playground for the collective making of the city over time. Allen regarded infrastructural urbanism as a complex system with a degree of play (not utopic freedom) for future developments, which work like an artificial ecology.[119] Interest on systemic fields of evolutionary urbanism and architecture has been pursued by Allen[120] and many others. Following this path, Pérez Romero has recently dissected a comprehensive genealogy of architectural and urban currents in the 20th century which have progressed from conservative models to temporally evolutive, morphogenetic and cybernetic systems; echoing modern scientific development—e.g. Von Bertalanffy's general systems theory (GST). According to the author systemic architecture is 'in interaction with its surrounding, evolves through self-organization over time, without losing its identity or structural stability.'[121]

At this point, one may wonder what shall be the horizon of self-organization systems in architecture or urban design; how systematic should they be? It could be argued that hard computational celebration—when it is distanced from phenomenological experience—usually results in a certain aesthetic preference which determines a mechanism of expansion, even if justified by an imaginary of systems or chaos theory. That is, an aesthetization of time

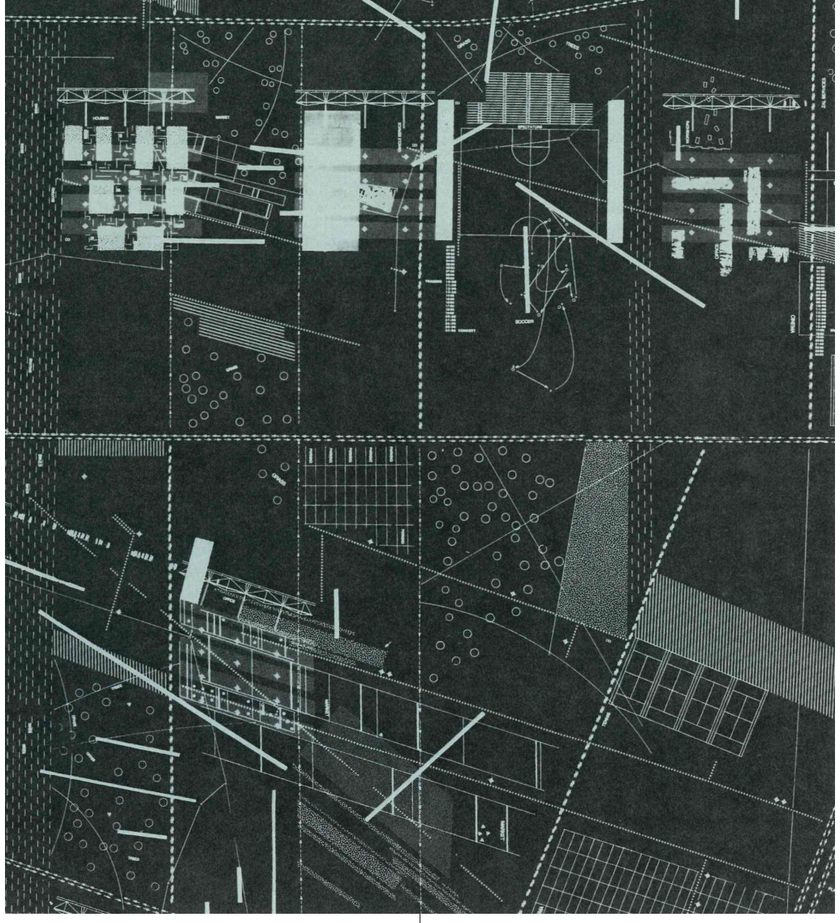


Fig. 26
Stan Allen, Logistical Activities Zone, Barcelona, Plan: montage of scenarios (1996)

110 Florian Beigel, *Time Architecture, Selected architectural works by Florian Beigel Architects and Architecture Research Unit* (London: ARU, 2003), p. 54.
111 'Infrastructure', in *The Collins English Dictionary* [online]. https://www.collinsdictionary.com/dictionary/english/infrastructure/related [accessed 30th July 2022].
112 Laurent Stalder and Carlotta Darò, 'Eight Points on Infrastructure and Architecture' in *Infrastructure Space* ed. by Andreas and Ilka Ruby (Beriln: Ruby Press, 2017), p. 27.
113 Francisco Alonso 'Infrastructures', *Quaderns d'Arquitectura i Urbanisme*, 181-182, pp. 18-29.
114 *Op. cit.*
115 *Op. cit.*
116 *Op. cit.*
117 Stan Allen, 'Infrastructural Urbanism' in *Points + Lines* (New York: Princeton Architectural Press, 1999), p. 52.
118 Ibid., p.54.
119 Ibid., pp. 54-57.
120 Stan Allen, 'From Object To Field' *Architectural Design*, 67: 5-6 (May-June 1997), pp. 24-31.
121 Manuel Pérez Romero, "El probable futuro del pasado emergente. La transición de la primera a la segunda edad del tiempo' (unpublished doctoral thesis: ETSAM, 2013) p. 163 [My translation].

and multiplicity, as it was in cubism, rather than primarily opening a passage for the unexpected unfolding of life. An over-systematized approach to infrastructure tends to focus on the whole; that is, general rules which mechanically swallow the substance of every partial situation and its manifold contexts, overwriting them by supressing unforeseen disturbance. Avoiding this systemic celebration, an open-ended approach to infrastructural space—which enjoys every pre-existing and upcoming concrete stratum of phenomena—was sketched, also in the nineties, by Florian Beigel and Philip Christou:

> The point of departure (…) is the design of a landscape infrastructure providing a framework for a diversity of urban development to happen in time. Landscape infrastructures are thought of as catalysts for architectural development (…). We intend to introduce landscape elements which make diversity enjoyable, creating a common ground for unknown futures. It is our premise that landscape infrastructures can be generated from the existing landscape conditions.[122]

Beigel and Christou saw on the prosaic procedures of land over time a clue for a design concept that they referred as 'landscape infrastructure.'[123] In their words, it is—again—about designing 'the site before the development but not necessarily the development itself. It is about designing the rug but not the picnic.'[124] However, rather than aiming to over-determine systems of growth, landscape infrastructures are loose fit and open for interpretation. They are based on the previously discussed concept of 'specific indeterminacy' which means that they shall be materially characterized by geological, cultural or tectonic specificities while remaining indeterminate in regard to its future use and transformation.[125] At the same time, landscape infrastructures do not start from *tabula rasa*: they engage with existing traces of the land that have resisted over time—for example, agricultural landscapes or footprints of industrial pasts. Hence, they are specific to prosaic and manifold contexts found in every place, tracing such contexts as inscribed topographies. Topo-graphies as in its etymological sense, from Greek *topos* 'place' + *-graphia* 'process of writing or recording.'[126] This way, in line with Alonso's suggestion

122 Florian Beigel and Philip Christou, 'Time architecture: Stadtlandschaft Lichterfelde Süd, Berlin', p. 204.
123 'Landscape Infrastructure' is a design concept developed by Florian Beigel and Philip Christou since the 1990s, which has been recently discussed in two doctoral dissertations: by Francisco Javier Castellano Pulido and by Lucy Pritchard
124 Florian Beigel and Philip Christou, *Architecture as City: Saemangeum Island City* (New York: Springer, 2010), p. 142.
125 See previous section "Rooms of Becoming."
126 'Topography' in *Online Etymology Dictionary,* https://www.etymonline.com/search?q=topography [accessed 30th July 2022].

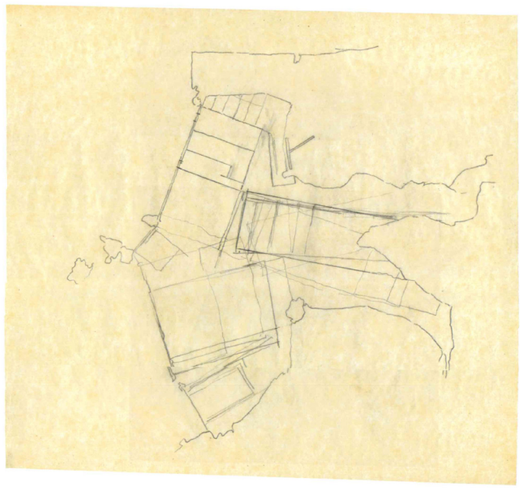




Fig. 27
Philip Christou, Sammegaum Island projecte, sketch exploring the form of the new island plates (2008).

Fig. 28
Florian Beigel, Sammegaum Island projecte, sketch of potential island positions (2008).

that 'each thing is infrastructure of the next,' it could be said that they acknowledge land topographies as pre-existing infrastructures which catalyse fresh landscape infrastructures which, in turn, will trigger unexpected subsequent spatial infrastructures: a design sequence that loosely spreads at all scales: physical, from landscape to furniture; temporal, from short-term to long-term; and social, enabling individual and communal habitation and contingency. Beigel and Christou sum up: 'We like infrastructures, because they are essential, can be shared and stir one's imagination. The project appears complete as each level of infrastructural scale is realized. The potential for delight is given.'[127]

Politics of Land

As previously stated, the working of the land and its worldwide processes of urbanization are charged with intrinsic political shades. Pier Vittorio Aureli has traced a genealogy of relationships between land's urbanisation following geometrical grids and its political implications across the past few millennia.[128] According to the author, in the development of Neolithic settlements, rectilinear subdivision of space was preferred to earlier circular forms (with open

127 Florian Beigel and Philip Christou, 'Time architecture: Stadtlandschaft Lichterfelde Süd, Berlin', p. 218.
128 Pier Vittorio Aureli, 'Appropriation, Subdivision, Abstraction: A Political History of the Urban Grid', *Log*, 44 (2018), 139-167.

in-between areas), for its efficiency in allowing greater accumulation of agricultural surplus. In Mesopotamia, rectangular room subdivision expanded outside towns, parcelling out agricultural fields whose rectangular shape followed efficient irrigation systems, leading to a large-scale agricultural surplus and urban growth. Parcellation related to surplus became a measurement device so as to provide economic value, whose necessary distribution and cadastral record is related to early forms of writing. Egyptian or Greek new colonies, opposite to their rather organic 'mother cities,' were planned following orthogonal grids as a template of rapid growth, which also served to objectify social differences by perpetuating land subdivision and distribution. Roman process of centuriation subdivided extensive landscapes to create a class of landowners, whose relation to property—*Res Privata*—was assured by the apparatus of law. These processes, which subsequently followed over centuries in different cultures, ended up in what Marxist terminology refers as 'primitive accumulation'—a violent theft of land by means of privatized enclosure.[129] Through the times of modern European colonialism, which expanded along with the Scientific Revolution, the entire planet would be seen as an empty land to be subdivided, starting with meridians and parallels, into spatial domains of colonial conquest and exploitation.

In short, Aureli presents a history of urbanization where the imposition of a geometrical apparatus of land subdivision in plots—the efficient grid—catalysed a lawful system of economic value based on land ownership, in order to perpetuate class segregation and control. At this juncture, there seems to be a conflict or paradox between this horrific history of land subdivision and previously discussed liberating forms of spatial appropriation based on infrastructural traces of the land—also related to walls, paths, or irrigation channels. Again, rather than questioning *what*—the spatial practice of urbanisation in itself—we might have to consider *how* to practice it, that is how to be urban. In this sense, Aureli argues that we don't need to reject all sort of walls, boundaries, or geometrical apparatuses of spatial definition, but we need to imagine how to erode their operational logics to be replaced by a different *nomos*—rather based on spatial custom than law specification. In this regards he suggests that "a possible counter-colonial figure that challenges the topological ubiquity of the grid is the 'island,' a finite settlement from whose relationship to the whole is never rigidly defined but always open to confrontation and negotiation."[130] The analogy of the island confronts the infinite field of urbanization, with a spatial realm that can be easily understood,

129 The process of primitive accumulation has been discussed in Chapter 1.
130 Pier Vittorio Aureli, 'Appropriation, Subdivision, Abstraction', p. 166.

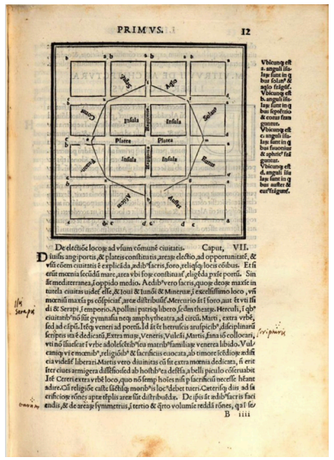




Fig. 29 (opposite page)
Fra Giocondo, Illustrated edition of De Architectura by Vitruvius (1511), p.12.

Fig. 30
Gerardus Mercator, Atlas sive Cosmographicae Meditationes de Fabrica Mundi et Fabricati Figura (1596).

distinctly perceived and lovingly cared by its inhabitants.[131] At the same time the island implies that its inhabitants are empowered to relate to an expansive otherness: the island principle is based on the assemblage of the archipelago. Aureli points out that "crucial to the architecture of the island is the idea of boundary not as an enclosure but as a threshold that allows communities to physicalize forms of land tenure and rules of access."[132] The island edge is a threshold. That is, the beach; which keeps changing over time, slightly blurring while clearly distinguishable from the sea, separating while connecting and connecting while separating, with the archipelago of the world—a commoning principle based on 'threshold spatiality.'[133]

Generative Ecologies

Beyond human interrelations, the politics and practices of land developed over the past short period of 12,000 years (a short duration in geological time), has had tremendous consequences for the biosphere. Starting with the agricultural revolution, what the first chapter has referred as efficient 'agrilogistics' has brought, besides

131 Pier Vittorio Aureli and Maria Shéhérazade Giudici 'Islands: The Settlement from Property to Care', *Log*, 47 (2019), 175-199.
132 Pier Vittorio Aureli, 'Appropriation, Subdivision, Abstraction', p. 166.
133 The concept of 'threshold spatiality' has been discussed in Chapter 1.

social stratification, industrial processes based on fossil fuels which, among other processes, have resulted in global warming and a planetary period of biodiversity mass extinction. Hence, a new geological period, in which human action and design are interwoven and inseparable from natural processes, has been coined: the Anthropocene.[134] As anticipated in the first chapter, understanding that our action in the biosphere leaves marks, traces and consequences for hundreds of thousands of years (mid-term or even long-term periods in geological time) is at the same time paralyzing for those who aim to restore the stabilized equilibrium of a pure natural past, while it becomes a liberating tool for a rather ambiguous ecological solidarity, based on human and nonhuman coexistence which rejects a disjunction between nature and humanity.[135]

In this regard, scientist Brian Walker and science writer David Salt make accessible a constructive alternative to managing social-ecological systems of combined human, inorganic and organic processes.[136] Rather than emphasizing closed practices of efficiency (e.g. optimizing a particular isolated resource, with further control

134 See "Ecological Awareness" in Chapter 1.
135 Timothy Morton, *Being Ecological* (London: Pelican Books, 2018), p. 131.
136 Brian Walker and David Salt, Resilience Thinking: Sustaining Ecosystems and People in a Changing World (Washington DC: Island press, 2006).



Fig. 31 (opposite page)
H+N+S, Rooms for the River, Jssel Delta Project. Reevediep: a new river arm. Picture by Siebe Swart.

or intensification),[137] they propose embracing the adaptability and continuous changeability of such complex social-ecological interdependent systems over the course of time. This alternative is based on resilience thinking. Resilience, which they define as the capacity of such systems to absorb disturbance and continue their course—even if altered—without a regime collapse.[138] Resilience is therefore just another way of approaching concepts that we have seen before, like persisting 'actant contexts' (made apparent by our ecological awareness) or 'place resistance' (related to physically and culturally situated slow changing topographies). According to Spanish landscape architect Miriam García we should not design our cities and landscapes based on sustainability's risk—that is, efficiently preventing vulnerability to climate change for instance building monumental infrastructures in sea shorelines—but following resilience thinking.[139] Designing resilient landscapes—she argues—means working with adaptive and generative cycles, including the circular economy of resources, metabolic processes, sediment transport, humidity regimes, biodiversity, among other processes, which produce continuously changing landscapes of human and nonhuman mashed-up interaction.[140]

In this section I have explored loving bounds, struggles, liberating potential and repressive doctrines of the practices and politics of land over the past 12,000 years. These processes of urbanization, which transcend traditional dialectics of city versus landscape, open up habitation practice towards interrelated human and nonhuman fields across the entire biosphere. I have argued that the infrastructural capacity of land phenomenologically emerges by carefully making apparent its situated ordinary traces and responding to its manifold actant contexts—as pre-existing infrastructures—whilst, at the same time, it loosely suggests future habitational delight, through material specificity and usage indeterminacy. In these sequences of infrastructural gradients, each level of infrastructure, which is both connected and separated by threshold spatiality, unfolds a slow passage of open-ended habitation. It is slow because each event of habitation cautiously distorts the concrete substances of its caring contexts (or surrounding infrastructures). It could be argued that each of those infrastructural levels may be seen as an

137 Ibid., p. 7.
138 Ibid., p. 38.
139 Miriam García García, 'Diseñando la resiliencia' in *Undo! Desurbanizar,* ed. by Carmen Espegel, Andrés Cánovas and Arturo Blanco (Charleston: Arcadia, 2018), p. 160.
140 Ibid., p. 38.

island which is part of the archipelago of a worldwide urbanization. The image of the island depicts a spatial realm that can be grasped—and experienced as a form of truthfeel—by inhabitants and, therefore, lovingly cared for in a struggling coexistence with the surrounding ocean of the biosphere. As we have seen, in our geological time of global warming and mass extinction, caring for each of these infrastructural levels and its interrelations is the beginning of ecological awareness and action—an action that shall rely on the concept of resilience, understood as an open-ended capacity of slow transformation by absorbing disturbance without a regime collapse. In this way, designing resilient landscapes not only embraces human delight and habitation, but also comprises organic metabolic processes, meteorological, flora and fauna interactions producing generative landscapes, loosely evolving over the course of time.

Conclusion
Propositions for Cross-scalar Design Speculation

In short, from rooms of daily alterations to generative landscapes, the second chapter of this thesis has critically drawn a cross-scalar literature revision of architectural catalysts of change. Initially, rather than harmless neutrality, the freedom of spatial appropriation on an everyday basis has been portrayed to be enhanced by qualified, specific and yet ambiguous passages of manifold physical, atmospheric and cultural differences open for interpretation. Later, in the midst of paradigms of the open form and spatial agency, Habraken's approaches have blurred the focus on objectual buildings to unfold a deep territory of levels (or live configurations) with generative permanence and intersubjective appropriation expanding at varying scales, while catalysing transformation and evolving over time. Finally, avoiding *tabula rasa*, I have argued that each level of these infrastructural gradients—which are interconnected and delimited by threshold spatiality—shall phenomenologically emerge from ordinary traces of its geological, cultural and ecological contexts; contexts which are cautiously cared and thus slowly altered. In this loose sequence, fresh infrastructural live configurations may be produced as generative contexts for upcoming durations of delightful indeterminacy.

Concluding this chapter, which has navigated through multiple architectural and urban precedents, is an opportunity to point at certain purposes for the forthcoming chapters of design speculation. Everyone knows that architectural projects or competitions usually follow the dictates of programmatic briefs, although this may not exactly be the case here. Instead, the main purpose of the design work will consist of exploring fresh and ambiguous interrelations between infrastructural sequences of spatial catalysts of change. To begin with, in order to grasp their territorial depth, these sequences may have to be explored at different physical scales—somewhat like

the Metabolists called ‘from atom to nebula’—but also across inter-subjective depth—from individual will to interdependent human and non-human contingency—as well as at varying temporal scales—from durations of daily alteration to geological transformation. In fact, a renewed potential of these nuanced interrelations might be explored precisely in-between scales and typical preconceptions (such as objectual buildings or urban archetypes), blurring their edges to unveil live configurations with an inherent capacity for change.

In addition, against *tabula rasa*, a vivid, manifold and generous interpretation of context shall also be a vital point of departure. In this way, by enhancing lived and ordinary contexts, the design work will display a constellation of projects that shall be situated and therefore will care for specific physical, cultural and ecological topographies. Avoiding over-deterministic systems of growth, fresh infrastructural topographies shall emerge phenomenologically from these manifold contexts, producing new contexts that loosely suggest upcoming appropriation and transformation to—again—phenomenologically emerge into the future. This suggestive and loose fit spatial quality might be achieved, as we have seen, through specific indeterminacy and threshold spatiality, as well as by eroding the dominating tendency of continuous orthogonal subdivision, thus celebrating every concrete substance of life.

The awareness of these infrastructural passages of change has been used to organize the core chapters of this thesis, that is the chapters which are focused on design speculation. In chapter 4—Unveiling ‘Actant’ Contexts—design will appear as a vehicle for drawing subjective pre-existing contexts as found catalysts of change. In chapter 5—Making Time Catalysts—design will emerge as a wider medium of speculation, with a constellation of projects both enhancing the previously found actant contexts, and creatively producing spatial triggers of change as new generative contexts of unforeseen futures.

Chapter 2
Spatial Stimulants of Delightful Change

Chapter 3
Research by Design in the Loose Ends of Barcelona

Pau Bajet
PhD 'by design'
July 2023



Fig. 1
Charles Clifford. Seaside city walls and Montjuïc castle (1852).

Having established the topic of study as spatial stimulants of delightful change, which will be addressed in the form of speculative design research in Chapters 4 and 5, we now turn to the research methodology and setting. To begin with, this chapter concerns an approach to knowledge production, which treats the activity and outcomes of design as a research vehicle. In particular, the first section considers the scholarly context for this epistemological pathway, presenting design speculation as a fruitful methodological means of grasping architectural knowledge. In regard to the setting for the design projects, the concluding notes to the previous chapter argued for embracing the complexity of a vivid, manifold context (by contrast with the concept of a *tabula rasa*) to test the potential of cross-scalar metabolics of change. The second section of this chapter will adopt a descriptive mode, providing site information to characterise the setting for the research by design, in the vibrant southern fringes or 'loose ends' of Barcelona.

I Design as a Medium for Research

> This knowledge is the child of practice and theory. Practice is the continuous and regular exercise of employment where manual work is done with any necessary material according to the design of a drawing. Theory, on the other hand, is the ability to demonstrate and explain the productions of dexterity on the principles of proportion.[1]

Since Vitruvius, architects have insisted on the inseparability of *thinking and making* in the production of architecture. And yet, traditional forms of research tend to prioritise one over the other, to isolate 'thinking' by analysing, interpreting and theorising about physical or cultural products fixed in the past. These objects of study are thus critically observed from a safe distance: objects that one cannot touch, transform or interact with while research is undertaken. But what is preventing architects from harnessing what they already do—from designing as an interplay of thinking and making—to further architectural knowledge? How can architecture develop a methodological approach to doctoral research that makes its own *praxis* central, recognising the inherent research capability in design speculation?

In recent decades, 'research through design'[2] has emerged as a fertile territory for architectural research—even though relatively unknown in some quarters. Defined as research 'through the medium of practitioner activity,'[3] discussion of this approach tends to centre around similarities and differences in the wider disciplinary context, as well as on overlaps between theory and practice, knowledge and action, thinking and making. Controversy has arisen in the context of doctoral awards, with claims of lack of academic rigour and failure to explicitly contribute to knowledge.[4] With this in mind, it would seem useful to understand the nature and purpose of research in general, within and beyond the specific field of architecture. The Frascati Manual states that to qualify as research, enquiry should be conducted towards novel and creative knowledge gained through a planned journey with an uncertain outcome, that shall be transferable or communicable to others.[5] A PhD is typically a monographic enquiry aiming for a high standard of originality and newness—a meaningful contribution to knowledge even though its scope may be narrow.[6] It is probably in this regard—to secure explicit new knowledge—that academic research in architecture has traditionally embraced the humanist convention of critically analysing objects fixed in the past.[7] The exception of applied technological development, in the industry-related R&D (research & development) mode, would be expected to follow experimental impulse or scientific processes within suitable laboratory conditions.

Notwithstanding research in the architectural humanities, which remain a fundamental umbrella for study, we are motivated to ask how research carried out through the medium of an architect's core praxis could and should qualify as academically valid. What should be the nature of knowledge produced through the medium of design speculation? By comparison with traditional forms of knowledge in architectural research, how should it be made communicable? These questions seem to expose again a problematic detachment between practice and theory. Generally, practice unfolds the art of subjectivity while theory informs rational objectivity, thus erecting a barrier between 'making' and 'thinking.' Many trace this disjunction, which

1 Marcus Vitruvius Pollio, 'The origin of the dwelling house' (c. 30-15) in *The Ten Books on Architecture*, trans. by Morris Hicky Morgan (Cambridge: Harvard University Press, 1914).
2 Known indistinguishably as research 'through' or 'by' design, this model of PhD research is usually referred to as 'practice-led' or 'by practice' research.
3 Bruce Archer, 'The Nature of Research', *Co-design: Interdisciplinary Journal of Design* (1995), 6-13 (p. 13).
4 David Durling, 'Design in the UK: some reflections on the emerging PhD' in *Doctoral Education in Design: Foundations for the Future*, ed. by David Durling and Ken Freidman (Stoke-on-Trent: Staffordshire University Press, 2002), pp. 317–328.; David Durling, 'Discourses on research and the PhD in Design', *Quality Assurance in Education*, 10.2 (2000), 79-85 (pp. 81-83).; Ken Friedman, 'Research Into, By and For Design', *Journal of Visual Arts Practice*, 7.2 (2008), 158 (pp. 153¬–160).
5 OECD, *Frascati Manual 2015: The Measurement of Scientific, Technological Innovation Activities* (Paris,OECD Publishing, 2015), p. 44.
6 Umberto Eco, *How to Write a Thesis* (Cambridge: MIT Press, 1977), p.2.; Patrick Dunleavy, *Authoring a PhD* (London: Palgrave MacMillan, 2003), p. xi.
7 In Spain, for instance, where there is a long tradition of doctoral studies in architecture, Luis Maldonado refers to the 'critical analysis of built architecture' as the leitmotif of several doctoral theses included in a research publication by ETSAM-UPM Luis Maldonado, 'Presentación Textos Académicos ETSAM-UPC' in *Diez: 10 tesis en curso*, Colección de Textos Académicos, ed. by José Manuel López-Peláez Morales (Madrid: Mairea, 2011), p.7.

relates to the split between artistic and scientific spheres, as a misleading division emerging in the 18th century.[8] This is clear in the chapter on the education of the architect in *De architectura*, the only treatise of architecture to survive from classical antiquity, which begins by positing a specific kind of architectural knowledge that is 'the child of practice and theory.'[9] In a similar way, scholars have argued that the interplay of words and buildings, drawings and theories, and typological transformation and narrative in the works of architects such as Alberti, Palladio, Kent, Soane, Schinkel, Semper, Le Corbusier, Saarinen, the Smithsons, Venturi, Rossi and Koolhaas, and many others, has navigated, even if not explicitly, the epistemological path of research though the medium of design speculation.[10]

8 Alberto Perez-Gomez, *Architecture and the Crisis of Modern Science* (Cambridge: The MIT Press, 1983), p. 324.
9 Marcus Vitruvius Pollio, 'dwelling house'.

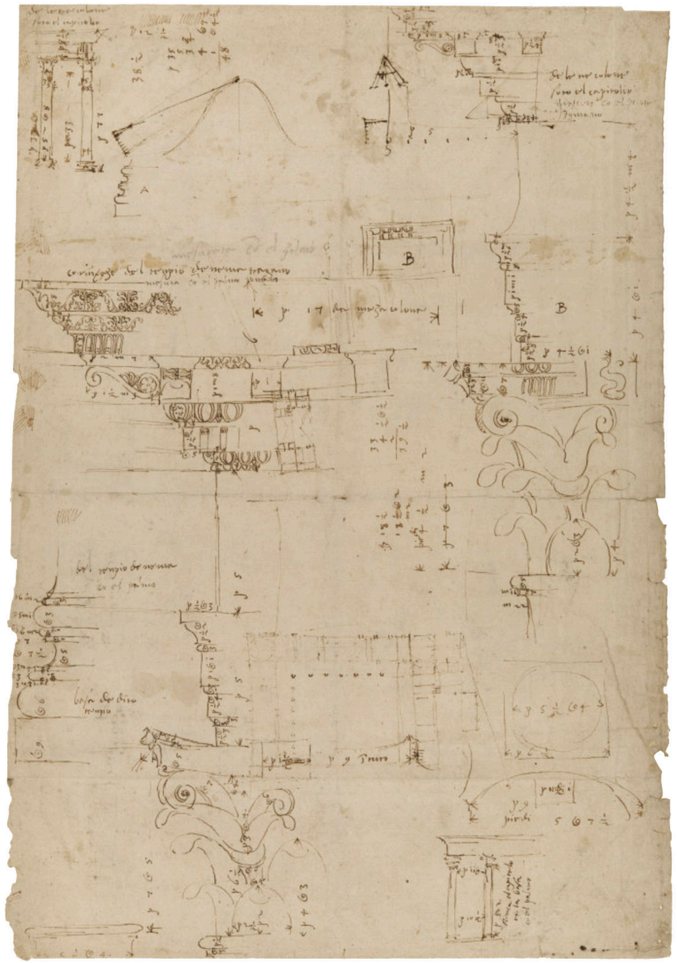


Fig. 2
Andrea Palladio, Studies of architectural details of the Forum of Nerva and the Temple of Minerva, Rome and sketch designs for the Palazzo Thiene, Vicenza (1560).

Tacit and Designerly Ways of Knowing

> The gesture is one of empathy, not of distanciation. Knowledge is gained from the inside, by a kind of participation to the "personality" of the phenomenon. Truth is not extracted from the phenomenon through a carefully designed experimental procedure, but truth is given time to reveal itself after a careful preparation of the experimenter. Actually, the measuring instrument is, in this case, the observer him/herself, with all his/her humanness, with all his/her anthropological depth.[11]

The kind of knowledge inseparable from *praxis* was approached by Polanyi, the modern era philosopher who formulated the epistemology of 'tacit knowledge.' Polanyi rejected 'scientific detachment' and 'complete objectivity' proposing instead a form of knowledge that connects with a hidden reality—a tacit, non-explicit, ineffable form of connoisseurship.[12] But, as Sennett recalls, recognising tacit knowledge does not mean refusing acquaintance. Tacit knowledge and self-conscious awareness are in fact complementary, performing a synchronic interplay: the former an anchor thrown to obscure depths, while the latter acts as a critical corrective.[13] This subtle dialogue may provide what Pérez-Gómez refers as 'true knowledge, ambiguous yet ultimately more relevant than scientific truth.'[14] In parallel, scholars who have analysed the epistemology of research through design in relation to scientific knowledge dynamics outline a rift with the traditional paradigm of objective science. For Archer, the 1620s Baconian system of scientific rules, based on empirical and

10 *Bryan Lawson,* 'The subject that won't go away. But perhaps we are ahead of the game. Design as research'*, Architectural Research Quarterly*, 6.2 (2002), 109¬–114.; Murray Fraser, 'Introduction' in *Design Research in Architecture*, ed. by Murray Fraser (New York: Routledge. New York, 2013), pp. 6-7.; Jonathan Hill, 'Design Research: The First 500 Years' in Design Research in Architecture, ed. by Murray Fraser (New York: Routledge, 2013), pp. 15-34.; Félix Solaguren-Beascoa, 'Epílogo. Qué es investigar en arquitectura' in *Investigar en arquitectura* (Valencia: General de Ediciones de Arquitectura, 2017), pp. 107-111.
11 Alain Findeli, 'A Quest for Credibility: Doctoral Education and Research in Design at the University of Montreal' in *Doctoral Education in Design. Proceedings of the Ohio Conference* (Ohio: Carnegie Mellon University, 1998), pp. 99-116.
12 Michael Polanyi, *Personal Knowledge: Towards a Post-critical Philosophy* (Chicago: University of Chicago Press, 1958), p. 92.
13 Richard Sennet, *The Craftsman* (Connecticut: Yale University Press, 2008), p. 50.
14 Alberto Pérez-Gómez, *Architecture and the Crisis of Modern Science*, p. 326.

inductive verifications, reached a *cul-de-sac* in the second half of the twentieth century. Scholarship instead favours Popper's approach, which relies on falsification of conjectures that are mainly the product of 'inspired guesswork', rather than on verification of inductive reasoning.[15] Likewise, Lawson states that design already provides the kind of 'in practice' model of knowledge production that contemporary science claims; 'perhaps we [designers] are just ahead of the game rather than behind it after all.'[16]

The case for elevating design as an acknowledged research domain gained momentum in the 1960s and 1970s. In his seminal book, *The Sciences of the Artificial,* Herbert A. Simon proposed that design research should have its own rules and logic, differing from natural science methodology, namely 'the science of design, a body of intellectually thought, analytic, partly formalizable, partly empirical, teachable doctrine about the design process.'[17] A few years later, Bruce Archer claimed a 'third area' of human knowledge distinct from science and the humanities, asserting that: 'there exists a designerly way of thinking and communicating that is both different from scientific and scholarly ways of thinking and communicating, and as powerful as scientific and scholarly methods of enquiry, when applied to its own kinds of problems.'[18] Following Archer's premise of 'designerly ways of knowing,' Nigel Cross[19] proposed the following key aspects of a subtle epistemology: a) the situations that design encounters are 'ill-defined' or too complex to be susceptible to truly exhaustive analysis; b) their *modus operandi* is 'solution-focused' rather than 'problem-focused' in the sense of resolving the underlying 'puzzle' of a scientific problem; c) they imply a 'constructive' way of thinking rather than the 'pattern recognition' process of finding solutions in existing data; d) they operate with visual codes reliant on graphic images such as drawings or sketches to translate conceptual purposes into specific objects; and e) they use these visual codes to both 'read' and 'write' in the material culture of 'object languages.' Such designerly ways of knowing provide the epistemological roots

15 Bruce Archer, 'The Nature of Research', p. 13.
16 Bryan Lawson, 'The subject that won't go away', pp. 109-114.
17 Herbert A. Simon, *The Sciences of the Artificial* (Cambridge: The MIT Press, 1969; repr. 1996), p. 113.
18 Bruce Archer, 'Design as a Discipline', *Design Studies*, 1:1 (1979), pp. 17-20.
19 Nigel Cross, 'Designerly ways of knowing', *Design Studies*, 3.4 (1982), pp. 221–227.



Fig. 3

Marie-José Van Hee, Tentative loose sketch of House Van Hee. (2019).

of research through the medium of design. But what is the methodological role of designing[20] in the context of a PhD?

The Role of Designing

> This book is both an attempt at architectural criticism and an apologia—an explanation, indirectly, of my work. Because I am a practicing architect, my ideas on architecture are inevitably a by-product of the criticism which accompanies working, (…).[21]

Could the products of design speculation—the projects *per se*—qualify as research in themselves, ultimately amenable to doctoral application and beyond? In this regard, many scholars agree that in design research the project itself should not be the central purpose but a means towards knowledge.[22] In other words, research and project are not to be confused because they have different goals: one delves into specific themes, narrowing its scope to precise questions to ascertain and communicate original knowledge, the other deals with ill-defined complex situations of the real world, aiming at

20 I usually favour the terms 'design speculation' or 'designing' above 'design' when referring to what is known as research though design, in order to emphasise the importance of the act of designing during the research journey and to distinguish from other research forms focusing on 'design' that has been realised, often years ago. Even if the realised project was made by the same researcher, it is fixed in the past and does not contribute to prospective thinking. Thus, a kind of research about one's own projects made in the past would be closer to other traditional forms of research about existing architecture (neither qualifying nor unqualifying a piece of research that may still be remarkable).
21 Robert Venturi, *Complexity and Contradiction in Architecture* (New York: The Museum of Modern Art, 1966; repr. 1992), p.13.
22 Christopher Frayling, 'Research in art and design', *Royal College of Art Research Papers*, 1.1 (1993) pp. 1–5.; Bruce Archer, 'The Nature of Research'; Alain Findeli, 'A Quest for Credibility: Doctoral Education and Research in Design at the University of Montreal'; Bryan Lawson, 'Design as Research'; David Durling, 'Design in the UK'; Michael Biggs, 'The role of the artefact in art and design research', *International Journal of Design Sciences and Technology*, 10.2 (2002), pp. 19–24.; Owain Pedgley and aul Wormald, 'Integration of Design Projects within a PhD', *Design Issues*, 23.3 (2007) pp. 70–85.; Maarit Mäkelä, 'Knowledge through making: The role of the artefact in practice-based research', *Knowledge, Technology & Policy*, 20.3 (2007), pp.157-163.; Jeremy Till, 'Three Myths and One Model', *Building Material*, 17 (2008), pp. 4–10.; Wolfgang Jonas, 'Exploring the Swampy Ground', in *Mapping Design Research*, ed. by Simon Grand and Wolfgang Jonas (Basal: Birkhäuser, 2021), pp. 11-42.; Halina Dunin-Woyseth and Fredrik Nilsson, 'On the emergence of research by design and practice-based research approaches in architectural and urban design' in *Design Innovation for the Built Environment: Research by Design and the Renovation of Practice*, ed. by Michael Hensel (London: Routledge, 2012), pp. 37¬51.; Murray Fraser, 'Introduction'; Richard Blythe and Leon van Shaik, 'What if Design Practice Matters?', in *Design Research in Architecture*, ed. by Murray Fraser (New York: Routledge, 2013), pp. 53–70.; Johan Verbeke, 'This is Research by Design', in *Design Research in Architecture* (New York: Routledge, 2013), pp.137–160.

manifold, conflicting and ever-expanding purposes. And yet, among the authors already cited, distinct hints towards a method for design research are evident. While Bruce Archer, Alain Findeli, David Durling and Owain Pedgley make the case for systematically conducted and rigorous research inquiries, unambiguously distinguished from design work, scholars such as Christopher Frayling, Bryan Lawson, Johan Verbeke and Leon Van Schaik argue for less graspable relationships between artefact and knowledge, recognising that drawings or objects may embody traces of tacit knowledge that can emerge—and be appreciated by attuned observers—in dialogue with explicit forms of insight.

The dialectics between 'research' and 'design' were elaborated decades ago. It has been reported that Archer introduced the three categories of 'research about design [and designing], research through design [and designing] and research for the purposes of design [and designing]' in the late 1970s among his colleagues at the Royal College of Art in London.[23] Nevertheless, the literature[24] indicates the popularisation by Frayling of these terms in the early nineties.[25] There is a certain contradiction, and perhaps confusion, between the categorisation triads depicted by different authors.[26] Whereas research 'about' design (also known as research 'into' design) seems clear, referring to traditional historical or theoretical research, research 'for' design is more ambiguous. Archer referred to it as applied enquiry that could contribute to other forms of practice: research that could 'fall into any category of Science or Humanities.'[27]

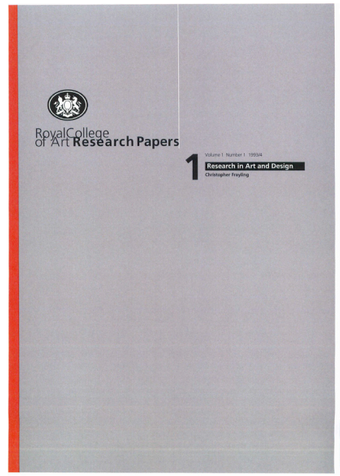


Fig. 4
Cover of Christopher Frayling, 'Research in art and design', Royal College of Art Research Papers, 1.1 (1993).

23 Eddie Norman, Richard Heath and Owain Pedgley, 'The framing of a practice-based PhD in design', *Core77 Research Web Pages* (2000), http://www.core77.com/research/ thesisresearch.html

24 For instance, Findeli referred initially only to Frayling's 'seminal text' (Alain Findeli, 'A Quest for Credibility') . Similarly, Friedman cited solely Frayling's model (Ken Friedman, 'Research Into, By and For Design'). More recently, again, Fraser refers only to the 'legendary essay' by Frayling (Murray Fraser, 'Introduction').

25 Christopher Frayling, 'Research in art and design'

26 For example, Friedman (Ken Friedman, 'Research Into, By and For Design'), who states that Frayling's essay 'is perhaps the most-cited and least-read document in design research' criticized its idea for 'research by design'; however, and ironically, as Jonas has pointed out (Wolfgang Jonas, 'Design Research and its Meaning'), Frayling did not speak of research 'by' design, but rather of research 'through' design and research 'for' design, being the later 'the thorny' one. So, it is difficult to understand to which of those categories shall be directed Friedman's critiques. Another example may be Jeremy Till's description of the three-part research model in 'Three Myths and One Model'. While the author claims to depict Frayling's triad for architectural research, he clearly does not use Frayling's concepts on research 'for' and 'through' design. Instead, he uses those terms embodied with a conceptual framework that seems to emerge from Archer or another author's models.

27 Bruce Archer, 'The Nature of Research'.

In contrast, Frayling saw research 'for' art and design as 'the thorny' form of research:

> What Picasso considered was the gathering of reference materials rather than research proper (…) where the thing is, so to speak, embodied in the artefact, where the goal is not primarily communicable knowledge in the sense of verbal communication, but in the sense of visual or iconic or imagistic communication.[28]

Archer and Frayling use different categories, but their ideas are—to some extent—compatible. Archer claims that 'practitioner activity can count as research if, and only if, it accords with the criteria of research,'[29] which he describes clearly and systematically. Hence, he leaves the door slightly open to the possibility of design action counting already as research (i.e. design as research) under certain conditions. Such an understanding of design research may overlap Frayling's former definition if, and only if, its primarily goal was communicable knowledge, even if it was to some extent 'visual or iconic or imagistic communication.' The Frascati Manual implicitly expands further the potential of acknowledging the production of artefacts when they are new and original (i.e. prototypes) as an intrinsic form of research, as long as they are constructed as a means to improvement and development), not as an end in themselves.[30] That is because they are conceived as *prototypes*, from the Greek prōtos 'first' + *typos* 'mold, pattern,' avowing primitive forms or models after which future artefacts will be formed.[31] These prototypes are produced as a raw material to support the investigation or, in other words, as primary sources of further enquire. Back to the dialectics between research and design, according to Archer, it is 'when research activity is carried out "through the medium of" practitioner activity that the case becomes interesting,'[32] which he defined as:

> Systematic enquiry conducted through the medium of practical action; calculated to devise or test new, or newly imported,

28 Christopher Frayling, 'Research in art and design'.

29 Bruce Archer, 'The Nature of Research'.

30 OECD (2015), Frascati Manual 2015: Guidelines for Collecting and Reporting Data on Research and Experimental Development, The Measurement of Scientific, Technological and Innovation Activities, oeCd publishing, paris. p. 60-61.

31 'Prototype' in Online Etymology Dictionary [online] https://www.etymonline.com/search?q=prototype [accessed 7th august 2022].

32 Bruce Archer, 'The Nature of Research'.

information, ideas, forms or procedures and generate communicable knowledge.[33]

But what does the process of design speculation tell researchers during their research? Firstly, designing is a fruitful means of collecting, understanding and interpreting a redrawn reality.[34] Beyond interpretation, the design act manifests a 'two way process in operation.' On one hand, design exploration unfolds intellectual values and unverified hypotheses, building towards a theoretical edifice. On the other, grounded theoretical assumptions can be tested through speculative intent.[35] With the preceding paragraphs in mind, the message appears to be clear that the apparatus of design speculation should enquire towards a specific and monographic research theme to attain concrete, original knowledge. But in this case, in contrast to the clean laboratory conditions of traditional experimental research, the complex situations, 'wicked problems'[36] and divergent purposes of the everyday world present a vivid opportunity for enquiry. That is to say, real-world circumstances unfold a canvas for transdisciplinary research, navigating beyond disciplinary boundaries to open up deeper and more relevant modes of knowledge, even if ambiguous and not conventionally verifiable.[37]

To conclude this insight into the role of designing in research, it may be observed that any elucidated knowledge, in the form of embedded awareness—visual and verbal, tacit and explicit—should be conveyed through a combination of pictorial and written, artefact and critical exegesis, ambiguous and unambiguous communicative forms.[38] Of course, many have claimed that to demonstrate a knowledge contribution, the written portion of a PhD by design must include (as with any doctorate) a full literature review rather than a light contextual review.[39] Yet, we may ask: in comparison to a traditional 80,000 words PhD book, what should the depth of the literature review be?

33 Ibid.
34 Maarit Mäkelä, 'Knowledge through making', p. 158.
35 Bryan Lawson, 'The subject that won't go away', p. 112.
36 Horst W. J. Rittle and Melvin M. Webber. 'Dilemas in General Theory of Planning', in *Policy Sciences* Vol. 4, No.2 (Amsterdam: Elsevier Scientific Publishing, 1973), pp. 155-159.
37 Halina Dunin-Woyseth and Fredrik Nilsson, 'On the emergence of research by design', pp. 38-39.
38 Michael Biggs, 'The role of the artefact', p. 6. It is no coincidence that from the 1990s regulations for practice-based doctorates in the UK started to require the combined format of a ca. 40,000 words thesis together with a portfolio containing creative work, with both of near equal weight. This compares to a 'traditional' written requirement for a PhD of 80,000 words (Christopher Frayling, *Practice-based doctorates in the creative and performing arts and design* (Lichfield: UK Council for Graduate Education, 1997), p. 15. https://ukcge.ac.uk/assets/resources/4-Practice-based-doctorates-in-the-Creative-and-Performing-Arts1997.pdf.)
39 David Durling, 'Design in the UK', p.82.

In order to maximize the 'core' contribution and strictly give readers only what they 'need to know,' Patrick Dunleavy suggests an approximately 20% proportion of 'lead-in' materials in the thesis plan.[40] But in the model of a doctorate by design, including 40,000 words and a design portfolio, what shall be the extent of the written lead-in material? Perhaps, it could be argued that this written scope might be proportionally shortened. However, it should take into account that the designed, drawn, and pictorial contribution will largely tend towards 'core' materials rather than 'lead-in.' Therefore, I suggest that a substantial written lead-in portion of ca. 16,000 words may still be necessary.

Towards Speculative Research

In this section I have argued that research through design includes, as 'core' and primary source materials, acts of design speculation. By contrast with isolated distant observation or criticism, this entails the empathic pursuit of a designerly kind of knowledge: complex and rich, constructive rather than only analytical, principally relevant rather than fully verifiable, subtly tacit as well as explicit, and largely visual and sensorial. Hence, design speculation fruitfully reveals a threefold movement: interpreting data, launching hypotheses, and testing postulations. Likewise, I maintain that the making of artefacts should not be the only purpose of research but remains a necessary medium, enabling monographic enquire to generate relevant knowledge, which include the exploration of prototypes as primary forms of praxis. This kind of awareness demands communication through a compound of pictorial and written information, combining tacit and explicit linguistic forms in dialogue with literature alongside methodological and contextual materials. In relation to the background for this position, I have offered elsewhere a context over three decades of relevant approaches to doctoral study in accordance with this theme.[41]

40 Patrick Dunleavy, *Authoring a PhD*, p. 49-61. In a traditional big-book thesis of 80,000 words, he suggests to limit the literature review to one chapter of ca. 8,000 words, and the methodological and background sections to another chapter of ca. 8,000 words, with an overall lead-in portion of 16,000 words.
41 Pau Bajet, 'PhD: Grasping Knowledge Through Design Speculation' in *IX Workshop on educational innovation in architecture: JIDA'21*, ed. by Daniel García-Escudero and Berta Bardí Milà (Barcelona: GILDA, 2021), pp. 424-437. This article offers a brief account of a number of doctoral programmes around the globe, that over the past 30 years have forged the first steps of this research approach, while acknowledging that much ground remains to be covered.

II Design Context and Research Site

Choosing a site for a doctoral thesis by design is an intricate task. It demands close consideration of the research method and theme. Methodologically, I have made clear that this study aims to enjoy the earthly situations of a specific, vivid, and complex reality as opposed to being put into practice under laboratory conditions. So, I looked for a place—a context that would constitute my research problem in the form of a nested case study—impinged by conflicting and overlayed rhythms. In other words, I wanted a place which was *a mess* with *lots to do*. Access to relevant data, previous studies and familiarity with the area was important to quickly grasp local complexity and start designing. In this regard, I decided on Barcelona: the city where I was born, studied and spent most of my life; where I 'learned the city,' feeling my way through intersubjective experiences of its

Fig. 5
View from Montjuïc towards the southern periphery of Barcelona and the Llobregat delta (2015).



habitation and becoming.[42] To inform the design research, I have drawn upon studies and data from local institutions.[43] With regards to the research theme, I looked for a place where human and nonhuman changes in past times were tangible, yet somehow incomplete; an area tinged by fragile cultural memories, abandoned agriculture and decayed industry, entangled infrastructures and wastelands, but still close to current civic and vibrant intensity. That is, a place loaded with manifold 'actant' contexts, even if vulnerable, that could be tested at varying scales to oppose a *tabula rasa* approach: an area high in transformative potential.

The site for research by design is located in Barcelona's fringes, hidden by the hill of Montjuïc near the sea. This hill, associated with historical conflict, has shaped the southern edge of the city for centuries. Still today, in spite of its proximity to the gentrified centre, it represents an experiential urban boundary. Behind it, the harbour has changed the coastline and expands towards the Llobregat river. These former delta swamplands, agriculturally transformed in the 19th century and absorbed by a huge industrial district in the 20th century, are characterized by obsolete industry, wastelands, and dispersal, all seemingly besieged by modern metropolitan infrastructures including one of the Mediterranean's largest container ports. Framed by the delta plain, with the fragile presence of the water, remaining wetlands, the pine forests and resisting farming lands, and surrounded by Montjuïc, the sea and the distant mountain chains, this area has been identified in local policy for civic expansion with a view to solving the housing crisis. While the focus in this section is on the southern fringe, we will begin with a historical overview of the city to build a measure of awareness of the design context and expanded place.





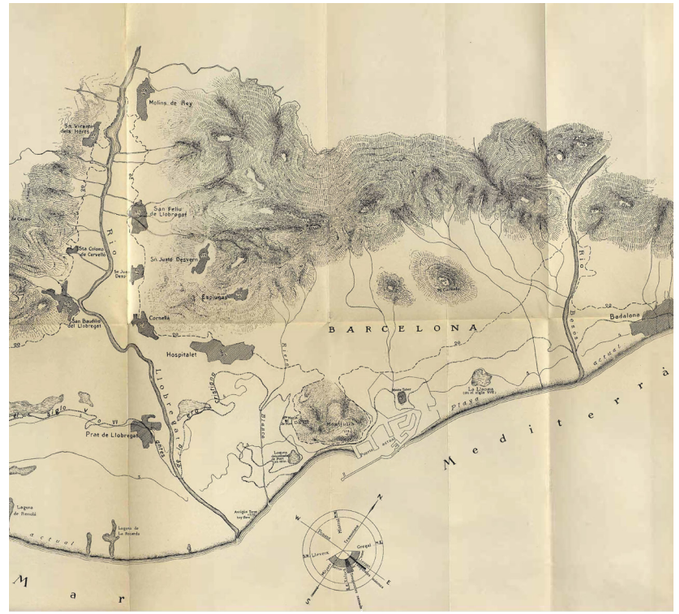
Fig. 6
Montjuïc hill from the motorway (2015).

Fig. 7
Empty plots next to the train tracks (2015).

Fig. 8 (opposite page)
P. Ribas, 'Croquis A: Reseña histórica del Puerto de Barcelona desde su origen hasta la actualidad' (1935)

42 Colin McFarlane, *Learning the City: Knowledge and Translocal Assemblage* (London: Blackwell, 2011), pp. 1-2.

43 Institutions such as *Barcelona Regional, Àrea Metropolitana de Barcelona, Ajuntament de Barcelona, Port de Barcelona, Consorci de la Zona Franca* and *Institut Cartogràfic de Catalunya*, among others.



The City of Barcelona

We may describe the Barcelona setting as somehow a 'room' defined to the front by the Mediterranean Sea, to the back by the Collserola mountain range, and to either side by the Llobregat and Besòs rivers. Among the few exceptions to a continuous gentle slope is the most abrupt: the hill of Montjuïc, with a sheer cliff rising 173m against the sea. Although traces of earlier settlement exist, the city's origin is attributed to the Roman colony of *Barcino* dating back to the 1st century BC. The colony was strategically placed on Mons Taber, a small promontory next to the sea, between two torrents, whose basins would provide a natural port.[44] The Roman *urbs* of *Barcino*, whose footprint remains readable in the old city core, followed the centuriation type: an orthogonal grid with the *cardo* and *decumanus* crossing at the centre. The Roman plan was laid out parallel to the coastline, a decision multiplied through Cerdà's plan to define the orientation of the city as it remains today; a direction related to the gentile slope towards the sea, providing a sense of orientation to Barcelona's inhabitants. Roman walls offered shelter to various invader

44 Joan Busquets, *Barcelona: The Urban Evolution of a Compact City*, (Cambridge: Harvard Design Press, 2014).



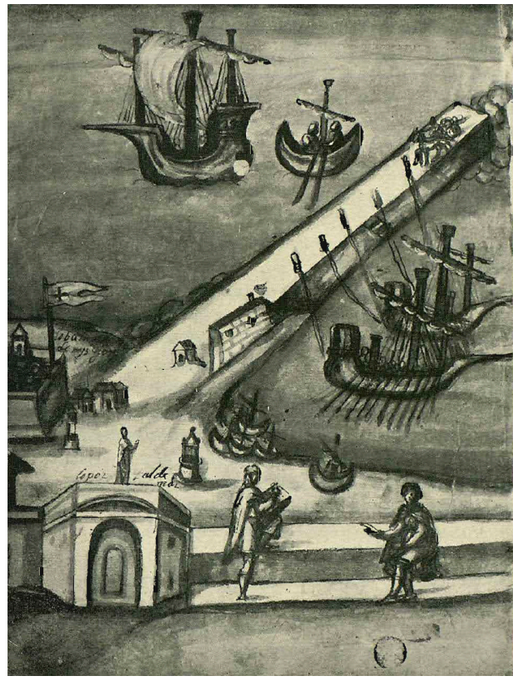


Fig. 9 (previous page)
Moulinier, Map of the city and harbour of Barcelona (ca 1806).

Fig. 10
Unknown, drawing of the dock built between 1590 and 1602 (ca 1600).

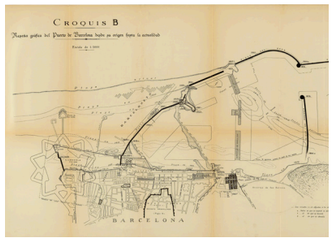
Fig. 11
P. Ribas, 'Croquis B: Reseña histórica del Puerto de Barcelona desde su origen hasta la actualidad' (1935).

Fig. 12
J. Anglada, 'Construcció de l'Eixample, pas del tren a vapor' (ca 1900).

Fig. 13 (opposite page)
Pardo de Figueroa and others, 'Carta desde el río Llobregat al río Besós con el puerto de Barcelona' (1892).

civilizations until economic revival and demographic pressure in the late Middle Ages originated a second and third city wall expansion, completing what stands today as *Ciutat Vella* (the Old City).

During the 18th century, with the beginning of Catalan industrialization and increased worldwide colonial trade, population trebled claiming further city expansion.[45] As 'Croquis B' drawing by Ribas suggests, the construction of the port dock and alluvium from Besòs river deposited by dominant sea currents reclaimed new land encircling the harbour, the shoreline shifted a kilometre reclaiming a plateau where the planned quarter of Barceloneta was built. In the 19th century, demographic pressure and social demand, arising from poor urban living conditions, made way for an agreement to demolish the city walls in 1854, seeding the germination of the city extension known as *Eixample*. The Cerdà plan was imposed by Royal Decree a few years later against the city council, which had selected another project. According to Solà-Morales, Cerdà's was the more socially progressive solution. By contrast with the competing schemes, based on eclectic motifs, his approach was based purely on its internal logic, his *General Theory of Urbanization* (1867). This way, 'the definition of streets and inter-street blocks in accordance





45 Ibid., p. 79.



with a systematic analysis of the technical requirements of traffic and hygiene (...) as the primary objectives of urban growth led to the egalitarian isotropy of the limitless grid, without hierarchies or peripheries.'[46] Over several decades the *Eixample* was consolidated as a dense, vibrant urban fabric. However, as Aureli points out, Cerdà's ambition for an egalitarian urban field that could distribute capital and resources, turned into a hierarchical territory where land subdivision was used to capitalize investors and impose a speculative 'regime of property.'[47]

In the 20th century, Barcelona sought to use major international events to trigger urban transformations towards modernity. Starting with the 1888 World Fair, which displaced the Citadel with an urban park, together with a project to redefine the interface between the *Ciutat Vella* and *Eixample*, a new centrality—Plaça Catalunya—was born; soon reinforced by the crossing of the earliest metro lines.[48] This period witnessed a Catalan cultural rebirth or *Renaixença*, in the form of *Modernisme* in architecture. Some years later, in the cultural milieu of *Noucentisme*, the city became a magnet for artists such as Picasso, Miró and Dalí.[49] The 1929 World Fair and its 15 year gestation became an instrument of urban policy in which Montjuïc hill would be symbolically recovered for the city (after two centuries representing military surveillance) and the plan of a 'Greater Barcelona' implemented, including connections with surrounding municipalities.[50]

As Parcerisa points out, the success of the city centre—that is, today's popular image of Barcelona—would have not been possible without the 'necessary city' located around the periphery.[51] Factories and warehouses sprawling across regional railways and industrial infrastructures replaced agricultural lands, expanding from the city towards Besòs and Llobregat rivers. For over a century, economic development and industrialization brought waves of migration from other corners of Spain to provide labour. The metropolitan population grew, in the second half of the 20th century, from two to five million.[52] This working-class growth, however, did not densify the

46 Manuel de Solà-Morales, 'Ten Lessons on Barcelona', *COAC* (2007), p. 287.
47 Pier Vittorio Aureli, 'Appropriation, Subdivision, Abstraction: A Political History of the Urban Grid', *Log 44*,(2018), 139-167 (p. 161).
48 Josep Parcerisa, *Barcelona: 20th Century Urbanism* (Barcelona: Marge Books, 2014) pp. 230-231.
49 Joan Busquets, *Barcelona,* pp. 151-62
50 Ignasi Solà-Morales, 'L'exposició internacional de Barcelona (1914-1929) com a instrument de política urbana', *Recerques*, 6 (1976).
51 Josep Parcerisa, *Barcelona,* pp. 88-89.
52 Josep Maria Carreras, Monrserrat Otero and Ernest Ruiz, *50 Years of Territorial Transformation. 1956-2006* (Barcelona: Àrea Metropolitana de Barcelona, 2012).



Fig. 14
Gilbert Fastenaekens, outskirts of Barcelona near Besòs (1990).

Fig. 15 (opposite page)
Institut Cartogràfic de Catalunya, Orthophoto of Barcelona (2015).

city centre, but expanded the fringes, tripling the urbanized land, typically in self-built shantytowns and large housing estates near the factories. The emerging democracy of the 1980s drove economic and social momentum that culminated with the Olympic Games in 1992. In that period, a collection of urban projects reallocating shantytowns, improving damaged areas and recovering public spaces—particularly focused on peripheral quarters—unveiled new centralities, enhancing gardens, parks, squares and pedestrian areas.[53] The Olympics provided an excuse to improve urban infrastructures such as the *Rondes*[54] and embellish the city edges, including Collserola, Montjuïc and particularly the seafront which opened the city out towards the sea. In recent years the metropolis has reconfigured decayed industrial areas stretching urbanity towards both Llobregat and Besòs rivers.[55] Meanwhile, large scale projects have remodelled the Llobregat delta, diverting the river mouth 2km to enlarge the Port and strategic industrial areas, as well as extending the airport with a new terminal, resulting in a massive reduction of agricultural lands and natural resources of the delta.

53 Oriol Bohigas, *La reconstrucció de Barcelona* (Barcelona: Edicions 62, 1985).
54 The urban motorways surrounding the city that distribute traffic while being planned to minimize landscape impact and urban discontinuity.
55 As an example, see the 22@ district which, in words of the city council, transformed '200 hectares of industrial land of Poblenou into an innovative district offering modern spaces for the strategic concentration of intensive knowledge-based activities' (www.22barcelona.com).



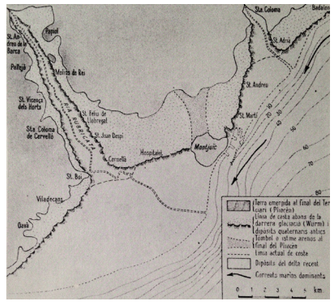
Montjuïc as Ancestor

Quan á la falda't miro de Montjuich seguda,
m'apar vèuret als brassos d'Alcides gegantí,
que per guardar sa filla del seu costat nascuda
en serra transformantse s'hagués quedat aquí.

Y al veure que traus sempre rocam de ses entranyes
per tos casals, que creixen com arbres ab sahó,
apar que diga á l'ona y al cel y á les montanyes:
—Miraula; òs de mos òssos, s'es feta gran com jo!—[56]

The presence of Montjuïc in the city of Barcelona is stunning. According to 18th century city plans, the hill's weight and volume were similar to the whole city. Engravings and city portraits over the past 500 years reveal the mountain's brusque silhouette behind the city; a strong, blunt rock against the water. But before any trace of human settlement existed, Montjuïc appeared as an island at the end of the Tertiary Period, becoming a geological catalyst for the city's

56 Jacint Verdaguer, 'Oda a Barcelona' (1883). https://ca.wikisource.org/wiki/Oda_a_Barcelona. In English: 'When I gaze on you there by the skirts of Montjuïc, seem to see you in the arms of the giant Alcides, who, to protect the daughter born from his own side, became a mountain and stayed here. And watching you for ever winning rock from his heart for your houses, that grow like trees in good ground, it's as though you were saying to the waves and the sky and the mountains: Look on her now, bone of my bones—and grown as great as I!' [English translation by P. Hutchinson, published by VISAT magazine].



formation. Alluvial action from the Llobregat and Besòs rivers was thwarted by this barrier, over time bridging it to the mainland, shifting the shoreline to form the Barcelona plain.[57] As such, Montjuïc played a role in the architecture of the city 'room' as it stands today. In addition to this nonhuman, geological agency, the hill supported the human crafting of the city. Since pre-Roman times, Montjuïc was a quarry reaching maximum exploitation during the *Eixample* expansion.[58] With her streets and squares paved by mountain stone, Barcelona is, as the poet Verdaguer wrote, 'the daughter of Montjuïc—bone of her bones.'

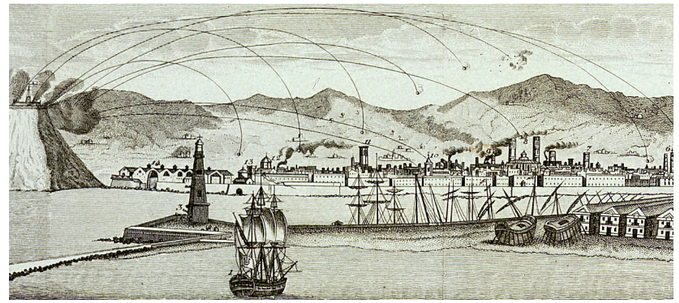
Human settlers have taken advantage of the privileged orography and location of Montjuïc over millennia. A maritime shelter near the western hillsides protected against inclement easterlies and stormy sea—a natural port used until the 10th century.[59] Offering defensive attributes, the mountain's domain supported various fortifications in the medieval period. Erected in 1639, the Castle of Montjuïc soon turned against the city to become a symbol of military and political repression, as depicted in engravings—oppression that lasted into the 20th century under Franco's fascist regime.[60] Montjuïc has thus been hated, and scars of this collective memory remain. Nevertheless, the fact that the hill has been preserved as a green lung for modern Barcelona is, according to Roca, a legacy of this odious military antecedence.[61] Over the past century Monjuïc has been gradually recovered for the city. Partially planned as a garden-park with several attempts at urbanization, its hillsides provided the site for the

57 Joan Alemany, *El port de Barcelona: Història i actualitat* (Barcelona: Port Autònom de Barcelona, 1984).
58 Estanislau Roca, 'Barcelona, filla de Montjuïci', *Barcelona: Metròpolis Mediterrània*, 61 (2003), pp. 38-41. This article follows the author's PhD: 'La construcció de la muntanya de Montjuïc' (Departament d'Urbanisme i ordenació del Territori. ETSAB. UPC., 1993).
59 This area is today 5km inland, a quarter of Barcelona whose name reminds of its origin, '*La Marina de Port*', next to the area of this research project.
60 Estanislau Roca, 'Barcelona', pp. 39-40.
61 Ibid., p. 41.

Fig. 16 (opposite page)
Anthonis van den Wyngaerde, Engraving of Barcelona from the sea (1563).

Fig. 17
L. Solé, Evolution of the shoreline of Barcelona.

Fig. 18
Domingo Estruch, View of Barcelona being bombed from Montjuïc in 1842.



1929 World Fair. The 1992 Olympics represented another landmark for its transformation. Today, the hill is seen as a green mountain, but it is in fact occupied with sports facilities, museums and theatres. It is currently open to the city centre on its eastern side. However, towards the southwest the mountain turns its back, and the rising hillside slopes and 19th century cemetery, remain forgotten and inaccessible, blocked by transport and industrial infrastructure.



Agrilogistics of The Delta Plain

The plain of the Llobregat delta expands across 95.5 km2 on the southern side of Montjuïc, bounded by the Garraf and Collserola mountain ranges. During the city's Roman phase, the plain barely existed, while the shoreline followed the edges of the slope. The geological formation of the delta took place discontinuously over periods of growth and stability, most actively during the 400 years between the 6th and 10th centuries, according to Desiré Gámez, and latterly in the 18th century.[62] Pau Esteban et al. attribute the

62 Desiré Gámez, 'Sequence Stratigraphy as a tool for water resources management in alluvial coastal aquifers: application to the Llobregat delta (Barcelona, Spain)' (unpublished doctoral thesis, Universitat Politècnica de Catalunya, 2007).

