
東京
GIUSEPPE SEMERARO
ARCHITECTURE
facing CRISIS
Confronting vulnerability in Tokyo

ARCHITECTURE FACING CRISIS.
Confronting vulnerability in Tokyo

Student / Giuseppe Semeraro

Tutor / Michele Bonino
Co-tutor / Michele Cerruti But
Co-tutor / Camilla Forina

Polytechnic University of Turin
Department of Architecture and Design
Master's Degree in Architecture for Sustainability
Academic Year 2024/2025

ABSTRACT

/ eng

The thesis moves from an hypothesis: if architecture radically tackles crisis, it may not only offer an otherwise perspective on the ways of inhabiting, but also reflect on the very tools and objectives of the discipline itself. Revolving around this issue, the research focuses on the case of Tokyo, a case that exemplary shows this phenomenon of mutual influence because of its changing vulnerability.
Whilst Tokyo's crisis and urgencies deeply transformed throughout the last century, architecture engaged differently with the challenges of the city, moving from offering utopian territorial design alternatives to silently responding to limited domestic needs.
First, architecture developed strong imaginative capacities with Metabolism when it faced the post-war demographic and environmental crisis, deeply impacting the cultural debate and local development. Far from responding to the challenges of water and climate change, architecture today instead works at other scales, is little able to dialogue with other disciplines, and the development of the city is mainly defined by technical solutionism.
After investigating both post-war architectural responses to the crisis, based on utopian envisioning, and engineering responses to current issues, based on separation and infrastructure, the thesis confronts a scenario in which Technics fails, and proposes an otherwise to the present by imagining a city that lives with water.
The thesis is divided into three parts. The first one deals with the crisis faced by the city of Tokyo after WW2: population growth, earthquakes and the environment. More specifically, this part offers an in-depth investigation of the Metabolism movement by analysing first-hand manifestos, exploring the abundant literature and critically considering the movement's architectural legacy.
The second one deals with the current crisis that Tokyo faces: climate challenges related to water, sea level rise and subsidence. In detail, this section explores the data framework and describes the main answers and solutions provided by engineering to control nature, and supports the study with dialogues and interviews.
The third part deals with a scenario in which Technics and Engineering fail. Instead of trying to technically limit and control water or utopically move the city elsewhere, the research explores a scenario of coexistence. By focusing on the area of Koto, the project evolves from neighbourhood to detail design confronting the idea of living with water.
Confronting vulnerability radically highlights the need for a collaborative effort in architectural practice, and a strong commitment to a non-mechanical approach to design. This requires deep reflection and collective commitment, so that architecture not only responds to emergencies but anticipates risks, creating spaces that are flexible, sustainable, and inclusive for future generations.
Addressing vulnerability in a radical way highlights the need for a collaborative effort in architectural practice and a strong commitment to a non-mechanical approach to design practice. This requires deep reflection and a collective commitment so that architecture does not just respond to emergencies but anticipates risks, creating flexible, sustainable and inclusive spaces for future generations.

ABSTRACT

/ ita

La tesi parte dall'ipotesi che un'architettura in grado di affrontare le crisi in modo radicale possa non solo offrire una prospettiva diversa sui modi di abitare, ma anche riflettere sugli strumenti e sugli obiettivi stessi della disciplina. Incentrata su questa tematica, la ricerca si focalizza sul caso di Tokyo, che rappresenta un esempio emblematico di questa influenza reciproca, data la sua vulnerabilità in costante evoluzione.
Le crisi e le urgenze di Tokyo hanno subito profonde trasformazioni nel corso dell'ultimo secolo, e l'architettura ha risposto in modi differenti, passando dall'offrire alternative utopiche di progettazione territoriale a risposte silenziose e limitate ai bisogni domestici. Inizialmente, l'architettura ha sviluppato forti capacità immaginative con il Movimento Metabolista, affrontando la crisi demografica e ambientale del dopoguerra, con un profondo impatto sul dibattito culturale e sullo sviluppo locale. Oggi, lontana dall'affrontare le sfide legate all'acqua e al cambiamento climatico, l'architettura opera a scale diverse, dialoga poco con altre discipline e lo sviluppo urbano è prevalentemente definito da un approccio tecnicistico.
Dopo aver analizzato sia le risposte architettoniche del dopoguerra, basate su visioni utopiche, sia quelle ingegneristiche alle problematiche attuali, fondate su separazione e infrastrutture, la tesi si confronta con uno scenario in cui la tecnica fallisce e propone un'alternativa al presente, immaginando una città che vive con l'acqua.
La tesi è articolata in tre parti. La prima affronta la crisi vissuta dalla città di Tokyo dopo la Seconda Guerra Mondiale: crescita demografica, terremoti e problematiche ambientali. Più nello specifico, questa sezione offre un'analisi approfondita del Movimento Metabolista attraverso lo studio diretto dei manifesti, l'esplorazione della vasta letteratura esistente e una valutazione critica dell'eredità architettonica del movimento.
La seconda parte si occupa delle sfide attuali che Tokyo affronta: problematiche climatiche legate all'acqua, innalzamento del livello del mare e subsidenza. Questa sezione analizza il quadro dei dati disponibili, descrive le principali risposte e soluzioni ingegneristiche adottate per controllare la natura e integra lo studio con dialoghi e interviste.
La terza parte si concentra su uno scenario in cui le tecniche e l'ingegneria tradizionali falliscono. Invece di tentare di limitare e controllare l'acqua tecnicamente o di immaginare utopicamente di spostare la città altrove, la ricerca esplora un modello di coesistenza. Focalizzandosi sull'area di Koto, il progetto si sviluppa dalla scala di quartiere fino al dettaglio architettonico, confrontandosi con l'idea di vivere con l'acqua. Affrontare la vulnerabilità in modo radicale evidenzia la necessità di un impegno collaborativo nella pratica architettonica e di una forte adesione a un approccio non meccanicistico al design. Ciò richiede una riflessione profonda e un impegno collettivo, affinché l'architettura non solo risponda alle emergenze, ma anticipi i rischi, creando spazi flessibili, sostenibili e inclusivi per le generazioni future.

INDEX

INTRO

Architecture is a complex practice that evolves in response to the challenges and crises faced by cities over time. Different approaches emerge from optimistic and pessimistic views regarding care and prevention, delineating a varied landscape of ideas and projects. Tokyo represents a radical example to understand this phenomenon of mutual influence, where a state of crisis influences architecture, and the latter responds coherently and innovatively.
Tokyo has been a fertile ground for experimenting with architectural ideas and developments, not only in the past but also in the present. After World War II, many crises related to demographic issues propelled architecture to respond through a radical approach supported by a movement of young architects known as the Metabolists. This movement involved a new generation of architects who embraced not only a practical but also a theoretical and conceptual approach. Dissatisfied with Tokyo's post-war situation, these architects sought to promote radical change through unprecedented innovations. Analyzing their 1960 manifesto, it is possible to evaluate the realized and projected works, aiming to understand to what extent the proposed ideals have materialized. However, many of these architectural responses remained incomplete or left a debatable legacy. Therefore, attention shifts to the contemporary issues of Tokyo, exploring various statistics and considering the evolution of the waterfront, the new relationships with the ocean, and the modifications to existing buildings near the bay. In this perspective, Tokyo continues to be an evolving laboratory, especially due to the

profound impacts of the current climate crisis. Today, architectural responses are diverse and not all solid, but it seems that architecture lacks a defined role and interdisciplinary collaboration.
The thesis treats Tokyo as a "laboratory of ideas" to explore how architectural responses develop in addressing crises and the relationship between architecture and other disciplines, a relationship that today seems nonexistent. This lack of collaboration with various professional figures has led to a disinterest among architects in delving into some of the crises Tokyo faces today, particularly the relationship between water and the city. The latter following World War II has undergone interesting evolutions. In the past, the population used natural water as a survival element, but today there is a sense of detachment. Various activities such as fishing are prohibited, and water itself is seen as a constant danger that needs to be controlled and stopped, almost like an enemy of the city. Along the various canals, current policies seem to undertake plans that fund the construction of protective elements to block the passage of water, reflecting a desire to control nature. Few experts propose alternative solutions that recreate past environments, advocating for a more harmonious relationship with water.
This analysis raises several questions: why is there a need to control a natural phenomenon, spending significant resources, time, and money? Why is everyone directed in this path, and why are compromises not sought? Even though statistics show that the failure rates of these protective systems are very low, what would happen if they failed? How would the city change? The population would find itself coexisting with water, recreating those past environments. Why not create "sponge cities" where architecture coexists with water, proposing different scenarios and alternative solutions from experts?
In this regard, an envisioned scenario seeks to show a vision for the future transformation of the city through an imagined scenario that starts from the global scale and delves into

IMAGE 1:
(page previous)
Cement
Eclipses,
©Isaac Cordal

IMAGE 2:
Lithograph of
the Great
Kanto earthqua-
ke, 1923
© 2013 Great
Kantō Earthqua-
ke.com

the detail of individual blocks, with the goal of promoting a new approach to architectural practice, seen as a collaborative effort that can provide hope even in challenging situations. This non-mechanical approach to design practice is based on the need to adapt past principles to contemporary challenges, proposing alternative life cycles and promoting awareness of the city's flexibility.
The objective is to create a future for a city constantly threatened by the demolition of some of its structures, using architecture as a tool to respond to the evolving needs and crises of urban society. A city capable of changing and transforming, able to adapt to new challenges without losing its connection to its history and natural environment, maintaining a dynamic balance between development and conservation. This requires deep reflection and collective commitment, so that architecture not only responds to emergencies but anticipates and mitigates risks, creating spaces that are flexible, sustainable, and inclusive for future generations.

SECTION I

Architecture and crisis

Postwar challenges

After World War II, Tokyo experienced rapid, unstructured growth, resulting in a fragmented urban fabric with inadequate infrastructure and anonymous residential spaces. This situation pushed architects and urban planners to seek innovative solutions to manage the city's expansion.
In the 1960s, a group of young architects, led by Kenzo Tange, founded the Metabolist movement. Through a manifesto that compiled theoretical writings, they proposed a flexible and modular architecture designed on an urban scale rather than merely for individual buildings. Their vision aimed to create cities capable of evolving over time, integrating infrastructure, housing, and services into a dynamic and interconnected system.
One of the main challenges was Tokyo's transformation into a "dormitory city," with millions commuting daily to the center. To address this crisis, models such as Kikutake's Ocean City, which envisioned modular expansions on the bay, and Tower Shape Community and Marine City, which explored verticality and artificial islands, were proposed. The urbanization of Tokyo Bay became a key strategy to accommodate the city's growth, but it was carried out in a fragmented way, lacking true cohesion with the existing urban fabric.
Although not formally part of the movement, Kenzo Tange played a crucial role in urban planning with his Plan for Tokyo 1960, which envisioned a linear city expanding over the bay, replacing the traditional radial model. However, despite their visionary potential, many Metabolist ideas faced economic and political obstacles, remaining largely unrealized or adapted to a more conventional scale.
Ultimately, the Metabolist movement did not radically transform Tokyo, but it profoundly influenced urban thought. By shifting the focus from individual buildings to city-wide planning, it anticipated concepts such as flexibility and modularity—ideas that continue to shape contemporary urbanism.

Tokyo in crisis: demographical and house issues

1.

A decade has passed since the end of the Second World War, cities are characterized by a state of confusion, disorder, urgency and society is attracted by new stimuli. It is necessary to remember that all proposals are dominated by insufficient space; In fact, the density of the Japanese population within this limited space causes a widespread sense of constraint, and a limitation of fundamental parameters. In this context, even the open countryside gives the impression of being modeled.[1] All this weighs on the conscience of modern architects, immersed in facing the weight of the current disorder, which is why they find themselves involved in the dramatic research. This is a deliberate move to push Japan into the arena of the architectural world. In this context, new figures emerge who try to give order to the city itself, which is growing disproportionately, without following a well-defined plan and with the sole purpose of providing the citizen with a home. These new figures are opposed to the closed forms and narrow proportions of the conventional modern building.
The starting point of the movement is the impatience with the way in which the world has limited itself to touching on the problems of the modern city. It also addresses the issue of obsolescence by proposing free structures that can be adapted to any technological progress, the group is driven by a suffering linked to the reality of municipal politics and private property.
This group is made up of five figures, such as young architects who have the opportunity to give space to their design ideas in 1960, the year in which they publish a manifesto. They present themselves as the doctors of the city of the present, through utopian drawings and essays in which various problems related to the city and consequently to those responsible for the development of the space itself are made explicit.
They seized the CO WO DE that took place in Tokyo in the 60s to launch this manifesto, and were accompanied by their teacher Kenzo Tange who proposed new words, never used before. Within the discourse, organicity becomes the key concept that lies behind the new design proposals, and which represents the guidelines of this new utopian vision. Moreover, this new cut is always justified by Tange himself in one of his subsequent speeches, in which he tries to explain that the administration knows only reconstruction, that reorganization after the catastrophe; It does not see the need to prevent new disasters by means of new programmes. [2]
The criticism raised by one of the members of the group, regarding the reconstruction of Tokyo, focused on the transformation of the city into a changing "dormitory city". [3]
In the post-war context, in which the priority had been to build as many houses as possible to respond to the increase in population and reduce the slums that had arisen in the post-war period, Tokyo had been faced with the complex challenge of redeveloping large urban areas. However, this process had taken place without organic and coherent planning. Although reconstruction was often seen as a consequence of the "clean slate" caused by the bombings, it had revealed a design gap. The absence of a structured urban plan had in fact led to a disorganized growth, characterized by impersonal residential spaces, interrupted by large empty areas and poor paving. This condition of fragmented urbanization, however, had represented, for the members of the group, an opportunity for critical reflection. In a context of accelerated reconstruction, it had been possible to develop innovative proposals and visions that would have been difficult to find space in more ordinary times. It was precisely the need to intervene quickly that had given rise to projects that challenged the conventions of the time.

1.
Robin, Op. cit.

2.
Frampton, Op.

3.
In his essay -Space City- Kurokawa identifies the main problem in the reconstruction of the city, which occurs mainly through the development of residential areas. He calls this urban configuration a "bed town," characterized by the lack of functional and diverse spaces necessary to support the new dynamics of post-war society and the advent of progress. This urban model, according to Kurokawa, is unable to respond to the needs of a modern community, as it reduces the city to a place exclusively dedicated to rest, devoid of significant connections with work, culture and sociality.

At the same time, not only foreign visitors, but also many Japanese who had returned from abroad, had observed how the local houses, often raised and characterized by tatami-covered floors, evoked the image of "large beds", offering a representation of the Japanese home as a sort of private "bedroom". In this context, Tokyo and other large Japanese cities had appeared as a set of bedrooms scattered throughout an urban fabric composed of "living rooms" (parks), "studios" (office buildings), "entrances" (ports and airports) and other public spaces.[4] Although this view may have seemed exaggerated or reductive, it provided an interesting perspective on the relationship between Japanese society and urban space. The cities, in fact, were surrounded by residential suburbs inhabited by ordinary people who lived at considerable distances from urban centers, often reachable only after one or two hours of travel by train, subway or bus.
Commuting workers spent their free time mainly sleeping at home, cementing the suburbs' image as a "dormitory town". In these circumstances, the head of the family, usually the husband, would get up at dawn and return home late in the evening, with free time limited almost exclusively to Sundays. In this context, the houses, although functional, were perceived as "bed boxes", with interior spaces that rarely favored sociality or cultural expression. Despite being equipped with modern amenities, such as advanced electronic devices and elegant interiors, Japanese homes lacked the cultural dimension often associated with Western homes, enriched with works of art, bookshelves or decorative elements. This sober and functional approach reflected a predominantly practicality-oriented management of spaces. However, the traditional housing model, while intimate and welcoming, was vulnerable to fire and theft, making homes unsuitable for long absences. Meanwhile, Japanese women, traditionally relegated to the role of housewives, had begun to perceive the limits of this system. Many had begun to demand greater autonomy, looking for job opportunities and claiming rights equal to those of men,

4.
Ashihara,Op. cit.

both in the world of work and in the management of domestic space. This evolution of the role of women was intertwined with the challenges of urban transformation: the need to improve public transport and reduce the inconvenience of commuting had become a priority to improve the quality of life in the suburbs. At the same time, the need to build safer and more functional homes, capable of guaranteeing greater efficiency in the management of spaces, had made its way. However, the problem of the "dormitory city" remained unresolved. Some experts had proposed concentrating urban development in city centers, creating skyscraper apartment buildings to reduce the distances between homes and workplaces. This solution, however, appeared more as a temporary remedy than as a definitive answer, since the traditional housing model, characterized by houses with gardens and a deep connection with nature, remained a central element in Japanese culture. This contrast between modern urban planning needs and deep cultural roots represented one of the most complex challenges for urban planning. Urban decentralization, with the creation of small cities capable of distributing population equally, seemed to offer a more sustainable long-term solution. The enhancement of local cultures and the spread of industries in peripheral areas could have helped to reduce metropolitan overcrowding, improving the quality of life in less densely populated areas. Similar but different, however, they present themselves as a compact group, which gives rise to a real movement: METABOLISM. Although they have different ideas, they are all united by the desire to promote proposals contained in a series of urban utopias that could be considered current. City utopias as a reaction and denunciation. [5]

The Bay yesterday

The issue of Tokyo Bay reclaimed land has fostered a lively and widespread debate in Japan about new principles for urban planning, particularly with regard to Tokyo's future urban expansion. The original idea of developing Tokyo on the water of the bay dates back to the Tokugawa era, when

5.
Frampton, Op. cit.

IMAGE 3
Azuma Bridge in Asakusa.
Photo after the bombing bombings of the 10th March 1945.
©Tokyo Metropolitan Library

IMAGE 4:
Azuma Bridge in Asakusa.
From 19 March 2015
© Eugene Hoshiko

some coastal reclamation work was initiated to create more land for the residences of both the working class and aristocrats. During the Meiji era (1868-1911), a progressive phase of concentration of functions in Tokyo began. As early as 1880, Tokyo Governor Matsuda Michiyuki proposed, as a policy of urban renewal of the capital, the development of a new Tokyo center in the harbor and produced a preliminary plan for the construction of a large international port that would emphasize Tokyo's role as a commercial center as well. However, the proposal was not implemented as some of the leading members of the government opposed it.[6] The industrial development of the early 19th century accelerated the exploitation of natural coastlines, a phenomenon that became more evident during the 1950s, when the high speed of economic growth caused a greater demand for land to set up large-scale factories and facilities such as central markets, gas plants, sewage plants, and power plants. Several specific economic factors, in particular the cost of natural land in the urban fabric of the city, the weakness of expropriation laws, and the strategic importance of sites near the sea, suggested that coastal areas near ports were the most suitable place to locate new industrial factories, as they were easily connected to trade routes for the import of raw materials such as oil and coal by sea. Needed as fuel for factories, and for the export of finished products. As a result, the reclamation of new land along the coasts became a central issue in the government's economic policy.

IMAGE 5
(page following)
Scenes of destruction at or near Yokoama

6.
" Various Artists, A Hundred Years of Tokyo City Planning, edited by TMG, Tokyo Metropo-litan Govern-ment, Municipal Library, N.28, 1997, pp.6-7; See also: Various Arti-sts, Planning of Tokyo 1994, edited by Bureau of City Planning, Tokyo.

Responses: The attempt of Architecture

2.

The ideas and themes discussed at the conference preparatory meetings resulted in the creation of a book consisting of four essays: Ocean City; Material and Man; Toward Group Form; Space City.
This book became the manifesto of the group, known as "Metabolism 1960 – The Proposals for a New Urbanism." Here, drawings and projects of imaginative megastructures, plug-in and capsule architectures, and collective forms expressed the new urban schemes and architectural languages adopted by the Metabolism group. This collection of texts proposed various scenarios for the city of the future, accompanied by drawings and conceptual diagrams. Among the projects of the manifesto, we can identify some of the fundamental points that the group had in common: fixed supports and interchangeable units, interconnections between the parts and the whole (three-dimensional communication), metamorphosis and adaptability over time. These points highlight the dynamic and flexible approach, peculiar to the Metabolists in the design of the city and architecture, made possible thanks to the adoption of open systems both in time and space, and to the experiments on the concepts of variability and autonomy of the parts proposed in the manifesto. It is also possible to perceive a certain affinity – not to be understood as a direct influence – with the themes that emerged fifty years earlier with the manifesto of Futurist architecture, especially for the suggestions of strong dynamism and three-dimensionality of the movement, inspired by Antonio Sant'Elia's "New City".[7]
Suggestions, not solutions- As it will seen in the following pages, where the main contents of the manifesto will be presented, starting from the proposals of "Metabolism 1960 - The Proposals for a New Urbanism," each member of the

7. Giacomeli M., Godoli E., Pelosi A., The Manifesto of Futurist Architecture of Sant'Elia and its Legacy, Universitas Studiorum, Mantua, 2014, p.118

group worked independently and following his own methodologies. This is the main reason why the architectural production of the movement is very differentiated.[8] This is not to be considered strange, since the Metabolists had repeatedly reiterated their intention not to provide finished models to be imitated, but rather to suggest methods and visions.

8. Architecture and Urban Planning, Op. cit., p. 30

"When we, therefore, present a "total image", were are not to specify in detail how the city of the future must be. Even if we actually do propose some such total image, we do not mean to advocate that our ideas must be realized exactly as they are, without any revisions. Nor should we ever do so. Our proposals are nothing more than mere segments of an image, or else mere suggestions about the directions and the methods to be taken. There can be no "final point" at which the city will one day arrive in its develpment. If there is, the city will find itself reduced immediately to ruins."[8]

architectural production of the movement is very differentiated.[9] This is not to be considered strange, since the Metabolists had repeatedly reiterated their intention not to provide finished models to be imitated, but rather to suggest methods and visions.

9. Botond B., Op. cit., p. 125

1960

Kikutake - OCEAN CITY

In the panorama of the contemporary debate on the evolution of the urban environment, the project "THE UNABARA" stands out as an innovative proposal that integrates two distinct architectural approaches, creating a visionary synthesis between tradition and avant-garde. At the heart of this idea is the conception of a city that is no longer static, but capable of continuously adapting to the changing needs of the community. This goes beyond the traditional paradigm of the rigid and predetermined relationship between individuals and urban spaces, proposing instead a dynamic system capable of responding to social, economic and environmental changes.
The project "THE UNABARA" aims to encourage constant interaction between people and living spaces, creating an urban environment that evolves together with its inhabitants. Kiyonori Kikutake, identifies the sea as a fundamental resource and an unexplored terrain for urban expansion. Through a series of theoretical concepts, including the famous "Ocean City", Kikutake lays the foundations for an architecture that integrates the models of "Tower Shape Community" and "Marine City". These two paradigms represent the practical solutions that the project explores and analyzes in detail, offering a concrete response to the challenges of contemporary urbanization.
"THE UNABARA" presents itself as a floating and mobile city, capable of adapting to the needs of space and resources of modern society. In this context, the project envisages a 24-kilometre-long floating industrial city, designed to accommodate around half a million inhabitants. This structure is organized in two concentric rings: the first dedicated to housing and the second to industrial activities. When the population exceeds one million inhabitants, the project contemplates expansion with an archipelago of artificial islands, thus ensuring sustainable and planned growth. This solution not only addresses the challenges of urbanization and population density, but also ensures a high quality of life thanks to its ability to evolve over time. At the same time, Tokyo represents an emblematic case of the difficulties related to urban uncontrolled growth. Congestion, scarcity of space and lack of proper planning highlight the urgency of innovative solutions. In this context, the "Tower Shape City" model is proposed as a concrete response. This vertical structure integrates different urban functions, promoting efficient mobility and harmony between inhabitants and spaces. The "Tower Shape Community", in particular, is a solution that houses 1,250 residential units for a total of 5,000 inhabitants, integrating homes, industries and public spaces into a single vertical structure. Each housing unit, which the architect calls move-net, [10] is prefabricated and designed to be mobile, thus ensuring extraordinary flexibility and ability to adapt to the needs of the residents. On the other hand, the "Marine City"

10. "Metabolism: The proposals for a New Urbanism", Op. cit.

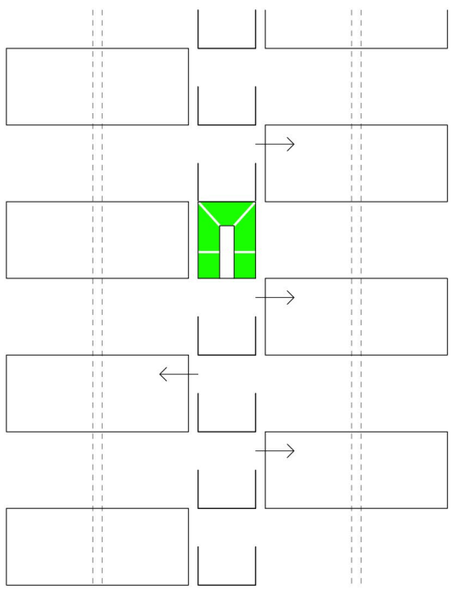


IMAGE 6: Kiyonori Kikutake, Tower Shaped Community. Type section and function diagram

introduces the concept of a floating artificial island, organized into functional areas dedicated to industries, residences, agriculture and entertainment. With six central towers and industries arranged along the perimeter, this

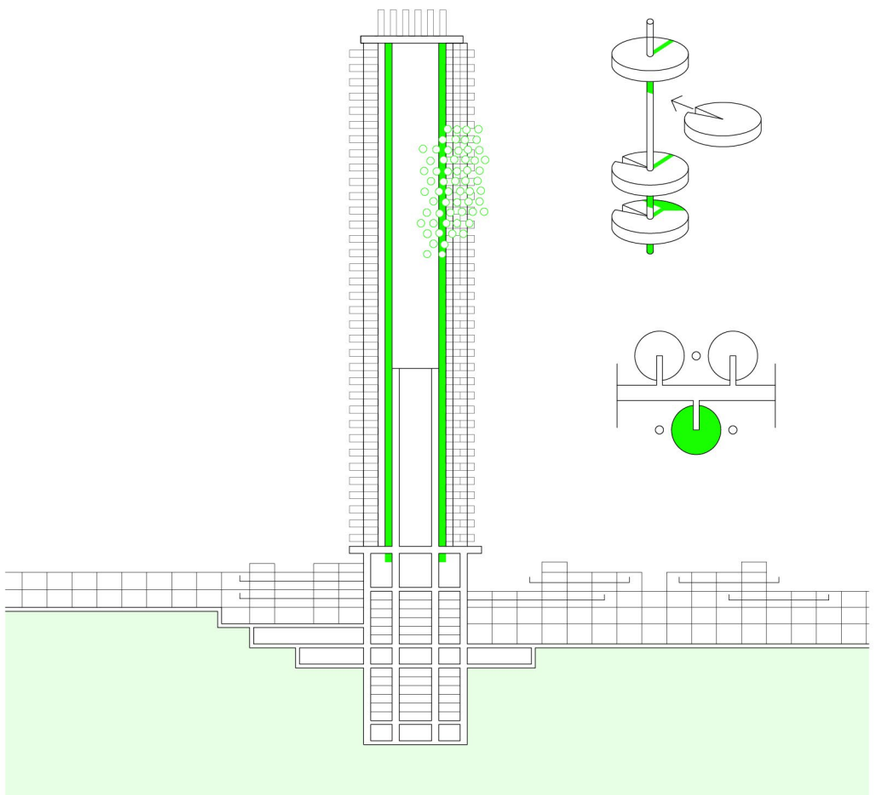


IMAGE 7
Kiyonori Kikutake, Tower Shaped Community. Type section and function diagrams

configuration represents an urban model that adapts to the challenges of contemporary society, while maintaining a strong focus on sustainability and technological innovation. The "Marine City" is not only an example of advanced design, but also a symbol of how architecture can respond creatively and proactively to global problems related to the environment and urbanization.

"Tokyo is expanding, but there is no more land, so we will have to expand on the sea [...]. In this project, the architect thinks about the future of the city. He divided it into two elements, one permanent and one temporary. The structural element is thought of in the shape of a tree, a permanent element, and the housing units as leaves, temporary elements that fall and are renewed according to the needs of the moment. Buildings may grow within this structure, and die and grow again, but the structure will remain."[11]

- Kenzo Tange

11.
in The Temptations of Architecture. Megastructures, Reyner Banham, Laterza, Bari, 1980, p. 25

In summary, "THE UNABARA" proposes a revolutionary vision of the city of the future. Urban spaces are no longer conceived as static entities, but as dynamic and flexible organisms, able to evolve in harmony with the needs of their inhabitants and the surrounding environment. By integrating floating models and interconnected communities, this proposal aims to address the challenges of the twenty-first century, promoting sustainable, resilient cities capable of ensuring a balance between urban development and environmental protection.

Kawazoe - MATERIAL AND MAN

Politicians and economists focus primarily on progress and control, often neglecting the fundamental issues related to the development of a more inclusive and organic society. One hypothesis addressed is that, if the whole of humanity adopted the belief that war is not an intrinsic phenomenon, it could pave the way for an era characterized by the exclusive pursuit of happiness. In such a scenario, the very existence of nuclear weapons could be lost.

The birth of order is considered from the nature of chaos. Often, we have tried to conceive cities characterized by order and rationality, without necessarily taking into account the needs of human beings, who contribute to the chaos within these contexts. This chaos emerges from the coexistence of various energies, which often interact in neutral and orderly architectural environments but unable to contain them effectively. In urban design, it would be appropriate to draw inspiration from the organic nature of nature.

The cities of the future must be able to promote dynamic spaces in which infrastructure systems coexist harmoniously with the natural environment. In addition, they must have the ability to adapt and metabolize themselves, which is only possible if they can accommodate diversity without compromising their fundamental structure. A possible solution could be to impose constraints, but in the vision of the future city, society must allow each individual to fully express his or her individuality, as this is a crucial prerequisite for achieving happiness. When each individual can express themselves and embrace their uniqueness, a reality will be created in which humanity and nature will merge into a single cohesive entity. This condition could transform the entire planet into a vast living organism, overcoming current fragmentation and inequality.

The optimists identified in the essay are architects and designers, [12] them play a crucial role in guiding this transformation. Their task is to analyze and promote the urban form that allows both individual freedom and the maintenance of order. There is no immutable ideal form, as the city of the future must be characterized by flexibility. Such flexibility will allow the city to deal with situations of destruction as an integral part of its continuous metabolism.

12.
"Metabolism: The proposals for a New Urbanism", Op. cit.

13.
Ibid.

"The universe is constantly engaged in creation. Nebulae are born one after another from a tiny atom to the greatest nebula, every piece of matter is a dynamic body ever changing and developing. We are all included in the process. Life, the highest among the things made from matter, is the one which is most concerned with metabolism. Our constructive age or tomorrow, or say today, will be the age of high metabolism. Order is generated from chaos, and chaos from order. Extinction is creation at the same time. We can see the duality of the process not only now but in the history of the past. In the coming age, however, this process must be practiced systematically and rapidly, especially in cities where civilization and culture are centralized. This is where tomorrow's city planning starts." [13]

- Kawazoe Noboru

Fumihiko Maki and Masato Otaka - TOWARD THE GROUP FORM

In the artistic field, compared to architecture, there is greater freedom in the use of shapes and colors, which allows for a more direct and individual expression. Architecture, on the other hand, has traditionally had a more collective approach, treating society in general or ideal terms and neglecting individuality. However, today there is an increasing need to adapt cities to rapid social transformations, which require a more flexible architecture capable of responding to change. In this context, the "GROUP FORM" emerges as a possible solution.
This approach focuses on the dynamic and ever-changing representation of the collective entity, with individual components that, while maintaining their specificity, are part of a constantly changing system.

14.
"Metabolism: The proposals for a New Urbanism", Op. cit.

IMAGE 8
(page following)
"Collective Form - Three Paradigms"

"In this "group architecture" [...], the relationship between the elements and the totality may be represented TOTALITY = Σ ELEMENTS, and the balance thus obtained is destroyed as the moment a single element is taken out of the group. In the group form, on the other hand, the relationship is represented as TOTALITY > Σ ELEMENTS, where >: inclusion."[14]

-Fumihino Maki

COMPOSITIONAL FORM MEGA FORM GROUP FORM

15.
Zhongjie Lin, Urban Structure for the expanding metropolis: Kenzo Tange's 1960 plan For Tokyo, in "Journal of Architectural and Planning Research", Locke Science Publishing Company, Inc., Chicago, 2007, p.

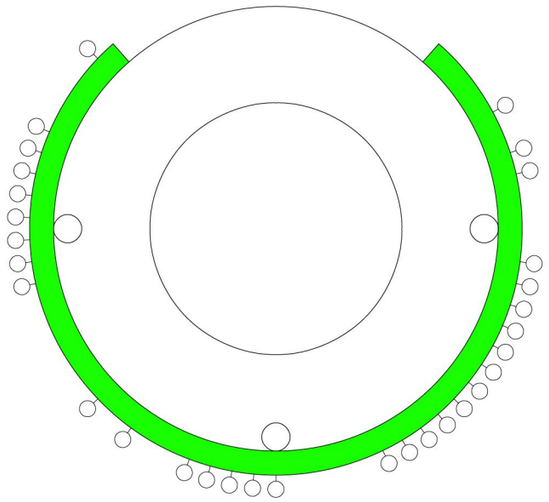
Contemporary cities are characterized by a multiplicity of heterogeneous structures and find themselves having to respond to an ever-changing society. [15] However, many times these cities risk falling into disorder or, on the contrary, into uniformity. The "GROUP FORM" aims to address these challenges, promoting flexibility and elasticity as fundamental solutions to meet the needs of an evolving city. The article by Fumihiko Maki and Masato Otaka explores, through a design proposal for Shinjuku station, the theme of the urban fabric and forms of the city and how they develop. The focus is not on the design of visionary megastructures, towards which the two authors have maintained a critical position, but rather on the need to search for new forms of planning that are more flexible and adaptable to urban and social changes.