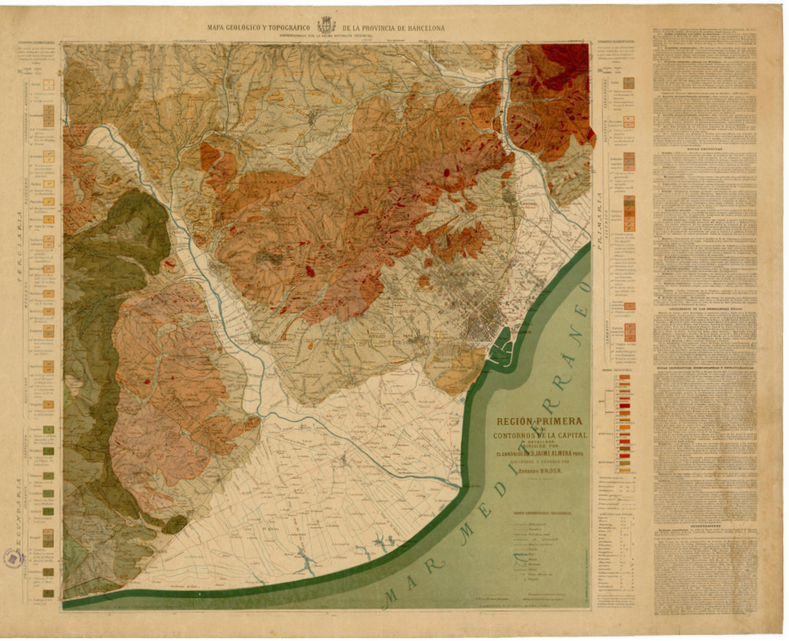


Fig. 19
View of the Olympic ring of Montjuïc from the cemetery (2015).

Fig. 20
Jaume Almera, Geological and topographical map of Barcelona (1891).

Fig. 21 (opposite page)
M. Tomás de Barba, 'Real Canal de la Infanta Doña Luisa Carlota de Borbón' (1908)

Fig. 22 (opposite page)
Unknown, View of Canal de la Infanta (1906).



formation of the delta to river alluvium, climatic changes and increased anthropic activity along the basin; a combination of non-human and human factors, including agricultural intensification of the past two millenniums.[63] Rising river levels and floods, insalubrious soil, inclement weather and epidemics, set limits to colonization of the delta until the 15th century. It was a rich ecosystem for flora and fauna: a territory of wetlands, reedbeds, pine forests and sand dunes.



Efforts were made in the 17th century to drain the swamps and control river flooding—an arduous task culminating much later in the construction of irrigation infrastructure.[64] Inaugurated in 1820, the *Canal de la Infanta,* which was the system's main channel, started 17km inland and encircled the eastern side of the plain up to the Montjuïc hillside. It rapidly transformed a tapestry of plots into fruitful irrigated farmlands, producing green vegetables, legumes and rice.[65] Likewise, the canal's current provided a source of energy for primary and low-cost industrialization during the 19th century.[66] After 1846, larger-scale transformation started in earnest after the city administration proscribed new factories inside the old town. Industrial

63 Pau Esteban, Susana Laredo, Joan Pino and Andres Valverde Martinez, 'El context deltaic: situació, origen geològic i història del poblament humà', in *Els sistemes naturals del deta del Llobregat* ed. by Josep Germain and Joan Pino Vilalta (Barcelona: Institució Catalana d'Història Natural, 2018), pp.30-32.
64 Eloisa Ortega, 'La Zona Franca de Barcelona: De Puerto Franco a Polígono Industrial', *Revista de geografia*, 11.1 (1977), pp. 89-106.
65 Pau Esteban et al., 'El context deltaic', p. 33.
66 Antoni Romeu, 'El Canal de la Infanta i el seu aprofintament industrial a l'Hospitalet', (unpublished research funded by Museu de L'Hospitalet, 1988), pp. 32-36. http://www.museul-h.cat/detallCataleg.aspx?12oSrtzAsSOAOWaYUS7oyHNWdqazCEwaiZjYNHUpkUr0tb4qazB



development was attracted by the flat plots of land, abundant aquifer supply, and proximity to the city. Calico-printing manufacturing known as *Indianas* was prominently established—a development that characterised the city's economic momentum during the 18th and 19th centuries.[67] *La Marina del Prat Vermell* is the core location of the physical site of this research project. The name of the urban quarter—*Prat Vermell* (red field)—recalls a calico-printing factory, whose dyed textiles would be laid out to dry covering the land, staining the field with a reddish colour.[68] This factory was established in the 1840s by textile industrialist Domènec Serra. According to his biographers, the factory was the first to implement steam and printing engines in Spain, while his descendent Eusebi Bertrand expanded the family legacy to its culmination; the Bulletin of the Master Cotton Spinners Association acknowledged him in 1934 as the first worldwide cotton industrialist.[69]

Since the turn of the 20th century, the area's expansion and industrialization have threatened the delta's ecology and agriculture. At the same time, Barcelona aspired to have a *Puerto Franco* (free port) that could produce and trade goods at a globally competitive price. After

67 Llorenç Ferrer Alòs, 'The diverse growth of 18th-century Catalonia: Proto-industrialisation?', *Catalan Historical Review,* 5 (2012), pp. 67-84.
68 Ajuntament de Barcelona, *Historia de la Marina del Prat Vermell* (2021) https://ajuntament.barcelona.cat/sants-montjuic/es/el-distrito-y-sus-barrios/la-marina-del-prat-vermell/historia-de-la-marina-del-prat-vermell [Accessed 13 November 2021].
69 Fundació Enciclopèdia Catalana, *Els Serra i els Bertrand* (2021) https://www.enciclopedia.cat/ec-fe-0217701.xml?destination=node/501421 [Accessed 20 November 2021].

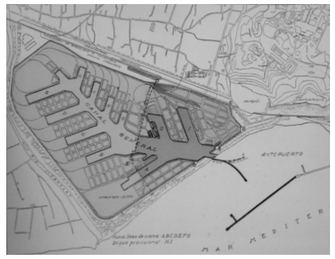


Fig. 23
Unknown, El Prat Vermell factory (1934).

Fig. 24
Frederic Ballell, Neighbours rescuing a boat at the beach of Can Tunis (1911).

Fig. 25 (opposite page)
El Consorci, 'Pla minim d'obres aprovat el 1932' (ca 1932).

Fig. 26 (opposite page)
Brigada Topográfica de Ingenieros del Ejército, 'Plano de la zona del Puerto Franco de Barcelona y terrenos adyacentes' (1926).



several attempts, the Consortium for the Free Port of Barcelona was constituted in 1917—a trade and commerce association created to manage and provide economic feasibility to the *Puerto Franco*.[70] The site for this colossal project was a triangular plot of 1,100 hectares of agricultural land between the river and Montjuïc, planned to procure an efficient management of goods 'in' and 'out' allowing ships to dock next to factories and warehouses.[71] Despite local opposition, the area was transferred as a bargain to the city of Barcelona, confining the municipality of L'Hospitalet inland and taking away its beach—a grievance that still endures for L'Hospitalet.[72] In this way, after centuries of labour turning the wetlands into a fertile resource, farmers and landowners saw their lands expropriated in 1927. But the *Puerto Franco* project failed to crystalize, and farmers continued their activity as Consortium tenants for 30 years.[73] The expropriations also affected the quarter of Can Tunis, a humble 19th century neighbourhood near the hillsides of Montjuïc which enjoyed the beach, and

70 The Consortium was led by the Mayor of Barcelona and a delegate of the Spanish Ministry of the Finance and Public Administrations among other representatives.
71 El Consorci, *El Consorci de la Zona Franca 1916 – 1998* (Barcelona, 1998), p.32.
72 Xabi Barrena, 'La 'playa' de L'Hospitalet', *El Periódico*, 17 August 2009. https://www.elperiodico.com/es/barcelona/20090817/playa-l-hospitalet-129974
73 Eloisa Ortega, 'La Zona Franca de Barcelona', pp. 94-95.



142 was connected to the city through the now discontinued Morrot's
143 tram. This pocket of urbanity was dismantled; its houses and families, stores, schools, associations and social clubs lost.[74]

Productive intensification in the Francoist economic period of *desarrollismo* (developmentalism) exploded in the 1960s, with the establishment of large industrial estates and with devastating results for the delta's natural resources. Damage was caused not only by unrestrained industrial expansion, but by waste matter being discharged into the water system, and uncontrolled aquifer and ground exploitation.[75] At that time, the port began extending between Montjuïc and the river, altering the coastline with progressive land reclamation for enormous docks and loading areas for cargo and inflammable liquids.[76] The *Puerto Franco* project had been abandoned, but the vast expropriated territory remained ripe for economic exploitation. Given the shortage of inner city industrial land, this site provided a unique opportunity for major strategic implementation

74 J. Oriol. Granados Garcia, 'Els grans projectes d'actuació a la Marina del Prat Vermell i al Morrot de Montjuïc', *Biblio3W Revista Bibliográfica de Geografía y Ciencias Sociales* (2013).
75 Pau Esteban et al., 'El context deltaic', p. 34.
76 Joan Alemany, *El port de Barcelona*, pp. 160-179.

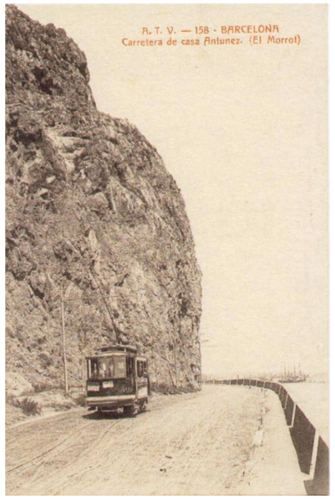




Fig. 27
Àngel Toldrà Viazo, '158, Barcelona, Carretera de casa Antúnez, El Morrot' (1919).

Fig. 28
Trabajos Aéreos y Fotogramétricos, SEAT factory (1955).

Fig. 29 (opposite page)
Unknown, Passeig de la Zona Franca (1932).

Fig. 30 (opposite page)
Trabajos Aéreos y Fotogramétricos, Housing for SEAT factory workers (1955).





near the port, at a discreet distance from the historic urban core.[77] This is how, symbolically adjusting its name from 'port' to 'zone,' the *Zona Franca* estate was approved by law in 1965 to create Spain's largest industrial development with over 400 hectares owned by a consortium today called *El Consorci de La Zona Franca*, and contributing almost the 4% of Catalonia's GDP in 2019.[78] The SEAT car factory, established in 1953 (which anticipated the creation of *Zona Franca*) represents a milestone in the area's history. A photometric flight series (1956-57) shows the orthogonal alignment of the manufacturing plant with an imaginary axis extending from the port, ignoring all cultural and physical traces of the agricultural terrain. Around the factory, the *Zona Franca* and port warehouses would grow orthogonally from the inside outwards. Historical photographs reveal platforms and buildings isolated from their agricultural context due to an urban engineering initiative to raise the street level by six feet, to combat flooding and accommodate infrastructure.

This aggressive urbanisation of the expropriated farmlands was replicated with housing estates built for thousands of workers near *Gran Via* avenue. Stretching between Gran Via and *Zona Franca*, the rectilinear boulevard—Passeig de la Zona Franca[79]—became a backbone

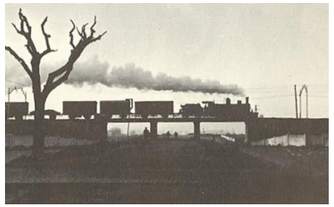
77 Eloisa Ortega, 'La Zona Franca de Barcelona', pp. 96-97.
78 María Teresa Coca, 'El Consorci de la Zona Franca genera el 3,8% del PIB de Cataluña', *El Economista,* 22 July 2020. https://www.eleconomista.es/catalunya/noticias/10681874/07/20/El-Consorci-de-la-Zona-Franca-genera-el-38-del-PIB-de-Cataluna.html
79 Its original name was "Passeig de la Indústria", later it would be known as "Passeig del Port Franc" until its current name "Passeig de la Zona Franca".

Fig. 31
US Army Map Service, photometric flight, detail of Mountjuïc and Zona Franca (1956-57).

Fig. 32 (opposite page)
Institut Cartogràfic de Catalunya, Orthophoto of Mountjuïc and Zona Franca (2015).

146 for the burgeoning industry and new residential areas. Today, this
147 is the centre of the so-called quarters of *La Marina* de Port and *La Marina* del Prat Vermell. Over decades, new industrial and commercial developments replaced the last remaining farmlands. Self-built settlements—disconnected not only from the city, but also from one another—sprang up between factories; despite their isolation they established roots in the area and a sense of collective solidarity.[80] Nevertheless, these small urban communities were again dismantled and replaced by *ex novo* urban developments, towards the end of the 20th century, with their occupants typically relocated to other parts of the metropolis, erasing any trace of their humble past.[81] In J. Oriol. Granados Garcia's account, by the end of this process, the identity of the place—informed by the delta wetlands, an agricultural heritage, the early textile legacy, the fragile social communities and, primarily, the presence of the sea—had vanished. Only its name—*La Marina*—recalls that this place was for thousands of years a natural port of the

80 Jaume Badia Ferrer, 'La Marina del Prat Vermell: nueva centralidad urbana?' (unpublished masters thesis, Universitat Politècnica de Catalunya, 2015), p. 46.
81 J. Oriol. Granados Garcia, 'Els grans projectes'.









region and the delta wetlands, a place crafted by human and nonhuman interaction with the force of water.

Current plans and opportunities

Further development has marked the past 30 years of this metropolitan area. The epicentre of the port has shifted towards the mouth of the diverted Llobregat river, there has been extensive modernisation of the cargo and logistics terminals, and energy plants and strategic infrastructure as well as new installations have appeared. Meanwhile, nearer the city centre, the port is succumbing to the pressures of urban absorption. Between Montjuïc and the sea, the area of Morrot is earmarked for urban expansion, attracting property speculation in dock areas previously considered to be obsolete—a controversial plan that has hitherto failed to mobilise.[82] The Morrot centenary railway cargo terminal, isolated from the new port in a cul-de-sac without growth capacity, is expected to fall out of use too. Its traffic will be partially diverted to the Can Tunis terminal but, more will divert to a network of six intermodal transport terminals at the core of the new port developments.[83] Together with the railway transformation, development studies to increase the Ronda Litoral urban motorway[84] have been reshaped by Barcelona Regional: the city's urban agency, as an opportunity to not only reduce traffic congestion but to establish public space, promote green areas, and improve civic and pedestrian connectivity along the shoreline.[85]

Between the dynamic industrial district of *Zona Franca* and the city, the neighbourhood of La Marina del Prat Vermell emerged

Fig. 33 (opposite page)
Unknown, railway bridge at the end of Passeig de la Zona Franca (1968).

Fig. 34 (opposite page)
Enric Masana, artificial lake to extract sand in Can Tunis as part of the process of Land reclamation (1965).

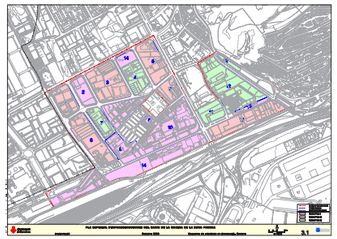
Fig. 35
Railway and motorway bridges at the end of Passeig de la Zona Franca (2015).

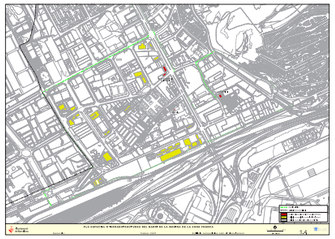
Fig. 36
Port de Barcelona, view of Montjuïc and Morrot area (2015).

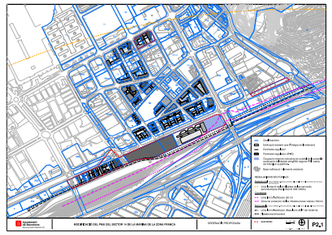
82 Jordi Molina, 'Trias reinventa el barrio de lujo Blau@Ictinea, junto a la única zona sin metro de Barcelona', eldiario.es, 11 May 2015. https://www.eldiario.es/catalunya/trias-reinventa-blau-ictinea-barcelona_1_5861331.html
83 See: ADIF, 'Estudio del Corredor Ferroviario Mediterráneo' (Ministerio de Fomento: Gobierno de España, March 2011). https://www.mitma.es/recursos_mfom/20110314_estcorrmediterraneobajo.pdf; Barcelona Regional Agència de Desenvolupament Urbà, *Memòria 2011-2015* (June 2015); Barcelona Regional Agència de Desenvolupament Urbà, *Façana Litoral Morrot*. https://www.bcnregional.com/treballs/facana-litoral-morrot/
84 Ministerio de Fomento, 'Fomento adjudica el Estudio Informativo de ampliación de la Ronda Litoral (B-10), en el tramo Zona Franca-El Morrot, Barcelona', Nota de prensa (2010).
85 See: Barcelona Regional Agència de Desenvolupament Urbà, *Memòria* 2006-to date.; Barcelona Regional Agència de Desenvolupament Urbà, *Peu de Montjuïc : Connectivitat litoral de Barcelona* https://www.bcnregional.com/treballs/propostes-per-la-ronda-litoral-al-peu-de-montjuic/; Cristina Buesa, 'BCN compra el Morrot a Adif per 43 milions per moure la Ronda Litoral', *El Periodico,* 23 March 2015. https://www.elperiodico.cat/ca/barcelona/20150323/bcn-compra-el-morrot-a-adif-per-43-milions-per-moure-la-ronda-litoral-4043542

148 as an opportunity for urban regeneration and to address housing
149 shortages. This area, sparsely populated with ca. 1,100 inhabitants (compared to ca 30,300 in La Marina de Port) has witnessed the progressive relocation of industry to peripheral districts, and awaits the implementation of an urban plan initiated by the City Council in 2006.[86] This plan aims to densify the area of 75ha in stages, aiming to match the standard rate for Barcelona (above 300 inhabitants/ha) raising to local population to 30,000 people, also accommodating tertiary and soft industrial activities. Hence, the new quarter aims to devote 73% to dwelling (an equal mix of private and social housing, at 5500 units each) and 27% to productive activities. The early stages of the plan are today under construction around the core residential area known as Eduard Aunós. The last part to be transformed will be the area of Colonia Santiveri (which is the focal site for this design thesis), located by Montjuïc hillside—whose urban plan has not yet been finalised. Two edifices are to be preserved as historical heritage under the planning proposals which also depict a dozen consolidated buildings considered compatible with the masterplan. It is disquieting that none of the ordinary warehouses and sheds, nor the row houses that appeared alongside the first factories that gradually occupied the agricultural mosaic during the past century, are expected to be retained, renewed or re-used. Instead, most of the proposed urban fabric will be brand new. Most of the new buildable volumes, which sit on top of larger ground floor plinth blocks of tertiary accommodation, establish preconfigured rectangles nom. 15m deep and 3m floor

86 Ajuntament de Barcelona, *'Modificació del Pla General Metropolità per a la transformació urbanística de la Marina de la Zona Franca'* (2006) https://dtes.gencat.cat/rpucportal/AppJava/cercaExpedient.do?reqCode=veureDocument&set-locale=ca&codintExp=225863&fromPage=load; during the process of writing up this thesis, a reviewd version of this plan was approved: Ajuntament de Barcelona 'Modificació punctual del PGM per a l'ajust del Pla de la Marina del Prat Vermell, a la Zona Franca (2019) https://ajuntament.barcelona.cat/informaciourbanistica/cerca/es/fitxa/M00B/--/--/ap/







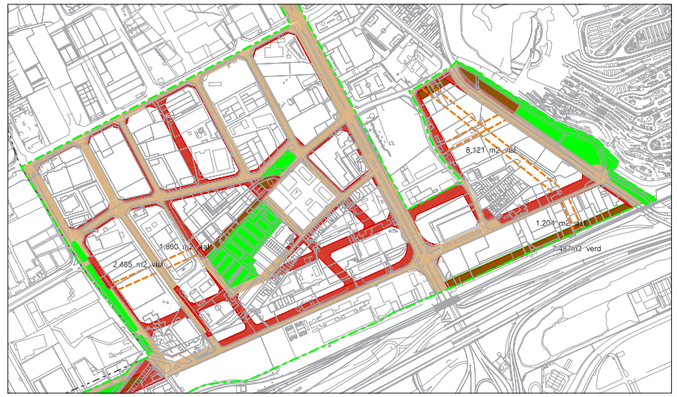


Fig. 37
Ajuntament de Barcelona, 'MPGM la Marina de la Zona Franca', Implementation phases (2006).

Fig. 38
Ajuntament de Barcelona, 'MPGM la Marina de la Zona Franca', Compatible and listed buildings (2006).

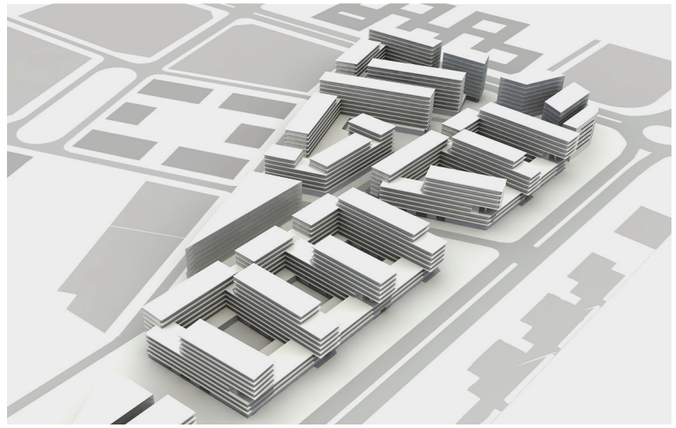
Fig.39
Ajuntament de Barcelona, 'MPGM la Marina de la Zona Franca', Approved building volumes (2006).

Fig. 40 (left)
Ajuntament de Barcelona, 'MPGM la Marina de la Zona Franca', Uranization of new streets and demolition of existing fabric (2006).

Fig. 41
Ajuntament de Barcelona, 'MPGM la Marina de la Zona Franca', Approved new volumes for the Sector 10 area (2006).

Fig. 42
Orthophoto of the area before its demolition.

to ceiling high, according to standardised generic housing typologies. In short, this planning generally operates by demolishing entire city blocks, emptying the land to erase traces of previous occupation, adjusting street alignments, establishing *ex-novo* building volumes, and re-parcelling the territory into new plots.





Conclusion
A Vivid Setting for Design Speculation

This chapter, Chapter 3, initially provided a *modus operandi* for its research in the form of a methodological foundation. Design speculation has been portrayed as an innovative, appropriate and relevant vehicle for conducting qualitative enquiry in regard to architectural and urban phenomena at the highest level (including doctoral research), while embracing conventional academic protocols and a range of scholarship to underpin its credibility, rigour and originality. Furthermore, in this chapter I have subsequently established the design context and research site for this doctoral study in La Marina del Prat Vermell, drawing upon historical and urban policy literature as well as urban studies sources. My methodological outlook clearly rejects the laboratory paradigm of a blank canvas in favour of an approach capable of, empathically responding to an uncertain but deeper nature of the research questions. In thematic terms, the elusively vibrant and ambiguous or ill-defined character of this site in the Barcelona 'loose ends' appears as a 'context in motion.'[87] I argue that its geological, historical, political, ecological, sensorial and cultural depth, which has been grasped intersubjectively through my engagement with the environment and its representations, emerges as a stimulating 'practice field' for the promise of time to be explored. As the word implies, approaching this site *intersubjectively* (*inter*, i.e. betwixt, in the midst of + *subjectively*, i.e. in personal, idiosyncratic ways)[88] means embracing its shared notion which materialises from manifold conflicting rhythms and bodies, while opening up towards a phenomenological reading of its appearance and embodiment, subjectively attuned by my position as an architectural researcher. Such an interpretive operation is obviously not objective, or neutral; it is not 'seen from a safe distance.' Instead, it has already been a constructional and designerly form of appearance with the purpose of building up a fragile and unfixed—yet empathic and deep—sense of 'actant' place.[89]

Going forward, and through this designerly approach to the site, there exists a smooth transition between this chapter and the next: Unveiling 'Actant' Contexts. While this chapter has made apparent an expanding constellation of details from which to begin designing, inhabiting and transforming the site, the next chapter will gather, draw, compose and reconstruct a number of specific pre-existing places identified 'as found' stimulants of change. Both chapters are based on the same designerly operation of grasping 'actant' places and contexts, which might have the potential to trigger future changeability. However, the next chapter will be more selective and architecturally deliberate, by drawing and constructing a number of specific spatial stimulants of appropriation and transformation at varying scales.

87 Bruno Latour and Albena Yaneva, ''Give me a gun and I will make all buildings move': an ANT's view of architecture', in *Explorations in Architecture: Teaching, Design, Research,* ed. by Reto Geiser (Basel, Birkhäuser, 2008), pp. 80-89.

88 'Intersubjective', in the *Online Etymology Dictionary* [online], https://www.etymonline.com/word/intersubjective#etymonline_v_35067 [accessed 13 August 2022].

89 This alludes to the 'Actant' Contexts and Lived Places as referred to in Chapter 1.

Fig. 43 (previous page)
View of La Marina del Prat Vermell from Montjuïc (2015).

Fig.44
Eusebi Bertrand with Enric Granados, among others, next to La Ricarda pond (ca 1908-15).



Chapter 3
Research by Design in the Loose Ends of Barcelona

Chapter 4
Unveiling 'Actant' Contexts

Pau Bajet
PhD 'by design'
July 2023



Fig. 1
SACE Servicios Aéreos Comerciales Españoles, Zona Franca: Men-Par S.A. (1964).

> If place is one of those moments when thought is woven with reality… In this sense, the drawing, even the paper itself, is place for an instant… The rules that let us advance also appear in it. Blank paper never exists. It is only an invisible backing… if we accept the rules of the page, it is to forget it. (…)[1]

'We panic in front of a blank sheet of paper.' As architects, we may say this when we feel lost or even blocked before we have to start designing from scratch, without clues that tell us what to do or what goes next. It is much easier, some argue, to go on with a project once it has started, when we are 'in the middle of the process.' But what really is a blank canvas? When do we truly face a spotless *tabula rasa*? Of course, without constraints, absolute freedom is paralysing—but we have to realise that it is also a pipe-dream. Even in a desert we find constraint: the force of gravity; an excess of evaporation; sandy surfaces eroded and transported by wind; a scarcity of water and biodiversity; the faded footprints of local settlers and their history of struggle and habitation; real and made-up stories of the ancient merchant travellers, with their abundance of jade, textiles, glassware, porcelain, spices and tea; our ideas, desires and preconceptions about the desert; the global failure of today's migrant crisis and human rights abuses. The desert is not empty, it is full of 'actant' contexts. These are—as I have suggested above—moving contexts 'in flight'. They reflect not only the external attributes of location, but embody a physical, political, meteorological, geological and biological multiplicity, including our interpersonal cultural and imaginary landscapes. Awareness of these actant contexts tells us that there isn't indeed a project to 'start from scratch' authored by the architect—in fact, when we receive an empty sheet of paper, the paper is not truly empty: the project has already started. We are already 'in the middle of the process.' Amidst accidental becoming, we may just add

1 Enric Miralles, 'Place' in *El Croquis 30+49-50+72+100-101: Enric Miralles* (Madrid: El Croquis editorial, 2005), p.30.

another layer to distort the intersubjective production of space. This is our contribution to a moving and deep sense of place, a place that changes, however, with a slow rhythm. It shall move gradually and slowly because it cares for every substance of its context.[2]

To an extent, this doctoral study investigates the capacity of the preceding strata of each place to stimulate forthcoming layers, additions and accretions, and to freely engage in design with the reciprocity of past and present over time. But logically, this process should start with unveiling and making apparent the vitality of the prior catalytic ground that I regard as found, actant contexts. This chapter intends to identify a number of actant contexts in the southern fringes of Barcelona. It acknowledges a sort of deep context and is dismissive of the temptations of a *tabula rasa* approach that would see a vacant piece of land as a blank canvas. Design emerges here as a vehicle for seeing, understanding and constructing meaningful sites by means of selecting, documenting, drawing, writing and modelling fragmentary situations of opportunity. These interpretations make apparent infrastructural traces that may perform as found stimulants of change, enhancing and giving direction to upcoming appropriation and transformation over the course of time.

In this chapter, these situations are deliberately researched at different and sometimes overlapping scales in three sections: City Edge, Urban Fabric and Room Ensemble. The research unveils qualities from marine and agricultural witnesses, ordinary streetscapes and industrial yards, and prosaic rowhouses struggling to coexist within their changing environment. Although described here in linear fashion at different scales—large, intermediate and small—the process of exploring these contexts has not been linear, straightforward, or sequential. Instead, it has unfolded as both practice and method in a journey both logical and erratic, a bricolage of scholarly history, planning analyses, environmental and economic studies, overlapped by local anecdotes, *derive* rambling, photography, and sketching. In the context of my doctoral research, I have framed the endeavour as an individually scaled, non-comprehensive task based on information gathered between 2015 and 2020, with the aim of providing sufficient grounds on which to test the potential of time as a design tool. My concern has to be faithful to the messy, contingent and circumstantial context at which we encounter the city. If scaled up to professional urban development, the project would naturally entail a broader, interdisciplinary team effort so as to produce a more exhaustive, multidimensional and extensive kind of survey.

2 This alludes to the "Actant Contexts" and "Place Resistance" as referred in Chapter 1.

I City Edge

We begin with the larger scale of the actant contexts: the urban scale addressed by means of an edge of the city. One might argue that an even larger scale could usefully be attempted, but that would be beyond the scope of this research, which has set out to make its claims circumscribed by the real conditions of an existing urban topography. In particular, the investigation tackles a scale between landscape and urbanism at the southern fringes of Barcelona. My focus is on and around a city 'edge'[3] that can be discerned between different fabrics of this urban periphery: a kilometric metropolitan corridor that can be travelled crossing from Montjuïc hill to the Llobregat river, along the former delta plain. The scale of the city is not only addressed here in its physical sense, but also with regards to its temporal depth, implying its long-term historical and geological

3 Kevin Lynch, *The Image of the City* (Cambridge, MA: The MIT Press, 1960), pp.47.

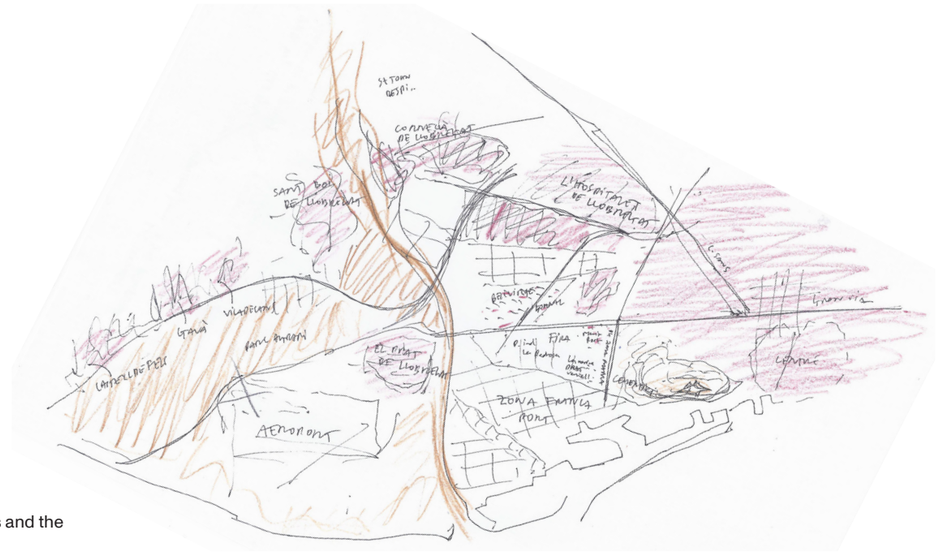


Fig. 2
Barcelona southern city edges and the Llobregat delta (2015).

developments. The paragraphs that follow will explore, firstly, traces of the wetlands and their vivid productive territory—Witnesses of the Delta—and, thereafter, the rich topographies of a specific city edge: An Artificial Mound as a Civic and Ecological Infrastructure.

Witnesses of the Delta

The exercise of drawing a temporal progression of delta transformations over recent millennia is not intended here to reflect a scientific account (may geologists forgive me), but to grasp—through drawing—the gigantic scale of its changes, originated from a compound of human and nonhuman factors, to understand its social and ecological implications (see Fig. 5, 6 and 7). While a good portion of the agricultural mosaic and small natural reservoirs, including irrigation channels, ponds and swamplands, have been preserved on the western side of the river, the eastern side of Llobregat has been aggressively urbanised. Wholesale urbanisation includes the kilometric coastline deviation to expand the fenced industrial port,





LAS PLAYAS LIBRES por Francisco Candel

UN DOMINGO POR LA MAÑANA EN CASA ANTUNEZ

PLAYA «CAPRI»

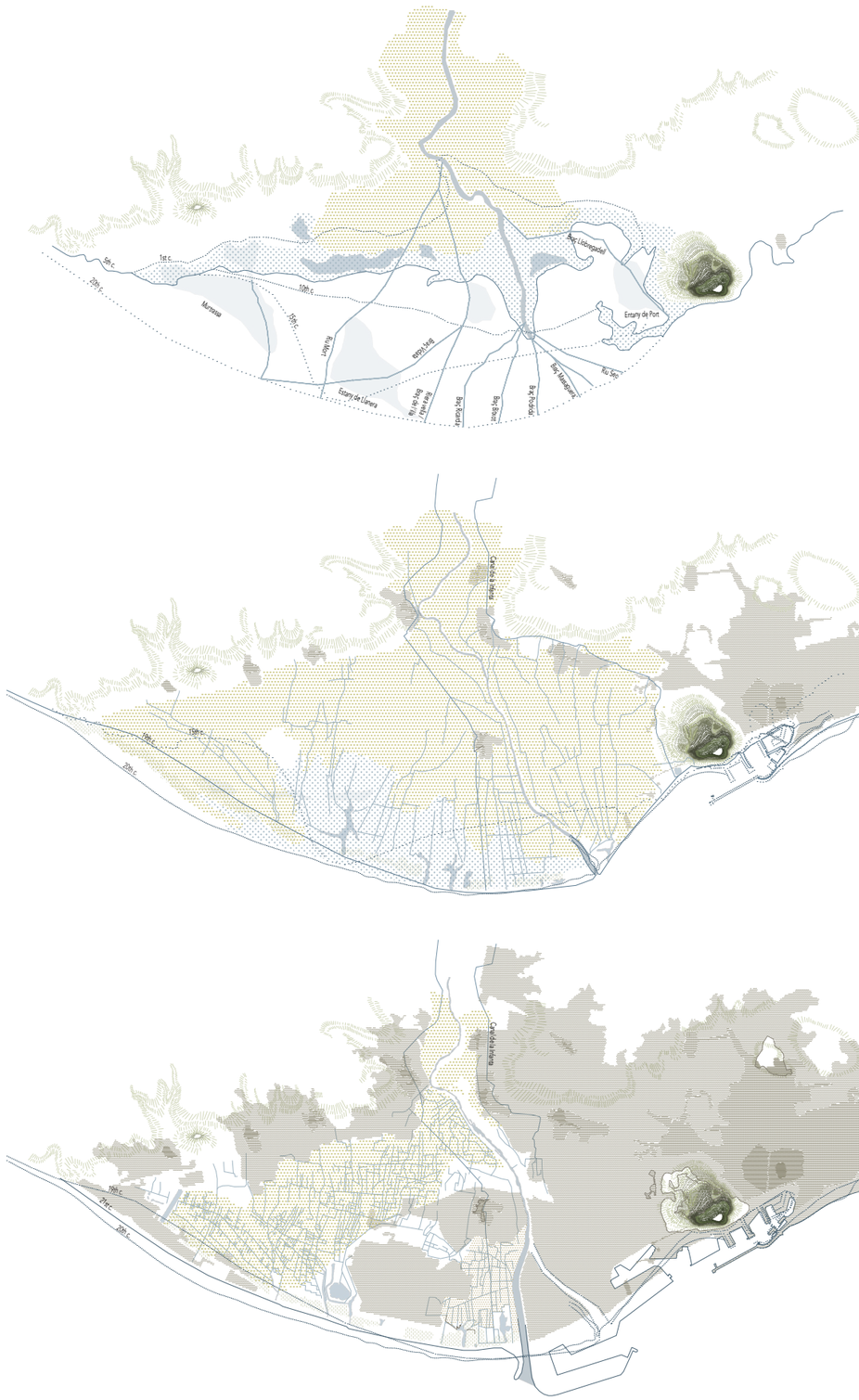
El porqué, ¿pensado ahora

—7

Fig. 3
Pond of Can Tunis as a popular destination for bath next to the beach (c. 1960).

Fig. 4
Beach of Can Tunis portrayed as leisure destination in *Destino* magazine, article by Paco Candel (1958).

Fig. 5, 6 and 7 (opposite page)
Plan of the Llobregat delta over centuries, indicating agricultural and urbanised land.
First drawing, 1st to 19th century.
Second drawing, 19th and 20th centntury.
Third drawing, as 2015.
Scale 1:200,000


5th c.
1st c.
10th c.
15th c.
Murnesa
La Marina
Riera Blanca
Riu de Sant Boi
Riera Rambla
Riera Rambla
Riera Rambla
Riera Rambla
Riu Sec
Estany de Port
Estany de Llobregat
Estany de Llobregat
Estany de Llobregat

prohibiting access for the public, occluding a previously public beach. It is a physical and cultural barrier to coastal walks, to biodiversity, and the delta's historical and collective memories—including the distant reminiscence of the medieval natural port. These fringes of the city, between Montjuïc and the river, do not respond to a traditional binary paradigm of 'inside versus outside' as city versus landscape (see Fig. 2). Instead, a vague territory of industrial colonization spreads between motorways and railway tracks. A *terrain vague* that, in spite of its aesthetic potential, has indeed suffered the raw forces of capitalism.[4] The consequences are both social and ecological: aquifer contamination due to unrestrained industrial exploitation is severe in this area (see Fig. 8). Likewise, this monofunctional industrial district is the most affected by the heat island effect in the whole city (see Fig. 9), a phenomenon attributed to the lack of vegetated and drained terrain together with extensive

4 Philip Ursprung, argues that an over anesthetization of *Terrain Vague* produces an Industrial Sublime, a naturalization (and acceptance) of the raw forces of capitalism and how they affect society. See Philip Ursprung, 'Beyond the Terrain Vague: Following Lara Almarcegui', in Lara Almarcegui, ed. by Octavio Zya (Madrid: Turner, 2013). pp.49-55. See also, Ignasi de Solà-Morales, *Terraing Vague* (Cambridge, MA: MIT Press, 1995), pp.118-123.

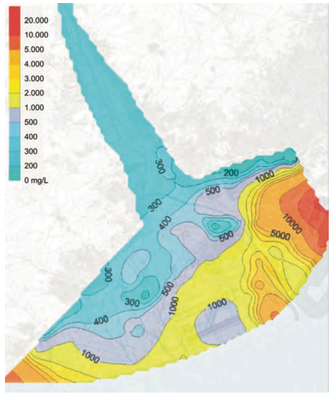


Fig. 8
Chlorides contamination in the aquifer of the Llobregat Delta.

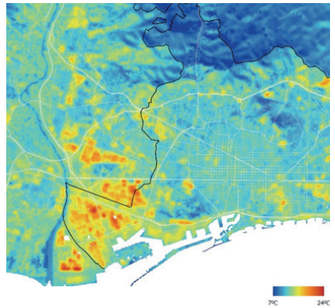


Fig. 9 (opposite page)
Map of surface temperature in Barcelona.

industrial roof construction and hard surfaces. Combined with the dominant summer winds coming from the south, this makes this district perform as an unwelcome radiator for the whole south-west side of Barcelona during the warm seasons (see Fig. 10). Knowledge and understanding of the anthropic distortions already witnessed by and carried out in this place will, the research argues, provide a renewed, reoriented perspective on which basis we may envisage the potential for meaningful large-scale, future transformation.

Witnesses or better said 'time witnesses'[5]—even if fragmentary ones—of the delta's prosaic historical development may be unveiled to unfold futurity. On this side of the delta, there still exists (particularly in the junction between Gran Via and the river) a number of irrigation streams and agricultural fields resisting the pressure of urbanisation, a legacy of the Canal de la Infanta today almost disappeared (see Fig. 11). Likewise, even though approved plans for the area aspire to demolish almost all the ordinary sheds, aged industrial constructions and rowhouses—all the prosaic buildings erected

5 Florian Beigel and Philip Christou, *Architecture as City: Saemangeum Island City* (Wien; New York: Springer, 2010), p.52.

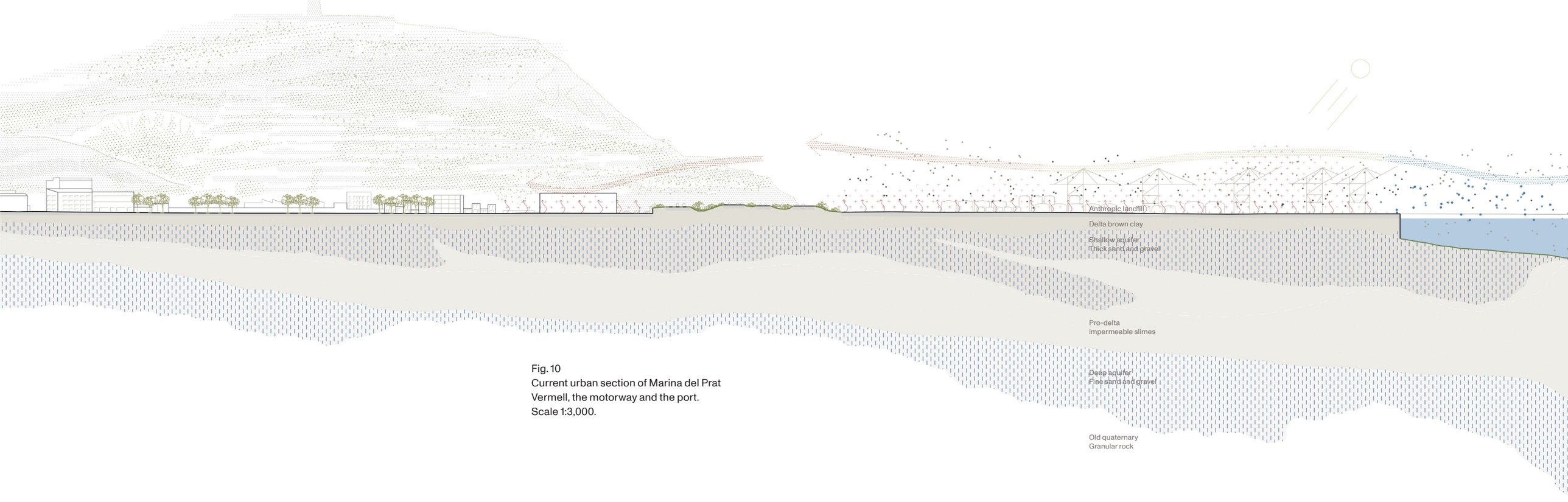


Fig. 10
Current urban section of Marina del Prat Vermell, the motorway and the port.
Scale 1:3,000.



Fig. 11
Site plan of the city edge.
Scale 1:20,000.

before the 1960s that coexisted with the agricultural mosaic—many of these constructions appear to be in reasonably good condition, and therefore amenable to renovation and reuse. This is the case of the factory that gave name to the neighbourhood—the Bertrand 'Prat Vermell' factory—an arguably unattractive building without artistic value which, however, has an important secret history (see Fig. 23 in Chapter 3). The same applies to several old warehouses or, for instance, the Santiveri colony (which I will discuss later). Many of these embody the qualities of what Stewart Brand called 'Low Road' construction, that is, 'low-visibility, low-rent, no-style, high turnover,'[6] buildings that invite appropriation. Similarly, today, most traces of the informal settlements and shanty towns are gone and, with them, all material witnesses of their politically empowering past. Such memories that can be traced, for example, in Paco Candel's celebrated book *Los Otros Catalanes* (The Other Catalans).[7] The author, born in southern Spain and raised precisely here, in Eduard Aunós colony, wrote an autobiographical account of the struggle between migrants and locals, to nourish the renewed, interrelated open identity of the *other* Catalans. In this fragile yet deeply physical and cultural context I wonder, is it possible to embrace an alternative approach to urban transformation, one that avoids sanitising the area? Should development not attempt to advantage the ordinary pre-existence and explore its potential? My suggestion is that all these witnesses, charged as actant contexts, may hide the capacity of triggering—as found catalysts—alternative, more sensitive, rooted, pleasant and ecological open-ended prospects.

An Artificial Mound as a Civic and Ecological Infrastructure

A large infrastructural corridor, of approximately two-hundred meters width, crosses from Montjuic to the river, containing motorways and railway tracks (see Fig. 10 and 11). Its origin dates back to a straight track built in 1881 cutting across the delta farmlands. Today, this infrastructural spine separates and disconnects its two sides. To the north: modest industry and La Marina del Prat Vermell neighbourhood, with its obsolete warehouses and the Council's claim to become a densified part of the city. To the south: the Zona Franca industrial estate and the port, containing mono-functional productive uses. Residential inhabitation is not allowed on this side, where

6 Stewart Brand, *How Buildings Learn: What Happens After they are Built* (New York: Penguin books, 1994), p.24.

7 Francisco Candel, *Els altres Catalans* (Barcelona: Edicions 62, 1964). First published in Catalan, the original manuscript was written in Spanish and originated form an article published in 1958 titled 'Los otros catalanes'.





Fig. 12
Pere Surribas, Casas baratas de Can Tunis (1963).

Fig. 13
Brigada Topográfica de Ingenieros del Ejército, 'Plano de la zona del Puerto Franco de Barcelona y terrenos adyacentes' (1926).

Fig. 14 (opposite page)
View of leftover land between lanes.



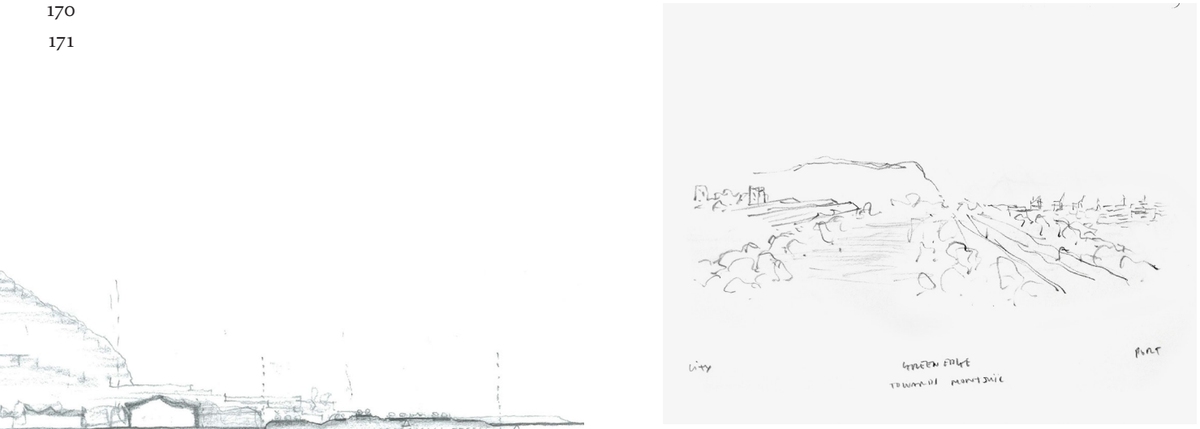
street walkability is hard and vitality conspicuous by its absence—not to mention the chemical hazards associated with the nearby mechanical plant and the carriage of dangerous goods.[8] In short, this infrastructural corridor produces an edge in the form of a barrier separating city and industry. The city turns its back at this border; it neglects its threshold capacity (see Fig. 5, 35 and 40 in Chapter 3). In this sense, it is significant to realise that the plan for the Free Port of 1926 depicted a hatched area along the railway tracks (see Fig. 13). This area was envisaged to become an 80m wide boulevard, connecting two distinct urban developments (above, a city extension;[9] below, the claimed Free Port).[10] The idea of this empty land, as a threshold rather than a barrier, contrasts with today's inaccessible traffic corridor and provides a clue about its potential transformation. In fact, a bare glimpse to the existing corridor reveals that a massive portion of its surface consists already of empty land (to be exact, sliced and inaccessible leftover fractions of land see Fig. 14). This uncultivated and yet vegetated terrain may be seen, after French landscaper Gilles Clément, as a fragment of the 'third landscape'—an unexpected free biological system for constant diversity and adaptation, that appears in the archipelago of peripheral leftover land.[11] This third landscape

8 Barcelona Regional, *Estratègia delta del Llobregat: Ajuntament de Barcelona, Ajuntament de l'Hospitalet de Llobregat, Ajuntament del Prat de Llobregat* (Barcelona: Barcelona Regional, 2018), pp.36-37. https://ajuntament.barcelona.cat/economiatreball/sites/default/files/documents/Memoria%20ESTRATEGIA%20DELTA_A4_completa.pdf [accessed 21 October 2022]

9 In spite of the presence of early industry at the beginning of the 20th century, the massive industrialization of the area was not foreseen. Conversely, there existed several projects of dense city extension for this area next to the Free Port.

10 See chapter 3.

11 Gilles Clément, *Manifiesto del Tercer paisaje*, Second edition. (Barcelona: Editorial Gustavo Gili, 2014), p.50. Originally published in 2004 under the French title *Manifeste du Tiers paysage*



crosses, along roads and tracks, from Montjuïc 'park' to the Llobregat river and beyond, connecting this ecosystem with the agricultural fields and natural reservoirs of the western side of the delta. Even though today this connection is indeed fragile, it can be read as a dormant ecological infrastructure, waiting to be enhanced.

Closer reading of this ecological corridor reveals a sophisticated human and nonhuman feature. The accumulation of railways and roads has created a long mound, an abrupt inflection standing out of the gentle delta plain (see Fig. 15, 17, 19 and 20). This 7m-high human-made notional topography has generated a catalytic relief: in contrast to the flatland's exposure, the creases and slopes between tracks and lanes have shaped basins and concavities that safeguard and multiply biodiversity, functioning as drains.[12] This extended, subtle topography stretches from the sheer promontory of Montjuïc, redefining a second shoreline before the horizontal harbour plain. As historical engravings reveal, Barcelona was once framed by the abrupt cliffs of Montjuïc rising from the sea (see Fig. 16 in Chapter 3). With subsequent port extensions, the narrow pathway of Morrot expanded a few hundred metres (see Fig. 36 in Chapter 3). Nevertheless, as the port plain merges with the sea, the pedestrian experience approaching

12 Ibid., p.20.

Fig. 15
Section of the infrastructural corridor (2016).

Fig. 16
Loose sketch of the corridor as an ecological infrastructure (2016).

Fig. 17 (opposite page)
Topographic model with curves every meter. Scale 1:5,000 (50 × 50 cm).





Fig. 18
Sketch of Montjuïc before the sea (2016).

Fig. 19 (below) and 20 (opposite page)
Topographic model with curves every meter. Scale 1:5,000 (50 × 50 cm).

the mountain from the city retains echoes of the old sublime image of Montjuïc before the ocean: a horizontality inhabited by distant freighters and cruise ships, a lattice of port cranes, the sound of seagulls and waves, the smell of the sea (see Fig. 18). Emerging from and grounded by the figure of Montjuïc, the human and nonhuman civic edge containing metropolitan infrastructures and a third landscape, seems to emerge as a second shoreline. It is a city edge with the potential, I argue, to reclaim a lost cultural and ecological relationship of the whole district with the sea and the delta.

In this section I have explored, drawn and modelled physical and immaterial traces that I propose to activate as found actant contexts at a large scale, focusing on a city edge. This has entailed a manifold investigation to unveil specific, ordinary traits of the place. The aim of acknowledging the context in depth is not to romanticise its image but, more pragmatically, to reveal and reinforce the potential of its ordinary character. Massive artificial distortions carried out in the area, particularly since the 1960s, have damaged its biodiversity and climatology, socially marginalising this already peripheral quarter. I suggest, however, that this ecological and cultural damage could be reversed. But is it plausible to use existing large-scale human-made urban transformation as a lever of generative socio-ecological metabolisms such as those of the 'third landscape' or the 'low road'? In the preceding, I have identified time witnesses of the delta origins, of the prolific irrigation and agricultural legacy, of a prosaic vernacular industry, of the social accomplishments and struggle—witnesses that in Chapter 5 will intend to trigger a slow and rooted journey of indeterminate and delightful future transformation.







Fig. 21
Plan of urban fabric next to Montjuïc (2017). Original scale 1:3,000 (reduction at 1:6,000).

II Urban Fabric

The second section of this chapter explores the intermediate-scale of actant contexts. Within the city tissue, this investigation is centred on an urban fragment that I see as representative of the place. As anticipated, the core of this study is the Santiveri colony: an area within the 'MPGM Marina del Prat Vermell' whose urban transformation has not yet been fully drawn.[13] These city blocks, adjacent to the rear Montjuïc hillsides and cemetery (east), are delimited by Passeig de la Zona Franca (west), the traffic corridor (south) and a slightly more densified portion of the urban fabric in continuity to the Marina de Port neighbourhood (north). Naturally, this intermediate-scale exploration is not isolated from its expanded context, as already surveyed. It initiates ties with smaller-scale research that will continue later on. In the forthcoming paragraphs, this section begins to unveil material traces of prosaic industrial and agricultural pasts—Ordinary Streetscapes and Yards. Studies of the depth of the plot mosaic and its habitation over time—Plot Tissue of Activity Fields—follow and, finally, it suggests contextual criteria for defining urban grain in Barcelona—Familiar City Structures.

Ordinary Streetscapes and Yards

Sequential plans and orthophotos of this small quarter, across three centuries, reveal forces that shaped its accidental morphology. Known for hundreds of years as the Estany de Port (Pond of the Port), the area retains memories of the vanished medieval natural port (see Fig. 5, 6 and 7). The Canal de la Infanta construction (1817) laid out a tissue of paths, irrigation channels and farming plots—gradually further subdivided—that is still visible in today's city structure (see

13 Ajuntament de Barcelona, *MPGM Marina del Prat Vermell* (Barcelona: Ajuntament de Barcelona, 2006) https://dtes.gencat.cat/rpucportal/AppJava/cercaExpedient.do?reqCode=veureDocument&set-locale=ca&codintExp=225863&fromPage=load [accessed 29/10/22].

Fig. 22, 23, 24, 25 and 26). Mare de Déu de Port Street has its origin on the course of the main canal, while Encuny Street used to be a sinuous pathway, parallel to Montjuïc hillsides, providing access and watering the farmlands. Previously, this serpentine path was known as Valencia Lane, as a sign of its territorial implantation, and for decades it was named Camí del Pont de les Vaques (Cow's Bridge Lane). In these fields, cattle grazed in the meadow on their way to the city's largest slaughterhouse.

Numerous vernacular industrial warehouses respected the agricultural pattern, gradually occupying the land. This pattern was interrupted by the superimposition of two perpendicular axes dividing the farmlands: horizontally, the railway track built in 1881 and, vertically, the boulevard Passeig de la Zona Franca planned a few decades later to connect this peripheral district under development (see Fig. 22 and 23). Since then, urbanization in this part of the city has negotiated between the serendipitous agricultural structure and the imposed orthogonal order. Ferrocarrils Catalans Street, the contemporary urban edge facing Montjuïc, follows strictly a line traced in the 1920s by a tram track (see figure 22 and 24). Although these tracks have since disappeared, a void in front of the mountain



Fig. 22
Shaping forces of the place before 1950 (2017).



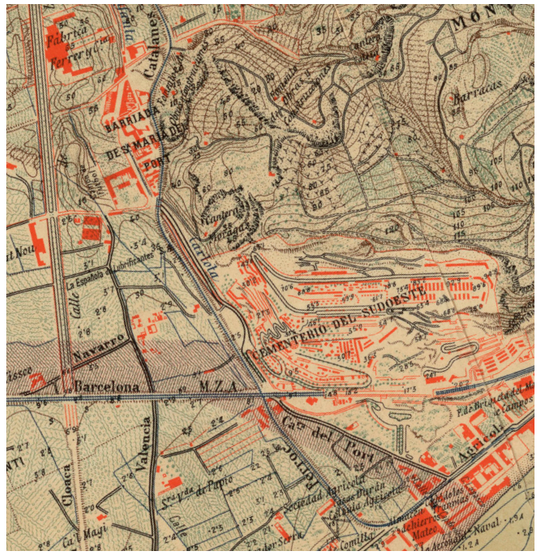






Fig. 23 (above)
J.M. Serra, detail of Plan of Barcelona (1890).

Fig. 25 (below)
US Army Map Service, photometric flight (1956-57).

Fig. 24 (above)
Brigada Topográfica de Ingenieros del Ejército, 'Plano de la zona del Puerto Franco de Barcelona y terrenos adyacentes' (1926).

Fig. 26 (below)
Comisión de Urbanismo y Servicios Comunes de Barcelona, orthophoto (1965).

remains. Initially parcelled out as farmlands, this void is today an underused park occupied by a grid of trees. In addition to material traces, municipal regulations, economic and social factors (Chapter 3) explain nonphysical forces shaping the site. My argument is that these many-sided mundane contingencies have directed and may still affect the transformation of the place.

Ordinary characteristics of the streetscapes and yards can be grasped as found stimulants of future developments. Notwithstanding an awareness of their accidental chronology recalled above, these spaces and settings can (and should) be appreciated for how they are experienced today. The loose sketches, pencil plans and photographs here introduced aim to capture qualities of resilient urban edges and greens and the modest scale and mild urbanity of Gabriel Miró and Torres de Marina streets—public spaces framed by the silhouette of Montjuïc (see Fig. 27, 28, 29, 30, 31 and 32). Similarly, analogue qualities can be traced within the large industrial plots. This is how alleys and yards appear in between warehouses as settings of





Fig. 27
Gabriel Miró Street towards Montjuïc (2017).

Fig. 28
Torres de Marina Street towards Montjuïc (2017).

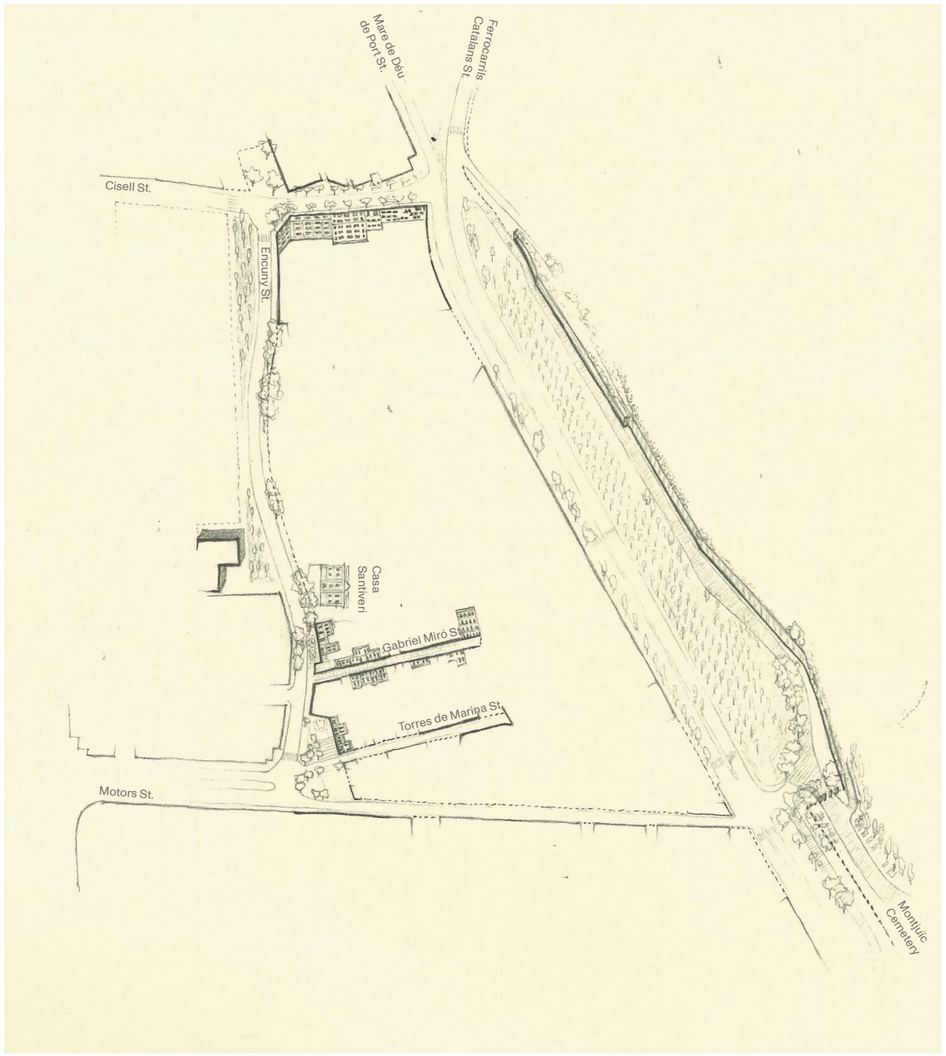


Fig. 29
Public space as found spatial infrastructure (2017).
Scale 1:4,000.





Fig. 30 (opposite page)
Loose sketch of Torres de Marina Street (2017).

Fig. 31 (opposite page)
Loose sketch of Gabriel Miró Street (2017).

Fig. 32
Line drawing of Torres de Marina Street.



182 unexpected beauty and a prosaic sense of place (see Fig. 33, 34 and 35).
183 These settings might be accidental, but they are not random: they are 'lived places'[14] shaped over time by cumulative everyday situations and austere constructional means. Charged with this sense of becoming, these courtyards or internal passages operate as common threshold spines within the large industrial plots. They offer a kind of (industrial) civic structure. I suggest that—once acknowledged—this carefully revealed threshold structure has the potential to act as a trigger for more attentive urban transformations. Besides their spatial and cultural character, these yards and alleys should also be measured for their atmospheric lack of comfort: with the exception of a few gardens shadowed by old pines, most of these spaces are empty, hard paved surfaces, increasing the heat island effect (see Fig. 34).

14 See the section "Lived Places" in chapter 1.



Fig. 33
Loose sketch of DAMM yard (2017).



Fig. 34
DISCER and DAMM yards (2017).

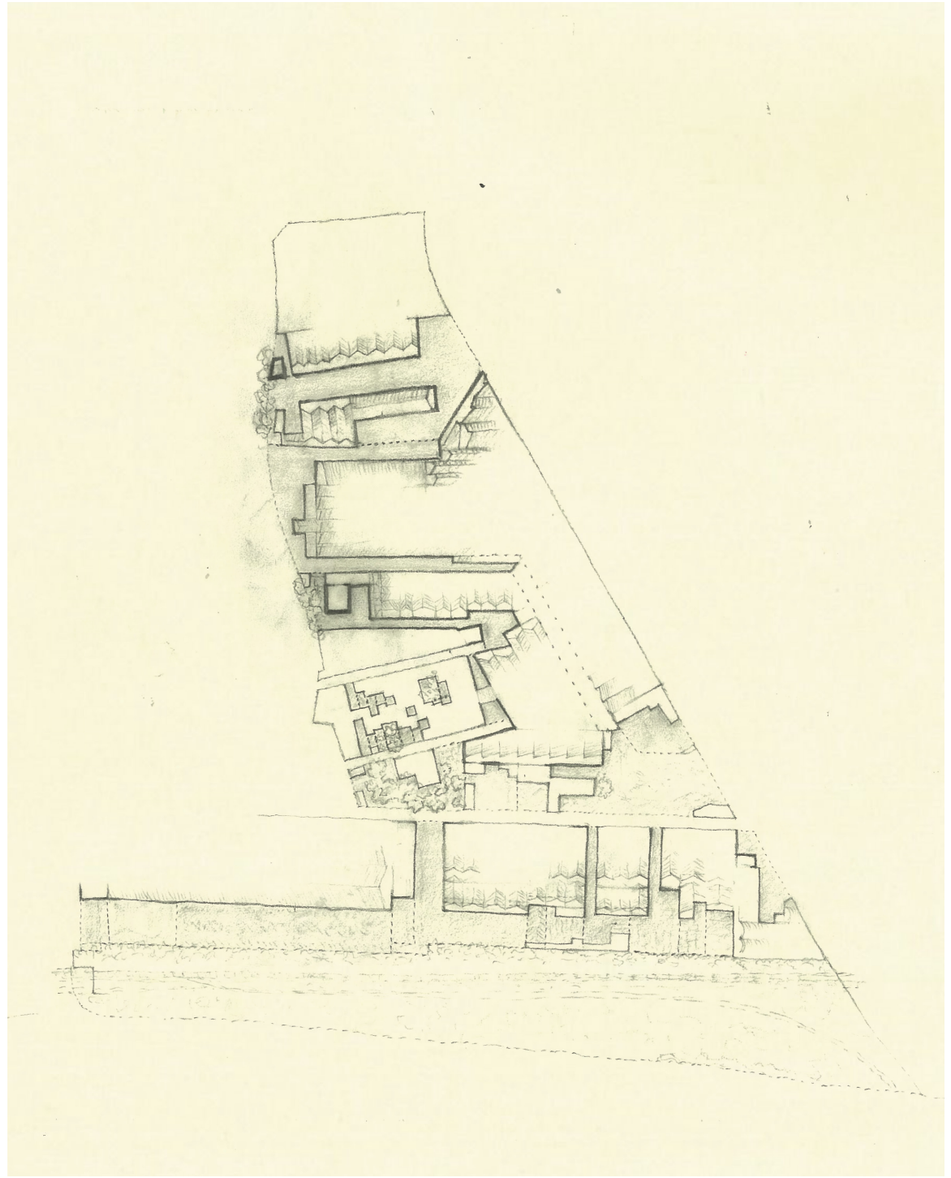


Fig. 35
Yards and alleys as found spatial infrastructure (2017).
Scale 1:4,000.

The division of the terrain into portions of distinct tenure, varied size and shape, catalyses territorial transformation in several ways. Firstly, it enables gradual, sustainable development. The plot tissue constitutes an adaptable, territorial net to be filled by diverse biographies and belongings. As urban transformation begins, the built environment (split into plots) does not need to be entirely demolished, emptied, and rendered lifeless during construction as a *tabula rasa.* Rather, it allows a step by step change that maintains a portion of ongoing habitation. This facilitates, even during large scale development, a topographical and social continuity as well as an uninterrupted—slowly adjusting—sense of place. Secondly, specific qualities of the plots (their size, shape, access or location) invite certain types of occupation. Hence the narrow and dense plots of the sheltered Gabriel Miró street allow for economical, personal, and varied habitation, by contrast with the large plots next to the railway tracks, occupied by larger companies. The larger plots allow lorry access, can easily adapt to changing activities, and are more efficient, but their full renovation costs more, and their morphology confers a homogeneity upon the built environment (see Fig. 37). Despite their liberating spatial potential, the techniques of land subdivision have also been historically dictated by the rules of capitalism, by establishing a system of exchange value based on land ownership and



Fig. 36
View of the urban block from Montjuïc (2015).



Fig. 37
Plot tissue and activities (2017). See key on next page.

1. Offices, workshops
Plot area: 1395 sqm
Built area: 5456 sqm

2. Offices, workshops
Plot area: 822 sqm
Built area: 3392 sqm

3. Offices, workshops (for sale)
Plot area: 377 sqm
Built area: 1508 sqm

4. Offices, workshops
Plot area: 1150 sqm
Built area: 2605 sqm

5. Offices
Plot area: 3745 sqm
Built area: 8739 sqm
- Anapharm Europe 4342 sqm
- Grupo Eulen 4397 sqm

6. Logistics
Plot area: 10289 sqm
Built area: 7190 sqm
- DAMM 2414 sqm
- DISCER 2088 sqm

7. PLANA
Plot area: 2317 sqm
Built area: 1554 sqm

8. PLANA
Plot area: 2955 sqm
Built area: 4638 sqm

9. PLANA
Plot area: 3262 sqm
Built area: 4118 sqm

10. IZARO
Plot area: 3351 sqm
Built area: 5910 sqm

11. MECALUX
Plot area: 5256 sqm
Built area: 9556 sqm

12. CASA SANTIVERI
Plot area: 9333 sqm
Built area: 9882 sqm
- Santiveri house 1062 sqm
- ET and industry 5396 sqm
- Industry (to C. Gabriel Miró) 330 sqm
- Transportes zona franca 3094

13. CASA SANTIVERI
Plot area: 3194 sqm
Built area: 2575 sqm

14. CASA SANTIVERI
Plot area: 4106 sqm
Built area: 1960 sqm

15. Bar restaurante FLORES
Plot area: 150 sqm
Built area: 300 sqm

16. SIKKEN pintura al horno
Plot area: 131 sqm
Built area: 131 sqm

17. gf tbc and housing
Plot area: 132 sqm
Built area: 360 sqm

18. tbc
Plot area: 57 sqm
Built area: 57 sqm

19. LOCKSMITH
Plot area: 86 sqm
Built area: 172 sqm

20. Dwelling
Plot area: 79 sqm
Built area: 79 sqm

21. Dwelling
Plot area: 78 sqm
Built area: 42 sqm

22. Bar IGNACIO
Plot area: 178 sqm
Built area: 125 sqm

23. tbc
Plot area: 157 sqm
Built area: 314 sqm

24. CASA SANTIVERI
Plot area: 150 sqm
Built area: 300 sqm

25. Casa Mateo (dwelling)
Plot area: 125 sqm
Built area: 150 sqm

26. CASA SANTIVERI
Plot area: 140 sqm
Built area: 280 sqm

27. CASA SANTIVERI
Plot area: 125 sqm
Built area: 300 sqm

28. CASA SANTIVERI
Plot area: 120 sqm
Built area: 240 sqm

29. CASA SANTIVERI
Plot area: 119 sqm
Built area: 240 sqm

30. CASA SANTIVERI
Plot area: 108 sqm
Built area: 216 sqm

31. CASA SANTIVERI
Plot area: 99 sqm
Built area: 198 sqm

32. CASA SANTIVERI
Plot area: 100 sqm
Built area: 200 sqm

33. Dwelling
Plot area: 99 sqm
Built area: 396 sqm

34. Dwelling
Plot area: 78 sqm
Built area: 312 sqm

35. DIETÉTIC SL. and MICROELEVA SL
Plot area: 551 sqm
Built area: 2204 sqm

36. tbc
Plot area: 151 sqm
Built area: 49 sqm

37. Dwelling
Plot area: 151 sqm
Built area: 184 sqm

38. Dwelling
Plot area: 148 sqm
Built area: 136 sqm

39. Dwelling
Plot area: 150 sqm
Built area: 162 sqm

40. PINK HOUSE brothel and Dwelling
Plot area: 146 sqm
Built area: 199 sqm

41. WHITE HOUSE brothel and Dwelling
Plot area: 305 sqm
Built area: 113 sqm

42. JOMGRA MÁRMOLES SL
Plot area: 148 sqm
Built area: 148 sqm

43. Dwelling
Plot area: 295 sqm
Built area: 101 sqm

44. Workshops
Plot area: 146 sqm
Built area: 76 sqm

45. Workshops
Plot area: 146 sqm
Built area: 108 sqm

46. Workshops
Plot area: 147 sqm
Built area: 276 sqm

47. Workshops
Plot area: 150 sqm
Built area: 300 sqm

48. Yard
Plot area: 177 sqm
Built area: 0 sqm

49. tbc
Plot area: 86 sqm
Built area: 86 sqm

50. Dwelling
Plot area: 89 sqm
Built area: 164 sqm

51. Dwelling
Plot area: 83 sqm
Built area: 80 sqm

52. Braseria LIN and dwelling
Plot area: 84 sqm
Built area: 124 sqm

53. Dwelling
Plot area: 151 sqm
Built area: 0 sqm

54. tbc
Plot area: 151 sqm
Built area: 148 sqm

55. Housing
Plot area: 151 sqm
Built area: 148 sqm

56. tbc
Plot area: 224 sqm
Built area: 64 sqm

57. Dwelling
Plot area: 223 sqm
Built area: 226 sqm

58. tbc
Plot area: 146 sqm
Built area: 59 sqm

59. Villa Manolita (dwelling)
Plot area: 149 sqm
Built area: 45 sqm

60. M. Andrés Vilella Escultor
Plot area: 142 sqm
Built area: 142 sqm

61. tbc
Plot area: 149 sqm
Built area: 81 sqm

62. tbc
Plot area: 149 sqm
Built area: 66 sqm

63. tbc
Plot area: 286 sqm
Built area: 279 sqm

64. tbc
Plot area: 142 sqm
Built area: 142 sqm

65. yard
Plot area: 337 sqm
Built area: 0 sqm

66. Bar Restaurante EL RANCHO GRANDE
Plot area: 2701 sqm
Built area: 45 sqm

67. DI.COM (demloshed in 2015)
Plot area: 1763 sqm
Built area: 663 sqm

68. TARREGA (demloshed in 2015)
Plot area: 1256 sqm
Built area: 521 sqm

69. FCC (empty)
Plot area: 5451 sqm
Built area: 819 sqm

70. RODI MOTOR SERVICES and BALART Y BADIA
Plot area: 1486 sqm
Built area: 5130 sqm

71. APPLUS (ITV)
Plot area: 4536 sqm
Built area: 5928 sqm

72. PERELADA COMERCIAL
Plot area: 9099 sqm
Built area: 5918 sqm

73. Various
Plot area: 9099 sqm
Built area: 11648 sqm
- PERELADA COMERCIAL 3662 sqm
- ITASOL MOTORS 2842 sqm
- AUTOMÓVILES FERNÁNDEZ 2534 sqm
- LAND MOTORS 2610 sqm

74. MERCHANSERVIS
Plot area: 1278 sqm
Built area: 3284 sqm

75. CENTRAL DE RECANVI ORIGINAL DE L'AUTOMÒBIL
Plot area: 6162 sqm
Built area: 6872 sqm

76. COSCOLLOLA
Plot area: 1055 sqm
Built area: 1374 sqm

77. BICING
Plot area: 2124 sqm
Built area: 3000 sqm

78. CITELUM
Plot area: 2577 sqm
Built area: 2620 sqm

79. CITELUM
Plot area: 1381 sqm
Built area: 790 sqm

80. tbc
Plot area: 1472 sqm
Built area: 520 sqm

81. IBERJET
Plot area: 1531 sqm
Built area: 2940 sqm

82. INGRAPLA SA
Plot area: 1557 sqm
Built area: 2887 sqm

83. Offices
Plot area: 3183 sqm
Built area: 2163 sqm

84. Offices AGÈNCIA TRIBUTÀRIA
Plot area: 20091 sqm
Built area: 44535 sqm

85. Empty
Plot area: 7092 sqm
Built area: 0 sqm

86. Housing tower
Plot area: 6546 sqm
Built area: 19812 sqm

88. CENTRAL REPARACIÓ CARROSSERIES
Plot area: 4953 sqm
Built area: 19312 sqm

89. Various
Plot area: 11275 sqm
Built area: 15699 sqm
- GAS SERVEI 1584 sqm
- CENTRAL CARN 738 sqm
- UPAT 706 sqm
- ELKOMA 690 sqm
- TECNO PERFIL 654 sqm
- AMBICLIMA 626 sqm
- BENTLEY 445 sqm
- ASTON MARTIN Bcn 445 sqm
- KIA MOTORS 907 sqm
- CAL VALENTÍ restaurant 450 sqm
- CATALANA MOTORS 2326 sqm
- COMERCIAL AIM 1140 sqm
- TECNO PERFIL 2316 sqm
- GRUP CONDAL 1972 sqm



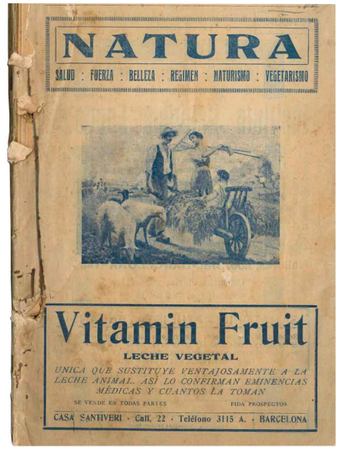
Fig. 38
Casa Santiveri (c. 1930).

Fig. 39
Natura vegetarian magazine by Casa Santiveri (c. 1930).

Fig. 40 (opposite page)
Figure/ground plan of the study site city block.

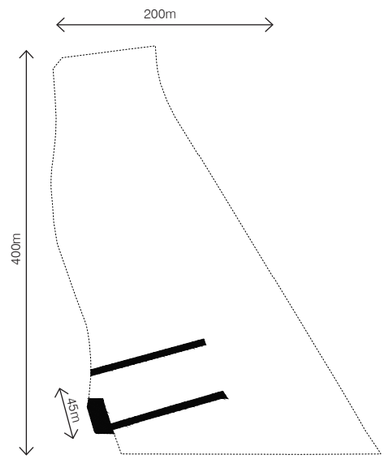
perpetuating social segregation as a means to exert control.[15] But, as I have previously argued, we might have to consider *how to practice* land subdivision rather than neglecting its boons and banes. Hence, political and ecological criticism shall be embraced in the techniques of a slow, open-ended and evolutionary plot tissue development.

In this urban fragment, spontaneous habitation has performed (and will hopefully keep operating) as a stimulant for spatial change. Habitation here embodies an aspect of human agency that I aim to quantify and qualify. In addressing this, I have listed 88 plots according to footage, tenure and activities, including administrative public offices, a large range of small and mid-size secondary and tertiary businesses, three restaurants, two brothels and several row houses occupied by diverse uses (see Fig. 37). A number of these activities have been evident for decades—they are rooted here. While acknowledging that it is one among others, the Santiveri company is a unique example in this regard. Towards the end of the 19th century, Jaume Santiveri was a young shirt vendor who suffered a lung disease and, after conventional medicine had given up on him, was cured through natural remedies in the sanatorium of priest Sebastian Kneipp in Wörishofen.[16] After this, in 1893, he opened the first shop of natural products and dietetics known in Spain. Initially reliant on imports, the Santiveri company started producing healthy food, natural supplements and medicinal herbs, as well as vegan, vegetarian and coeliac comestibles in a factory-house in Can Tunis. This building



15 See “Politics of Land” in chapter 2.
16 Santiveri, *Memorias de un apellido* (2021) https://www.santiveri.com/memorias-de-un-apellido/ [accessed 18/12/2021].

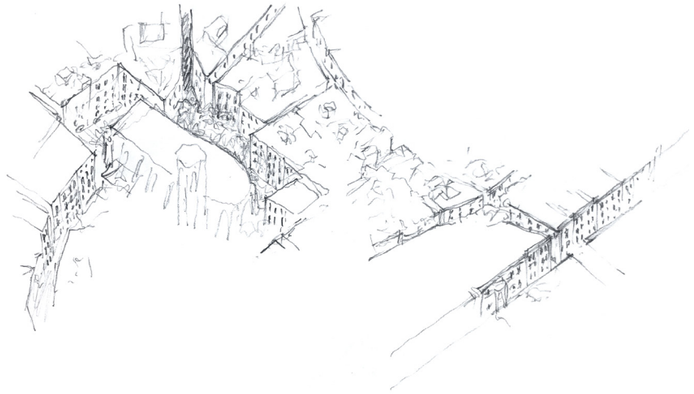
was expropriated in 1928 in favour of the Free Port Consortium, forcing them to move to their current location, in today’s Encuny Street. Emulating an early industrialist model, houses were built around the factory for the workers and their families, erecting the rowhouses of the Santiveri colony, also known as Barriada Nova del Port. This was the beginning of Gabriel Miró and Torres de Marina streets. Since the 1960s, this small neighbourhood sadly saw its population progressively dissipate as industrialization expanded.[17] After decades of both success and struggle, the Santiveri company today boasts three production centres, over 250 points of sale, c. 400 employees and exports worldwide. Now, in the context of the current council plans for city densification (and the MPGM La Marina del Prat Vermell) the continuity of the company in this place is unsure. This is the case of Santiveri, but all the other activities—even the modest or temporary ones—shall be equally relevant to embrace. In this piece of research, which has a provisional character in that its purpose is speculative rather than to mimic professional practice, I have aimed to give a sense of the place’s habitational depth, with the conviction that any urban transformation of the area should carefully embrace its inhabitants and their intersubjective purposes.[18]



Familiar City Structures

Consideration of the process of design at a scale that involves substantial public space and urban fabric transformation leads inevitably to questions about ordinary one might take for granted in the city. These are questions such as: what should be the ideal size of a street or a city block? What about its built density, architectural expression, plot pattern, and ground floor porosity? And much more—how should we account for its amalgam of usage variety, capacity to embrace habitational vulnerability, circularity of its economic and energetic flows, amount of vegetated and draining terrain to sustain a healthy environment for humans and nonhumans? This research, in its effort to use time as a design tool, cannot attempt to respond to all of these questions in depth. But, at the same time, if the process of design speculation is to be rigorous in its knowledge producing dimension, it cannot ignore or overlook any relevant issues. It should not be paralyzed by the lack of certainty that naturally accompanied the work of urban transformation. Therefore, design thinking necessarily welcomes provisional or light contextual criteria for these

17 Editorial, ‘La colònia Santiveri, la identitat d’un barri’, *La Marina*, 22 August 2017. http://lamarina.cat/noticies/societat/12799/colonia-santiveri/ [accessed 18/12/2021].
18 See “Spatial Agency” in chapter 2.



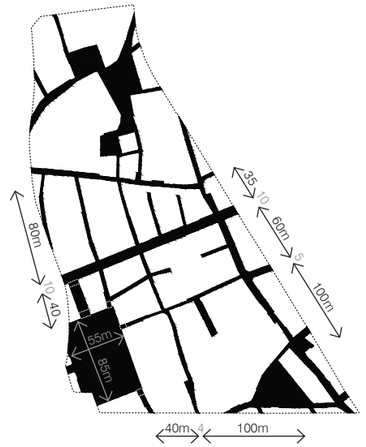


Fig. 40 (top left)
Loose sketch of medieval Gòtic.

Fig. 41 (top right)
Figure/ground plan of medieval Gòtic.

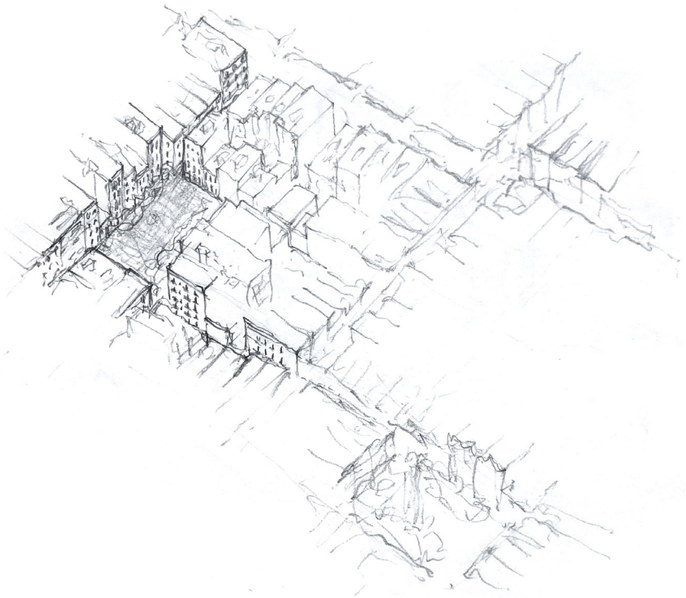
Fig. 42 (bottom left)
Loose sketch of 19th c. Gràcia.

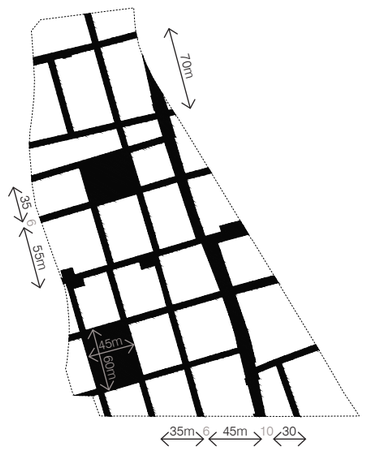
Fig. 43 (bottom right)
Figure/ground plan of 19th c. Gràcia.

considerations; approaches that could arguably be considered intuition. Hence, based on personal feelings and previous experiences, these fragile criteria—or might say, intersubjective clichés and reasonable assumptions—may be inserted into the category of actant contexts.

A simple Gestalt diagram, illustrating the figure-ground phenomenon between familiar fabrics of Barcelona, offers morphological clues regarding valuable urban texture and public space specificity.[19] The study site consists of a massive industrial city block of ca 400x200m (see Fig. 40), similar to other mono-functional industrial city blocks

19 This is based on the studies of 'Crisis of the Object: Predicament of Texture' in Fred Koetter and Colin Rowe, *Collage City* (Cambridge, MA: The MIT Press, 1978).





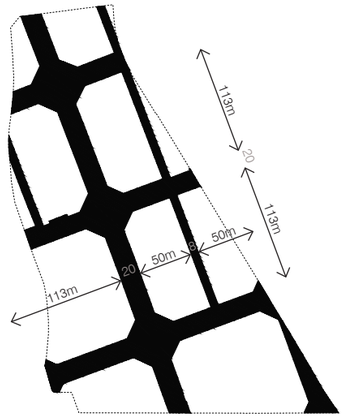
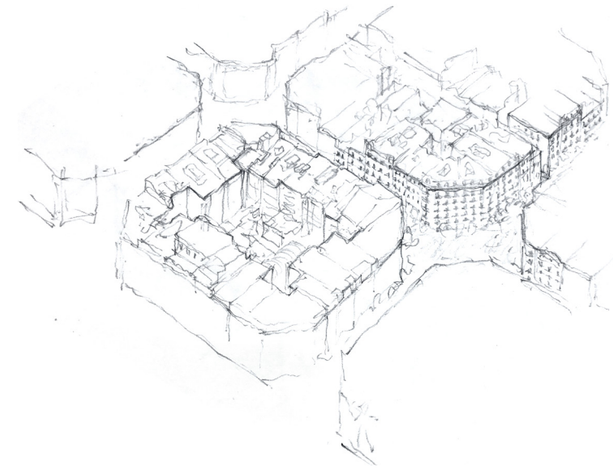


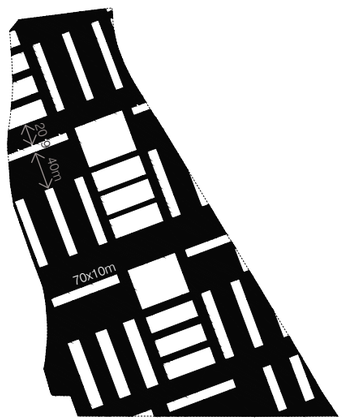
Fig. 44 (top left)
Figure/ground plan of 19th c. Eixample.

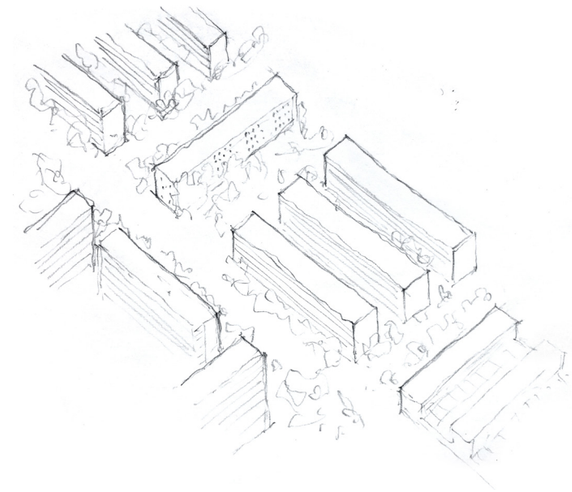
Fig. 45 (top right)
Loose sketch of 19th c. Eixample.

Fig. 46 (bottom left)
Figure/ground plan of 20th c. Besòs housing estates.

Fig. 47 (bottom right)
Loose sketch of 20th c. Besòs housing estates.

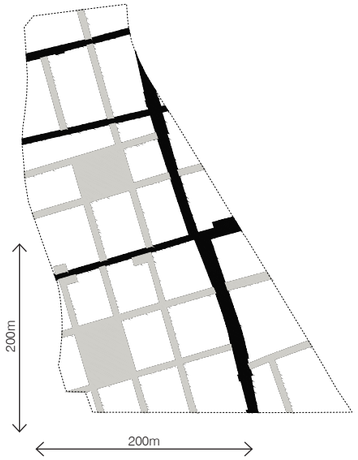






of the periphery. Using this footprint, alternative city fabrics (see Fig. 40, 41, 42, 43, 44 and 45) demonstrate higher levels of urbanity, comparable to those pursued by the council for the Marina del Prat Vermell: in medieval Gòtic, in early 19th century Gràcia, and even in the Eixample extension. These precedents depict in-between spaces—or figures—charged with character: streets, passages and squares structuring civic life. Their dimensions range from smaller 30x30m blocks to larger 113x113m, with a walkable average around 50x70m. Older streets based on foot-travellers are 5-10m wide, while Eixample—designed to suit vehicular traffic—has a regular width of 20m. In Gràcia, recent urban renovations have aimed to enhance street life by overlapping two urban frameworks: a larger grid of vehicle-streets (of ca 200x200m) and a smaller grid of pedestrian-streets



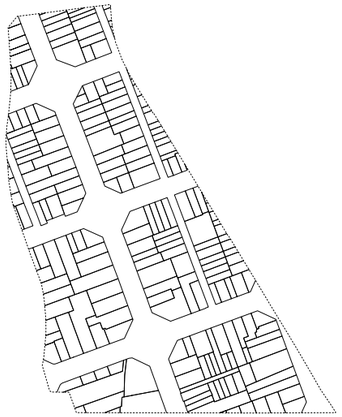


(of ca 50x50m). Car access is reduced rather than restricted to enable the appropriation of public space by citizens (see Fig. 48, 49 and 52).[20]

In contrast to historical precedent, the Besòs housing estates are dominated by object buildings floating in a disorientating urban void. In the 1970s, among other scholars and practitioners sceptical of orthodox modernist urbanism,[21] Manuel de Solà-Morales stated that 'the measurement of historic cities shows how the average grids (of about 60m) give the greatest proportions of public ways (urbanity, [...]) in proportion to built surface.'[22] In fact, myriad additional attributes may be appreciated by comparing built urban fabrics. If we compare Eixample and Poblenou (see figures X and X), both with apparently similar street structures, palpable differences—physical, social and historical distinctions—emerge in their constructional typologies, interior space sizes, and even their plots. Built density, measured through the net floor ratio (i.e. built floor above ground in m2, divided by buildable ground in m2) is another aspect to take into account; with an average in Barcelona of 2.11; of 3.46 in Gràcia and 5.27 in Eixample. This ratio can be compared to the habitation density (inhabitants/ha): 157 in Barcelona, 380 in Gràcia and 353 in Eixample. In sum, these practices of spatial definition perform as stimulants—at the same time that are conditioned by—distinguished modes of habitation.

Beyond spatial form, contemporary urban progress is considered through biological and political networks of flows and exchange.[23] The discourse of ecological urbanism has, for several decades, attempted to visualise urban processes through schematic representations that transcend the physical form of the city—thus mapping territorially these metabolic fluxes.[24] Undoubtedly, awareness of this exosystemic phenomena may empower alternative, more careful and sustainable political and ecological agendas. In Barcelona, the public urban planning agency at AMB (Àrea Metropolitana de Barcelona), has spent the past decade drawing up the Urbanistic Metropolitan Plan to enhance the city's 'health, democracy, equity, social justice, sustainability and resilience.'[25] This colossal interdisciplinary effort has mapped manifold data, producing drawings that have been widely published and exhibited.[26] In this way, not only the physical structure of the research site can be compared to other parts of the city, but also flows such as water, electricity, gas, waste, telecommunications; vectors of mobility such as fast and slow roads, bike-friendly and pedestrian streets;

20 An equivalent urban strategy, namely the 'superilles' (super-blocks), is currently being pursued by the city council throughout Barcelona.
21 For example, Leon Krier researched desired configurations for the reconstruction of the European city. This included suitable proportions of public space and city block for urban extensions in Paris, Berlin and Barcelona. See Leon Krier, *Architecture and Urban Design* (New York: St. Martin's Press, 1992).



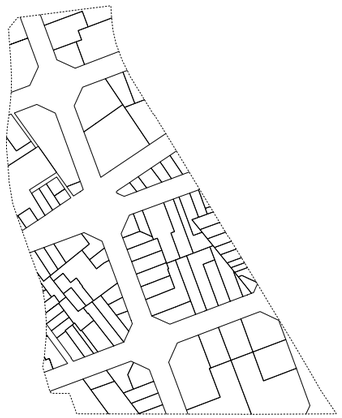


Fig. 48
Typical pedestrian-street in Gràcia quarter.

Fig. 49
Figure/ground plan of Gràcia showing pedestrian (grey) and vehicle (black) streets.

Fig. 50 (bottom left)
Plot tissue of Eixample.

Fig. 51 (bottom right)
Plot tissue of Poblenou.

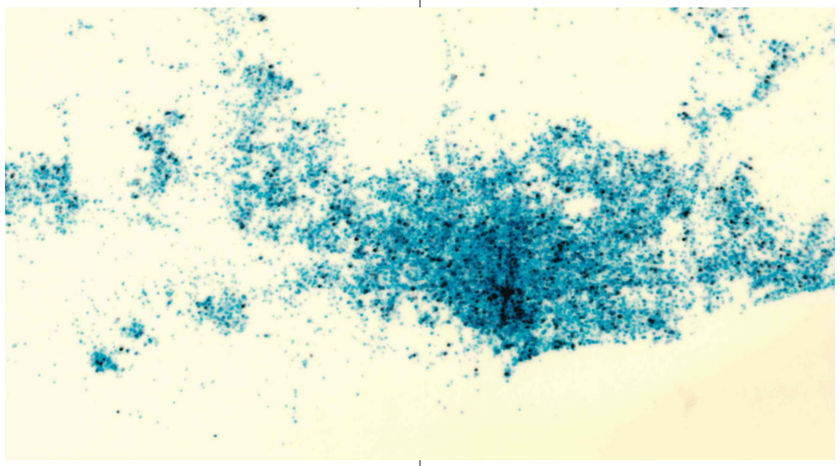
Fig. 52 (opposite page)
Communal celebration in Gràcia pedestrian-streets.



22 Manuel Solà-Morales, 'Dear Leon, why 22 by 22', *Lotus International*, 19 (1978), 38-41.
23 See "Land Resilience" in chapter 1, particularly "Politics of Land" and "Generative Ecologies."
24 According to Danneels, a pioneer in this regard was Belgian ecologist Paul Duvigneaud with his work on the planning policies of the Brussels Agglomeration during the 1970s. See Koenraad Danneels, 'Historicizing Ecological Urbanism: Paul Duvigneaud, the Brussels Agglomeration and the influence of ecology on urbanism (1970-2016)' In *On Reproduction. Re-Imagining the Political Ecology of Urbanism*, ed. by Michiel Dehaene and David Peleman (Ghent, 2018). http://hdl.handle.net/1854/LU-8605458
25 AMB, *Pla Director Urbanísitc Metropolità* (2021) https://urbanisme.amb.cat/pdu-metropolita [accessed 29/12/2021]
26 AMB, *Atlas Barcelona Metropoli:. Contemporary maps* (Àrea Metropolitana de Barcelona, 2015).







concentrations of freight and industry transport; citizen access to public transit and intermodality; dynamic behaviour of daily movement around the city and hourly, localized Twitter activity; the form of economic activity distinguishing industry, logistics, commerce, wholesale trade, medical centres, offices, tech industry, courier services and agricultural production; identifying markets, street markets, department stores, shopping malls, hypermarkets, street axes of everyday commerce; leisure, cultural, recreational and touristic attractors such as theatres, museums, restaurants and cafes, beaches, hiking paths and biking trails, concentration of hotels, monuments, walking and bus tours; public and private facilities of cultural, religious, educational, health, supply, management and security services; among many other data (see Fig. 53, 54 and 55 as a brief example). This myriad accumulation of detail provides accurate place-specificity, but can be difficult to digest. This is why it is important, in my view, that flux and data flows are treated, in this research and with regard to its purposes, as an added stratum to a predominantly experiential phenomenologically grasped awareness of place.[27] In this regard, Barac states:

> Places, as opposed to words and ideas, have a better chance of holding their own against tendencies towards conceptualisation. Encountered through data, a city can soon disappear into flows of information. One city becomes much like another (…) But if one comes to know a place not by data about it but by the dirt on the ground—by means of soil that can be scooped up and sifted through one's fingers—then the city is never anything other than what it is.

27 This recalls the previously discussed notion of "Place Resistance" in chapter 1.

Fig. 53 (top left)
Àrea Metropolitana de Barcelona, Metropolitan Metabolism Networks.

Fig. 54
Àrea Metropolitana de Barcelona, Use of taxis at 6:10 am.

Fig. 55
Àrea Metropolitana de Barcelona, Tweets interaction at 9:03 pm.

> Its ground is always the basis of its claim to being a place that has a unique location, character, and substance.[28]

In this section I have subjectively recorded ordinary footprints mentally or physically localized in this Urban Fabric. As with the City Edge, the aim was to activate, but at an intermediate-scale, such fragile traces as found actant contexts of future transformation. The research method I have proposed and adopted is reflexive regarding its subjective aspects, couched in awareness that the elements drawn or recalled have nothing to do with and make no direct claims regarding commonly accepted artistic or cultural value. Indeed, it would seem ridiculous to attach such values to every found witness of this semi-industrial fabric: its yards and alleys, their prosaic memories and chronological becoming, the existing plot pattern, every humble economic activity, the urban 'clichés' explored around the city. But at the same time, any observant critic would find it shocking—as I do—that urban transformation nearby has been started with the demolition of entire industrial city blocks, re-parcelling a new plot tissue and erecting altogether brand-new generic modern buildings. This study wonders if perhaps there is a way of caring for these ordinary witnesses of the place—not caring so much so as to freeze and monumentalise them, but rather to playfully and slowly distorting them. An attentive yet open minded urban distortion, carried out by many over an extended period of time, should start by activating every substance of its context.

28 Matthew Barac, 'Place resists: grounding African urban order in an age of global change' *Social Dynamics*, 37.1 (2011), 24-42.



Fig. 56
Urban context in 2016.
Scale 1:1,100.



Fig. 57
Existing Room Ensemble.
Scale 1:750.

III Room Ensemble

From the inside, the city can be envisaged as an accumulation or 'society' (after Louis Kahn) of rooms: 'the society of rooms is the place where it is good to learn, good to live, good to work.'[29] It is a civic compound where all uses are welcomed, even if Kahn warned us that 'rooms must suggest their use without name'[30]—which, in my view, directs our attention to notions addressed earlier such as specific indeterminacy and atmospheric generosity.[31] Beyond interior or exterior preconceptions, even the street should be considered a room. In this sense, Kahn sharply stated that 'the street is a room of agreement'[32]—emphasising the threshold and social capacity of such spaces. This section, the last in this chapter, explores a smaller scale of the actant contexts, delving precisely into the room ensemble of this urban fragment. Notwithstanding acknowledgement that an investigation such as this one could have extended its scope to even smaller scale—to furniture gadgets, and textiles—the architectonic tone of the research outlook supports the decision to frame the study as a triad of scalar interrelatedness: starting at the city edge, continuing with its urban fabric, and concluding in its room ensemble.

By comparison with the previous sections, this section builds its argument on informed assumptions concerning room layouts and building interiors rather than direct observation. Public CAD surveys are only provided at scale 1:1,000.[33] Systematic access to interior private space was unfeasible, so generally I have viewed interiors from the street (although many of the warehouses and industrial spaces in the study areas were fairly visible from the outside). Likewise, I

29 Louis Kahn, 'The Room, the Street and Human Agreement', *AIA Journal*, 56.3 (1971), pp.33-34.
30 *Op. cit.*
31 See the section "Everyday Rooms of Becoming" in Chapter 1.
32 Louis Kahn, 'The Room', pp. 33-34.
33 CAD sources have been downloaded at scale 1:1,000 from AMB public website: https://geoportalcartografia.amb.cat/AppGeoportalCartografia2/index.html

200 did not have at my disposal more detailed accurate geotechnical and
201 topographical data of the private plots (i.e. surveys that could depict subtle ground variations, precise identification of vegetation, interior plans of the built fabric, physical properties of the soil, etc.). Public access to cadastral information[34] has been useful, while Google Maps 3D and Goolzoom have been additional useful tools to appreciate details of the urban texture. Finally, considering that this area is not isolated from its context in Barcelona, the researcher's familiarity with the context (as both resident and as a built environment professional) and specific knowledge of typical constructional systems, depending on the period and urban typology, allows us to establish a coherent understanding of their specificities.

Struggle and Vitality of the Warehouse and Rowhouse

This city block was mainly developed in two periods. The Santiveri rowhouses were first built in the early 1930s. Later, following the Spanish period of developmentalism around the 1960s, most of the warehouses and sheds appeared (see Fig. 1 and 26). As noted above, occupation of the rowhouses diminished as industrialization rose in the area. Their narrow and deep plots have concealed, since then, a variety of modest and diverse uses.[35] The larger plots typically contain standard industrial sheds (2,000-5,000 sqm in floor area), usually covered with asbestos roofs on light steel trusses and pillars, in 10-15 metre structural bays around 6m tall, usually occupying the entire plot up to the urban edges—even where such borders are oblique. By comparison with the autonomous, prismatic box buildings surrounded by wasteland, associated with most contemporary industrial estates, these awkwardly shaped warehouses, lining up to their plot contours, recall agricultural practices (see Fig. 21). Inside the double-height spaces of the warehouses, lighter construction with mezzanines, enclosed offices or other uses, have sporadically appeared over time (see Fig. 59). In this way, for half a century, a



Fig. 58
Unknown, Ca l'Agut house, in today's Motor Street (1932).

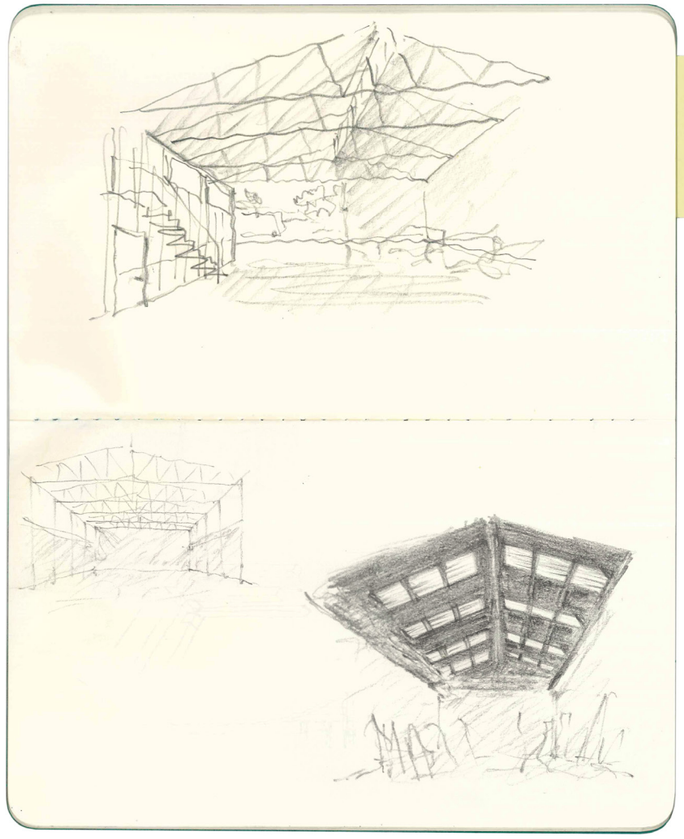


Fig. 59
Loose sketch of Interior qualities in Mare de Déu de Port Street and Gabriel Miró Street (2016).

majority of this city block has been inhabited by a low-cost-yet-grand sort of interior generosity.

In fact, public data provided by the city council evidences that these aged industrial spaces are inexpensively rented and owned.[36] Likewise, it is no secret that in the depth of this peripheral urban fabric (and particularly in the rowhouses plots), not only industry, but all kinds of modest and often vulnerable activities find a

34 The map of Spanish Cadastre (Sede electrónica del Cadastro) can publicly be accessed here: https://www1.sedecatastro.gob.es/Cartografia/mapa.aspx?pest=rc&from=OVCBusqueda&final=&ZV=NO&ZR=NO&anyoZV=&tematicos=&anyotem=

35 See this list of activities under the heading "Plot Tissue of Activity Fields" in the previous section.

36 In 2021 the average cadastral value of Marina del Prat Vermell was 460€/sqm, among the lowest neighborhoods, compared to an average of ca 1,000€/sqm in the entire city. Additional data can be observed such as average tertiary sale price in 2008, which shows an average of 1,890€/m2 compared to the city's 2,764€/m2, or average tertiary rental price in 2010, which shows an average of 6,47€/m2 compared to the city's 10,23€/m2—although interestingly the average tertiary rental unit price of this quarter was 9,315€ per month, six times more expensive that the city median, a data only explained by the much larger size of the industrial warehouses compared the rest of the city smaller lots. See Ajuntament de Barcelona, Estadísitca i Difusió de Dades (2021) https://ajuntament.barcelona.cat/estadistica [accessed 2/1/21]

home—uses (some of them illegal) that are usually excluded from wealthier quarters. In these interiors, the affordable adaptability which comprises a mixture of freedom of appropriation and ordinary humbleness recalls the 'Low Road' qualities celebrated by Brand.[37] Both the rowhouses (built almost a century ago) and the warehouses (standing for 60-some years) are in a deteriorated condition. So, architectural and urban renovation is not only a conviction of the city council, to address the contemporary housing emergency, but also a necessity to save urban fabric that is struggling to subsist. Therefore, a difficult task emerges: the challenge of configuring a kind of urban transformation that may preserve the vitality of these aged constructions— taking care of their vulnerable activities—while still striving to unveil fresh potential for future inhabitation.

Image Memories of Actant Supports

> The past is that which no longer acts, although in a sense it lives a shadowy and fleeting existence. It still is. It is real. The past remains accessible in the form of recollections, either as motor mechanisms in the form of habit memory, or, more correctly, in the form of image memories. (…) Memory is the present's mode of access to the past. The past is preserved in time, while the memory image, one of the past's images or elements, can be selected according to present interests.[38]

As we approach the conclusion of this chapter, this heading aims to extend the methodological principle of design research framed as creative speculation to the curation and composition of 'image memories.' These images are not necessarily literal representations or photographs, but rather a visual inventory of spatial stimulants combining precedence and association: a kaleidoscope of delightful appropriation and echoes of transformation, all related to the scale of the urban Room Ensemble. My intent for adopting this collage-like technique, of speculative reconstruction of the past within the present, is the aim of adding an additional stratum that will finally consolidate and enrich the actant context. This final layer of contextual depth characterises a cultural past in a representation of the collective memory as embodied in my own architectural recollections. Gathered together, these recollections operate as a propositional, transcultural, non-exhaustive compendium of cross-historical 'found' antecedents in the form of small images. These individual representations speak for themselves, as they offer glimpses of micro universes that are open for interpretation. But collected together they intend to compose sets of nuanced meaningful commonalities.

Notwithstanding the risk, in our data-saturated age, of triggering a loss of meaning due to the decontextualising of images, the argument here put forward is that this exercise may be still fruitful—it is a kind of endeavour that many have made before.[39] The communicative intentions that underpin this approach to the task of formulating an investigatory outlook embodied in creative practices include an openness to ambiguity, and anticipate composite conceptualisations in which a selection of antecedents are embedded, all anchored to the thesis as a whole. A caveat in regard to this outlook is my acknowledgement that we know all too well that this kind of image accumulation has sometimes led to obscure, arguably wilful, and even irritating misuse of unrooted cultural icons.[40] While this collection is not followed by a case-by-case analysis and exegesis, it concentrates and illustrates examples and ideas that I have widely explored in the second chapter, thus providing ample disciplinary context. In order to draw specific and varied traits of the support imagery, this inventory is segmented in ambiguous yet distinguishable common categories or 'spatial typicalities.' Each of these commonalities claim typical situations of delightful appropriation over time, avoiding isolating their visual similarities into dull typological reductions.[41] They intend to avow paradigmatic situations of spatial praxis capable of embodying character and meaning rooted in our cultural life, situations that play—in Dalibor's terms—'not only a synthetic but also a receptive role.'[42] Overall, rather than a closed restrictive taxonomy, this categorization aims to offer a suggestive, intentional yet open-ended cohort of interrelated familiarities.

37 Stewart Brand, *How Buildings Learn,* p. 24.
38 Elizabeth Grosz, 'The Future of Space: Toward an Architecture of Invention' in *Anyhow* ed. by Cynthia Davidson (Cambridge, MA: MIT Press, 1998); repr. in Elizabeth Grosz, *Architecture from the Outside. Essays on Virtual and Real Space* (Cambridge, MA: The MIT Press, 2001), pp.121-122.
39 See for instance the "Excursus" section in Fred Koetter and Colin Rowe, *Collage City* (Cambridge, MA: The MIT Press, 1978), pp. 151-177; collections of antecedents on resembling themes such as SITE, *Highrise of Homes* (New York: Rizzoli, 1982); and, among other examples, the collectively produced thematic image database, *Book of Copies* ed. by San Rocco (2012) available at https://www.sanrocco.info/bookofcopies [accessed 3/1/22].
40 This could apply to many, but it particularly alludes a critique by Adam Caruso of two books published on the work of Swiss architects Valerio Olgiati and Christian Kerez. See: Adam Caruso, 'Whatever Happened to Analogue Architecture', *AA Files*, 59, pp.74-75.
41 Peter Carl, 'Type, Field, Culture, Praxis', *Architectural Design*, 81. 1 (2011), 38-45.
42 Dalibor Vesely, Architecture in the age of divided representation: the question of creativity in the shadow of production (London: The MIT Press, 2004), pp.387-389.

Enduring Bones for Unplanned Interpretation

We start with almost-permanent structures that can be delightfully appropriated and even distorted over time. These are usually classic or even archaic kinds of spatial arrangements—even if they have recently been built and they are unsuspicious of mannerism—because they respond to essential technical and anthropological commonplaceness. Their base structure (and their spaces in-between) may be clearly perceived even if they are wildly inhabited and, yet, after secondary constructive additions have taken place. These persistent bones stimulate further transformation and unplanned forms of occupation to successively appear.


Fig. 62

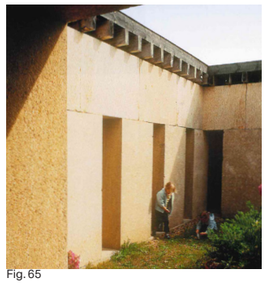


Fig. 65


Fig. 60


Fig. 64

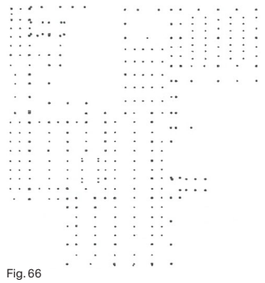


Fig. 66


Fig. 61

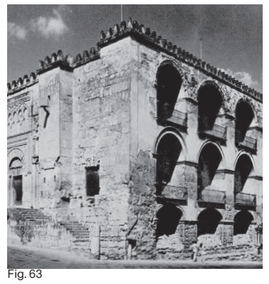


Fig. 63


Fig. 67

Delightful Spatial Rhythms and Differences

Then, spatial islands which contain recurrent rhythms, peculiar fluctuations and memorable differences of large and small, concealed and open air, shadowy and bright, social and hidden, central and diffuse, loud and silent, heavy and airy, cold and warm, avant-garde and vernacular, unique and ordinary, naturalised and domesticated interior and exterior rooms. These spaces are qualified by specific phenomenological gestures and yet they can be engaged and inhabited in loose, playful and unexpected ways. In a few words, this kind of spatial intensity has usually been referenced to the image of a whole city—or better yet, a universe—within a building.

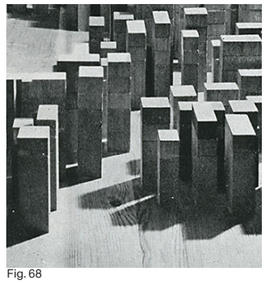


Fig. 68

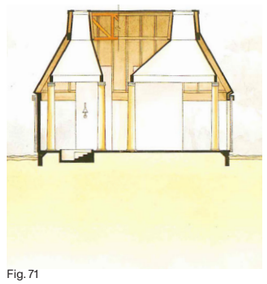


Fig. 71

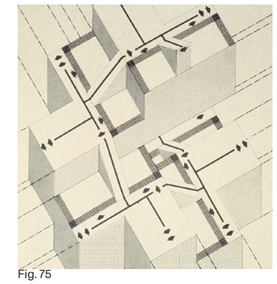


Fig. 75


Fig. 69


Fig. 72

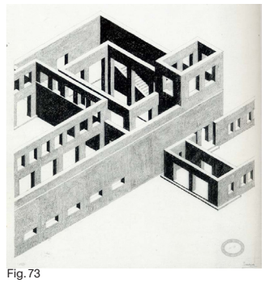


Fig. 73

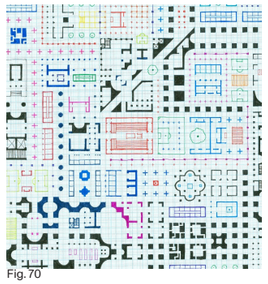


Fig. 70

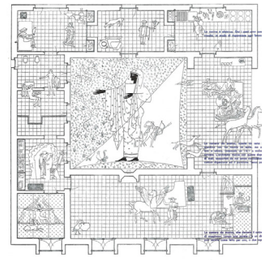


Fig. 74

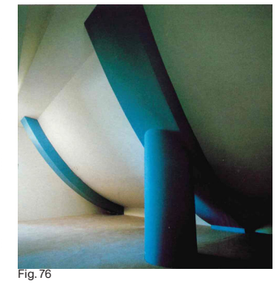


Fig. 76

Palaces of Communal Loose Choreographies

Next, comparable spatial compounds where rhythm and difference, first and foremost, follow the dictates of communal living practices. Gradients of threshold spatiality ranging from the crowd to the personal, with multiple nuanced situations where people may come across, share, exchange, debate and coexist with each other. These socio-spatial body practices interweaved with political or religious costumes may orchestrate—ideally loosely, avoiding determinism—choreographies of groups of people living in common.


Fig. 80


Fig. 77

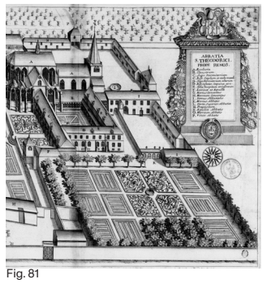


Fig. 81


Fig. 78


Fig. 79


Fig. 82

Thermodynamic Beyond-human Generosity

In certain spatial conglomerates, rhythm and difference may primarily follow the decrees of climate in search of comfort for humans and other species. Threshold gradients may vary from dry to humid or, for instance, concern the dynamics of cross ventilation to take advantage of prevailing winds and meteorological conditions. Niches may enclose or conceal bodily-emanated heat, or adopt air stratification to keep an elevated space cool. Organic matter, plants and the effect of evapotranspiration may improve air quality, produce a kind of aesthetic pleasure, besides housing insects, birds and biodiversity.[43] Occasionally, these strategies may exploit thermal inertia to keep space temperatures stable or, conversely, use greenhouse effect to produce precious solar energy absorption. Energetic dissipations, transmissions and absorptions to produce beyond-human habitational comfort and sensorial delight, while reducing power consumption and ecological footprint, summarise this category.

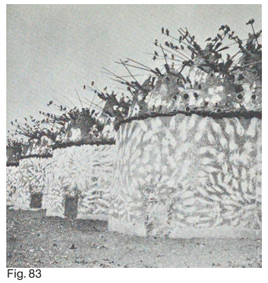


Fig. 83

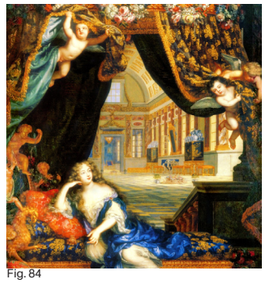


Fig. 84


Fig. 86


Fig. 89


Fig. 85

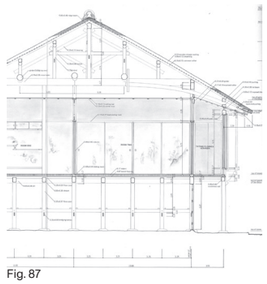


Fig. 87


Fig. 88

43 Evapotranspiration is water evaporation and transpiration from vegetation or the soil.

Infrastructures for Plots in the Air

This category follows the instincts of modernist heroes like the Hansens, Friberger, Kikutake and Habraken: the ambition of 'building sites up in the air.'[44] Collectively managed long-lasting large shared infrastructures, containing the loadbearing structure, installations, access and occasionally façades, intending to provide great levels of individual freedom within each lot. Escaping the megastructure concept's monumentality and sophistication, these supports are neither 'buildings' nor 'small fragments' of a historical city. Instead, they explore a physical and political threshold between both scales.

44 John N, Habraken, *Dragers en de Mensen*, (Amsterdam: Scheltema & Holkema, 1961); published in English as *Supports: An Alternative to Mass Housing*, trans. by B. Valkenburg (London: Architectural Press, 1972), p.70.


Fig. 90

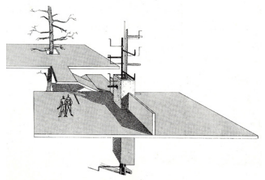


Fig. 95


Fig. 91


Fig. 94

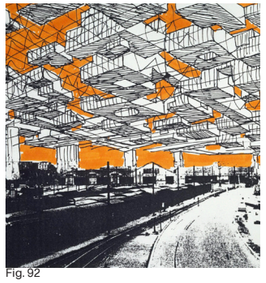


Fig. 92


Fig. 93

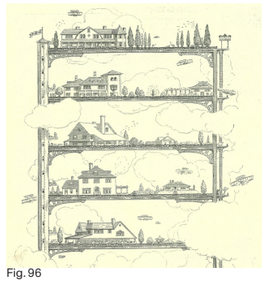


Fig. 96

Buildings as Layered Supports

Following a similar legacy, an approach to smaller and clearly recognizable entities—i.e. 'buildings'—although not as objectual wholes, but as an ensemble of layers and flows operating at different time frames. Compared to the Infrastructures for Plots in the Air, these smaller buildings are easier to manage, renovate or even replace by modest agency. One next to each other, these entities may aggregate as a larger urban ensemble through historically well-known urban techniques.


Fig. 97

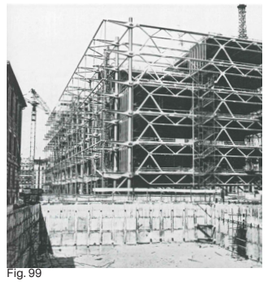


Fig. 99

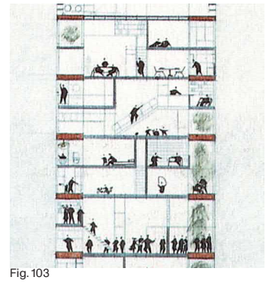


Fig. 103

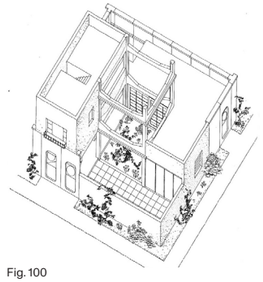


Fig. 100

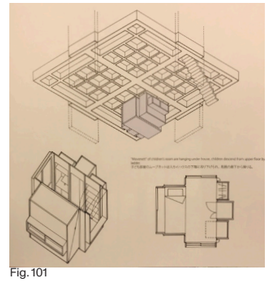


Fig. 101


Fig. 98

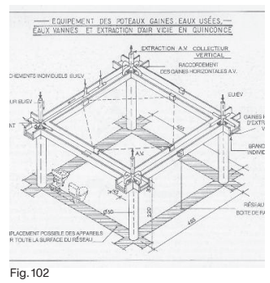


Fig. 102

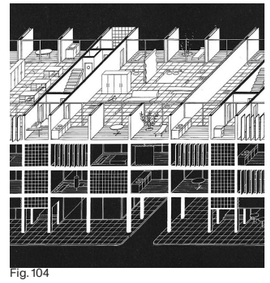


Fig. 104

Soft and Spontaneous Techniques of Habitation

Within dry infrastructural spaces, soft and changeable techniques of smaller architectures to produce modest sceneries for the everyday. Away from deterministic interior planning and standardization, generous interpretable spaces can be freely engaged. Sometimes such large chambers may be almost 'camped'—that is, occupied by relaxed fitout or furniture arrangements that inhabitants can use in different ways and change easily over time. In other instances, designed movable doors, tables, benches or gadgets may allow inhabitants with a set of possible alterations for their changing everyday usage, comfort and delight.


Fig. 105

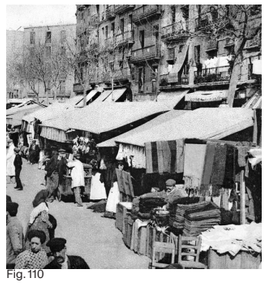


Fig. 110


Fig. 107


Fig. 108


Fig. 106

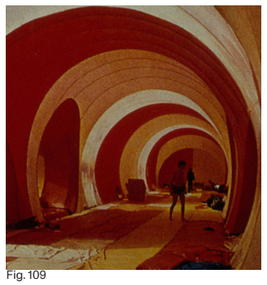


Fig. 109


Fig. 111

Tectonics of Change: Between Vernacular and Open Source

Shared and accessible technologies of construction may catalyse both modest everyday building alteration and far-reaching transformations. Because they are ordinary and easily produced, such changes may be built by either specialists or amateurs, allowing heterogeneous agency and open collaboration. Over time, this constructional ease enables sporadic and unexpected conversions and expansions. Against dull standardisation, design specificity and personalisation may be achieved both through a progressive digital production industry and a careful use of local materials, resources and vernacular constructional wisdom. In fact, this paradigm weaves together vernacular architecture—usually produced without architects[45]—with the open-source culture since the rise of the Internet—an approach that some refer to as open-source architecture.[46]


Fig. 114

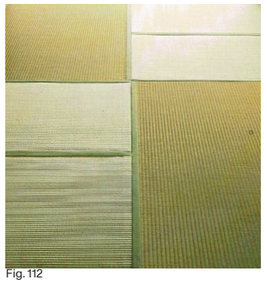


Fig. 112

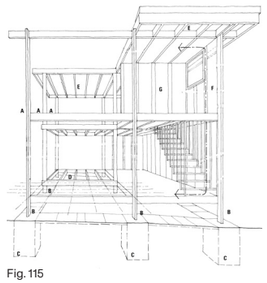


Fig. 115

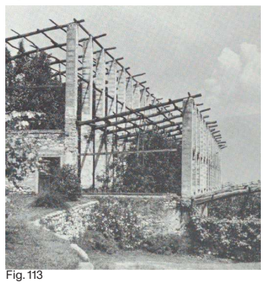


Fig. 113

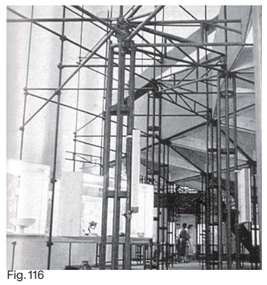


Fig. 116


Fig. 117

45 Bernard Rudofsky, *Architecture Without Architects. A Short Introduction to Non-Pedigreed Architecture* (New York: Museum of Modern Art, 1964).

46 A collaborative definition published in *Domus* magazine and currently evolving in Wikipedia reads as follows: 'OSArc (Open Source Architecture) is an emerging paradigm describing new procedures for the design, construction and operation of buildings, infrastructure and spaces. Drawing from references as diverse as open-source culture, avant-garde architectural theory, science fiction, language theory, and others, it describes an inclusive approach to spatial design, a collaborative use of design software and the transparent operation throughout the course of a building and city's life cycle.' See Carlo Ratti et al., Open Source Architecture (London: Thames & Hudson, 2015), p.64.

Fig. 60
'Architecture by substraction' in Les Baux-en-Provence.

Fig. 61
Erik Friberger, Däckhuset housing project in Göteborg (1959).

Fig 62
Jean Baptise Guibert, Engraving of 1st century Roman amphitheatre in Arlés (1686).

Fig. 63
Mosque of Cordoba.

Fig. 64
Miguel Fisac, housing in Damiel (1977).

Fig. 65
Gilles Perraudin, Vauvert wine cellars (1998).

Fig. 66
Katsura Palace, Column/floor post (17th c.).

Fig 67
Castle Hedingham, Essex (12th c.).

Fig. 68
Oswald Mathias Ungers, First proposal for the 'Neue Stradt' in Köln (1961).

Fig 69
Adolf Loos, Müller House (1930).

Fig. 70
Sam Jacob, Empire of Ice Cream No.16 (2011).

Fig. 71
Charles Moore, Moore House in Orinda, California (1962).

Fig. 72
Casa delle Nozze d'Argento (300 BC).

Fig. 73
Dom Hans van der Laan, Axonometric of the entrance hall and adjacent blocks. Extension of St. Benedict's Abbey at Vaals (1956-86).

Fig 74
Gio Ponti, Drawings for a courtyard villa on Procida island (1938).

Fig. 75
Ricardo Bofill Taller de Arquitectura, 'The City in Space' (1970).

Fig 76
Kazuo Shinohara, House Under High Voltage Lines Tokyo (1981), photograph by Tomio Ohashi.

Fig. 77
H. J. Hardenbergh, Waldorf Hotel in New York City (1893).

Fig. 78
Herman Hertzberger, De Drie Hoven (1966-72).

Fig. 79
Marten van Cleve, Kitchen interior (c. 1565).

Fig. 80
Aldo van Eyck, Municipal Orphanage, 'the Children's Home,' Amsterdam (1955-60).

Fig 81
Plan of the Abbaye de Mont d'Hor (17th c.).

Fig. 82
Jean-Baptiste André Godin, Familistère de Guise (1859), photograph by Marie-Jeanne Dallet-Prudhommeaux (c. 1897).

Fig. 83
Bernard Rudofsky, Pigeoncots in the Nile Valley.

Fig. 84
Henri Gascar, Mme de Montespan allongée dans son château de Clagny (c. 1675-1680).

Fig 85
Frei Otto, Wohnhaus and atelier in Stuttgart (1968-69).

Fig. 86
Félix Trombe, Experimental solar house in Odeillo, France (1962-1963).

Fig. 87
Katsura Palace, section of the Middle Shoin (1642).

Fig. 88
Postcaed of the Murs à pêches in Montreuil, Paris.

Fig. 89
Lina Bo Bardi, Casa de Vidro in Sao Paulo (1950-51).

Fig 90
SITE, James Wines, highrise of homes (1981).

Fig. 91
Frei Otto, Öko-häuser, Berin (1987-91).

Fig 92
Yona Friedman, Ville spatiale (1959-65).

Fig. 93
Masati Otaka, Sakaide Housing Complex (1964-74).

Fig. 94
Kiyonori Kikutake, Stratiform Structure System (1972).

Fig. 95
Georges Candilis, Alexis Jossic and Shadrach Woods, 'Proposition pour un hábitat evolutif' (1959).

Fig. 96
A. B. Walker cartoon 'Celestial Real Estate Company' (1909).

Fig 97
Frei Otto, Ideenskizze für ein Baumhaus (1980).

Fig 98
Ludwig Leo, Umlauftank 2 (1967-74).

Fig. 99
Renzo Piano and Richard Rogers, Beaubourg under construction, photograph by Bernard Vincent (1977).

Fig. 100
James Stirling, PREVI Low Cost Housing, Lima (1969).

Fig. 101
Kiyonori Kikutake, Sky House (1958), Movenett addition for a children's room.

Fig. 102
Bernard Kohn and Georges Maurios, Housing Les Marelles (1975).

Fig. 103
Yves Lion, Domus Demain. Research of a habitat for the beginning of the 21st century (1984).

Fig. 104
W.J. Neutelings, A. Wall, X. de Geyter, F. Roodbeen, Apartments for the competition Habitatgte i Ciutat (1990).

Fig 105
Marcel Duchamp, Porte: 11, Rue Larrey (1927).

Fig106
Andy Warhol, the Factory (1965), photograph by Stephen Shore.

Fig. 107
Karel Van Mallery, 'The Incubation of The Silkworm Eggs,' Plate 3 from 'The Introduction of The Silkworm' (c. 1595).

Fig. 108
Florian Beigel and Philip Christou, support for a washing machine (2004).

Fig. 109
Fernando Bendito, Carlos Ferrater and José M. Prada, Instant city in Ibiza (1970-71).

Fig 110
Frederic Ballell, Urgell Street, Barcelona (c.1960)

Fig. 111
Superstudio, 'Italy: The New Domestic Lanscape' (1972).

Fig 112
Katsura Palace, tatami detail (17th c.).

Fig. 113
Bernard Rudofsky, 'Skeletal architecture' in Lake Garda.

Fig. 114
Otto Steidle, Genter Strasse Housing, Munich (1969-1975).

Fig. 115
Walter Segal's Method, General arrangement.

Fig. 116
Franco Albini and Franca Helg, Salone D'Onore X Trianale de Milano (1954).

Fig 117
Kiyonori Kikutake, Sky House (1958), later additions photographed in 2009.

Conclusion
Actant Contexts as Design Sites

In this chapter I have endeavoured to put subjectivity to work in order to stimulate, make apparent, and draw into play a deep context. It has clearly been a constructional, speculative, and ambiguous design exercise conducted by means of seeing, selecting, documenting, analysing, drawing, modelling, sketching, photographing and writing. At a larger scale, I have identified massive anthropic distortions carried out for millennia and drastically damaged since the 1960s affecting climate and biodiversity; witnesses of the former delta, its agricultural legacy, early industry and social struggle; together with drawing a city edge characterised by an artificial mound, containing metropolitan infrastructures and wastelands. My argument is that these ordinary traits of the place may be appreciated and set in motion as a generative socio-ecological metabolism for the betterment of human and nonhuman life. At an intermediate-scale, within the city fabric, I have recorded physical and cultural traces existing in a long-lived and deteriorated semi-industrial fabric, aiming to grasp every passage or yard, the configuration of every plot, of every habitational footprint and economic activity. This manifold context appearance has included an account of urban clichés, based on historical familiarities and personal experience. Now, altogether, this attentive contextual compound constitutes a playful yet careful urban distortion, eroded gradually by heterogeneous agency.
At a smaller scale, within the room ensemble, specific traits of the rowhouses and warehouses are depicted. This society of rooms has housed, for decades, a range of dynamic, modest and vulnerable activities, adding up to a splendid mixture of free appropriation and ordinary humility—qualities to sustain and enhance. Finally, I have compiled a cultural inventory of image memories of persistence and appropriation at this smaller scale.

Qualities and differences of each lived place, which have been gathered in this chapter, perform as infrastructural contexts that, in their 'actant' character, come to resemble 'as found stimulants of change', design resources that further transformation and creative speculation to arrive. Their aim is to phenomenologically situate in the production of the future city. They want to (virtually)[47] construct and specify 'design sites' for further spatial production. As a matter of fact, they have characterised unique sites for the projects of the next chapter. Likewise, this careful and many-sided awareness of context aims to function as a cordon sanitaire against the temptations of *tabula rasa*, over-deterministic systems of growth and standardization. The visual-written collection of these manifold traces—that I have referred to as actant contexts—intends to reflect their performative character: they *act* as empathic makers of what comes next. In short, they are found, intersubjective stimulants of a slow and rooted journey of urban appropriation and transformation. The next layer to appear, with additional fresh strata—to be embedded and distort its preceding infrastructure, attentively, playfully and sometimes boldly—will come in the next chapter.

47 his alludes to Grosz notion of virtuality as recollections of the past in time present. See "The Phenomena of Duration" in Chapter 1.