Kurokawa - SPACE CITY

In accordance with Le Corbusier's thinking, urban life can be divided into four essential components: workspaces, leisure areas, transport infrastructures and places of residence. However, the transformation of contemporary cities has redefined these elements, leading to a radical change in their functions and interactions. For example, the concept of "living" is no longer limited to a traditional model, in which the family unit lives in a permanent house. New social and work dynamics, characterised by reduced working hours and a more flexible distribution of leisure time throughout the day, require more complex and diversified approaches. In this context, conventional solutions appear insufficient to address emerging urban challenges. The introduction of new technologies, such as atomic energy, could radically transform the architecture of cities, allowing the creation of compact and integrated structures, where the distinction between residential and working spaces dissolves. In particular, the evolution of the concept of the "wall" as a multifunctional element, capable of hosting vital infrastructures such as elevators and conveyor belts, opens up new perspectives for a vertical city. This dynamic reinterpretation of the wall, which becomes a symbol of a new way of urban life, takes shape with projects such as the Wall City, the first proposal presented in his article, Kisho Kurokawa. This proposal integrates residences, offices and services within a continuous megastructure, designed to overcome the rigid separation between urban functions and promote greater interaction between the different spaces. The Wall City stands out for its double wall, which acts as a membrane between living and working spaces, creating functional and symbolic continuity. At the same time, Kurokawa expands his reflection to different contexts, as demonstrated by the Agricultural City project, which enhances rural communities, often neglected in urban planning. This project, designed to rebuild the Aichi agricultural center after the 1959 typhoon, uses a modular grid of 500x500 meters, with lots suspended four meters

IMAGE

IMAGE 9:
Kisho Kurokawa, Bamboo Type Community. Function diagram



above the ground to prevent flooding.[16] The houses, called Mushroom-shaped house in the manifesto, consist of a housing unit that rests on a central block in reinforced concrete, which therefore allows a further detachment from the ground, a possible sense of protection and to create an open space below the residential unit.[17] This urban model proposes a self-sufficient community, in which residential units are integrated with spaces for worship, education and administration. In parallel, the New Tokyo Project tackles the reorganization of the city of Tokyo, adopting a cross-shaped structure that connects the urban center with peripheral areas through air and underground transport infrastructure. Inside, two types of urban communities – the Plant Type Community and the Bamboo Type Community – combine residential, service and leisure spaces, with buildings inspired by nature. In the Bamboo Type Community, the vertical structures imitate the shape of bamboo, a symbol of growth and regeneration, while in the Plant Type Community the buildings are configured as trees, with roots that host productive activities and foliage that houses living spaces. Another central concept addressed in Kurokawa's manifesto

16.
Kurokawa Kisho, Metabolism in Architecture, London, Studio Vista, 1977, p. 46

17.
"Metabolism: The proposals for a New Urbanism", Op. cit.

is the Urban Connector, a superstructure that mediates between the urban and human scales, between the collective and the individual. This structure not only facilitates integration between different urban functions, but also promotes a new vision of community, in which individual forces combine to create collective power. The concept of Urban Connector is inspired by ideas already explored by Soviet disurbanists, such as in Moisei Ginzburg's residential projects and Ivan Leonidov's social clubs, which redefined domesticity to encourage sharing and cooperation. In other words, the idea of infrastructure as a space for sharing is specified by Kurokawa in his idea of an urban connector.

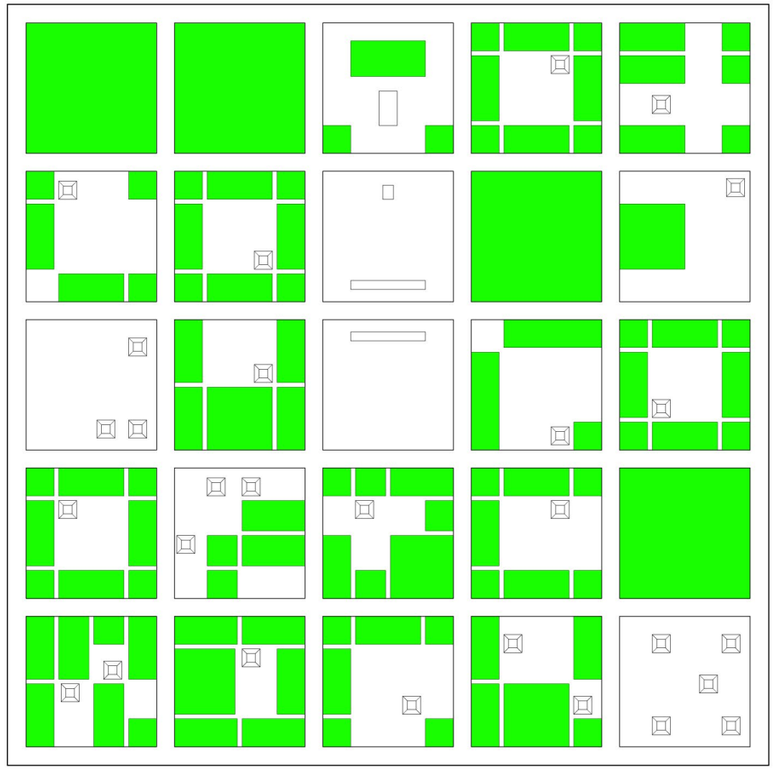
18.
Z. Lin, Kenzo Tange and the Metabolist Movement, Routledge, New York 2010, p.81

«a superscale structure which served as the medium between urban scale and buman scale, and between the collective and the individual. It would Bather individual forces into collective power integrating the environmentas a whole» [18]

IMAGE 18
Azuma Bridge in Asakusa.
Above: photo after the bombings of the 10th March 1945.
Below: photo from 19 March 2015
Author: Eugene Hoshiko

These examples explore the possibility of redefining bourgeois domesticity and inventing new forms of collective space, in which personal spaces are minimized to foster sharing and cooperation.

IMAGE 10:
Kisho Kurokawa, Agricultural City.
Function diagram



Applied theories

... modern and contemporary Japanese architecture is distinguished by one particular aspect: the fact that it is at one and the same time utopian and concrete. [19]

- Marco Pompili

Starting from Marco Pompili's reflection, one can analyze one of the most evident contradictions of the Metabolist movement: while proclaiming in their writings an ephemeral architecture, many of their buildings were made of reinforced concrete, a material that contrasts with the lightness evoked, for example, by wood. This discrepancy raises questions about the consistency between the theoretical principles expressed and the practical choices adopted. Reinforced concrete, although a symbol of progress and modernity, appears distant from the idea of ephemerality and transformation that the metabolists hoped for. It is true that the movement tried to balance tradition and innovation, reinterpreting the past in a modern key, but the use of a material already widely adopted in other architectural currents can be perceived as a non-innovative choice. This may have limited the group's ability to stand out in terms of material originality, despite reinforced concrete representing an advanced technological language for the time. Despite the apparent inconsistencies, the Metabolists managed to leave a significant imprint. Their ability to stimulate debate and influence the direction of modern architecture can be considered one of the reasons for their success. In this sense, their work fits more as a catalyst for a change of perspective, rather than as a model to be slavishly replicated. This explains that design was not primarily their purpose, but rather they were fascinated by the idea of transforming vision and influencing design

IMAGE 11
(page following)
From left to right: Kikutake, Asada, Kawazoe, Kurokawa
©sabukaru.online.com

direction. In other words, they were focused on defining an identity and changing perspectives rather than designing in the traditional sense. However, there seems to be a correlation between what they claimed and what they actually accomplished.
To start, the two architects Maki and Otaka present a single essay, which may be due to the similarity of their design approaches in various aspects. Looking at the Sakaide Village and Hillside Terrace cases, a new concept emerges in both, designed as if they were a device; that is, a heterogeneous whole composed of living, mineral and mental materials (speeches, institutions, architectures, laws, propositions). The device is the network that holds these different elements together, governing the nature of the bonds that can unite them. [20]
By examining the two projects in more detail, it is possible to understand how they concretize the theory of their designers. The underlying architectural philosophy places a strong emphasis on the need to overcome the traditional approach based on building directly on the ground and to promote a concept of architecture that deviates from the conventional conception of megastructures, such as that adopted by their colleagues. In response to this rejection, as mentioned in the previous chapter, they promote the idea of "form groups." An approach visible in their projects, where each element within an architectural composition is designed to be autonomous, with its own purpose and specific function. However, this relative isolation does not prevent a meaningful connection between the elements themselves. Instead of basing their designs on a centralized structure or a traditional megastructure, they create a network of connections between the autonomous elements within the project. This approach gives rise to a dynamic architectural structure in which each part is able to express its individuality but is also closely related to the other parts of the whole. To further contextualize this perspective, it would be appropriate to mention Banham's interpretation. He would consider Maki and Otaka's work to be part of the

20.
Navarra, Op. cit.

21.
Soleri, Op. cit.

IMAGE 12:
Sky House interior, 2014
© Iwan Baan

macrogroup of megastructures, however, their vision differs significantly from that proposed by Paolo Soleri and his contemporaries.[21] The megastructures proposed by Paolo Soleri often emphasize monumentality and central unity, trying to create an architecture that can accommodate the whole of society in a single integrated system. In contrast, Japanese architects Kenzo Tange, Kiyonori Kikutake, and especially Maki and Otaka, stand out for an approach that favors diversity and connectivity, promoting the idea of a city that is not based on a single dominant structure, but on a complex system of interconnected elements. This approach opens up new perspectives on architecture, shifting the focus from the concept of a monolithic unit to that of a fluid and adaptable network, where buildings are not isolated entities, but part of an ever-evolving system. These proposals offer a response to the urban challenges of post-war Japan, combining the need for urban growth with the desire for greater flexibility and adaptability to the unexpected.

This search for flexibility, which becomes a central concept in Metabolist architecture, is directly linked to the theoretical reflection of Kenzo Tange and the various members of the movement, including the influence of Takamatsu and Kawazoe. The latter, in fact, stressed that the future of cities had to respond to the "society of uncertainty", a society characterized by the speed of social, economic and technological changes. Kawazoe suggested that architecture should adapt to this uncertainty, proposing solutions that could respond to the changing times. The Metabolists' projects, therefore, were not only an attempt to respond to urban needs, but also a search for a new form of architecture that was flexible and capable of evolving over time, just like society itself.
The encounter with the "society of uncertainty" requires a reflection on social change and its implications for urban design. When we talk about a society of uncertainty, we refer to a world in which social and political structures are constantly changing, and predicting the future becomes increasingly complex. In Japan, the end of the Second World War had already triggered a period of uncertainty, both material and psychological, due to the devastation caused by the bombings. Architects, engaged in reconstruction, had to face not only the challenge of physically renovating cities, but also that of responding to a profound change in social dynamics. The Japanese philosopher and historian Tsurumi Shunsuke, observing life in the cities destroyed by the war during the period of Allied occupation, compared the condition of the inhabitants to that of prehistoric men, forced to live in temporary shelters and shantytowns that were slowly built in the years following the conflict. The condition of uncertainty was not only physical, but also psychological, linked to the memory of the destruction and the difficulty of dealing with the scars left by the conflict. The architectural response to this scenario, therefore, was not limited to reconstruction, but also aimed to heal the wounds left by the war, trying to create a new identity for the city and for Japanese society. [22] These issues took on particular

22.
T. Shunsuke, Cultural History of Postwar Japan, 1945-1980, Routledge, London 1987. At the end of World War II, Japan was occupied by the victorious powers. The Treaty of San Francisco, signed on September 8, 19th and officially entered into force on April 28th, 1952, marked the end of the period of occupation.

relevance in the sixties, following the consequences of the war in Vietnam. The images of the conflict, in fact, were intertwined in the perception of Japanese society with those of the destruction suffered by Japan during the Second World War, clearly highlighting the country's subordinate position in the geopolitical scenario of the Cold War.[23]
In this context, post-war Japanese architecture is part of a process of overcoming the psychological and social wounds left by the war. The reconstruction of cities was not only a physical act, but also an attempt to redefine Japan's national and collective identity. Modernization, through the recovery of the principles of the Modern Movement, was intertwined with a desire to detach from the historical and authoritarian structures that had characterized the period before the conflict. Functionalist urban models, which were inspired by processes of standardization and prefabrication, were considered ideal for addressing the severe housing shortage and for promoting a rational reconstruction of cities. This approach, which emphasized functionality and efficiency, was based on the idea that architecture should respond to the needs of society in a pragmatic way, reflecting democratic and egalitarian values, but also overcoming the rigidity and historicist tradition that had characterized the pre-war period. In the case of Hiroshima, the city symbol of atomic destruction, the situation was even more complex. Hiroshima was not only a physical place destroyed by the bomb, but also represented a "mental place", a symbol of devastation and rebirth. The reconstruction of the city of Hiroshima became, therefore, a field of experimentation for modern architecture, an opportunity to put into practice the theories and ideas of the Metabolist Movement.
Megastructures, such as those designed by Metabolists, represent a radical response to urban growth and the challenges imposed by modern society. The "living machines" and mega-residential forms proposed by this movement were not only urban solutions, but also an attempt to address the psychological scars left by the war. Metabolist architecture sought to cure the "poisons" produced by the traumatic experiences of the past, creating

23.
The use of the Okinawa military base by the Americans resulted in Japan's direct involvement in military operations in Vietnam.

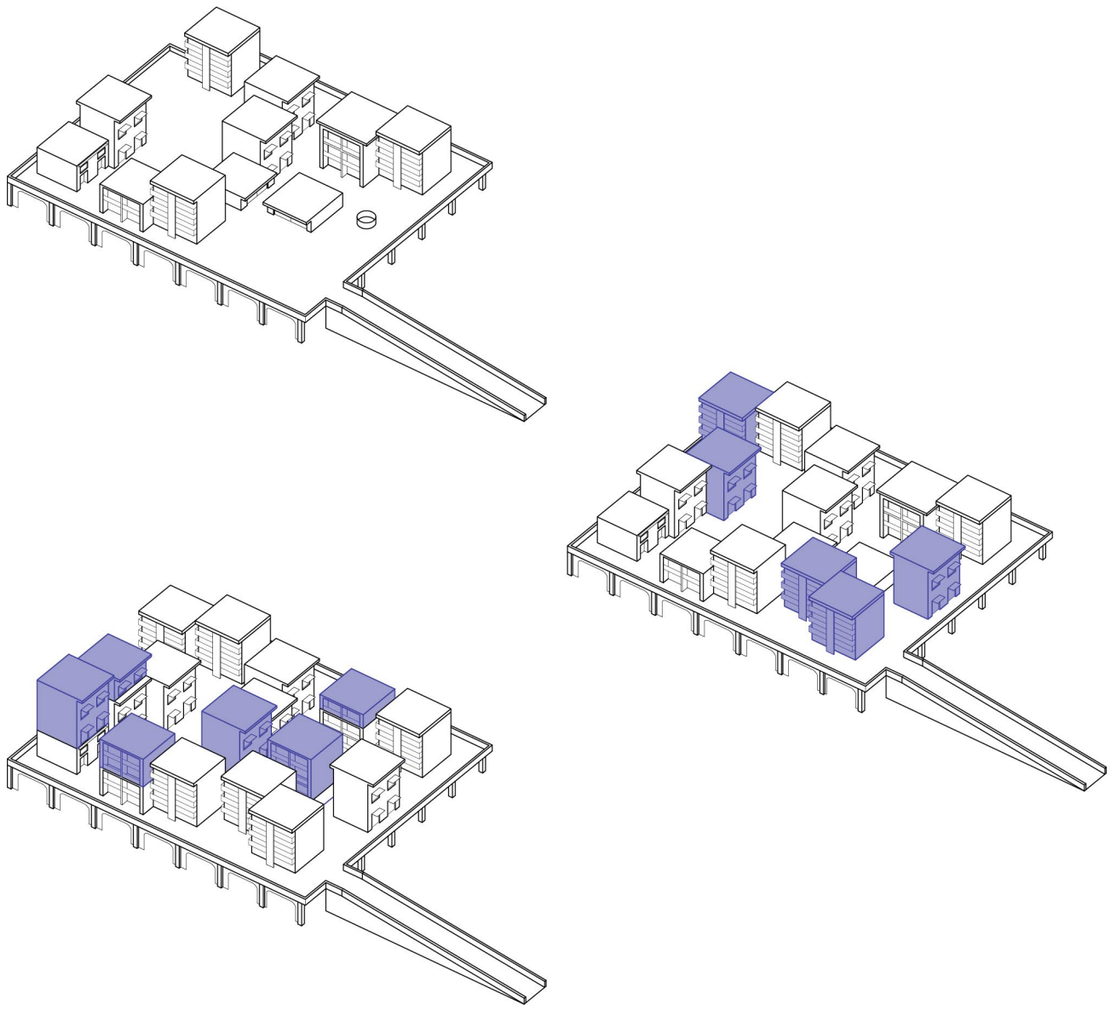


IMAGE 13
(page previous)
Sakaide Phase 1
scenarios for a
“dynamically
growing city”

IMAGE 14
Sakaide Phase 1

spaces that could adapt and transform over time, capable of accommodating a constantly changing society.
The first concrete example of this approach was the assignment entrusted to Masato Otaka, who was in charge of the reconstruction of Hiroshima. Otaka, influenced by Maekawa's vision, presented the concept of "artificial land", an artificial land created through architectural and urban intervention. His vision of architecture capable of responding to the needs of a city in continuous transformation is exemplified by his projects, including the Harumi apartments, considered the first true Japanese megastructure. This approach, which combined technological innovation with a profound reflection on the social and psychological context, marked a fundamental step in the reconstruction of Hiroshima and in the definition of post-war Japanese architecture.

"When a city is built of fragile materials and can be easily rebuilt, no one feels very responsible for the planning of the city."[24]

- Kawazoe Noboru

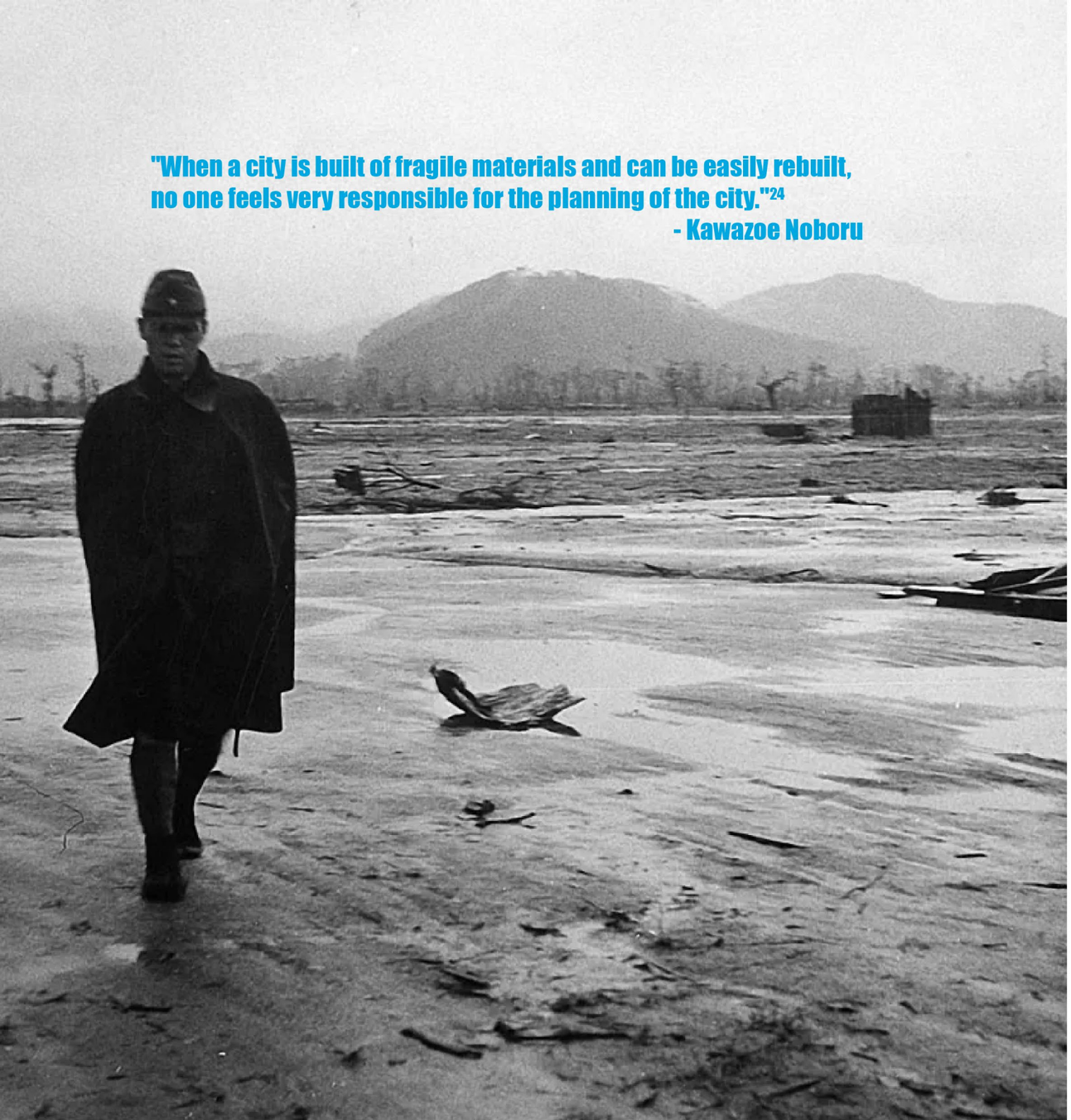


IMAGE 15:
(page previous) Japanese man walking amidst destroyed Hiroshima, Japan, 1945
© hiroshimapeacemedia.com

24.
Noboru Kawazoe, "A Step Toward the Future," The Japan Architect 34 (March 1959), p.25

25.
For comparison of Harumi and Marseilles, see Roger Sherwood, Modern Housing Prototypes (Cambridge, MA: Harvard University Press, 1978), p.126

Kunio Maekawa's Harumi Apartments: a symbol of architectural transition

In 1959, Noboru Kawazoe reviewed Kunio Maekawa's Harumi Apartments, completed in 1958, noting that they represented an innovation in the context of Japanese urban planning. The Harumi apartments, made of concrete, challenged this mentality, embodying a long-term approach. Located on Harumi Island in Tokyo Bay, the apartments stood out as a ten-story residential complex, reaching the height limit of 31 meters, then allowed by Japanese building regulations. Often considered the "oriental equivalent" of Le Corbusier's Unité d'Habitation in Marseille, the Harumi project shows strong links with Moisei Ginzburg and Ignatii Milinis' Narkomfin Common House, completed in 1930 in Moscow. [25] This constructivist prototype may have influenced MasatoOtaka's reinterpretation of the "artificial earth", as distinct from the views of other contemporaries such as Yosizaka. Completed shortly before the emergence of the Metabolist Movement, Harumi became a source of inspiration for architects of the time, an easily accessible place in Tokyo Bay, soon renowned for hosting unrealized utopian visions. In addition, Harumi marked a turning point in public-private collaboration, being Japan's first residential skyscraper. The Great Kantō Earthquake of 1923 had highlighted the vulnerability of Tokyo's wooden buildings, in particular due to their poor fire resistance. This event accelerated the adoption of concrete as the preferred material for safer buildings, and Harumi Island, an area reclaimed in 1929 and initially intended for the 1940 International Exposition, was chosen as the ideal site to test these new building types.

Kunio Maekawa's vision

He was commissioned to design the Harumi Apartments in 1956. Trained under Le Corbusier between 1928 and 1930, Maekawa had a solid reputation as the "architect of the people", dedicated to progressive solutions for common needs. In 1953, Maekawa reflected on his career, highlighting his commitment to eliminating the seismic shear walls

ubiquitous in Japanese concrete construction, in favor of more elastic and economically viable spaces. [26]
With Harumi, Maekawa faced significant challenges. The site, while logistically perfect, had unstable terrain, requiring advanced engineering solutions to support the structure. The project included 169 residential units, served by just two elevators, and 60% of the budget was allocated to the structure, putting pressure on the design team. Toshihiko Kimura, an engineer in Maekawa's office, worked with Fugaku Yokoyama to develop a steel-reinforced concrete (SRC) structure, minimizing welding costs and foundation needs. The result was a grid frame with voids 12 meters wide by 9 meters high, which combined structural efficiency and spatial flexibility.

The duality of structures, Soviet influence and the concept of "transition type"

The structure of the Harumi Apartments was conceived as a combination of "major structure" and "minor structure". The first, consisting of a reinforced concrete frame, provided a permanent infrastructure resistant to earthquakes, while the second, composed of flexible internal elements, could be modified over time to adapt to the needs of the residents. This configuration allowed for a smooth transition to higher living standards, reflecting Maekawa's vision of an elastic living space. [27]
The Harumi Apartments share some similarities with Soviet apartment buildings and, in particular, with the Narkomfin Common House. Both projects adopted shared corridors to foster social interaction and promote gradual cultural transformation. In Narkomfin's case, the goal was to push residents toward a collective lifestyle, while Harumi aimed to preserve traditional Japanese elements in a modern context. [28]
This approach resulted in the introduction of architectural elements not typical of traditional Japanese homes, such as corridors, used to emphasize traditional principles, including contact with nature.

26.
Noboru Kawazoe, Contemporary Japanese Architecture (Tokyo: The Japan Foundation, 1973), p.58

27.
Toshihiko Kimura, "On Construction Design," Shinkenchiku (January 1957), p. 22

28.
Ichiro Kawahara and Masato Otaka, "Toward the New Living Space," Shinkenchiku (January 1957), p.24

In traditional Japanese homes, the garden was an essential element to foster this connection with the natural environment. Considering that Harumi was one of the first tall buildings built in Tokyo, an attempt was made to transfer this design idea through the use of corridors, conceived not only as spaces for socializing, but also as tools to offer panoramic views of the outside. These corridors were designed to create a visual and spatial relationship with the surrounding context, favoring continuity between the built environment and the natural landscape, reinterpreting the relationship with nature typical of traditional homes in a vertical key.
Harumi is part of the "debate on tradition" animated by Kawazoe in the 50s, which sought to combine Western modernity and Japanese identity. The project reinterpreted elements of minka and machiya, Japanese vernacular typologies, in a vertical urban context. The fireproof and earthquake-proof structure was described by Kawazoe as an "artificial rock" that protected a wooden past for future revitalization.
Despite its experimental character, Harumi quickly became inhabited. The facades of the building, animated by clothes hung out to dry, aroused conflicting opinions. Tange criticizedthis practice as unsightly, while Kawazoe considered it a sign of the building's vitality and strength. However, the active participation of residents in the design and customization of spaces was limited.

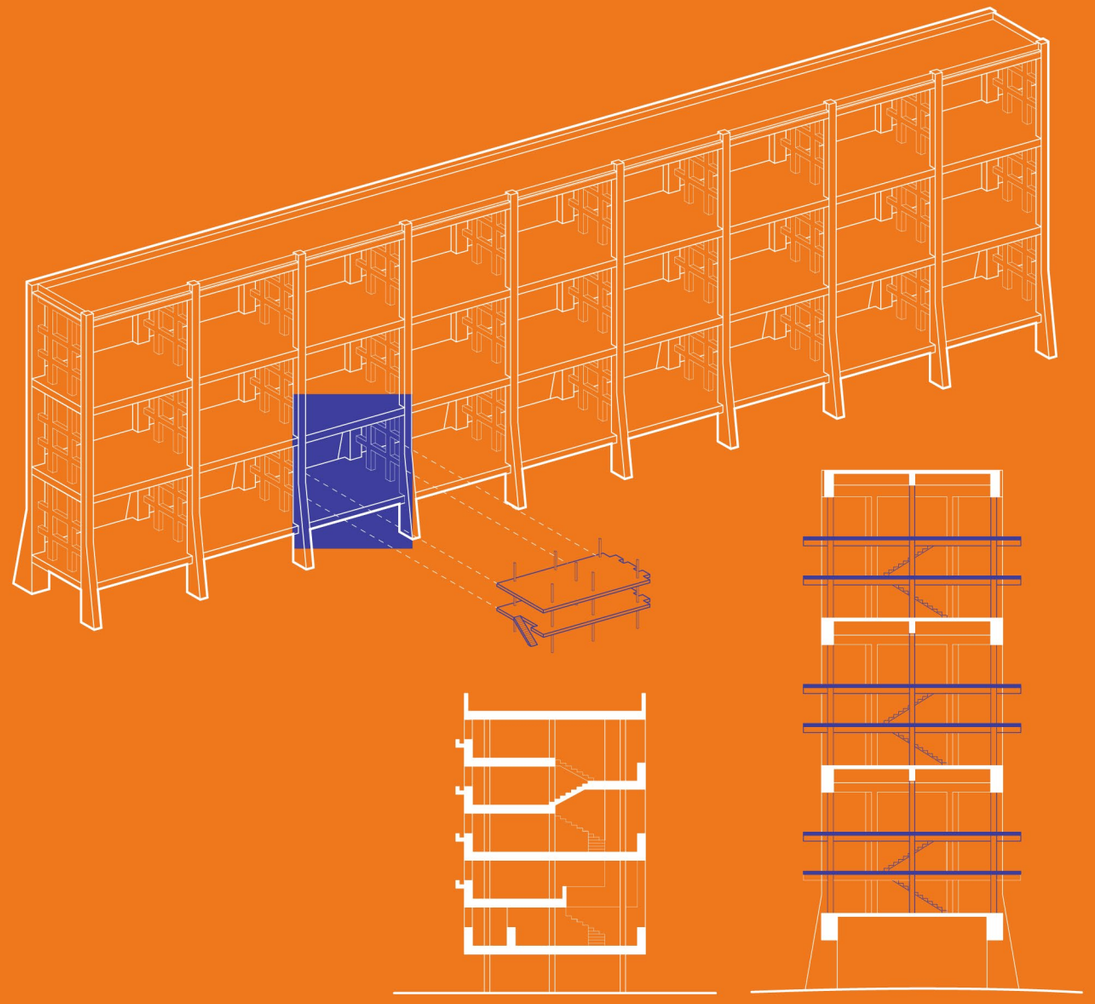
"It seems to me [...] drying diapers are a sign of life and energy," and that an "apartment house should be able to withstand these manifestations of human life. If it cannot, it is a weak .[29]

29.
Noboru Kawazoe, "A Step," p.25

IMAGE 16
(page following)
Harumi Apartments,1961
©architectuul.com

IMAGE 17
(page following) Explanatory drawings of the design concepts for the Harumi Apartments. The axonometry highlights the relationship between major and minor structure, while the sections compare the design with the Narkomfin house

The Harumi Apartments represent an example of a "transition type" that, while preserving traditional elements, introduced new types of housing in response to post-war urban needs. Although it did not fully realize its potential for adaptability, the project remains a testament to the architectural ingenuity of Maekawa, Masato Otaka's training site, who sought to learn the best from these experiences and re-present it in his designs.



Promoting flexibility in architecture: the case of Kiyonori Kikutake

Promoting cities, architecture, or flexible projects is at the heart of the Metabolist manifesto, although each member of the movement develops its own well-defined theory. Kiyonori Kikutake's work represents a unique synthesis of robustness and flexibility, in which architecture adapts to changing needs without sacrificing structural stability. Through projects such as the Sky House and the Aquapolis, Kikutake has demonstrated how architecture can be a tool to explore new possibilities of inhabiting the planet, reconciling utopia and reality. However, in Kiyonori Kikutake's case, the concept of flexibility manifests itself more subtly than the approach taken by some of his colleagues. This flexibility emerges as an adaptive response that integrates harmoniously into your architectural projects, without compromising structural stability. The Sky House is an emblematic example of this vision.

The Sky House: an architectural manifesto

Designed in 1958, the Sky House fully embodies Kikutake's metabolist principles and reflections on domestic architecture. The structure has a square plan and rests on four reinforced concrete pillars, thus solving the entire structural system. The open-plan upper floor includes a living room, a mobile kitchen and a bathroom, while the ground floor initially remains empty, serving as a flexible space for subsequent modifications. The first significant transformation takes place with the addition of the "First Network" ("Move-net"), a suspended unit intended for the child's bedroom. Over the years, the ground floor was progressively filled with new units and uses, culminating, in the eighties, with the complete occupation of the space and the direct connection to the ground. This process represents a model of evolutionary domesticity, in which architecture adapts to the changing needs of the inhabitants without altering the stability of the main structural system.