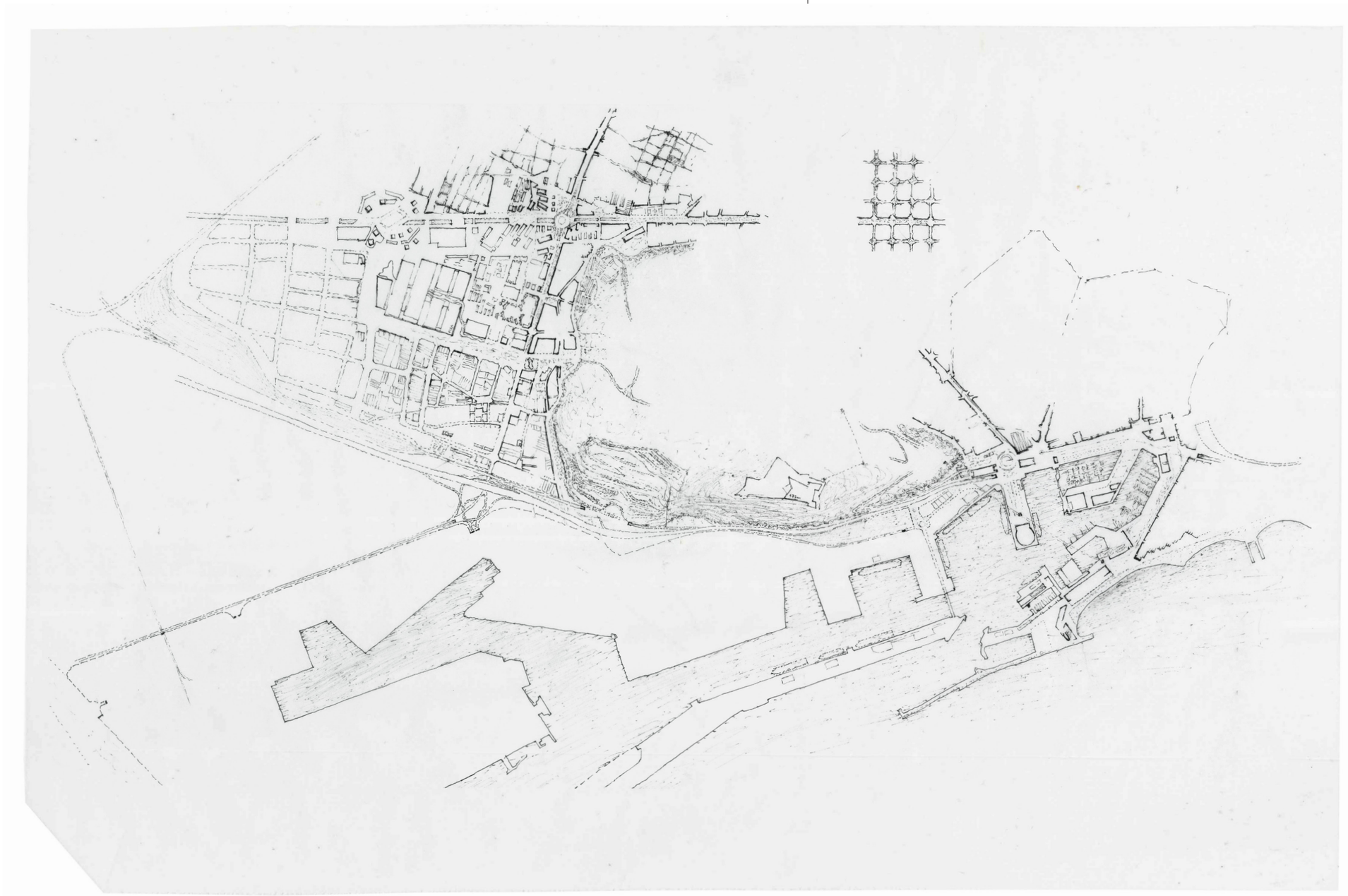


Fig. 118
Montjuïc Backsides and city edge and shoreline (2015).

Fig. 119 (next page)
Beach of Can Tunis portrayed as leisure destination in *Destino* magazine, article by Paco Candel (1958).

ntes, para ir a la playa, se empleaban mucho los carros. Ahora también se ven, pero no tanto. Eso de que el caballo va desapareciendo es una verdad como un templo

LAS PLAYAS LIBRES

por Francisco Candel

UN DOMINGO POR LA MAÑANA

da, amontonan lo que han enco
trado escarbando: cristal, hier
trapo, papel, ladrillos, madera
Diríase que aquello es un ver
dero negocio. Mientras unos
miones y carros vierten escomb
otros se llevan lo seleccionado

Chapter 4
Unveiling 'Actant' Contexts

Chapter 5
Making Time Catalysts

Pau Bajet
PhD 'by design'
July 2023



Fig. 1 (opposite page)
Dense carbon nanotube forest formed after de deposition of metal, buffer layer and catalyst in the CMi (EPFL Centrer of MicroNanoTechnology), with accidental salts deposited on the surface.

In 1794, early British chemist Elisabeth Fulhame identified a process by which a certain substance stimulates the chemical reaction of others, while outlasting such process—water triggering oxidation, in her experiments.[1] In other words, a substance that, in contact with others, activates their transformation, but it is not consumed in the chemical reaction and therefore remains. Swedish chemist Jacob Berzelius later coined the term 'catalysis' to describe similar reactions and, since then, such stimulant and enduring substances would be known as 'catalysts.' In now familiar expressions such as 'catalysts of change', the terminology of experimental science has been widely adopted in politics, economics, arts and architecture.[2] The chemist's analogy is strong in spatial practice because it suggests that we can alter the world without directly determining phenomena, but by introducing something that may activate change or, perhaps by distorting or destabilising its setting, set off a chain reaction or hyperbolically trigger transformation. The transposition from chemistry to architecture requires, nonetheless, opening up towards an ambiguous understanding of catalysis as an interpersonal subjective process. Spatial catalysts, in this research, suggest reactions that may be open to interpretation in different and diverse ways, rather than dictate them with certainty: as noted earlier, their modus operandi

1 Keith Laidler and Athel Cornish-Bowden, 'Elizabeth Fulhame and the discovery of catalysis: 100 years before Buchner', in *New Beer in an Old Bottle: Eduard Buchner and the Growth of Biochemical Knowledge*, ed. by Athel Cornish-Bowden (Universitat de València, Spain) pp 123-126.

2 I was personally attracted to this expression though readings of Enric Miralles and Mansilla/Tuñón where specific and situated limitations—constraints that were subjectively recollected—could perform as 'catalysts' of architectural potential, following a modus operandi experimented in literature by OuLiPo (workshop of potential literature). See: Luis M. Mansilla and Emilio Tuñón, 'Travel Conversations', *2G,* 27 (2003), p. 141. In addition, a comparable usage of the term 'catalyst' to my own approach has been recently brought by Manuel Bailo in this PhD thesis on Urban Catalysts titled "Contra la indiferència: catalitzadors de la urbanitat" (ETSAB, UPC, 2012).

concerns ‘designing the rug but not the picnic’.[3] A final insight that translates coherently in the analogy borrowed from the methods of science: the catalytic substance is not lost over the process of transformation. It resists, remaining distinguished from the chemicals changed round it. In this way, it establishes a dichotomy between a stimulant base that remains—which may catalyse again, changing other substances in future—and the strata that build up as a layered residue or outcome of processes of change. In short, the translation of catalysis from a chemical to a spatial context opens up a fruitful interrelation between permanence and performance.[4]

When I first put the word ‘time’ next to ‘catalyst’ to create the spatial formulation ‘time catalysts’, I wondered: am I saying the same thing twice? A catalyst, by definition, produces reactions—quite probably a series of reactions—that occur over time (even if they separated by only seconds). Why, then, this emphasis on time? With the idea of time catalysts, my intention is to avoid a deterministic conceptualisation of architectural impact or consequence: a spatialised version of “A+B=C”, usually related to function. Instead, my research aims to explore the capacity of unknown, unplanned future reactions; changes that may occur though open-ended durations of becoming. In other words, and as set out in Chapter 1, this research investigates in spatial terms the potential of time. In this way, the notion of time catalysts sets out to express my focus on spatial stimulants of delightful appropriation and transformation, over the course of time, with a level of precision while explicitly retaining the concept’s capacity for ambiguity.

In this chapter—Chapter 5: Making Time Catalysts—design emerges as a speculative medium for imagining and releasing the promise of time in spatial form. Organised according to the same three section headings of the previous chapter—City Edge, Urban Fabric and Room Ensemble—this process occurs through a collection of prototypical projects at different spatial, social and temporal scales. The design process describes a two-fold, interwoven movement: on the one hand, enhancing previously found situations (i.e. slowly distorting the ‘actant contexts’) and, on the other, creatively launching new time catalysts in distinct, fresh forms. Bearing in mind the cyclic and iterative character of design as a medium for concurrent observation and speculation, this chapter should be approached alongside the previous one, as if they are in constant dialogue. Indeed, it may be desirable or necessary to go back and forth between chapters to critically knit together continuities between the ‘actant contexts’ and the proposed prototypes.

A further, final point worth reiterating is that despite its focus on design speculations, the aim of this chapter is not to develop finalised projects *per se*, nor any kind of ‘design guidance’. Rather, the design process aims to generate an appreciation of time catalysts as prototypical forms: as the architectonic manifestation of spatially constituted situations. Designing is not seen, in this doctoral investigation, as an ‘end’ but as a ‘means’: a necessary medium for grasping in practice communicable knowledges arising from the researched capacity of time catalysts. As I have argued earlier, the methodological outlook adopted gives due consideration to ‘real world’ concerns (including economic, political, normative and planning constraints) but is not restricted by them in pursuit of its research objectives, which depend for their efficacy on playful exploration and provocative speculation. Hence, the design studies at the heart of this chapter do not follow a precise brief in the conventional sense of the word, yet they are oriented as a response to the urgency of densification (up to 300 inhabitants/ha) envisaged by the City Council.[5]

3 Florian Beigel and Philip Christou, *Architecture as City: Saemangeum Island city* (Springer-Verlag/Viena, 2010), p. 142.

4 I have discussed in detail these interrelations in Chapter 2 sections of Levels of Permanence and Appropriation and Land Resilience.

5 See the heading ‘Current plans and opportunities’ in Chapter 3.

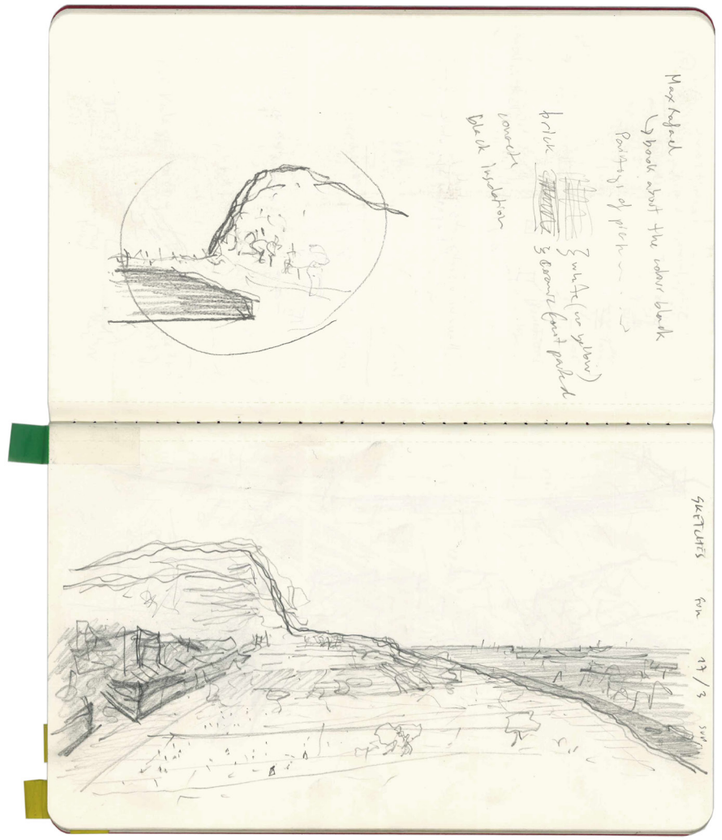




Fig. 2
The edge as a virtual shoreline reclaiming the silhouette of Montjuïc before the ocean and the port (2017).

Fig. 3 (opposite page)
The edge as an ecological corridor towards the delta (2017).

I City Edge

Building upon the definition of the found city edge developed in Chapter 4, this section investigates the potential of carefully transforming it, together with its adjacent urban tissue. This edge is an infrastructural corridor of motorways and railway tracks, witnesses of the delta cornered by modern capitalist developments and a sprawl topography. It represents a border condition that serves to disconnect its two sides: city and industry. The aim of the design explorations that follow is to turn this metropolitan edge from a back-entrance border to a front-door civic threshold capable of catalysing a dynamic of interrelation. The prototypes described in this first section aim to unveil a new situation for the city near the sea. The intention is to take cultural and aesthetic interpretations into account and foster awareness of place, while at the same time embracing a progressive social and ecological flowering generated by the 'actant contexts' already identified.

Distorting a Human-made Plateau

Through the proposals of this design research, the 200-metre-wide traffic corridor can be seen as a found catalyst for a metropolitan transformation, resulting in an intensified ecological artery—a long urban park connecting the Montjuïc hill with the Llobregat river and the delta's preserved farmlands and natural reservoirs (see Fig. 2 and 3). Planned changes in public infrastructure (i.e. loss of Morrot railway terminal and traffic reduction in Can Tunis, as well as the Ronda Litoral motorway transformation),[6] offer an opportunity to reclaim agricultural fields, as well as for arranging a wide linear forest of 'third landscapes'—catalyzing biodiversity and reviving the cultural heritage of the land. The proposed Ronda Litoral is compressed to reduce its impact and in the area of Morrot, following Barcelona

6 See again 'Current plans and opportunities' in Chapter 3.

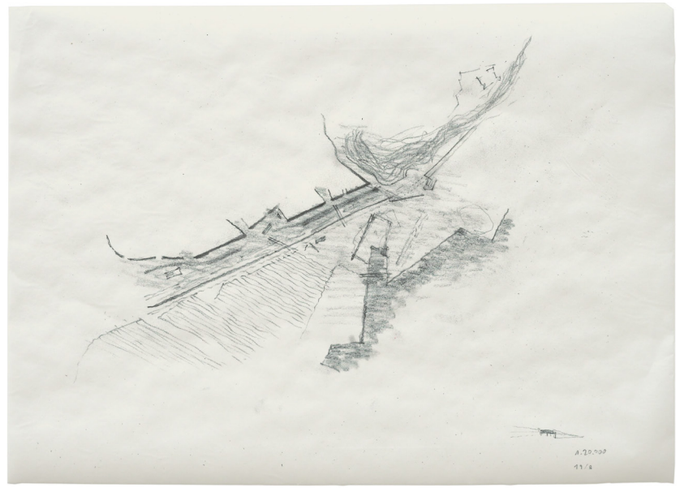
228 Regional studies, its high-speed traffic lanes are taken down to the
229 lower level of the port, leaving the upper road as a local lane to be integrated within the park (see Fig. 4). The new contours of the motorway emphasise the park's edge condition, sharpening its level change in front of the port flatland. In this way, the city edge may be experienced as a second shoreline: an artificial geology in the form of a long urban plateau against the Mediterranean Sea (see Fig. 2 and 4). New topographical strata are added to the found geology of creases and slopes, distorting but not covering or obscuring them. The irregular composition of surfaces and slopes, providing motorway access and drain basins, is enhanced and adjusted to define a new, accidental orography that is not only cheaper (because it reduces earth movement) but also serves to catalyse biodiversity (by comparison with conventional *ex-novo* development). Roads originally designed for speed and abandoned railroad connections are retained in the proposed prototype, but transformed into gentle bicycle or pedestrian routes that give the new urban park structure. These



Fig. 4
Study of the city edge park, integrating the motorways (2017).

Fig. 5 (below)
Detail of existing and distorted accidental orography. Topographic model with curves every meter.
Scale 1:5,000 (50 × 50 cm).

Fig. 6 (right)
The urban park as a civic threshold both connecting and separating (2021).



topographical wrinkles and scars marked by ordinary traces from the past function not only as poetic witnesses but also, more pragmatically, as valuable future-facing prospective infrastructure for human and nonhuman habitation (see Fig. 5).

The new park suggests something of a reminiscence of the unbuilt 1926 boulevard. In its efforts to reclaim the lost relationship of the neighbourhood with the sea and harbour it performs as a civic threshold, rather than a barrier (see Fig. 6). The park can be frequently crossed, following existing street continuity and, occasionally, recovered historical paths (such as Valencia Lane), at two different notional speeds: pedestrian access (in all directions, to traverse and enjoy the park), and vehicular crossings according to larger grid. Beyond the park's internal logic, its key contribution as a stimulant of urbanity arises from the definition of its contours: the edges that shape the urban tissue. These edges intend simultaneously to separate and connect, enhancing the park's threshold capacity. Longitudinally, they aim to be sharply visible, perceived in figure-ground terms as a clear city front. Transversely, however, they open up a continuity between city and park to increase porosity. In this way, a variety of public spaces, preserving and reinforcing pre-existing traces, sometimes in the form of streets that widen as they approach the park, and at others as modest typical variations of the *piazza* facing the landscape (see Fig. 12). These spaces are carefully scaled in relation to other urban fronts of the city, such as Pla de Palau and Barceloneta (see Fig. 118 in Chapter 4). Ordinary 'low road' type buildings of the industrial heritage are generally preserved, particularly early 20th century artefacts that coexisted with the

230 agricultural mosaic. For instance, the Bertrand 'Prat Vermell' factory
231 and the 'Casa de los empleados de la estación' (house of the station workers)—both to be demolished according to local planning—are not just kept but dignified by distinctive urban articulation (see Fig. 12).

Generative Wetlands of the *Estany del Port*

This prototype intends to reclaim the all but vanished antecedence of the delta and irrigation heritage by producing generative wetlands. This slow, generative landscape aims to catalyse biodiversity, manage the water cycle, moderate the urban climate, and redeem cultural memories of the absent coast of Can Tunis. A new channel, reconfiguring the few resisting streams of La Infanta, traverses the northern edge of the park, restoring the prospect of delta crops such as vegetables and rice (see Fig. 7 and 8). In simple geological terms, it functions as a valley against the park's artificial plateau—a water basin to capture rainfall from several districts: La Marina de Port, La Marina del Prat Vermell, and L'Hospitalet. The watercourse follows a gentle slope reminiscent of the river diversions and natural ponds such as Estany del Port traced from pre-agricultural times of the delta (see Fig. 9). Designed as a succession of small embankments, it follows SuDS principles (Sustainable Drainage Systems) to manage storm-water runoff through retention ponds and avoiding urban flooding, while providing a much-needed source for aquifer recharge. Some areas are planted with macrophytes that act as biofilters to

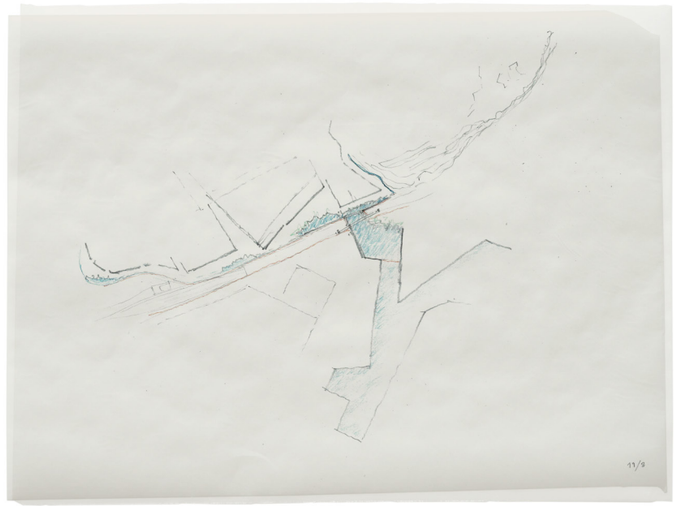


Fig. 7
Study of a new generative landscape of water streams and wetlands (2021).



Fig. 8 (opposite page, top)
City edges around the new urban park and wetlands (2021).



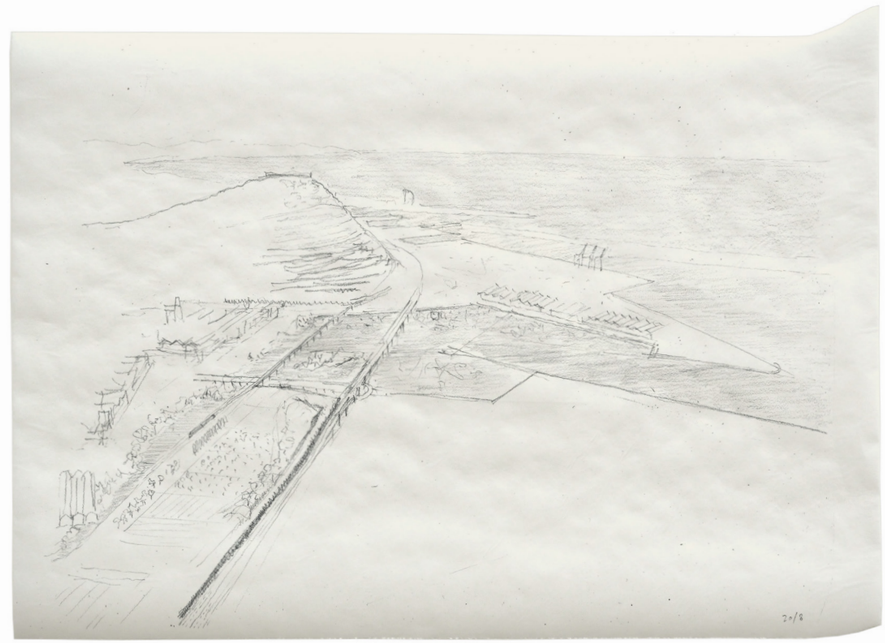
Fig. 9 (opposite page, bottom)
Plan of the Llobregat delta, with a reclaimed continuity of the *Canal de la Infanta* and the pond of *Estany de Port* (see correlative drawings in Chapter 4). Scale 1:200,000

remove pollutants; others are left as attractive ecosystems for reeds, seaweed, flowers, birds, insects, reptiles, and arthropods, a level of biodiversity currently seen only in delta reservoirs distant from the city. These water-cycle strategies will provide a resilient urban landscape: a generative place that catalyses wildlife, changing cycles over time and between seasons, adapting the land to resist the inclemency of climate change.

The water bodies are not only offered for agriculture or flora and fauna recovery, but also for human delight and atmospheric urban comfort. The park, extending 4km long, provides a substantial break to the heat island effect, while its wide linear forest and the wetlands perform as coolers of the dominant southern summer winds as they approach the city (see Fig. 10). In short, the park functions as a

Fig. 10
Proposed urban section of the city edge.
Scale 1:3,000.

Fig. 11 (opposite page)
Study drawing with the traffic lanes crossing the wetlands before the city.



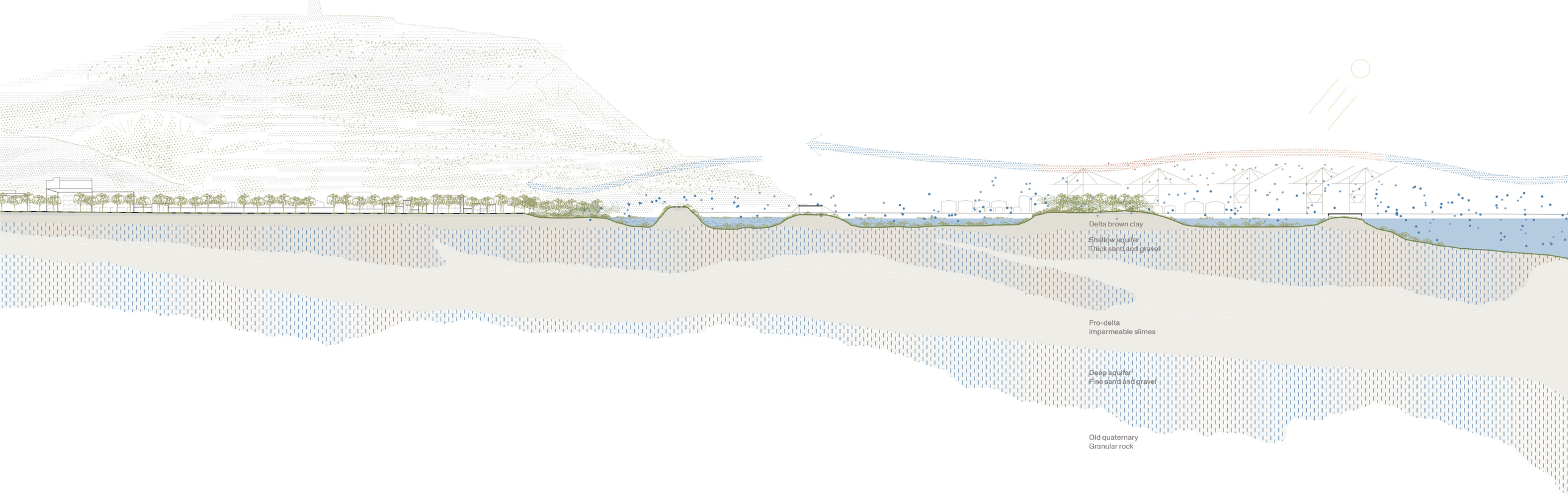




Fig. 12
Site plan of the proposed city edge.
Scale 1:20,000.

Fig. 13 (opposite page) and Fig. 14
Generative landscape of small embankments. Topographic model with curves every meter.
Scale 1:5,000 (50 × 50 cm).



climatic device to mitigate seasonal metropolitan heat for southern Barcelona. In addition, the watercourse embraces activities such as swimming, recreational rowing, bird observation, urban hiking, horse riding and enjoying a new beach, with the neighbourhood retrieving a lost relationship with the Mediterranean (see Fig. 21). Next to the harbour, the wetlands become particularly intensified. In approaching the port, the watercourse broadens into a 40ha marshland that flows directly into the sea. This is achieved by slightly distorting the existing dock edges to form a 'bay room' for the city. At large-scale, as one travels through the park towards Montjuïc, before arriving in Barcelona, the experience of traversing the wetlands offers a pause at the threshold to the city's hard urbanity, while making apparent a recovery of the delta's deep cultural and ecological value (see Fig. 11, 13, 14 and 26).

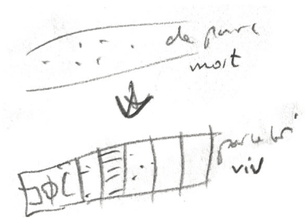


Fig. 15
Design input: Habitation of the urban park.

A Sequential Tapestry for Human and Nonhuman Delight

This urban prototype embraces the principle of gradual transformation. Adopting an incremental process of change that, in fact, is never intended to be 'finished', it cares for the meantime period, avoiding the imperative of full demolition or of emptying the land to 'start from scratch'. To do so, the urban edges facing the park preserve tectonic traces of the prosaic heritage of the delta. Pre-existing walls, paths and plot divisions are kept not only for their unique spatial and social qualities, accumulated over time, but because they enable continuity of habitation during a gradual open-ended development (see Fig. 16, 17 and 18). In other words, besides ecological resilience, the capacity of the land to be gradually altered becomes valuable as an

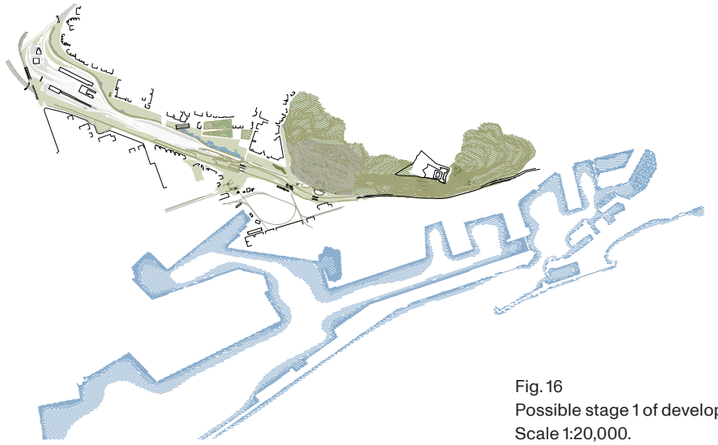


Fig. 16
Possible stage 1 of development.
Scale 1:20,000.

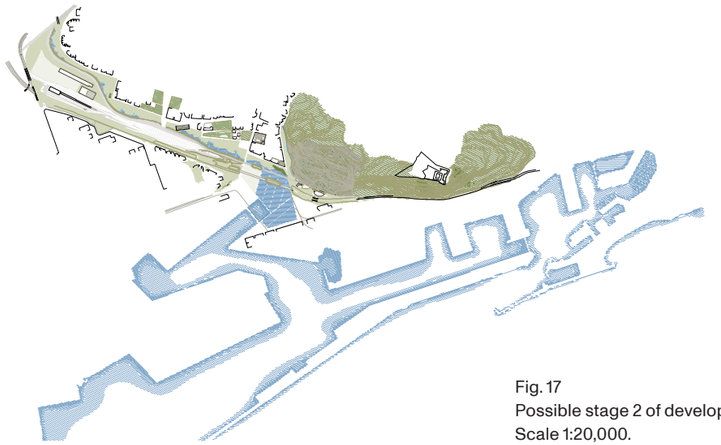


Fig. 17
Possible stage 2 of development.
Scale 1:20,000.

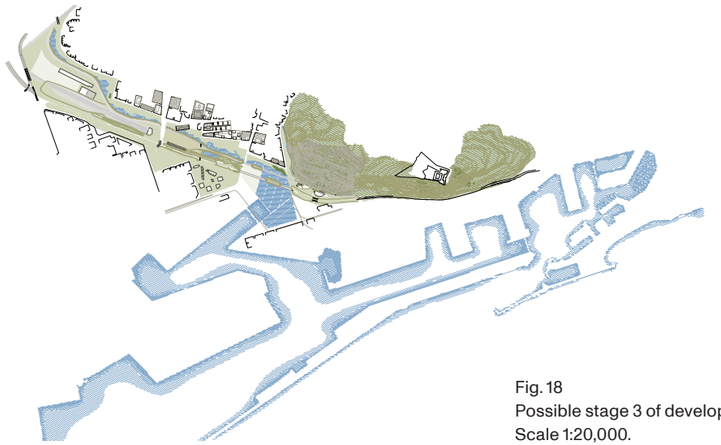


Fig. 18
Possible stage 3 of development.
Scale 1:20,000.

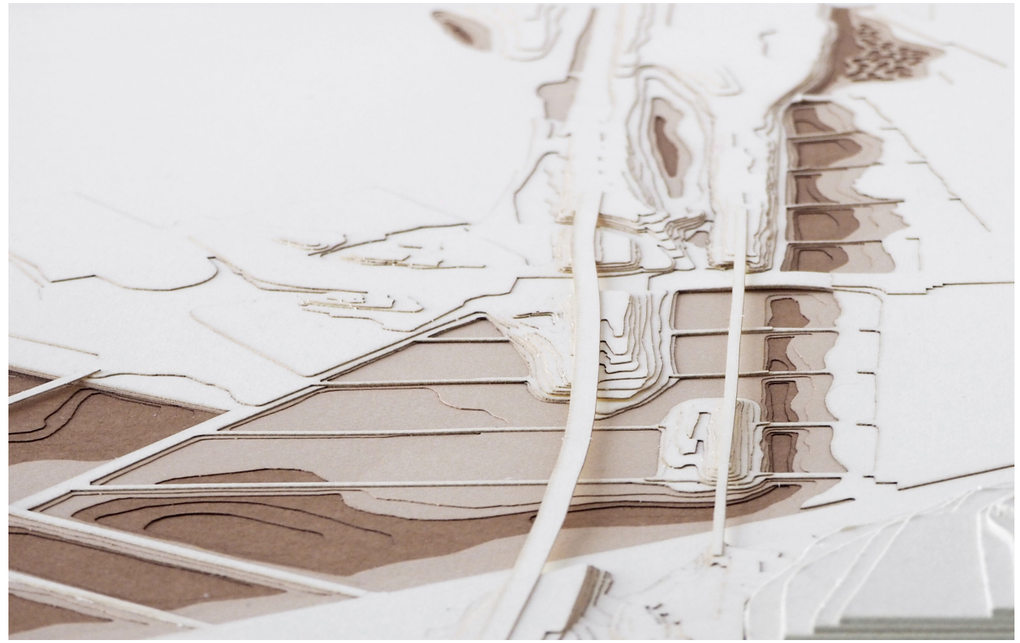


Fig. 19
Topographic model.
Scale 1:5,000 (50 × 50 cm).

economic resource: it confers resilience by allowing for local investment on a step-by-step basis, rather than risking economic collapse. The park, structured by the same techniques of enhancing the found, has been conceived as a kind of large-scale horizontal bookshelf, providing an infrastructure of pieces of land ready to be inhabited (see Fig. 12, 15 and 19). The sequence of embankments and the agricultural and leisure fields, all crossed by walkways and accidental topographies, produce this interconnected tapestry of city gardens. A tapestry that intensifies crop diversity and a sporadic growth of free vegetation communities between fields to enrich biodiversity. In sum, this mosaic catalyses human and nonhuman delight, while, though its memorable rhythms, stimulates qualified difference to flourish synchronically and change over time (see Fig. 20, 22, 23, 24 and 25).

Through sketching, modelling, CAD drawing, making collages and writing, I have designed a metropolitan park and its city borderlands, a prototype accounted for in this section of the chapter. My intention is for the prototype to function as a civic artefact consisting of a generative landscape supported on an artificial geological plateau crossing from Montjuïc to the river. It is a large-scale urban prototype that has only appeared by cautiously transforming physical and cultural found witnesses of the delta, prosaic traces of agricultural



Fig. 20
Generative wetland of the *Estany de Port*.

and industrial pasts, as well as altering the course of vast anthropic distortions. In other words, its formation has cared for and reshaped previously characterised actant contexts. The project enhances a slow, rooted and gradual transformation of the place and, at the same time, sets out to catalyse manifold delightful indeterminacy in time future at a large scale. This is to be achieved by stimulating wild biodiversity, climatological comfort, and open-ended habitational enjoyment for humans and animals, while reclaiming a lost cultural connection with the sea and delta.

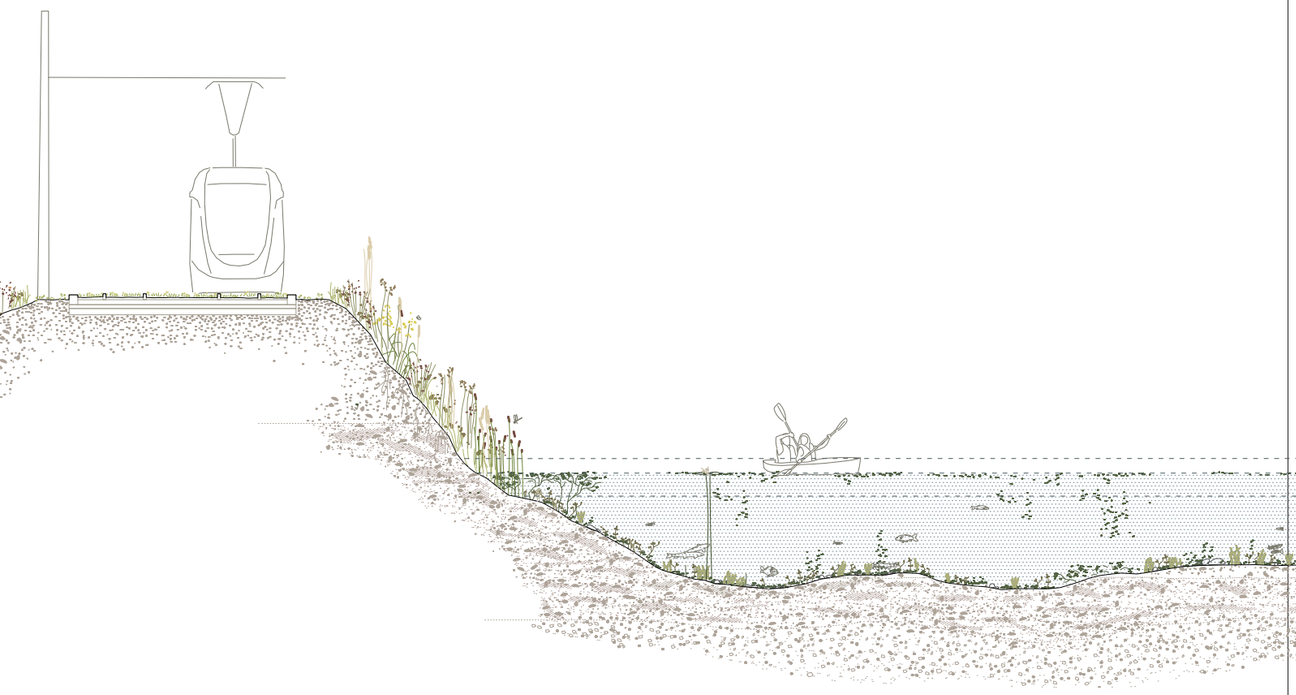


Fig. 21
City edge situation 1: Wetlands.
Scale 1:175.

An habitat with silver birch (*betula pendula*), black cottonwood (*populus trichocarpa*), golden samphire (*inula crithmoides*), grass (*puccinellia festuciformis, brachypodium*), marine plantation (*plantago crassifolia*), sea lavender (*limonium virgatum*), wild blackberry (*rubus ulmifolius*), woody fleabane (*dittrichia viscosa*), alkali sandspurry (*spergularia diandra*), sea pearlwort (*caryophyllaceae*), lenzites warnieri (*pluteus aurantiorugosus*), water-crowfoot (*ranunculus aquatilis*), longroot smartweed (*polygonum amphibium*), hyssop loosestrife (*lythrum hyssopifolia*), horned pondweed (*zannichellia palustris*), knotgrass (*paspalum distichum*), golden-and-silver honeysuckle (*lonicera japonica*), bidens frondosa (*devil's-pitchfork*), thicklip grey mullet (*chelon labrosus*), common goby (*pomatoschistus microps*), roach (*rutilus rutilus*), european flounder (*platichthys flesus*), and humans, among other lifeforms.



Fig. 22
City edge situation 2: Seaside.
Scale 1:175.

An habitat with sea rocket (*cakile maritima*), prickly saltwort (*salsola kali*), *atriplex tatarica*, true grasses (*sporobolus pungens*), marram grass (*ammophila arenaria*), *crucianella maritima*, shaggy sparrow-wor (*thymelaea hirsuta*), sea rush (*juncus maritimus*), seashore aster (*aster tripolium*), *triglochin maritimum*, *kosteletzkia pentacarpa, inocybe dunensis, marasmiellus mesosporus, volvariella dunensis*, tongue-orchid (*serapias lingua*) early spider-orchid (*ophrys sphegodes*), common sandpiper (*actitis hypoleucos*), iberian pond turtle (*mauremys leprosa*) and humans, among other lifeforms.



Fig. 23
City edge situation 3: Pinewoods.
Scale 1:175.

An habitat with stone pine (*pinus pinea*), aleppo pine (*pinus halepensis*), box elder(*acer negundo*), black locust (*robinia pseudoacacia*), australian laurel (*pittosporum tobira*), black swallow-wort (*vincetoxicum nigrum*), wild madder (*rubia peregrina*), silverleaf sotoneaster (*cotoneaster pannosus*), australian laurel (*pittosporum tobira*), *leucoagaricus littoralis, inocybe heimi*, orchids (*epipactis parviflora*), little ringed plover (*charadrius dubius*), common sandpiper (*actitis hypoleucos*),tree squirrel (*sciuridae*), wild boar (*sus scrofa*), european robin (*erithacus rubecula*), and humans, among other lifeforms.

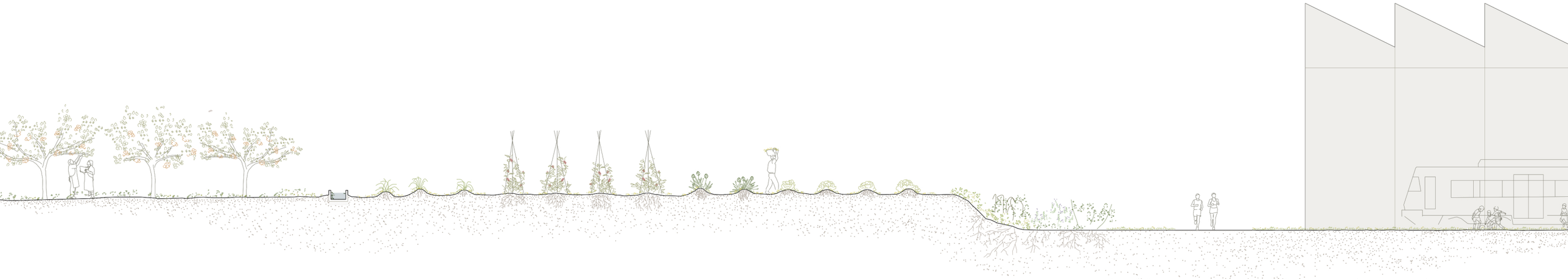


Fig. 24
City edge situation 4: Agricultural mosaic.
Scale 1:175.

An habitat with *artemisia caerulescens*, golden samphire (*limbarda crithmoides*), couch-grass (*elymus farctus*), suaeda vera (*chenopodiaceae*), sea purslane (*halimione portulacoides*), *potamogeton densus*, *potamogeton pusillus*, *zannichellia palustris*, *psathyrella candolleana*, *volvopluteus gloiocephalus*, carolina mosquitofern (*azolla cristata*), apricot (*prunus armeniaca*), tomato (*solanum lycopersicum)*, bulb onion (*allium cepa varhorcal*), plum tree (*prunus domestica*), lemon tree (*citrus aurantiifolia*), strawberry tree (*arbutus unedo*), mandarin orange tree (*citrus reticulata*), rabbit (*oryctolagus cuniculus*), domestic silk moth (*bombyx mori*), ladybugs (*coccinellidae*), orange tip (*anthocharis cardamines*), and humans, among other lifeforms.



Fig. 25
City edge situation 5: Urban square.
Scale 1:175.

An habitat with honey locust (*gleditsia triacanthos*), kurrajong (*brachychiton populneus*), bay tree (*laurus nobilis*), common mulberry (*morus alba*), madeira walnut (*juglans regia*), box elder (*acer negundo*), black locust (*robinia pseudoacacia*), Australian blackwood (*acacia melanoxylon*), Japanese pagoda tree (*styphnolobium japonicum*), Japanese pittosporum (*pittosporum tobira*), japanese honeysuckle (*lonicera japonica*), *strelitzia nicolai*, *orchis coriophora*, *serapias parviflora*, barn swallow (*hirundo rustica*), common pigeon (*columba livia*), and humans, among other lifeforms.

49

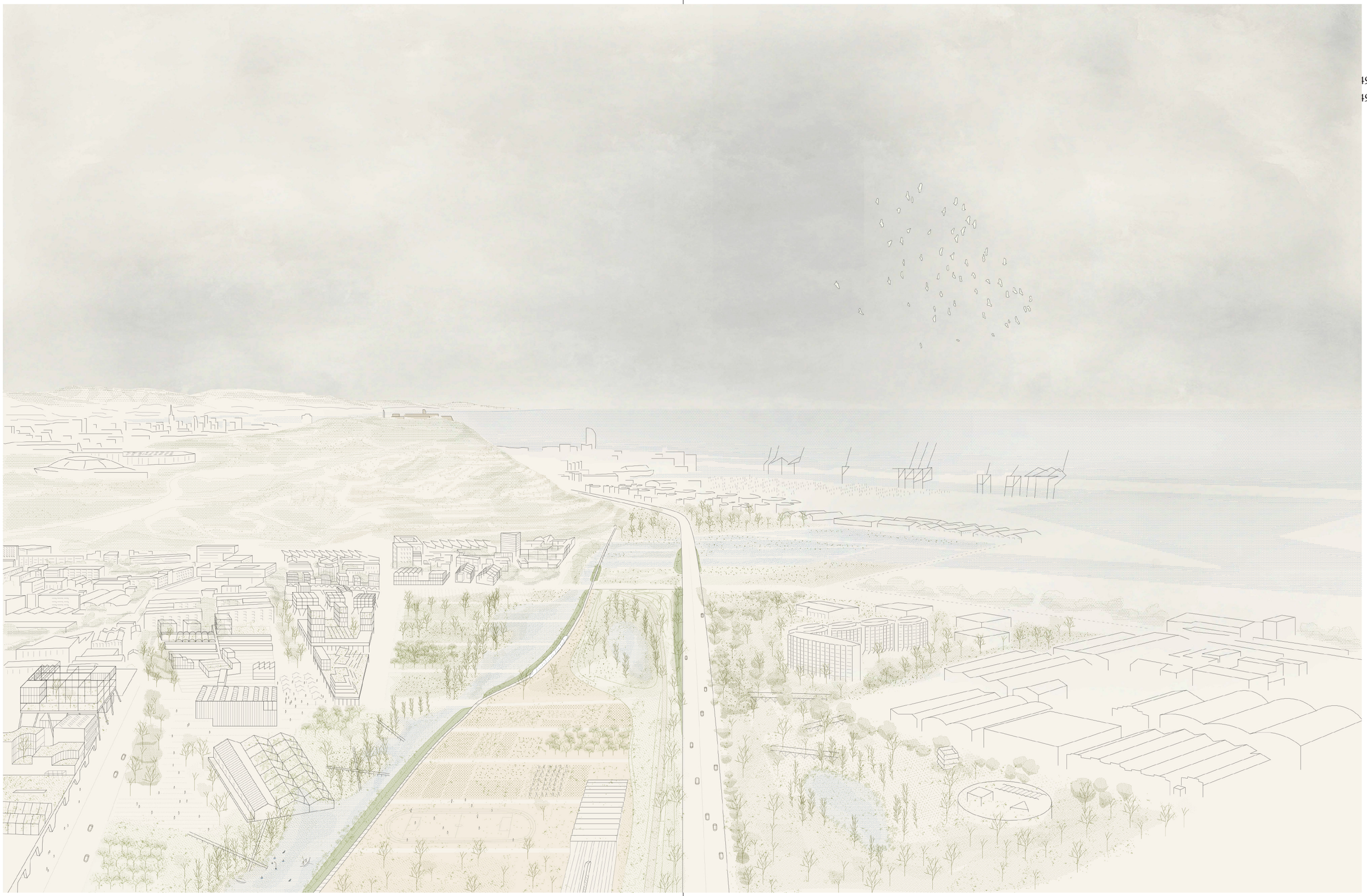


Fig. 26 (previous page)
City edge aerial view.

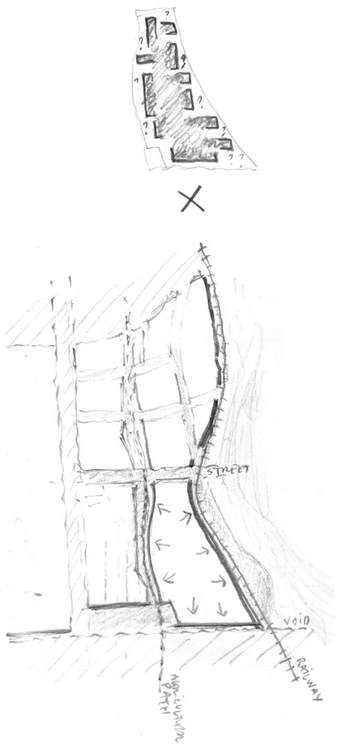
Fig. 27
Suggesting a continuity of Torres de Marina Street towards Montjuïc, currently a dead end (2017).

Fig. 28 (opposite page)
Design input: Enhancing the accidental perimeter of the city block.



II Urban Fabric

This section, the second of this chapter, explores the transformation of a found city fragment, whose qualities have been characterised as actant contexts in Chapter 4, focusing on a large industrial city bock (encircled by Motors St, Mare de Déu de Port St, Cisell St and Encuny St). This design exploration departs from a reinterpreted context, embracing certain ongoing urban developments[7] and including—as part of this existing yet virtual context—the large-scale urban prototypes of the previous section. In the following pages, at intermediate scale, alternative street and plot tissue structures are proposed. The design adjusts and distorts ordinary found physical and cultural contexts, in opposition to a *tabula rasa* approach. This attentive procedure favours qualified difference above generic standardization, while embracing a gradual, embedded transformation of the place. Likewise, intensified social and ecological interactions are investigated within this urban tissue and its public spaces. In sum, at the scale of the city fabric, the exploration is conducted by cautiously enhancing 'as found' situations, while adding new strata, in order to propose fresh urban catalysts for open-ended appropriation and transformation over time.



Enhancing Industrial Vernacular: An Accidental Street Becoming

In order to preserve and enhance the physical and cultural qualities of the existing street structure,[8] this urban prototype celebrates its accidental becoming. Hence, the awkwardly shaped perimeter of the city block is kept as a vital attribute that characterizes the surrounding streets and public places—the urban spaces in-between, in figure-ground terms. Therefore, unintentional 'leftover' gaps are avoided (see Fig. 28). In this way, the sinuous journey of Enucny

7 See the heading 'Current plans and opportunities' in Chapter 3.
8 See the heading 'Ordinary Streetscapes and yards' in Chapter 4.

Street towards the sea, deeply embedded in the cultural landscape, and the long oblique façade of Ferrocarrils Catalans Street (which delineates the historical edge of the city facing Montjuïc) are sustained and intensified. Meanwhile, the modest scale and mild urbanity of Gabriel Miró and Torres de Marina internal streets are enhanced. Characterized by the silhouette of Montjuïc, these two streets are directed towards the hill, even though this such journey is currently interrupted (see Fig. 29 in Chapter 4). In this urban prototype, as we will see, the existing cul-de-sac rows may find a way out towards Montjuïc, by carving a street continuity through the existing fabric (see Fig. 29).

Based on previously explored intersubjective 'urban clichés,'[9] the desirable level of densification (around 300 inhabitants/ha)[10] of this large industrial city block, measuring 400m x 200m, entails the breaking down and better articulation of the public space network, to intensify access and civic life. Sketches and drawings in Chapter 4 reveal the potential of ordinary 'lived places' to form an accidental threshold that situates and already characterises a modest urbanity, with its internal streets and squares. The design speculations that follow unveil public routes carved through this industrial fabric. This exercise carefully observes and enhances specific qualities of the spaces 'as found'. Evidence of damaged or tumbledown structures, as well as preservation of current activities, offer criteria to choose what should be preserved or demolished in order to draw new streets. Additional criteria are graphically expressed (see Fig. 30) to suggest that: firstly, yards or empty plots could become part of this urban structure by only dismantling fences; secondly, warehouses may be partially disassembled by removing structural bays; finally, entire buildings may be selectively demolished while trying to preserve the plot tissue.

Following these simple techniques and departing from existing yards and alleys, three streets and two squares may easily appear. Firstly, the DAMM yard (see Fig. 33 in chapter 4), a long space with a consistent width of 20m—the typical section of Eixample streets in Barcelona—may naturally be added to the street structure (see Fig. 31). This operation forms a 90x90m urban block at its northern side—a similar size to adjacent urban blocks—while tracing a continuity with Ulldecona Street, a backbone for civic life that crosses diagonally from Montjuïc towards the delta. Secondly, approached obliquely from Mare de Déu de Port Street and following a former agricultural path, the DISCER yard is discovered as a modest civic

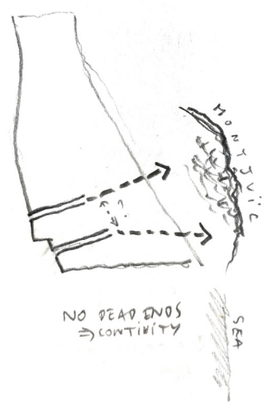


Fig. 29
Design input: Carving a street continuity through existing fabric.

Fig. 30
Design input: Basic criteria to mitigate demolitions of existing fabric.



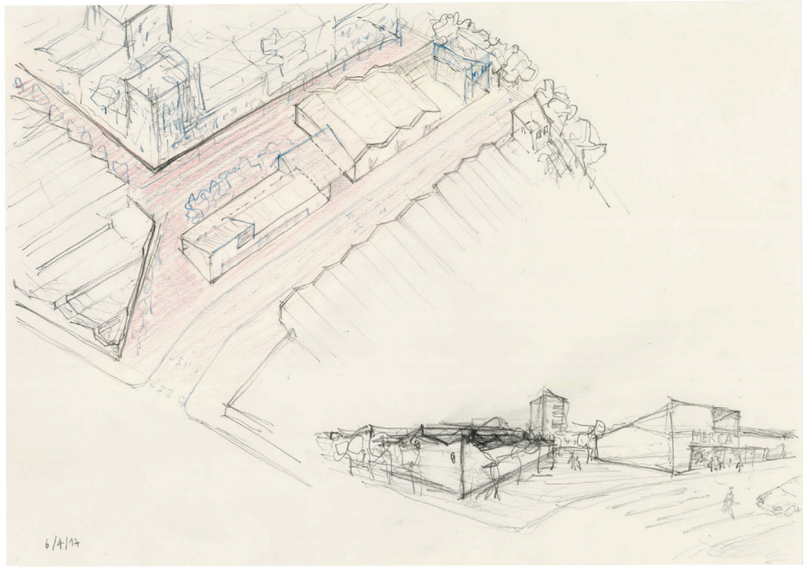
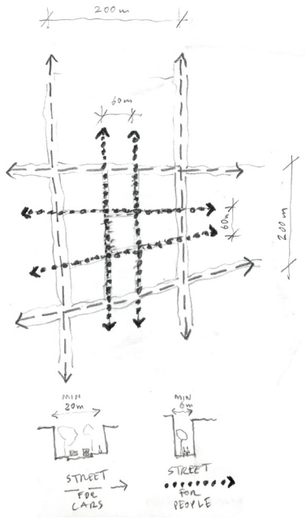


Fig. 31
Loose axonometric projection and perspective of DAMM and DISCER yards turned into public space (2017).

Fig. 32
Design input: In plan, overlay of vehicle and pedestrian grids; in section, minimum suitable dimension.



square at the core of this built fabric, with a way out towards Encuny Street (see Fig. 31). This square is located, slightly awkwardly but appealingly casually, close to the newly opened street in a configuration that reduces the depth of the plots between both public spaces. In order to preserve the 'low road' qualities of the built fabric, this kind of situation should remain the exception—particular moments that, in return, offer manifestations of urban connectivity suited to civic activities such as local markets, celebratory events, or public facilities. Thirdly, the MECALUX alley, a narrow internal passage that crosses horizontally the city block, could be widened reproducing again the 20m street width, by simply dismantling a warehouse bay (see Fig. 37). This rectilinear street splits the former industrial city block in two similar portions of ca 250x150m—a reasonable size for a larger grid of vehicle-streets, overlayered to a smaller grid of pacified ways, emulating super-block strategies learned before[11] (see Fig. 32). Fourthly, a second square may be uncovered at the centre of the southern half. This space is catalysed from a rather subtle yet embedded trace: an empty trapezoidal yard that reflects (at a smaller scale) the geometrical struggle of the entire city fragment, while vertically connecting Gabriel Miró and Torres de Marina internal streets (see Fig. 37 and 42). Suddenly this urban configuration, with two modest squares each at the centre of a super-block, recalls the squares in

9 See the heading 'Familiar City Structures' in Chapter 4.
10 See the heading 'Current plans and opportunities' in Chapter 3.
11 I am referring to the urban renovations in Gràcia discussed in 'Familiar City Structures', Chapter 4.

254 Gràcia quarter, each located at the core of an urban piece (see Fig. 33).
255 Finally and fifthly, the SANTIVERI internal alley may be added to the street structure as a narrow pedestrian street (see Fig. 37). Parallel to Mare de Déu de Port Street, this passage offers a valuable shortcut crossing vertically. And yet, further connectivity between these found streets and squares must yet be found.

The following drawing (Fig. 36) expresses opportunities for these additional connections, carved as spatial continuities through the industrial built fabric. Beyond vertical and horizontal street continuity, both central squares intend to increase public access—on each corner—as intensified urban attractors (see Fig. 34). But how should these additional connections be shaped? For the sake of rationalization, rectilinear streets could be laid out. But such a grid would ignore the existing urban tissue. It may be ideal for spatial control and traffic management, but the comparatively tortuous, informal and accidental connections that may be traced by attentively responding to the existing environment are preferred (see Fig. 35). Of course, this approach to street layout allows for gradual transformation by preserving more plots and buildings. It claims the high ethical ground by avoiding local displacement, but it also has aesthetic, spatial qualities in and of itself. As we know from medieval street patterns in historic towns, the sinuous passages preserve a

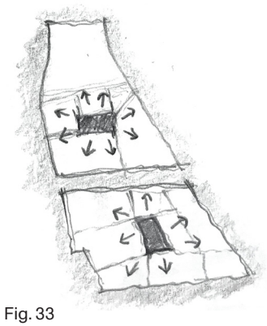


Fig. 33
Design input: Square as a civic core for each super-block.

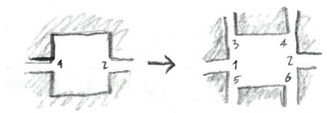


Fig. 34
Design input: Increasing street access on each corner of both squares to enhance urbanity.

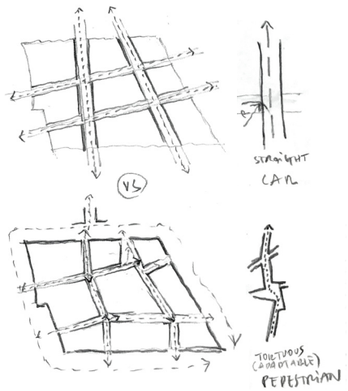


Fig. 35
Design input: Qualities of tortuous, accidental continuities, avoiding imposed alignments.

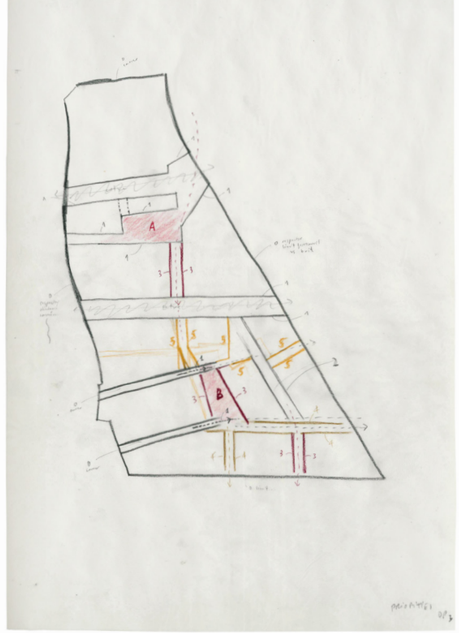


Fig 36 (left)
Opportunities for additional connections between squares 'A' and 'B.' Red colour indicates enhancement of found space and yellow a necessity of partial demolition (2017).



Fig. 37
Current urban grain and minimised demolitions (in yellow) for a possible urban transformation (2017).
Scale 1:3,000

Fig. 38
Studying possible continuities that could be developed over time, in a found street structure. Red colour indicates enhancement of found space. Blue colour indicates new traces (2017).
Scale 1:3,000.

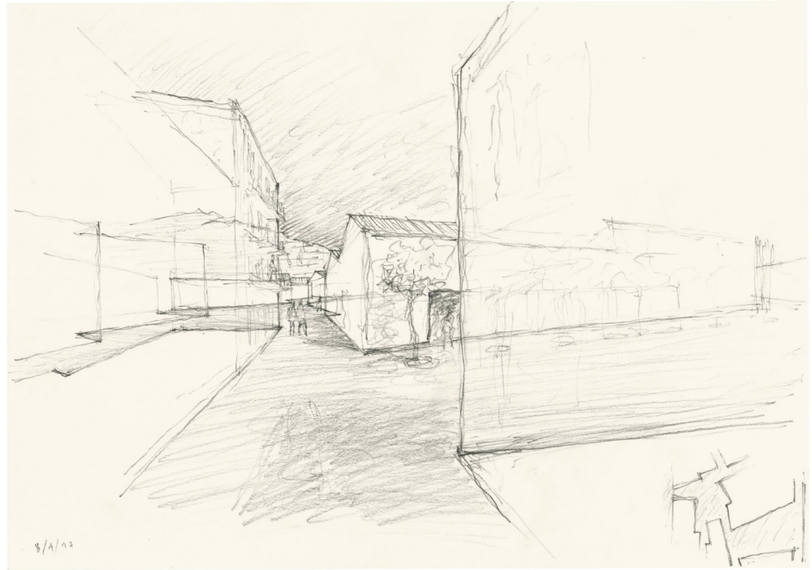


Fig. 39
View from Gabriel Miró St. towards a particular street junction with SANTIVERI alley (2017).

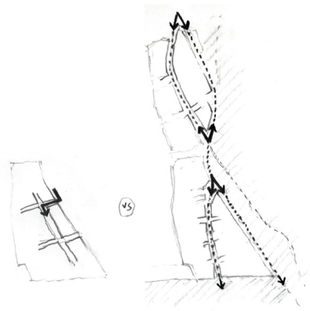


Fig. 40
Design input: Enhancing found oblique intersections along Montjuïc.

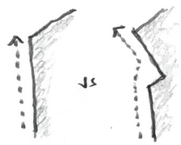


Fig. 41
Design input: Enhancing found façade meanders.

sense of discovery in the arrival at public spaces, as if one were following in the footsteps of local citizens. Such street patterns reflect human-scale. In the proposal, interconnected yet sheltered spaces may be gradually discovered rather that fully visible at once, opening public space up in unexpected celebrations of urban conviviality (see Fig. 39). Likewise, this design procedure embraces specific situations in the current urban tissue. For instance, as a result of different historical traces, a number of street forks intersect obliquely along the border of Montjuïc, emphasizing the tangential presence of the hill (see Fig. 40). Inspired by these arguably inefficient and non-orthogonal precedents, this urban prototype enhances oblique street forks, even where they produce triangular built corners (and, indeed, celebrating when they do in distinctive architecturally expressed corners). Another similarly picturesque, unique urban situation worth retaining occurs at the intersection between Gabriel Miró Street and SANTIVERI alley, where the clash of geometries produces a spatial articulation expressed through façade meanders (see Fig. 41) which may be enhanced and multiplied at the junction (see Fig. 39 and 49).

In the preceding paragraphs, I have insisted on the benefits of gradual transformation that would avoid displacement (both poetic and demographic). Amenable to phased implementation, this urban prototype would feel both ‘complete’ and ‘incomplete’ after each step, a duality conditioned by both preserving and distorting the existing city fabric. Each phase could be carried out individually, depending on demand and resources, and progressively establish a basis for

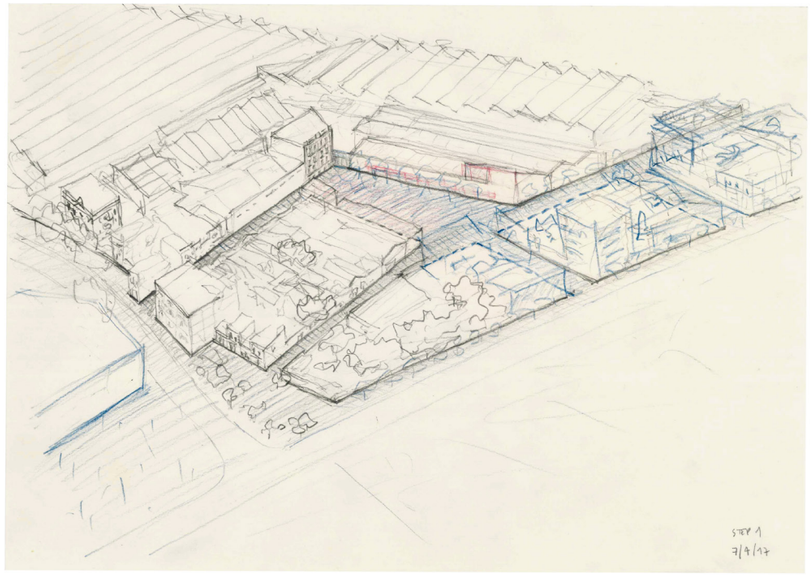


Fig. 42
Initial stage of site transformation. Red colour indicates enhancement of found space. Blue colour indicates new traces (2017).

social and economic resilience. A first phase or step would start with the trapezoidal square joining Gabriel Miró and Torres de Marina street ends, while tracing a way out through empty plots towards Montjuïc, where new buildings could be developed defining a new city front (see Fig. 42 and 44). In a second phase, the northern super-block could be developed, with its central square and the two 20m wide streets (see Fig. 45). At this point a major urban transformation would have been implemented without interfering with the current activities of the SANTIVERI company. This company, at present occupying over 17,500sqm and deeply rooted in the neighbourhood,[12] underpins the vitality to an otherwise decayed city quarter and helps to sustain its bars and restaurants. This vitality is a cultural resource that would enrich the process of urban transformation. After some years, once urban revitalization and densification had taken place—a process that inevitably displaces large-scale logistical and industrial patterns of occupation and activity—the SANTIVERI alley would, in a final phase, become a public passage between the two super-blocks (see Fig. 46). The resulting city fabric should still retain soft industrial uses, compatible with dwelling, civic and leisure activities. Of course, further fragmentation of the city structure in smaller urban blocks could be carried on but, at some point, the 'low road' qualities of the built ensemble would end up becoming jeopardized (see Fig. 47 and 48).

12 See the heading 'Plot Tissue of Activity Fields' in Chapter 4.

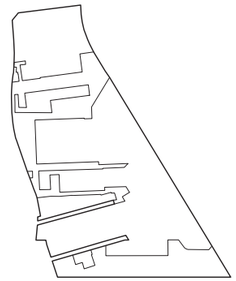


Fig. 43
Existing

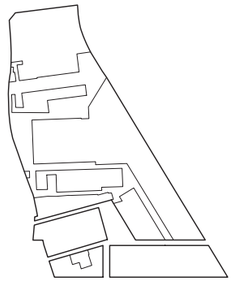


Fig. 44
Step 1

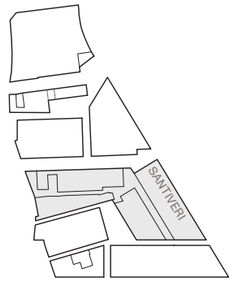


Fig. 45
Step 2

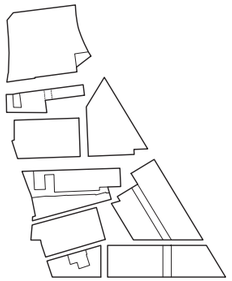


Fig. 46
Step 3

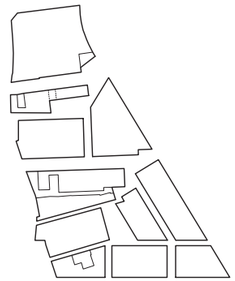


Fig. 47
Further break down.

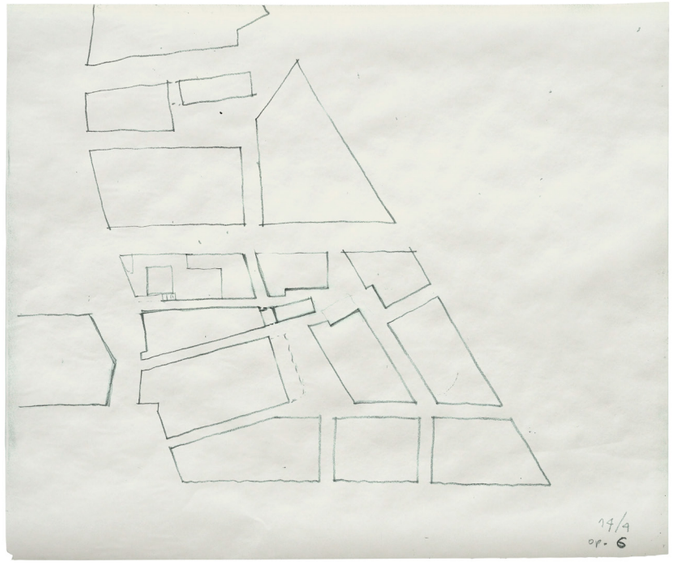


Fig. 48
Perhaps an excessively fragmented street structure (2017).



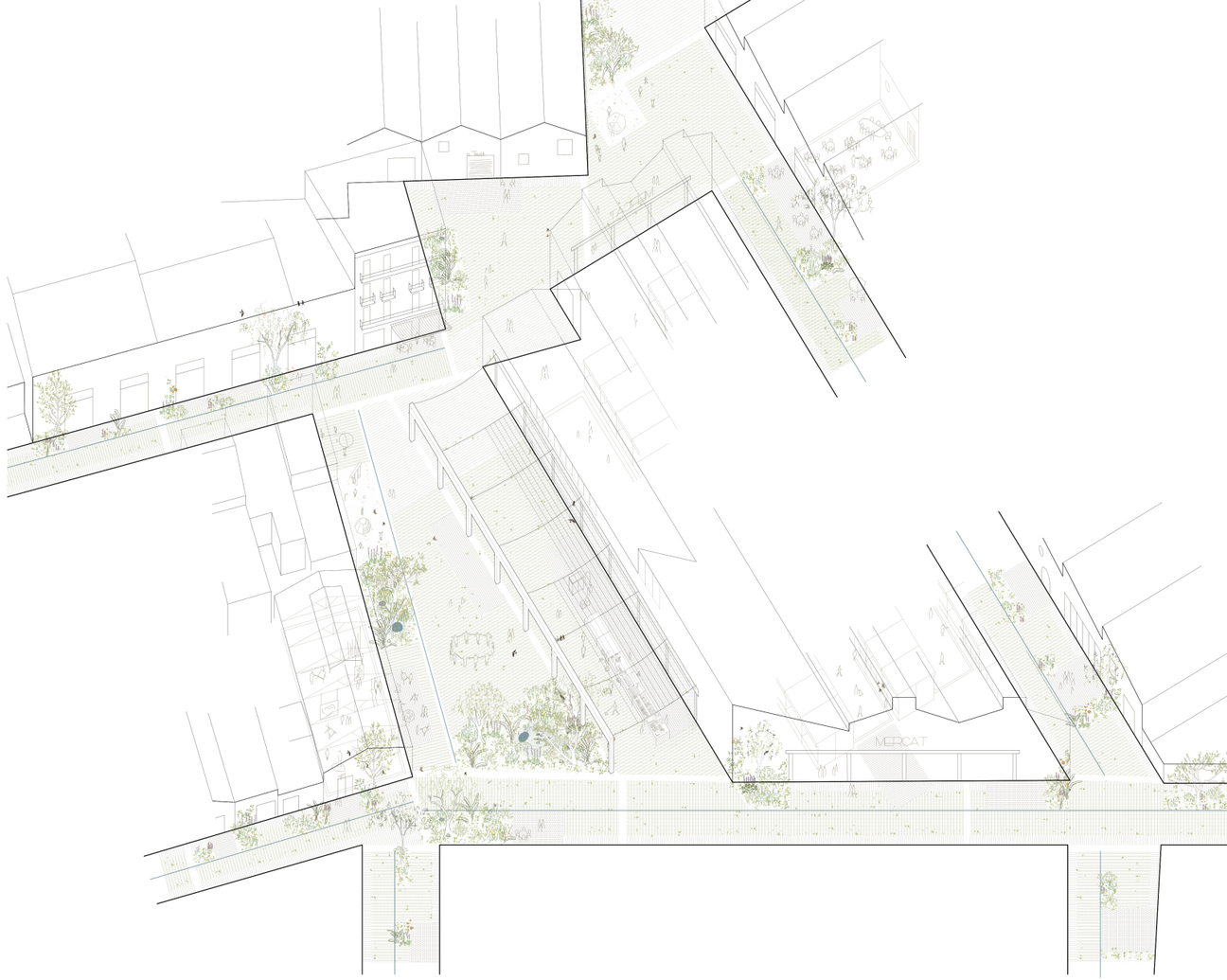


Fig. 49 (opposite page)
An accidental street structure plan.
Scale 1:3,000.

Fig. 50
Axonometric projection of human and nonhuman street interaction.
Scale: 1:750.

Street Social and Atmospheric Interactions

Before addressing the scale of the built ensemble and its interior landscape, which we will come to in the next section, attention should be given to the capacity of the street to foster and support manifold exchanges and interactions with its built surroundings. To begin with, this threshold capacity should catalyse social and cultural interplay: a two-way exchange between street and the inner space of each block, so that civic life may penetrate the depth of the urban plots. This attunement to the existing and potential reciprocity between a thoroughfare and its surrounding urban fabric





is characterised by Jane Clossick as a street's 'depth structure'.[13] A good depth structure may be fostered and enhanced through porous ground floors and profound dynamically responsive sections; at the same time that street space, supported by the depth of a rich hinterland of inhabitation, is amenable to appropriation by sporadic interpersonal activities and belongings. In this way, 'commoning' spaces are embraced in this prototype: spaces distinguished from public spaces managed by top-down processes or individually privatised and overly defended shared spaces.[14] Along this threshold realm, exchanges may be mediated by customary techniques of spatial practice, such as negotiation with neighbours or moving and folding soft architectural elements—doors, fences, awnings, etc. In this urban prototype a series of paved carpets and urban furnishings intend to catalyse street appropriation. It is a loose overlay of metaphoric rugs and small infrastructural items that suggests (without determining) certain areas to be inhabited. They are strategically located both as islands of generous squares and parks, as well as front-door surface extensions of buildings, thus expanding inside-out their habitation practices (see Fig. 50 and 51).

Alongside social interaction, the threshold capacity of streets produces exchanges between a variety of metabolic fluxes including the dynamics of environmental performance. In this sense, this prototype has been conceived under the umbrella of the strategies adopted

13 Jane Clossick, 'The depth structure of a London high street: a study in urban order' (unpublished doctoral thesis, London Metropolitan University, 2017).
14 See the heading 'Politics of Space' in Chapter 1.

Fig. 51 (opposite page)
A situation of atmospheric, human and nonhuman street interactions.

Fig. 52
Axonometric projection of enhanced atmospheric street interactions.
Scale: 1:750.

264 in 'Generative Wetlands of the *Estany del Port*' in the previous section.
265 Hence, impermeable paved surfaces are minimized in favour of vegetated or draining terrain—bearing in mind the demand for universal access to sustain the rights of people with reduced mobility—while prioritising low-water demand planting. Likewise, SuDs principles are adopted to enhance the water circle and stimulate local ecosystems. Together, these strategies produce temperature and humidity interactions with the surrounding build environment. They perform as micro-climatological devices to mitigate summer heat by increasing water evaporation and transpiration from vegetation and soil, while optimising shading in both horizontal (ground) and vertical (facade) axes. This approach offers district level and local benefits: it will reduce the heat island effect and improve air quality, while providing atmospheric comfort, the integration of biodiversity to foster wellbeing, and aesthetic delight (see Fig. 51 and 52).

Breaking Up the Field

'Give architects large plots and they will design large buildings; give them smaller plots so they will design small buildings.' Although clearly a simplification, this statement rings usually true when it comes to professional practice, regularly producing enormous out-of-scale constructions in city expansions all over the world. Bureaucratic processes and customs seem to reinforce a split between urbanism and architecture practices, the former entailing the definition of a base structure with streets, plots and urban regulations, the latter devoted to erecting buildings within each lot. For practicing architects, it would seem difficult to question whether a received empty plot should perhaps be broken up in smaller lots (so as to contribute to a certain kind of modest-scale urbanity). The modus operandi of this practice research, as mobilised in the project of designing urban prototypes, is to speculate in a manner that bridges the scale of urban production (typically represented in the function of the urban planner, local authority or city agency) and the architect. This speculation naturally explores the threshold between architecture and urbanism to deliver a thought-experiment. Initially, I would argue that civic densification of this former industrial area may entail further territorial subdivision, breaking the site into smaller lots. But, before adding any additional plot division, a haphazard current situation may be observed (see Fig. 54). The fortuitous process of preserving the existing plot tissue after being crossed by the proposed street structure, has provided a particular plot field—a field that could be regarded as an assembly of large and small urban rooms. This assembly of urban spaces has already proved its qualities as a powerful found catalyst of urban transformation: needless to say, the street structure has followed the dictates of the plot tissue, a decision that has provided a chance to keep urban vitality alive during the different phases of development. Likewise, this plot field is characterised by diversity and specificity—small, large, central and peripheral plots—stimulating manifold habitational forms.

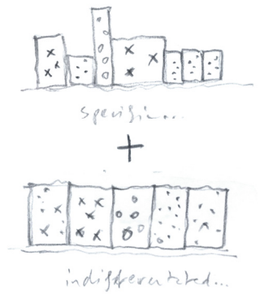


Fig. 53
Design input: plots of specific indeterminacy.

The exercise of adding new plot divisions—and distorting existing ones—entails speculating on particular morphological attributes of the plot, attributes that I have attempted to express initially through a threefold cohort of design inputs. Firstly, the plot field, as any assembly of rooms, should pursue the attributes of 'specific indeterminacy' by embracing both diversity and adaptability (see Fig. 53). A field of undifferentiated lots seems to provide, on the one



Fig. 54
Existing plot tissue after being crossed by the proposed street structure. Red indicates enhancement of existing traces, while blue suggests new lines.
Scale 1:3,000.

hand, a logical framework for changing habitation over time; on the other, difference, rhythm and fluctuation are crucial to housing the multiplicity of urban life and avoiding standardization. The second design input reflects on the attributes of plot dimensions related to their affordability and mutability (see Fig. 55). Regarding affordability, larger plots are more expensive to acquire and build, by comparison with smaller plots, suitable for modest tenure (even if building at scale may usually be more efficient and therefore cheaper per square meter). Regarding mutability, larger plots promise flexibility of accommodation whereas smaller plots may restrict their occupation to workshops, stores or individual homes. However, once the urban fabric is consolidated, larger plots materialise as big and fixed buildings multiplied into unchangeable and monotonous urban fragments. Smaller plots, by contrast, invite change while allowing for patterns of repetition and variation, catalysing a varied and vibrant urban fabric. The third design input expresses the necessity of plot depth in two ways (see Fig. 56). From the outside, greater proportions of public routes, based on historic measurements, may suggest approximately 60m wide city blocks.[15] From the inside, plot depth provides cheaper areas, away from street fronts, occasionally embracing vulnerable and even informal occupancy—to enhance qualities that I have referred to earlier through the 'low road' mixture of freedom of appropriation and ordinary humbleness.[16]

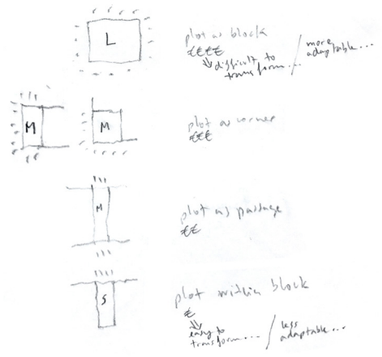


Fig. 55
Design input: plot dimension related to affordability and mutability.

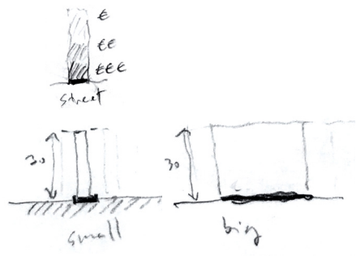


Fig. 56
Design input: the necessity of depth.

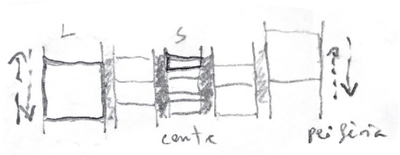


Fig. 57
Design input: plot size depending on location (centre vs. periphery).

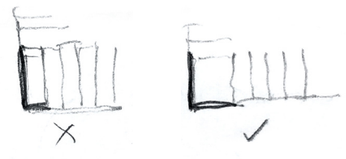


Fig. 58
Design input: plot size depending on location (street corners).

Additional contributions to this cohort of design inputs may be suggested by reflecting on the relative location of plots within the urban ensemble. A relationship may be established between the size of each lot and its peripheral or core location regarding civic centralities (see Fig. 57). Larger plots might often be suitable in peripheral areas, accommodating functions such as industry or shopping malls, which demand delivery and loading access. At the same time, certain public and civic facilities require large plots at the urban core. Finer grain and modest activities may generally encircle these urban centralities, enhancing vibrant everyday life. Another design input may reflect the importance of street corners (see Fig. 58). Larger plots, if located in significant urban places, may provide enough room to take advantage of their multiple street front—for the benefit of both internal uses and street life. Similar reasoning may suggest that the best orientations, either facing preeminent civic spaces, views or sunlight, should

15 See the heading 'Familiar City Structures' in Chapter 4.
16 See the heading 'Struggle and Vitality of the Warehouse and the Rowhouse' in Chapter 4.

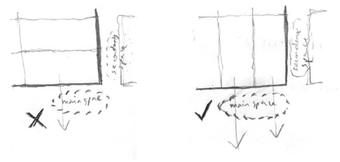


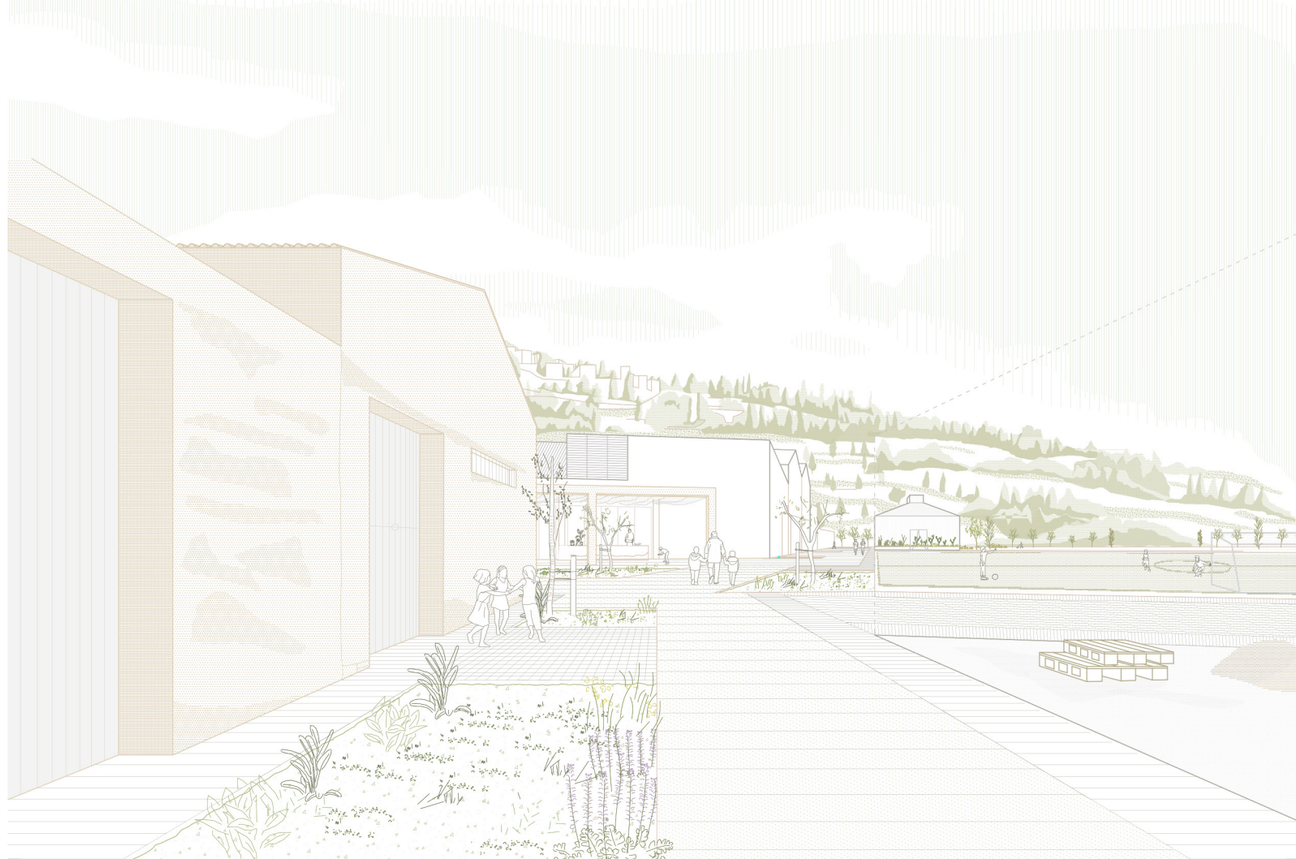
Fig. 59
Design input: plot orientation depending on location.

Fig. 60
Line drawing of Torres de Marina Street and its adjacent plots in a first stage of urban transformation (see correlative drawing in Chapter 4).

be shared by as many lots as possible, therefore intensifying the benefits for many rather than privileging a few (see Fig. 59).

In the previous paragraphs I have referred to small and large plots without discussing their specific size and habitation potential. The prototypical design exercise of breaking up the field requires careful consideration of these attributes—even though they may be widely subjective (see Fig. 61). Small-sized plots may embrace a kind of nuclear tenancy with direct access from the street. They may be dimensioned to fit what I have referred as the traditional institution of the family[17] (around five members) while alternatively

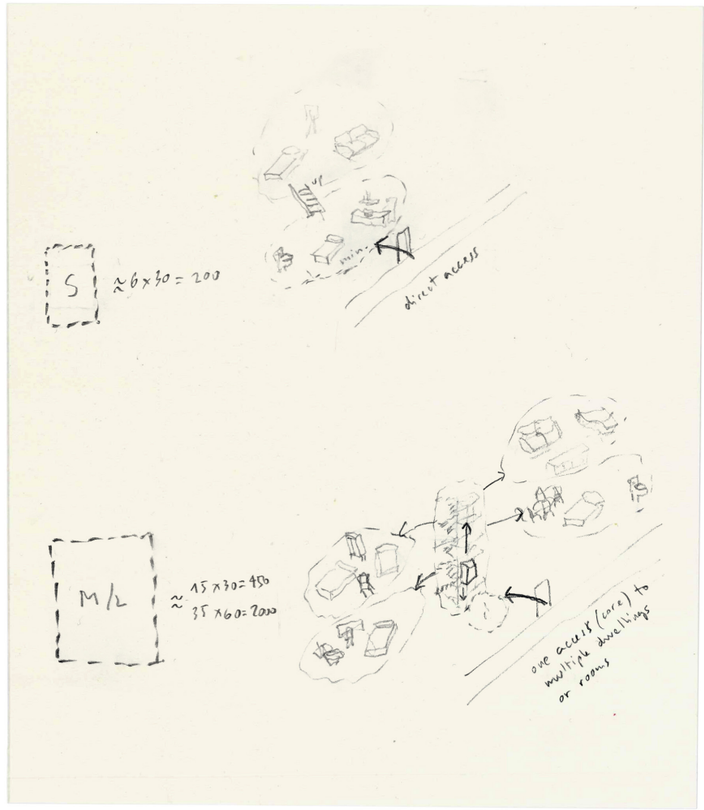
17 See the headings 'The Pleasure of Spatial Phenomenology' and 'Politics of Space' in Chapter 1.



268 accommodating any kind of modest use (small office, workshop,
269 local shop or restaurant). Considering an average of 30m deep plots, I suggest a minimum width of ca 5m—to stimulate interior generosity—giving room to ca 150-200sqm plots. Nevertheless, these small plots appear to be still too big and expensive for the current average households in Catalonia—where almost 60% of homes contain one or two persons only.[18] Medium-sized plots may accommodate these needs with collective tenancy, by sharing access and services, while preserving a gentle physical and social grain. In addition to a broader variety of activities, these plots may suit a number of small families

18 Instituto Nacional de Estadística, *Encuesta Continua de Hogares: Año 2017* (INE ECH, 2018), <https://www.ine.es/prensa/ech_2017.pdf> [accessed 28 December 2022]

Fig. 61
Design input: plot dimension in relation to habitation potential.



living together or communal household, such as a co-housing for up to 20-25 people: a modestly sized, place-based social formation large enough to enable commoning practices.[19] For these plots I may consider an approximate width of 10-15m, giving room to ca 300-500sqm areas. Finally, large-sized plots may take in extensive multi-dwelling condominiums or mixed-use urban buildings with shared access and services, as well as any type of tertiary sector edifice. An increase in scale produces potential for generous and efficient collective facilities, but such economic benefits must be balanced against the risk of a loss of a sense of belonging, giving rise to disaffection concerning commoning practices. Any plot above 500sqm could fit in this

19 See the headings 'Politics of Space' in Chapter 1 and 'Politics of Land' in Chapter 2.





Fig. 62 (opposite page)
Addition of medium and large new plots as urban time catalysts.
Scale 1:3,000.

Fig. 63
Addition of small and large new plots as urban time catalysts.
Scale 1:3,000.

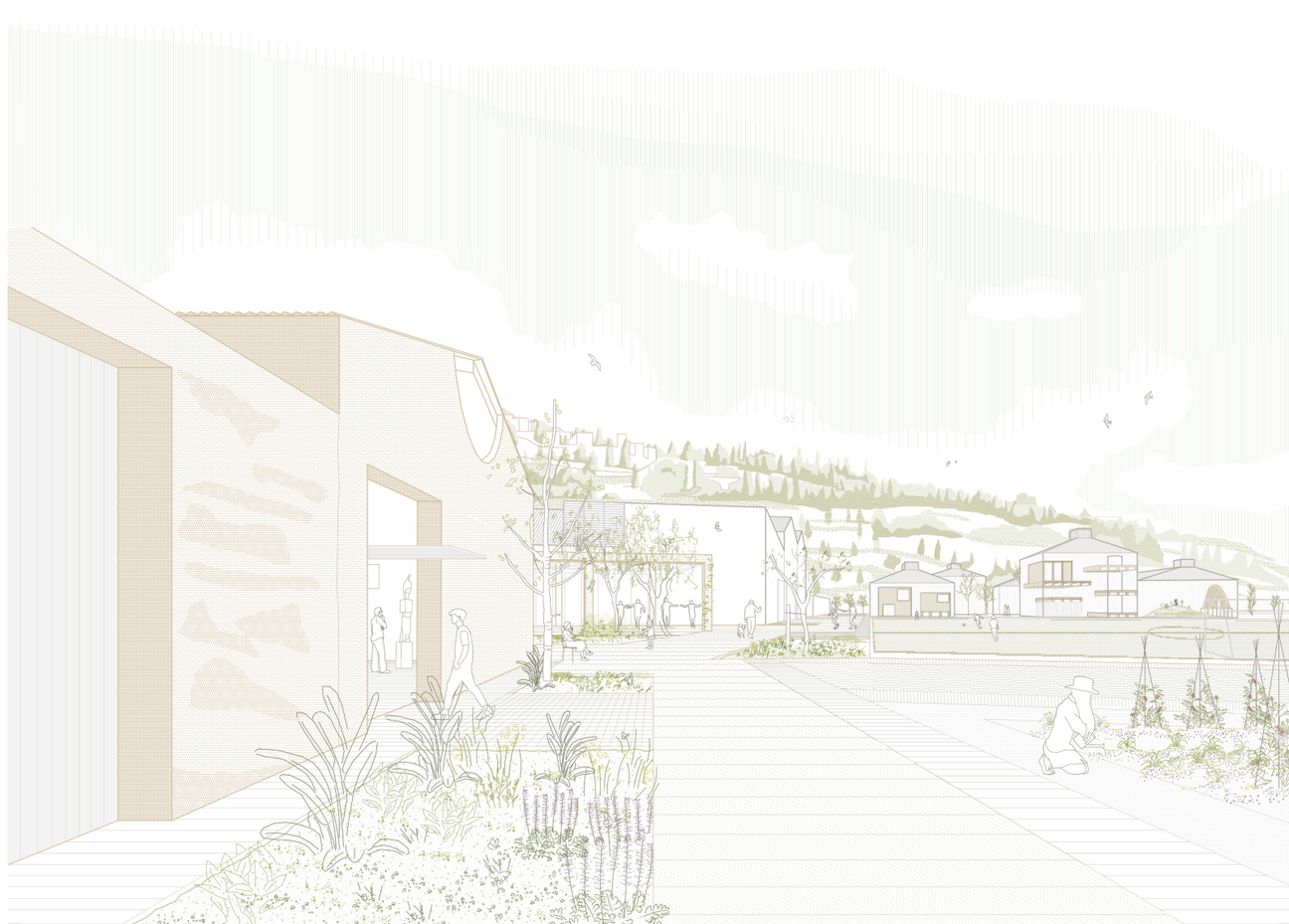


Fig. 64 (opposite page)
Plot tissue site plan, suggesting the necessity of 'tiny' plots, responding to current common households.
Scale 1:3,000.

Fig. 65
Line drawing of Torres de Marina Street and its adjacent plots in a second stage of urban transformation.

category, while dimensions exceeding 2000sqm would *de facto* perform as a city block, risking a sense of time and urbanity if developed as an objectual building. Bearing in mind the above considerations and the preceding design inputs, in the following drawings I have speculated about the potential of an evolutionary plot tissue development with a variety of vacant urban rooms (see Fig. 60, 62, 63, 64, 65 and 66).

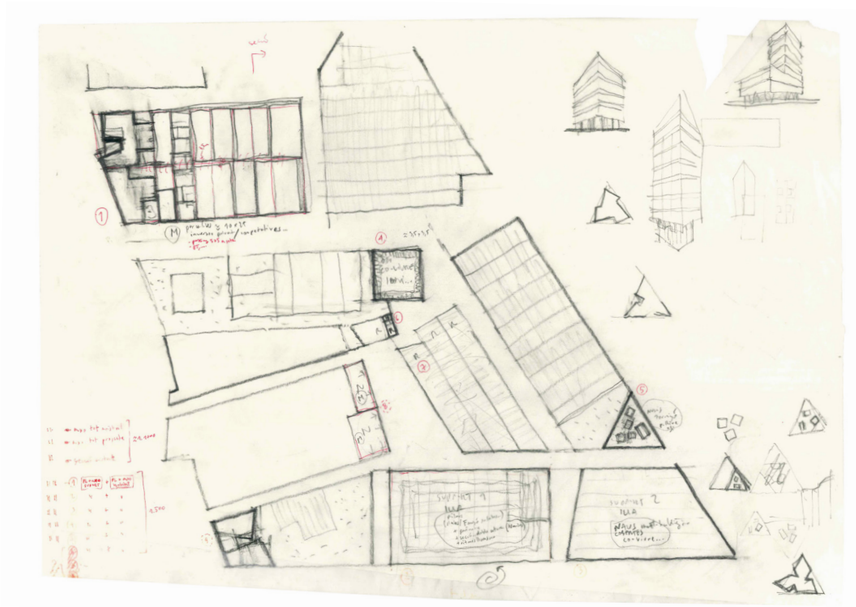
To summarise, in this section I have designed variations of urban catalysts of change. To do so, I have drawn upon earlier chapters to embrace the multiplicity of 'actant contexts', opening up a process of partial continuity: of slow distortion and selective replacement of some traces of occupation while emphatically preserving others, all in opposition to a *tabula rasa* approach. An accidental street structure has produced a variant of urban tissue that may call to mind historic cities. This is not the outcome, however, of urban caricaturist



mannerisms developed under certain postmodern interpretations. Rather, the accidental street structure has emerged by unveiling its own sporadic gradual journey of becoming. It does not need to pretend to be historical; it has a patina of its own. This patina comprises a physical and cultural accelerated historicity that has been phenomenologically attained in a fusion of interpretation and design. The urban exploration carried out in this section of the chapter has also addressed the capacity of the street threshold to stimulate social, economic, atmospheric and ecological interactions with its surrounding built environment. Finally, I have researched the potential of an evolutionary plot tissue development in which an intriguing contradiction seems to appear. While city vitality and changefulness have been depicted as qualities of smaller plots, these fail to accommodate the social urgency of tiny households—today's majority—and, at the same time, fail to foster the commoning practices that larger plots may allow for. In the next section, alternative civic supports will be explored with the intention of working into and inhabiting this area of apparent contradiction.

Fig. 66
Line drawing of Torres de Marina Street and its adjacent plots in a third stage of urban transformation.





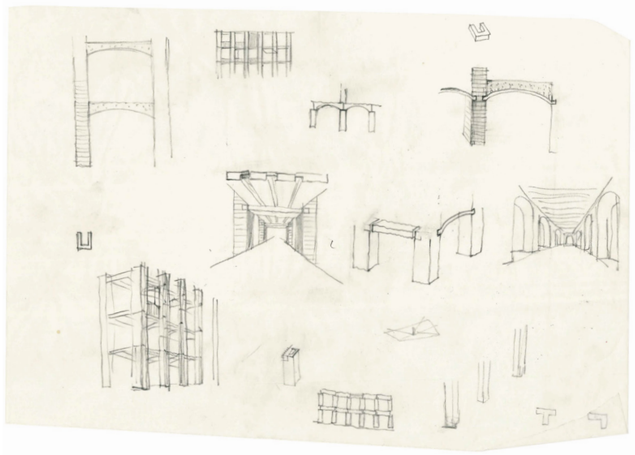
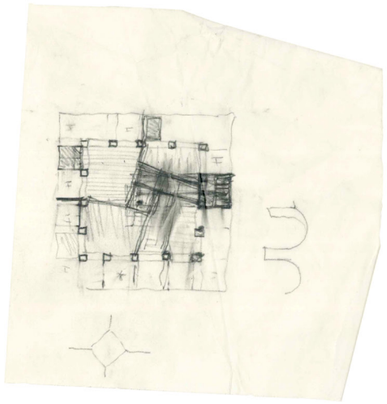


Fig. 67
Initial speculation of 'support' prototypes in different locations of the urban tissue (2018).

Fig. 68
Studies of an infrastructural façade conceived as a scaffolding (2018).

Fig. 69 (opposite page)
Prototype of an active and passive ring-thickness as an infrastructural gradient (2018).

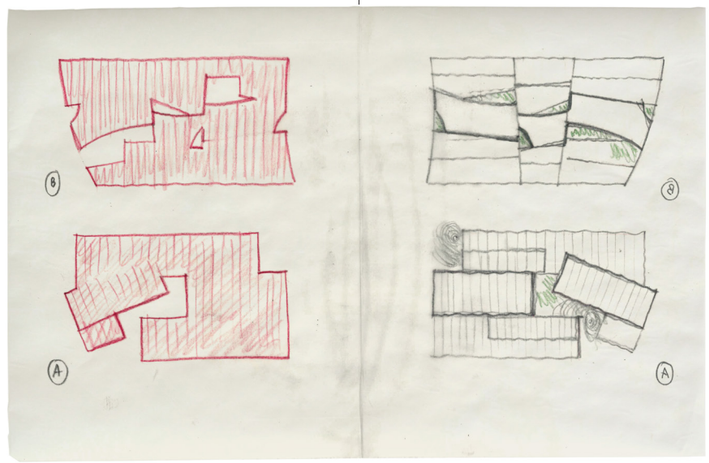


III Room Ensemble

The third and last section of this chapter delves into the built ensemble and its interior landscape. In continuity with the urban speculations of the past two sections, a cohort of prototypes will explore—at a slightly smaller scale—the threshold between architecture and urbanism, that follows the legacy of Habraken's 'supports' and other paradigms of 'open form.'[20] These proposals aim to address a contradiction raised above: the vitality of smaller lots, eased for modest tenancy that changes over time, can be accommodated on (or within) shared infrastructural supports that are persistent like streets and stimulate commoning practices. Setting out to research a range of spatial catalysts of change, an archipelago of interventions has been put forward as an open-ended collection of projects. Initially, a wider group was sketched—as reflected in the following sketches and drawings, as well as in the city fragment axonometric (see Fig. 67, 68, 69, 112 and 113)—while two support prototypes have been developed in more detail: A City Base for Row Habitation and a Plug-in Three-dimensional Framework. Methodologically, I have avoided developing different prototypes in the same plot in a generic manner (i.e. using a square plot in isolation to develop the design work, which would enable easier comparative analysis). Conversely, every project celebrates specific traits of its social and physical context, aiming to provide a diverse constellation of unique prototypes, suggesting—as a compound—the prospect of a vibrant city.

Given a lack of precise information of the existing city interiors (as noted earlier),[21] the two main design explorations have departed from vacant plots, researching the potential of newly built environments. This has naturally shifted the focus from mainly altering and distorting pre-existing physical topographies, as in the previous sections, to erecting new constructions at this smaller scale. Alongside circumstantial reasons, this fact reflects perhaps obvious

20 See the section 'Levels of permanence and appropriation' in Chapter 2.
21 See the introduction of the section 'Room Ensemble' in Chapter 4.





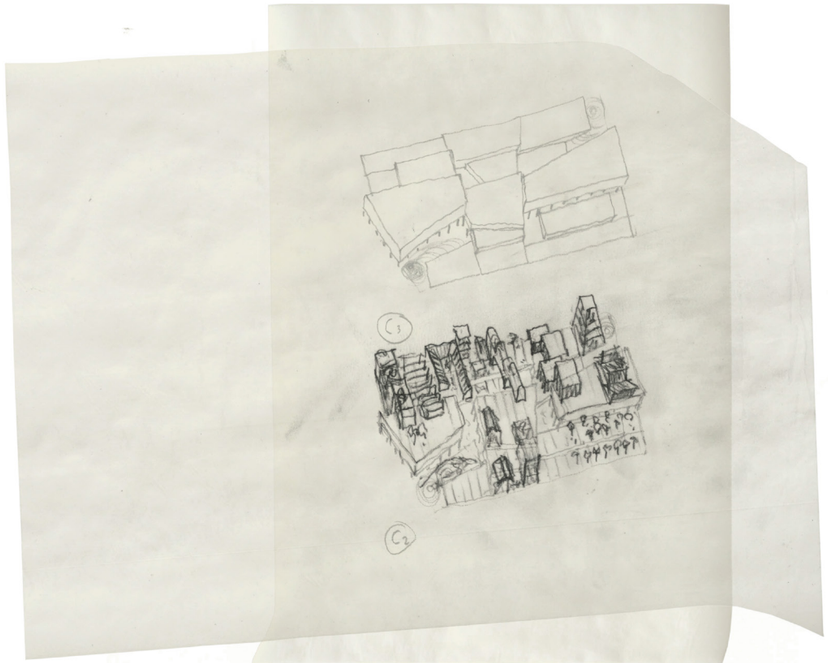


Fig. 70
Finding an accidental geometrical pattern for the support plots, while sustaining urban depth (2022).

Fig. 71 (opposite page)
The support as a geological feature (2022).

Fig. 72
Testing the potential of row habitation on top of the urban support (2022).

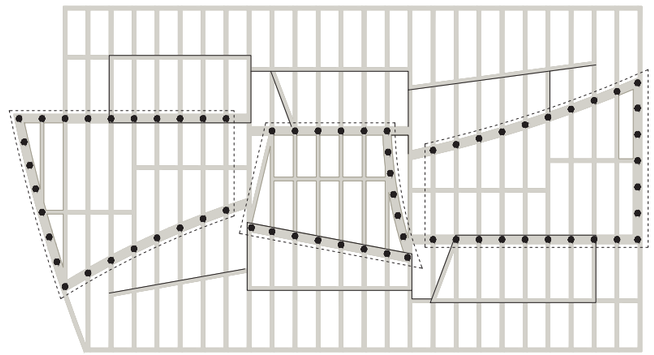
Fig. 73
Plan of a city base for row habitation. Scale 1:1,000.

phenomenon related to size and complexity when transforming the existing city: that smaller entities—a piece of furniture or small buildings—may be easily built brand new and inserted within the city. By contrast, as argued before, by erecting enormous entities—a city fragment or a small neighbourhood—all at once by fully replacing existing fabric, risks leading to impoverished, unrooted and anti-democratic environments, no matter how much such large scale development may be underpinned by good intentions.[22] In spite of working with new buildings in vacant plots, both physical and cultural traits of the researched 'actant contexts' have been embraced to produce delightful catalysts of change, for this society of rooms at the fringes of Barcelona.

A City Base for Row Habitation

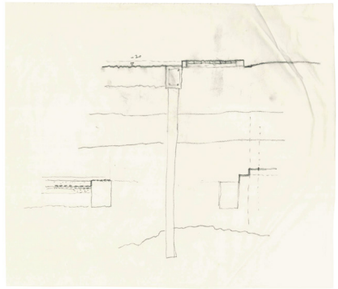
This protype aims to build the least for the most extent of benefit. Situated between architecture and urbanism, it investigates a large yet subtle shared infrastructural support, the size of a city block (100m by 60m), for multiple modest urban plots: medium and small size row buildings in deep plots, of a similar grain to the Santiveri rowhouses (see Fig. 72). The base support consists of an artificial topography, permanent like a geological feature and built of mineral materials (earthwork and concrete), that provides a surface with a modular plot tissue that tenants can develop in wider or narrower plots, based on 3.5m bays, a subjective dimension corresponding

22 This observation is related to a critique of large-scale physical planning and the megastructures that I have recalled in the section 'Aesthetics of the Open Form' in Chapter 2.



278 to minimum internal generosity (see Fig. 73). In these former delta
279 lands, the primary structure includes a grid of base beams supported on piled raft foundations laid out following the plot pattern to enable unplanned detachable units (houses, sheds, light buildings, etc.) to be assembled above. Most of the surfaces, in-between grid lines, remain as natural soil, permeable to drain water, potentially vegetated, awaiting further developments (see Fig. 72, 75 and 76).

While the grid and its practice of subdivision follow an orthogonal pattern, accidental geometrical clashes resonate the former agricultural mosaic and pathways, intending to qualify unique situations along the urban support (see Fig. 70). In the depth of the city block, a cracked plateau emerges over the ground in this way providing a stepped mineral base for the urban lots. It is a human-made mound with specific and perhaps unusual qualities. In this area, two meters of anthropic landfill have been dug to recover the delta level, digging a bit further in a central spot where the water table emerges, enhancing a small node of biodiversity (see Fig. 74 and 76). Further underground excavation has been purposely avoided for economic and ecological reasons. Earthwork is used both for landscaping and providing the formwork of the entire concrete shell that (later) is partially undermined to be exposed (see Fig. 77, 78 and 79). Not only the foundation beams follow this logic, but also a grand vaulted cellar covered under the platforms: a shared basement with high ceilings, whose spatial generosity and sunlight can accommodate a variety of activities (see Fig. 81). At both ends, in a threshold to street life, the central platforms are perceived as small community buildings with shared polyvalent interior and exterior rooms. In time, the base infrastructural support would end up consumed by a cohort of individually developed row buildings (see Fig. 80, 89 and 91).



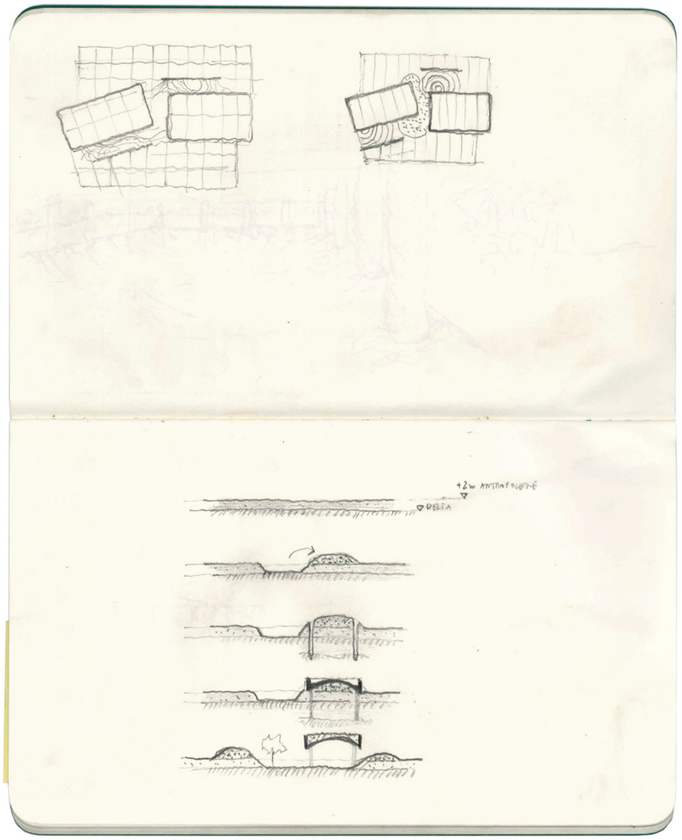




Fig. 74 (left)
Studying how to use earth as a formwork, after digging 2m of anthropic landfill to recover the delta level in some areas of the support (2022).

Fig. 75 (left, opposite page)
Studying a permeable foundation in the delta subsoil: piled raft foundations embedded in a deep rock layer (2022).

Fig. 76 (right)
The support as a grid of foundations and infrastructure for unplanned lightweight architectures (2022).

Fig. 77 (bottom)
Plaster cast model process: earth used as a formwork of the vaulted ceiling and piles, just before pouring the plaster.

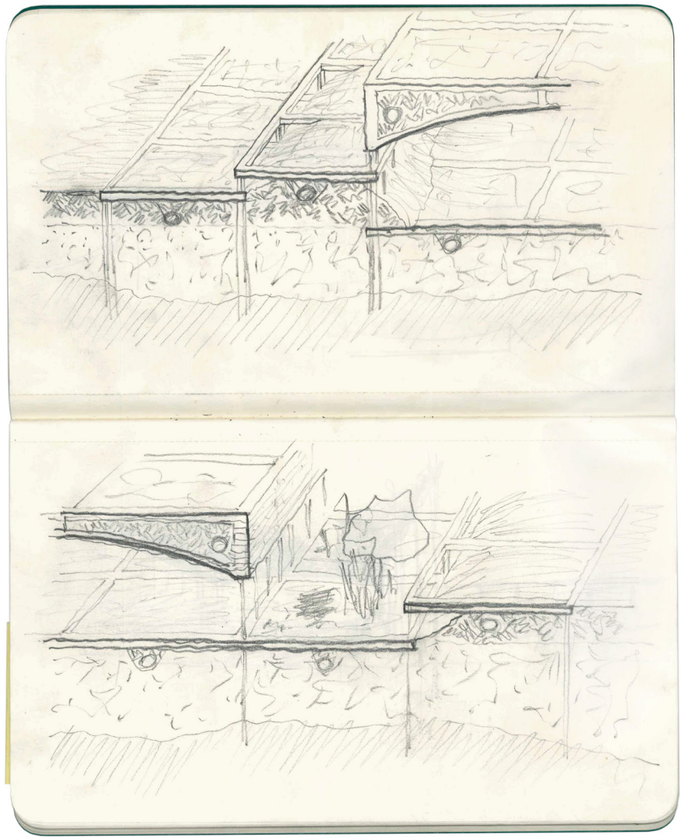






Fig. 78
Cast model during the process of digging under the vaulted platforms.

Fig. 79
Process of casting the base beams.

Fig. 80
A situation of early settlement, where exceeding landfill has been used to shape artificial mounds, vegetation has started to bloom and human habitation begins its course.
Scale 1:60, (100×25cm).



Beyond its spatial qualities, the permanent support provides with varied services and functions operated by the 'support' community, catalysing social and ecological interactions. The city block dimension allows for economies of scale for renewable energy production, in line with ICGC suggested strategies.[23] This would entail managing shallow geothermal energy systems in urban environments. Either closed loop systems (CLS) or open loop systems (OLS) could be implemented to extract heat (in winter) and dissipate heat (in summer), while the delta geological base provides a unique opportunity for aquifer thermal energy storage (ATES). This would allow for taking advantage of the capacity of water to store heat, four times more efficient than soil, to retain excess heat from solar collectors and heat rejection from buildings or industrial processes. Likewise, the infrastructural support allows for managing and storing storm-water runoff, according to SuDS principles, a water-cycle approach that has been tested to catalyse a resilient delightful urban landscape for flora and fauna, including humans (see Fig. 81, 82, 83

23 Institut Cartogràfic i Geològic de Catalunya, <https://www.icgc.cat/ca/Administracio-i-empresa/Serveis/Geotermia> [accessed 16 April 2022].

Fig. 81
Appropriated section of a city base for row habitation.
Scale 1:200.

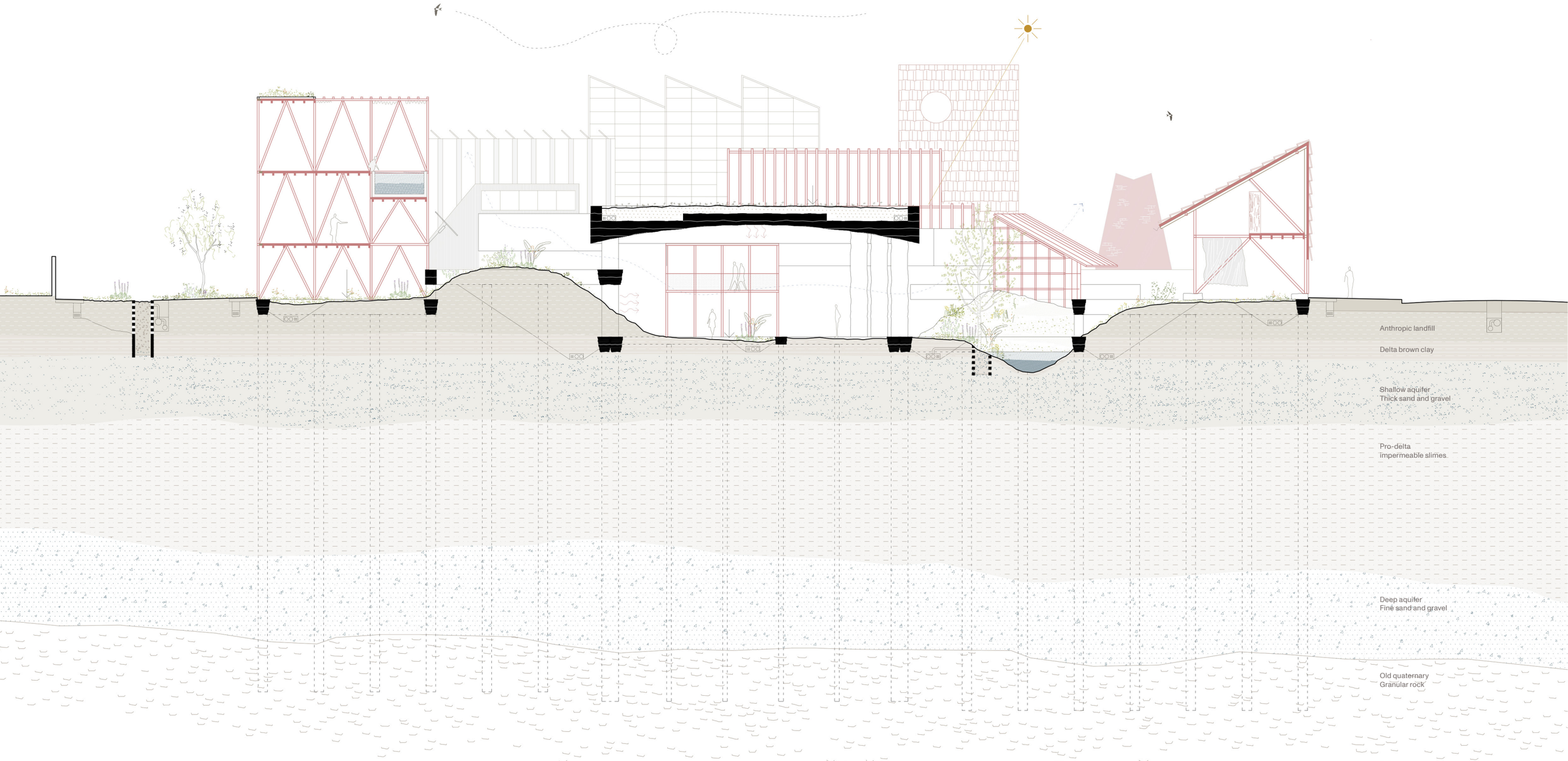








Fig. 82, 83 and 84
Details of a delightful habitat for flora, fauna, humans and small architectures.



and 84). Within the prototypical scheme, a diversity of shared spaces can be appropriated by the community, with large and small indoor and outdoor areas. In the depth of the urban plot, the vaulted basement can accommodate a carpark for the entire city block that, given its spatial qualities, could anytime be adapted to other functions (see Fig. 81, 85 and 86). The polyvalent buildings and gardens at both ends of the spine may house community rooms for changing activities, facilities, services and leisure.

In addition to designing the permanent city block's infrastructural support, I have attempted to anticipate further levels of appropriation and persistence[24] (see Fig. 81, 87, 88, 89). Even if the envisaged detachable units have not been planned, and could be designed and developed in myriad ways by different spatial agents or architects, the physical qualities of the base support have sought to define a series of constraints (related to structural capacity, spatial arrangements, material specificities, etc.) that condition and catalyse their prospective emergence in the pursuit of delightful indeterminacy—constraints regarded with potential, because as I said before, absolute free will is overrated.[25] In addition, aiming to preserve and enhance

24 The process of testing the detachable units within the support has not been linear, but all mixed up: the specific form of the support responds to freely testing the potential of the sporadic individual soft architectures, as much as the other way around.

25 See the sections 'Freedom of Appropriation' and 'Ecological Awareness' in Chapter 1.

Fig. 85 (opposite page)
Grand vaulted basement as an unexpected ambiguous and atemporal space under unplanned city developments.

Fig. 86
View of the artificial cracked plateau slightly emerging above street level.



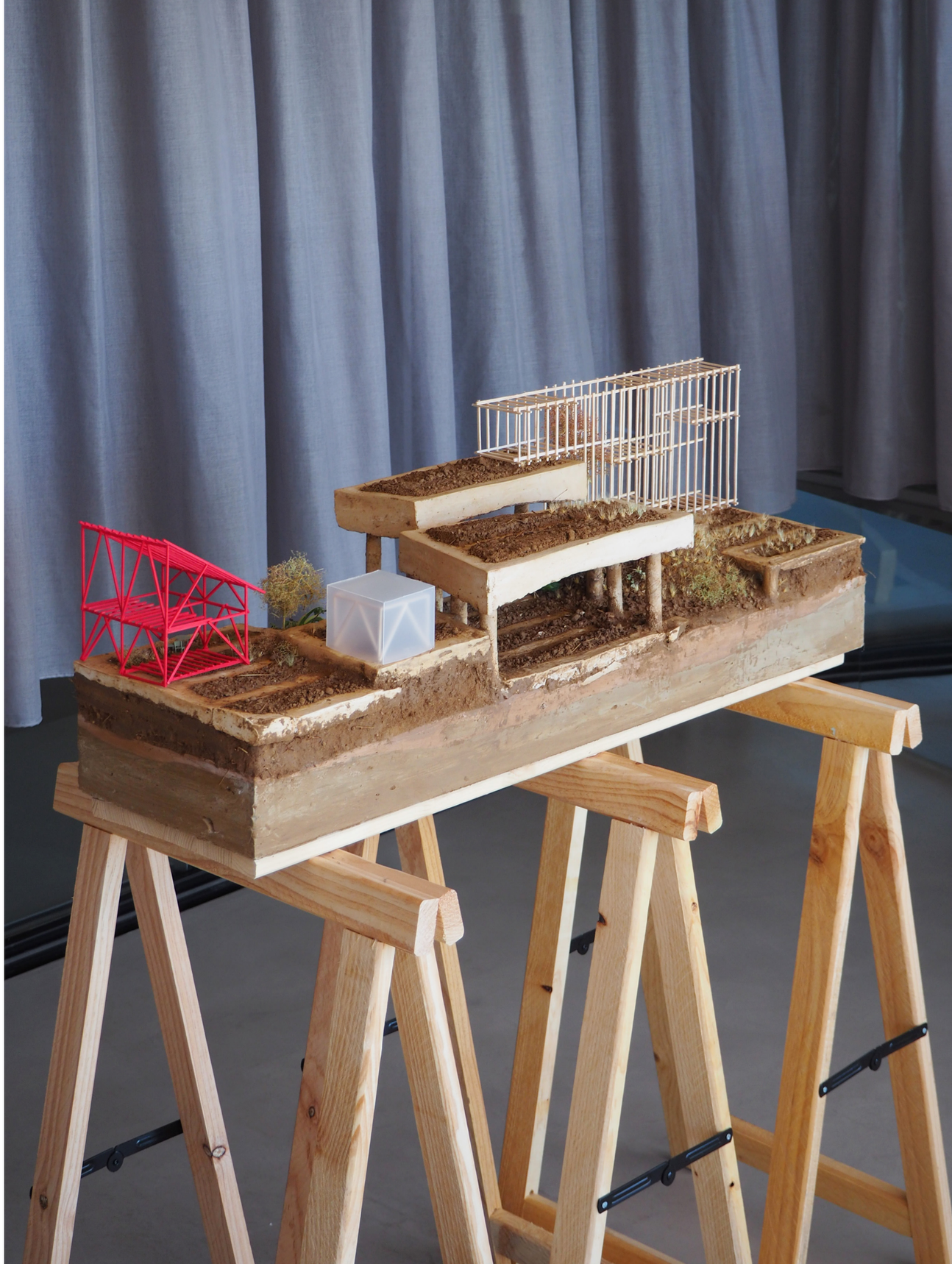


Fig. 87
Habitation of a red timber frame house with a generous garden.

Fig. 88
The support being gradually covered by lightweight structures.

Fig. 89 (opposite page)
Cast plaster model.
Scale 1:60, (100×25cm).





290 further urbanity and habitation comfort, besides spatial constraints,
291 I have tested a series of urban play-rules of open-ended outcome (i.e. sporadic and incomplete urban parameters that should not be taken as normative). This exercise resulted in the following suggestions: a) ground floors can be fully occupied enhancing Low Road qualities but only an additional maximum buildable net ratio of 1.5 can be freely distributed above the ground floor in different levels; b) building heights are restricted to a maximum of 14m without prescribing interior ceiling spans; c) the width of individual plots should not exceed 4 bays (i.e. varying widths of 3.5m, 7m, 10.5m and 14m); d) a constructional criterium should be followed to treat the dividing walls as doubled up blind façades by preserving their individuality; and e) structural criteria based on lightweight structural systems may be embraced taking advantage of the support as a foundation (see Fig. 90 as well as the drawings and model pictures where these constraints are tested).

The exploration of adding further soft architectures opens up the potential of treating each layer as an infrastructural support of the next, a kind of expansive investigation of smaller spatial and constructional scales that, in this prototype, are only gently suggested. Nevertheless, this exercise allows envisaging a wide range of small and medium size tenancies—little households as well as modest multi-unit dwellings or co-housing buildings—that take advantage of the shared spaces and services. The individuality of each unit, together with the infrastructural qualities of the support, has enabled an affordable procedure for continuous and synchronic transformation of different parts of the city block over time, avoiding displacement and promoting the continuity of a fine urban grain. Each lot has the freedom to become something of its own, catalysing urban and constructional tectonics of change that are familiar in vernacular cities (see Fig. XX). In short, it produces an easy course of sporadic and slow transformations that could never happen in a generic large housing development of the same size.

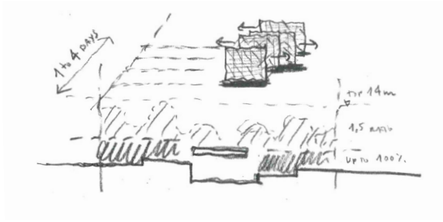
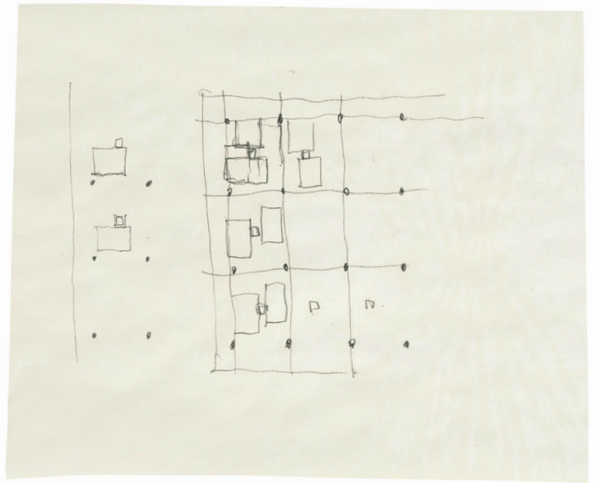


Fig. 90
Suggested play-rules to enhance commoning practices of coexistence during development.

Fig. 91
A view of the urban support next to Santiveri house towards Montjuïc (2022).





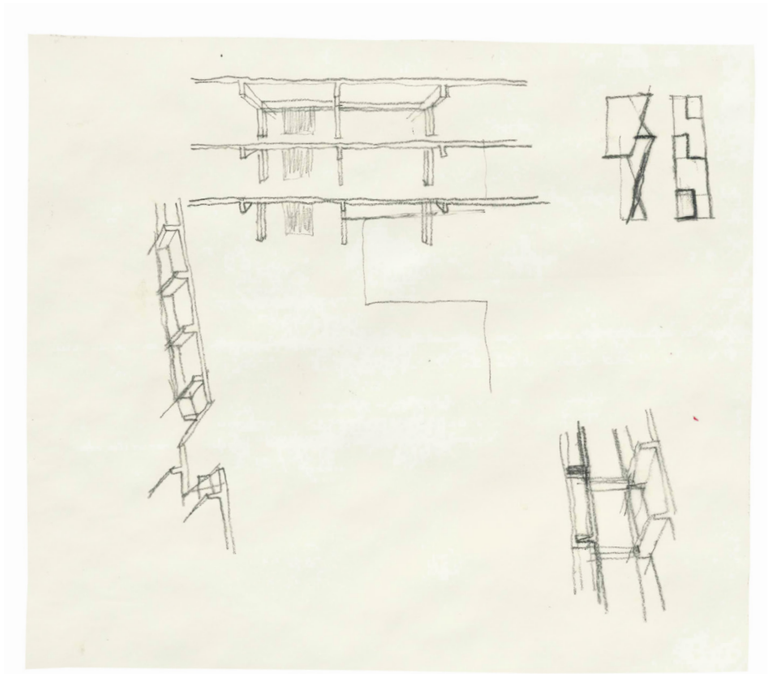
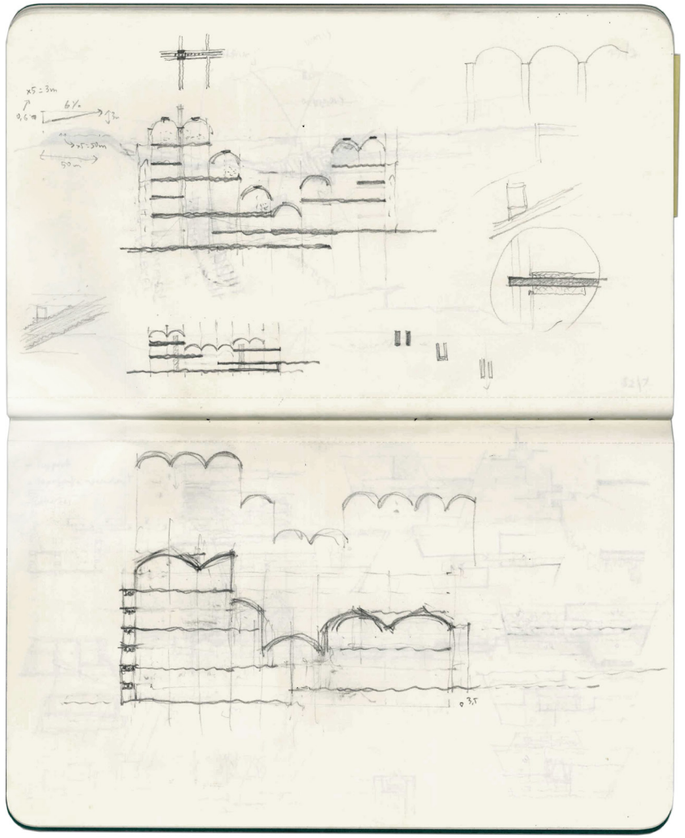


Fig. 92
Investigating the potential of an open plan of quasi-rooms in relation to M&E central risers (2018).

Fig. 93
Following a legacy of frame/infill interrelations (2018).

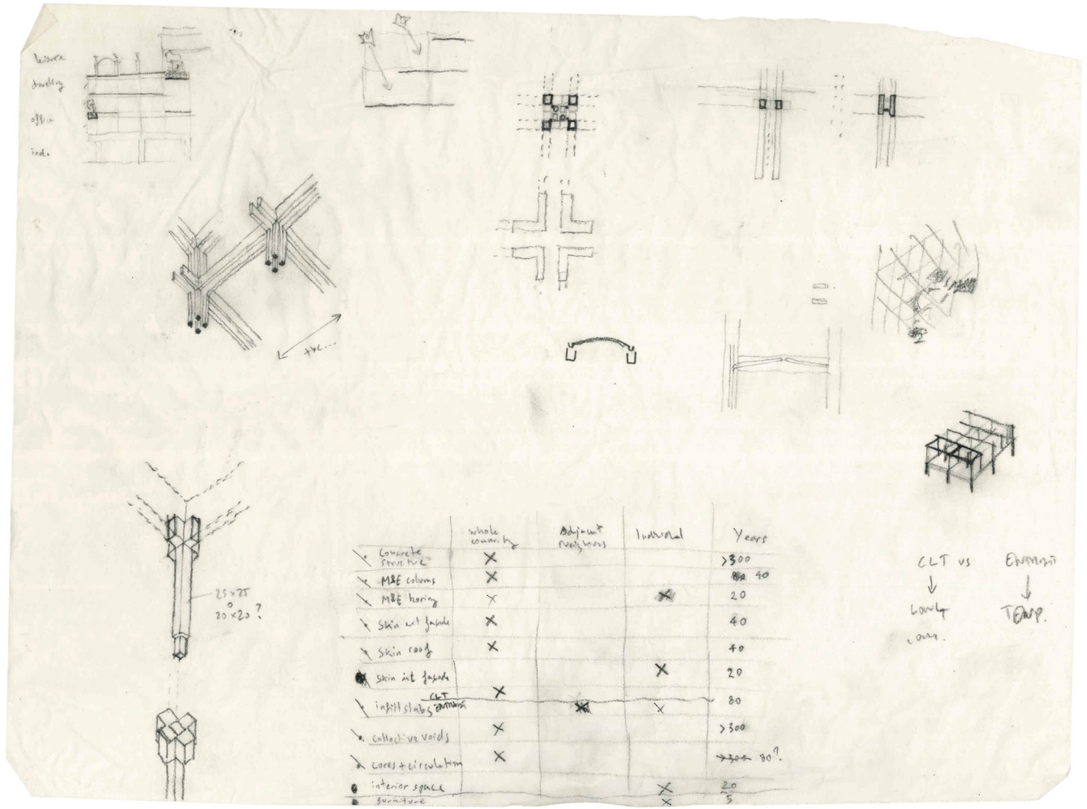
Fig. 94
Exploring the potential of double-height primary spaces and a stepped section of the support (2018).



Plug-in Three-dimensional Framework

This prototype follows the legacy of a modernist, structuralist paradigm to build plots 'up in the air.'[26] It proposes a large building support comprising a primary, permanent, indeterminate and yet specific frame structure, distinguished from subsequent layers and additions, catalysing sporadic and playful habitation over time (see Fig. 92, 93 and 94). The frame is initially defined by a three-dimensional precast structural skeleton of hollow columns and beams—without slabs—that contain plug-in horizontal and vertical routes for M&E (see Fig. 95 and 97). Besides distributing service flows such as electricity, communications, waste and rainwater throughout the built ensemble, this precast concrete structural framework

26 N. John Habraken, *Supports*, ed. by Jonathan Teicher (Urban International Press: UK, 1999), p. 70. Originally published in 1961 under the title *Dragers en de Mensen*.



can be thermally activated, by managing urban shallow geothermal energy, with thermo-active foundations systems (TAFs). At first sight, the support and its constructional tectonics of assemblage appear as an isotropic rhythm of pure flexibility, a grid that could expand producing a nonstop generic landscape. However, external and internal forces provoke fluctuations and memorable differences defined by specific contours. In relation to the small grain of the surrounding urban tissue, the built ensemble breaks down its silhouette in the upper levels, offering modest volumes and rooftops, this procedure also generates distinguished interior qualities with increased façade exposure (see Fig. 106, 110, 112 and 113). Compared to the upper floors—which are very generous for small tenancy and dwelling—interior depth has been enhanced in the lower levels, to stimulate low-rent spacious areas, suited to productive and creative activities. Occasionally, the structural span doubles up on the ground floor, freeing up larger interior naves that maximise versatility for either productive, leisure or commercial uses (see Fig. 96). Inside, a

Fig. 95
Initial sketches for a plug-in three-dimensional framework, where services and frame structure are integrated. The table suggests a variety of lifespan and agency according to each layer (2021).