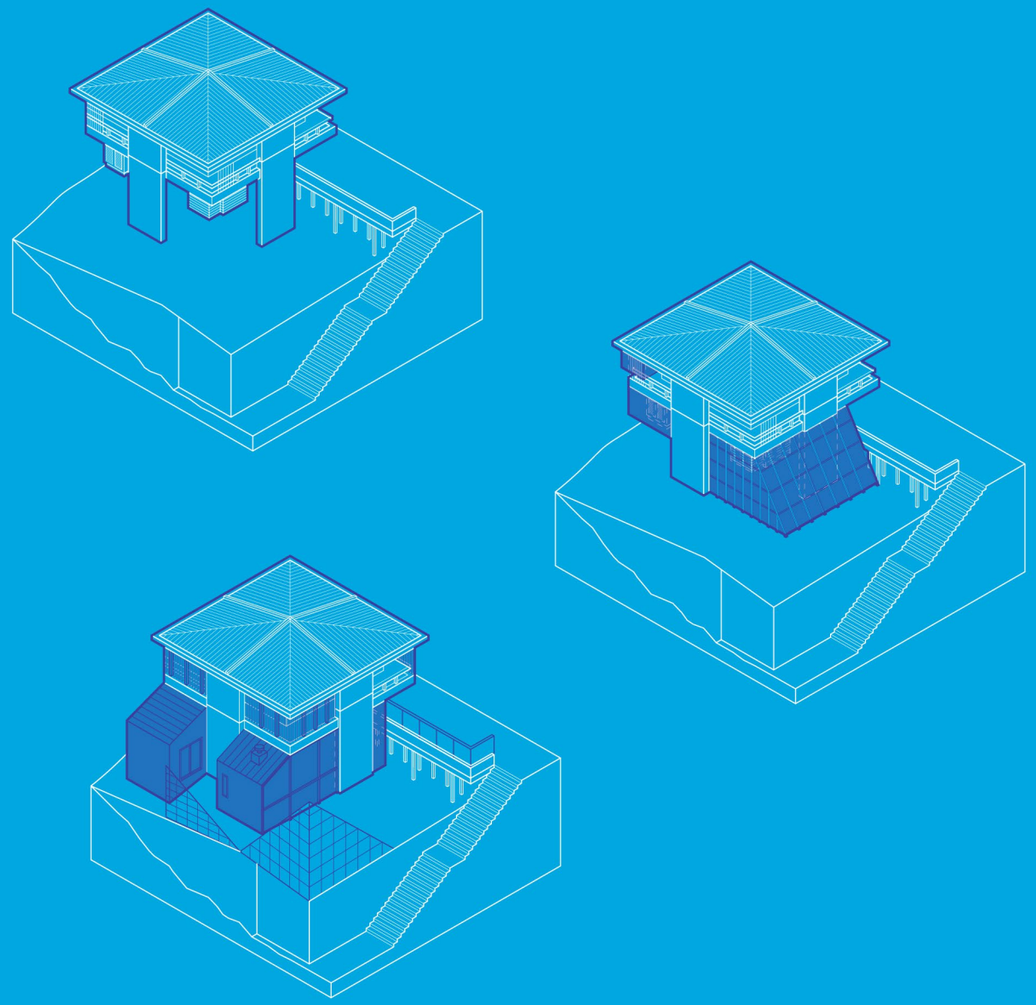
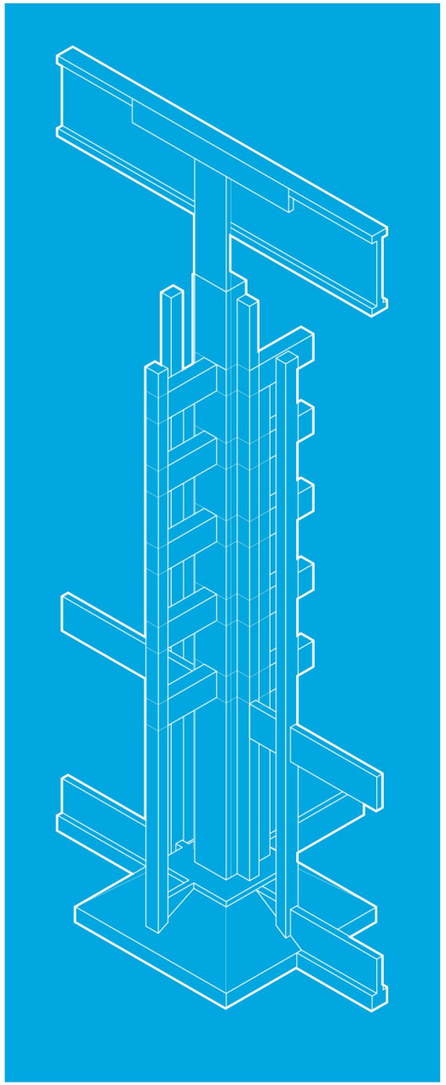


IMAGE 18
Explanatory diagram of the changes made to the Sky House over the years.



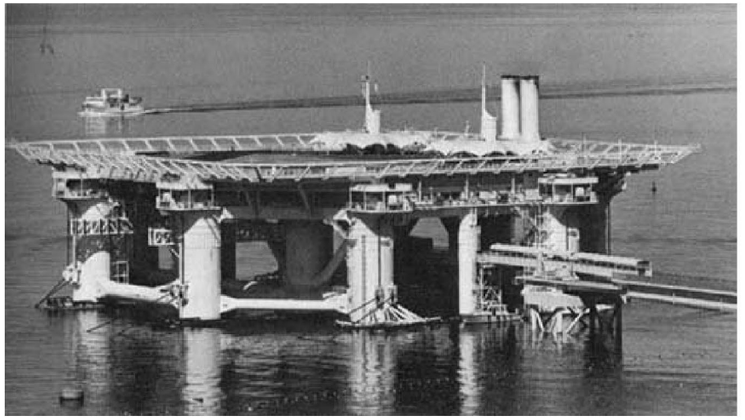
Fragility and flexibility: an architectural dialogue

Kikutake's Sky House expresses a subtle dialogue between structural strength and internal fragility. The solidity of the concrete pillars contrasts with the temporary and modifiable nature of the indoor units. This intentional fragility allows for the creation of flexible and adaptable spaces, a concept that is also reflected in subsequent projects. Interestingly, this approach has changed over time, evolving. Despite these developments, the stability of the supporting structure remains a central element. For example, in both the Hotel Token and the Tower designed for the Osaka Expo 70, the robustness of the supporting structure is always highlighted but is interrupted by additional elements that give a feeling of fragility, although this is no longer hidden as in previous projects. In this way, we witness a manifestation of the idea of flexibility: in the Hotel, it is evident in the fragmented façade, while in the Tower it is visible through the use of cells hanging from the structure, which seem to be in a state of temporary precariousness. In the Hotel Tōken, flexibility is evident in the fragmented façade, which suggests a sense of precariousness without compromising structural solidity. Similarly, in the Expo Tower, the cells suspended from the main structure evoke a feeling of provisionality, emphasizing the idea of adaptability. In both cases, the robustness of the load-bearing structure acts as a central element, ensuring the stability of the building despite the changeability of the accessory components.

IMAGE 19/20
(page following)
Kiyonori Kikutake, Aquapolis, Okinawa, 1975
© worldsfairphotos.com

Aquapolis: a dream come true.

For Kikutake and also for his colleague Kurokawa, architecture is a means to explore new possibilities of inhabiting the planet, imagining future scenarios that challenge the logic of the present. However, this vision has encountered significant difficulties in its practical application, especially at the urban level, where metabolist projects have often struggled to translate into reality. Despite the challenges, Kikutake was able to realize one of its most ambitious visions thanks to the 1975 Okinawa Expo. The Aquapolis, a floating city designed for exhibition, represents a concrete materialization of metabolist principles. Built as a prototype marine community, Aquapolis proposes innovative solutions to address the challenges of overpopulation and rising sea levels. Raised 32 meters above sea level and costing 14 billion yen (about $41 million), the Aquapolis is a utopian vision of harmony between man and the marine environment. The project imagines the sea as a human habitat, suggesting a future in which marine resources become fundamental to the sustainability of the planet. After the Expo, the Aquapolis remained in operation for several years, attracting visitors until its closure in 1993. Although later dismantled, the Aquapolis remains an icon of Metabolist thought and an example of how architecture can imagine new ways of inhabiting the planet.



Modules, Movement, Future: Kisho Kurokawa's Universe

He stands out in the contemporary architectural scene as a leading figure, characterized by an abstract and sometimes visionary conception of architecture. His practice is strongly linked to technological development and permeated by a deep affinity with the concept of prefabrication. However, the practical application of the principle of flexibility in its works is problematic. An emblematic example is represented by the Nagakin Capsule Tower, one of his most iconic creations. Although this structure seems to embody at first glance the apotheosis of flexibility thanks to the presence of numerous small blocks conceived as autonomous cells, this apparent flexibility is actually limited by the repetition of a single module. The constant repetition of the same cell within the complex raises questions about the actual flexibility of the building. This approach is echoed in the pavilions designed by Kurokawa for Expo '70. Although his theoretical writings emphasize concepts such as spatial diversification and integration, concrete works rarely reflect these ideas directly. For example, Kurokawa advocated the need for urban plans that integrated different types of spaces within the same complex, thus responding to the multiple needs of contemporary society. This vision, however, is attenuated in completed projects, while it is more preserved in unrealized projects. This discrepancy between theory and practice highlights the complexity of Kurokawa's thought, which is further enriched by his prolific literary activity. The numerous books he wrote testify to the depth and variety of his concepts, making him a unique case study in the architectural landscape.

Coexistence between public and private space

In the East, space is often referred to as the realm of coexistence. The oriental buildings, in fact, open directly onto the street, where the daily activities of the inhabitants mix with public circulation. Private and public spaces merge,

with public circulation. Private and public spaces merge, creating continuity between architecture and the city. In contrast, in European cities architecture is generally isolated from the street. The functional separation between circulation and daily activities is marked, with squares and public spaces taking on an essential role in the urban hierarchy. This concept of Eastern coexistence is opposed to the functionalism of Western origin, developed by the modernist current. Kurokawa, while acknowledging the efficiency of functionalism, criticizes the elimination of intermediate and undefined elements that characterized traditional spaces. He argues that Eastern philosophy, in particular Japanese thought, represents a fertile ground for the recovery of these intermediate spaces. In Toshi Dezain, Kurokawa emphasizes how coexistence and symbiosis can offer a new architectural and cultural paradigm, challenging modernist theories and proposing an alternative value system based on Japanese culture.

Philosophy of Symbiosis

It represents the pinnacle of Kurokawa's philosophical and multidisciplinary approach. It develops through three fundamental concepts – metabolism, metamorphosis and symbiosis – which constitute the vital principles underlying his architectural theories and productions. This philosophy is not limited to architecture, but extends to different areas of society and existence, proposing an alternative reading to Western dualism. In Kurokawa's thought, the world is perceived as a set of opposites – part and all, flesh and spirit, science and art, life and death – which, instead of being separate, must coexist in a state of symbiosis. The in-between spaces play a crucial role in this process, as they allow the coexistence of opposing elements without them cancelling each other out. Kurokawa attributes the elimination of these intermediate spaces to the advent of functionalism and the age of the machine. Instead, he proposes a re-appropriation of these spaces in the age of life, based on the concepts of metabolism and symbiosis. In the architectural and urban spheres, this philosophy

IMAGE 21
(page following)
Kuala Lumpur International Airport, Satellite Terminal
©David McKelvey

promotes the coexistence of different cultural values and identities (synchronicity) and the symbiosis between past, present and future (diachronicity). Metabolism, in particular, is understood as the ability of architecture to grow and transform over time, breaking with the idea of a permanent and finite architecture.

"The entire world is perceived as sets of opposing opposites - the part and the whole, the flesh and the spirit, science and art, good and evil, life and death, humanity and nature, intellect and feeling. The principle of majority rule, one of the basic tenets of democracy, is also a dualistic choice between yes and no. [...]. In this dualistic world, ambiguous existence, vague zone, and multivalent zones are rejected. Contradictory elements, the symbiosis of opposing existence, and mixed states have been treated as chaotic or irrational."[30]
-Kisho Kurokawa

30.
Kisho Kurokawa, Each One a Hero. Philosophy of Symbiosis, Tokyo, Kodansha Amer Inc., 1997, in http://www.kisho.co.jp - Chapter One

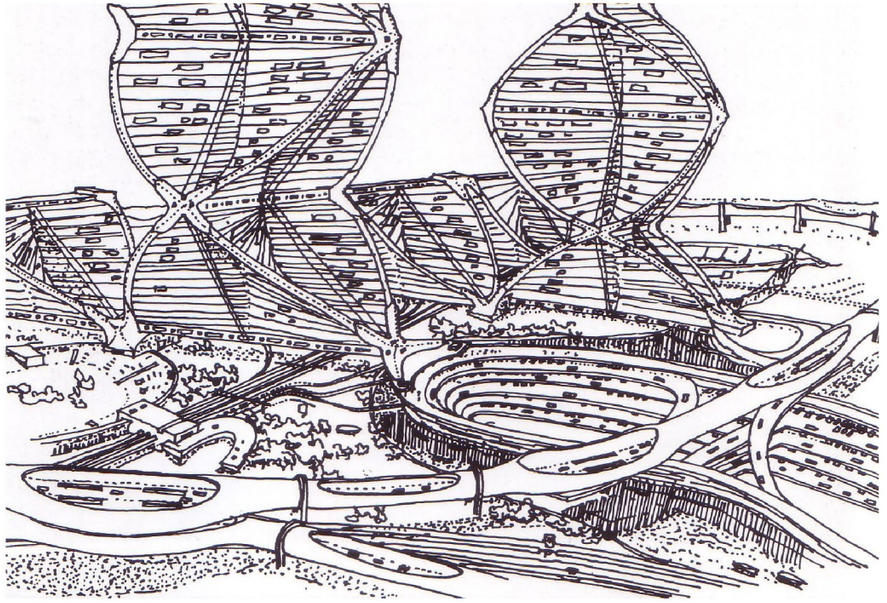


IMAGE 22
(page previous)
National Art
Center,
Tokyo, 2013
© OZAKIX

IMAGE 23
Helix City
project,
1960
© archeyes.com

Practical applications of the philosophy of Symbiosis

The philosophy of Symbiosis finds a concrete application in numerous projects carried out by Kisho Kurokawa. Among these, the Fukuoka Bank (1975), the Kyocera Hotel (1983-87) and the atrium of the National Art Center in Tokyo (2000-06) stand out as significant examples of spaces designed to encourage sharing and interaction. In particular, the National Art Center in Tokyo, a monumental "exhibition machine," represents the highest expression of this philosophy. Considered by Kurokawa himself as his masterpiece, 31 the building synthesizes the fundamental principles of Symbiosis, harmoniously integrating architecture with the cultural and social context. This building, located in the Roppongi district, is not conceived as an archive, but as an open and flexible space that hosts traveling public exhibitions. The undulating façade, made of glass and iron, establishes continuity between inside and outside, while the open atrium invites the public to interact with the structure. Inside the museum, spaces such as the bookshop, auditorium and bar, are accessible to all, [32] reflecting the idea of an intermediate space that promotes coexistence between public and private. This approach is also visible in Kurokawa's other museum projects, such as the Museum of Contemporary Art in Hiroshima (1986-88) and the Museum of Photography in Nara (1989-91). In each of them, the architect seeks to create a synthesis between globalism and localism, using a symbolic and abstract architectural language.

Visionary projects: Helix City and the concept of Super-Domino

Among the first metabolist theories developed by Kurokawa, Helix City (1961) occupies a prominent place. Inspired by the double helix structure of DNA, this floating city represents an innovative vision of the information society. The three-dimensional structure of the Helix City consists of two steel spirals to which modular units are attached, a symbol

32.
http://www.ki-sho. co.jp

of the Super-Domino concept.
The latter, in contrast to Le Corbusier's Domino, is based on a super-structure composed of a central core and overlapping layers of capsules and groupings. The Helix City is designed to expand both vertically and horizontally, ensuring structural and functional flexibility. The modular units, covered with vegetation, ensure a high green area, contributing to a balance between nature and architecture. This approach is also taken up in Kuala Lumpur International Airport (KLIA) in Malaysia (1998), where Kurokawa combines Islamic cultural elements, nature and high technology. The structure, designed to be easily expandable, integrates cultural and environmental symbols, such as domes inspired by mosques and columns that recall palm trunks.

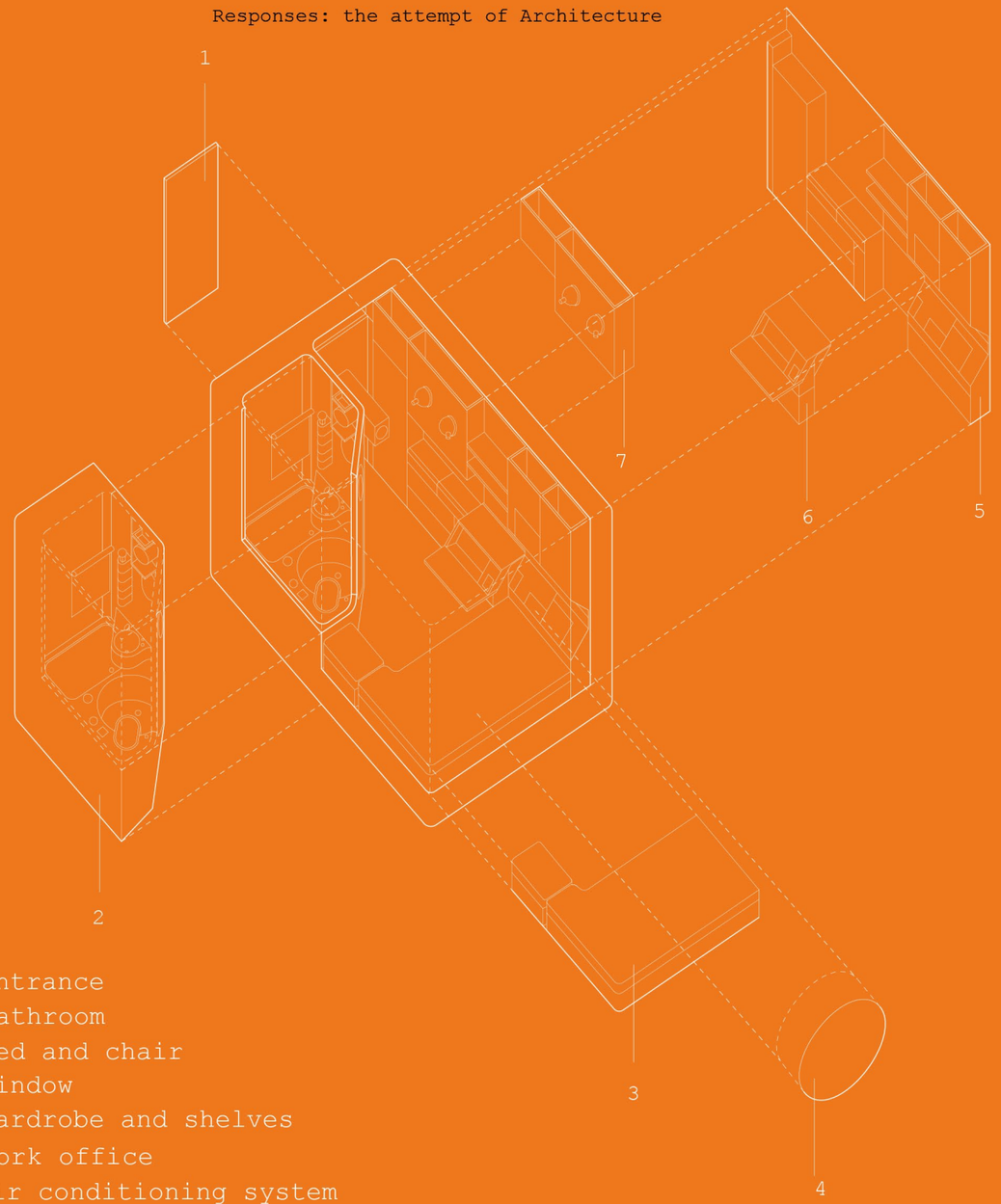
"In 1960 I thought that if the connections in machines are mechanical and those in life are information, you could say that the Machine Age is industrial society and the Life Age is the information society." [33]

-

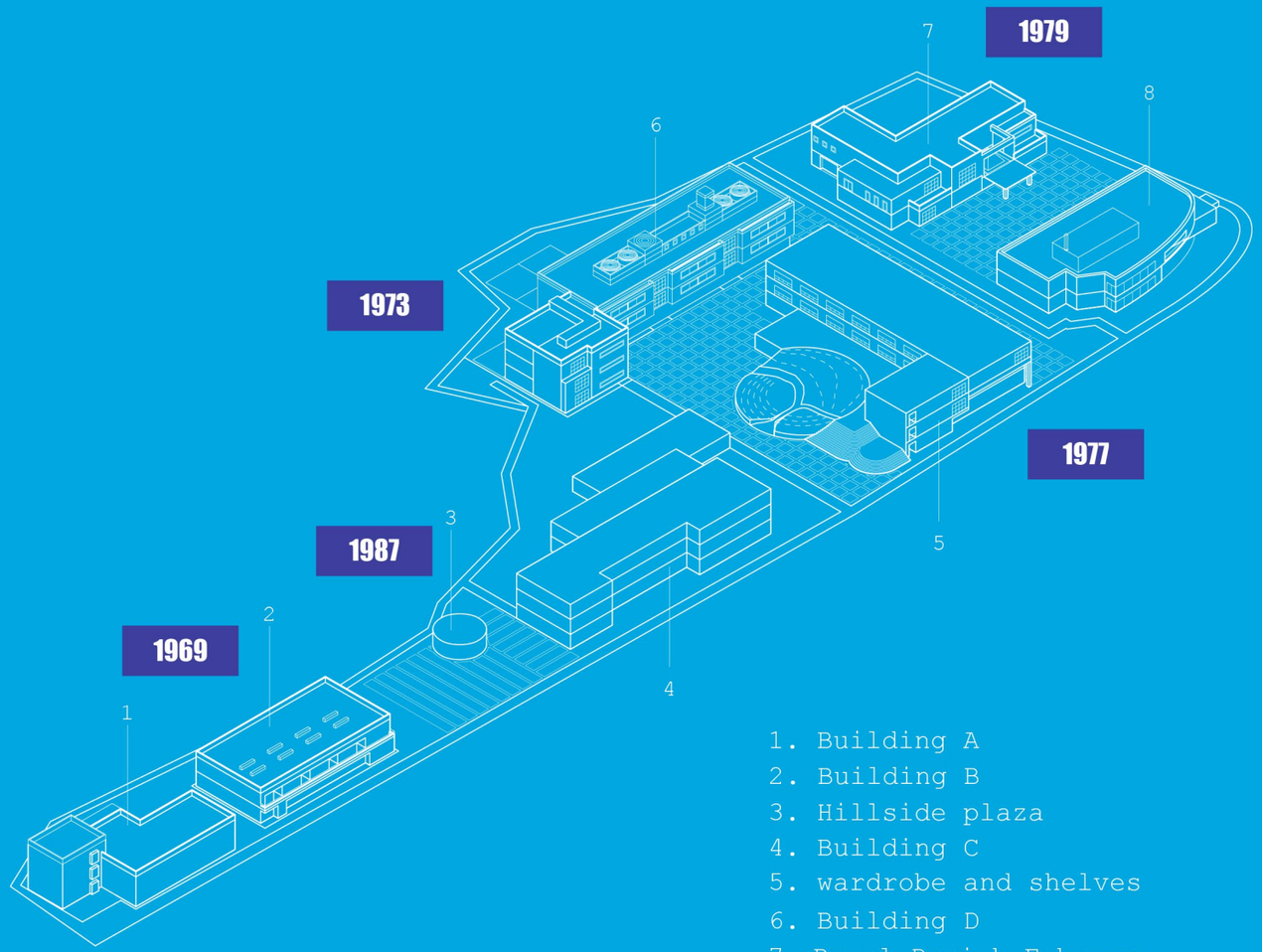
33.
From the Age of Machine to the Age of Life, in "L'Arca plus", n° 219, 1997, p. 9

Kisho Kurokawa's work represents a meeting point between tradition and innovation, between East and West. His philosophy of Symbiosis offers an alternative paradigm to Western dualism, promoting the coexistence of opposites and the enhancement of intermediate spaces. Although his concrete works do not always fully reflect the theoretical principles set out in his writings, they testify to the complexity and depth of his thought. Projects such as the Nagakin Capsule Tower, Helix City and the National Art Center in Tokyo embody his ideas about flexibility, metabolism and symbiosis, offering valuable insights for the future of architecture and urbanism.

Responses: the attempt of Architecture



1. entrance
2. bathroom
3. bed and chair
4. window
5. wardrobe and shelves
6. work office
7. air conditioning system



1. Building A
2. Building B
3. Hillside plaza
4. Building C
5. wardrobe and shelves
6. Building D
7. Royal Danish Embassy
8. Building G

A design dichotomy.

The dichotomy between pragmatic and visionary approaches in the Japanese Metabolist movement represents a central theme in this research. In fact, thanks to the analysis of the individual approaches, it was possible to understand the presence of a very compact but heterogeneous movement. This contrast emerges clearly through the comparison between Fumihiko Maki's Hillside Terrace projects and Kisho Kurokawa's Nakagin Capsule Tower, two emblematic works that embody divergent approaches within the same movement. By analyzing these two works, the different design strategies and their practical, social and cultural implications are highlighted, offering a deeper understanding of the challenges and potentials of architectural metabolism. The Metabolist movement proposed an innovative vision of architecture and urbanism, characterized by an interest in modularity, flexibility and organic growth. However, two main currents emerged within it: a pragmatic approach, represented by architects such as Fumihiko Maki and Masato Otaka, and a visionary and experimental orientation, embodied by figures such as Kisho Kurokawa and Kiyonori Kikutake. These two trends, while sharing a common language and similar theoretical principles, have produced significantly different design outcomes. Hillside Terrace, built in several phases between 1967 and 1992, is a paradigmatic example of a pragmatic and contextualized approach. Located in the Daikanyama district of Tokyo, the complex has been designed to meet the needs of the local community, integrating harmoniously with the surrounding urban context. The architecture of Hillside Terrace stands out for its modularity, which has allowed a gradual evolution of the project in response to socio-economic changes and new functional needs. Maki's attention to the continuity between public and private spaces has helped to create a place that not only respects, but enhances the existing urban fabric. Maki's approach is rooted in a vision that prioritizes sustainability and longevity, avoiding the architectural sensationalism that characterized

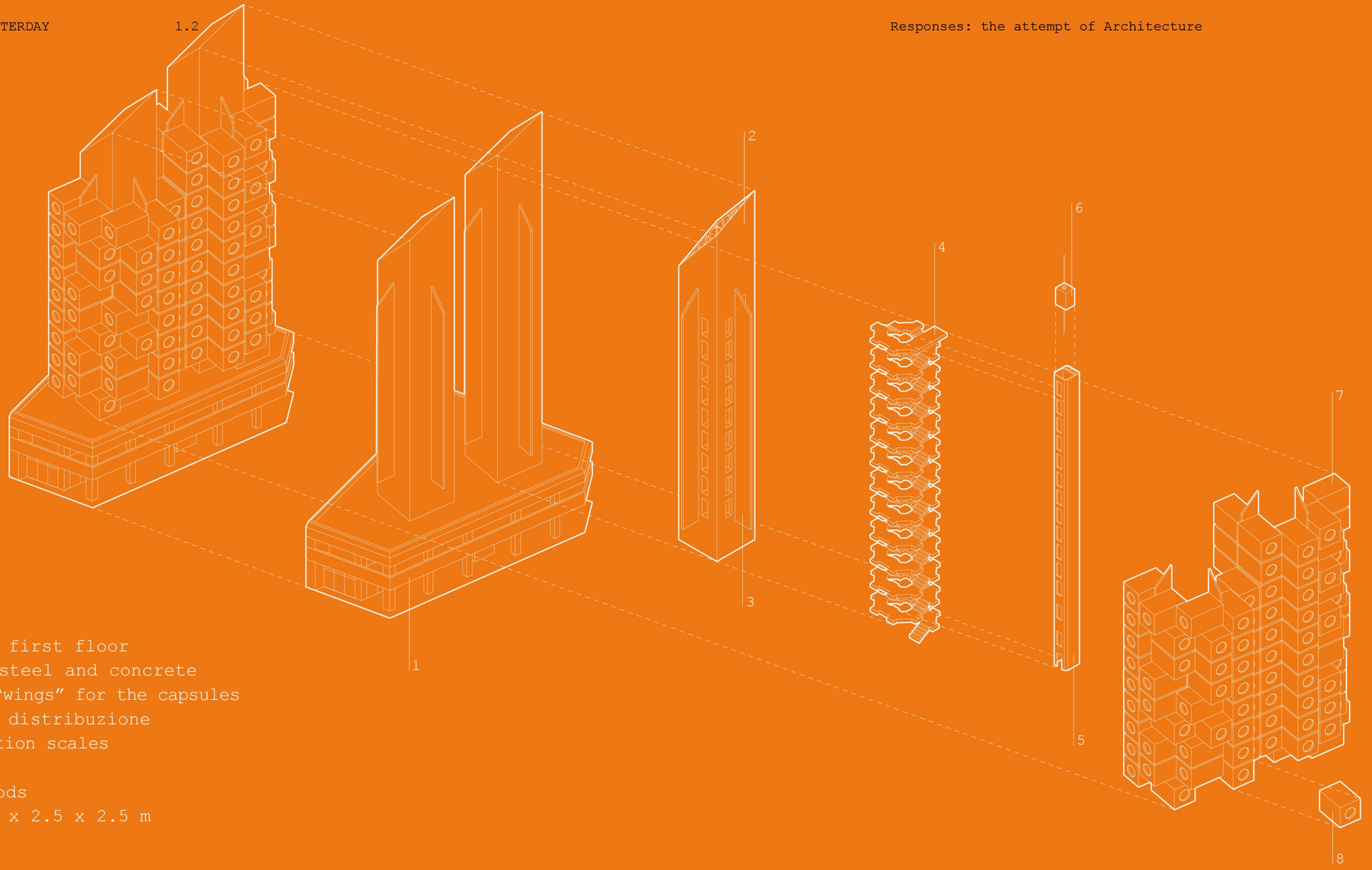
many projects from Japan's economic expansion period. This is reflected in the choice of materials, the small scale of the buildings and the attention to design details, elements that have guaranteed the relevance and functionality of the complex over time. Hillside Terrace represents a successful example of how architecture can adapt and respond to the needs of a community, while maintaining a strong aesthetic and cultural identity. In stark contrast, Kisho Kurokawa's Nakagin Capsule Tower, completed in 1972, embodies a radical and experimental approach. This building consists of 140 prefabricated capsules, conceived as autonomous housing units, hooked to two central towers in reinforced concrete with its plug in system, in which the individual cells could be inserted independently as if they were plugs in an electrical socket.[34] There is talk of a completely new way of being able to use contemporary building technologies. The design of the Nakagin Capsule Tower reflected the Metabolist ideals of flexibility and renewability, with the ambition to create an architecture that could evolve over time through the replacement of capsules. However, this vision never fully materialized. Since its early years, the Nakagin Capsule Tower has faced significant issues related to maintenance and technological obsolescence. The capsules, despite being designed to be easily replaceable, were never refurbished, due to high costs and organizational difficulties. In addition, inadequate thermal insulation and limited living comfort further compromised the livability of the building. These factors, combined with fragmented condominium management, led to the progressive degradation of the structure, culminating in its demolition in 2022. The Nakagin Capsule Tower, while representing an icon of modern architecture, has become a warning about the limits of architectural utopias when the practical and social implications are not adequately considered. The comparison between Hillside Terrace and the Nakagin Capsule Tower highlights the fundamental differences between a pragmatic and a visionary approach within the Metabolist movement. While Hillside Terrace has proven to be a model of

34.
Nuttgens Patrick, Storia dell'architettura, Mondadori Bruno, Marzo 2002, p. 293

sustainable success, capable of adapting to urban and social transformations, the Nakagin Capsule Tower has highlighted the difficulties of translating radical concepts into functional and lasting realities. Hillside Terrace's longevity can be attributed to its ability to respond to practical needs and integrate into the urban fabric, while the failure of the Nakagin Capsule Tower underscores the importance of balancing innovation and feasibility. A further element of comparison concerns social adaptability. Hillside Terrace has been designed to evolve with the community, offering flexible spaces that promote interaction between users and the urban context. In contrast, the Nakagin Capsule Tower, with its highly specific and isolated design, failed to meet the expectations of the inhabitants or maintain its relevance over time. This difference reflects not only divergent design approaches, but also a different understanding of the role of architecture in society. The dichotomy between pragmatic and utopian vision, embodied by Maki and Kurokawa respectively, raises fundamental questions about the relationship between theory and practice in architecture. Maki translated metabolist principles into design solutions that balance ambition and feasibility, while Kurokawa pursued a radical vision that, while innovative, proved unsustainable in the long run. This discussion is not intended to devalue the importance of utopian experimentation, but rather to highlight the need for a balance between innovation and pragmatism to ensure the success and sustainability of a project. Hillside Terrace is an example of how contextualized and adaptable architecture can positively influence the urban and social fabric. This approach has made it possible to create a complex that not only responds to immediate needs, but also contributes to defining a lasting urban topos. On the other hand, the Nakagin Capsule Tower, while being a symbol of architectural innovation, highlights the risks of excessive design idealism. The inability to meet practical challenges and ensure effective maintenance has compromised its potential, turning it into an example of a failed utopia. This

case underlines the importance of considering the practical and social implications from the early stages of the design process, in order to ensure the sustainability and relevance of a work over time.
Both projects embody Metabolist principles, but only Hillside Terrace has succeeded in translating these concepts into a model of lasting success. This comparison highlights not only the challenges and opportunities of architectural metabolism, but also the need for a balanced approach that integrates innovation, contextualization and sustainability.