Fig. 96
Structural scheme.

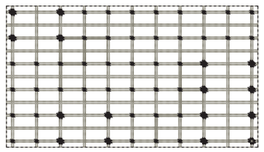
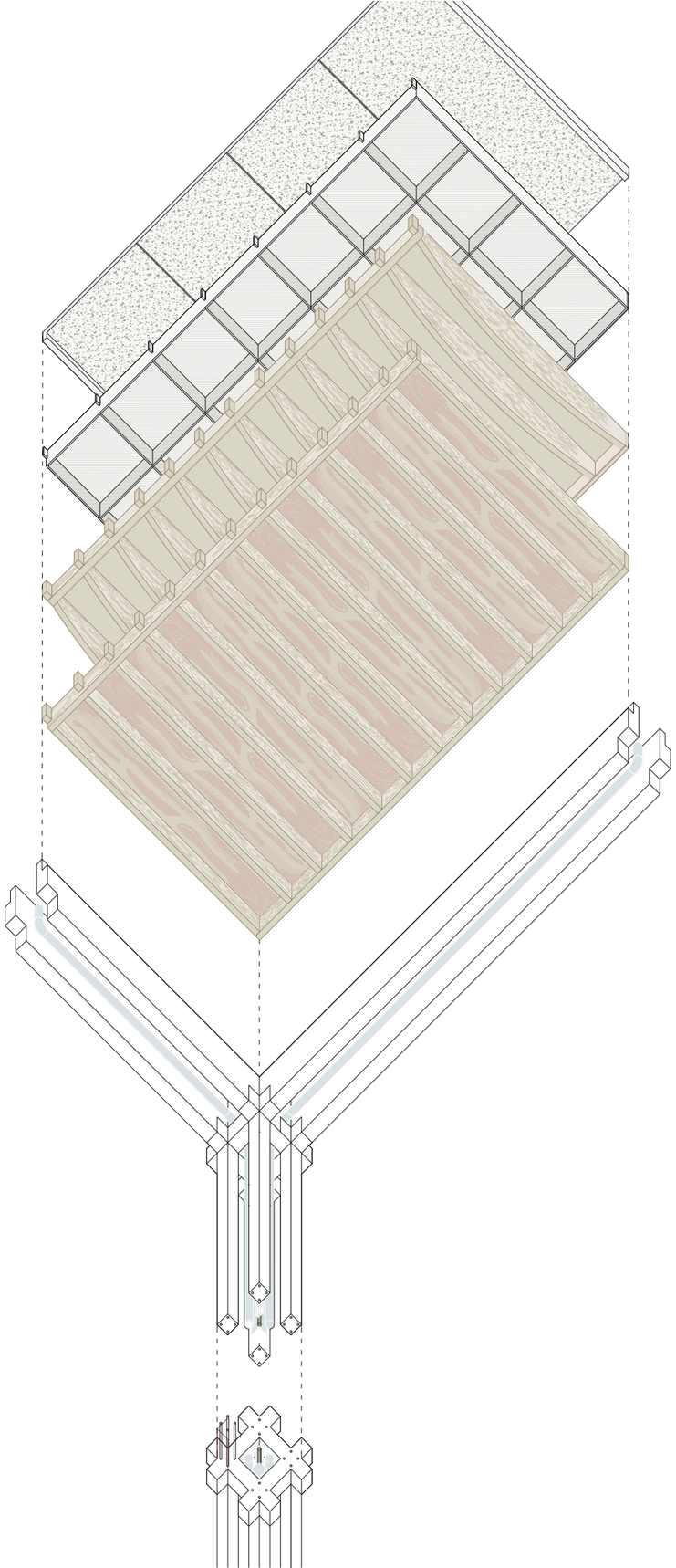


Fig. 97
Detail of the frame structure, services and a variety of possible infill floors. Scale 1:50.



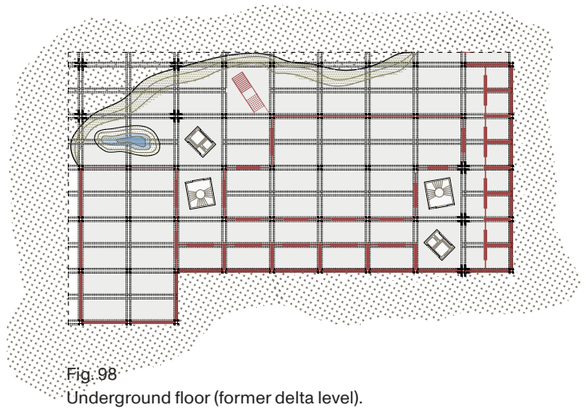


Fig. 98
Underground floor (former delta level).

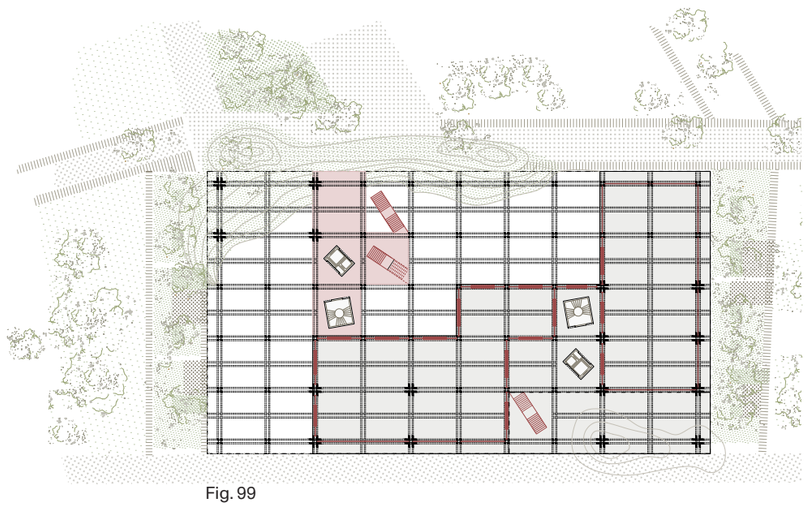


Fig. 99
Ground floor

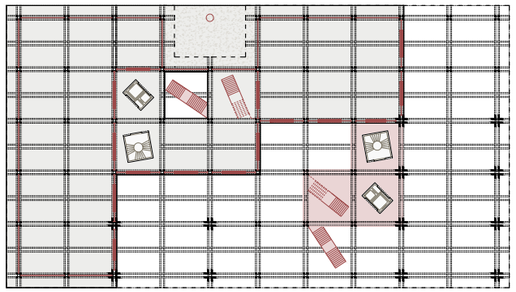


Fig. 100
First floor

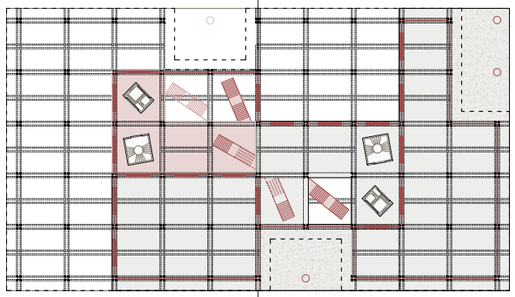


Fig. 101
Second floor

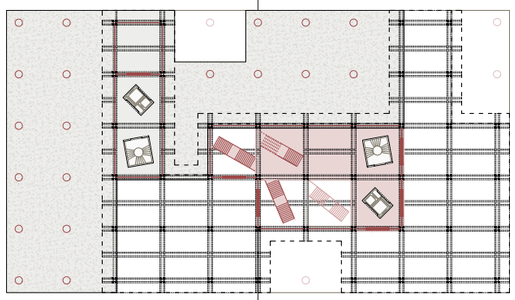


Fig. 102
Third floor

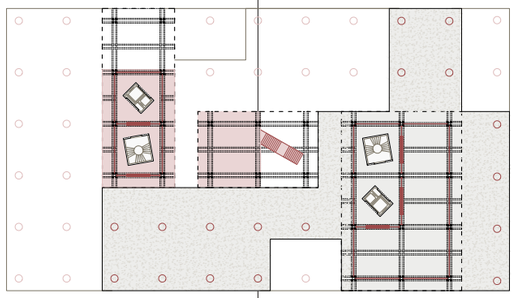


Fig. 103
Fourth floor

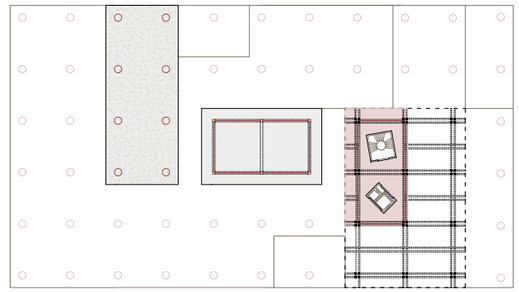


Fig. 104
Fifth floor

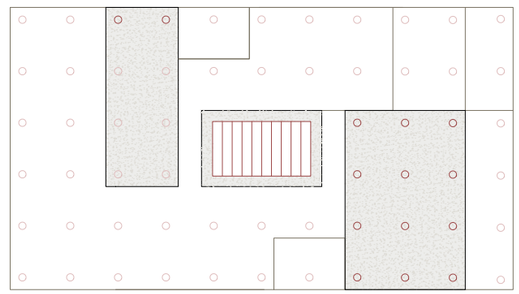


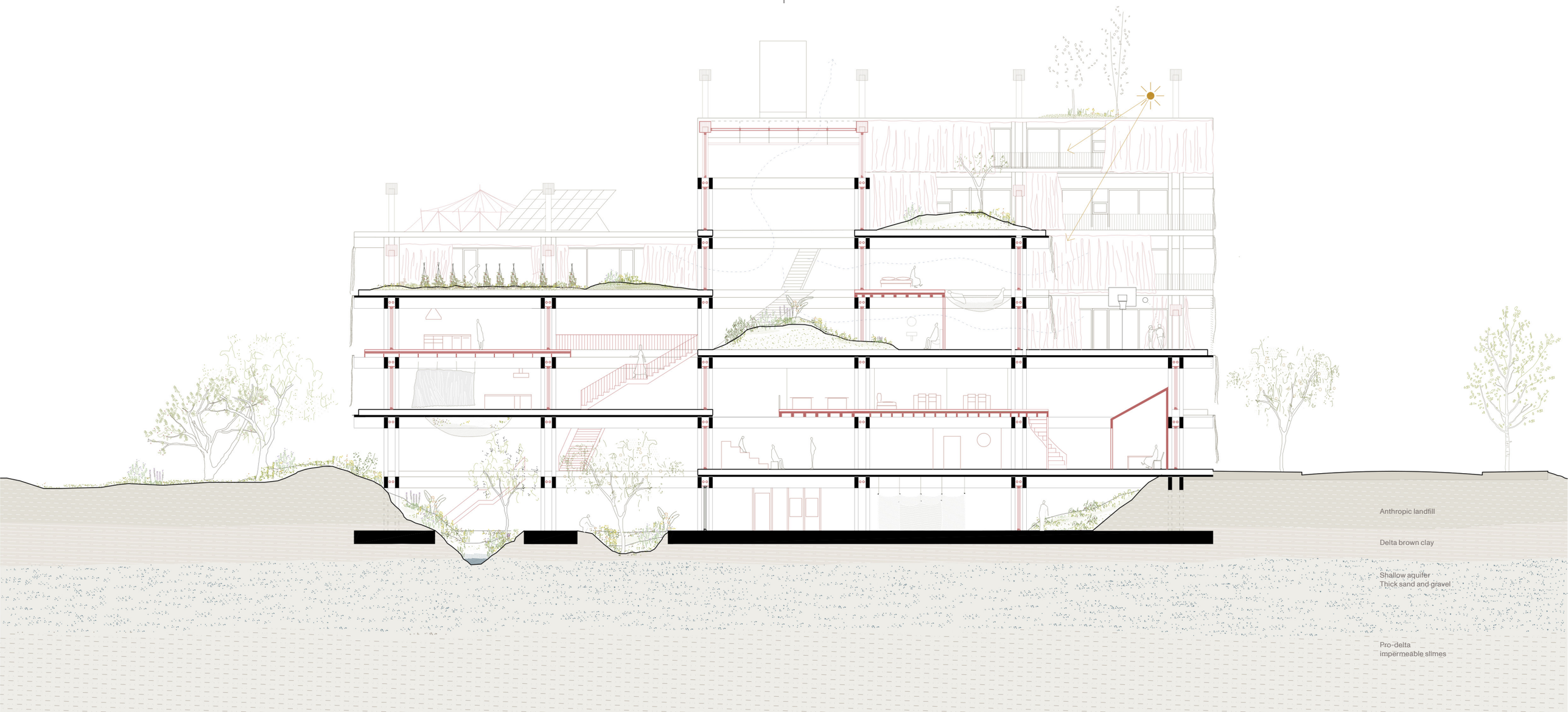
Fig. 105
Top roof

All plans at scale 1:1,000
Shared concrete frame with infill pre-cast slabs, services, access cores and envelope, before individual appropriation begins.

large diagonalized void, related to the experience of accessing the individual lots—next to platforms, stairs and cores—generates a deep terraced section: an interior landscape for exchange and interpersonal appropriation, echoing a gregarious sense of commoning. Along this section a series of generous interior and exterior rooms are offered for collective delight. These spaces can accommodate a variety of activities such as playgrounds, a basketball court, a small cinema or music room, vegetable gardens, all supported by utilities such as bicycle, buggy or shopping cart storages (see Fig. 106). In sum, the plug-in framework aims to perform as a playful support for civic life.

Fig. 106
Appropriated section of the plug-in three-dimensional framework.
Scale 1:200.

As has been made clear, this prototype is not defined by a simple disjunction between permanence and temporariness, support and infill, community and individual. Instead, the built ensemble is conceived as a gradient of layers with varying levels of longevity, tectonics and agency (see table in Fig. 95). The loadbearing framework, with its specific exterior and interior contours, is expected to last over 300 years. Each component of service reticulation (M&E, communications, waste, etc.) might have a shorter lifespan depending on technical progress and obsolescence—the entire three-dimensional grid necessarily being managed at community scale. Two different types of floor construction or infill slab are anticipated: approximately one half of the bays are spanned with prefabricated floor slabs that define a shell with double-height spaces—distinguished from the concrete



framework and potentially changeable—and yet functioning as a long-term base to be managed by the 'support' community. The remainder (the other half of slabs) are foreseen as lightweight timber frame or steel floors, initially unplanned, that can be easily added and removed by individual tenants over time (see Fig 97, 106, 107 and 109).

In regard to the question of the envelope and its prototypical characteristics, an outer skin, protecting the framework from external weather, might also be handled by community management. Horizontally, each top level is either covered with long-lasting green roofs or potentially removable winter gardens. Vertically, a light layer of shadings and glazing (likely to demand replacement from time to time) provide enclosure with a spatial thermo-dynamic thickness

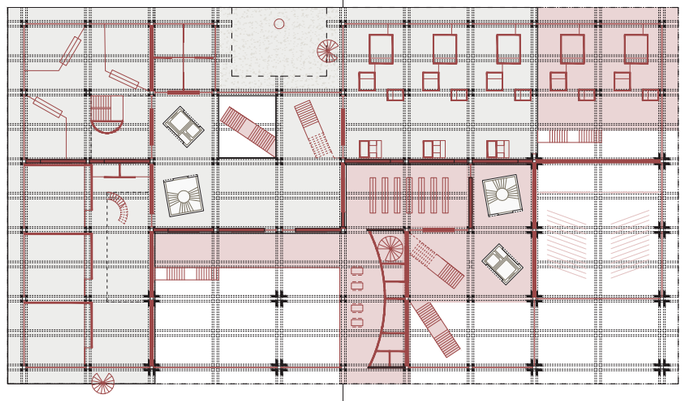


Fig. 107
First floor, a situation of appropriation.
Scale 1:750

to ensure a tempered internal climate. Although managed by the community, the building envelope and its thermal moderation is operated on an everyday basis by each tenant, taking advantage of its micro-climatic performance. Within this shared intermediate thermal envelope, inhabitants may individually add a secondary façade to enhance interior comfort. Inside, rather than a totally flexible free plan, an open plan of quasi-rooms, defined by the downstand beams and appropriately sized columns, make apparent the transformative potential of the three-dimensional framework (see Fig. 108). Each tenant may add subsequent enclosures generating withdraw for ease, intimacy and individual freedom of appropriation (see Fig. 107, 109). Designs of the internal enclosures may take the shape of movable screens or large elements of furniture—removable or demountable

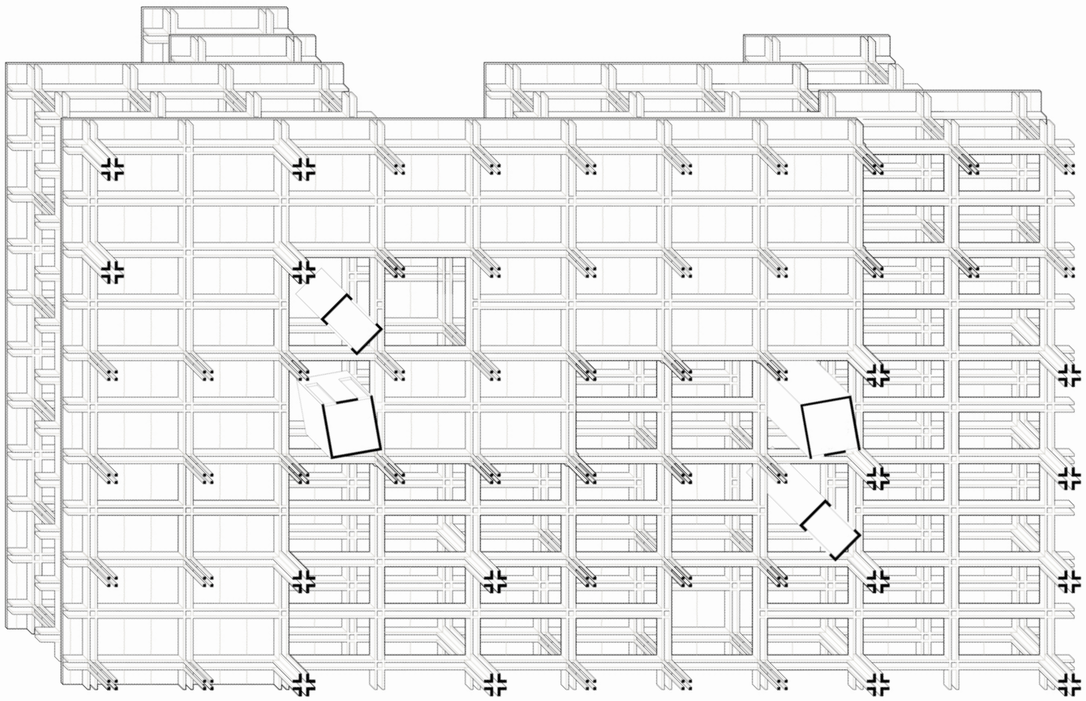


Fig. 108
Concrete layers.
Scale 1:500

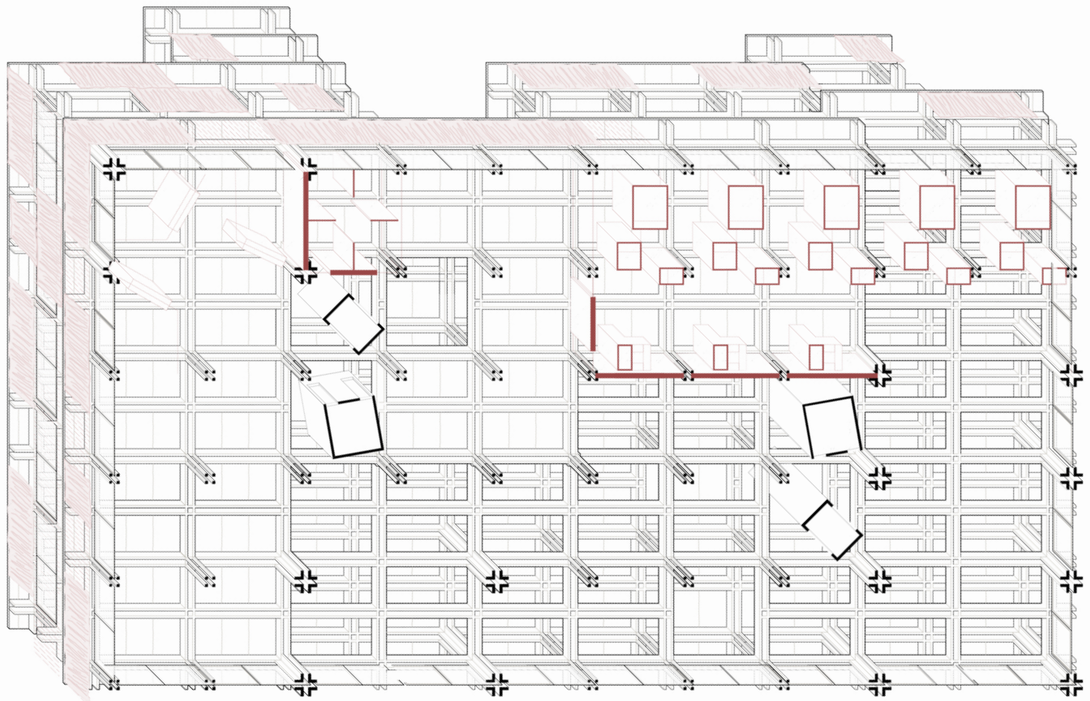


Fig. 109
Added appropriation.
Scale 1:500

Fig. 110
Exploring the potential of stepped roof-tops and layer stratification through the appropriation of a variety of interior and exterior rooms (2022).



domestic bodies—that can be populated by and mixed with personal belongings, appliances and gadgets, in this way blurring the edges between architecture and habitation. In summary, the prototype design argues that the binary interpretation of support vs infill—as a dichotomy—is here superseded by a layering of infrastructural support-infill gradients that embrace heterogeneous, synchronic and slow transformation over the course of time (see Fig. 110 and 111).

In this section, the last of Chapter 5, I have developed two infrastructural supports that have been designed as prototypes to catalyse personal and commoning city interiors: A City Base for Row Habitation and a Plug-in Three-dimensional Frame. City interiors that may be heterogeneously and synchronically appropriated, altered and transformed over time, reaching a certain level of urban density and intensity (see Fig. 112 and 113). While the support prototypes have included the load-bearing structure, installations, access to every lot and a climatic envelope, I have also tested that each of these components can be further subdivided into primary, secondary and subsequent elements. In this way, the support/infill dichotomy has been superseded by infrastructural gradients with different levels of temporality, tectonics and agency. A comparison of the different prototypes manifests considerable differences in relation to its appropriation techniques. The first one minimizes the initial investment by barely building a topographical plinth that occupies 1/5 of the buildable area, thus enabling maximum freedom of choice for consequently more expensive appropriation. By contrast, the second support—which produces generous raw interiors within a shared envelope—requires a substantial initial investment by the community, but makes affordable the transformations over time for each individual lot. In the different prototypes I have intended to make apparent—visually and experientially—the articulation of each layer, one on top of each other, in order to catalyse the potential of unforeseen change. In this regard, I have generally used mineral tectonics for longest-term primary base layers, in contrast with mid-term and short-term soft additions, that I have tested in lightweight easily-detachable constructional systems.

Throughout the different projects, spatial fluctuation and difference has been measured with intention, opposing monotonous neutrality to offer a multiplicity of settings for dwelling, working, leisure, festivity, refuge, sport, gardening, chilling, celebration, contemplation, and so on—specificities that include delightful thermodynamic interactions and increased biodiversity, alongside social vitality and cultural richness. In addition to their physical attributes, the infrastructural gradients have included tactics of contingency as self-imposed constraints of careful transformation over time. In other words, a set of

intersubjective game rules for future soft-developments (or small-scale commoning regulations) that may be necessary to manage the shared layers and mediate the potential of change. The first prototype has deliberately explored urban ensembles not too distinct from the old rowhouses and the smaller industrial warehouses, by learning from their vitality and 'low road' qualities, while taking advantage of the infrastructural shared base for social and ecological purposes. While this section has focused in newly built designs in empty plots, further research counting on detailed data and surveys, should delve into the transformation of pre-existing city interiors—as I have tested at larger scales—avoiding *tabula rasa*, by playfully caring and distorting every footprint of the physical and cultural environment.



Fig. 111
View of an individual unit enhancing a generous interior life. The image intends to suggest a finer scale of everyday supports such as curtains, wooden units, service connections, shades, gardens, etc.



Fig. 112
Early stage of urban transformation.
Scale 1:1,100.



Fig. 113
Later stage of urban transformation.
Scale 1:1,100.

Conclusion
Prototypes and Apprehensions

In this chapter the design of spatial catalysts of change has been speculated at different scales. The design work does not represent a collection of individual and disconnected artefacts in a laboratory, nor is a univocal vision for a city fragment. Instead, the intention has been to trace a cohort of interwoven prototypes that can be interpreted individually, but should be spatially experienced as an interrelated urban compound. Beyond their role as a vehicle of monographic investigation, these prototypes can be appreciated for their own tectonic, cultural and ecological qualities as urban artefacts. At a larger scale, an artificial geological shoreline has been proposed as a socio-ecological corridor connecting Montjuïc to the delta's agricultural lands, with the purpose of enhancing the water cycle, recovering wetlands and promoting sea presence, biodiversity and activating a microclimatological device to resist climate change. In this way, the metropolitan corridor has transformed from a back-entrance border to a front-door civic threshold, creating a new place where city edges are sharply visible yet permeable and where a proposed landscape infrastructure is a catalyst for the coexistence of upcoming horticulture, leisure, sport, workspace, living, exchange and mobility. At an intermediate scale, an accidental street structure has been proposed by radically opposing a *tabula rasa* approach in favour of ordinary found contexts: industrial yards, alleys and oblique passageways. These existing infrastructures are qualified by having been crafted by countless individual decisions over time and they make possible a sequential, progressive transformation, and they avoid displacement by distorting and breaking up the current plot structure to sustain productive activities while setting up potential for further habitation. At a smaller scale, a cohort of proposed support prototypes includes a city block plateau for row habitation and a plug-in skeleton infrastructure for 'plots in the air.' Regardless of the scale, these prototypes have embraced the Council's aim to densify

this part of the city and, yet, the projects prove that this transformation can take place while avoiding local displacement, by slowly adjusting and qualifying historical differences, as well as by setting up a city grain that can be freely engaged and appropriated without predefined functions.

Even if acknowledging the role of prototypes in knowledge production, in previous chapters I have claimed that the making of projects should not be the unique purpose a PhD 'by design', but additionally perform as a vehicle towards communicable knowledge. In this regard, retrospectively, different apprehensions may be grasped from the cross-scalar spatial artefacts of the design work. But, how could these knowledges be articulated? In the methodological discussion I have sustained that this kind of awareness may entail a compound of explicit and tacit, written, pictorial and sensorial information. It is my belief that a project—each concrete built or drawn situation—cannot be entirely dissected, with its knowledge fully detached from its body. Therefore, I eagerly embrace ineffable forms of connoisseurship that observers may subjectively interpret, by directly experiencing the artefacts. While acknowledging such limitation, in the next chapter I intend to open up a cohort of apprehensions from the projects explored herein. To do so, I have started by paying attention to the small hand sketches or inputs that have accompanied the design developments—a series of design intents that have served to speculate isolated purposes colliding in the design prototypes. My aim is that these inputs, interrelated with a direct observation of the artefacts, may unveil designerly ways of communicating architectural awareness.



Fig. 114
Cast plaster model.
Scale 1:60, (100×25cm).

Chapter 5
Making Time Catalysts

Chapter 6
Towards a Family of Artifices

Pau Bajet
PhD 'by design'
July 2023

> You scramble over the ruins to cadge a system of proportions, you cobble together your summer-houses out of the blessed rubble, and think yourselves the true guardians of the secrets of art if you can reckon the inches and minutest lines of past buildings. If you had rather felt than measured, if the spirit of the pile you so admire had come upon you, you would not simply have imitated it because they did it and it is beautiful; you would have made your plans because of truth and necessity, and a living creative beauty would have flowed from them. (…) Rules are more damaging to the genius than examples.[1]

Each proposal or artefact depicted in the previous chapter embodies implicit understandings about designing 'time catalysts.' These are the knowledges that this chapter intends to articulate; they are the key output components of the research carried out by design and their articulation aims to produce insightful findings that fulfil and make sense of the methodological argument at the heart of the doctoral project. In this regard, one might ask, should a system of codified categories with a rigorous taxonomy be induced from the prototypical projects, so that anyone could use them mechanically to deduce alternative, future wholes? Clearly, the answer is no: Goethe's passage above suggests that such rule-making risks devaluing the 'truth and necessity' at the heart of a 'living creative beauty.' In the same way, Joseph Rykwert claimed that the production of artefacts and architecture should not be reduced to automatic procedures but should rely on the subjective skills and intentions of designers.

> There cannot be design—and at the risk of committing a tautology I would say that no artifact can exist without design being involved somewhere in the making of it—without intention; and it follows,

1 Johann Wolfgang von Goethe, 'On German Architecture', in *Goethe on Art* ed. and trans. by John Gage (London: Scholar Press, 1980), p. 105. Originally published in 1772.

since intention is a voluntary function, that there cannot be design without artifice.[2]

The artefact is the *oeuvre*, while the artifice is the ability to produce artefacts. Both artefact and artifice derive from '*art*' (as human skill) + '*facere*' (to make, do),[3] implying the necessity of a skilled human production or, in other words, subjective craftmanship. In this way, artifice is understood as a 'designerly way of knowing'[4] that enables the experience of making; it is a deeply apprehended practical wisdom—much more than a neutral recipe or a manual of instructions. It unfolds, in short, a 'phenomenological' mode of access.[5] How, then, can this designerly way of knowing become communicable knowledge if we accept that it cannot be entirely detached from either the artefact or the designer?

In the first section of this chapter, the design work is interpreted in the form of an appraisal of its course of development recontextualised against the theoretical framework. This account necessarily tracks the evolution and application of the design research as a journey, intending to distil modest traces of originality and relevance. In the second section, a specific formulation of architectural strategies is proposed for the design of time catalysts that are somehow embedded in the design proposals: a family of artifices in dialogue with the artefacts, that may be openly interpreted in their orientation to the future. To be more specific, this chapter suggests a designerly kind of awareness that demands upcoming inventiveness, an artful process of making in futurity. In this way, the argument for a family of artifices represents an effort grounded by design at weaving together theoretical knowledge and practical wisdom.

2 Joseph Rykwert, *The Necessity of Artifice* (London: Academy Editions, 1982), p.59.
3 'artifact', *Online Etymology Dictionary* https://www.etymonline.com/word/artifact#etymonline_v_17051 [accessed 28th December 2022]
4 See the heading 'Subtle ways of knowing' in Chapter 3.
5 In the first chapter of the thesis I have approached this philosophical term through 20th century philosophers such as Husserl, Heidegger and Bachelard, as well as though the ecological interpretation of contemporary scholar Timothy Morton. See the headings 'The Phenomena of Duration,' 'Actant Contexts,' 'Ecological Awareness' and 'The Pleasure of Spatial Phenomenology.'

I Design Interpretation

When beginning this PhD research in 2015, guided by the supervisory hand of Florian Beigel, Philip Christou and Peter Carl, I spent nearly two intense years focusing on design exploration to produce, at that time, a considerable proportion of Chapters 4 and 5. It took me several months to define the area of study in Barcelona, and to clarify my aim to investigate spatial catalysts of change—an intention I soon formulated as 'time catalysts.' Initially, this was an attempt to develop a strand of Beigel and Christou's research on 'landscape infrastructures' in a decisively urban (even if post-industrial) environment, while exploring the potential of designing in a cross-scalar manner. Already, during the early design investigations, I encountered a series of unexpected critical aspects that have underpinned the development of the thesis over the years—aspects that I intend to illustrate in the successive headings of this section.

By 2018, encouraged by new members of my supervisory team, Matthew Barac and Pere Joan Ravetllat, (and having adjusted my mode of study from full-time to part-time, therefore juggling professional practice in Barcelona alongside my doctoral research) I shifted my effort to consolidate my theoretical framework. This framework was developed in methodological as well as thematic dimensions: firstly, by researching the scholarly context of doctorates by design—as argued in Chapter 3 and implicitly present in the whole thesis—and, secondly, by delving into and critically organising philosophical, anthropological and architectural literatures concerning the topics of time: Chapters 1 and 2 refer. These critical revisions in the wayfinding of the research journey have served to sharpen and consolidate the constitution of the field of study and my direction within it, while bringing up enduring as well as timely ecological, political, technical and poetic concerns.

Enhancing as Making: Caring for the Depth of the Ordinary

The evolving doctoral process, focused on the design exploration of spatial stimulants of delightful change, brought a deepening awareness and attentive care for the ordinary physical and cultural pre-existing contexts. During the early stages of the thesis, at larger scales, I expected to explore different *ex-novo* urban patterns, because I had assumed that a design laboratory should always begin its hypothetical experiment on a blank slate. My investigation was focused on researching spatial catalysts of appropriation and transformation over time and, obviously, anyone could argue that these kinds of spatial structures, regardless of their scale, could be built from scratch. But in the same way that I expected that my time catalyst designs—loosely conditioned by their infrastructural capacity—could be inhabited and changed by others in time after (i.e. in the future), I quickly realized that this temporal succession had to initially be reversed towards time before (i.e. in the past) in order to start designing. In other words, it was only though my subjective recollection of what pre-existed that my present design proposals could come to be.[6] In this, 'each thing is infrastructure of the next.'[7]

Rather than directly proposing time catalysts from zero, I started by identifying, characterizing and drawing 'found time catalysts' of the ordinary context in the design site (as Chapter 4 describes). In this way, I experienced in phenomenological terms the capacity of both subtle and bold heterogeneous traces of the place to catalyse delightful change. Traces of the context were heterogeneous—not restricted by reference only to location—because they carried historical, geological, biological, climatic, political, economic, poetic interrelations. The process of making apparent qualities of the context was not intended to idealize the pre-existing, but to allow me to appreciate its dormant performative potential (as an 'actant' context). As I have argued, this sense of latent contextual metabolism provided me with ecological awareness, a tool to playfully and yet seriously distort pre-existence.[8] In this way, even when existing traces were almost mute, I began the making of time catalysts by enhancing actant contexts that I had previously attuned (Chapter 5).

By working with ordinary traces of the place in play, the design approach has crafted a sort of accidental city fragment possibly reminiscent of historic urban developments, a consequence which—I would like to argue—has more to do with a lived duration of becoming rather than a pictorial historicity. Generally speaking, I have chosen to activate the pre-existing by acknowledging fragile time witnesses while causing certain bold distortions to qualify spaces, thereby realising them in decisively architectonic terms. Among other traces, I have embraced the current plot boundary conditions to avoid the dynamics of displacement typically associated with urban transformation, promoting instead a slow and rooted alteration of the social topography. Prosaic constructions (such as vernacular industrial warehouses, factory yards, modest irrigation channels and serendipitous paths) are appreciated for their present qualities. Their mild urbanity and 'low road' attributes stimulate freedom of appropriation eased by their patina as lived places crafted cumulatively over time. It is no coincidence that most of these time witnesses, which gradually occupied the land, retraced the agricultural mosaic that inhabited the delta for centuries.

In addition, I have appreciated potential qualities in severe anthropic transformations (caused by the train and motorway construction of the past century or, more recently, massive port expansions) to avoid any temptation concerning the erasure of agrilogistic developments. In short, the proposed urban situation has emerged by attentively altering—and occasionally distorting—a footprint crafted over centuries, in this way revealing a sporadic but gradual journey in which the city can slowly come to be. As I have argued, this city fragment (which constitutes a prospective consolidated outcome) does not need to pretend to be historical because it already has a patina of its own. It is the result of an open-ended duration of becoming, in which a physical and cultural accelerated historicity has been phenomenologically attained.

Edges as Catalytic Ambivalences

The design proposals, across different scales, are inspired by and followed a legacy of heroes; among them Le Corbusier, Yona Friedman, John Habraken, Kiyonori Kikutake, Erik Friberger and Frei Otto. These precedents stimulate temporal, social and tectonic ambivalences that perform as time catalysts. An initial preoccupation for

6 Here I am almost paraphrasing Elisabeth Grosz, who states: 'The past does not come after the present has ceased to be, nor does the present become or somehow move into the past. Rather, it is the past which is the condition of the present; it is only through a preexistence that the present can come to be.' See. Elizabeth Grosz, 'The Future of Space: Toward an Architecture of Invention' in *Anyhow*, ed. by Cynthia Davidson (Cambridge: MIT Press, 1998); reprinted in Elizabeth Grosz *Architecture from the Outside. Essays on Virtual and Real Space* (Cambridge: The MIT Press, 2001), pp. 124.

7 See the heading 'The Infrastructural Capacity of Land' in Chapter 2. Quote from Paco Alonso, 'Infrastructures', *Quaderns d'Arquitectura i Urbanisme*, 181-182 (1989), 18-29.

8 See the headings 'Actant Contexts' and 'Ecological Awareness' in Chapter 1.

tectonic duality between frame structure and soft interior partition (skeleton/infill), was refined in the late 1950s and early 1960s to reflect a temporal performance (permanence/change), along with empowering distinct levels of social appropriation (community/individual). Later, with the 'open building,' such dualities made room for nuanced superimpositions of layers, contributing to blurring the focus on object buildings and, instead, treating the built environment across scales by opening up territorial depth: an expansive gradient of supports understood as live, generative configurations (or infrastructural levels) performed by heterogeneous networks of agency, information and matter to catalyse transformation over time.[9] The prototypes of this thesis—from city edge to room ensemble—reflect this interrelated territorial depth, while emphasizing additional traits.

Notwithstanding my effort to address the research site as an interrelated continuous field, I have sought to ensure that each infrastructural level may be clearly recognized as distinctive, while still feeling loose and changeable. Hence, each support can be easily engaged and appropriated, remaining open to interpretation. To do so, I have explored the promise of threshold spatiality by focusing on the definition of edges. Those edges that give direction to pedestrian impulses, to interior appropriation, to modest urban expansion and vast geological transformation. Edges in the form of spatial contours and threshold thicknesses—both sharply experienced and yet openly permeable—simultaneously separating and connecting habitable spaces, climatic atmospheres, social aggregations and poles of biodiversity. This threshold capacity has been tested: by distorting a human-made plateau to perform as a socio-ecological doorway for human and wildlife delight, by enhancing an accidental street structure found in an industrial vernacular tissue, as well as through street fronts with permeable ground floors and 'splendid sections' crossing throughout entire city blocks. Threshold spatiality manifests its social capacity by producing two-way exchanges between street and inner space, catalysing both public space re-appropriation (by non-institutionalized sporadic activity) and multiplying commoning within the depth of the urban plots.

These edges are designed to stimulate both continuity and articulation. Continuity throughout territorial depth is enhanced by persistent traces and design strategies regardless of their scale: for example, landform infrastructures such as terraces, paths and watercourses, as well as a recognition of the plot tissue capacity to perform as a tapestry for human and nonhuman delight—strategies deployed

9 See the sections 'Levels of Permanence and Appropriation' and 'Land Resilience' in Chapter 2.

to structure new landscapes, but also to erect primarily structures for dwelling, working, civic and leisure activities. Articulation, in order to distinguish each level of territorial depth, has been emphasized by manifold tectonics of change: each layer may loosely be recognized, assembled, expanded and detached within the next. In this way, for example, accessible means of lightweight construction for modest alterations have been conceived within mineral support structures of great endurance. These tectonics offer an opportunity to test aesthetic, sensorial, technological and thermodynamic interactions: in-situ and blockwork rammed earth construction to, respectively, consolidate landscape terraces and erect mineral façade thicknesses of great inertia and durability, while expressing load-bearing gestures such as vaults, pilasters and brackets; three-dimensional precast concrete skeletons of hollow columns and beams to erect thermally activated, expansive and enduring plug-in structures; large cross-laminated wood panels to define intermediate-lasting shared supports within greater ensembles; lightweight timber frame sub-structures that can easily be detached by small builders or amateurs to stimulate everyday alteration practices and, among additional tested tectonics, dynamic outer skins providing with atmospheric comfort, usually built with detachable panels such as steel, aluminium, wood, glass, polycarbonate, ETFE, cement bonded wood boards, textiles or alternative composite materials.

As has been previously discussed, during the process of defining the various infrastructural sequences, in both physical and cultural terms, a condition of *tabula rasa* is never assumed as a point of departure. By ecologically caring for fragile activities and traces of the ordinary context (of the past), I have equally intended to avoid over-deterministic systems of growth (in the future). This is because each infrastructural level has emerged from a situated place—i.e. a place charged with resistance[10]—that has produced a slow and rooted sequence, in which the new infrastructural levels aim to be supportive of, similarly, upcoming appropriation and transformation to emerge phenomenologically into the future. I have attempted to stimulate this suggestive step-by-step progression by eroding (not supressing) the dominant tendency of spatial neutrality and orthogonal subdivision, in order to celebrate every physical and cultural situation; every substance of life. But, rather than fully supressing cartesian subdivision, I have kept small islands where modest orthogonal ensembles safeguard economy of space and materials; sometimes with prosaic, low-cost, repetitive and standardized constructional means. In search of a fruitful balance between these

10 See the heading 'Place Resistance' in Chapter 1.

ambivalences, the ambiguous concept of 'specific indeterminacy'[11] has provided me with a tool to characterize situated geological, cultural and tectonic specificities, while keeping the prospect of appropriation open, anticipating indeterminate habitation over time.

In-between Typicalities

During this design journey, I have tried to resist the temptation of predefined categories, scales and disciplines. It has been a process of drawing while fighting the prejudicial preconceptions or unconscious bias of the designer's projective impulse: to diligently observe after each trace, before slowly discovering the next. In this way, the projects were treated as sentient bodies in a process empathically curated by design. For this reason, I have usually referred to live configurations, infrastructural levels and islands (navigating through territorial depth) as an attempt to erode the oppressing but natural tendency to fall into reductive, predefined types, usually standardized by the market (i.e. object categories derived from simple characteristics, such as housing buildings, municipal parks, bedrooms, or elements such as doors and windows). However, to erode this tendency does not mean ignoring the persistence of primary structures, archetypes and spatial preunderstandings. On the contrary, I have been attentive of typical lived situations; I have been impinged by my personal recollections of architectural precedents and clichés, the reverberation of the places I love, my childhood memories, the words and images of my life. These 'typicalities' have operated as a deeper structure of interdependencies, freeing up the potential of ambiguous, perhaps unexpected, propositions.[12] The design proposals, therefore, prioritise the in-between: in-between typical spatial categories, in-between usual scales, and in-between disciplinary convention.

In this way, depending on how one looks at them, the prototypes ambiguously inhabit shifting functional domains: from climatological devices, to social dynamisers, to poetic redeemers and back again. They aim to blur or resonate to produce unexpected interrelations between city and landscape, human and nonhuman, spaces of production and spaces of reproduction or leisure, intimacy and community, interior and exterior, small and large, ancient and new, change and persistence. These theoretical or conceptual intentions

11 See the heading 'Specific Indeterminacy' in Chapter 2.

12 Peter Carl, 'Type, Field, Culture, Praxis', *Architectural Design,* 81 (2011) https://doi.org/10.1002/ad.1187

are brought into focus through progressive particularity in design proposals. So far, I could be speaking about the proposed Generative Wetlands of Estany the Port, at a larger scale, or the City Base for Row Habitation and even its suggested smaller grain sub-structures and appropriation forms. These proposals—interwoven with one another through shared infrastructural physical and cultural traces—aim to characterise and settle unusual architectural or urban scalar interrelations. These cross-scalar interrelations are not only physical. Temporal interactions range from modest durations of daily alteration to enduring geological transformations. They also have multiple levels of intersubjective depth, including individual, small groups or families, modest cooperatives, large communities, neighbourhood and even metropolitan levels of agency. These manifold interrelations necessarily expand the scope of disciplinary convention in architecture (which typically centres upon space) to bring concerns from fields such as geology, biology, politics, economics, history, sociology, into design. It has been my intent, however, to avoid overdetermining the multiplicity of design as an excuse to ignore the subjective craft of architectural space and its aesthetic domain. Conversely, I have precisely intended to explore expressive techniques of spatial practice, capable of articulating relationships of transdisciplinary research. In other words, I have embraced the art of *tectonics* understood as the dexterous poetics of making, which interrelates the mashup of the material culture, and takes care of its manifold effects.[13]

The preceding section has reappraised pivotal aspects of the design process, discussing the cross-scalar prototypes in relation to the theoretical framework. Notwithstanding the notional absence of critical distance (between my role as a designer and an interpreter; a longstanding methodological problem or benefit for 'action research') this reflexive disquisition aims to bridge the traditional gap between practice and theory by clarifying my research by design journey according to its fundamental questions: what did I do, what did I discover, and what critical understandings arose from it? In this way, I have illustrated the initially unanticipated discovery of a deep ecological awareness: that of ordinary physical and cultural pre-existing contexts—phenomenologically attained—that serve to activate their performative potential as actant contexts. Likewise, I have outlined the design proposals as generative live configurations in-between typical categories, disciplines and scales: situated infrastructural

13 The concept of tectonics, here and elsewhere in this research, relates to the notion of 'poetics of construction' as an evolutionary, non-fixed approach to tectonic culture, developed by Kenneth Frampton. See: Kenneth Frampton, *Studies in Tectonic Culture: Nine Poetics of Construction in Nineteenth and Twentieth Century Architecture* (London: The MIT Press, 1995).

326 supports qualified by threshold spatiality and specific indeterminacy.
327 These artefacts intend to catalyse relationships between permanence and performance that transcend simplified dichotomies—for example: support/infill, community/personal, human/nonhuman, interior/exterior—by opening up ambiguous infrastructural gradients that follow temporal, social and spatial scalar relativity.

II From Artefacts to Artifices

Moving beyond reflection and interpretation in the articulation between practice and theory, this second section shapes and characterises my approach to the artifices as designerly ways of knowing. A series of consciously ambiguous visual-written architectural strategies is presented so as to represent and occupy the discursive culmination of the thesis. Emerging from the spatialised, drawn and described design speculations of the previous chapters, these intend to indeterminately specify an open-ended cohort of interrelated artifices for the design of time catalysts, articulated in themselves and with one another. They strategically avoid a closed loop classificatory schema, with flawless categories, but suggest instead a pattern of interrelatedness that is implicitly rich and ontologically almost flat. It intends to be an ongoing and indefinite list, so that anyone could carefully add or replace its items: nuanced architectural strategies sometimes overlapping and usually interconnected. However, my proposal is not a never-ending or endlessly proliferating list. Here, the artifices are grouped in three 'families' each comprising a series of strategies which bear some resemblance and sense of continuity with one another.

Each strategy depicts specific (inter)personal approaches relevant—rather than certain—to my *praxis*. They are deliberately elaborated and still loose, so that they can potentially be interpreted in different ways in spite of being charged with specific qualities. They are elaborated because they are complex, each strategy composed by an array of interwoven physical and cultural intentions, in this way avoiding an excessive itemisation that, if taken too seriously, could easily imply hundreds (or thousands) of isolated elementary intents, to produce an undigestible lexicon. The artifices are expressed in the combined format of a short text, in speculative language, together with small drawings that synthetize and conceptualize their purpose. These drawings are conceived as ideograms: in simple etymological

328 terms ('idea' + 'gram'), ideas which are drawn.[14] Importantly, each
329 design strategy should not be understood as an artifice in itself—i.e. as an idea unrooted from the material world. Instead, the artifice can only be grasped when it is phenomenologically interpreted by someone, being interrelated to her or his concrete experiences and, as developed through and argued in this doctoral study, in dialogue with the specific design proposals of the previous chapters.

Making Apparent the 'Actant' Contexts

A first family of nine artifices arises mainly from the explorations in Chapter 4, by proposing a set of architectural strategies that intends to unveil deep contexts, with the purpose of characterising distinguished, lived urban situations. These contexts may 'act' as catalysts of future habitation and transformation over time. The exercise of drafting the actant contexts entails a manifold, transdisciplinary investigation that includes sketching, photographing and modelling, but also rambling around the area, understanding local communities and local government authorities, and reading about the historical, urban planning, social, economic and environmental conditions of the site, among other data. In short, a constructional and designerly way of drawing a deep and empathic sense of (catalytic) place.

14 'ideogram', *Online Etymology Dictionary*, https://www.etymonline.com/word/ideogram#etymonline_v_34671

Redrawing Geological and Historical Times

The awareness of large-scale transformations from the past, that sometimes are taken for granted, enables a renewed perspective to envisage the potential of future developments. Investigating archival material, examining historical cartography, geological evolution over time, and redrawing a step-by-step progression of these changes, together with the understanding of their economic, political, ecological and cultural implications and meaning, are necessary procedures to grasp this potential.

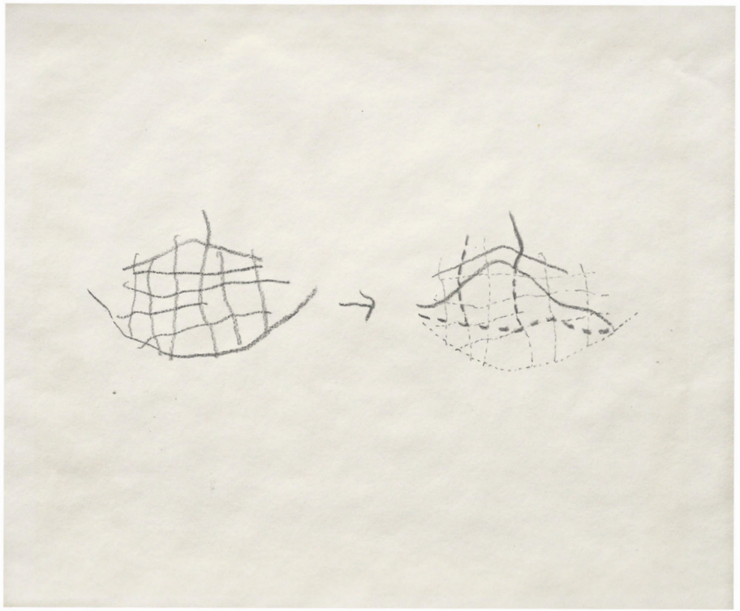


Fig. 1

I have tested this kind of survey twice in this research, first, by researching the transformations of the delta over a period of millennia, and secondly, by digging out the origins of an accidental street structure.

Representing Metabolics of Anthropized Landscapes

A selective representation of the spatial relationships between atmospheric, biological and political networks of flows and exchange, enables one to grasp the effect that territorial transformation—usually resulting from long-term anthropic activity—has had for human and nonhuman inhabitants. This many-sided representation should avoid an excessive accumulation of data, therefore treating these fluxes as added layers to a predominantly experiential awareness of place.

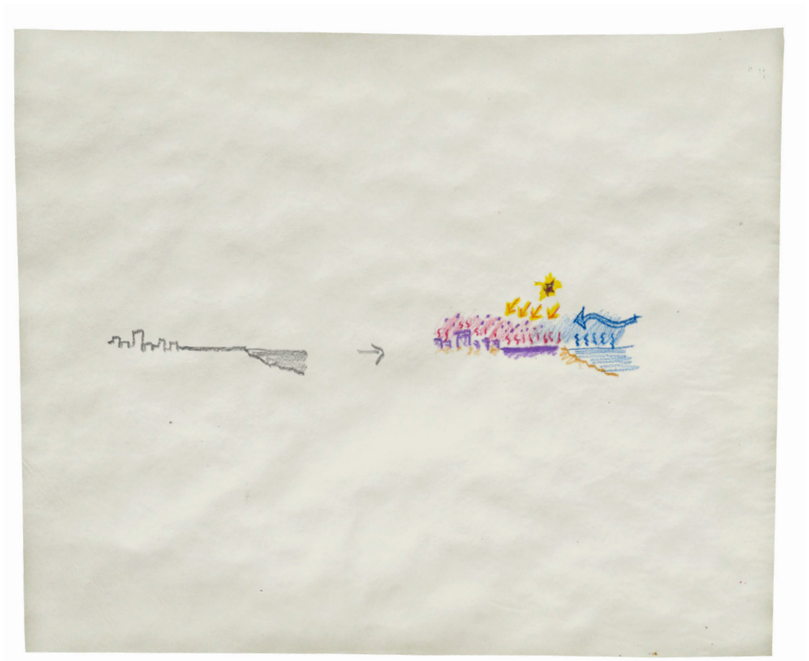


Fig. 2

Several drawings in Chapter 4 represent these metabolic fluxes. In particular, drawings depict the urbanization of the delta and its heat island effect, with its performance as an urban radiator; and how artificial creases and slopes between railway tracks and motorway lanes have the potential to safeguard and multiply biodiversity.

Revealing Past Wounds, Milestones and Memories

This strategy consists of identifying the antecedence of political struggle, past events of land expropriation, the recalling of bygone situations of vitality and urbanity, recovering images of sublime and everyday beauty. These significant events from the past and their collective, living meaning should be gathered and interpreted as cultural materials to characterise places.

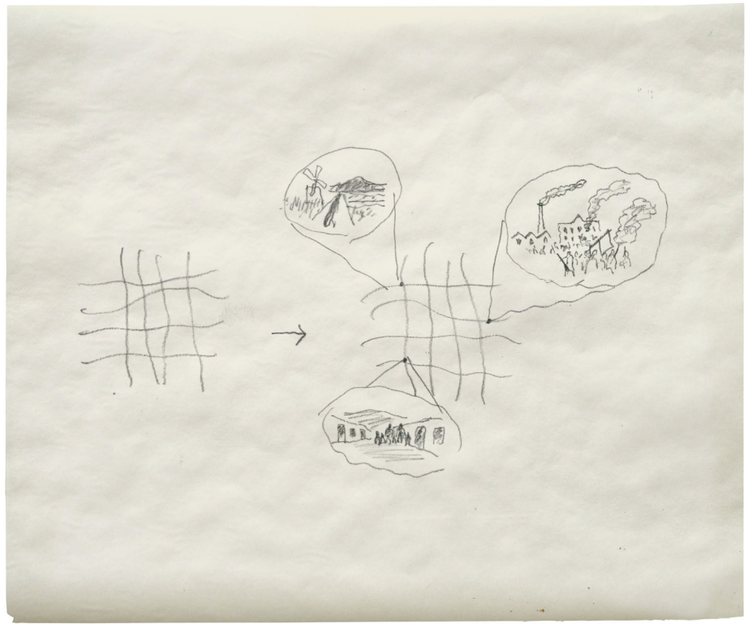


Fig. 3

In this doctoral study I have recalled the antecedence of the wetlands and the vanished natural port for their cultural and ecological relevance. I am reminded of the sublime image of Montjuïc against the sea, the stolen beach of L'Hospitalet, the agricultural legacy and the expropriation of the farmlands for the industrialist development of Zona Franca, which in turn led to demolishing the modest neighbourhood of Can Tunis. Personal witnesses have also been found, such as the Prat Vermell factory origin, Paco Candel's narrative, and the Santiveri chronology and place attachment.

Unveiling Subtle Material Witnesses

Making apparent fragile and sometimes fragmentary pre-existing material traces, usually not visible at first sight, unfolds a deeper attachment to places and their mundane rhythms. It activates the resistance of persisting—sometimes vulnerable—contexts, a resistance that catalyses the experience of slow, gradual and situated durations of transformation. These material traces may sometimes hide histories from forgotten glorious figures and pasts while, in other cases, will unveil footprints from dull, prosaic developments—both of equal relevance.

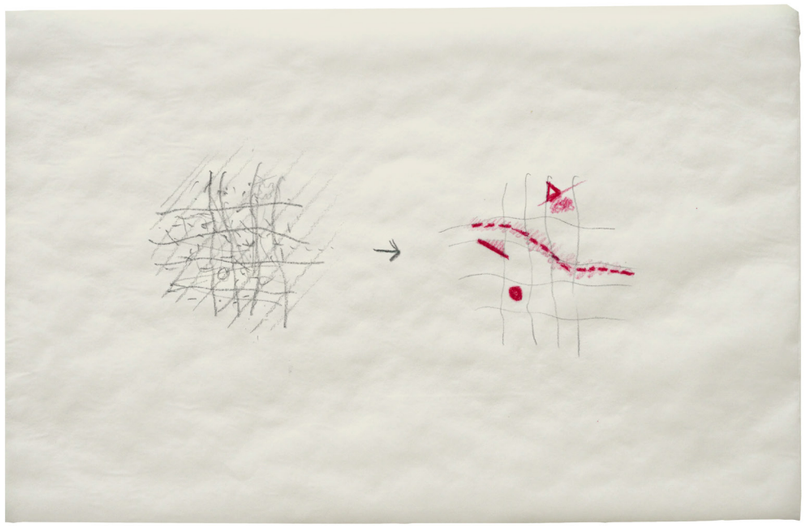


Fig. 4

Material witnesses of the Delta and a few resisting irrigation streams from the Canal de la Infanta have been identified and re-drawn. The same with ordinary warehouses and factories from the early industrialist period, structures that usually reflect the former agricultural pattern. Likewise, I have identified an artificial, irregular topography resulting from the accumulation of train tracks and motorway lanes, for its ecological and culturally rooted potential.

Characterizing Found Infrastructural Space

Intentionally drawing singular attributes of found spaces produces the effect of performing as a (resistant) support of future delightful habitation by means of an intensification of their qualitative character. These found spaces, usually of ordinary origin, can be appreciated for their rooted chronology of becoming, but they have also to be measured for how they are spatially experienced—as lived places—today. A primary notion of such spaces arises from the definition of their edges, edges charged with catalytic ambivalences, capable of opening up passages of threshold spatiality and delightful indeterminacy.

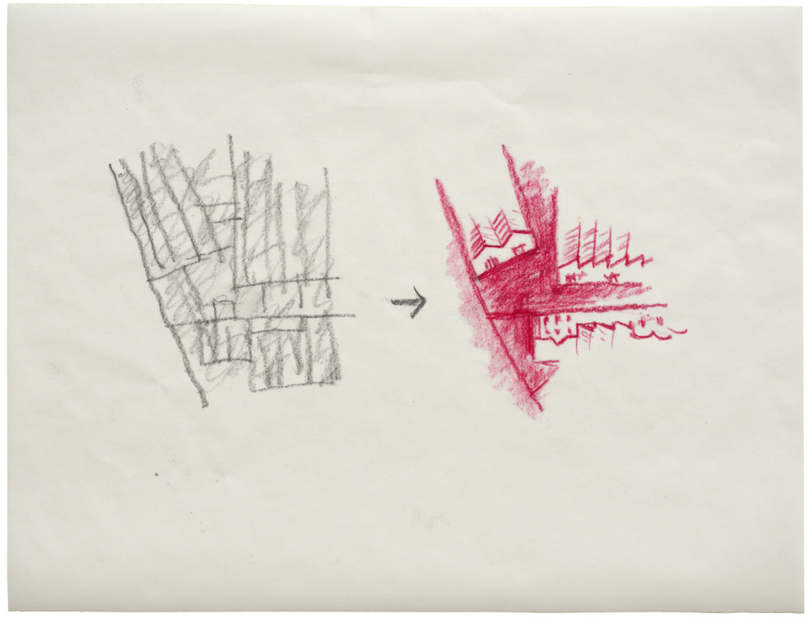


Fig. 5

With loose sketches, pencil and CAD drawings, I have characterized valuable found infrastructural spaces at varying scales. Starting with the city edge infrastructural corridor, with its particular topography and civic contours facing ‘third landscapes’ fragments. Likewise, I have drawn ordinary streetscapes and yards as civic structures to trigger urban change. Finally, ‘low-road’ warehouses and rowhouses of a finer grain, have both been characterized for their great freedom of delightful appropriation.

Grasping the Varying Subdivision of the Field

Land subdivision, starting with the seclusion of rooms and expanding worldwide through plots, agricultural, territorial and geopolitical borders and enclosures, must be read carefully to grasp its atrocities and potentials. The world is urban for better and for worse, and we should be attentive of its repressive doctrines, while at the same time acknowledging its empowering spatial practices, valued for their liberating technics of habitation, as much as for their aesthetic, political and ecological potential. The terrain as it has been divided in portions of distinct tenure and varied morphology performs as a support of gradual change inhabited by ongoing, slowly changing biographies and belongings. Physical and cultural traits of each subdivided piece of land will stimulate certain ways of occupation, traits that should be deeply grasped before further transformation begins.

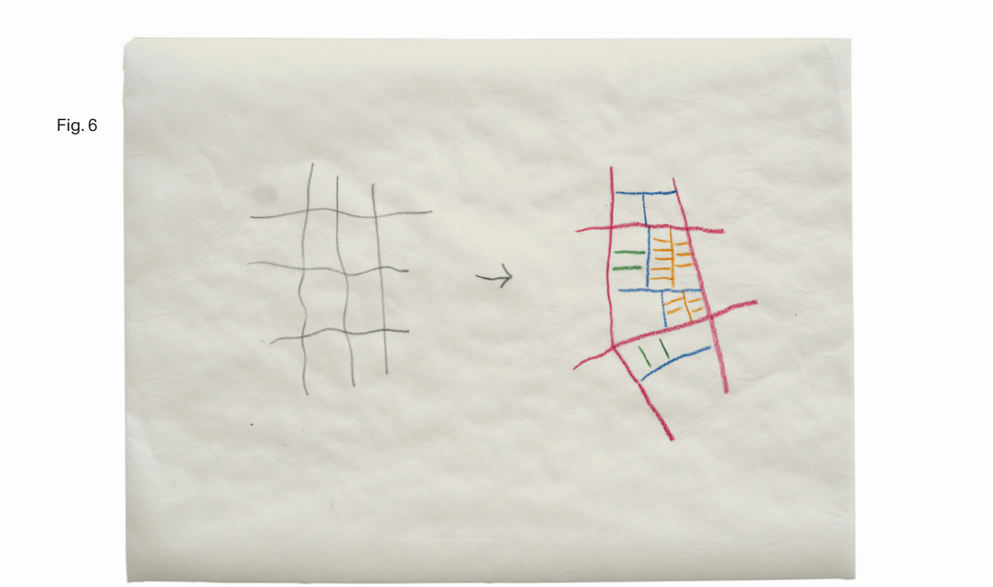


Fig. 6

I have intended to reflect on these potentials by re-drawing the plot boundaries, in relation to the field of activities that inhabits the place. The depth, size, location, and access of plots have been studied in relation to the varied practices of occupation and their biographies.

Portraying a Cartography of Agency and Purpose

Drawing a cartography of the non-physical structures and purposes of local agency aims to make it visible, activating and empowering the players of negotiated, collaborative and heterogeneous processes of spatial production—processes in which professionals and non-professional agents may contribute in solidarity. In order to understand people's everyday environments and potentials, this process usually entails mapping ordinary and non-institutionalized habitation practices, social agents and local communities, transdisciplinary collaboration with social scientists, ethnographic observation, and other forms of exchange. A mixed method approach—both quantitative and qualitative—is naturally needed.

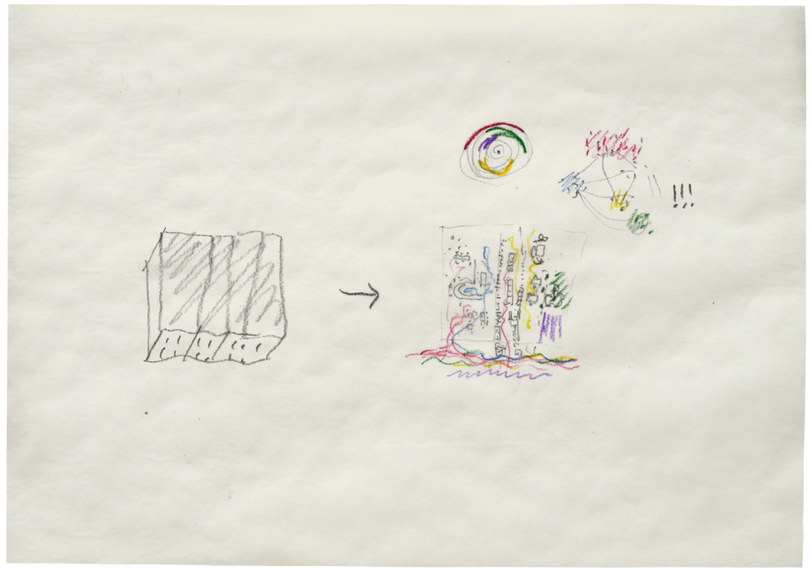


Fig. 7

In this item of research, I have listed and analysed 88 plots, according to dimension and type of activity, as well as form of tenure. Likewise, I have aimed to grasp individual and social habits and patterns, their historical course of becoming, their interpersonal purposes and desires. While I have met with a local community twice and experienced direct observation in place, this part of the investigation has represented only a portion of a larger-scope design research. Therefore, I have not had the opportunity to be systematically involved with local agents, nor engage with transdisciplinary collaboration.

Finding Opportunities in Normative, Political and Economic Contingency

This approach is about discovering opportunities for unexpected potential in current urban developments, in political and economic conjunctions, in regulations and legislation. Sometimes, it entails discovering implicit potential in large-scale governmental investments; at others, one must carefully take advantage of gaps in normative or regulatory plans of local authorities, to unlock catalysts for civic betterment.

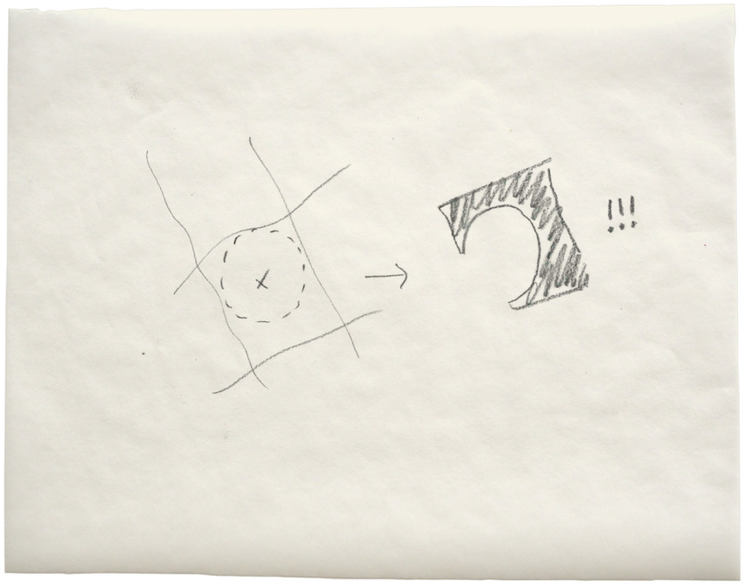


Fig. 8

These current plans and opportunities have been researched first in Chapter 3 and, in more detail, in Chapter 4. Planned transformations of train terminals and motorways have been identified as opportunities for large-scale urban change, while current urban planning in the area directed by the city council has been attentively approached.