IMAGE 24
Street edge of Hillside Terrace
© Hiroaki Tanaka

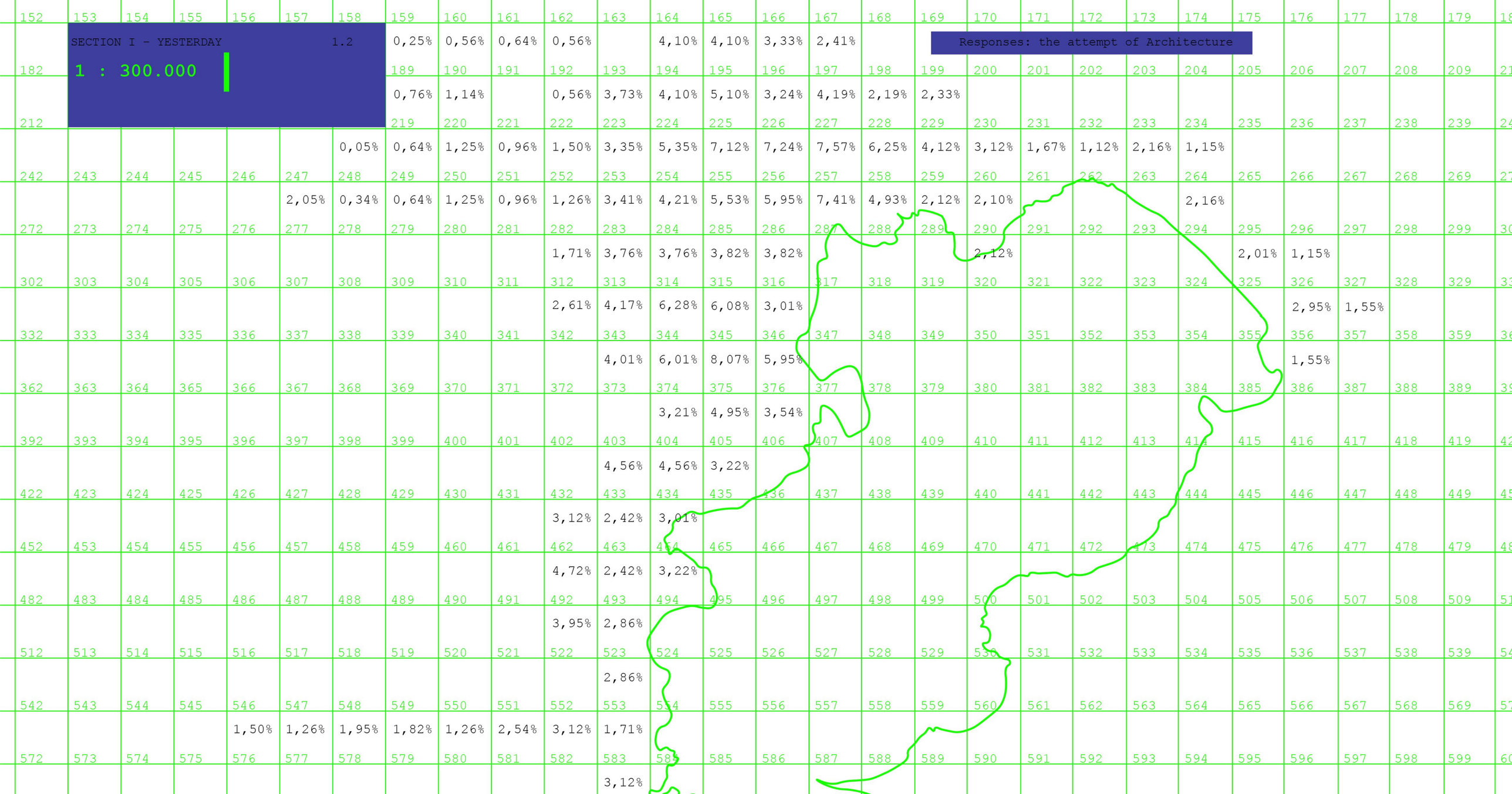


1. base and first floor
2. core in steel and concrete
3. support “wings” for the capsules
4. scale di distribuzione
5. distribution scales
6. elevator
7. living pods
8. module 4 x 2.5 x 2.5 m

SECTION I - YESTERDAY 1.2

1 : 300.000

Responses: the attempt of Architecture



Kenzo Tange and the bay

In the context of the rapid changes that characterized Tokyo in the 60s, the Japanese government and urban authorities were looking for innovative solutions to address the growing problems related to pollution, scarcity of space, while at the same time trying to expand and renovate the city. In this scenario, several architects were involved, including the Metabolists, who, under the guidance of Kenzo Tange, proposed visionary approaches to respond to the challenges of urban growth. The Metabolist movement, representing the response to the needs of a city in rapid transformation, imagined solutions such as urban expansion through the creation of land gained from the sea, the introduction of housing modules and the design of a dynamic architecture, capable of adapting and responding to changes in the context. These were interventions aimed at containing the demographic explosion that had seen the city go from three million inhabitants in 1945 to ten million in 1960. Kenzo Tange's role within this movement, however, still remains a matter of debate. Although his membership in the group has never been formally clarified, his relationship with the movement has often been interpreted ambiguously. Unlike Arata Isozaki, who, despite having collaborated with the group, has always claimed to consider himself a separate individual, Tange has never taken an official position regarding his adherence to Metabolism. While Isozaki, while sharing many of the group's ideas, emphasized his independence, Tange has never made any definitive statements on the matter. Despite this, some members of the group, such as Maki, described Tange as a "Chief Guide", emphasizing his role as a mentor. It is important to note, however, that this statement may reflect an attempt to recognize the majestic figure of Tange, who for the members of the group was not simply a colleague, but a fundamental figure in their training, as they had all had direct experience in his workshop. Tange may therefore have been seen as the main intellectual point of reference, but not necessarily as an active member of the group, probably to protect his professional image from possible criticism.

The Metabolist movement, known for its radicalism, included concepts that recalled some aspects of the communist manifesto, an aspect that, in a political context such as the Japanese one, did not facilitate the practical implementation of projects. The group presented itself as an innovative current, with ambitious goals and often provocative lyrics, which deviated from a neutral or conciliatory approach. It cannot be ruled out that Tange shared some of the group's ideological principles, but his position of public detachment may have been a strategy to avoid political implications. His collaboration with the group could be interpreted as a sign of support, but Tange has chosen to keep his distance to protect his reputation as an international architect.

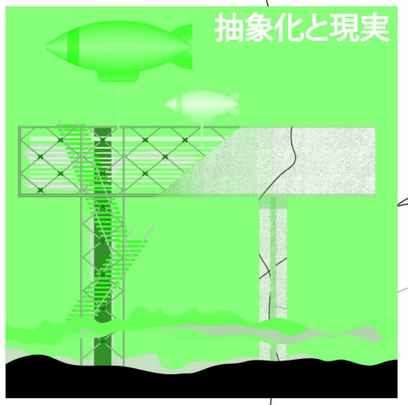
Furthermore, as pointed out by Casey Mack in his study, the concept of "artificial land", introduced by Otaka, is closely linked to Tange's work. This concept, which reworks Le Corbusier's principle of pilotis, constitutes one of the fundamental elements in Tange's Tokyo plan. Without Otaka's contribution, the project could not have taken shape, but Tange was never considered an internal member of the Metabolist movement. In designing Tokyo Bay, despite having participated in numerous exchanges of ideas and discussions, Tange proposed a reworking of projects previously put forward by his colleagues, many of which dated back to 1957, and came from architects outside the movement. In 1960, Kenzo Tange was entrusted with the design of the Tokyo plan. Chosen because Kenzo Tange was, without a doubt, the most important Japanese architect of the twentieth century, the one who elevated Japan to the epicenter of the debate on architectural modernism. By associating terms such as "cell" and "metabolism" with urban design, Tange represented with his proposal a new conception of the city: a living organism, in constant transformation, free from rigid solutions and traditional models. It is essential to remember that Tange sought, in the interaction between urban planning and advanced

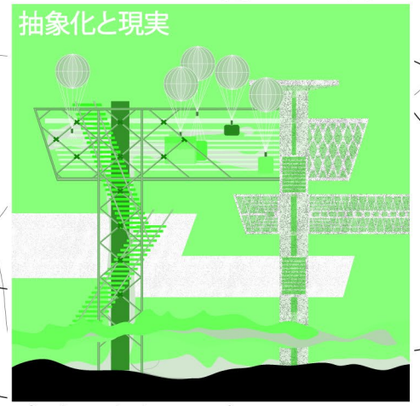
1.
Robin, Op. cit.

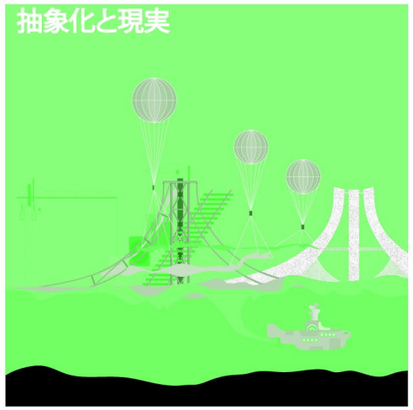
2.
Frampton, Op.

3.
In his essay -Space City- Kurokawa identifies the main problem in the reconstruction of the city, which occurs mainly through the development of residential areas. He calls this urban configuration a "bed town," characterized by the lack of functional and diverse spaces necessary to support the new dynamics of post-war society and the advent of progress. This urban model, according to Kurokawa, is unable to respond to the needs of a modern community, as it reduces the city to a place exclusively dedicated to rest, devoid of significant connections with work, culture and sociality.

1 : 300.000







technology, the conditions for a new design approach. For him, urban planning represented the fulcrum around which highly technological megastructures developed, capable of containing and organizing traffic flows. The exaggerated size of these structures was intended as an expedient to promote hyper-technology, using design materials such as flexibility, freedom and openness. His goal was to create a city capable of overcoming fragility and stimulating movement, gestures, desires and dreams. To fully understand Tange's design, it is necessary to examine the morphology of the previous Tokyo. Civic and administrative functions, concentrated in the city center, had favored a centripetal radial growth. The population had moved to the suburbs, attracted by cheap land, which had led to an increase in commuters and travel distances. The city, with its ten million inhabitants, was in constant motion, and the radial model was no longer able to handle this dynamism. The labyrinthine tangle of streets and infrastructures required a reconsideration of the urban spatial order. In this regard, Tange's words are illuminating: the proposal for a linear structure for cyclical transport was configured as a possible alternative to the radial model, offering a solution more suitable for an ever-expanding city.
"We reject the concept of metropolitan civic center, preferring a new concept centered on the definition of civic axis [...], the connecting channel could lead to the outside in a minimum of time." [35]
Thus, radial idiosyncrasy and linear idealism – understood as flexibility, openness, freedom – are attributable to Kenzo Tange's proposal.

"since the functions in the center will form the nucleus of the functions that will take place along the axis [...] it is quite natural that the axis should start from the current center." [36]

35.
The following quotations all derive from the same text since its drafting was addressed through the consultation of: AA. VV, Kenzo Tange. Serie di Architettura, Zanichelli Editore, Bologna, 1979, pp. 61-76.

36.
Ibid., p. 64.

37.
Ibid., p. 67.

38.
"Over the years, Tokyo has in fact ceded coastal areas to industrial settlements": Ibid., p. 72

The linear civic axis was conceived as a ribbon that started from the metropolitan center resting on the sea. In this way Kenzo Tange could have made the population of Tokyo rediscover the extraordinary nature of the sea, and in this way Tokyo would have returned to being a city overlooking the sea.[37] Kenzo Tange's liberalitas can be read not only in the desire to make the body "intermated with the world", [38] but also in the commitment to fix a cure for an ankylosed body: more analytically, the axis constituted the place where 2,000,000 or 2,500,000 could be distributed along it in order to fulfill urban functions and 5 or 6,000,000 individuals could walk along this axis daily.
The new urban layout based on spatial order reflected an open society. The openness, flexibility, and freedom of the new urban spatial system are not to be traced back exclusively to mobility: the megastructures of the civic axis, which were also decisive in the new system, related to the residential areas, merging into an organic whole capable of allowing continuity of movement and – probable – future expansion. The megastructures were intended for the areas of government, administrative offices and more generally the pilot functions of the nation in economic terms. Hence the need to exasperate the infrastructures of the civic axis: the immense flow of traffic had to be absorbed in such a way as to prevent congestion. As for the residential areas, these were reached by a system of streets that departed from the civic axis, perpendicular to it. Located in the bay, built on a human scale and characterized by a horizontal distribution, the residential areas constituted real neighborhoods in which it was possible to identify a succession of areas and equipment for sports and leisure, large open spaces, educational facilities and housing, giving life to a dynamic whole. Tange's project, in addition to pursuing ambition and the desire for order, in a phase of capitalist development, constitutes the scientific and design tool to face the new dimensions of the urban problem. Kenzo Tange's intentions, hopes, dreams were welcomed by politicized critics, but the proposal remained on paper. And this is due to the nuance of utopia that the architect used to repaint the territory and the

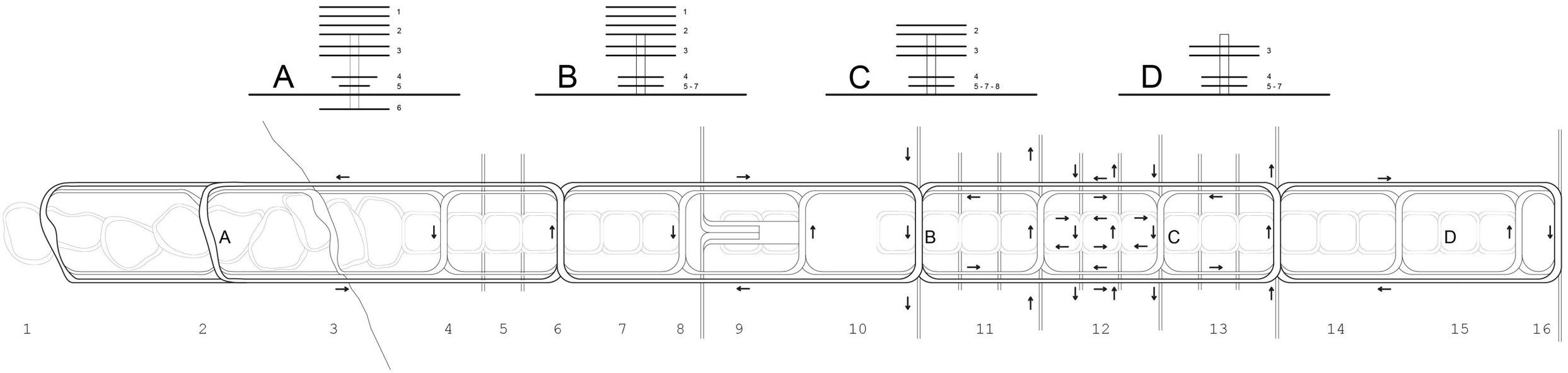
space. The revolutionary, ambitious, dreamy attitude, which expresses a sense of ecstatic abandonment can be identified in the very words of Kenzo Tange, who in 1960 commented as follows: "We think that people of all classes and professions must fight aggressively and constructively for the reformulation of Tokyo. […] If this plan should work as a foundation stone in the construction of the new city, our hopes will be fulfilled."[39] Have the choices adopted in the contemporary world really healed that sick body – or system – ? No: from the analysis carried out it is possible to assert that the problems of Tokyo in 1960 have not actually been solved. In fact, that of 2020 appears as a city still congested, paralyzed and in the throes of a ferocious expansion.
Kenzo Tange, on the contrary, by promoting the resolution of problems, has favored the reaffirmation of the social and moral role of the architect: the intent to cure the sick body of the paralyzed city was realized through the presentation of a proposal in which the dataization of each element could be preparatory to the actual realization of the project. We do not actually know if Kenzo Tange's project, if it had been realized, could have solved the problems of an expanding city. But despite this, the whole program promised a favorable outcome. Although he never had the opportunity to realize his project, a few years later, he gave life to a new proposal, the 1986 plan that the Tokyo government is gradually realizing over the years, the similarity between the proposed designs and the new islands made with waste along the bay is remarkable. Obviously, in this proposal, Kenzo Tange abandons all the concepts articulated in his proposal of the 60s, but trivializes his proposal for an expansion on the sea, as confirmation of the use of it as an expansion surface, abandoning all past reasoning, and putting aside the concepts related to the new society formed by the 60s.
Kenzo Tange's modus operandi can be traced back to the urban planning debate of the twentieth century, which gravitated around the theme of the body: and it is precisely because the urban project touches the body that the body

39.
Ibid., p. 76.

IMAGE 25
(page following)
Kenzo Tange,
Plan for Tokyo -
1960 - Toward a
structural
reorganizzation
© archeyes.com

has become the protagonist of Tange's proposal. In this regard, taking up the words of Cristina Bianchetti, it is possible to conclude by asserting that "Designing the relationship between body and space means touching the body with the project. Touching the body is a position at the center of Jean-Luc Nancy's ontology. […] Touching means modifying, changing, moving, questioning that something you touch. The project touches the body because it acts on space […] because it touches it with meaning". [40]

40.
C. Bianchetti,
Bodies between
space and
design, Mime-
sis, Milan,
2019, p. 44.



Struttura dell’asse civico

1. Ikebykuro
2. Ichigaya, raccordo con la linea Chuo
3. Stazione di Tokyo, raccordo con la linea Keihin
4. Tsukiji
4. Tsukiji
6. Harumi
6. Harumi
8. Nuova linea Tokaido
9. Nuova stazione di Tokyo, 2° ciclo sulla baia
10. Porto di Tokyo, 3° ciclo sulla baia
11. Distretto gorvernativo, 4° ciclo sulla baia
11. Distretto gorvernativo, 4° ciclo sulla baia
13. Distretto commerciale e alberghiero, 6° ciclo sulla baia
14. Distretto amministrativo, 7° ciclo sulla baia
15. Distretto ricreativo, 8° ciclo sulla baia
16. Kisarazu

Sezioni sui punti di scambio

1. Trasporto ciclico, 3° livello
2. Trasporto ciclico, 2° livello con metropolitana
3. Trasporto ciclico, 1° livello
4. Raccordo con la strada
5. Scambio della metropolitana
6. Metropolitana
7. Parcheggio
8. Livello negozi

Vernissage as a failure (Expo70)

The metabolist megastructure, a central symbol of this movement's research, represents a design expression that lasted over a decade and culminated with the Osaka Expo in 1970. This approach is based on a biological-mechanical vision, where the city is conceived as an evolving organism, dominated by technological elements such as looms, aerial or floating planes, which act as aggregating structures for residential cells interchangeable over time. At the heart of metabolist urban visions are concepts such as evolutionary process, artificial soil, marine civilization, metabolic cycle, collective form, cellular unit, street-space, intermediate structure and shared semi-public space.
The urban projects of the Metabolists are distinguished by synthetic and highly evocative images, which reinterpret the construction logic of the Japanese tradition such as modularity, assembly and the practice of replacing materials in temples to ensure their continuous renewal. These characteristics have given their ideas a futuristic and exotic aura, favoring their rapid diffusion in the international academic and professional scene, but also a subsequent marginalization. In particular, in Europe, their projects have often been considered naïve academic exercises, products of a specific cultural context and manifestation of a modernist project now in its twilight, evoking images of "urban dinosaurs" destined for extinction.
The article "The megastructure is dead" by Reyner Banham, published in Casabella in 1973, summarizes this disillusionment. Banham, who less than a decade earlier had celebrated the megastructure as a paradigm of modern architectural renewal, changes perspective in his book Megastructure: Urban Futures of the Recent Past (1976), where he avoids defining it explicitly, preferring to the descriptions of Fumihiko Maki and Ralph Wilcoxon. Maki, in his text Investigations in Collective Form (1964), describes the megastructure as a vast technological framework

capable of accommodating different urban functions, comparing it to an artificial element of the landscape, such as a large hill. Wilcoxon, on the other hand, defines it as a set of prefabricated units hooked to extendable modular systems, with a longer life than individual units.
The fascination with the techno-utopian character of these urban models, combined with Western criticisms, has obscured another significant aspect of Metabolist projects: their relationship with the concepts of destruction and ruin. Arata Isozaki, an ambivalent figure of the movement, clearly expresses this dimension, integrating it into the broader techno-utopian imaginary of late modernity. Through the radicalization of the Cartesian tabula rasa and the exaltation of the modelistic characteristics of modern design, the Metabolists have created urban spaces that, in a subtle way, reproduce characteristics of the Japanese settlement tradition.
This operation can be interpreted both as a cultural critique of modernist logic, and as a denunciation of the uncritical import of Western urban models into Japan. Rather than directly opposing Asian and Western traditions, the Metabolists place the debate on an intermediate terrain, proposing a postcolonial reflection that reworks traditional concepts in an innovative way. This approach, although criticized for some inconsistencies, represents a unique response to the urban planning challenges of their time and a critical reinterpretation of modernity.

IMAGE 26
View of the east area of the Expo, September 1970
© sabukaru.online.com

Positions: A future past not yet forgotten

3.

As Koolhass noted in his book, metabolism has inherently turned what was previously considered a limitation into an opportunity.[41] In other words, architect Rem Koolhaas reveals the approach with which the movement pursued the understanding of the very essence of Isola as a place of design, promoting architectural initiatives that exploited the sea as a fundamental terrain for development. In this context, a relevant consideration arises, namely the invocation of the concept of "ARTIFICIAL LAND," which has granted architects the ability to conceive new types of residences, often focused on the construction of structures on stilts or artificial islands within the marine context. It should be noted that Metabolists have fervently embraced this concept, considering it as the supporting pillar of their project initiatives. This approach was developed with the intention of conceiving a new architectural structure designed for a society in which individual freedom is maximally emphasized. On this basis, Zhongjie elaborated a reflection, explaining that Metabolists intended to redefine the relationship between nature and humanity. This conception starts from the idea that the earth should not be owned by specific individuals, but rather should return to its natural state, becoming public heritage.[42] In other words, the main objective of projects based on the principle of ARTIFICIAL LAND was to emancipate the soil as a common resource and to restore it to its original state.
Despite this, there is a criticism made by Smithson (team x) against the approach of the Metabolist group. He argues that it is necessary to go beyond mere rhetoric and concretely demonstrate the validity of the proposals, emphasizing the need to provide tangible technical support to the ideas presented.

41.
Koolhaas Rem, Op. cit.

42.
Casey Mack, Op. cit., p. 15

In this sense, the architect Casey Mack emerges as a key figure, since, through his book, he exposes a series of concrete examples, in which he tries to highlight the feasibility and feasibility of the projects proposed by Metabolists. Therefore, his contribution is configured as a praise of the Artificial Land, proposing it as a solution that deserves serious consideration for the future of architecture and the built environment. In addition, he explains that flexibility has a critical value and that it allows multiple aspects to be questioned, allowing for greater scenarios. Precisely for this reason, Artificial Land must be considered as a solution that exploits design freedom in order to obtain different opportunities over time.[43]
The concept of "Artificial Land" represents an element of considerable interest, as it permeated the ensemble of projects developed within the Metabolista group. This omni-presence of such a conception may have been favored by its ability to promote architectural scenarios of considerable flexibility. It is worth mentioning that the mentor of this idea was Otaka, commonly recognized as the member most averse to expansion and getting out of his "comfort zone." Otaka, in addition to promoting an innovative architectural concept, also advanced a new approach to the design process. Indeed, he advocated that the personality of the architect should find expression within a group context, affirming the need for an organizational dimension aimed at creating preordained circumstances and situations.
However, there are a number of criticisms in relation to his approach, some of which categorize the concept of "Group Form" as "Crowd Form" or even "Sample Show Style."[44] However, Robin Boyd's analysis could be open to a wide discussion, since, if that had been the case, Otaka would have been successful in making a plurality of architectural manifestations.
Undoubtedly, it is necessary to recognize a clear desire for separation in Otaka's projects between public and private space. This separation finds formal expression in his projects, in which the structures of a public nature are

43.
Boy Robin, Op. cit

44.
Zhongie Lin, Op. cit., p. 107

arranged below the "Artificial Land," while, above it, various private structures characterized by architectural configurations of dramatic resonance are promoted.[45]
A similar intent to promote an architecture with a system of flexible and persistent spatial infrastructures also emerges in Maki's works. The buildings designed by Maki are united by a particular attention paid to detail and lighting. The architect has dedicated himself fervently to the organization of spaces, alternating structural bodies with rest areas, intended for meetings or events. These spaces are sometimes arranged outdoors and, in other cases, inside rooms. In more abstract terms, we are witnessing an internalization of outdoor spaces and exteriorization of interior spaces. It is worth noting that these stops are conceived with the aim of serving the community, a central concept within Maki's design process. This predilection for forms that evoke or symbolize the collective, such as the walls and towers of ancient cities, is justified by a premise that emphasizes a strong attraction to forms that suggest or symbolize collective unity, considered as a whole.
A possible example of this expression of collective unity could be identified in the metaphor of the boat, which represents the self-sufficiency and mysteriousness of space. Maki, through his design practice, tries to reintroduce this model as the only plausible solution. The roof itself is conceived as a connecting bridge, the fences as elements that give a sense of protection and stability, and the stairwells are inserted inside towers, thus helping to strengthen naval architecture as a prototype. A more direct approach would recommend using the scanning of a particular shape but associating it with different meanings. It would be an abstraction to design an assembly produced by the form itself.[46] Fumihiko Maki's speech could be considered a divergence from the general view held by the Metabolist Movement. In fact, the group explains that there should not be a form, the city should be conceived as a passive object, more precisely as a mutable entity. In this context, Kiyonori Kikutake emphasized the need to abandon

45.
Boy Robin, Op. cit

46.
Frampton, Op. cit., p.74

the traditional approach based on form and function, in favor of a new paradigm based on space and changing function. A concrete example of this emphasis on changeability can be found in the design of the Hotel Pacifico, where one can clearly see the attention paid to changing conditions. Kikutake's approach aimed to solve the challenge of change without compromising the overall vision.[47]
This concept aligned with one of the core tenets of the Metabolist Movement known as "CITY AS PROCESS." According to this vision, the city should not be limited by fixed and specific destinies, but should be conceived as an entity in constant growth and renewal.[48] In this perspective, both Maki and Otaka emphasized the importance of adopting dynamic rather than static urban planning approaches, in order to create systems capable of adapting to present and future changes.[49]
Despite the initial enthusiasm aroused by the proposals of the Metabolist Movement, not everyone welcomed his methodology. Manfredo Tafuri, a contemporary critic, raised significant doubts and criticisms, arguing that the metabolist approach could lead to architectural and urban scenarios that were excessively broad and abstract, but lacking in substantial content. According to Tafuri, the young architects involved in the movement risked falling into excessive abstractionism, focusing more on a generic stylization of forms than on a profound reflection on the sociological and human issues that architecture would have to address. He warned against the danger of neglecting the concrete methodological development that should have guided the design, replacing instead a more utopian approach that was not rooted in social reality. His criticism, therefore, was not limited to the surface of the design proposals, but extended to the lack of a real connection with the concrete needs of society and its inhabitants. [50]
Tafuri is part of a debate that, starting from the critical one, has seen the emergence of fundamental questions on the very nature of Metabolism. Was the movement to be considered a group of individuals with shared ideas, or a

47.
Boy Robin, Op. cit

48.
Zhongie Lin, Op. cit., p. 96

49.
Zhongie Lin, Op. cit., p. 96

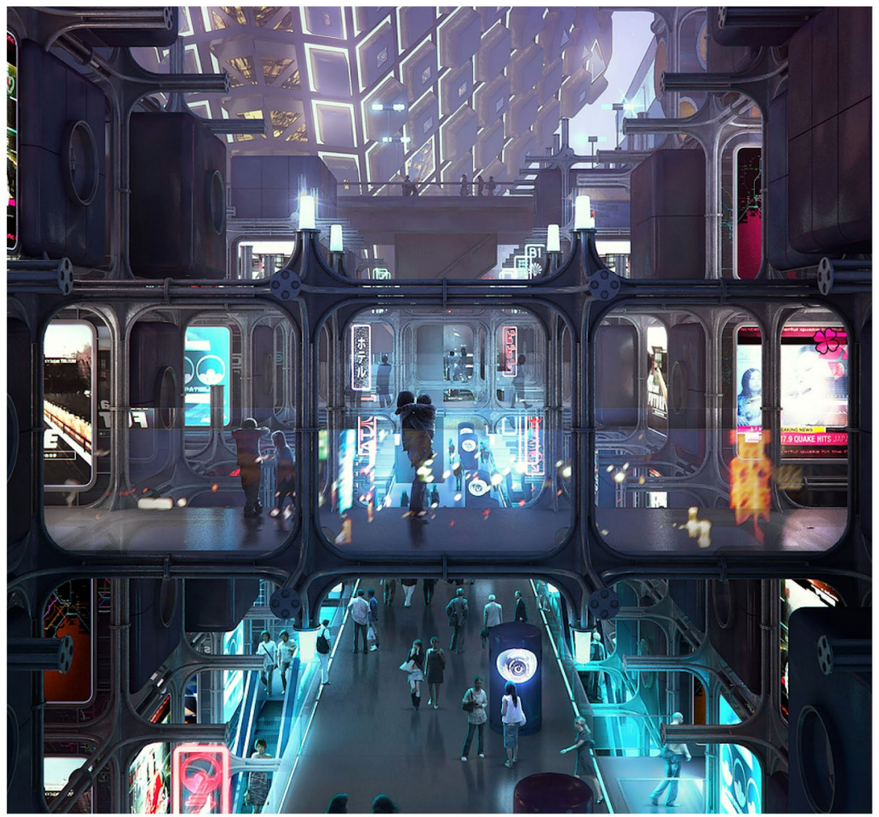
50.
Tafuri, Op. cit., p. 137

real movement, characterized by precise rules and a common goal? Wendelken, in his essay The Metabolist Movement as a Group of Individuals, offers a reflection that highlights the importance of individuality within the movement, showing how the projects of individual members have often diverged from the initial ideas of Metabolism. Despite the collective vision that had animated the early stages of the movement, in fact, the subsequent design developments of the various architects have shown distinct paths and, in many cases, a departure from the original guidelines. In particular, Kisho Kurokawa was the only member of the group to maintain a fidelity to the principles of Metabolism over time, continuing to publish and design movement-related works, while the other members went their separate ways. The dichotomy between "group" and "movement" is therefore a crucial issue, which has been explored by various scholars, including Tafuri and Lin. Tafuri defines Metabolism as a group of young architects, who, while sharing some initial ideas, then progressively detached themselves from collective visions. On the contrary, Lin considers Metabolism as a real movement, with precise rules and a common goal, which was part of the utopian current and which saw in Kenzo Tange a figure of reference and guide. Boyd, for his part, compared the Metabolism to other avant-garde movements, but emphasized its strong connection with Japanese tradition, while acknowledging a certain backwardness compared to the official Japanese architecture of the time. The vision of Metabolism as a unified movement, with a clear and shared design intent, has therefore been questioned by different interpretations, each of which has tried to define its character through comparison with other architectural and cultural movements.
Despite the interest aroused by the proposals of the Metabolist Movement, it is important to underline that the group did not fully succeed in realizing its vision. With the exception of Osaka 1970, the movement had limited opportunities to carry out large-scale urban projects,

IMAGE 27
Metabolism City",2012
© Jean Marc Emy, architect and graphic artist

focusing mainly on the design and construction of smaller architectural projects. Therefore, the future of Metabolism is often regarded as a "downfall," following the perspective envisaged by Arata Isozaki. [51]

51.
Julian Worrall, Op. cit., p. 148



SECTION II

Architecture and crisis

Contemporary challenges

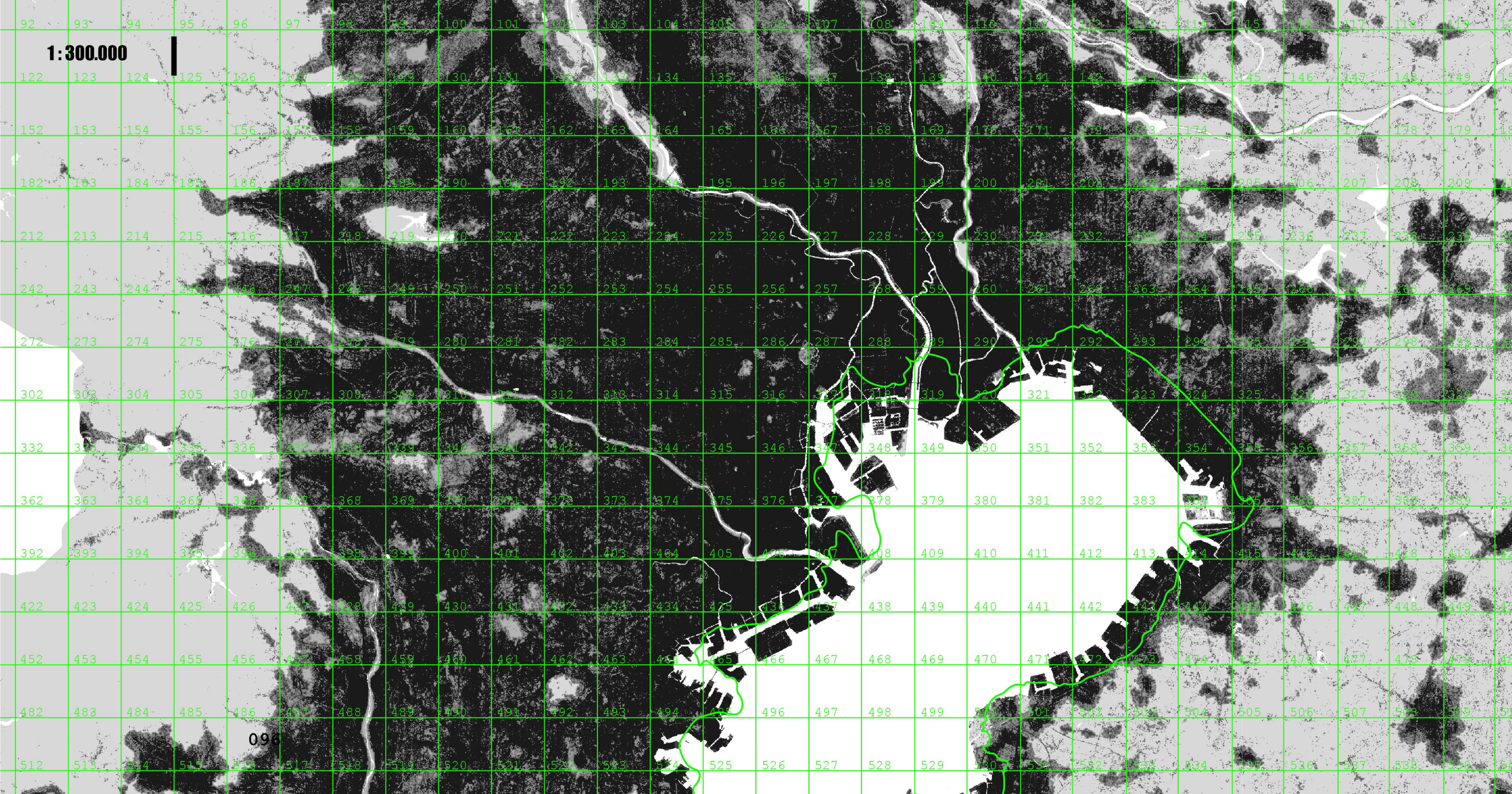
Tokyo faces growing environmental threats due to climate change and rising sea levels, putting existing protection strategies to the test. Despite its advanced flood-control and seismic infrastructure, urbanization and the loss of natural spaces have disrupted the hydrogeological balance, turning Tokyo Bay from a vital resource into a persistent flood risk.