Recollecting Architectural Typicality

The recollection of cultural preunderstandings—such as interpersonal paradigmatic situations, archetypes, ordinary and disciplinary clichés, image memories or other forms of typicality—in this doctoral study has related to phenomena of delightful appropriation and the potential of spatial transformation. Such typicalities emerge as a decisive collective vehicle to characterize and enrich the cultural depth of the actant contexts. These recollections, gathered from found transcultural and cross-historical antecedents, may compose a visual family of meaningful commonalities.

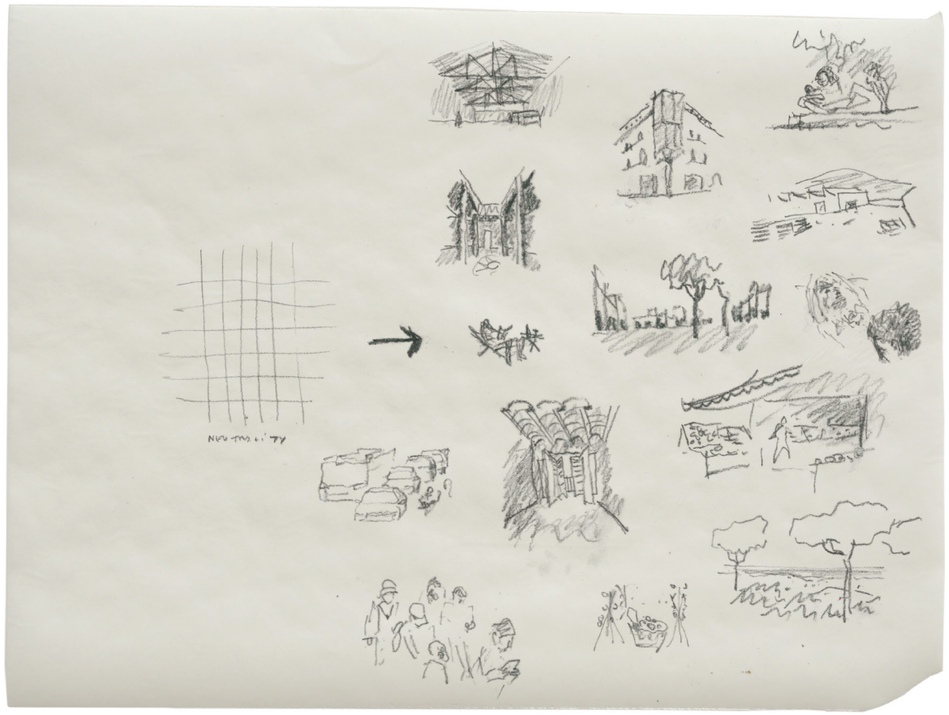


Fig. 9

This kind of speculative research has taken place in various parts of this doctorate. First, with an exploration of familiar city structures and, later, with the investigation of image memories of support structures.

Ushering in Adaptation and Enhancement

The next family of seven artifices appears from a wide array of design speculations in Chapter 5. They suggest a cohort of architectural strategies that unfold spatial catalysts of appropriation and transformation, primarily emerging from adaptation and enhancement of the found. In this way, subtle alterations and bold distortions of existing situations yield for creatively moulding previously characterized actant contexts, resulting in unexpected, fresh lived places.

Carving Through Loved Wrinkles and Scars

This is a careful, creative operation of slowly altering (sometimes abruptly distorting) infrastructural spaces and material witnesses. By this procedure, regardless of the scale, material wrinkles and scars inscribed by everyday traces from the past are revealed both, as poetic forms of engagement and care, as well as pragmatically hosting valuable habitation potential, previously unexpected. This strategy takes advantage of the as found, existing environment and reduces demolition. It opposes *tabula rasa* and the abuse of expansive standardization which usually results in orthogonal sameness. Instead, it playfully cares for ordinary footprints of lived places to propose gradual durations of selective change and replacement. It thereby produces a phenomenological form of becoming, giving rise to spatial situations characterized by accidental difference. By these processes of enhancement, the found may be curated and charged with potential to catalyse passages of delightful, rooted change in time future. In this way, specific conditions of wild landscapes, agricultural terrains, found vernacular environments, or industrialist developments of any sort, can be embraced as spatial infrastructures to catalyse unique, accidental betterment: situations of distinctive, lived character for delightfully transformed greens, streets, plots, buildings, furnishings or rooms.

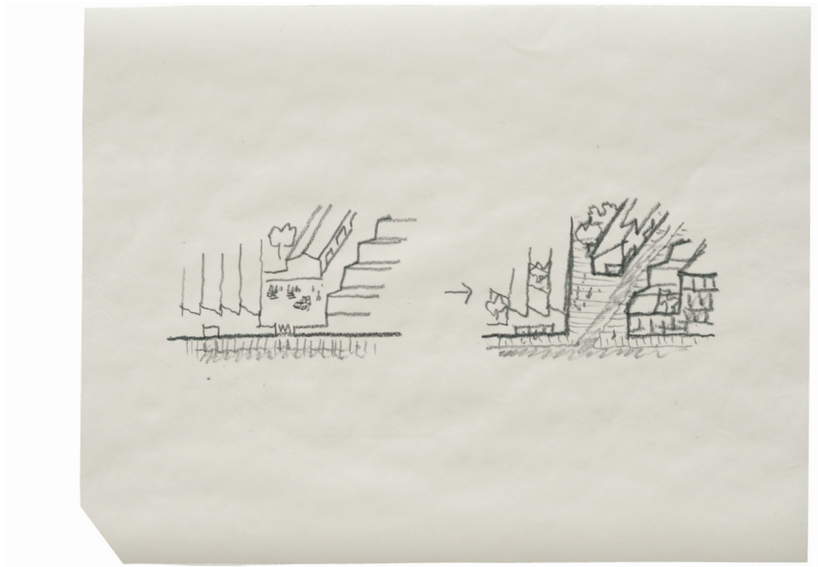


Fig. 10

This *modus operandi* can be appreciated in several prototypes at different scales. The renewed city edge—with its urban park, the water basins, and the new urban contours—takes advantage of accidental found material traces. The same applies to the urban tissue explorations, by enhancing fortuitous street and plot patterns. In general, I have prioritized preserving consolidated built structures and those that were inhabited, but decisions were also taken subjectively by appreciating qualified differences and personal attachment to place, freely enjoying moments of poetic arbitrariness.

Enhancing Found Resilient Landscapes

The attentive enhancement of previously identified biological ecosystems, interwoven with anthropized terrains, may produce adaptive and generative landscapes that multiply biodiversity in coexistence with human habitation. These strategies intend to reverse—rather than supress—agrilogistic developments that have damaged ecosystems until now. This endeavour does not consist in erasing artificial existence in the hope of producing an idealized version of nature. On the contrary, it curates an adaptable interplay of human and non-human habitats, lifeforms, metabolic processes, sediment transportation and climatic interactions. It promotes an interplay charged with resilience: a capacity to absorb unexpected disturbance, alteration and transformation, avoiding future episodes of collapse.

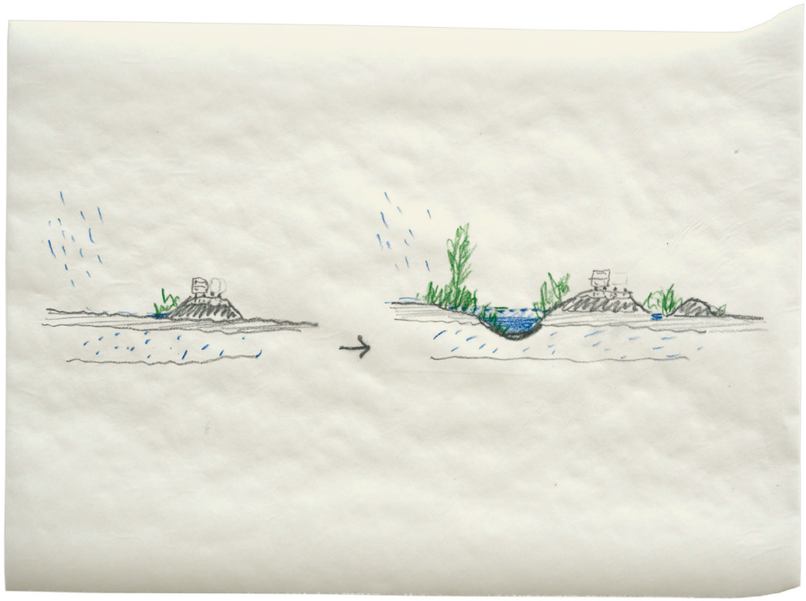


Fig. 11

I have tested these strategies by arranging a mosaic of 'third landscapes' and recovered irrigation streams and farmlands. Likewise, an artificial orography has been enhanced, with its creases, ridges and water basins that safeguard biodiversity.

Boosting Found Social Metabolisms

This strategy consists of enhancing found social environments to catalyse civic delight. In continuity with the previous task of characterizing and empowering local agency, its outcome should follow a collaborative and heterogenous process of spatial co-production. Organized communities and ordinary inhabitants should participate in dialogue with professionals, scholars, institutions and local authorities. Rooted in place, this transdisciplinary effort should take care of collective and personal histories, needs, purposes and desires. In addition, as architects, we must be aware of—and enhance—found spaces that safeguard these social metabolisms. Some of these places, usually located at the depth of city blocks or around the urban fringes, preserve vulnerable activities and their freedom of appropriation, even if they are currently damaged or seemingly worthless at first sight.

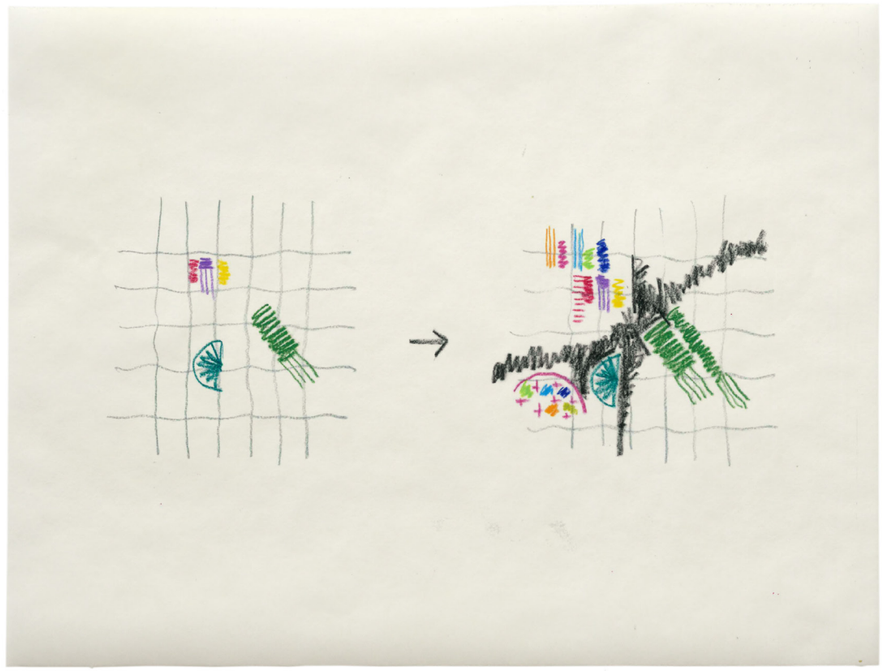


Fig. 12

In parts of Chapter 5 I have intended to preserve existing nodes of social vitality. This is why I have largely kept rowhouses and warehouses built in early industrialist developments, with partial demolitions and adjustments, to sustain and enhance their 'low road' and varied civic qualities. Likewise, I have engaged with a number of current activities, such as restaurants, workshops, houses and, in particular, with the Santiveri family. Finally, new-built proposals such as the city base for row habitation, intend to trace a continuity with found cultural topographies of the place.

Reclaiming Fragile Cultural Landmarks

Following earlier efforts to identify the antecedence of wounds, milestones and memories rooted in places, this approach intends to reclaim these cultural landmarks to poetically launch redeemed urban situations. These renewed spaces of the city shall be carefully situated and embedded in collective memories, having witnessed political struggle, ecological harm, and social redemption, thereby catalysing a deep sense of belonging, meaningfulness, urbanity and delight.

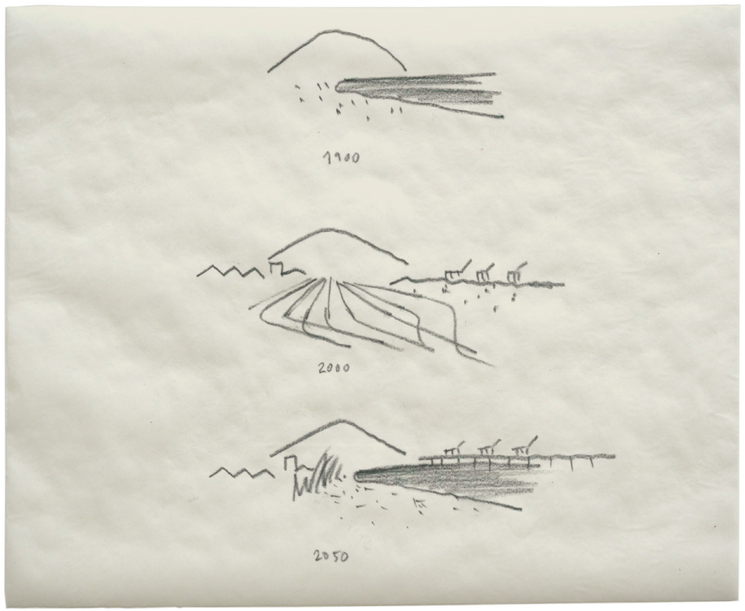


Fig. 13

The city edge project intends to redeem social, political and ecological pasts, by being treated as a second shoreline that reclaims the antecedence of the delta wetlands, the ancient natural port, the changing river diversions towards the sea, the extinguished pond of Estany de Port, the stolen beach of L'Hospitalet, and the irrigation and agricultural heritage.

Distorting the Field in Suggestive Lots

After carefully grasping the subdivision of the field, and being attentive to its ongoing physical and cultural topographies, additional selective break-up, distortion and connection may stimulate further habitation potential: a gradual and slow development to catalyse delightful change. The transformed field of lots and enclosures should embrace both diversity and adaptability by virtue of specificity and indeterminacy, thus accommodating the multiplicity of a dynamic urban life. In this way, a dense ensemble of small plots may be regarded for their affordability and continuous capacity for synchronic mutability, whereas larger monotonous urban entities may allow for greater interior and inexpensive flexibility. Greater depth and withdrawal (measured from public routes) appears as a necessary medium to safeguard ordinary forms of appropriation and marginal modes of becoming—even dissidence—while increased porosity and simultaneous access stimulate vibrant situations of exchange and commoning. Peripheral and epicentral urban locations may habitually benefit from larger plots, housing both flexible activities at the fringes and core civic institutions, while a finer average grain may sustain a rich, evolutionary tissue around centres. Significant urban orientation, related to atmospheric comfort or cultural delight, should be maximized and split up, in this way granting qualities for many rather than privileging a few.

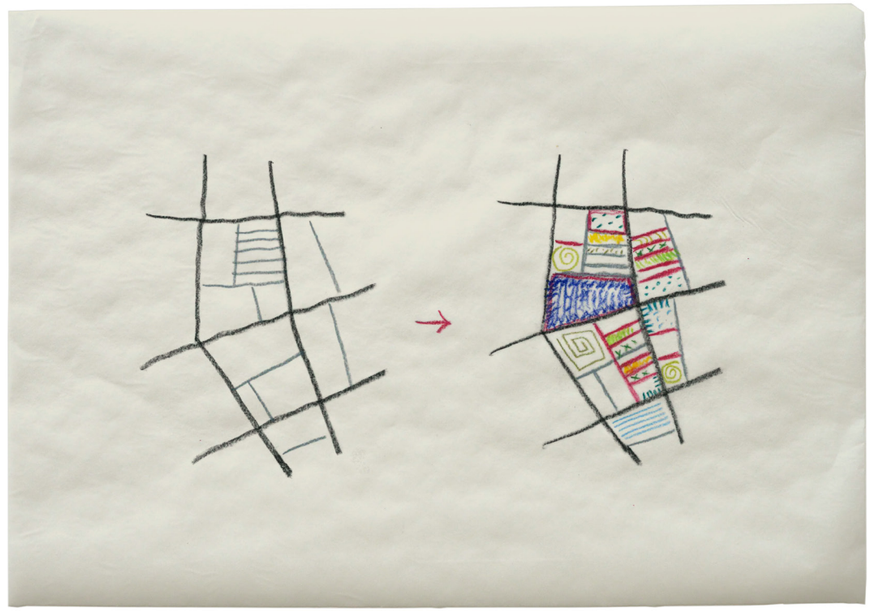


Fig. 14

These strategies have been explicitly tested and developed in the speculation of an evolutionary plot tissue for the urban fabric near Santiveri. However, similar criteria have been followed with the larger scale city edge project, as well as with the interior break-up and enclosure of the support prototypes at the smaller scale section of Chapter 5.

Transposing Architectural Typicality

Rather than being understood as a preestablished and dead logic of object replacement (A → B), the analogical act of transposition may be approached as a non-deterministic mode of practice that connects and interrelates individual, unique phenomena. Particularly, it connects phenomena such as the cultural preunderstandings gathered before—including paradigmatic situations, image memories and other forms of typicality (which are related to the time catalyst imaginary in this study) with actual situations of practice. Such an approach to the analogical transfer enables a deep awareness of difference and sameness between precedent and live phenomena, an awareness mediated by our personal habits and cultural contexts, to open up rich processes of distinction, equivalence, resistance and substitution, towards the evolution or revelation of genuine, unexpected new situations.[15]

15 See the analogical practice approached by Bourdieu. Pierre Bourdieu, *The Logic of Practice* (California: Stanford University Press, 1992). p. 94.

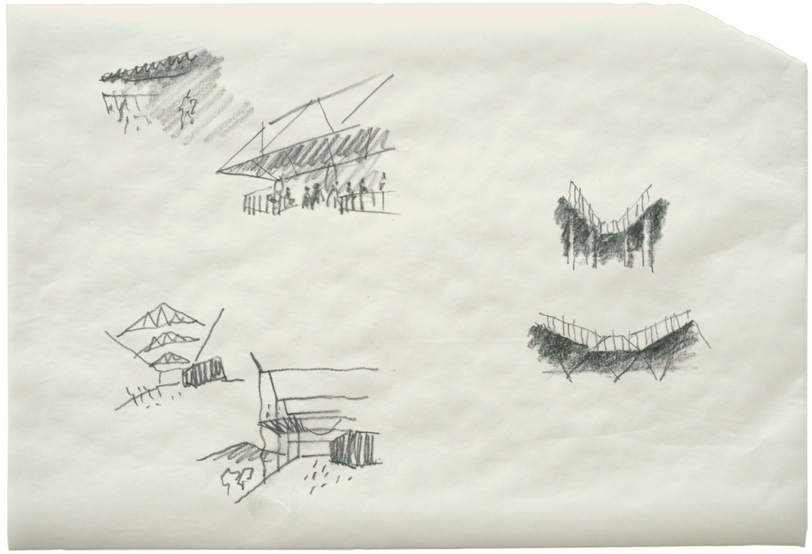


Fig. 15

From cover to cover, this research project has transposed disciplinary and ordinary cultural preunderstandings attuned by me. This attitude was behind the agricultural and wetland recovery and the restoration of a shoreline before Montjuïc. It was the operation that provided qualitative and quantitative measure to the formation of an accidental street structure, with its variety of public places. Likewise, analogical transposition has performed as a catalyst of support structures at a smaller scale, by following a linage of modernist heroes and vernacular paradigms related to the promise of time.

Intensifying the Infrastructural Capacity of Archetypical Elements

This operation entails consciously exploring the fundamental characteristics of essential constructional elements, with the intention of intensifying their capacity as a support of appropriation and transformation. This comprises investigating the infrastructural potential of apparently simple, even archaic elements such as walls, columns, beams, floors, steps, roofs, earthwork, foundations, as well as cables, structural brackets, studs, hinges, rails, bolts and other material joints, among many other essential architectural elements.

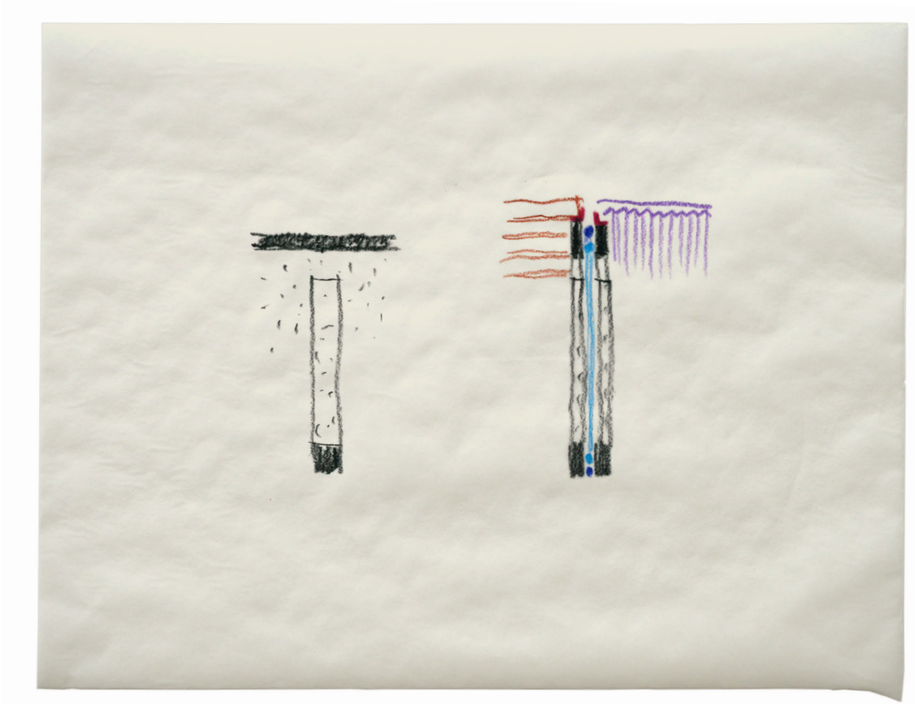


Fig. 16

This kind of exploration is clear with the prototypes of the room ensemble. In the city base for row habitation I have investigated potentials of earthwork and foundations as spatial infrastructure. In the plug-in framework, the column and the beam are reinterpreted as a three-dimensional framework of hollow conducts for service and thermal recirculation, the floors are designed as removable wooden bookshelves, and a diffuse notion of room persists with the presence of a structural grid that connects while separates an open plan of quasi-rooms.

Crafting Time Catalyst

The third and last family of ten artifices emerges from design explorations in Chapter 5, speculating the potential of time into rather new spatial arrangements. Compared to the former family, this one embraces a stronger pulse for creatively launching spatial stimulants of change in freshly made forms. However, artifices and projects will neither describe pure enhancement nor plain new-born production. They follow instead a dual interrelation, manifesting varied interplays between continuity and disruption. Hence, these groupings may be read as ambiguous and smoothly overlapping familiarities for the crafting of our civic environments.

Tracing Phenomenological Differences of Open Interpretation

Against the deceitful promise of meaningless expansive neutrality and unrestrained flexibility—usually swallowed by capitalistic standardization and control—it shall be a deep, resistant and varying territory of phenomenologically qualified physical, atmospheric, temporal and cultural differences, which catalyse situations of engagement that are open to interpretation, inviting rooted change, habitational indeterminacy and delight. Rhythm, fluctuation and difference found in specific material and immaterial characteristics of the environment we inhabit may ease a variety of situations open for withdrawal, pleasure, exchange, gathering, celebration and biodiversity, catalysing slow durations of becoming and appropriation on everyday basis, while sometimes enabling greater dynamics of transformation.

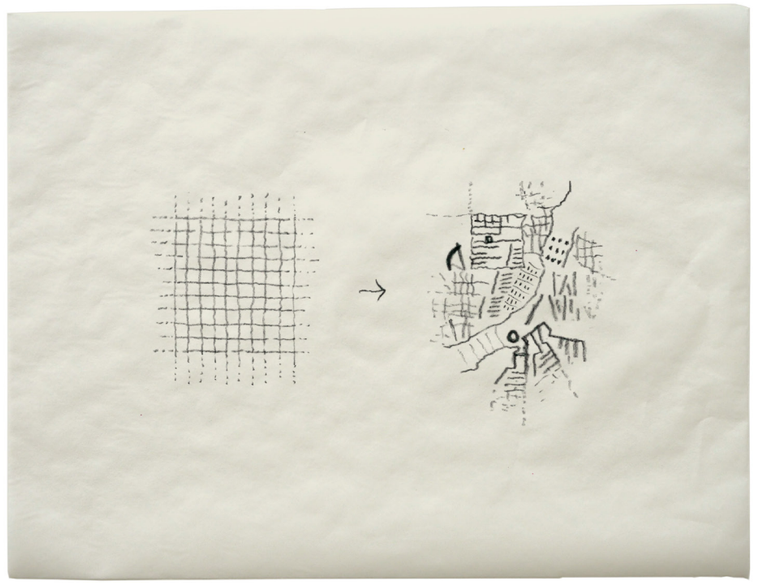


Fig. 17

All the prototypes developed in this investigation have intended to reflect this quality, that I have usually referred through the concept of specific indeterminacy. A majority of the prototypes have been largely characterised by found conditions of the physical and cultural contexts, while exploring the capacity of specific spatial arrangements, tectonic gestures, climatic and metabolic interactions.

Outlining Diffuse yet Sharp Edges for Threshold Spatiality

Within the ocean of endless urbanization, an ambiguous approach to the definition of edges—and their threshold capacity—performs as a fruitful tool for spatial practice, regardless of the scale, from landscape to furniture. On the one hand, edges shall be sharply outlined by producing a break or stationary point: a recognizable tectonic articulation that distinguishes an entity (i.e. an island within the ocean) so that it may be intersubjectively grasped, engaged, inhabited, and cared for. On the other, edges shall feel loose, changeable and permeable, opening up passages to fluctuating interpretation, while enhancing human and nonhuman continuity and interrelation through territorial depth.

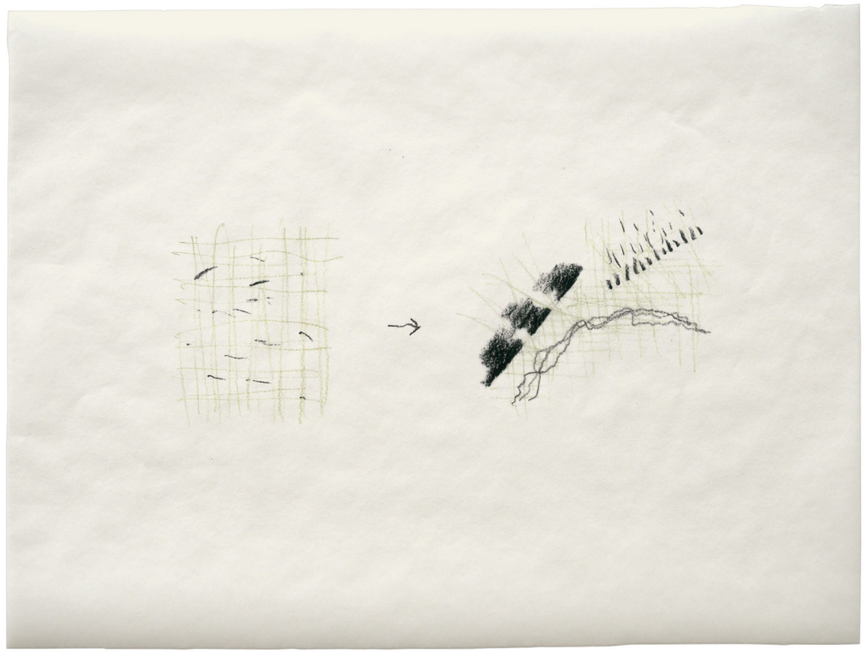


Fig. 18

In previous sections, I have explicitly argued how threshold spatiality and its tectonics of separation and continuity have been tested throughout the different projects, from larger to smaller scales.[1]

1 See the heading 'Edges as Catalytic Ambivalences' in Chapter 6.

Enabling Step-by-Step Meanwhile Manoeuvrings

This procedure consists of enabling step-by-step manoeuvrings during city developments. Developments that are not intended as finalised unitarian wholes but, on the contrary, care for every meantime situation; on every stage feeling both as a characterized lived place and emanating further potential for unknown change. The capacity of land and the city to be gradually altered—avoiding displacement and full *tabula rasa*—is a tactical and pragmatic way of operating in the city because it provides resilience in social and economic terms: it absorbs sudden eruptions of change without risking an economic regime of collapse. The ethos of step-by-step manoeuvrings entails, in first place, caring for what pre-exists, unfolding techniques of enhancement as already discussed. Later, additional infrastructural traces may be added as memorable triggers for future persistence: supports to accommodate further step-by-step tectonics of assemblage, habitation, improvisation, use and misuse.

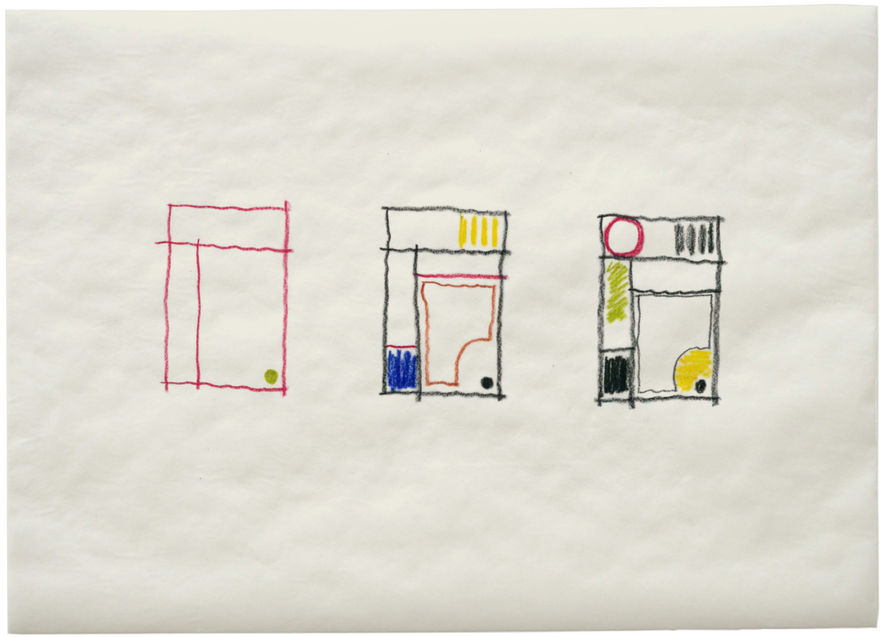


Fig. 19

These tactics have been tested across the different scales, starting with the sequential tapestry for human and nonhuman delight at the city edge project. The entire process of urban fabric transformation has been conceived in this way too, so that the project could be considered 'finalised' on each stage of implementation, being adaptable to heterogenous purposes and plural demands. At the smaller scale, I have approached it by adopting urban strategies within buildings, as well as by exploring tectonics of change.

This approach avoids a focus on object buildings or reductive predefined types. It guards against simplified binaries between temporal, spatial and social ambivalences. Instead, it proposes to enjoy territorial cross-scalar depth, through threshold spatiality and differences of open interpretation to construct 'islands'—within the ocean of urbanization—understood as generative live configurations. These configurations can be seen as an expansive gradient of supports, a gradient of superimposed interrelations between infrastructural layers of varying longevity, distinct levels of agency and differing tectonics. Regardless of the scale (within a wooden cabinet as much as in agricultural terraces) load-bearing structural bays may be designed as enduring bones for unplanned habitation, additions and subtractions; being interrelated to larger or smaller, rather durable or temporary sub-structures, including those that confine temporary enclosures or claddings—primary, secondary and subsequent structures operated by a diversity of agents, from individual will to public authority. Hollow thicknesses containing service reticulation and thermodynamic apparatuses may also be engaged as spatial infrastructures to house changing appropriation over time. In sum, these support gradients may be regarded as small cities within built ensembles: with their streets and squares, households and communities, intimate and civic rooms, metabolic infrastructures and evolutionary plot tissue. As an alternative to traditional dense urbanism, they enable smaller plot-like spaces—plots up in the air—that can be freely appropriated over time, suitable for modest and individual tenancy, while taking advantage of economies of scale.

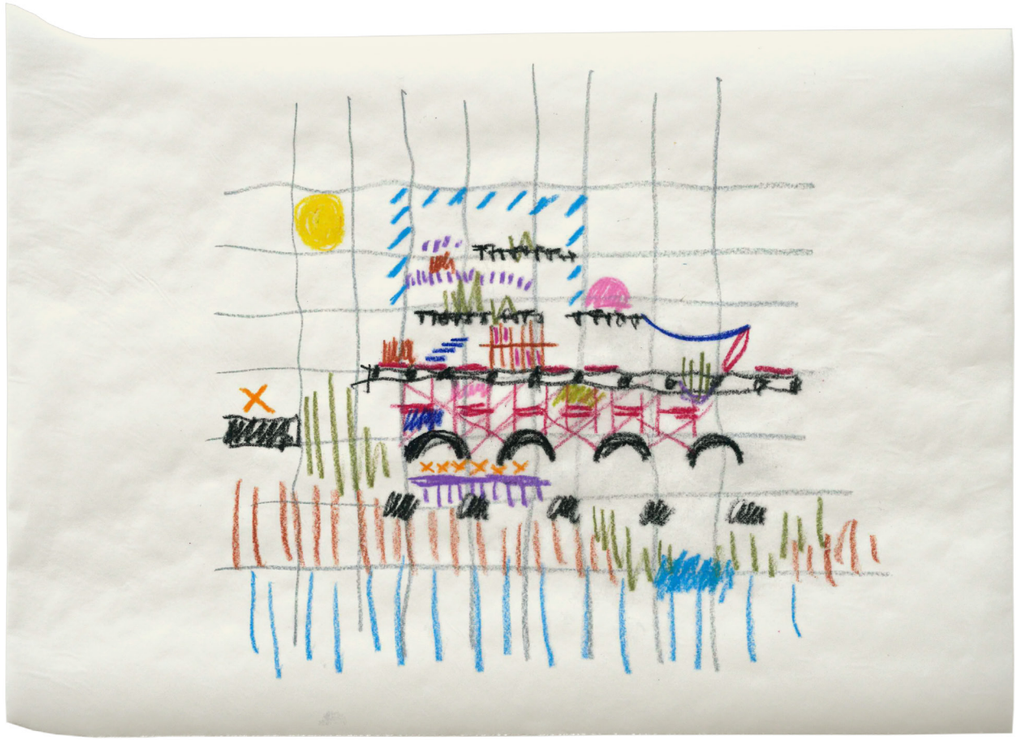


Fig. 20

These support gradients have been tested at the third section of Chapter 5, including island-entities such as a city base for row habitation and, a plug-in three-dimensional framework.

The built environment, when it is articulated as a gradient of support layers of varying longevity and agency, involves specific technical and poetic approaches to the art of construction. As we have seen, change (or, the *oeuvre* of continuous becoming)[16] performs by qualifying and articulating that which pre-exists. This is why new future pre-existence—what we produce today—needs to play a fundamental role too. Tectonics of permanence and change imply both designing persistent supports, for future potential, as well as removable layers through techniques of assemblage, detachment and expansion. Specific qualities of materials—their weight, structural behaviour, mode of production, thermal conductivity, sensory and aesthetic character or quality—condition their capacity to resist long-term or develop quick dynamics of change. Large, quasi-permanent supports may be produced by taking advantage of economies of scale, justifying a greater resource and effort depletion, still minimizing carbon footprint in its manufacture, and enjoying an imaginary that traces us back to ancient ruins, the use of mineral materials, the cave, and a search for atemporal decorum and delight. By contrast, modest detachable layers may benefit from lightweight, economical and technologically accessible 'open-source' or even 'do it yourself' modes of assemblage, that may be produced over time by ordinary, heterogeneous agency, being necessarily recyclable, carbon neutral and locally produced, as well as taking pleasure both in vernacular wisdom and digital industry, to celebrating personalisation, design specificity and sporadic habitation. However, beyond simplified dualities, the built environment in its rich, layered multiplicity, may be composed by strata with ambiguous interrelations of relative persistence and changeability. A clear distinction and articulation between the layers of different longevity and agency, appears as a source of interpersonal engagement, in this way empowering further appropriation, replacement and addition over time.

16 See the heading 'Freedom of Delightful Appropriation' in Chapter 1.



Fig. 21

While the exploration of these tectonics can be appreciated over the different large-scale, urban and landscape designs, it is perhaps more explicit in the room ensemble prototypes. In these 'support ensembles' I have tested an aggregation of primary, secondary, and subsequent clearly articulated layers of different longevity and levels of agency; with sometimes less evident interrelations. Mineral quasi-permanent structures have been investigated using earthwork as a way to arrange artificial mounds and a formwork to construct grand concrete vaults almost experienced as geological features. Cyclopean concrete and prefabricated rammed-earth construction have also been explored for these persistent supports.

This approach enables appropriation on an everyday basis within longer-term infrastructures, through soft, low-impact techniques of spatial practice. A first quality of the base supports ensures habitation versatility: a spatial configuration of the supports that suggests a varied, indeterminate and changeable collection of furniture arrangements, carpets, tables, chairs, shelves, appliances, plants, books, and other tools and belongings. In turn, this array of domestic bodies performs as an additional support of human, animal and vegetal body practices. A second strategy consists of blurring the edges between architecture and habitation by designing large pieces of furniture to function as supports of versatile appropriation. These soft architectures, characterized as detachable additions of a greater infrastructural space, appear as an initial and instigator trace of spatial occupation, being perhaps confused and mixed with the ordinary belongings of habitation. By the same token, removable textile enclosures, cushioned surfaces or velvety coverings may be utilised to dress up spaces by evoking a certain decorum, dimness, warmth or soundness. Additional techniques of daily alteration, even if not as soft as the former ones, may entail the design of sliding, folding or pivoting panels or the movement of furniture-like elements. This includes common items such as swinging doors and foldable sunshades, but also moving walls, cabinets, beds or any sort of habitational gadget. Movement may be performed through hinges and rails, cables and sheaves, or other mechanical components, including wheels, increasing the potential of greater spatial adaptations for the everyday.

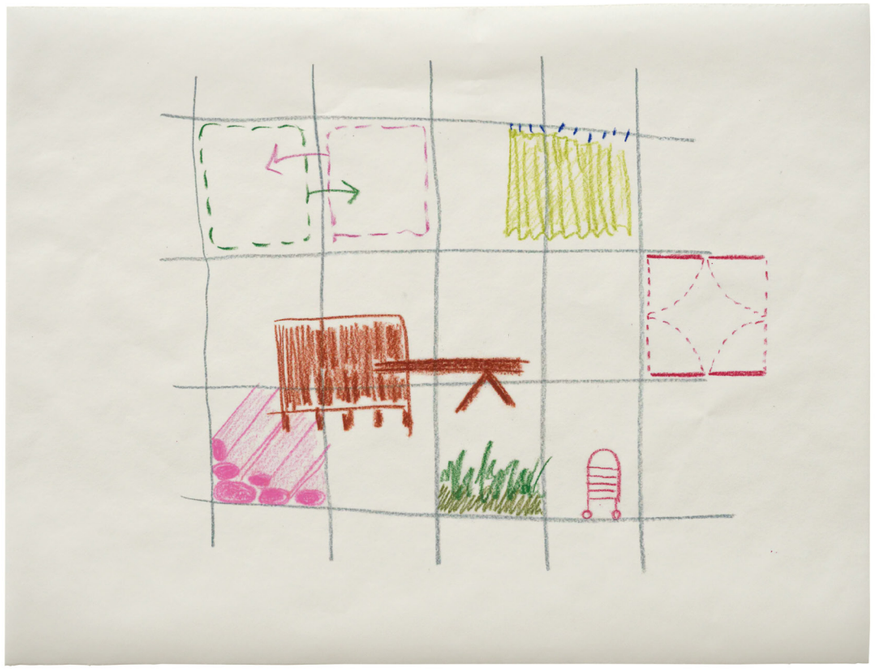


Fig. 22

These techniques of daily alteration appear at various scales. The urban fabric prototype investigates its potential with street ‘rugs’ that suggest spots for human or nonhuman gathering, furniture-like playgrounds and benches that instigate further street appropriation, as well as utilising a found concrete frame to provide temporary shade. The interior prototypes have also explicitly explored these strategies, particularly exploring an overlay of different grades of temporariness.

Heating up Thermodynamic Interactions

With the purpose of enhancing comfort and delight—for humans, flora and fauna—climate may be artificially distorted without the need of continuous electric consumption. In this way, passive architectural elements may be designed to absorb, transport or dissipate energy: for example, with greenhouse effect to absorb solar radiation or shading devices to avoid it; activating thermal mass to keep temperature stability; using evapotranspiration to improve humidity and air quality; enhancing dynamics of air movement to dissipate or transport heat and humidity, including air stack effect and cross ventilation while taking advantage of local wind prevalence; or designing small textile-like enclosures to conceal bodily-emanated heat.

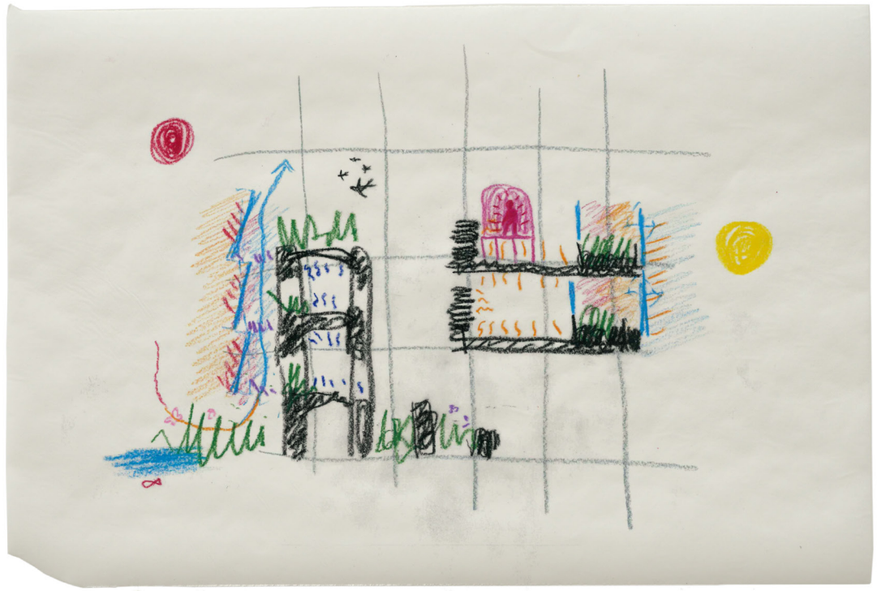


Fig. 23

Thermodynamic interactions have been equally tested across the different scales. The city edge park, with its mosaic of 'third landscape' and farmlands next to the wetlands, perform as a local climatological device for the southern districts of Barcelona. In the intermediate scale, the street threshold capacity is tested to enhance similar thermodynamic interactions. At the smaller scale of the building interiors, additional architectural strategies are tested, exploring a wide range of passive thermodynamic devices.

Seeding Generators of Ecological Resilience

In our geological era of global warming and biodiversity mass extinction, the proliferation of generators of a potentially durable and adaptable coexistence, between human and nonhuman objects in the biosphere, is a paramount tool for a gratifying course of developments over time. Reductions in energy consumption while improving our habitat and air quality may be achieved through a multiplicity of thermodynamic interactions as noted above. The carbon footprint may be neutralised by following a circular model of production that demands attention to resource scarcity, low-emitting manufacture, reduced transport, sharing, reusing, repairing and recycling materials. Biodiversity may be enhanced through micro-climatic interactions and a mosaic of 'third landscape' refuges. These refuges become poles to stimulate quick dynamics of biodiversity within urbanized territories, avoiding monoculture, enhancing connectors to primary reservoirs, safeguarding orographic reliefs, embankments to sustain aquatic life, and a sustainable water cycle. In addition, birds, mammals, reptiles, insects and other species may be housed within human-made architectures with specifically designed nests, shelters, platforms and water dispensers: artefacts that perform as infrastructures of ecological coexistence.

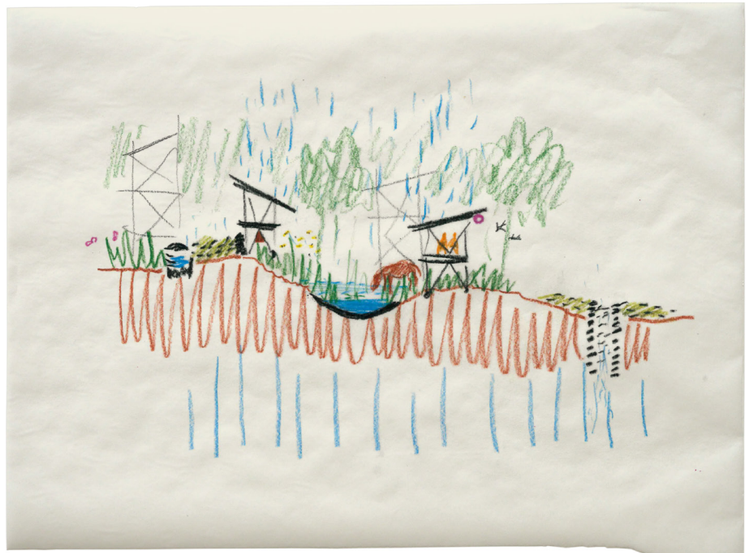


Fig. 24

These strategies have been tested at different scales. The city edge project is conceived as an ecological connector between Montjuic, the Llobregat river and the delta farmlands. The wetland recovery appears as a catalyst of reeds, seaweed, flowers, birds and many other lifeforms that enjoy a flowering ecosystem: water-cycle and micro-climatic strategies that perform as a resilient landscape, adapting the land to resist climate change. Similar strategies are explored in the urban project, where architectural shelter for multiple species are also tested—an investigation continued and expanded in the smaller scale prototypes.

Commending Spatial Stimulants of Interpersonal Solidarity

The field of spatial enclosures that crosses territorial depth may be carefully designed to catalyse heterogenous interpersonal solidarity—a conscious response to commoning political purposes. Solidarity shall occur among heterogenous subjects while safeguarding minorities: intergenerational, gender-inclusive, cross-cultural, socioeconomically and functionally diverse communities. This strategy takes on and refines earlier procedures, such as the capacity of threshold spatiality to simultaneously enable porosity (opening up interrelation) and separation (liberating withdrawal), as well as the design of support gradients of varying longevity and distinct levels of agency, allowing both the freedom of daily alterations and long-term transformations, operated by individuals, small groups or communities. These threshold gradients may be designed with specific spatial qualities, to offer a multiplicity of nuanced situations, accompanying someone from personal seclusion to familiar encounter, from next-door acquaintance to community gathering. Opportunities of productive solitude, safety, care, exchange, play, debate, empathy and solidarity are thereby opened up.

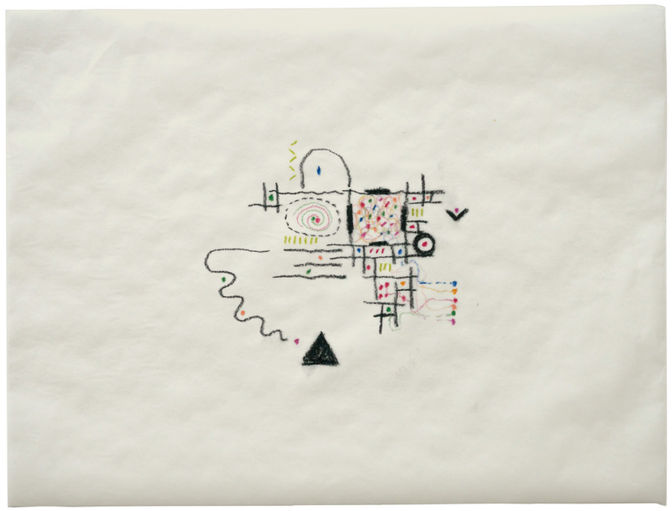


Fig. 25

Once again, these strategies have been explored at different scales. At the city edge project, the urban horticulture and orchards are offered as situations of encounter among neighbours and their cultural past, while the wetlands and the forest gather situations of individual and group reclusion from the city, in contact with a wider scope of species of the biosphere. In the urban fragment, the street space has offered equivalent situations in a rather civic context, with pavements, plantings, furnishings and playgrounds catalysing the encounter and public appropriation by heterogeneous groups of people. Through de built ensemble, a wide variety of strategies—starting with ground floor porosity, gregarious sections, pathways, collective rooms and courtyards, shared facilities, etc.—have been investigated to suggest interpersonal solidarity.

Interweaving Playfully-serious Shared Constraints

When open space prevails and the dictates of spatial domination have been left loose, interpersonal contingency and negotiation should be anticipated. This path consists of adding playfully-serious shared constraints to an ambiguous spatial territory with the purpose of enhancing further urbanity and collective habitational delight. These constraints appear as self-imposed rules proposed by communities themselves, intending to anticipate future smaller-scale—usually soft—developments within their territorial level. They may be seen as devices for participatory co-making, or as a threshold possibility before urban regulations and public authority: a tool to articulate open-ended alterations and transformations over time, while attempting to enhance non-violent interpersonal coexistence.

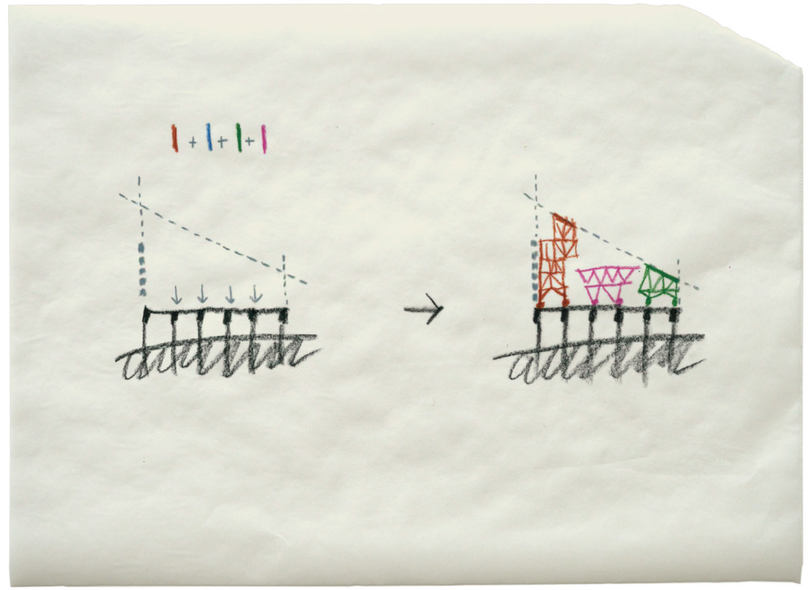


Fig. 26

These kind of ‘game rules’ have been particularly tested with the support prototypes. These prototypes explore a threshold between urbanism and architecture with supports that sustain plots up in the air. In this context, a series of playful and yet serious constraints have been explored to catalyse modes of development over time; modes of development that are careful with interpersonal coexistence.

Conclusion
Prototypicalities for Futurity

In this chapter, an extended family of interrelated imaginary entities and apprehensions has been proposed, intending to construct a deeper understanding of 'time catalysts': knowledge outcomes explored and developed through the doctoral research by design. These apprehensions avoid epistemological generalization through simple inductive reasoning, suggesting instead the notion of 'artifice': a kind of practical wisdom that cannot be reduced in isolation, because it relies on a rich, ambiguous and designerly type of awareness. As such, the family constitutes a cosmography of artifices interrelated with specific designs (in this case those from Chapters 4 and 5) that demand, for their meaningful mobilisation, subjective skills, interpretation and intention if embraced by others in time future. The second section of this chapter has presented this extended family as an open-ended cohort of elaborated, interconnected and ambiguous visual-written architectural strategies—artifices—that together avoid a simplified itemization of typological rules.

Grouped in three overlapping segments, each artifice emphasises its singular character by being introduced with specific *actions*. In response to their interpretative purpose, 'Making Apparent the Actant Contexts' starts with *redrawing*, *representing*, *revealing*, *unveiling*, *characterising*, *grasping*, *portraying*, *finding* and *recollecting*. Embedded in the awareness of dextrously remoulding found situations, 'Ushering in Adaptation and Enhancement' begins with *carving*, *enhancing*, *boosting*, *reclaiming*, *distorting*, *transposing* and *intensifying*. Finally, 'Crafting Time Catalysts' unfolds greater design prospection by initiating with *tracing*, *outlining*, *enabling*, *designing*, *mobilising*, *animating*, *heating up*, *seeding*, *commending* and *interweaving*. These *-ing* participles could perhaps be interchanged one another to subtly adjust their purpose and

362 meaning. And yet, in their current embodiment, each one of them
363 intends to vivify the artifices with specific tasty flavours related to my position as an architectural designer.

The first section of the chapter reassessed pivotal aspects of the design work in dialogue with the theoretical framework that was set out in the initial two chapters of the thesis. From city edge to room ensemble, the prototypes have been outlined as situated gradients of infrastructural layers in-between typical categories, scales and disciplinary convention. These live configurations are characterized, recognized and cared for through recurring concepts such as specific indeterminacy and threshold spatiality. They traverse territorial depth cross-scalarly, overcoming simplified dichotomies through manifold tectonic, social, climatic, ecological and temporal ambiguous interrelations. It has been a great discovery to realise that these interrelations can never start from scratch (past) and should never unfold mechanical systems of growth (future), revealing in this way an unexpected deep ecological awareness, based on the resistance of—and our care for—ordinary, situated physical and cultural pre-existence: a kind of phenomenological awareness that activates the performance of many-sided, actant contexts. In the process of city transformation, these current pre-existences (attuned from past traces), as well as pre-existences in time future (qualified outcomes from our current distortions of the past) should always follow slowness: a playful and yet serious passage to gradually and interpersonally inhabit, alter, transform, distort and qualify the places we love. This approach to urban development does not need to pretend to be historical, because it reveals a patina of its own: it is the outcome of a lived duration of becoming, where a sort of physical and cultural accelerated historicity is heterogeneously and phenomenologically attained.

In my earlier discussion on the role of designing as a medium for research (Chapter 3), I have argued that the making of artefacts should not be the main purpose of research but perform as a necessary medium towards monographic enquiry. Likewise, I have noted that the exploration of prototypes—i.e. primary (*proto-*) moulds or patterns (*-types*) after which future artefacts may be generated—could already qualify as research.[17] This understanding of the prototype, not just as any artefact, but as a primary one that may operate in its deep structure by freeing up or modelling future propositions, overlaps with the generative notion of artifice. While artefacts may be regarded as prototypes in certain conditions, artifices may be qualified as prototypical for their greater generative capacity too.

17 See the heading 'The Role of Designing' in Chapter 3.

Therefore, the notion of 'prototypical artifices' or just 'prototypicalities' for a time yet to come—in comparison to prototypes—intends to emphasize further the awareness of situated typicality over objectified type, as well as the exploration of artifice beyond artefact, in the search for deeper structures that may trigger unexpected forms of spatial praxis in time to come. These prototypical artifices, as an outcome of a methodological approach that intends to bridge practice and theory in architectural research (which could appear in any field of architectural investigation), traces a joyful overlap with the specific topic of time catalysts in this thesis: it reveals a design time catalyst—methodologically speaking—of upcoming spatial time catalysts. In other words, it stimulates future processes of design where unknown stimulants of delightful appropriation and transformation over time may arise.

Chapter 6
Towards a Family of Artifices

Conclusion as Opening

Pau Bajet
PhD 'by design'
July 2023

This thesis ends with a conclusive opening. It concludes in the sense of reaching the final part of a personal research journey, while seeing the thesis beyond the sum of its parts. To do so, this ending section intends to recall and interrelate significant research purposes, outcomes and meanings across the different chapters. But this investigation cannot reach *a conclusion*, in the sense of a univocal verdict resulting from faultless reasoning. This is because it has been largely based on 'lived in' spatial phenomena experienced through concrete poetical and spatial design speculation.[1] It has embraced the joy of uncertain, ambiguous forms of connoisseurship embedded in—and reverberating from—the process of making.[2] This explains why a *Decalogue* of design principles were not presented; rather, an extended, open-ended family of nuanced design strategies were sketched. Following the notion of open-endedness, this conclusion is devised as an opening. It is sought as an opening towards a wider field of investigation: an explosion of possible flavours and findings still unknown.

A Research Workshop of Time Catalysts

From the beginning, this study has been understood as a design investigation conducted through the craft of architecture: a workshop of time catalysts, where the study's theme, methodology and outputs have been interwoven through *research praxis*. This triad should not be seen as a ramification of disconnected paths, rather, as an integrated journey. Initially, the topic of enquiry was established as an attempt to come to a deeper understanding about how

1 This phenomenological attitude is granted from Bachelard's spatial investigations. See: Gaston Bachelard, *The Poetics of Space* (New York: Penguin Books, 1958; repr. 2014), p. 2.
2 Michael Polanyi, *Personal Knowledge: Towards a Post-critical Philosophy* (Chicago: University of Chicago Press, 1958), p. 92.

one might design cross-scalar spatial catalysts for delightful appropriation and transformation over time. Its method was based on the prospect of design speculation as a medium of interpretation, launching fresh hypotheses and testing theoretical postulations. Its outputs were expected to take the form of specific urban projects and design strategies, embodying tacit and explicit awareness, all related to the topic and method of investigation.

Working in three scales—a city edge, an urban fabric and a room ensemble—the constructional exercise started with a subjective recollection of the site and its historic background (Chapter 3), aiming to activate a performative deep context at each of the three scales (Chapter 4). Following the critical development of an awareness of becoming and ecological sensitivity (Chapter 1), this deep context was 'virtually' recollected from found traces of the past, providing a many-sided contextualisation—including geological, historical, meteorological and grounded spatial interpretations—to physically and culturally anchor the resistance of slow-changing situations.[3] Situations were seen to be propositionally 'activated' not through a simple accumulation of data, but as empathic pre-existing spatial stimulants of upcoming appropriation and transformation. Their meaning came from a *truthfeel* aesthetic experience.[4] In Morton's terms, the 'aesthetic experience isn't really about data—it's about data*ness*, the qualities we experience when we apprehend something. (…) It's a solidarity, a feeling of alreadiness, for no reason in particular.'[5] In chapter 4, through nuanced, manifold design interpretations, a 'lived in' aesthetical experience has given a sense of meaning, a sense of place, with its impregnated beauty, values, dreams and desires. In our geological period of the Anthropocene characterised by the anticipation of planetary mass extinction, this chapter has awakened a deep ecological sense of ordinary human and nonhuman coexistence in solidarity. This contextual solidarity was spatially mobilised to perform as a series of careful actant contexts—*careful*, because they cared for the ecology of their ordinary depth, and *actant*, because they acted to stimulate what would come open-endedly next (i.e. as found-time catalysts) carrying a sort of 'spectral futurality:'

> So when I experience beauty, I am coexisting with at least one thing that isn't me, and doesn't have to be conscious or alive, in a noncoercive way (…). We coexist; we are in solidarity. I'm haunted, charmed, enchanted, under a spell, things could get out of control, but they won't, at least for now. The present moment collapses and I'm left with an uncertain, spectral futurality (…). How it looks, how it feels, where it is sitting, its mass, its shape—all that, which we could call appearance, is the past. (…) [*it*] is a sort of train station in which past and future are sliding past one another not touching, and what I mistakenly call present is a kind of relative motion between the two sliding trains of past and future.[6]

The previously characterised actant contexts were tested as design sites for further design speculation (Chapter 5). Design proposal responses were made at three scales: landscape, urban and architectural, while keeping a close dialogue with the literature discussed in Chapter 2. These were addressed in a two-stage design approach. Firstly, deep continuities between Chapter 4 and Chapter 5 unfolded the practice of enhancement—through an accidental process of alteration and distortion—to provide the city with renewed spatial time catalysts. And secondly, fresh speculative proposals were made in vacant pieces of land, launching time catalyst designs as *ex novo* built ensembles—still subtly embedded in cultural and physical continuities. The projects have not only revealed the potential of enhancement as a source to elude the temptation of *tabula rasa*, avoiding physical and cultural displacement (from the past). But, crucially, their spatial configurations painstakingly avoid the tendency, habitual in the field, of over-determining systems of growth.[7] Hence, the projects have brought new spatial embeddedness—resilient over time—functioning as a lever towards 'lived-in' durations of delightful appropriation and transformation in an open-ended course of action yet to arrive (towards the future).

Beyond their role as triggers of change, time catalysts are intended to add value to the world we live in by means of design, presenting vehicles for civic betterment and unexpected meaning, and delight for a wide spectrum of lifeforms in the biosphere. In the context of the Barcelona housing crisis, recent planning tendencies have consisted in demolishing entire city blocks within old industrial quarters, emptying the land to produce a brand-new urban tissue with functionally pre-planned volumes.[8] In opposition to this tendency, the proposed cross-scalar constellation of projects has revealed the potential for more careful, slow and embedded transformations,

3 See the awareness of becoming discussed in the heading 'The Phenomena of Duration,' the ecological sensitivity discussed in the heading 'Ecological Awareness,' and the role of resistance in qualifying architecture to support mundane, appropriate rhythms of lived situations discussed in the heading 'The Play of Place Resistance,' all in Chapter 1.

4 See the term 'thruthfeel' in the heading 'Actant Contexts' in Chapter 1.

5 Timothy Morton, *Being Ecological* (London: Pelican Books, 2018), p. 121.

6 Ibid., p. 131. The theme of *futurality* is taken by Morton from the work of Jacques Derrida.

7 I have referred to these over-deterministic systems in the heading 'The Infrastructural Capacity of Land' in Chapter 2.

8 See the heading 'Current plans and opportunities' in Chapter 3, in comparison to the design proposal.

with an equivalent level of density. From artificial wetlands to roof details, the projects have challenged ethically wrongful typological reductions and over-simplified oppositions such as nature vs architecture, public vs private or production vs reproduction.[9] They have proposed, instead, an expansive gradient of catalytic supports through territorial depth, following temporal, social and spatial scalar relativity, where each support is characterised by specific indeterminacy and threshold spatiality.[10] This proposed territorial depth offers nuanced interrelations between individual and community, human and nonhuman, support and infill, resistance and performance—overlayered ambivalences empowering interdependent (individual and commoning) rights of choice, appropriation and participation, safeguarding the potential to properly 'write history' and proceed otherwise.[11] In the context of the climate emergency and unrestrained capitalistic patterns of exploitation, these catalytically charged territories care for feminist, decolonial, and non-anthropocentric politics and aesthetics: sensitivities that have been widely discussed both at the beginning (Chapters 1 and 2) and in the subsequent design stores (Chapters 4 and 5). These sensitivities are rooted in each tectonic choice, each vulnerable witness retained, and each threshold left open.

Knowledge Embeddedness

The methodological approach employed in this study—'research by design'—has been critically discussed, adopted and developed at a doctoral level. In this sense, while the third chapter provides a contextual overview of epistemological discourse in the field, the entire dissertation, chapter by chapter, is devised as a proposal for an approach to architectural research that treats design as a medium for speculative enquiry. The primacy of designing as a method of investigation is compatible, I have argued, with standard academic procedures such as reviewing philosophical and architectural literature (Chapters 1 and 2), the provision of contextual, lead-in or background information, and methodological materials (Chapter 3), as well the establishment of a planned research journey (or content-focused case study) by means of which to conduct the design work. The latter is developed through a triad-scalar approach in a specific location. The first aspect in the triad places stress on interpretation (Chapter 4); later the emphasis is on creative speculation (Chapter 5); finally, the study concludes in the form of a propositional synthesis (Chapter 6). By following this approach, compared to traditional modes of research in the humanities, 'core' primary sources of investigation and thus the basis of the research findings have been gathered from direct participant observation: from both speculating spatial artefacts and interpreting them in a self-critical manner.

In the process of this investigation, design and research are interwoven but not confused. Design appears initially as a method of interpreting and redrawing a deep context (Chapter 4). Later, a two-way procedure is introduced (Chapter 5) with, on the one hand, erratic and overlapping intervals of testing previously formulated assumptions (i.e., theoretical positions or preunderstandings arising from my experience in practice, cross referring precedents discussed in Chapter 2) and, on the other, by launching fresh hypotheses materialised in specific designs, with unexpected tectonic, cultural and ecological interrelations. Situated in real-life 'wicked' conditions, the projects inevitably respond to many-sided concerns beyond their monographic research original purpose, related to the promise of time. This approach presented an opportunity to vivify earthy, complex and accidental rhythms—such as the Eduard Aunós or Santiveri stories—hence resulting in specific, transdisciplinary, and situated design proposals. The deeply situated physical and cultural character of the proposals gives the enquiry into time catalysts particular and specific qualities, which if tackled in a more theoretical or humanist fashion, could have become too broad. The specificity of the approach has resulted in a grounded investigation characterised by real life setting with outputs that, in spite of their local origin (or, I might argue, precisely because of this) have the potential to be applicable in other *real* contexts. This approach is perhaps not applicable anywhere, but surely within fringes of cities with analogous levels of decayed industrial urban fabric and places with fragile physical and cultural topographies.