Industrialization and urban expansion have transformed the city's lowlands, increasing land subsidence and flood vulnerability. To counter these risks, various strategies have been proposed: reinforcing embankments with "super levees," integrating storm surge barriers with urban development, and even restoring certain areas into lagoons to reestablish the natural water-land relationship.

The 2011 Tohoku earthquake and tsunami further exposed the limits of Tokyo's protective infrastructure, prompting a reassessment of disaster prevention and post-disaster architecture. Initiatives like Toyo Ito's Home for All emphasized the need for community spaces to aid both physical reconstruction and social cohesion.

At the heart of the debate is the balance between protection and transformation. While engineering solutions continue to strengthen physical defenses, they risk further separating the city from its environment. Meanwhile, urban planners and architects seek approaches that merge safety with livability, envisioning the waterfront not as a rigid barrier but as an adaptive, revitalized space.

This raises a fundamental question: should Tokyo merely resist water, or can it learn to coexist with it? The challenge extends beyond technical solutions to cultural and design perspectives. A more integrated approach is essential—one that overcomes disciplinary fragmentation to create a shared vision where protection and urban quality are not in conflict but part of a unified strategy for a more resilient and sustainable city.


1:300.000
096

Tokyo in crisis: sea level rise and subsidence

Walking around Tokyo, it almost seems that the Metabolist movement has never had the opportunity to materialize. The few remaining traces are even more elusive today, especially after the demolition of the Capsule Tower, the symbolic building of this movement. In a current context of crisis, one wonders what Metabolists would create today if they had the opportunity to express their ideas. What issues would they highlight in their manifesto? They would probably focus on different themes, reflecting on the complexity of the megalopolis Tokyo, which has to face varied problems, different from district to district. In any case, common problems emerge in this stratified climate, not surprisingly in a period of crisis, with urgent issues related to climate change, rising sea levels, population growth and demographic aging. These issues, while they may seem unrelated, are actually interconnected. Japan, one of the most developed countries in the world, has seen Tokyo position itself as a model city, although it is currently experiencing uncertainty. Several solutions have been implemented thanks to research and investments that have made the city safe from potential flooding and have prevented the collapse of buildings, designed with high seismic resistance capabilities. However, these solutions may no longer be effective today. As sea levels rise, structures designed to protect the city from flooding, whether due to heavy rains or tsunamis, seem to be no longer working. This is not only about maintenance issues, but also about the need to redesign buildings, increasing their height. The demolition of natural elements along the banks, which in the past served as stagnation areas, has also contributed to this situation. The need to build housing has resulted in the loss of parks. As a result, the idea of

IMAGE 1
(page previous)
Orthophoto of the city of Tokyo

bringing greenery to rooftops emerged as a solution to the lack of green spaces. In this context, Tokyo and much of Japan face significant water-related challenges. The country is among the most exposed to the risk of flooding, also due to its geographical position in the Far East, subject to frequent monsoons with high annual rainfall and a long typhoon season. It is evident that Japan suffers devastating damage every year due to extreme events. The presence of these problems has led to changes to the Flood Protection Act, which has been progressively revised to cover more rivers. In addition, alarm regulations require disaster preparedness and response plans, including evacuation plans for facilities and people. Considering a more precise scale, for example Tokyo Bay, it is possible to understand how this vast expanse of water, which embraces the Japanese metropolis, plays a central role in numerous intricate challenges related to the theme of water. In a global context where climate change is progressively intensifying the frequency and severity of extreme weather events, Tokyo Bay is facing an increasing risk associated with potential flooding and significant environmental alterations. This vast expanse of water, which winds majestically around the Japanese metropolis, becomes not only a distinctive feature of the landscape, but also a focal point of environmental concerns. Water, once a vital and beneficial resource despite some problems, is now seen as one of the biggest threats. This shift in perception has led to extensive planning for water management and disaster prevention. This perception is particularly accentuated in the plains, where its geographical position and its link with the sea make it particularly susceptible to the impacts of climate change, which manifest itself through increasingly extreme weather phenomena. In this complex scenario, Tokyo Bay becomes a representative microcosm of global water-related challenges, which require a holistic approach and strategic planning to mitigate potential negative impacts on the metropolis and the surrounding environment. The need to take proactive and sustainable measures emerges as imperative, as the resilience of Tokyo Bay is critical to the

long-term security and sustainability of the region. To fully understand Japan's complex relationship with water, it is crucial to consider its topography. Nearly three-quarters of Japan is mountainous, which explains the steep and short nature of its rivers, which limit the amount of rainwater that can be captured before flowing into the sea. Additionally, as a country that experiences heavy rainfall at specific times of the year (the rainy season from June to July and the typhoon season from August to September), Japan has historically suffered from severe flooding. Despite various investments, this remains a persistent concern. Combined with the challenges of climate change, especially rising sea levels, water has become one of Japan's most significant concerns. The growing threat of natural disasters has led to calls for better resilience planning, but many areas remain unprepared for flood prevention. The Tokyo metropolitan area is one of the few regions in the world that has taken significant measures to address flood risks. Given the extreme danger of flooding, extensive development of infrastructure, including forest areas or "green dams", has become essential for flood management in the country. Strong support for forest management for water management comes mainly from civil society and is largely shaped by the media rather than academia. Forests and dams complement each other: dams continue to be built, while policies, laws, and regulations promote integrated forest and water management at the national level. Regarding extreme events such as droughts and floods, the Tokyo Metropolitan Government's Water Supply Office has planned mitigation and adaptation measures to address the impacts of climate change on water works. It is estimated that the number of days with heavy rainfall (100 mm or more per day) will increase to 10 days per year over the next 100 years. Mitigation measures include the use of renewable energy, forest conservation, and drainage infrastructure to prevent losses. The adaptation measures, as envisaged, also consider natural disasters in the National Plan for Adaptation to the Impacts of Climate Change. Japan's history of extreme events has made its institutions and society

aware of the importance of preparedness. With variability and climate change, these events are likely to increase.Currently, although the phenomenon of land subsidence has stopped since the entry into force of the regulations on groundwater extraction, the ground level remains below the mean sea level. To protect lowland areas, the Tokyo government has carried out several projects, building an extensive network of rigid measures such as dams, pumping stations and locks. This approach is supported by recent studies predicting that global mean sea levels could rise between 0.98 m and 2.92 m by 2100 compared to pre-industrial levels. This increase could have serious repercussions on wastewater treatment plants, creating further problems related not only to changes in coastlines but also to the operation of the various systems. However, there is currently a lack of guidelines on how these plants can adapt to rising sea levels. With climate change and the increase in extreme natural disasters, people will have to adapt to living in areas with a higher risk of flooding. This will not only be the case in Tokyo, but also in other places such as the Netherlands, where 50% of the country is located no more than a few meters above sea level. In addition, it should be emphasized that Japan is crossed by numerous rivers, which have significantly different characteristics from European rivers. The water that flows along the Japanese mountain ranges has a more violent and direct course. This rapid and impetuous flow is due to the geographical conformation of the Japanese territory, characterized by steep mountains and short rivers. As a result, the flow of water occurs more quickly and less sinuously than in Europe, where rivers tend to follow more tortuous paths and descend more gradually. This characteristic of Japanese rivers requires more attention and analysis in their management to prevent them from causing significant problems to the cities they pass through. To address these challenges, Japanese rivers are classified into three main categories: rivers with flood prediction, rivers known for their water levels, and other small and medium-sized rivers. Rivers with flood forecast are those

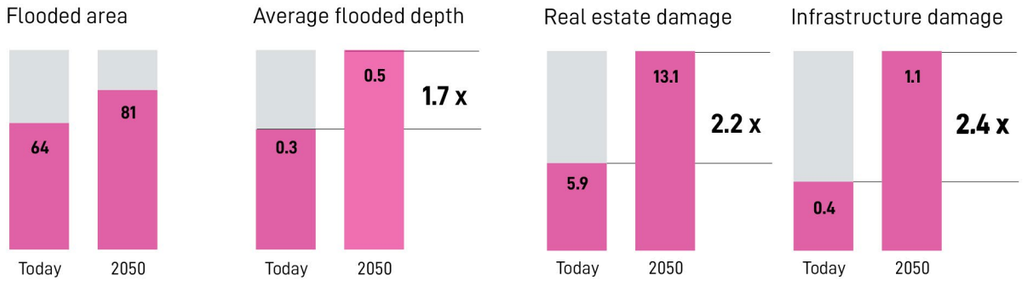


IMAGE 2:
The graphs show the potential issues resulting from the projected increase in flood frequency and intensity in Tokyo by 2050, due to climate change, in the absence of adaptation and mitigation measures

that cross two or more prefectures or have a large catchment area. In these cases, floods can cause serious damage to the national territory and the economy. Therefore, the management of these rivers is of paramount importance for national security. In contrast, rivers known for their water levels are first-class rivers that do not fall into the category of flood forecast rivers. Flood forecasts for these rivers arecrucial because flooding can cause significant damage to the national economy. A relevant example of this category occurred in October 2019, when 80% of rivers managed by prefectures reported flooding in areas corresponding to the maximum expected rainfall. However, there has been no significant progress in flood management for small and medium-sized rivers, which lack water level guidance. This lack of data makes it more difficult to plan and implement effective prevention measures, increasing the risk of damage during extreme weather events. In summary, the unique nature of Japanese rivers requires a highly specialized and proactive management approach that takes into account their distinctive characteristics and the challenges they pose. Only through accurate classification and targeted management can the risks associated with flooding be mitigated and the safety of urban and rural communities ensured.

IMAGE 3
(page following)
Sea Level Rise Projection Map (Tokyo)

Exploring the Tokyo Lowland Areas: A Focus on Koto Ward

The Tokyo metropolitan area is the largest urbanized megacity in the world, with a total population of about 36 million. This vast area is divided into several prefectures, including Tokyo, Kanagawa, Chiba, and Saitama.
Tokyo Prefecture itself is distinguished by its complex geography, which includes three main areas: a mountainous area to the west, a central plateau, and a delta area to the east, overlooking Tokyo Bay. Specific areas of the city, in particular the inland areas of Tokyo Bay, were selected as the main case studies for this research. These areas are of particular interest not only because they once represented the water-front of the bay, but also because, in the second half of the post-war period, they were the scene of the first attempts at urban development by experts, aimed at improving the precarious living conditions of the Japanese population.
As mentioned, metabolists have played a crucial role in devising innovative projects to address Tokyo's urban crisis. However, one of the most significant challenges has been the frequent earthquakes, a problem not only for Tokyo, but for all of Japan. In this context, Professor Takaima focused his studies on designing a new city that would take into account seismic and other difficulties. He decided to develop his project in the lowland, an area already the subject of innovative attempts by the Japanese government.

First solutions of the 60s

The lowland, which is the subject of current studies, has been a field of experimentation to find solutions to Japan's many daily challenges, such as earthquakes, fires and tidal waves. The project developed by Professor Takaima and his research group envisaged a cross-shaped structure as an element of cohesion between the various poles of the city. This scheme, graphically represented as a cross, aimed to

limit the spread of problems, with fireproof skyscrapers arranged at the edges to contain the spread of fires. The main objective of the project was to ensure the safety of about 50,000 people, with an internal evacuation space of about 5 hectares. However, even with a secure base, if evacuation routes were not protected, many casualties would still occur. By deploying independent centers throughout the region, efforts were made to improve safety by developing a disaster prevention belt as a protective element for large overcrowded cities such as Tokyo. This belt served not only as an evacuation site and rescue route during emergencies, but also as a greenway and social zone in normal times. In a context of increasing urbanization, the active planning of green spaces becomes essential.[1] This belt, including schools, parks, and other public facilities, would be critical to the safety and sustainability of overcrowded cities.
The project highlighted the precariousness of the study area, especially considering that the phenomenon of subsidence was not yet fully controlled.

1. Takaima H. Op. cit, p.62

Beginning of problems

Since the early 1900s, areas of the Tokyo Plain have been heavily influenced by human activity. In pre-modern times, these areas were home to fishing villages, temples, shrines, recreational areas, hiking sites, and timber yards. During the modern age, in reaction to industrialization, the waterfront began to house factories, warehouses, workshops and popular neighborhoods. Many steamboats plowed the canals and trams plowed the wide lanes, supporting the hustle and bustle of life in Köto-Sumida.[2] Industrialization has not only caused pollution problems due to the release of substances from factories into canals, but has also led to the phenomenon of subsidence due to the extraction of water from the ground in order to be able to give it to the feed industries. In addition, it is necessary to point out that with the advent of the automobile and the train, water transport and trams were progressively abandoned, leading to the creation of paved areas and the loss of the porous surface.

2. Jinnai H., Takaima H. Op. cit, p.73

The loss of the porous mantle, the pollution of the water and the need to build highways were the main causes of Tokyo's transformation from a city of water, a key element of Japanese life, to modernizing and losing much of its original personality. The Tokyo Plain was once comparable to Venice, a "city of water".[3] With modernization, public interest in the area has increased, promoting the financing of flood protection structures. However, these works have exacerbated the phenomenon of land subsidence, lowering some parts of the delta to about 5 meters. The extraction of groundwater and natural gas caused a subsidence phenomenon that began between the end of the Meiji period and the beginning of the Taisho period, continued until the 70s and led to the construction of defensive walls along the banks, modifying the area east of the Sumida River.[4] The most severe subsidence occurred in Minamisuna 2-chome, an area in the Koto district, which cumulatively decreased by 4.57 meters (level reached in 1982). To combat subsidence, the government issued several regulations on groundwater pumping for the Koto district, including the "Industrial Water Law" (1961) and the "Law on the Regulation of Groundwater Pumping for Use in Buildings" (1963). As a result, the ground in the Koto district stopped sinking and even rose slightly. However, the area around the mouth of the Arakawa River continued to sink at a rate of 23.9 cm per year, leading to a ban on natural gas extraction in 1982.

3.
Jinnnai H. ,Op. cit, p.314

4.
Imamura Y., Op. cit, p.117

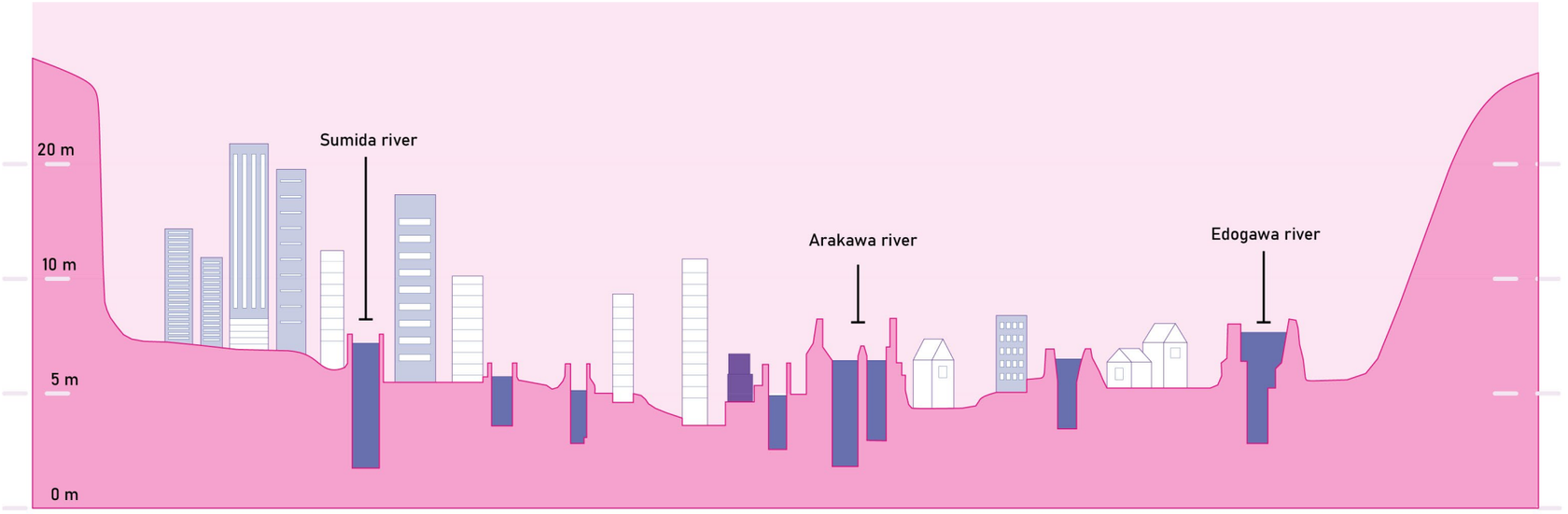


IMAGE 4
Representative spatial section of the current situation in Tokyo lowland

The river as salvation

The area around the Arakawa River, which defines Tokyo's lowland plains, today stands on precarious ground. Despite historical efforts to curb flooding, the surrounding zones remain vulnerable, and the protective systems put in place over the years no longer seem adequate to contain the growing risk. In the early 1990s, the Arakawa was envisioned as a beacon of safety, a remarkable feat of engineering designed, to control frequent floods and alleviate the burden on local residents; and for a time, it succeeded: people could continue to live in this region, feeling shielded by one of Tokyo's major rivers. Yet, over the years, residents have seen the threats reemerge. Even with the Arakawa's presence, the area has faced further flooding events, resulting in damage, evacuations, and, tragically, some fatalities. It has become clear that the existing systems built to hold back the water no longer offer sufficient protection.
The impact of the Arakawa has also reshaped the region's geography: the river stretches with an artificial branch running 22 kilometers to allow for controlled water flow, mitigating the
risk of overflow. But this has come at a cost. The river's construction led to the displacement of over a thousand residents and significant changes to local transportation routes. Today, many homes face a high protective wall that serves as a visual barrier as well, removing much of the community's once-vital connection to the water.
In response, the government has started new safety

IMAGE 5
Start of work on the construction of the new protection system along the Arakawa River.
© River Office, MILT

IMAGE 6
(page following)
Illustrative plan of the subsidence phenomenon that occurred in the city of Tokyo

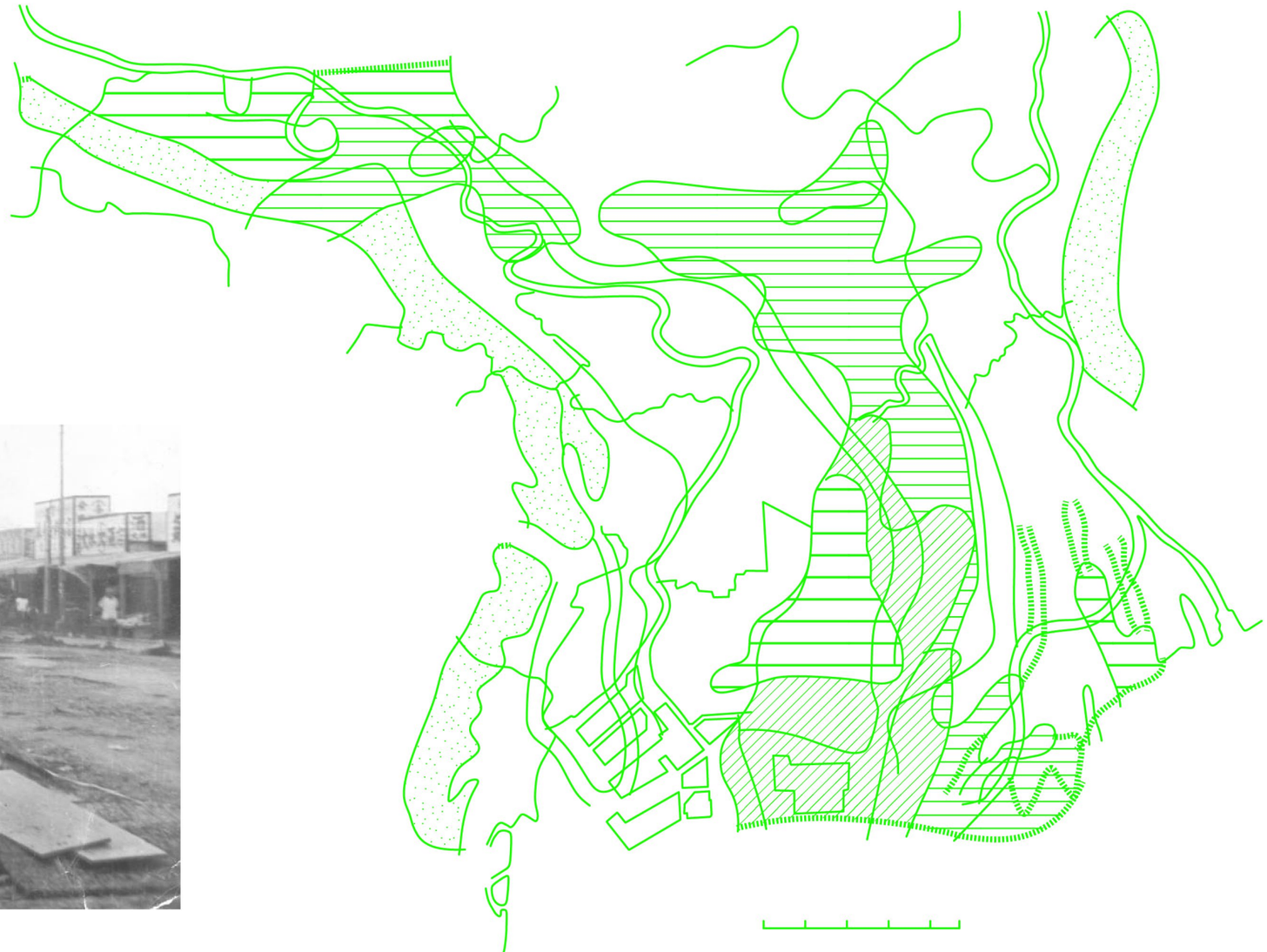


IMAGE 7
Ohshima area in Koto-ku flooded in Kanogawa Typhoon (September 1958)
© River Division, Bureau of Construction TMG

IMAGE 8
Damage caused by Typhoon Kathleen (September 1947)
© River Office, MILT

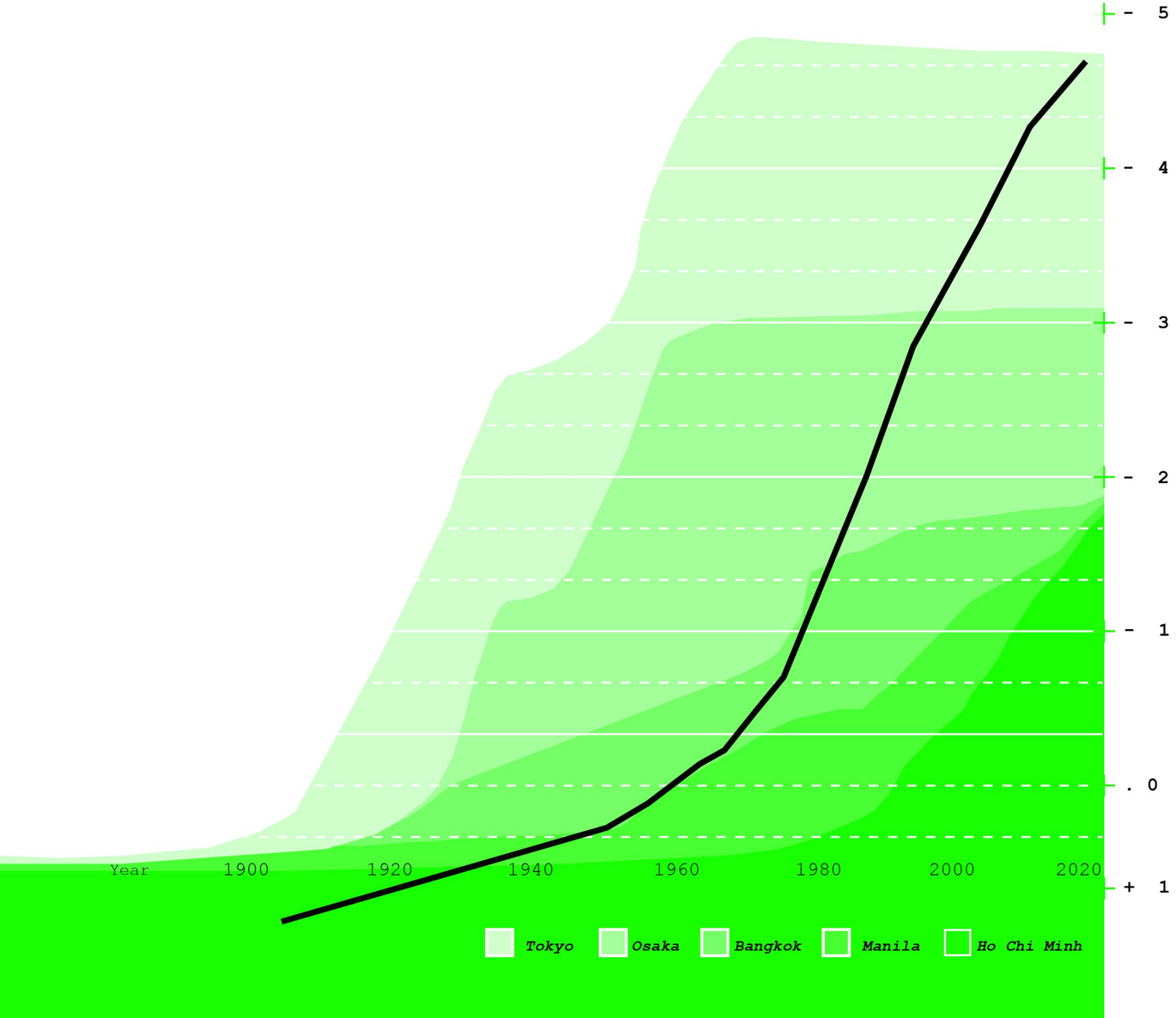


IMAGE 9
(page previous)
Accumulative land subsidence in Asian deltaic cities

IMAGE 10
A man walking in the city flooded by Typhoon Kathleen (September 1947)
© River Office, MILT

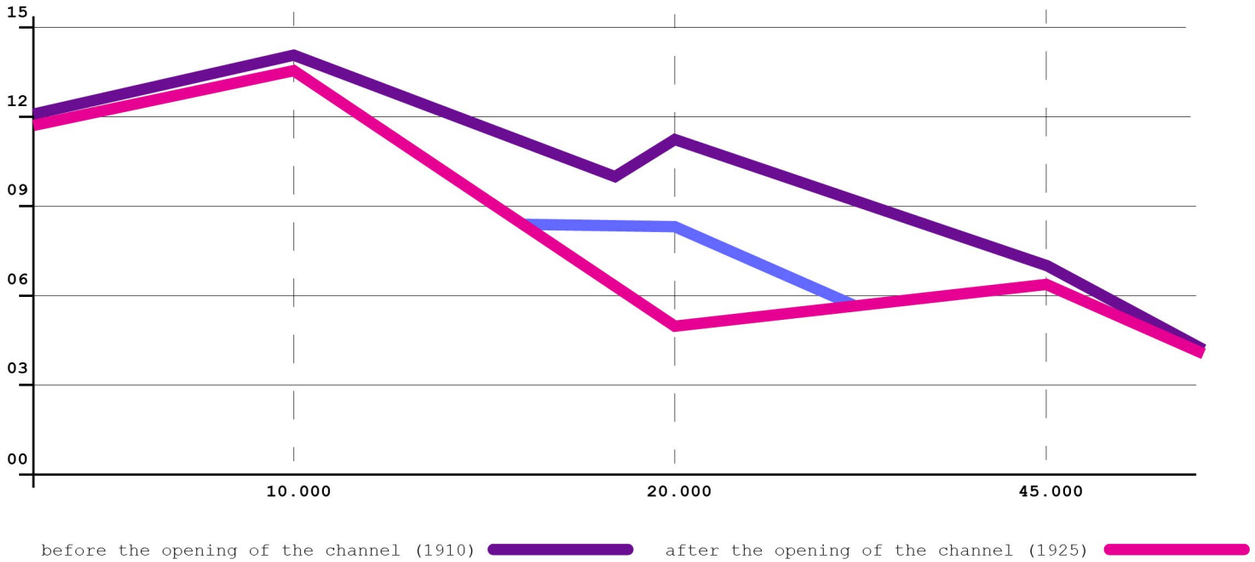


IMAGE 11
Water level at the time of flooding before and after the opening of the channel

upgrades. However, the proposed solutions are not without controversy, particularly regarding aesthetics. Among the measures are elevated terraces along the embankments, designed to act as higher barriers and, in emergencies, as evacuation zones. Although functional, these green spaces appear empty and isolated, creating a landscape that feels somewhat detached and lacking urban vibrancy.
Lastly, there is a fascinating relationship between the Arakawa and another of Tokyo's waterways, the Sumida River. The two rivers are connected by the Onigawa, a small river running perpendicular that captures the territorial changes reshaping the city. Along its course, the Onigawa drops by roughly three meters, descending from the Sumida to the Arakawa, serving as a reminder of the city's efforts to adapt to a constantly shifting landscape where nature remains a powerful and persistent force.

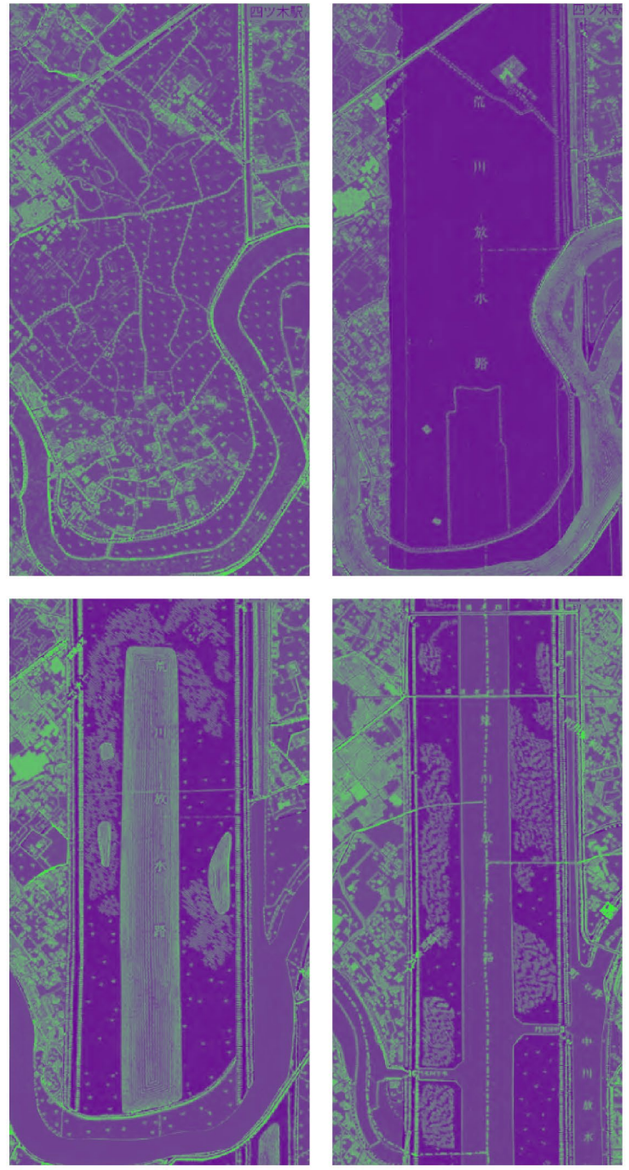
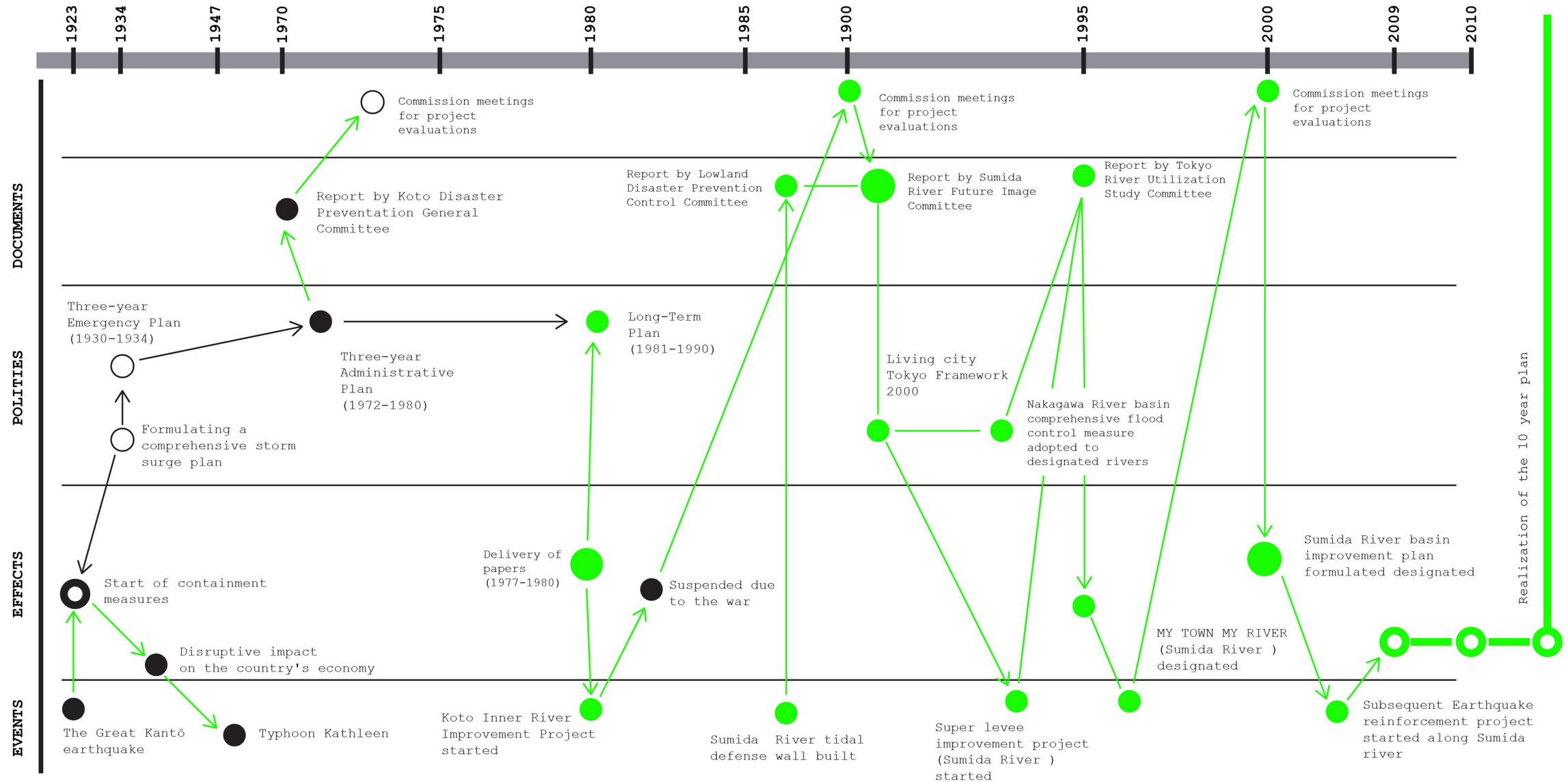


IMAGE 12
Comparative maps analyzing the evolution of river structure over the years

IMAGE 13
(page following)
Shezen diagram analyzing the history of Lowland river Control Projects


1923
1934
1947
1970
1975
1980
1985
1900
1995
2000
2009
2010
DOCUMENTS
POLITIES
EFFECTS
EVENTS
Commission meetings for project evaluations
Report by Koto Disaster Preventation General Committee
Three-year Emergency Plan (1930-1934)
Three-year Administrative Plan (1972-1980)
Formulating a comprehensive storm surge plan
Long-Term Plan (1981-1990)
Report by Lowland Disaster Prevention Control Committee
Commission meetings for project evaluations
Report by Sumida River Future Image Committee
Report by Tokyo River Utilization Study Committee
Commission meetings for project evaluations
Living city Tokyo Framework 2000
Nakagawa River basin comprehensive flood control measure adopted to designated rivers
Start of containment measures
Disruptive impact on the country's economy
Delivery of papers (1977-1980)
Suspended due to the war
Sumida River basin improvement plan formulated designated
MY TOWN MY RIVER (Sumida River) designated
Realization of the 10 year plan
The Great Kantō earthquake
Typhoon Kathleen
Koto Inner River Improvement Project started
Sumida River tidal defense wall built
Super levee improvement project (Sumida River) started
Subsequent Earthquake reinforcement project started along Sumida river

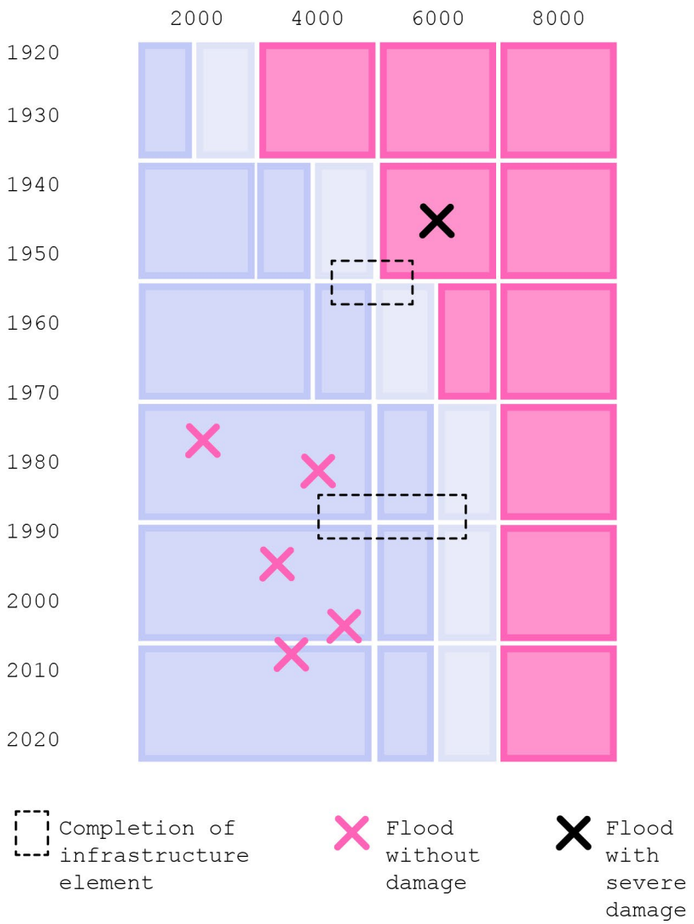
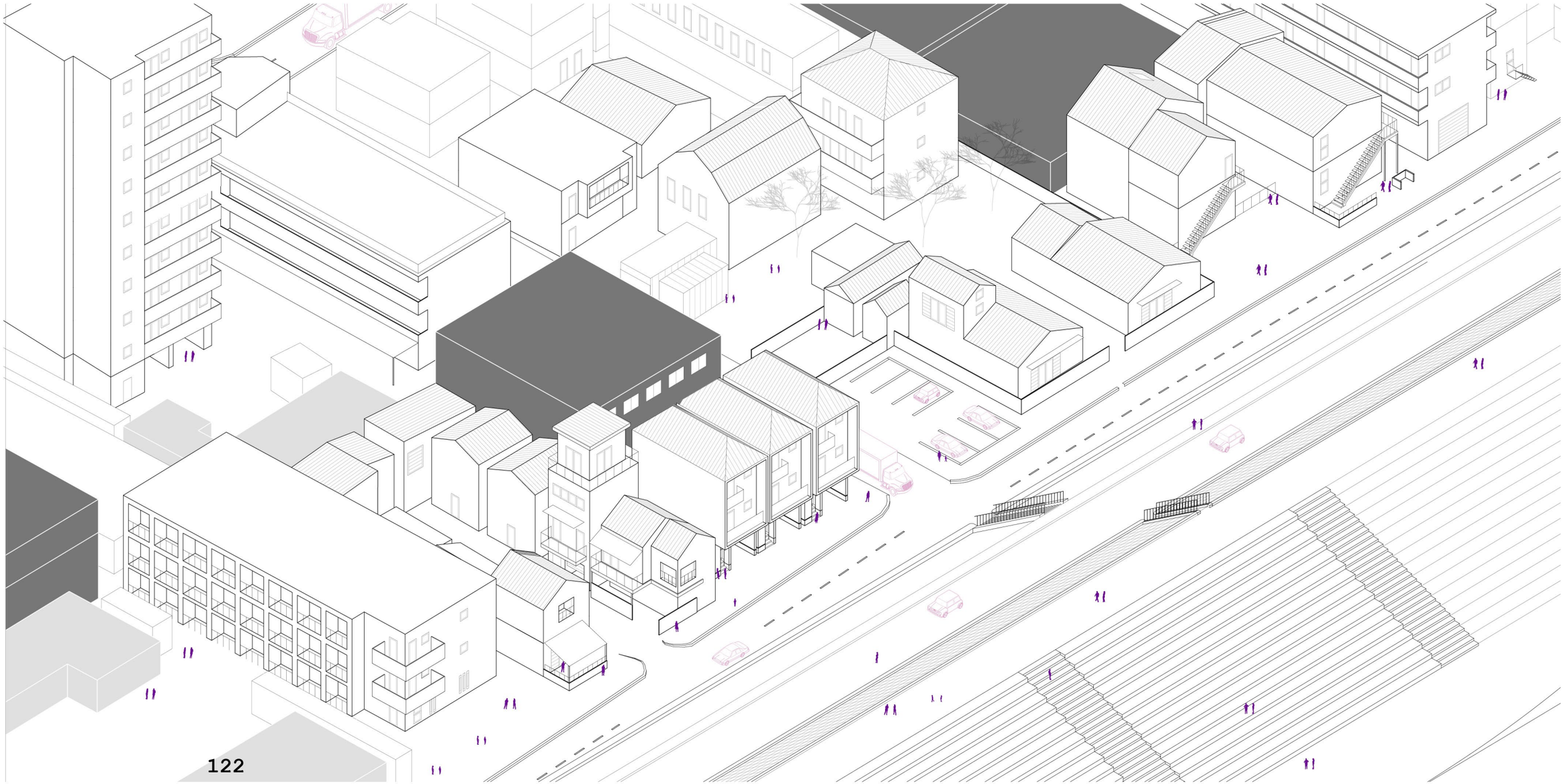


IMAGE 14
Explanatory graph of the capacity of Arakawa Flood Diversion Channel changed with time

IMAGE 15/18
(page following)
Current status of the various embankments at Koto-ku district



Past Traumas and their lasting impact

IMAGE 19
(page previous)
Axonometry of the current state of the relationship between the city edge and the Arakawa river

The need to respond to a primary need, namely to protect the city, is evident. Although Tokyo is generally considered a safe city due to the numerous policies adopted to ensure safety, the research still does not seem satisfied. This is particularly evident after the 2011 disaster, which demonstrated the overestimation of current protection systems, which are now increasingly being questioned. The critical issues do not only concern the unpredictability of nature or the obsolescence of structures, but also climate change. These factors justify the urgency of proposing new solutions, questioning the effectiveness of existing infrastructure, to prevent a repetition of disastrous events such as the one that hit the bay of the Tohoku area.
In fact, a catastrophic event such as the tsunami can cause enormous changes over large areas, as happened in Tohoku, in northern Japan, where an area of 500 km was severely damaged. The consequences were not limited to the natural disaster, but were compounded by an already precarious economic situation and depopulation, leading to a future of instability. The awareness that no restoration work can completely restore the pre-disaster condition has led to the development of a new way of thinking about architecture. However, it is necessary to focus on the rebirth of the industry, the reorganization of the region and the definition of a broad and global recovery strategy, with the aim of rebuilding a solid community ready for the future.
In this context, architecture plays a fundamental role. Considering both individual and collective needs, the foundations are laid for new alternative reconstruction strategies. Numerous architects have revisited their professional approach, confronting real and tangible problems. Many participatory projects have been initiated to restore local communities. However, 14 years after the great catastrophe, 48,000 people are still living in temporary housing. This scenario highlights the urgency of finding innovative solutions that can overcome the limitations found

in the planning that has taken place to date.

Tohoku

Northern part of the island of Honshu, the main island of Japan, and covers an area of 66,886 km². It is bordered to the west by the Sea of Japan and to the east by the Pacific Ocean, and is bordered by the Ou mountain range, the longest in Japan. It includes the prefectures of Aomori, Akita, Iwate, Yamagata, Miyagi and Fukushima. The name comes from the Japanese terms tō (east) and hoku (north). Although Tohoku occupies almost a fifth of Japan's territory, it is home to less than a tenth of the country's total population, with about 9.3 million inhabitants.
Mainly rural, the area is characterized by spectacular nature and rich in historical treasures. The largest city is Sendai, located in Miyagi Prefecture. The region's economy depends mainly on agriculture, so much so that it is considered the "breadbasket of rice" of Japan, thanks to its mild climate in

IMAGE 20
Tsunami in Tohoku: towns destroyed by 10-meter-high waves, March 2011
© uncrd.or.jp

IMAGE 21
People waiting to be rescued write the letters "SOS" on top of a building in Kesennuma, Miyagi Prefecture, 12 March 2011, © Yomiuri Shimbun

summer and snowy in winter. Fruits are grown and livestock are raised, while the main industries include forestry, mining, and fishing. Traditional handicrafts are still very developed, with products such as lacquerware, iron and copper utensils, toys and textiles. Despite being integrated into the Shinkansen network since 2010 and the construction of the Seikan Tunnel in 1988, the area remains one of Japan's least densely populated, with mountainous landscapes, forests, lakes, hot springs, and volcanoes. A place rich in history, originally inhabited by the Emishi people, it is characterized by a long feudal tradition with numerous temples, shrines and castles. However, urban growth has remained slow, a phenomenon exacerbated by the 2011 catastrophe, which turned many cities into "ghost towns", further accentuating the depopulation of the region.

The 2011 Tsunami

On Friday, March 11, 2011, local time at 2:46 p.m., an unprecedented earthquake destroyed the Tohoku region of Japan. An earthquake of magnitude 9.0 on the Richter scale

struck northeastern Japan, with its epicenter off Sendai, the most powerful earthquake ever recorded in the country's history. The force of this seismic event has generated tsunamis, which in some places reach ten meters in height, thus devastating a coastal strip of about 650 kilometers.
The event generated even more catastrophic consequences, recording damage to the cooling system of the Fukushi ma Dai-ichi nuclear power plant, causing the explosion of reactor number 1 on March 12.
Two hundred thousand people living in the vicinity of the plant have been forced to abandon their homes and those who live within a radius of thirty kilometers had to limit themselves to remaining locked in their homes. The radioactive wave spread quickly, so much so that higher than normal levels of radioactivity in the air were recorded even in Tokyo, which is about three hundred kilometers from the plant.
The official death toll grows as the days go by, up to official estimates that indicate between 18,500 and 20,000 dead and missing. The American Red Cross estimates that 19,447 people lost their lives that day and that 299,692 homes were destroyed or heavily damaged.
On March 13, 2011, Prime Minister Naoto Kan declared that the country would now face "its most serious crisis since World War II." In the days following the disaster, Japan's economic activities came to a halt due to interruptions to the national electricity grid, and on March 15, the Tokyo Stock Exchange recorded a record drop of 10.55%.
In a modern and developed country like Japan, where anti-seismic systems are among the first in the world and the population seems to have complete confidence in the authorities that govern it, what happened on March 11, 2011 upset the balances, convictions and foundations on which the certainties of an entire nation were based.
The Tōhoku earthquake and tsunami caused a major impact on Japan, including the loss of 12,915 lives.
As the months passed, the number of deaths increased, exceeding 15,000, some also due to the lack of food and medical care in shelters, such as the number of refugees

which exceeded 300,000. The number of confirmed deaths on 10 June 2016 is 15,894, with more than 2,500 people still missing.45 The economic impact was also significant, as many automotive, food, electronics, energy infrastructure and chemical plants were some completely destroyed, while others were closed due to severe damage, with enormous costs for reconstruction or recommissioning. These industries, of great importance for the whole of Japan, damaged the national GDP for several months. Not only were industries affected, but raw materials were also affected by numerous consequences, in fact it is estimated that about 23,600 hectares of agricultural land, mostly rice paddies, were damaged by the tsnami. The salt released into the soil by the tsunami waves damaged rice crops for years. In addition, it is estimated that about 90% of the fishing boats in the prefectures of Miyagi, Iwate and Fukushima were destroyed by the tsunami, causing a major impact on the fishing industry.

A catastrophic situation in itself aggravated by the severe damage suffered at the Fukushima Daiichi nuclear power plant, a failure found in the cooling system, causing a level 7 nuclear meltdown and the release of radioactive materials. The electrical power and backup generators were overwhelmed by the tsunami and the plant lost its cooling capacity. The consequences were severe large-scale releases of radioactivity, very low levels of radioactive chemicals were detected as far as the North American coast off Canada and California, threatening the surrounding environment and the health of citizens.

The Japanese government acted very quickly to help the affected areas, by July 2011 47% of the debris had been removed, 73.7% of farms had restarted and 35.5% of fishing boats had returned to the sea. 46 Years after the disaster, the affected areas have still not returned to normal. By now the evacuation orders concerning the area surrounding the nuclear power plant have been withdrawn, but the reclamation works are proceeding. The dismantling maneuvers of the plant managed by Tokyo Electric Power (TEPCO) continue, and the removal of radioactive magma in

reactors 1 and 2 of the plant is now scheduled for March 2029, with a delay of 5 years. The continuous cooling of the damaged reactors also generates a quantity of 170 tons of radioactive water produced every day, which are added to a mass of about one million tons spread over an increasingly large area, which the government has proposed to disperse into the sea against the will of the local fishermen's associations. An enigma that at the moment has no solution and that worries environmental associations. To date, about 90% of the government-supplied housing in the three prefectures (Fukushima, Iwate and Miyagi) have been completed and the coastal railway line will return to connect the entire coastal region again from March 2025. Despite the drop in displaced people from a peak of 470,000 to the current 48,000, 90% of the 42 municipalities affected by the disaster have recorded a significant population decline compared to pre-earthquake levels.nota In fact, the phenomenon of "ghost towns" is spreading, in many cases it is only the elderly who return to their countries of origin. Unemployment looms over these areas and in many cases the economic situation is so precarious that the workers have decided to take the risks of radiation and continue to work for the decontamination of the nuclear power plant. The government has allocated numerous funds to restore these areas, especially in anticipation of the 2020 Tokyo Olympics, then postponed due to the global Corona-Virus 19 pandemic, thus declaring them usable. Citizens are therefore faced with a difficult choice, they have to decide whether to return to the old villages or stay in temporary housing, with the risk of losing the subsidy made available for the displaced. The area for now still declared uninhabitable includes the areas within a radius of 20 km from the plant. However, there are still many concerns among citizens, as it is thought that the decontamination was done only on the most superficial layer of the ground (where some, even today, continue to look for the remains of their loved ones missing during the tsunami) and not in the neighboring areas. This provides that through wind and rain, it will take a short time to recontaminate the towns now declared "safe".

IMAGE 22
Building foundations and mud are all that remain in an area devastated by the tsunami in Sendai, 12 March 2011,
© Jo Yong-Hak

IMAGE 23
A man leads his dog along a cleared path through the rubble in a destroyed destroyed residential area of Kesennuma, Miyagi Prefecture, 22 March 2011
© Issei Kato

Interim solutions

Japan is located along the so-called "ring of fire," [13] an area of high seismic and volcanic activity. Living in such a vulnerable region inevitably raises the question of how the population perceives the risk and how it can react to disasters already considered inevitable. The Japanese people's response to catastrophic events has affected many: the Japanese seem to have a certain ability to adapt to events such as earthquakes, partly tolerating such a real and constant danger. However, a natural disaster not only causes material destruction, but also generates deep psychological trauma, with symptoms of post-traumatic stress that affect people in a lasting way, like an "invisible earthquake" that shakes their inner world.

Around 500 km of coastline has been devastated by tsunamis, with entire cities razed to the ground, wooden houses swept away and even reinforced concrete structures reduced to rubble. This has highlighted not only the vulnerability of traditional architecture, but also the limits of engineering to the power of natural disasters. In response, several architects have begun to reflect on how to make cities more flexible and resilient. Already in past years, Kenzo Tange had criticized the lack of flexible vision of his colleagues, who are mainly focused on post-disaster reconstruction projects without adequate prevention.

In 2011, in the face of devastation, Japanese architects mobilized to support the population. The VAN (Voluntary Architects' Network), led by Shigeru Ban, immediately built emergency shelters, using partition systems to ensure privacy, a crucial measure for people forced to live in shared spaces. The dividers, made of paper tubes and canvas curtains, were quickly installed in 1,872 units spread across 29 locations, with the majority of requests in Miyagi, Iwate and Fukushima prefectures.

In the meantime, the Japanese government has taken steps to provide temporary housing: as of March 2012, 52,620 temporary homes were already operational, intended to be used for at least 10 years. To improve life in these

5. A highly unstable geological area, prone to frequent earthquakes and volcanic eruptions. It is estimated that 90% of the world's earthquakes occur within this belt, which stretches for approximately 40,000 km along the perimeter of the Pacific Ocean. This zone includes the coasts of the American continent, Polynesia, the Philippines, New Zealand, Indonesia, Japan, and numerous oceanic trenches.

6. General Incorporated ArchiAid Association - Relief and Recovery by Architects for Tohoku Earthquake and Tsunami, Executive Director: Kazuhiro Kojima. Headquarters main office: 3-3-16, Oroshima-chi, Wakabayashi-ku, Sendai, Miyagi, 984-0015, Japan. The association Archi+Aid, is a network of support for reconstruction by Japanese architects who are are committed to preserving the special needs of communities and those specific to each locality. Today it consists of 300 members engaged in long-term reconstruction long-term reconstruction and regeneration efforts in disaster areas.

prefabricated spaces, architects such as those at VAN collaborated with local artisans to provide comfort and functionality, and with communities to create social environments that strengthened bonds between displaced people.

Other prominent Japanese architects, such as Toyo Ito, Riken Yamamoto, Hiroshi Naito, Kengo Kuma, and Kazuyo Sejima, created the KISYN association and launched the "Home for All" project, which aims to build community spaces at temporary sites to support socialization activities and restore community life. The next step, the definitive reconstruction of the devastated areas, requires not only knowledge of their pre-earthquake history, but also planning that reduces urban vulnerability and promotes shared management of the catastrophe.

Initiatives such as Archi+Aid[14], which collaborates with schools of architecture and supports the Tōhoku region, or the project "New Tōhoku, Future of Japan" (led by the OECD), aim to involve young people in the revitalization of the local economy and in the construction of human resource networks. The integrated approach of architects, institutions and communities has become essential not only to reduce visible damage, but also to counteract the breakdown of communities, which is crucial for social well-being after a natural disaster.

Home for all: the architects' proposal

The catastrophe has devastated entire cities and communities, forcing residents to move into temporary housing. Already in the months following the disaster, there were about 50,000 facilities capable of accommodating over 100,000 people. These housing modules, while maintaining the privacy of the inhabitants, have turned out to be "antisocial", contributing to the disintegration of the community at the very moment when mutual support is essential. Urban plans for reconstruction, focused on the creation of safe spaces, have neglected the historical memory of the place, preferring to implement projects based on standardized technologies. This has led to the loss of

connections between people and their natural environment, as well as damaging the interpersonal relationships that represent the cultural heritage of the region. The risk is therefore to generate ghost towns, in which residents can no longer recognize themselves.
In this context, it is essential that architects work to restore the space, conceived as a "social product". Public space must be seen as a place of socialization, capable of offering quality to the territorial project, where people can recognize themselves and rebuild a sense of identity.
Following these principles, the architect Toyo Ito, with the "Home for All" project, aims to provide displaced people living in temporary housing complexes with small but emotionally significant common spaces; In essence, the project aims to create the most primitive type of public space, the living room.
This project has given rise to a series of interventions in different areas of Tohoku, with the support of architects such as Riken Yamamoto, Hiroshi Naito, Kengo Kuma and Kazuyo Sejima, who founded the "KISYN-no-kai" group. Each "Home for All" was individually designed by an architectural firm. The initiative is not limited to creating small buildings for the community, but raises a crucial discussion about what form architecture should take in the present and future.

7.
The following quotations all derive from the same text since its drafting was addressed through the consultation of: Toyo Ito. Home for All, Domus, September 2012

" Rather than assuming the role of the architect who provides a response to the needs of those living in the disaster-affected area, I prefer to see things from the perspective of the victims."[15]
- Toyo Ito

After March 11, 2011, Toyo Ito wondered how the architect could provide concrete help to the affected communities. Spending eight months in contact with refugees and residents of temporary shelters, he listened to moving stories of people who, despite having suffered unbridgeable losses, were trying to maintain a calm attitude and express their joy at still being alive. This fueled his determination to understand how he could help effectively.
In the face of such emergencies, it is natural for architects and, in general, for human beings to question how they can offer support. Architecture, therefore, can regain its essential character as a place and an experience. Ito opened his atelier in 1971, at a time when architects were striving to society through movements such as "metabolism". However,

IMAGE 24
Two elderly couples greet each other at a shelter as they reunite, 15 March 2011, © Lee Jae-Won

over the years, the profession has locked itself into a narrowly architectural world, disconnecting from society.

"Why can't we turn our disaster relief activities into a once-in-a-lifetime opportunity to redefine our relationship with society?" [16]

- Toyo Ito

These reflections led Ito to consider architecture as the result of the encounter between people's daily actions, a place that must tell stories. For him, architecture is like an organ, biomorphic, which changes shape over time. These conclusions are fundamental to understand how to intervene in such a delicate territory as that of Tohoku. The analysis of this case study represents a starting point for propose new visions for conceiving architecture as a fundamental element of a society, in a union with people and the environment.

In this new vision, architecture is not simply a reorganization of spaces or a response to primary needs; it creates experiences, attracts people and tells stories, becoming a place that can be malleable by those who use it. In a delicate situation such as that of post-catastrophe reconstruction, architecture must not be imposed, but must arise from participatory projects,where displaced persons become active "architects" in the proposal of constructions that meet their needs. The heart of a village, even if devoid of specific functions, acquires meaning as the "home" of the community, a place where residents can adapt it to their needs through functions that are meaningful to them. Architecture, in this context, has the task of acting as a

8. Ibid.

9. Ibid.

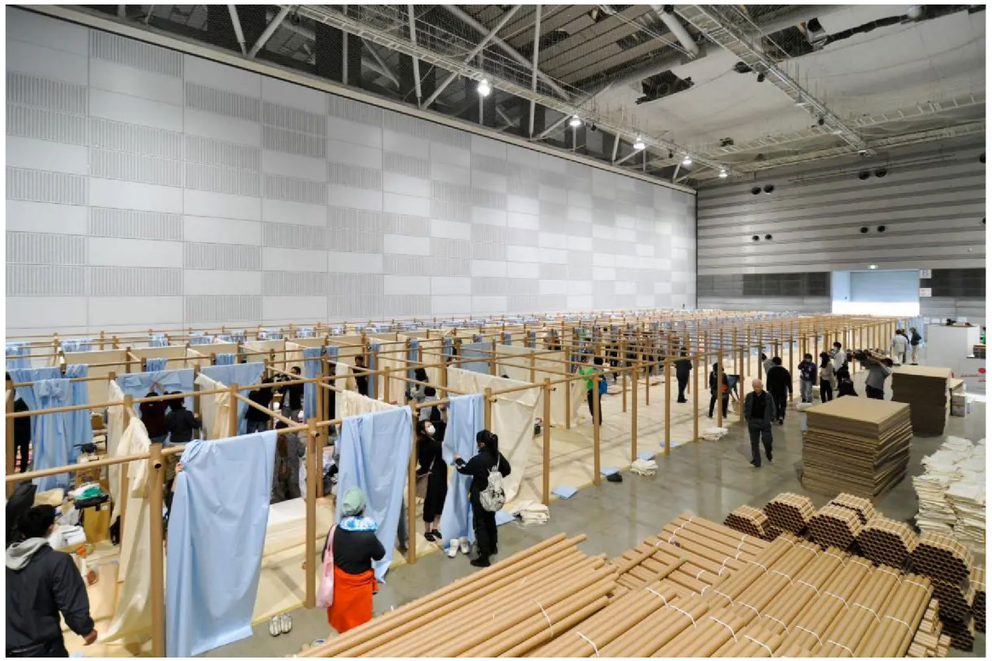


IMAGE 25
Realization of the Shigeru Ban's project at Otsuchi High School, Otsuchi Town, Iwate Prefecture
© Photo extracted from the book What is Co-dividuality? Post-individual Architecture, Shared Houses, and Other Stories of Openness in Japan.

social aggregator, where residents can freely organize their space.

"It is crucial to build relationships with the inhabitants with a view to the future. "[17]

- Toyo Ito

IMAGE 24
The way the body interacts and lives within Shigeru Ban's temporary project.
© Photo extracted from the book What is Co-dividuality? Post-individual Architecture, Shared Houses, and Other Stories of Openness in Japan.

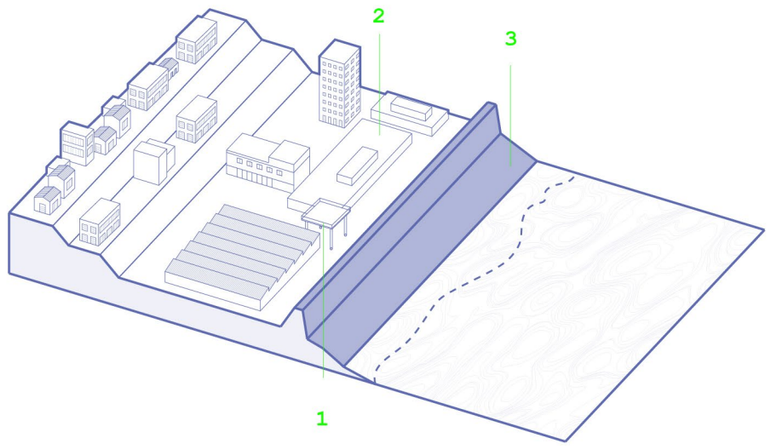
IMAGE 27
Toyo Ito working with the Sendai community to bring the project to life, 2012
© Maria Cristina Didero

IMAGE 28/30
(page following)
The 3 systems of reconstruction of the areas devastated by the Tohoku disaster of 2011,
Revised on TOKYO METROPOLITAN GOVERNMENT

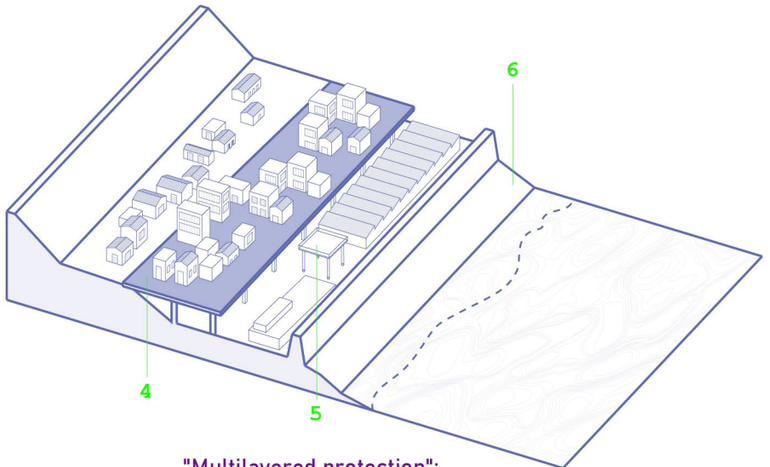
Permanent reactions

Delivering a project that can provide support today is essential, but it is vital to preserve that support over time, so that new points of reference and stories can be generated, marking a new beginning. This comparison with the 2011 earthquake not only helps to understand the extent of the damage, but also shows that the preventive measures taken were effective, albeit insufficient. For example, Sendai, Japan's twelfth-largest city and a key urban center in the Tohoku region, suffered little damage during the earthquake, demonstrating the effectiveness of building codes.
However, most of the damage was caused by the tsunami. Although damage from future earthquakes can be reduced, the power of tsunamis is such that no matter how well the structures are improved, communities are at risk of being destroyed again. The Great East Japan Earthquake was therefore an unprecedented event, characterized by a complex intertwining of earthquakes, tsunamis and a major nuclear accident that affected much of northeastern Japan. After the disaster of March 11, the national government established a Council for Reconstruction, putting forward three proposals to minimize future damage.

"Moving to higher ground":
This strategy involves moving the affected areas to sites located at higher altitudes, such as the hills behind the city. This approach aims to reduce the exposure of coastal communities to disaster events.

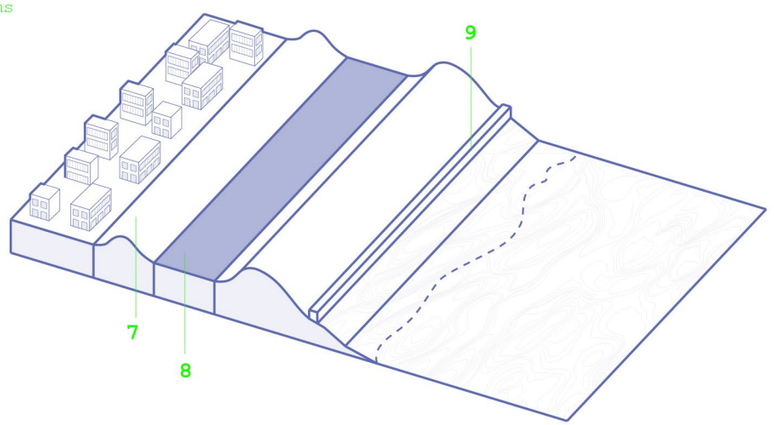


"Raising up: on artificial foundation platforms":
This method consists of increasing the height of buildings above sea level through the use of "foundation platforms." Buildings and homes previously located in coastal areas would be rebuilt on platforms high enough to ensure their safety against possible tsunamis. This particularly ambitious proposal involves the raising of entire urban centers if adequate land in the hinterland is not available for the construction of residences, or if moving cities proves problematic due to the occupation of higher land by the existing communities.