However, the exportation of these apprehensions has avoided epistemological generalization through simple inductive reasoning. The thesis argument is sustained on the assumption that knowledge embodiment (albeit tacit and to some extent inaccessible) is carried out by or within the artefacts—the primary outputs of this investigation—and yet, additional and corequisite outputs, in the form of embedded, communicable, ambiguously explicit knowledge have

9 This ethical position, attached to a certain political, ecological and aesthetic awareness, has been discussed in Chapter 1, especially in the sections 'Ethics of Change' and 'Lived Places.'

10 This approach to urban practice, interlinked with paradigmatic literature, has been widely argued in the heading 'Edges as Catalytic Ambivalences' in Chapter 6.

11 Walter Benjamin, 'Theses on the Philosophy of History', trans. by Henry Zohn in *Illuminations: Essays and Reflections*, ed. by Hannah Arendt (London: Fontana, 1973), p. 262. Originally published in 1940 under its German title "Über den Begriff der Geschichte."

necessarily been proposed: the 'family of artifices' (Chapter 6). In the context of this research, where spatial speculations are devised as raw materials to support future designs, the civic artefacts (Chapter 5) have been qualified as 'prototypical', acknowledging their prospective contribution to original knowledge—even if such a contribution is modest or somewhat ineffable in its linguistic form. The dialectical drift between explicit and tacit knowledge has been embraced, in this research, by speculating through an interplay of words and drawings, of textual and visual expression. In this visual-textual exercise, words have been intended in a nuanced language expressing 'lived in' unspeakable emotions; drawings have been carefully traced to voice conceptual intent. Therefore, emanating from the prototypes, true shades of irreducible originality and relevance may only be fairly grasped and glimpsed, by experiencing them both directly and also in reciprocity across scales.

With the purpose of finding shared, communicable yet 'lived in' procedures for the attunement and making of time catalysts that may be applicable elsewhere, and following a critical interpretation of the design work, an extended family of artifices is proposed (Chapter 6). This open-ended family is formed by three cohorts of design strategies, embodying deeper structures of shared and yet situated typicality as opposed to typological reduction.[12] Gathered from the design speculations of Chapter 4, a family of nine specific artifices under the heading 'Making Apparent the Actant Contexts' is proposed—artifices that aim to unveil and characterise found-time catalysts in any urban or suburban site. As previously discussed, the design process in Chapter 5 began by enhancing the found, and continued by creatively adding fresh spatial arrangements. This two-step course of action is pursued in Chapter 6 to propose, initially, a cohort of seven artifices concerned with 'Ushering in Adaptation and Enhancement' and, later, ten artifices under the heading 'Crafting Fresh Catalysts'. This adds up to the sum of seventeen artifices that together suggest practices for the making of time catalysts elsewhere. The artifices weave together theory and practice in architectural research by articulating communicable knowledge embedded in designerly apprehensions. They are designerly because, to a necessary extent, they remain ineffable: only to be grasped or glimpsed in their true value as and when being interrelated with their generative artefacts (Chapters 4 and 5) and posing the necessity of a 'live' skill, intention and will, when being interpreted by other designers in futurity.

12 Peter Carl, 'Type, Field, Culture, Praxis', *Architectural Design*, 81 (2011). 10.1002/ad.1187.

Meaningful Endeavours for Further Investigation

Assembled as a designerly vehicle for architectural research, this thesis points at possibilities for further study of the potential of time as a design tool by offering a cohort of civic artefacts and artifices that can be engaged with and freely interpreted beyond their monographic inception. To better understand a number of possible springboards for work going forward, the following paragraphs begin by discussing the limitations, research boundaries and constraints of the civic artefacts and artifices, before making suggestions for further investigation.

Firstly, the research 'by design' methodology entails clear, inescapable limitations. This epistemological path has been sustained on subjective 'lived in' design speculations, unfolding an ineffable kind of knowledge that has been widely discussed previously. These speculations accept at the outset the argument that: even if I put my finger directly onto something, I may never fully grasp its comprehensive meaning—and yet I should happily carry on fine-tuning and reflecting upon it by design. Nonetheless, an attempt has been made to structure design research through the rigours of interpretation, hypothesising, and the testing of postulations to produce not only architectural designs but also communicable knowledge (Chapters 4, 5 and 6). The mode of doctoral research 'by design' has also proved challenging with regard to the regulatory limit of the usual UK format of a 40,000-word thesis together with a portfolio containing creative work. Compared to a more traditional, 'big book' type, 80,000-word written thesis, the reduced length has posed a challenge to sustain a relevant portion of text devoted to literature revision and theoretical framework. In this sense, during the research process, it was important to realise that a significant amount of written lead-in materials could be retained, given that they would naturally balance the weight of 'core' creative, design contents. In sum, the methodological purpose of this doctoral study has been to provide a vehicle for architectural investigation regardless of the topic of enquiry: a speculative, phenomenological pathway that engages with tacit as well as explicit forms of knowledge, bridging practice and theory though reflection in action, without undermining academic standards. Undoubtedly, the unexpected potential of this richly uncertain research methodology is waiting to be embraced by architectural PhD candidates all over the world.

There were additional challenges related to the methodological journey upon which this thesis took me, more specific to the case study in Barcelona and its design developments undertaken at an individual scale. Site and background information (Chapter 3), as well as the

contextual activation (Chapter 4) have been framed as a non-comprehensive task based on my personal access to public, open-source data gathered between 2015 and 2020. For instance, I was unable to access pre-existing small-scale architectural or topographical surveys, a limitation that restricted the 'Room Ensemble' speculations, hence focusing in newly built prototypes in empty plots. Surely, an exercise of design speculation based on enhancement and alterations of as-found accidental interior qualities, similar to those carried out at the larger scales, should be pursued in future research. In addition, the urban and architectural proposals (Chapter 5), given their situated and manifold contextualisation, have necessarily traversed disciplinary fields outside of my expertise as an architectural designer; specialities such as urban sociology, environmental sciences, M&E and structural engineering are implicitly called for. The purpose of this transdisciplinary effort has been to provide situated grounds on which to modestly test the enquiry of time catalysts. Hence, if scaled up to a live, real world city development, the project would have to be reassessed, moulded, and re-developed by a larger, multidisciplinary team of professional, academic and local agents. Surely, such an endeavour would capture potentials of greater value for a wider investigation of time catalysts, an endeavour that could lead to the structured discovery of unexpected yet welcome urban development. Even if research of this sort were initially unfeasible, I suggest that it may be worthwhile to build directly upon the present study by opening an exchange with public planning agencies such as Barcelona Regional or AMB, as well as neighbourhood associations, with the purpose of sharing the potential of a slower, indeterminate city development in the area of the Marina del Prat Vermell.

The scope of the topic of enquiry has involved a series of challenges too. With regards to the critical revision of existing literature, the discussion has mainly been limited to an account of precedents developed since the 1950s in Western countries, given that the thesis has intentionally been focused on 'by design' core materials. Deeper analyses of selected case studies or comprehensive, monographic surveys with transcultural ancient and vernacular cases could be the focus of other doctoral studies engaged in the historiographical or theoretical tradition. Concerning the design-core chapters, the investigation has been centred on cross-scalar interrelations between larger and smaller spatial stimulants of change—from architectural alterations to urban and landscape transformations—in this way avoiding an easier focus on isolated objects of study. In other words, the thesis has prioritised a profound sense of territorial interrelatedness, even if a design speculation and analyses at one scale could have perhaps provided deeper findings related to a specific range of topics. Moreover, accepting an ethical approach with an awareness of time and the potential for change that might occur, has implied that a sense of indeterminacy should be allowed, therefore radically avoiding a deterministic conceptualisation of time catalysts, related to one function or purpose only—even if a mono-functional scope could possibly offer a less uncertain niche of study. Whilst this thesis has coherently chosen to follow a diffuse position in relation to scale and function, as well as prioritising territorial depth, a complementary course of study into time catalysts could be done with reduced programmatic and scalar complexity. As a matter of fact, any of the artifices proposed as communicable outputs of this study, could be taken as a topic of enquiry for a monographic, separate investigation.[13]

From a theoretical point of view, the thesis and particularly its literature review has excluded a deeper focus on the role of the 'typical' as a generative force of transformation in architecture, although the artifices proposed in the sixth chapter are related to this topic.[14] The Spanish architect Carlos Martí has discussed the concept of transformation associated with deeper persisting structures that lie beneath apparently disconnected phenomena.[15] Drawing upon a lineage originating in the early 19th century by Quatremere de Quincy and Jean Nicolas Louis Durand, this argument was followed in the 20th century by Aldo Rossi and others, including Giulio Carlo Argan and Giorgio Grassi, as well as by members of the Oppositions group such as Anthony Vidler and Rafael Moneo.[16] A typological drift reductively centred on formal appearancehas been criticised by phenomenologists such as Alberto Pérez-Gómez, Dalibor Vesely

13 For instance, at a smaller scale, additional research could focus only on 'Soft Techniques of Daily Alteration' by testing and constructing fresh tectonics with moving habitational devices or, at a larger scale, an investigation could engage with 'Generators of Ecological Resilience' in the form of self-generative territorial landscapes. Likewise, a different study could focus solely on speculating 'Thermodynamic Interactions' functioning to climatically anticipate and stimulate appropriation and change over time or, another, could deepen on 'Spatial Stimulants of Interpersonal Solidarity' engaging with local agents and inhabitants to test and propose commoning practices of spatial change.

14 The role of the 'typical' has been briefly discussed in the heading 'In-between Typicalities' in Chapter 6. As a matter of fact, the entire family of artifices proposed in the sixth chapter can be seen as an effort to articulate shared and deeper 'typical' situations of spatial-making. Besides, the awareness of typicality in architectural production is specifically referred in the artifices of 'Recollecting Architectural Typicality', 'Transposing Architectural Typicality' and 'Intensifying the Infrastructural Capacity of Archetypical Elements'.

15 Carlos Martí, 'El concepto de transformación en arquitectura', in Las variaciones de la identidad (Barcelona: Fundación Arquia, 2014; originally published in 1993), pp. 106-119.

16 This genealogy has been recently picked by a doctoral dissertation presented at the Delft University of Technology. See: Christopher C.M. Lee, 'The Fourth Typology: Dominant Type and the Idea of the City' (Unpublished doctoral thesis, Delft University of Technology, 2012).

and Peter Carl.[17] An approach to the typical centred precisely upon the situations that produce our 'lived places'— situations embedded on shared, recognisable and yet interpretable phenomena—would unfold a particularly fruitful arena for further study of time catalysts. The resistance of these typical spatial practices (not only formal, but also social, poetic and technical interrelations) promises to support valuable events of appropriation and transformation. I suggest that this research pathway would delve into ordinary architectural production by embracing interpersonal socio-spatial body practices,[18] as well as by further investigating what I have referred to as a 'Tectonics of Permanence and Change', hence sustaining deep vernacular and ancient practices of open-ended construction while enjoying current digital, open-source modes of production.

The conclusion of this PhD has reprised the research questions launched at the opening chapters, portraying the thesis as the interplay of a threefold enquiry, concerning the theme of study (time catalysts), its research methodology (by design), and outputs (in the form of both civic artefacts and artifices). The emergence of a performative, deep sense of place—the actant contexts—has been embraced as an inescapable yet joyful conceptualisation that connects all chapters. This notion of context is embraced to both subtly alter and boldly distort found situations, avoiding physical and cultural displacement from the past, as well as crucially providing new spatial embeddedness to catalyse open-ended appropriation and transformation in time future. The design of a deep, slow-changing territory of time catalysts gradients has been portrayed to care for civic and ecological betterment, painstakingly curating their aesthetics and meaning. While the thesis sustains that tacit, irreducible knowledge is embedded in these prototypical urban artefacts, it has proposed additional suggestive outputs in the ambiguous—communicable yet 'lived in'—form of an open-ended family of artifices. The later part of this conclusion has indeed functioned to devise an opening towards relevant and wider debates, both in academia and real-life civic developments. Personal and methodological limitations as well as the scope of research boundaries have been discussed, stressing theoretical and epistemological controversies to suggest meaningful endeavours for further engagement and enquiry.

17 Alberto Perez-Gomez, *Architecture and the Crisis of Modern Science* (Cambridge: The MIT Press, 1983), pp. 297-314.; Dalibor Vesely, *Architecture in the Age of Divided Representation: The Question of Creativity in the Shadow of Production* (Cambridge, Mass: MIT Press, 2004), p. 96.; Peter Carl, 'Type, Field, Culture, Praxis', *Architectural Design*, 81 (2011). 10.1002/ad.1187.

18 For instance by following Pierre Bourdieu's concept of 'habitus' (see: Pierre Bourdieu, *The Logic of Practice* (California: Stanford University Press, 1992), pp. 52-65.

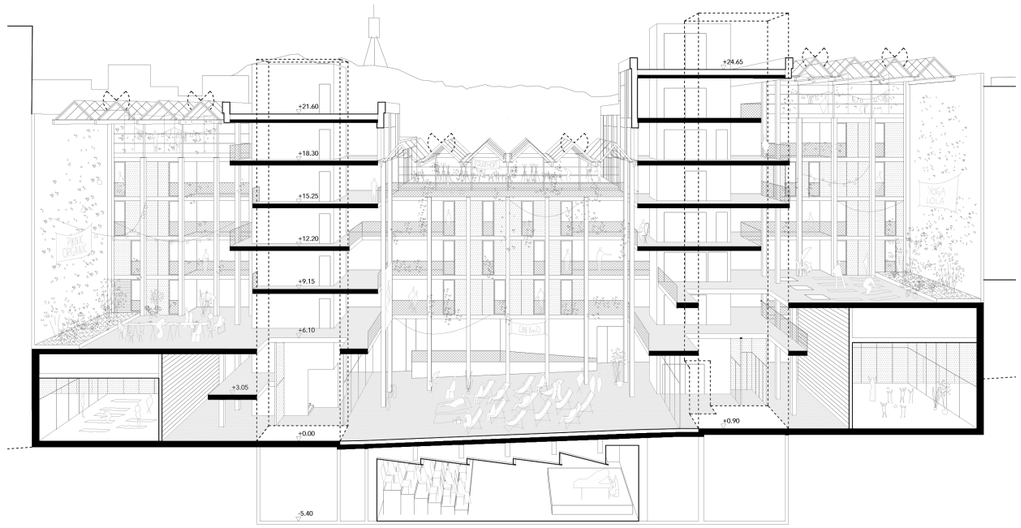


Fig. 1
bg032 Quiró. Perspective section.

Fig. 2
Bajet Giramé's stamp.

Fig. 3
bg032 Quiró. Interior courtyard visual.



Afterword
Live Interrelations

The design work developed for the purpose of this doctorate was produced between 2015 and 2021. Concurrently, there have existed two-way prolific interrelations with design work undertaken in a parallel arena in the Barcelona practice that I co-founded together with Maria Giramé in 2017: *Bajet Giramé*. The paragraphs of this brief afterword will identify as discussion points some of these interrelations, which have been opportunities to test and construct in on-going professional conditions some of the spatial concepts initiated in the PhD, and to formulate new hypotheses in practice that were later transposed to the thesis. Methodologically, this doctoral study has chosen to avoid mixing the core primary materials of the research with my professional practice, in contrast with other practice-based research programmes that largely rely on the analysis of an architect's own projects, often developed in the past.[19] The reason for this is to ensure a consistent organization of the design work—scalarly, from City Edge to Room Ensemble—allowing me to dig more deeply in one place, both culturally and socially, while avoiding a conflict of interest with contingent circumstances of past professional projects. This approach ensured that the main purpose of the projects was the live research of time catalysts, carried out through direct, entwined participant observation.



At a larger scale, we have developed two urban planning projects, one which was approved in 2019 and the other that is currently awaiting its final acceptance: PMU Serramar (bg013) and PP O'Connor

19 In this regard, an acknowledged initiative is the ADAPT-r project which, following a practice-based PhD methodology originated 30 years ago at RMIT University Melbourne, has joined forces with European universities to establish a platform for dozens of recognised practising architects to complete their doctorate. As part of this programme see: Jo Van der Berghe, 'Theatre of Operations, or: Construction Site as Architectural Design' (Unpublished doctoral thesis, RMIT University, Melbourne, 2012).



(bg034). Both of these, located in the rural village of Alcanar in the southern coast of Catalonia, served to investigate landscape infrastructure strategies for an open-ended urban development over time. In particular, the 27ha PP O'Connor project put in practice the entire family of artifices related to the section above entitled *'Ushering in Adaptation and Enhancement'* by opposing a previous master plan that treated the existing agricultural landscape as a 'blank canvas'. Instead, the proposal acknowledged and enhanced existing fragile time witnesses such as dry-stone retaining walls, an accidental structure of paths, flooding basins with third landscape fragments, abandoned and cultivated orchard terraces, and the ruin of an antique rural *masia*. A new and varied plot tissue was overlaid onto these traces with the purpose of enabling a step-by-step uncertain development, adaptable to changing socio-economic situations. This modest settlement is physically and culturally conceived as a new rural centrality, not only sustained by urban form, but though playfully-serious urban parameters to be somewhat freely engaged in by individual architects and inhabitants over time. Specific yet indeterminate shared constraints provide criteria for spatial and tectonic expression, as well as for a variety of land usage, including agriculture, an ecological corridor, dwellings, tertiary, leisure, and public facilities.

Likewise, we have investigated strategies related to *'Ushering in Adaptation and Enhancement'* in a number of architectural and interior renovations. These projects represent *de facto* an opportunity to

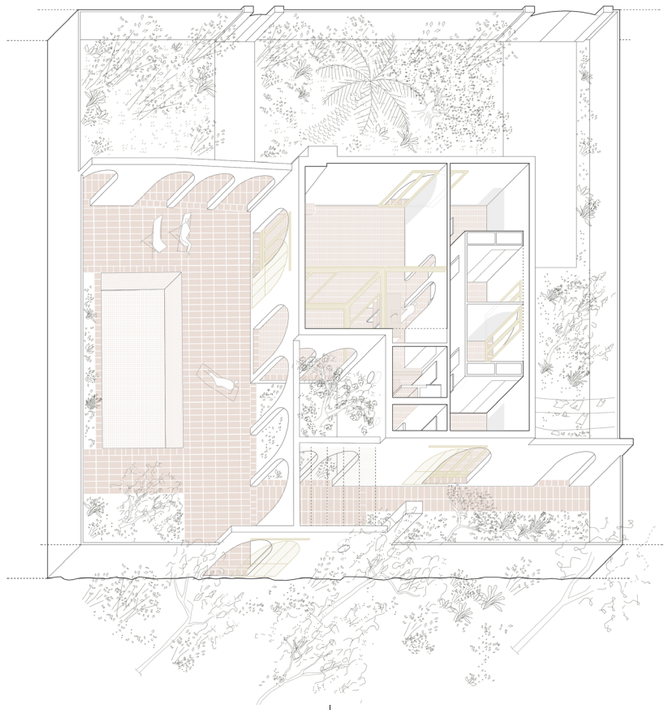


Fig. 4
bg034 O'Connor. Axonometric perspective of a third stage of urban development.

Fig. 5 and 6
bg021 Les 3 Maries. Axonometric and view of a sequence of thresholds.



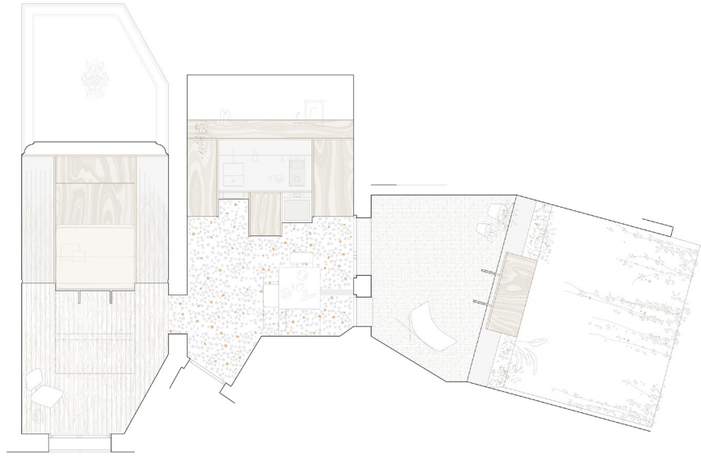
expand the investigation of time catalysts with found pre-existence at a smaller-scale—an area of study that was ruled out of the doctorate due to a lack of detailed topographical surveys. Les 3 Maries (bg021) renovation enhances the 'courtyard-house' character of an average summer residence from the 1960s near Tarragona. Pre-existing arched wall enclosures are echoed throughout the house and garden, resulting in a playful sequence of interior and exterior rooms. With minimal intervention, the project opposes an apparent previous tendency of the house—that promoted domestic control, privacy and functional determinacy—offering, as an alternative, an ensemble of spatial rhythms with differences for open interpretation. It is conceived as an open and diverse continuum of thresholds: wide and sunny, as well as intimate and shady, with coves, topographies,



loggias and gardens providing a landscape of vitality and delight. Similar strategies are deployed in the Outdoor Pavilions (bg035) where, in opposition to the usual *tabula rasa* approach, the project recognizes material and cultural values of two old service buildings, turning them upside-down and celebrating their prosaic construction typologies and finishes. Material and immaterial time witnesses are also enhanced and interrelated with fresh constructional additions in interior renovations such as in the Montparnasse (bg017) and Palau Gomis (bg052) projects. In these interior renovations, careful judgments are made when retaining plaster cornices, aged pavements

Fig. 7
bg035 Outdoor Pavilions. View of the new rammed-earth pavilion.

Fig. 8 and 9
bg017 Montparnasse. Elevation/plan drawing and interior view.





or even the original character of the enclosed rooms. These found accidental traces coexist with new lightweight domestic furnishings and boldly cut walls, enhancing an almost-open plan of enjoyable living.

Some of these renovations and other larger projects, mainly the results of public competitions, have also served to dig deeper into the strategies of *'Crafting Time Catalysts.'* Built projects such as the Home in Mitre (bg03), Les 3 Maries (bg021), EVSA (bg047) and the Poblenou Attics (bg058) allowed us to investigate the ambiguous spatial artifice of *'Tracing Phenomenological Differences for Open Interpretation.'* These projects oppose spatial neutrality in favour of qualified physical and cultural difference, inviting open and delightful appropriation over time. They also functioned to test strategies of *'Outlining Diffuse yet Sharp Edges for Threshold Spatiality.'* In this regard, productive and reproductive realms, public and private, as well as property boundaries are diffused and distorted in the Poblenou Attics (bg058); while atmospheric, thermal generosity is enhanced through a matrix of interior and exterior rooms in Les 3 Maries (bg021). This kind of threshold gradient, that produces cross-scalar social, spatial and climatic interrelations within an architectural ensemble, has been explored at the Cañaveral (bgc20c) competition, as well as at the Quiró (bg032) project, our first-place winning competition entry for 83 dwellings for elderly, a senior cohousing, and public facilities in Barcelona. Currently under construction, this project is conceived as a composite gradient of large and small, loud and quiet, communal and personal, central and loose sequence of rooms, courtyards and in-between spaces. The threshold capacity of the façade as a climatic and cultural mediator has been tested in open competitions such as

384 the A-simetries (bgc18a) and Llindars al Centre (bgc19a), where the
385 building wall enclosure became an inhabitable active and passive threshold.

Special care has been taken in *'Mobilising Tectonics of Permanence and Change.'* Following an 'open building' criterion, we have intended that most of our projects are clearly articulated by distinguishing layers of different longevity and agency—those more permanent and shared, therefore acting as supports of those more temporary and personal. This is clear in the interior renovations where we usually redefine a primary infrastructural space, distinguished from secondary and subsequent additions of softer, warmer, smaller architectures, giving a sense of time and urbanity. Whereas in our first projects this distinction was expressed as a duality—e.g. Home in Mitre (bg03)—later projects introduce a deeper awareness of territorial levels, with a more diffused and loose composition between layers—e.g. Palau



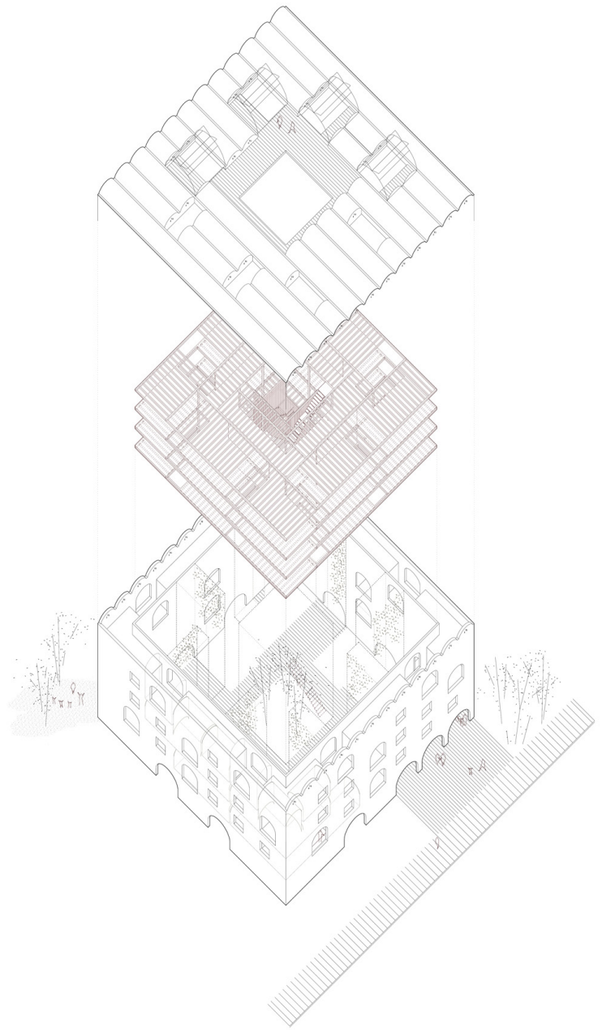




Fig. 10
bg058 Poblenou Attics. View of one of the domestic supports.

Fig. 11
bgc18a A-simetries. Axonometric perspective.

Fig.12
bg047 EVSA. View of the façade corner as a window display.

Gomis (bg052), EVSA (bg047) or the Poblenou Attics (bg058). In these projects we have enjoyed providing a greater autonomy to specific domestic bodies—objects that hide smaller and yet irreducible stories that have been co-produced with other agents—for example, with stainless-steel furnishings standing on tiptoes, which are laser-cut with screwed-on tabs. In our experience, this increased tectonic depth has stimulated further freedom of appropriation and provide resilience, anticipating unexpected change by the inhabitants. Everyday spatial alterations have been made by introducing hardware such as sliding and pivoting panels (Home in Mitre) or folding furniture-like elements (Montparnasse), while softer techniques have implied the design of loose spaces and ambiguous domestic bodies—e.g., a piece of furniture that is not clearly a bed or a sofa in the Poblenou Attics (bg058). In new building developments, at a slightly larger scale, we have also intended to distinguish between more

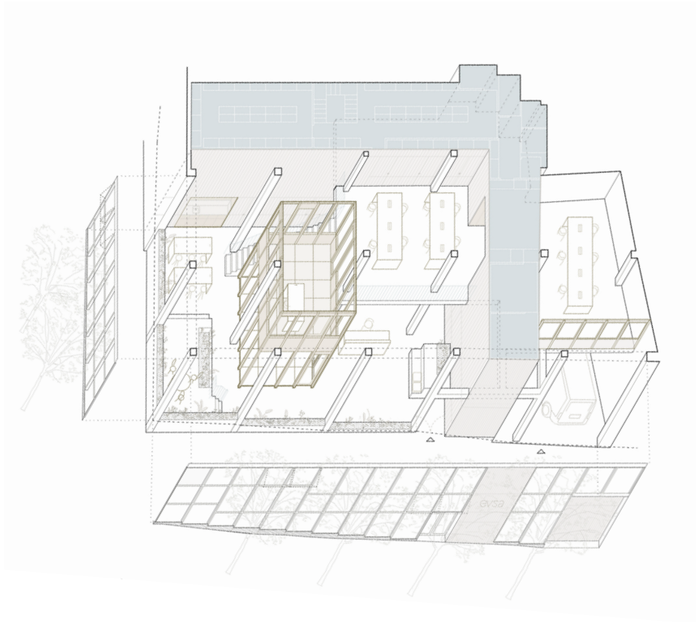
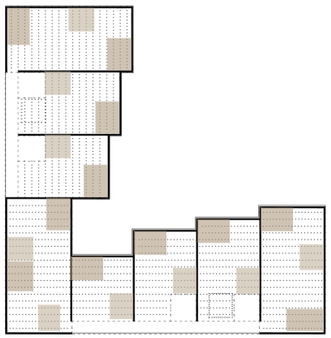


Fig. 13
bg047 EVSA. Axonometric perspective.

Fig. 14 and 15
bgc19b Cases de Cós. Plan diagram and exterior visual.

permanent support structures (usually made of concrete, rammed-earth or stone) and more temporary sub-structures (conceived as wooden frameworks). In the A-simetries (bgc18a) competition project, this tectonic distinction followed a concentric scheme, whereas the El Prat (bg068), a recent winning competition project for 71 social dwellings, has followed a stacking logic, with a quasi-permanent plinth related to polyvalent, public activities. In other competition entries such as Montgat (bgc18b) and Cases de Cós (bgc19b) we tested the potential of intermediate-scale primary structures with a strong presence, that are still compatible with a generous feeling of open-plan appropriation by its future inhabitants.

This experience in built professional architectural design projects has given us the opportunity to consciously introduce 'time catalyst' spatial practices (or, I should say 'artifices'), with the purpose of enhancing intersubjective rights of appropriation and transformation over time. This reinforces the assumption that the artifices can be applied in other contexts, precisely, because of their local, situated origin. Our real-life practice recalls, however, the implacable limitation of scales and programmes that have been standardised by the market, legislation and custom—residential interiors, housing buildings or urban master plans encircled by inexorable administrative perimeters. We have seen that in these enclosed physical and cultural spheres, live projects can however, put into practice the promise of time catalysts developed in this research in modest and joyful ways. Nonetheless, in an attempt to work beyond most of the restrictions of these straitjackets, unveiling further potentials for the





use of time as a design tool, this doctoral study has delved into more complex design speculations in-between typical categories, scales, functions and disciplinary conventions—proposing supports for plots in the air, an accidental carefully-changing urban fabric, and a third landscape of generative wetlands flowing into the port. These urban prototypes have appeared as unexpected civic and ecological artefacts, which have operated to release a nuanced family of artifices—artifices that offer hope for future wonder and engagement to unfold in our built and cultural environment.

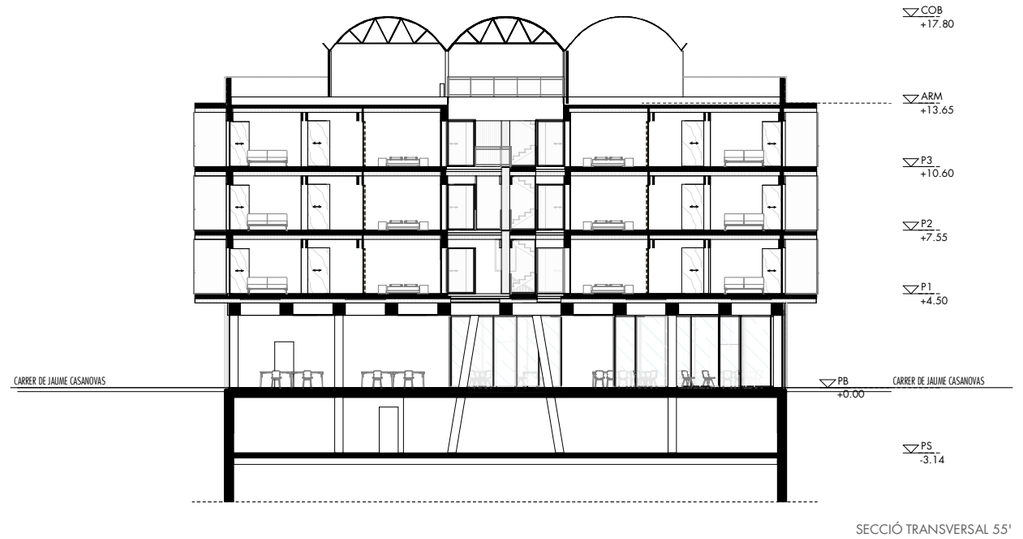


Fig.16
bg068 El Prat. Section through the public and private realm, exported from Revit.

Bibliography

Ábalos, Iñaki, 'Warhol at the Factory: de las comunas freudomarxistas al loft neoyorkino' in La Buena Vida: Visita Guiada a las Casas de la Modernidad (Barcelona: Editorial Gustavo Gili, 2000), 109-138

Ábalos, Iñaki and Renata Sentkiewicz, Essays on Thermodynamics, Architecture and Beauty (New York: Actar Publishers, 2015)

ADIF, 'Estudio del Corredor Ferroviario Mediterráneo' (Ministerio de Fomento: Gobierno de España, March 2011) https://www.mitma.es/recursos_mfom/20110314_estcorrmediterraneobajo.pdf

Ajuntament de Barcelona, MPGM Marina del Prat Vermell (Barcelona: Ajuntament de Barcelona, 2006) https://dtes.gencat.cat/rpucportal/AppJava/cercaExpedient.do?reqCode=veureDocument&set-locale=-ca&codintExp=225863&fromPage=load [accessed 29/10/22]

Ajuntament de Barcelona, 'Modificació del Pla General Metropolità per a la transformació urbanística de la Marina de la Zona Franca' (2006)

Ajuntament de Barcelona, Estadísitca i Difusió de Dades (2021) https://ajuntament.barcelona.cat/estadistica [accessed 2/1/21]

Ajuntament de Barcelona, Historia de la Marina del Prat Vermell (2021) https://ajuntament.barcelona.cat/sants-montjuic/es/el-distrito-y-sus-barrios/la-marina-del-prat-vermell/historia-de-la-marina-del-prat-vermell [Accessed 13 November 2021]

Alemany, Joan, El port de Barcelona: Història i actualitat (Barcelona: Port Autònom de Barcelona, 1984)

Allen, Stan, 'From Object To Field' Architectural Design, 67: 5-6 (May-June 1997), pp. 24-31.

Allen, Stan, 'Infrastructural Urbanism' in Points + Lines (New York: Princeton Architectural Press, 1999)

Alonso, Paco, 'Infrastructures', Quaderns d'Arquitectura i Urbanisme, 181-182, pp. 18-29

AMB, Atlas Barcelona Metropoli:. Contemporary maps (Àrea Metropolitana de Barcelona, 2015)

AMB, Pla Director Urbanísitc Metropolità (2021) https://urbanisme.amb.cat/pdu-metropolita [accessed 29/12/2021]

Archer, Bruce, 'Design as a Discipline', Design Studies, 1:1 (1979), pp. 17-20

Archer, Bruce, 'The Nature of Research', Co-design: Interdisciplinary Journal of Design (1995), 6-13

Askimaki, Anna and Gerasimos Koustourakis, 'Habitus: An Attempt at a Thorough Analysis of a Controversial Concept in Pierre Bourdieu's Theory of Practice', Social Sciences, 3: 4 (2014) 121-131

Aureli, Pier Vittorio, Less is Enough: On Architecture and Asceticism (Strelka Press, 2013)

Aureli, Pier Vittorio and Maria Shéhérazade Giudici, 'Familiar horror: Toward a Critique of Domestic Space', Log 38 (2016), 105-129

Aureli, Pier Vittorio, 'Appropriation, Subdivision, Abstraction: A Political History of the Urban Grid', Log, 44 (2018), 139-167

Aureli, Pier Vittorio and Maria Shéhérazade Giudici 'Islands: The Settlement from Property to Care', Log, 47 (2019), 175-199

Awan, Nishat, Tatjana Schneider and Jeremy Till, Spatial Agency: Other Ways Of Doing Architecture (New York: Routledge, 2011)

Bachelard, Gaston, The Poetics of Space (New York: Penguin Books, 1958; repr. 2014)

Badia Ferrer, Jaume, 'La Marina del Prat Vermell: nueva centralidad urbana?' (unpublished masters thesis, Universitat Politècnica de Catalunya, 2015)

Bajet, Pau, 'PhD: Grasping Knowledge Through Design Speculation' in IX Workshop on educational innovation in architecture: JIDA'21, ed. by Daniel García-Escudero and Berta Bardí Milà (Barcelona: GILDA, 2021), pp. 424-437

Banham, Reyner, Paul Barker, Peter Hall and Cedric Price, 'Non-Plan: An Experiment in Freedom', New Society, 13:338 (20 March 1969) 435-443

Banham, Reyner, Megastructure: Urban Futures of the Recent Past (New York: Harper and Row, 1976)

Barac, Matthew, 'Place Resists: Grounding African Urban Order in an Age of Global Change, Social Dynamics, 37: 1 (2011), 24-42

Barcelona Regional Agència de Desenvolupament Urbà, Memòria 2011-2015 (June 2015); Barcelona Regional Agència de Desenvolupament Urbà, Façana Litoral Morrot https://www.bcnregional.com/treballs/facana-litoral-morrot/

Barcelona Regional Agència de Desenvolupament Urbà, Peu de Montjuïc : Connectivitat litoral de Barcelona https://www.bcnregional.com/treballs/propostes-per-la-ronda-litoral-al-peu-de-montjuic/

Barcelona Regional Agència de Desenvolupament Urbà, Memòria 2006-to date

Barcelona Regional, Estratègia delta del Llobregat: Ajuntament de Barcelona, Ajuntament de l'Hospitalet de Llobregat, Ajuntament del Prat de Llobregat (Barcelona: Barcelona Regional, 2018)

Barrena, Xabi, 'La 'playa' de L'Hospitalet', El Periódico, 17 August 2009 https://www.elperiodico.com/es/barcelona/20090817/playa-l-hospitalet-129974

Beigel, Florian and Philip Christou, 'Brikettfabrik Witznitz: specific indeterminacy – designing for uncertainty', arq: Architectural Research Quarterly, 2 (1996), 18-38

Beigel, Florian and Philip Christou, 'Time architecture: Stadtlandschaft Lichterfelde Slid, Berlin', arq: Architechtural Research Quarterly, 3 (1999)

Beigel, Florian, Time Architecture, Selected architectural works by Florian Beigel Architects and Architecture Research Unit (London: ARU, 2003)

Beigel, Florian and Philip Christou, Architecture as City: Saemangeum Island City (New York: Springer, 2010)

Beigel, Florian and Philip Christou, Translations (Basel: Christoph Merian Verlag and Swiss Architecture Museum, 2014)

Benjamin, Walter, 'Theses on the Philosophy of History', trans. by Henry Zohn in Illuminations: Essays and Reflections, ed. by Hannah Arendt (London: Fontana, 1973)

Bianchino, Gloria, 'Introduction' in Non-Stop City: Archizoom Associati (Orléans: Editions HYX, 2006), pp. 135-136

Biggs, Michael, 'The role of the artefact in art and design research', International Journal of Design Sciences and Technology, 10.2 (2002), pp. 19–24

Blundell Hones, Peter, 'Editor's note' in Architecture and Participation, ed. by Peter Blundell-Jones, Donia Petrescu, and Jeremy Till (London: Spon Press, 2005)

Blythe, Richard and Leon van Shaik, 'What if Design Practice Matters?', in Design Research in Architecture, ed. by Murray Fraser (New York: Routledge, 2013), pp. 53–70

Bocquet-Appel, Jean-Pierre, 'When the World's Population Took Off: The Springboard of the Neolithic Demographic Transition', Science, 333 (2011)

Bohigas, Oriol, La reconstrucció de Barcelona (Barcelona: Edicions 62, 1985)

Bourdieu, Pierre, 'The Logic of Practice' (California: Stanford University Press, 1992)

Brand, Stewart, How Buildings Learn: What Happens after they are Built. (New York: Penguin, 1994)

Branzi, Andrea, 'Postface' in Non-Stop City: Archizoom Associati (Orléans: Editions HYX, 2006), pp. 139-140.

Buesa, Cristina, 'BCN compra el Morrot a Adif per 43 milions per moure la Ronda Litoral', El Periodico, 23 March 2015 https://www.elperiodico.cat/ca/barcelona/20150323/bcn-compra-el-morrot-a-adif-per-43-milions-per-moure-la-ronda-litoral-4043542

Busquets, Joan, Barcelona: The Urban Evolution of a Compact City, (Cambridge: Harvard Design Press, 2014)

Calvino, Italo, Invisible Cities, trans. by William Weaver (New York: Harcourt Brace Jovanovich, 1974)

Candel, Francisco, Els altres Catalans (Barcelona: Edicions 62, 1964)

Candilis, Georges, Alexis Jossic and Shadrach Woods, 'Proposition pour un hábitat evolutive', Le Carré Bleu, 2 (1959) 3-6

Carl, Peter, 'Type, Field, Culture, Praxis', Architectural Design, 81. 1 (2011), 38-45

Caruso, Adam, 'Whatever Happened to Analogue Architecture', AA Files, 59, pp.74-75

Castellano Pulido, Javier, 'El Patrimonio Fértil: Transferencias entre el paisaje agrario y la arquitectura en los crecimientos urbanos' (unpublished doctoral thesis, Universidad de Granada, 2015)

Castellano Pulido, Javier, 'Infrastructure and Memory: From Geddes' Agricultural Terraces to Beigel's Overlapping Landscapes' Revista Proyecto Progreso Arquitectura. 13 (2015)

Castells, Manuel, The Rise of the Network Society, 2nd edn, The Information Age: Economy, Society and Culture, 1 (Oxford: Blackwell, 1996; repr. 2010)

Chalk, Warren, Peter Cook, Dennis Crompton (editor), David Greene, Ron Herron and Michael Webb, Archigram The Book (London: Circa Press, 2018)

CIAM, CIAM '59 in Otterlo, ed. by Oscar Newman (Stuttgart: Krämer, 1961)

Clément, Gilles, Manifiesto del Tercer paisaje, Second edition. (Barcelona: Editorial Gustavo Gili, 2014)

Clossick, Jane, 'The depth structure of a London high street: a study in urban order' (unpublished doctoral thesis, London Metropolitan University, 2017)

Coca, Maria Teresa, 'El Consorci de la Zona Franca genera el 3,8% del PIB de Cataluña', El Economista, 22 July 2020 https://www.eleconomista.es/catalunya/noticias/10681874/07/20/El-Consorci-de-la-Zona-Franca-genera-el-38-del-PIB-de-Cataluna.html

Colmenares Vilata, Silvia, 'The Neutral at the Typical Plan: supports and dom-ino(s)' in Constelaciones nº2 (2014), 22-42

Cox, Nicole and Silvia Federici, Counter-planning from the Kitchen (Bristol: Falling Wall Press, 1974; repr. 1975)

Cross, Nigel, 'Designerly ways of knowing', Design Studies, 3.4 (1982)

Danneels, Koenraad, 'Historicizing Ecological Urbanism: Paul Duvigneaud, the Brussels Agglomeration and the influence of ecology on urbanism (1970-2016)' In On Reproduction. Re-Imagining the Political Ecology of Urbanism, ed. by Michiel Dehaene and David Peleman (Ghent, 2018) http://hdl.handle.net/1854/LU-8605458

Debord, Guy, Society of the Spectacle (New York: Zone Books, 1994)

De Carlo, Giancarlo, 'Architecture's Public', in Architecture and Participation, ed. by Peter Blundell-Jones, Donia Petrescu, and Jeremy Till (London: Spon Press, 1992; repr. 2005)

de Giles, Sara, Espacios de relación y soporte en la vivienda colectiva moderna: Realidades y utopías (Buenos Aires: Textos de Arquitectura y Diseño, 2021)

de Solà-Morales, Ignasi, Terraing Vague (Cambridge, MA: MIT Press, 1995), pp.118-123

de Solà-Morales, Manuel, 'Ten Lessons on Barcelona', COAC (2007)

Dunin-Woyseth, Halina and Fredrik Nilsson, 'On the emergence of research by design and practice-based research approaches in architectural and urban design' in Design Innovation for the Built Environment: Research by Design and the Renovation of Practice, ed. by Michael Hensel (London: Routledge, 2012), pp. 37–51

Dunleavy, Patrick, Authoring a PhD (London: Palgrave MacMillan, 2003)

Durling, David, 'Discourses on research and the PhD in Design', Quality Assurance in Education, 10.2 (2000), 79-85

Durling, David, 'Design in the UK: some reflections on the emerging PhD' in Doctoral Education in Design: Foundations for the Future, ed. by David Durling and Ken Freidman (Stoke-on-Trent: Staffordshire University Press, 2002), pp. 317–328

Eco, Umberto, How to Write a Thesis (Cambridge: MIT Press, 1977)

El Consorci, El Consorci de la Zona Franca 1916 – 1998 (Barcelona, 1998)

Esteban, Pau, Susana Laredo, Joan Pino and Andres Valverde Martinez, 'El context deltaic: situació, origen geològic i història del poblament humà', in Els sistemes naturals del deta del Llobregat ed. by Josep Germain and Joan Pino Vilalta (Barcelona: Institució Catalana d'Història Natural, 2018), pp.30-32

Evans, Robin, 'Figures, Doors and Passages', Architectural Design, 48 (1978), 267-278

Evans, Robin, 'Rookeries and Model Dwellings: English Housing Reform and the Moralities of Private Space', Architectural Association Quarterly, 10 (1978), 25-35

Federici, Silvia, Caliban and the Witch: Women, the Body and Primitive Accumulation (Brooklyn: Autonomedia, 2004)

Fernandez-Galiano, Luis, Fire and Memory: On Architecture and Energy (Cambridge: MIT Press, 2000)

Fernández, Pablo Lorenzo, 'La Casa Abierta' ['The open house'] (unpublished doctoral thesis, ETSAM-UPM, 2012)

Ferrer Alòs, Llorenç, 'The diverse growth of 18th-century Catalonia: Proto-industrialisation?', Catalan Historical Review, 5 (2012), pp. 67-84

Findeli, Alain, 'A Quest for Credibility: Doctoral Education and Research in Design at the University of Montreal' in Doctoral Education in Design. Proceedings of the Ohio Conference (Ohio: Carnegie Mellon University, 1998), pp. 99-116

Frampton, Kenneth, 'Team 10, Plus 20: The Vicissitudes of Ideology', L'architecture d'aujourd'hui, 177 (1975), 62-5; repr. In Labour, Work and Architecture (London: Phaidon Press Limited, 2002)

Frampton, Kenneth, Studies in Tectonic Culture: Nine Poetics of Construction in Nineteenth and Twentieth Century Architecture (London: The MIT Press, 1995)

Fraser, Murray, 'Introduction' in Design Research in Architecture, ed. by Murray Fraser (New York: Routledge. New York, 2013)

Frayling, Christopher, 'Research in art and design', Royal College of Art Research Papers, 1.1 (1993) pp. 1–5

Frayling, Christopher, Practice-based doctorates in the creative and performing arts and design (Lichfield: UK Council for Graduate Education, 1997)

https://ukcge.ac.uk/assets/resources/4-Practice-based-doctorates-in-the-Creative-and-Performing-Arts1997.pdf

Friedman, Ken, 'Research Into, By and For Design', Journal of Visual Arts Practice, 7.2 (2008), pp. 153-160

Friedman, Yona, 'Complement to personal statement at experts meeting in Dubrovnik on Policies Concerning Human Settlement' (1956) in Yona Friedman: The Dilution of Architecture, ed. by Nader Seraj (Zurich: Park Books, 2015).

Friedman, Yona and Roger Aujame, 'Mobile Architecture', Architectural Design, 30: 9 (1960)

Friedman, Yona, 'Ten Principles of a New Architecture' in Yona Friedman. Structures Serving the Unpredictable ed. by Sabine Lebesque and Helene Fentener van Vlissingen (Rotterdam: Nai Publishers,1999)

Fundació Enciclopèdia Catalana, Els Serra i els Bertrand (2021) https://www.enciclopedia.cat/ec-fe-0217701.xml?destination=node/501421 [Accessed 20 November 2021]

Gámez, Desiré, 'Sequence Stratigraphy as a tool for water resources management in alluvial coastal aquifers: application to the Llobregat delta (Barcelona, Spain)' (unpublished doctoral thesis, Universitat Politècnica de Catalunya, 2007)

García García, Miriam, 'Diseñando la resiliencia' in Undo! Desurbanizar, ed. by Carmen Espegel, Andrés Cánovas and Arturo Blanco (Charleston: Arcadia, 2018)

García-Germán, Javier, 'Thermodynamic Interactions' in Thermodynamic Interactions: An Architectural Exploration into Physiological, Material, Territorial Atmospheres ed. by Javier García-Germán (New York: Actar Publishers, 2017)

García-Germán, Javier, 'Revisando la Teoría de Soportes. Acerca del potencial del Open Building para desplegar una interacción más intensa con el entorno. Hacia una perspectiva expansiva del Open Building' in Open building 2.0: Re-Pensando la Edificación Abierta ed. by Almudena Ribot, Ignaci Borrego, Javier García-Germán and Diego García- Setién (Madrid: CoLab, 2017)

Geddes, Patrick, The Civic Survey of Edinburgh (Ediburgh: Town Planning Conference Civics Department, 1911)

Geddes, Patrick, Cities in Evolution (London: Williams & Norgate, 1915)

Giedion, Sigfried, Space, Time and Architecture. The Growth of a new Tradition 3rd edn (Cambridge: Harvard University Press, 1941; repr. 1959)

Giglia, Ángela, El Habitar y la Cultura. Perspectivas Teóricas y de Investigación (Barcelona: Anthropos Editorial, 2012)

Goethe, Johann Wolfgang, 'On German Architecture', in Goethe on Art ed. and trans. by John Gage (London: Scholar Press, 1980)

Granados Garcia, J. Oriol, 'Els grans projectes d'actuació a la Marina del Prat Vermell i al Morrot de Montjuïc', Biblio3W Revista Bibliográfica de Geografía y Ciencias Sociales (2013)

Grosz, Elizabeth, 'The Future of Space: Toward an Architecture of Invention' in Anyhow ed. by Cynthia C. Davidson (Cambridge: MIT Press, 1998)

Habraken, N. John, et al., Variations: The Systematic Design of Supports (Cambridge: MIT Laboratory of Architecture and Planning, 1976)

Habraken, N. John, The Structure of the Ordinary. Form and Control in the Built Environment (Cambridge: The MIT Press, 1998)

Habraken, N. John, Supports: An Alternative to Mass Housing, ed. by Jonathan Teicher (UK: Urban International Press, 1972; repr. 2011)

Hall, Edward T., The Hidden Dimension, (New York: Anchor Books, 1966; repr.1990)

Hamdi, Nabeel, Housing Without Houses: Participation, Flexibility, Enablement (West Yorkshire: Intermediate Technology Publications, 1995)

Hansen, Oskar and Zofia Hansen, 'The Open Form in Architecture: The Art of the Great Number', in CIAM '59 in Otterlo, ed. by Oscar Newman (Stuttgart: Krämer, 1959; repr. 1961)

Harman, Graham, Object-Oriented Ontology: A New Theory of Everything (London: Pelican Books, 2018

Harvey, David, 'Accumulation by Dispossession' in The New Imperialism (Oxford: Oxford University Press, 2005)

Harvey, David, Rebel Cities. From the Right to the City to the Urban Revolution (London: Verso, 2012)

Heidegger, Martin, 'Building Dwelling Thinking' in Poetry, Language, Thought, trans. by Albert Hofstadter (New York: Harper Colophon Books, 1971)

Hertzberger, Herman, 'Flexibility and Polyvalence', Forum, 16:2 (1962), 115-118

Hertzberger, Herman, 'Time-based buildings' in Time Based Architecture, ed. by Bernard Leupen, René Heijne and Jasper van Zwol (Rotterdam: 010 Publishers, 2005)

Hill, Jonathan, 'Design Research: The First 500 Years' in Design Research in Architecture, ed. by Murray Fraser (New York: Routledge, 2013), pp. 15-34

Institut Cartogràfic i Geològic de Catalunya, <https://www.icgc.cat/ca/Administracio-i-empresa/Serveis/Geotermia> [accessed 16 April 2022]

Instituto Nacional de Estadística, Encuesta Continua de Hogares: Año 2017 (INE ECH, 2018), <https://www.ine.es/prensa/ech_2017.pdf> [accessed 28 December 2022]

Jonas, Wolfgang, 'Exploring the Swampy Ground', in Mapping Design Research, ed. by Simon Grand and Wolfgang Jonas (Basel: Birkhäuser, 2021), pp. 11-42

Junta de Obras del Puerto de Barcelona, Memoria (Barcelona: Industrias C. Cornet, 1935)

Kendall, Stephen and Jonathan Teicher, Residential open building (London: E & FN Spon, 2000)

Kendall, Stephen, 'Reflections on the History and Future of Open Building and the OB Network' (July 2015) http://open-building.org/archives/Reflections_on_the_History_and_Future_of_Open%20Building_and_the_OB_Network.pdf [accessed 30th July 2022]

Kahn, Louis, 'Architecture is the Thoughtful Making of Spaces', Perspecta, 4 (1957)

Kahn, Louis, 'The Room, the Street and Human Agreement', AIA Journal, 56.3 (1971), pp.33-34

Kikutake, Kiyonori, Noboru Kawazoe, Masato Otaka, Fumihiko Maki and Kisho Kurokawa, Metabolism: the Proposals for New Urbanism (Tokyo: Bitjutu Syuppan Sha, 1960).

Koetter, Fred and Colin Rowe, Collage City (Cambridge, MA: The MIT Press, 1978)

Kofman, Eleonore, Elizabeth Lebas, 'Lost in Transposition—Time, Space and the City' in Writings on Cities, trans. and ed. by Eleonore Kofman and Elizabeth Lebas (Oxford: Blackwell, 1996)

Kolbert, Elizabeth, The Sixth Extinction: An Unnatural History (New York: Henry Holt and Company, 2014)

Koolhaas, Rem and Bruce Mau, 'Bigness or the Problem of Large' in Rem Koolhaas and Bruce Mau, S,M,L,XL. (New York: The Monacelli Press, 1995)

Koolhaas, Rem, 'Elegy for the Vacant Lot', in S,M,L,XL, ed. by Rem Koolhaas and Bruce Mau (New York: The Monacelli Press, 1995) pp. 894-939

Koolhaas, Rem, 'Congestion Without Matter', in S,M,L,XL, ed. by Rem Koolhaas and Bruce Mau, (New York: The Monacelli Press, 1995) pp. 894-939

Koolhaas, Rem, Delirio de Nueva York (Barcelona: Editorial Gustavo Gili, 2007)

Krier, Leon, Architecture and Urban Design (New York: St. Martin's Press, 1992)

Lacaton, Anne and Carina Sacher, 'Feeling Well at Home. About the Need to Finally Rethink Housing' TRANSFER Global Architecture Platform (2020) https://www.transfer-arch.com/transfer-next/feeling-well-at-home/

Laidler, Keith and Athel Cornish-Bowden, 'Elizabeth Fulhame and the discovery of catalysis: 100 years before Buchner', in New Beer in an Old Bottle: Eduard Buchner and the Growth of Biochemical Knowledge, ed. by Athel Cornish-Bowden (Universitat de València, Spain) pp 123-126

La Marina Editorial, 'La colònia Santiveri, la identitat d'un barri', La Marina, 22 August 2017 http://lamarina.cat/noticies/societat/12799/colonia-santiveri/ [accessed 18/12/2021]

Latour, Bruno and Albena Yaneva '"Give me a gun and I will make all buildings move"': an ANT's view of architecture' in Explorations in Architecture: Teaching, Design, Research, ed. by Reto Geiser (Basel: Birkhäuser, 2008), pp. 80-89

Latour, Bruno, An Attempt at a "Compositionist Manifesto" (Mexico City: Gato Negro Ediciones, 2016).

Lawson, Bryan, 'The subject that won't go away. But perhaps we are ahead of the game. Design as research', Architectural Research Quarterly, 6.2 (2002), 109-114

Le Corbusier, Towards a new architecture, trans. By Frederick Etchells (London: John Rodker, 1927 repr. 1931)

Lee, Christopher C. M., 'The Fourth Typology: Dominant Type and the Idea of the City' (Unpublished doctoral thesis, Delft University of Technology, 2012)

Lefebvre, Henri, The Production of Space, trans. by Donald Nicholson (Oxford: Basil Blackwell Ltd, 1991)

Lefebvre, Henri, 'Perspective or Prospective' in Writings on Cities, trans. and ed. by Eleonore Kofman and Elizabeth Lebas (Oxford: Blackwell, 1996)

Leupen, Bernard and Harald Mooij, Housing Design: A Manual (Rotterdam: Nai Publishers, 2012)

Littlewood, Joan, 'Leisure and the Arts', New Scientist (14 May 1964) 433. Cited in Reyner Banham, Megastructure, p. 92

Lynch, Kevin, The Image of the City (Cambridge, MA: The MIT Press, 1960)

MacCreanor, Gerard, 'The Sustainable City is the Adaptable City" in Time Based Architecture ed. by Bernard Leupen, René Heijne and Jasper van Zwol (Rotterdam: 010 Publishers, 2005), 98-109

Mäkelä, Maarit, 'Knowledge through making: The role of the artefact in practice-based research', Knowledge, Technology & Policy, 20.3 (2007), pp.157-163

Maki, Fumihiko and Masato Otaka, 'Collective Form—Three Paradigm' in Investigations in Collective Form, by Fumihiko Maki (St Louis: Washington University School of Architecture, 1964)

Mansilla, Luis M. and Emilio Tuñón, 'Travel Conversations', 2G, 27 (2003)

Maria Carreras, Josep, Monrserrat Otero and Ernest Ruiz, 50 Years of Territorial Transformation. 1956-2006 (Barcelona: Àrea Metropolitana de Barcelona, 2012)

Martí, Carlos, 'El concepto de transformación en arquitectura', in Las variaciones de la identidad (Barcelona: Fundación Arquia, 2014)

McFarlane, Colin, Learning the City: Knowledge and Translocal Assemblage (London: Blackwell, 2011), pp. 1-2

Ministerio de Fomento, 'Fomento adjudica el Estudio Informativo de ampliación de la Ronda Litoral (B-10), en el tramo Zona Franca-El Morrot, Barcelona', Nota de prensa (2010)

Miralles, Enric, 'Place' in El Croquis 30+49-50+72+100-101: Enric Miralles (Madrid: El Croquis editorial, 2005)

Molina, Jordi, 'Trias reinventa el barrio de lujo Blau@Ictinea, junto a la única zona sin metro de Barcelona', eldiario.es, 11 May 2015 https://www.eldiario.es/catalunya/trias-reinventa-blau-ictinea-barcelona_1_5861331.html

Morton, Timothy, 'Ecology without the Present' in 'Deconstruction in the Anthropocene,' Oxford Literary Review, 34: 2 (2012) 229-238.

Morton, Timothy, Being Ecological, (London: Pelican Books, 2018)

Nagore, Israel, 'La vigencia de los soportes. Cincuenta años de teoría y crítica' in Open building 2.0: Re-Pensando la Edificación Abierta ed. by Almudena Ribot, Ignaci Borrego, Javier García-Germán and Diego García- Setién (Madrid: CoLab, 2017)

Norberg-Schulz, Christian, Genius Loci. Towards a Phenomenology of Architecture (New York: Rizzoli, 1979; repr. 1980)

Norman, Eddie, Richard Heath and Owain Pedgley, 'The framing of a practice-based PhD in design', Core77 Research Web Pages (2000) http://www.core77.com/research/ thesisresearch.html

OECD, Frascati Manual 2015: Guidelines for Collecting and Reporting Data on Research and Experimental Development, The Measurement of Scientific, Technological and Innovation Activities (OECD Publishing: Paris, 2015)

Orazi, Manuel, 'The Erratic Universe of Yona Friedman' in Yona Friedman: The Dilution of Architecture, ed. by Nader Seraj (Zurich: Park Books, 2015)

Ortega, Eloisa, 'La Zona Franca de Barcelona: De Puerto Franco a Polígono Industrial', Revista de geografia, 11.1 (1977), pp. 89-106

Osborne, Peter, 'The Politics of Time', Radical Philosophy 68 (1994)

Parcerisa, Josep, Barcelona: 20th Century Urbanism (Barcelona: Marge Books, 2014)

Pedgley, Owain and aul Wormald, 'Integration of Design Projects within a PhD', Design Issues, 23.3 (2007) pp. 70–85

Perez-Gomez, Alberto, Architecture and the Crisis of Modern Science (Cambridge: The MIT Press, 1983)

Pérez Romero, Manuel Agustin, "El probable futuro del pasado emergente. La transición de la primera a la segunda edad del tiempo' (unpublished doctoral thesis: ETSAM, 2013)

Polanyi, Michael, Personal Knowledge: Towards a Post-critical Philosophy (Chicago: University of Chicago Press, 1958)

Pritchard, Lucy, 'Bastide City Territory: Landscape Infrastructure Design, Monpazier, France' (unpublished doctoral thesis, London Metropolitan University, 2019)

Puigjaner, Anna, 'Towards a Diffuse House', e-flux Architecture (2020) https://www.e-flux.com/architecture/housing/333708/towards-a-diffuse-house/

Rittle, Horst W. J., and Melvin M. Webber, 'Dilemas in General Theory of Planning', in Policy Sciences Vol. 4, No.2 (Amsterdam: Elsevier Scientific Publishing, 1973), pp. 155-159

Roca, Estanislau, 'Barcelona, filla de Montjuïc', Barcelona: Metròpolis Mediterrània, 61 (2003), pp. 38-41

Romeu, Antoni, 'El Canal de la Infanta i el seu aprofintament industrial a l'Hospitalet', (unpublished research funded by Museu de L'Hospitalet, 1988), pp. 32-36

Rossi, Aldo, The Architecture of the City (Cambridge: Oppositions books/ The MIT Press, 1982)

Rudofsky, Bernard, Architecture Without Architects. A Short Introduction to Non-Pedigreed Architecture (New York: Museum of Modern Art, 1964).

Rykwert, Jospeh, The Necessity of Artifice (London: Academy Editions, 1982)

Sala Llopart, Blanca, 'Antropologia y Arquitectura. La Apropiación del Espacio del Hábitat', Temes de Disseny, 16 (2000), 84-90

Santiveri, Memorias de un apellido (2021) https://www.santiveri.com/memorias-de-un-apellido/ [accessed 18/12/2021]

Schneider, Tatjana and Jeremy Till, 'Episodes in Flexible Housing' in Flexible Housing (Oxford: Elsiever, 2007)

Sennet, Richard, The Craftsman (Connecticut: Yale University Press, 2008)

Sennet, Richard, Building and Dwelling: Ethics for the City (London: Penguin Random House, 2018)

Simon, Herbert A., The Sciences of the Artificial (Cambridge: The MIT Press, 1969; repr. 1996)

SITE, Highrise of Homes (New York: Rizzoli, 1982)

Smithson, Alison and Peter, 'Mobility: Road Systems', Architectural Design (November 1958), 385-88

Smithson, Alison and Peter, 'Comment following the Doorn Manifesto' in Team 10 Primer, ed. by Alison Smithson (Cambridge: MIT Press, 1968)

Smithson, Alison and Peter, 'The 'As Found' and the 'Found'' in The Independent Group: Postwar Britain and the Aesthetics of Plenty (Cambridge: MIT Press, 1990)

Smithson, Alison and Peter, 'Los Smithson' in Cambiando El Arte de Habitar (Barcelona: Gustavo Gill, 2001)

Solaguren-Beascoa, Félix, 'Epílogo. Qué es investigar en arquitectura' in Investigar en arquitectura (Valencia: General de Ediciones de Arquitectura, 2017), pp. 107-111

Solà-Morales, Manuel, 'Dear Leon, why 22 by 22', Lotus International, 19 (1978), 38-41

Stalder, Laurant, 'Philippe Rahm: Form and Function follow Climate', Archithese, 10: 2 (2010), 88-93

Stalder, Laurant, and Carlotta Darò, 'Eight Points on Infrastructure and Architecture' Infrastructure Space ed. by Andreas and Ilka Ruby (Beriln: Ruby Press, 2017)

Stavrides, Stavros, Common Space: The City as Commons (London: Zed Books, 2016)

Till, Jeremy, 'Three Myths and One Model', Building Material, 17 (2008), pp. 4–10

Tomeu Vidal, Enric Pol, 'La apropiación del espacio: una propuesta teórica para comprender la vinculación entre las personas y los lugares', Anuario de psicología, 36: 3 (2005)

Unsigned, 'The Doorn Manifesto', Holland

Ursprung, Phillip, 'Beyond the Terrain Vague: Following Lara Almarcegui', in Lara Almarcegui, ed. by Octavio Zya (Madrid: Turner, 2013). pp.49-55

Van der Berghe, Jo, 'Theatre of Operations, or: Construction Site as Architectural Design' (Unpublished doctoral thesis, RMIT University, Melbourne, 2012)

van der Rohe, Mies, 'Zu meinem Block', in Bau und Wohnung (Stuttgart: Julius Hoffman, 1927)

van Eyck, Aldo, 'Is Architecture Going to Reconcile Basic Values?' in CIAM '59 in Otterlo, ed. by Oscar Newman, pp. 27-34

van Zwol, Jasper, 'The combination of living and working' in Time Based Architecture, ed. by Bernard Leupen, René Heijne and Jasper van Zwol (Rotterdam: 010 Publishers, 2005), 30-40

Venturi, Robert, Complexity and Contradiction in Architecture (New York: The Museum of Modern Art, 1966; repr. 1992).

Verbeke, Johan, 'This is Research by Design', in Design Research in Architecture (New York: Routledge, 2013), pp.137–160

Verdaguer, Jacint, 'Oda a Barcelona' (1883) https://ca.wikisource.org/wiki/Oda_a_Barcelona

Vesely, Dalibor, Architecture in the age of divided representation: the question of creativity in the shadow of production (London: The MIT Press, 2004), pp.387-389

Vitruvius Pollio, Marcus, 'The origin of the dwelling house' in The Ten Books on Architecture, trans. by Morris Hicky Morgan (Cambridge: Harvard University Press, 1914)

Walker, Brian, and David Salt, Resilience Thinking: Sustaining Ecosystems and People in a Changing World (Washington DC: Island press, 2006)

Conclusion as Opening

School of Art, Architecture and Design
at London Metropolitan University