1. escape tower
2. industrial plants
3. barrier against storms
4. artificial land
5. escape tower
6. barrier against storms
7. agricultural land
8. use of rubble
9. barrier against storms

"Multilayered protection":
This strategy involves building a massive storm barrier along the coast, taking advantage of the rubble from the March 11 tsunami. The barrier would be inserted on the coastline, behind which a buffer zone for agricultural land would be created, followed by the construction of a secondary barrier in the form of a dike. The community would therefore find itself protected by this secondary barrier.

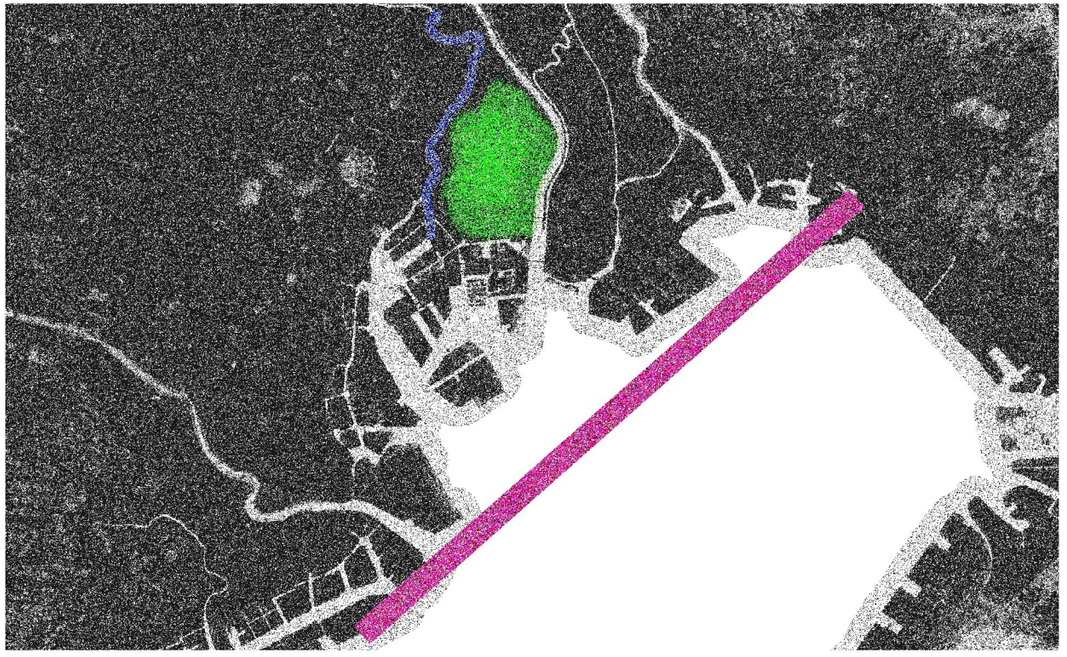


Responses: The role of engineering

The Metabolist movement, with its innovative and futuristic approach, has offered us a variety of possibilities for urban planning and architecture. However, what are the proposals being considered by experts today? Metabolists have faced different challenges than the current crisis, which emerged a few years after they began. The key figures involved are mainly hydraulic, civil and environmental engineers. The initial reactions were rather heterogeneous: they ranged from those who aimed to create a situation of total protection, to those who focused on the designation of evacuation areas, to those who considered the idea of abandoning certain areas altogether, using them for as long as possible and hoping for their own self-adaptation to the changes themselves. . The latter view, which in some ways could be defined as pessimistic, was supported by those who believed it was impracticable to keep the population within the reclaimed lands and at the same time guarantee security. They reflected on the high costs of implementing comprehensive defensive solutions, such as building walls along all rivers
or demolishing everything to create a possible lagoon. This last suggestion would also involve a reconsideration of where to relocate the entire population within that area. To avoid these exorbitant costs, some have proposed building an airport in the area, as it is close to the bay and centrally located in the city. However, this proposal ran into several obstacles, including private property issues, disagreement with the government, and conflicting investments. As a result, it never materialized and has not been revisited since. Today, the area remains the subject of intense studies and research. However, the focus has shifted primarily to engineers rather than architects or landscape architects.

IMAGE 31
(page following)
Various engineering solutions proposed for thr Lowland

This is why engineers, through their research centers, are tasked with finding solutions to mitigate the problems associated with this challenge. In reality, they are the ones who are in charge of providing solutions and through their research centers they try to mitigate the problems associated with this problem.
However, current solutions share a common goal: to create a safe zone for the population without relocating it.
While the end goal is consistent, the approaches vary significantly. For example, some experts advocate strengthening existing infrastructure to withstand natural disasters, while others propose integrating green spaces that can absorb floodwater.



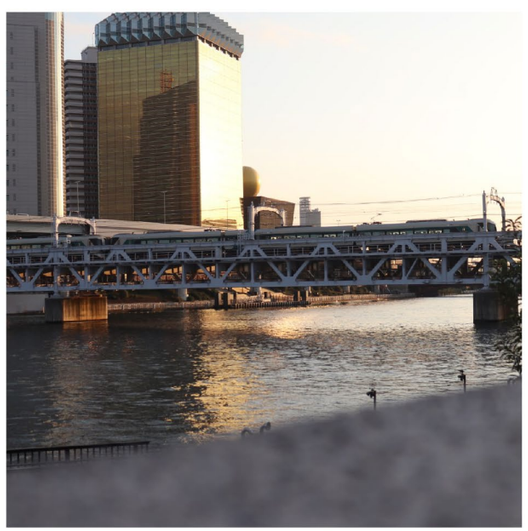
Embarkments as protection

The lower regions of Tokyo saw extensive land subsidence between 1910 and 1980, as well as changes in river courses during the Edo period due to human activity. Some areas of the delta now have levels below five meters due to these changes . As a result, according to Tsuchiya's research, 1.6 million people live in regions below mean sea level. Many places in the Koto and Edogawa neighborhoods are guarded by a vast network of inflexible measures, including levees, pumping stations, and locks, in order to combat this condition. But because there are not enough safe shelters for people to evacuate, Tokyo's low-lying areas could flood for up to two weeks if the levee breaks. This represents a serious problem. The government responded to this problem by enacting the High Standard Embankment project, also known as "super embankments," along the major rivers of these low-lying districts. The High Standard Levee, sometimes referred to as a super levee, is an innovative method of protecting cities from earthquakes and floods. As the Arakawa-Karyu River Bureau noted in 2007, these state-of-the-art constructions are built to withstand both natural disasters and to provide a strong defense system that blends seamlessly with urban renewal initiatives. Super embankments are distinguished by their considerable width, which allows them to efficiently control and distribute floodwater. When rivers overflow during major floods, the water spreads down the gentle slopes, reducing the amount of damage to nearby metropolitan areas and giving people enough time to evacuate.

When the super levee approach was first proposed and implemented between 1987 and 2010,
during the “business screening of projects”[18] under the government of the Democratic Party,
the overall estimated financial cost for the project was 12 trillion Japanese yen Japanese yen, or about 92 billion U.S. dollars. To build the 873 km of levees on both sides of Tokyo's six rivers, it is estimated that it would have taken 400 years. Less than 50 kilometers of embankments had been built, however, as of 2010. Locals and taxpayers,

10.
Business screening of projects, or Jigyoushiwake, (事業仕分け in Japanese) refers to a public event where the national and local governments take external perspectives into account to evaluate the situation of a project regarding its budget and necessity, and determine where there it should be continued or terminated.

IMAGE 32/35
Pictures of some completed super levee

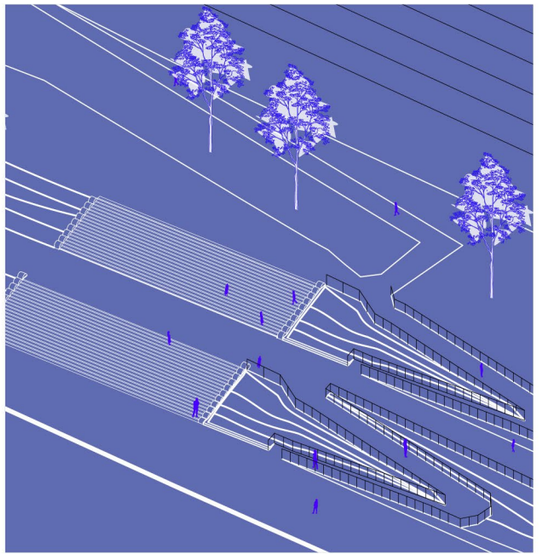


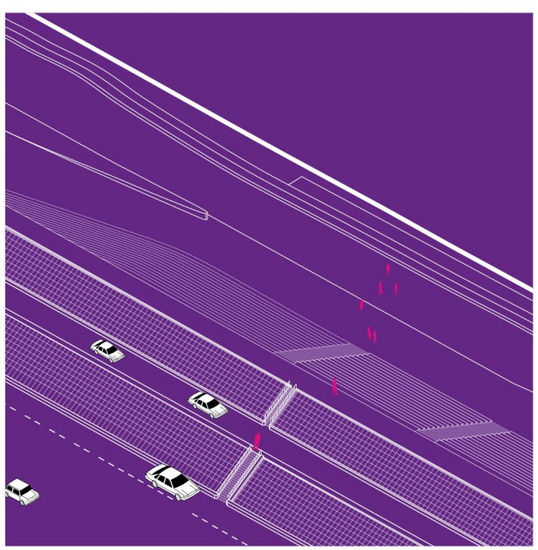
especially those who had to relocate for construction, opposed the project due to its exorbitant cost and slow development. Even with these difficulties, the super levee technique has been more popular recently because the flood risks are higher. The Tokyo government decided to include sea level rise in its forecasts for sea level rise and record rainfall after reading those of the IPCC.
Super embankments follow specific design principles, including being 30 times wider than their height, with sizes ranging from 200 to 300 metres. For an embankment with a height of 10 meters, this translates to a width of 300 meters, with a gentle slope ratio of 1:30. In addition, super levees incorporate terrain improvements to increase flood and earthquake resistance (Arakawa-Karyu River Office, 2017). Accessibility to rivers is a crucial aspect of super levee design. The slopes of the embankments should connect the city streets to the river banks with rolling hills, characterized by a slope of 3%, to ensure a comfortable and pleasant walking experience. In addition, super embankments must include emergency roads to facilitate rapid evacuation and response during emergencies.
In addition to their primary function of flood protection, super levees offer multiple benefits. Once the ground level is raised, the steep banks of existing embankments are transformed into flat open spaces suitable for a variety of uses, such as public roads, parks, and evacuation areas. During disasters, these elevated areas can serve as crucial evacuation sites, providing higher ground for safety. The availability of these open spaces as evacuation zones provides peace of mind for residents during floods and other disasters. In addition to their practical advantages, super embankments improve the cityscape by opening up an unobstructed view. Unlike conventional levees, which often block the horizon, super levees bring people together with river water and greenery, creating a more pleasant living environment. As a result, one adaptation strategy to deal with the projected sea level rise is the super levee project. However, only about 12% of the proposed super levee projects have been implemented, partly due to opposition from locals who will have to evacuate in order to build the

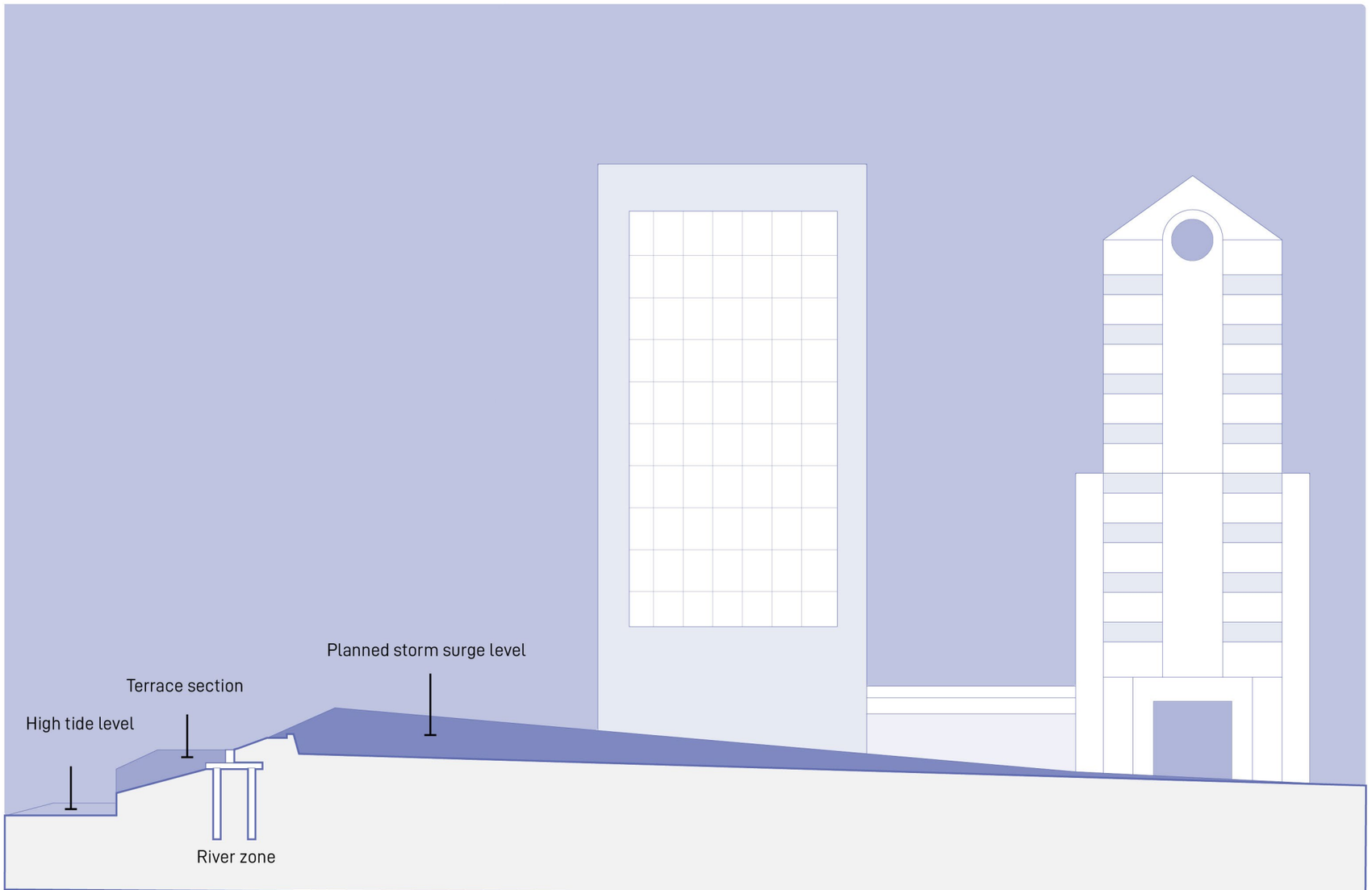
11.
Inamiya, S. Op. cit

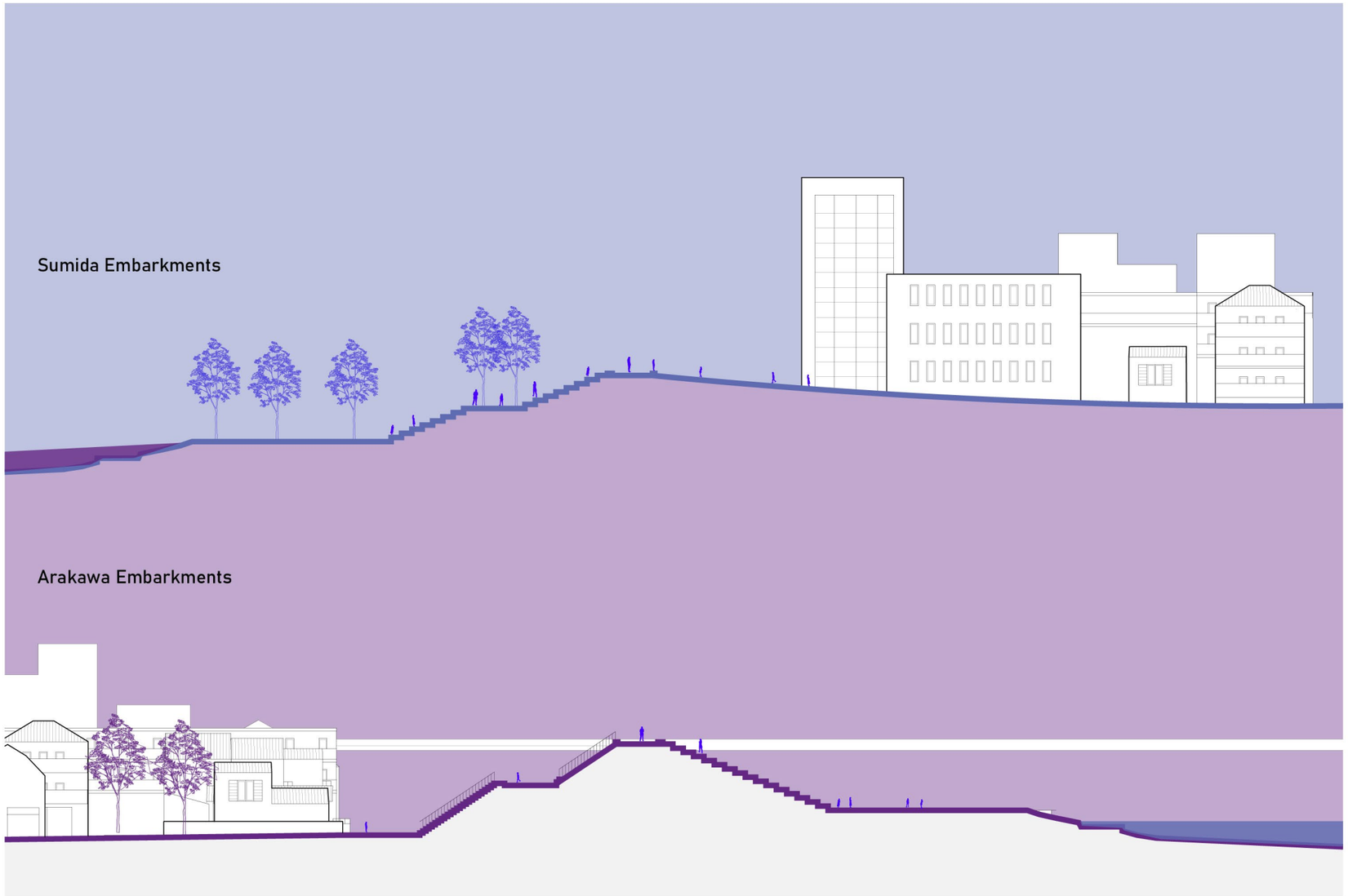
IMAGE 36/37
(page following)
Series of diagrams and conceptual sections comparing the solutions adopted along the Arakawa and Sumida rivers.

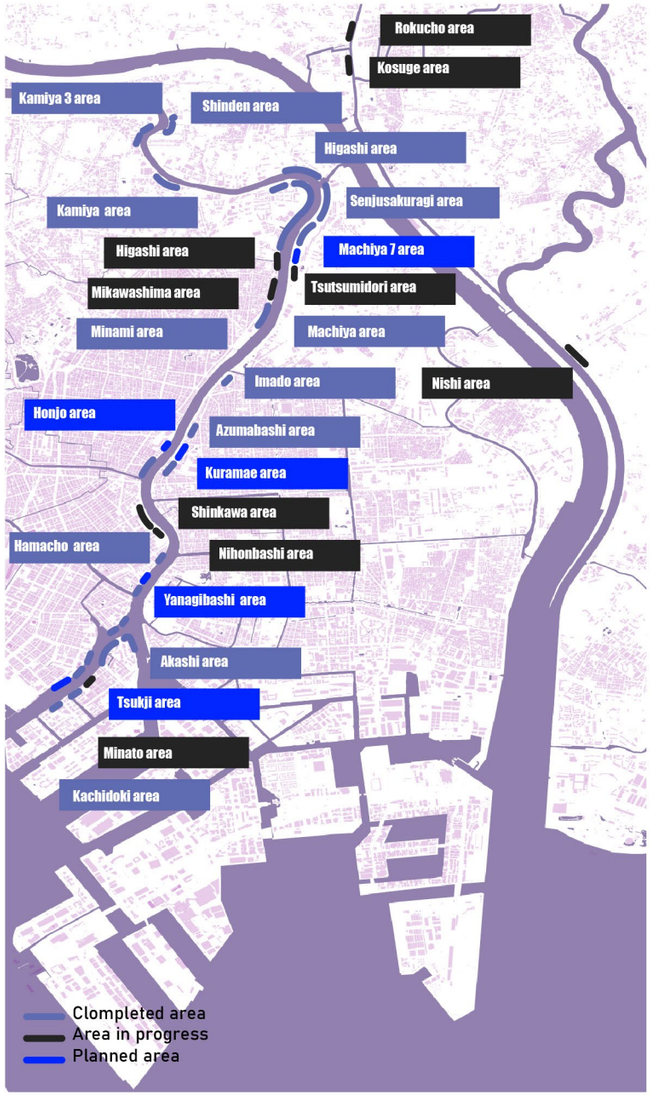
project. 92% of respondents in a public survey conducted in Edogawa River districts expressed opposition to the project due to its high cost and the need to temporarily relocate 90,000 people[18].
The importance of super levees is further underscored by historical and contemporary challenges in flood management in Tokyo. Rivers have posed significant threats since the 1970s, driving the development of various flood management solutions. Initially, simple walls of various heights were used. However, over the years, these measures have evolved into more complex solutions, culminating in the contemporary approach of super levees to address Tokyo's vulnerabilities. To overcome these obstacles, cooperation with stakeholders has been crucial. In addition, the government's determination to reconsider and modify the super levee strategy despite initial resistance and slow progress underscores the importance of long-term resilience plans in the face of escalating environmental risks. While super embankments offer a modern and effective solution for flood and earthquake protection in urban areas, their implementation faces significant financial, logistical and social challenges. However, their potential to provide greater safety and improve living environments makes them a valuable component of urban infrastructure planning. The government's commitment to reviewing and adapting the super levee approach, despite initial opposition and slow progress, underscores the importance of long-term resilience strategies in the face of growing environmental threats.
In conclusion, super levees provide a practical, state-of-the-art way to safeguard urban areas from earthquakes and floods, but their construction presents significant financial, practical, and social challenges. However, they are an important part of urban infrastructure development because of their ability to increase safety and improve living conditions. Despite initial resistance and slow progress, the government's willingness to reconsider and modify the super levee method underlines the importance of long-term resilience strategies in the face of escalating environmental risks.






Planned storm surge level
Terrace section
High tide level
River zone


Sumida Embarkments
Arakawa Embarkments


Rokucho area
Kosuge area
Kamiya 3 area
Shinden area
Higashi area
Kamiya area
Senjusakuragi area
Higashi area
Machiya 7 area
Mikawashima area
Tsutsumidori area
Minami area
Machiya area
Imado area
Nishi area
Honjo area
Azumabashi area
Kuramae area
Shinkawa area
Hamacho area
Nihonbashi area
Yanagibashi area
Akashi area
Tsukji area
Minato area
Kachidoki area
Clompleted area
Area in progress
Planned area








Talking with Miguel Esteban

In reading the various scientific articles published by you and your research group, your stance in the debate on Tokyo's urban planning becomes quite clear. If I am not mistaken, you strongly support the super levee project. Could you explain its concept in a clear way, avoiding excessive technicalities?

Certainly. Super levees represent an innovative solution for Tokyo's flood protection. Unlike simply reinforcing existing infrastructure, these levees create a new elevated platform on which the city can be developed, providing a more effective flood defense. They are not just barriers against water but a fundamental urban transformation.

However, defining them as a "new terrain" implies demolishing not only the existing flood protection infrastructure but also the buildings located along the rivers. Doesn't this risk being an excessively invasive intervention? What will happen to the residents of these areas?

The alternative to super levees would be to continue building concrete walls along existing embankments, but this solution presents critical issues. If a wall were to collapse, water would flood the city with devastating consequences. Super levees, on the other hand, reduce the risk of catastrophic failures by integrating flood protection into the urban fabric. Certainly, the intervention is invasive, but it is a necessary compromise to ensure safety.

Before delving into the technical details, I would like to focus on the design aspects. From the few portions already built, it seems that the relocation of residents occurs within high-rise residential towers. Speaking with historian Jinnai, who recently organized an event at the Italian Embassy, a compositional issue emerged: the loss of the urban heterogeneity typical of Tokyo Bay. The new towers risk homogenizing the skyline and diminishing the intensity and vibrancy of the city. As an engineer, I imagine this is not your specific field, but super levees also imply a precise architectural choice. Have you had the opportunity to discuss these aspects?

As you know, I am an engineer, so my primary goal is to ensure the city's safety, whether through walls or innovative solutions like super levees. I have not had the chance to delve deeply into architectural choices, but I can say that while towers

may not always be aesthetically appreciated, they respond to the housing needs of the population. Are you sure that citizens still prefer low-rise housing? Such dwellings occupy a lot of land and limit public spaces, which are increasingly in demand today. Well-designed towers allow for the creation of new urban areas dedicated to social interaction.

However, when observing the newly built residential complexes on the artificial islands in Tokyo Bay, many remain uninhabited. This seems to contradict the idea that towers are the solution desired by the population. Citizens continue to prefer low-rise housing in the lowlands, despite numerous political campaigns encouraging relocation to the new areas. Data from the Koto Ward show that the population in those neighborhoods is growing, while many buildings in the newly developed areas remain vacant.

This confirms that the lowlands are still perceived as central residential areas and that people want to remain there. If that were not the case, there would be no studies on how to make them safer. As for the high-rises in the bay, their occupation takes time, but over the years, these areas are gradually filling up. We cannot draw definitive conclusions without allowing more time to pass.

Certainly, my observations are based on perceptions and data reinterpretations, but I am here precisely to engage with you and clarify certain aspects. What I do not understand is the tendency to rigidly separate the city from the water. Here, I am referring specifically to your field of expertise, setting aside the housing issue for now.

Think of a hydraulic engineer—why does he study this discipline?

To ensure the protection of the city?

Exactly. Protection is a deeply rooted concept in Japanese mentality. The sea is perceived both as a resource and a threat. In Europe, the relationship between the city and water is more open, but in Japan, the priority is safety. When I first arrived, I found it absurd that the shores were covered by large concrete walls, but over time, I understood that these protections are not even high enough. They need to be further reinforced. The protection of citizens is the

guiding principle behind all decisions made by a hydraulic engineer.

But every infrastructure has a potential, albeit minimal, risk of failure. Why this need to control water at all costs instead of allowing it to reclaim its spaces? If the barriers were to fail, we would be back to square one. Has an alternative approach to strict separation between the city and water ever been considered?

Let me stop you there. The interventions carried out so far have worked, and if they are no longer effective today, they need to be reinforced. Super levees are one of the most viable solutions. We must abandon the romantic idea of letting nature reclaim its spaces—it would be a waste of decades of studies and investments. If we had had a blank slate from the beginning, perhaps another solution could have been envisioned, but now we must face reality.

I am not suggesting following Professor Shinohara's theories and transforming Tokyo into a lagoon, but a "sponge city" model could be an effective alternative. A solution that does not rely solely on strict separation from nature.

And who would pay for such a scenario?

Creating a "sponge city" does not mean restoring the territory to its natural state but developing a more efficient and adaptive water management system through the integration of temporary storage basins and multifunctional infrastructure. It would be a more economically sustainable solution compared to the construction of massive, rigid engineering structures like those implemented so far.

If we analyze it in these terms, there are already some interventions moving in this direction. Don't you think?

Not entirely. The presence of numerous underground canals demonstrates that the dominant approach remains canalization and separation from water rather than integrated water management. Why keep these rivers underground? Due to pollution concerns? Certainly, there are river restoration projects, such as along the Sumida River, but a "sponge city" is not just about adding green spaces along riverbanks. It involves designing environments capable of adapting to flooding, such as floodable retention basins or multifunctional public spaces that serve different purposes under normal and emergency conditions. As of today, however, riverbanks

are still predominantly covered in concrete. Am I wrong?

No, you are not wrong. However, the main issue remains economic feasibility. The infrastructural solutions adopted today are the result of strategies initiated over a century ago, and current decisions are heavily influenced by available funds and government priorities. Moreover, we should not focus solely on Tokyo. While the capital faces hydrogeological risks, other regions of Japan present even greater vulnerabilities, and resources must be allocated on a national scale.

That is clear, but if the super levees are truly the most viable solution, why continue investing in pumping technologies that, no matter how advanced, will never provide absolute security? Or in the design of storm surge barriers, which require enormous costs and extensive maintenance? Would it not be more effective to concentrate efforts on a single strategy, such as super levees? Additionally, if these are developed only in certain strategic locations, the risk is not eliminated but merely shifted elsewhere.

The time factor is crucial. Besides costs, we must consider the logistical feasibility of large-scale interventions. Furthermore, as mentioned, the Japanese government is not focusing solely on Tokyo—concrete barriers are being constructed along the entire coastline in response to tsunami threats. Resources must be allocated equitably. Lastly, investment policies change over time and with different administrations: super levees require long-term planning, which often clashes with the political and economic needs of the moment.

Given the current situation, what would be the best investment in terms of urban resilience?

There is no single solution. The most effective strategy is an integrated approach combining multiple measures: flood control, soil consolidation, and the redevelopment of vulnerable areas. From an environmental perspective, some of these solutions may seem invasive, but they are also being adopted in Europe. Consider Venice, where the MOSE barrier was built to address rising sea levels. Why shouldn't Tokyo implement a similar system? Ultimately, it is not about choosing one solution over another but integrating multiple strategies based on the available resources.

Artificial Land

A groundbreaking proposal, still in its conceptual phase, envisions a revisitation of the core principles advocated by the pioneer of the modern movement. Numerous prominent figures are working and supporting the idea of creating self-sufficient infrastructures capable of generating economic profit, proposing them as fertile ground for the development of new urban areas. This logic evokes images already explored in the past; the current proposals can be interpreted as a simplification of the scenarios advanced by the Metabolist movement, which aspired to an organic and dynamic city.

The aesthetic and visual similarity of the project to previous proposals is remarkable, as is the desire to create a new area of development entirely artificial and located in the sea. However, there are significant political and operational differences. Among the supporters of this ambitious vision is Professor Hideki Otha, who proposes a solution that, in practical terms, recalls the Metabolist movement. At first glance, Otha's project might appear as an exemplification of the floating city proposed in the past or the famous urban project of Kenzo Tange for Tokyo Bay.

Otha's research begins with a fundamental question: why is it not feasible to create a protective barrier approximately 30 km long, a solution considered in other contexts like Venice and Rotterdam, where similar or even more ambitious solutions have been proposed? His proposal involves creating a multifunctional barrier that not only protects the city from flooding but also serves as an urban development area. The project includes a 25 km long protective barrier with various functions, such as an underground railway connection linking the airport to part of the city. Another interesting feature is the inclusion of residential areas with all possible comforts, such as private beaches and cultural centers, to finance the possible execution of the project. The plan also includes the installation of an underground reservoir in the form of a

tunnel, 30 km long and located at a depth of 100 meters below sea level, at the base of the sea wall. In the unlikely event that seawater begins to flow into the underground railways, the reservoir would temporarily store the water, allowing people to evacuate from the subway systems. Additionally, highways, high-speed railways, and subways are planned along the reservoir, enabling Haneda and Narita airports to operate in an integrated manner. A series of 50-meter-class wind turbines will be lined up along the sea wall to generate electricity from the wind, and when there is no wind, seawater will be discharged into the underground reservoir to generate hydroelectric power.

The storm surge barrier would be a type of shutter for windows. Normally, the shutter is positioned horizontally, allowing seawater to move freely, and during high tide, the shutter closes to prevent the movement of seawater.

The shutter gate would be diagonally inclined, receiving sunlight and forming a vast bed of algae, thus creating an ideal habitat for the fry of various fish species and contributing to the protection of the natural environment of Tokyo Bay. The construction of five-story buildings in the shape of Baumkuchen, with a diameter of 150 meters between the rows of windmills, is also envisioned. These buildings could be divided into eight equal parts and sold as luxury residences, each with a floor area of 500 tsubo (1,650 square meters). The total area would be 2,500 tsubo (8,250 square meters) for a cost of 30 billion yen. They could be highly secure residences with private yacht ports, beaches, fish farms, and rooftop gardens, attracting considerable demand from the super-rich in Asian countries.

There would also likely be demand for buildings as corporate offices combined with recreational facilities.

Another research project, promoted by engineer Tsuchiya Nobuyuki, director of the River Front Center, proposes a similar but more ambitious solution. Tsuchiya and his team aim to create a protective barrier that collects the four main rivers of Tokyo: Sumida, Tama, Edogawa, and

Arakawa. This infrastructure, longer than the previous one, is interrupted at four points to create passages and avoid a total closure of the bay. Designed to be less impactful, it uses mobile elements that activate only in emergency situations, similar to the MOSE system in Venice. Although the project is still under development, specific constraints such as a maximum height of 99 meters are being considered, given that the barrier would be situated between two airports. The goal is to create a paradise for marine creatures, a city full of activities, including work and leisure, and suggestive views such as that of Mount Fuji.
The barrier should also purify the water quality of Tokyo Bay and serve as a port for cruises.
Given the complexity and cost of the project, alternative solutions have also been proposed in case of nonfeasibility. However, the project aligns with the various artificial islands already constructed, following the same stratigraphic logic. The infrastructure involves the use of recycled concrete and an internal structure filled with waste. In the event of a typhoon, the barrier should create protection against waves up to 5 meters high, calculated based on historical typhoon data from Nagoya.
Tsuchiya's project stands out for its efficiency and economic savings, avoiding the use of costly pumping systems. With a maximum height of 5 meters and a structure made of recycled concrete and iron, it draws inspiration from solutions already adopted in Venice and the Netherlands, but adapted to the specific needs of Tokyo. In conclusion, these innovative projects seek to address environmental and urban challenges with solutions that
combine protection, economic development, and sustainability, offering new perspectives for the future of coastal cities. The importance of such initiatives lies not only in their ability to protect urban areas from flooding but also in their potential to radically transform the way we conceive and build the cities of the future, integrating advanced technologies and ecological approaches to create resilient and prosperous urban environments.

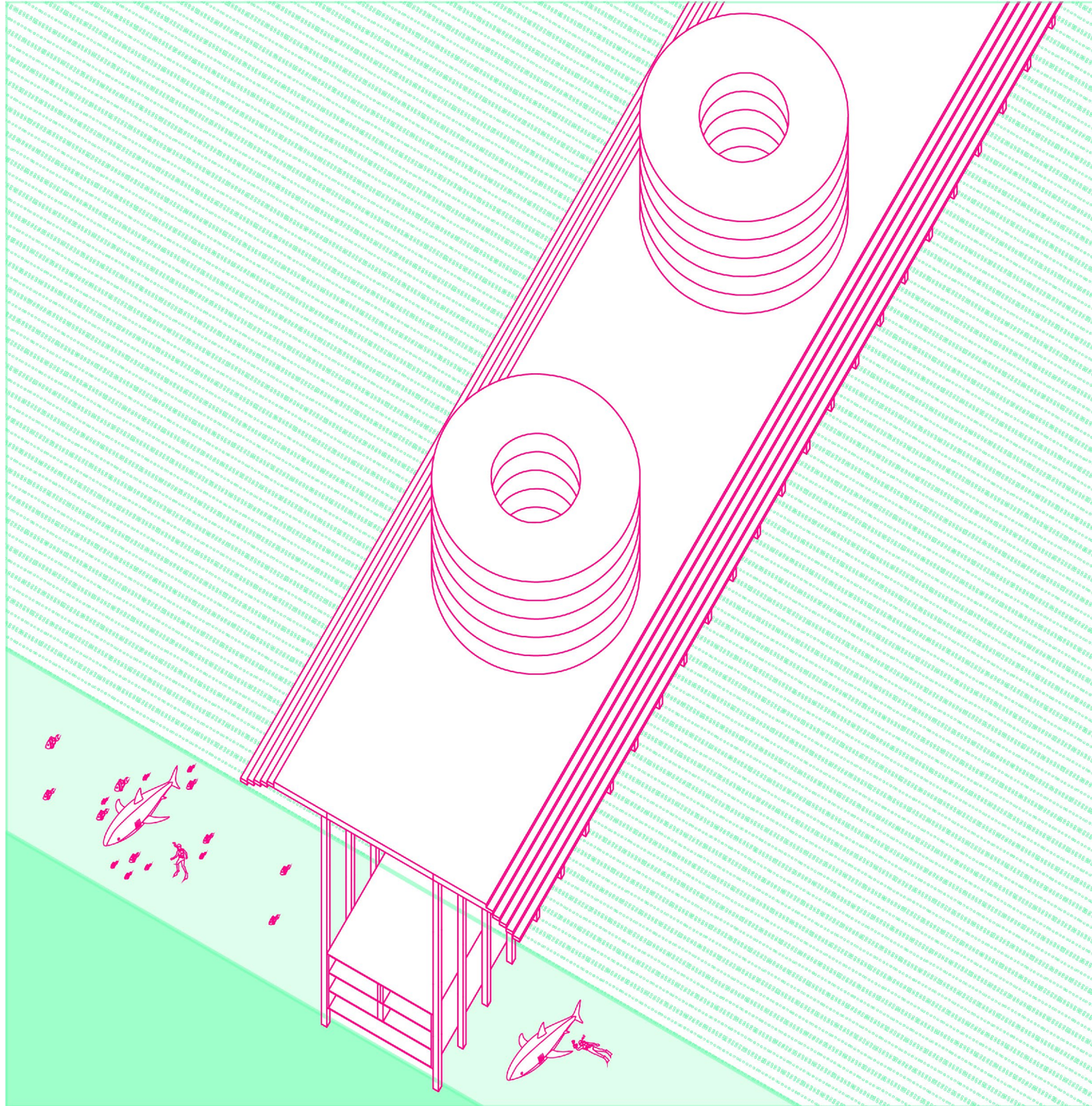


IMAGE 38
Conceptual axonometry of the possible storm surge, also proposed as new soil for future city design.

Talking with Tsuchiya Nobuyuki

During the conference, you did not have the opportunity to present your proposal in detail. However, as described in your articles, you and your research team are developing a comprehensive safety program. You have promoted a protective structure similar to a storm surge barrier. However, isn't this solution often both costly and challenging to implement?

Yes, my proposal involves creating a protective barrier that not only acts as a simple barrier but also serves as potential expansion land for the city of Tokyo. The idea is that it becomes an area of possible development for the city. If we were to create just an infrastructure, there wouldn't be the necessary economic funds for the realization. In practice, who would finance the construction of a wall in the middle of the sea? For this reason, the dual functionality of the structure arises: it is not just a wall but land to invest in, and the generated revenues can be used to offset the investment made. Moreover, according to calculations, various solutions proposed by my colleagues, which involve building walls along the canals (as the government is currently doing), do not create a truly protected area if limited to this action alone. The raising of the walls also involves the installation of pumps to move water from the various canals into the four main rivers. To be effective against the force of a tsunami, these pumps would need unimaginable power, and the costs for their production are prohibitive. The current pumping solutions, which have already required significant sums, have a power of 1/36 of what is actually necessary. Therefore, after various calculations, the storm surge barrier emerges as a more feasible solution in terms of both cost and efficiency. Additionally, it has been positioned near the waterfront to create something truly achievable.

Reading your proposal and based on your responses, it seems there are similarities with Professor Otha's proposal. Have you considered collaborating with him to develop a unified solution?

Indeed, my proposal is based on the same foundation as Professor Otha's. There are compositional differences, and we can say that my proposal is an elaboration of what Professor Otha presented at the conference. There is always a comparison, but since we come from different institutions, it is challenging to create a single collaborative project. However, interdisciplinary collaboration is crucial for

addressing the complex challenges associated with urban flood protection. I believe that by working together, we could develop a more effective and sustainable solution.

This solution involves construction at sea, as you explained, in an area near the waterfront. However, if implemented as a continuous barrier, how would it allow boats to pass? Additionally, are there concerns related to water pollution?

The solution is not conceived as a single wall. Following the model of the MOSE Plan in Venice, it includes open spaces that, under normal conditions, remain low and allow passage. However, in dangerous situations, they rise to block the passage. This approach ensures that the barrier is functional and adaptable. Regarding pollution, the design of the barrier includes filtering and water management systems to minimize environmental impact. Additionally, the barrier itself can serve as a platform for further infrastructural developments, such as wastewater treatment plants, thereby contributing to improving the overall water quality in the bay.

Your barrier seems to connect and integrate with the existing artificial islands along the bay. Have you considered the same type of development in terms of materials?

Yes, the integration with the artificial islands is intentional. The materiality of the barrier would align with the existing infrastructure to ensure consistency and structural integrity. We will use advanced and sustainable materials that ensure durability and minimize environmental impact. Moreover, the barrier can be designed to host green and recreational spaces, creating a more pleasant and usable environment for citizens.

You are familiar with the Metabolists. Do you see any parallels between your proposals and their projects?

Visually, there might be some similarity, but fundamentally the solutions are different. The Metabolists were pioneers in considering cities as living, evolving organisms, and some of their ideas can be seen as precursors to my proposals.

However, while their projects focused primarily on urban expansion and modularity, my approach is more oriented towards resilience and environmental sustainability. Therefore, I would not emphasize a strong connection between their projects and mine.

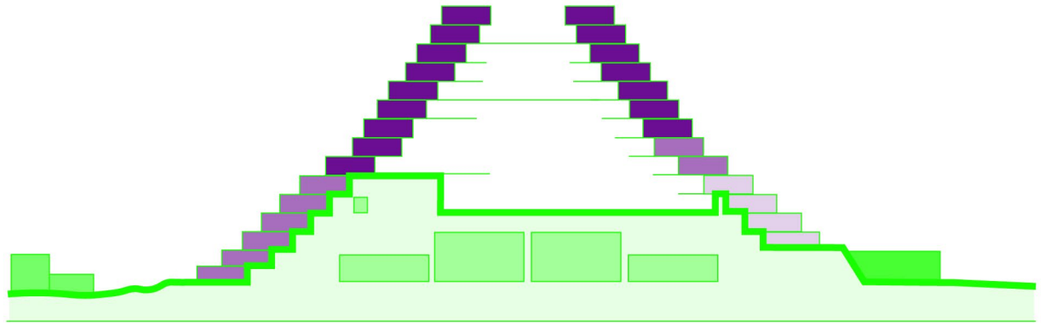
I have read that you have also presented solutions for lowland areas. While your current proposal focuses on the sea, considering that even if approved, your solution will take several years to be realized, what do you propose for the lowland areas?

For lowland areas, I promote the construction of buildings on stilts, with ground floors limited to storage spaces or garages, making them non-essential in case of flooding. For instance, if there is a double living room, it could be positioned on the ground floor to minimize the impact of potential floods. This approach ensures that the main living spaces are preserved even under adverse conditions. Additionally, I am exploring sustainable drainage solutions and the use of permeable materials to improve the soil's absorption capacity, thereby reducing the risk of flooding. Creating green spaces and parks can also help improve rainwater management, making urban areas more resilient to extreme weather events.

Return to primitive state

Professor Shinohara Osamu's proposal for Tokyo 2050 is both extreme and provocative, but full of interesting and innovative ideas. Aware of the fragility of the city's current protection systems, Shinohara has developed an ambitious project that addresses future threats in a radical and visionary way. This work, titled "Tokyo 2050," despite his research efforts, found little support from the Tokyo government and was not widely documented, leading the engineer to leave the project to young researchers.
Shinohara's project focuses on the need to reassess protection strategies against floods and earthquakes, two of Tokyo's most pressing natural threats. It questions the effectiveness of continuing to build expensive and vulnerable protection systems that can suddenly collapse, increasing uncertainty among citizens. Professor Shinohara's proposal introduces a more sustainable, albeit extreme, approach that places water at the center of urban reconfiguration, a concept that recalls the idea of "Ramsar City", a city characterized by the presence and sustainable management of wetlands. The Koto district was chosen as the area of the project. At the beginning of the Edo period, this was a rural area that, with the expansion of Edo's population, saw urban development eastwards. The population grew to one million, making it necessary to reclaim the territory. Agricultural areas were created, but the area, characterized by wet soil, was urbanized during the Edo period. This riverside land offers a unique opportunity to implement an integrated ecological system that could serve as a model for other global metropolises. This idea considers the entire territory along the river as an integrated ecological system. A new approach has been discussed in recent years, but according to Shinohara these discussions are insufficient, as they tend to consider only partial aspects of the problem. Using rice paddies as water storage and creating dams is not enough.
Shinohara has traveled to Germany and Switzerland to study new technologies and his proposal involves the creation of a new urban environment: a lagoon for citizens, in which the

interaction between the human and the non-human is strengthened. This project aims to recover natural spaces, creating wetlands that favor the return of the original ecosystems. It is a radical approach that aims to safeguard the population through the creation of scattered settlements, interspersed with water areas and sacred structures, accessible through slow mobility. The project is based on a gently sloping topography, which allows for the creation of a diverse ecosystem. During floods, gently sloping terrain acts as a natural defense, minimizing the impact on residential areas. Although large-scale flooding can significantly alter topography, Shinohara proposes an adaptive management model that involves intervention only when residential structures are damaged.
The area is divided into three blocks: upstream, mid-river and downstream. Each block will be developed in such a way as to ensure the optimal functioning of the wetlands before proceeding with the creation of the residential areas. The wetlands will be expanded by connecting each block, improving water flow and overall ecological balance. Urban wetlands will be fed by existing rivers, with sluices installed to regulate the flow of water.
The creation of wetlands carries with it the potential to alter the original topography and promote biodiversity, creating a complex and diverse ecosystem. Although floods can temporarily disturb ecosystems, such events are seen as opportunities to restore ecological diversity. In addition, Shinohara's proposal recognizes the importance of wetlands not only for water resource management, but also for mitigating the effects of climate change, conserving biodiversity and improving the quality of urban life.
Shinohara's proposal includes detailed water management plans to ensure the conservation of wetlands. Upstream and downstream sluice gates will regulate water levels, preventing flooding in residential areas. The safety of residential areas and surrounding urban areas is a top priority. Shinohara suggests that water management should be an integral part of urban planning, not just a complement.
In addition, Shinohara's vision aligns with the principles of



housing bussiness pubblic space cultural space infrastructure service

IMAGE 39
Diagrammatic section of new residences thought to be integrated into the possible lagoon, in line with engineer Shinohara's design

IMAGE 40
(page following)
Evocative image of the lagoon proposed for the Koto-ku residential neighborhood. 2010
© ShinoaraLab (Utokyo)

"Ramsar Cities," cities that respect and value wetlands for their ecological, economic, and social benefits. These cities use wetlands to improve urban resilience, reduce the risks of natural disasters, and promote biodiversity. The transformation of Tokyo into a "Ramsar city" implies a cultural and structural change, where water and nature are not seen as obstacles but as vital resources for sustainable development.
In conclusion, Shinohara's project represents a paradigm shift in urban water management and environmental protection. The project, while provocative and radical, offers a vision of a future Tokyo in which coexistence with water and nature is harmonious and sustainable. The creation of a wetland-based urban environment could provide an innovative solution to the environmental challenges of the future, promoting a diverse and resilient ecosystem. Shinohara's approach not only improves Tokyo's ability to cope with floods and earthquakes, but also to adapt to climate change, improve the quality of urban life and conserve biodiversity, demonstrating that the city of the future can be as innovative as it is environmentally friendly.

Talking with Shinohara Osamu

During your academic years, you chose to present new and alternative ideas, diverging from your colleagues' opinions on certain research topics, particularly on the relationship between water and cities and how to make Tokyo resilient to potential floods. Did this choice stem from a desire to disagree?

My research does not aim to control water but to reestablish a connection with it, as in the past. My colleagues and the government promote river control projects, investing resources and time, but the problem lies in this approach. Therefore, I decided to present a project for the Tokyo area, originally a lagoon reclaimed during the Edo Period, which is now in an urban emergency situation. My proposal is conceptual: there is a deformation of space in the representation, but the project area is clearly identifiable as a zone where nature has been completely nullified. After various studies, I noticed that in Europe, walls are no longer used as a defensive solution, favoring a reconnection between humans and water. If the Japanese government's choices, such as increasing protective walls, continue to be promoted, there will be a total absence of relationship between residents and the waterfront. For example, why develop the project in the area east of the Sumida River, considering the lowland, when the flooding problem also affects different areas of Japan and the Kanto region? It was done because the area is more densely populated and more easily justifiable to the administration, which was trying to justify the expenses for possible evacuation plans. However, considering the million residents involved, it is absurd to spend resources on ineffective solutions. I sought an alternative: to restore wetlands and create residential clusters in intermediate areas, with a sanctuary in the highest part, spread throughout the area. The deformation of the plan is not a provocative act, but a way to make the population aware of the area's transformations between past and present. The idea is to restore the zones as they were before the reclamation to create rice paddies, returning to the pre-Edo period. High-rise buildings are suitable for offices, not residences, as demonstrated by articles that prohibit the construction of residential towers. Reality is not perceived in these buildings. Mobility would be based on the use of the subway as a connecting element, not to promote a slow lifestyle, but to include the concept of connection with nature. It's about restoring various expropriated ecosystems.

Looking at your proposal, a strong reference to the original condition of the site and a renewed relationship with nature stands out. This is a radical approach that seems more like an evocation than a practicable solution. I can't help but perceive a provocative intention in your work: not an attempt to provide definitive answers, but to raise deeper questions about the very nature of inhabited space.What strikes me most is the treatment of urban space. You don't just revert it to a primordial condition, but subject it to further distortion, altering the layout of the existing fabric. Is this a graphic or conceptual choice? What is the meaning of this deformation, if your proposal already radically overturns the current configuration?

You've touched on a crucial aspect of my work: my proposal doesn't aim to be a definitive solution, but rather a manifesto capable of generating reflection. The area in question has undergone radical transformations over time: from lagoon to fishing village, from industrial zone to residential neighborhood now threatened. In this context, my design choice isn't so much a return to a past condition, but an act of unveiling the transient nature of urban space.

Your approach raises crucial questions about the perception of the city and its relationship with change. However, I wonder if the difficulty in accepting your proposal also lies in its relationship with the inhabitant.
If the project completely overturns the current condition, it risks generating a sense of disorientation, dissolving not only the urban morphology but also the social fabric and memory of the place. How does your intervention engage with the forms of dwelling and the community's sense of continuity?

The point you raise is central: the connection to place and dwelling is what makes accepting change difficult. However, I believe the real issue lies in how permanence is interpreted today.
Historically, Japanese culture has always lived with an awareness of the ephemeral, in a dynamic balance with time and nature. Yet in recent decades, an opposite tendency has emerged, a desire to cling to an illusory stability, as if the built environment could remain unchanged. My project fits into this tension: it doesn't negate the sense of belonging, but reformulates it in terms of adaptability.

It's interesting to see how your proposal goes beyond a formal operation and opens up a broader debate about the perception of time and transformation. However, if your intention is to spark a cultural shift, how do you envision this vision translating into practical intervention strategies?

Today, it is necessary to recover everything that has disintegrated. The government's actions and proposals are insufficient. The problem concerns management: residents' activities cannot easily develop due to authorities' control. Take Kameido Park: many things are missing, it seems very dry and is not a focal point. In the past, pleasant places were created by planting cherry trees for festivals and tea houses. Now, any possible activity is missing. Everything is designed by the public sector, homogeneous and boring. We need to draw inspiration from the past. In concrete terms, one can only act on a small scale; Intervening on a large scale is impossible. I am interested in topography and the re-proposition of forms that recall the development of the land.

Acting along the riverbanks can be an interesting approach but very invasive. In the lowland neighborhood, which is highly built-up, it would mean demolishing several buildings. There are some specific places to create wetlands, but it remains complex. There is a desire to revive traces of the past and have the population live with water again. Do you have concrete examples or contexts from which you drew inspiration?

I know the Ramsar City project in Chiba from '93, an interesting starting point, but not my reference case study. In Hokkaido, there is a wetland, Kushiro, which demonstrates how the relationship between water and humans has never been annulled. I have intensely analyzed this project. It is an example of pristine nature, a reality present also in Tokyo Bay before the Edo period and the industrialization processes, which I wish to propose again.

You explained that you wanted to avoid building in the reclaimed part of the city and were against total demolition, preferring to leave the land interconnected with the waterfront untouched. What do you think of the proposals of the Metabolists, who partly shared a similar vision?

The Metabolists were an exception, the only group of architects interested in the bay. I know Kenzo Tange's project for the bay, which envisaged leaving part of it untouched. Although I partly share his proposal, my approach is more radical: I emphasize the connection with nature, as Tokyo Bay was a vast wetland. Tange sought to expand the land with water, a different approach from mine, as he sought marketable solutions to maintain his reputation. However, I am not specifically familiar with their proposals, but I certainly shared their approach. I agree on

the need to propose solid infrastructure and promote something ephemeral regarding architecture, to achieve greater flexibility while maintaining the livability of space. Unfortunately, this approach has not been practically considered; in the last 20 years, there has been a push to promote buildings that last as long as possible, a characteristic not inherent to Japanese culture.

Why do architects seem disinterested in the issue of the relationship between water and cities, leaving the discussion to engineers, historians, and urban planners?

Architects are not interested. In Japan, the debate on water damage prevention does not include architecture. There is no connection between the technologies proposed by engineers and the solutions of urban planners. Collaboration between these figures is lacking. Hydraulic engineers manage the rivers, urban planners understand the city's functionality, and architects deal with houses. Each sector operates in isolation, with inefficient results.

So, collaboration between different figures is essential to achieve effective results?

I believe a change in approach is necessary, and I have tried to do this at the university. I promoted collaboration between architects, engineers, and landscapers, creating a research group on the relationship between urban areas and rivers. I chaired the group, alongside experts like Professor Okuma, and we collaborated with the public works administration and young researchers like Ni. The challenge is to adopt a new approach that includes various competencies for a more integrated and sustainable solution.

Positions: Diverging views and ongoing debate

The issue remains unresolved, fueled by conflicting opinions and different perspectives. Some actively participate, offering contributions, ideas and solutions, convinced of the importance of intervening; others, on the other hand, prefer to maintain a more detached role, limiting themselves to observing developments and evaluating the possible consequences. However, despite these different positions, the topic continues to occupy a role of primary importance, attracting attention and arousing widespread interest. Uncertainty about the direction to take helps to keep the discussion alive, making this issue central and still open to new interpretations and contributions.

Aesthetics and safety compared: what priority for the city?

The debate remains open and complex, as evidenced by the various approaches discussed, none of which yet present a definitive economic solution. Following current trends, the first approach examined seems to be the one with the highest probability of implementation, as it favours continuity with programmes already launched in specific areas. This orientation leads the other solutions, although interesting, to be put in the background: enhancing the first approach is considered crucial to avoid failures and not to devalue the interventions made so far.
In this scenario, local governments take every opportunity to promote their ideas. According to data reported in various reports, local administrations have highlighted the need to raise awareness among citizens through advertising campaigns spread on various web platforms, but also through traditional means, such as magazines and television commercials, to reach a wide audience, including readers,

housewives and families. However, the result so far has led to more confusion and lack of clarity, with a difficult interpretation of the various hazard maps and evacuation plans.
While supporting the expansion of protective infrastructure, local governments support the "super margins" project, as they guarantee evacuation areas close to the neighbourhoods themselves, partly responding to the needs of the inhabitants. Local officials said that despite the security offered by modern infrastructure, history shows that uncertainty is always present: the typhoons of 2018 (Osaka) and 2011 (Tohoko) caused the collapse of some dams, despite the control measures taken. It is therefore essential to design evacuation zones, as infrastructure should not be relied upon solely to protect lives. Based on this observation, the super embankment approach tries to respond to various inconveniences and to confirm the validity of the approach they have started to finance the project only in some specific areas, in order to have punctual testers. However, it is expected to take about 40 years to build the 873 km of levees planned along both banks of Tokyo's six rivers, and in 2010 less than 50 km were completed. However, the protection promised by these large-scale structures has also been criticized for their negative impact on the ecosystem of the bay and beyond. In fact, the construction of large dams can also involve the displacement of communities, which, while eliminating slums, has significant social consequences.
Another critical issue concerns the economic cost: the project has an estimated cost of 12 trillion Japanese yen (about 85 billion euros). According to several analyses, the super dam is more expensive than other flood control measures for the areas it is supposed to protect. For example, 2.2 km of super dam costs 170 billion Japanese yen, while the reinforcement of existing dams with the "method of building continuous underground walls", 400 km long on the banks of the Tone River and 100 km on those of the Edogawa River, costs 250 billion yen in total .
Although this measure is less durable and less aesthetically pleasing, it seems to have broad support from the

population, who prefer more economically and temporally efficient solutions.
Professor Shinohara criticizes his colleagues and the proposals put forward by the metropolitan government, believing that, although the embankments can bring the city closer to the water-front, this remains an artificial solution and destined to fail. The director of the river management office (Nobuyuki Tsuchiya) seems to accept Prof. Shinohara's ideas, but still believes it is more important to meet the expectations of the population and propose something that makes the city safe and manageable. The construction of a lagoon in the center of Tokyo could create further problems for the functioning of the megalopolis.
Although the perception of risk (in terms of vulnerability and severity) is relevant, it does not necessarily imply automatic support for the proposed policies. Citizens' support depends rather than on the perceived effectiveness of the measures, the importance attached to the problem and the way in which the information is processed. While it is intuitive to think that greater vulnerability leads to greater support, surveys conducted by researcher Ann suggest that a high perception of risk does not automatically guarantee public support for adaptation policies (note).

A known uncertainty apparently

The topic has been widely explored, involving engineers in particular who consider the safety of residents a top priority, but which leaves open a crucial question: what do those who live in these areas really want? Architecture, as a discipline geared towards social welfare, requires an understanding of the aspirations of the community. To this end, in 2018 two researchers from Waseda University conducted a survey on a sample of about one hundred inhabitants, to assess their degree of awareness regarding local environmental issues. The questionnaire, initially designed to analyze citizens' knowledge, was re-proposed in 2024 in the context of on-site inspections, to collect data directly in the field.

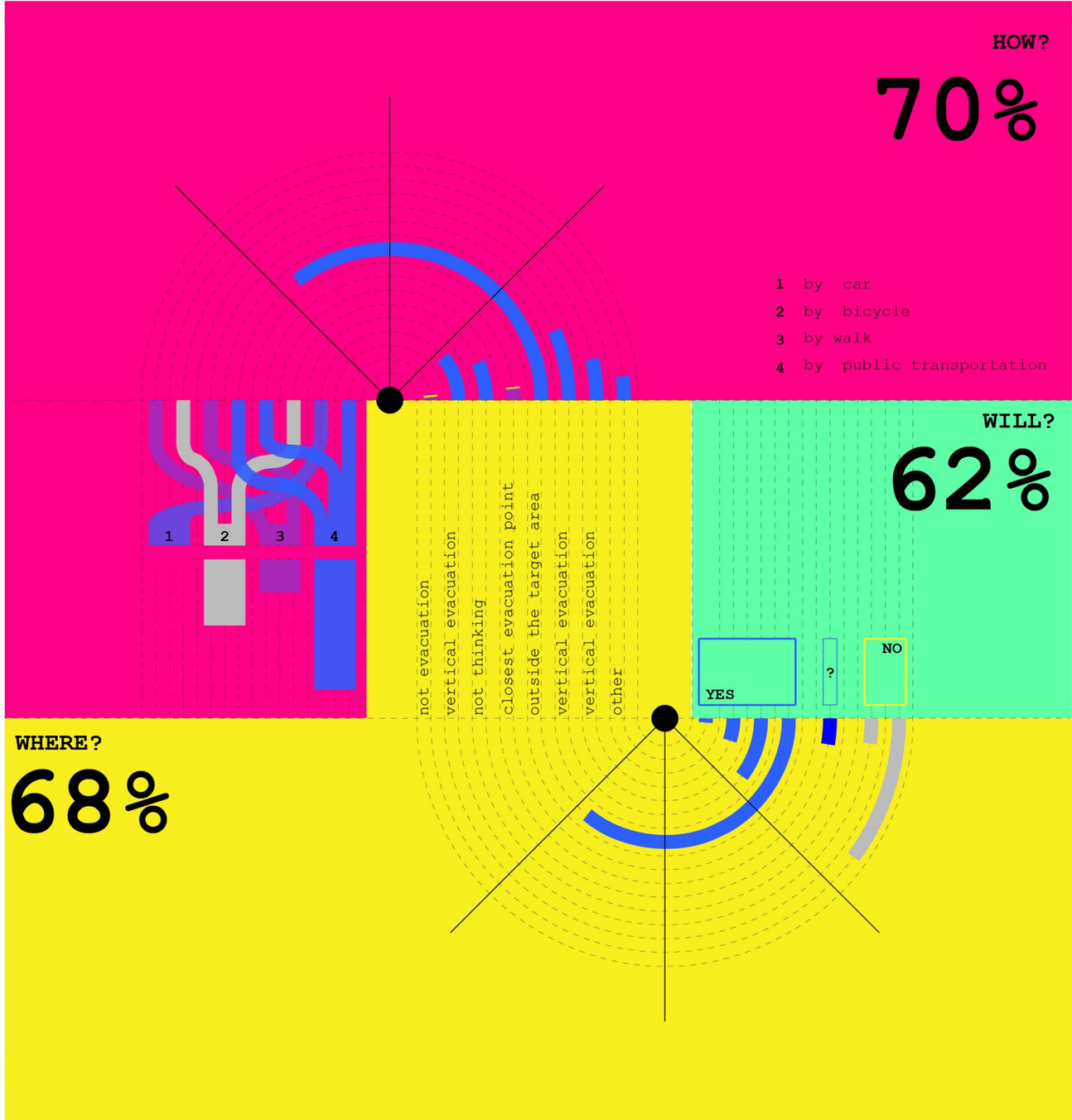


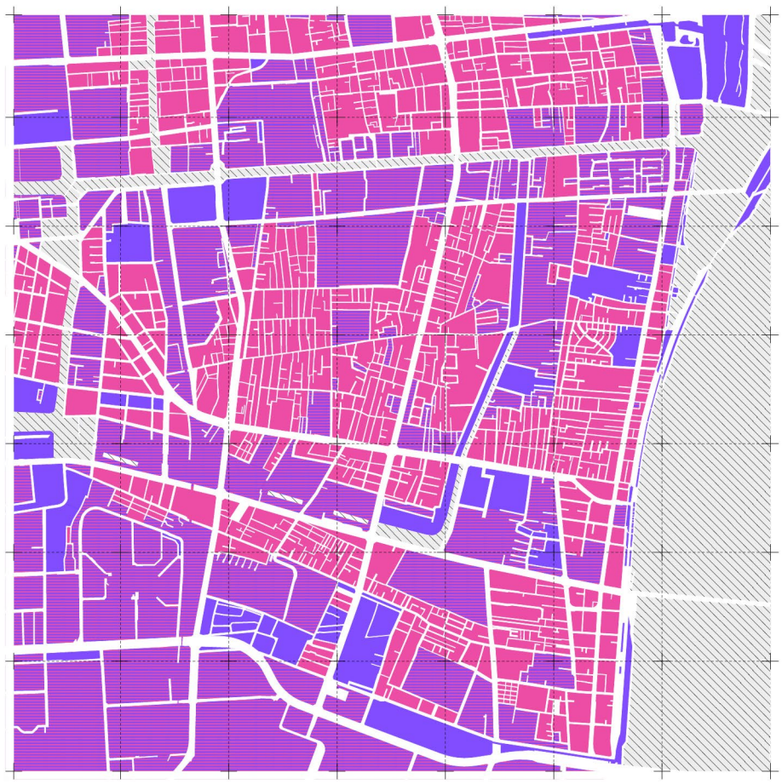
IMAGE 41
Diagram reworked based on the responses obtained from the various surveys administered to a given portion of the population

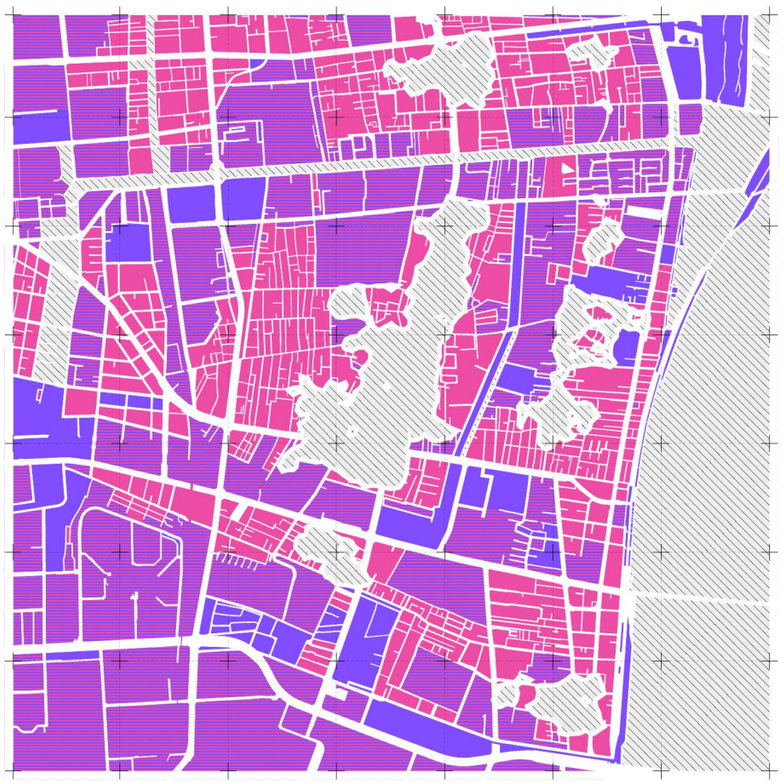
SECTION III

Architecture and crisis

Otherwise challenges

The current landscape of applied technicalities presents a number of critical issues, often accompanied by discordant opinions questioning their validity. This fragmentation opens the way for broader reflections, stimulating the need to imagine future scenarios in which these technicalities may prove insufficient in the face of contemporary urban challenges.
In this context, there is a sense of urgency to bring architecture back to the center of the discussion, especially where it has been marginalized by crucial issues concerning the fate of cities at risk, particularly those exposed to extreme hydrogeological phenomena.
A key starting point for this reflection is an analysis of the historical relationship between water and the city, examining how its perception and management have evolved over time. In earlier periods, water was regarded as a vital resource, but with increasing urbanization, it gradually came to be seen as a force to be controlled and contained. This shift transformed water into a perceived threat, leading to the construction of dams, levees, and drainage systems—solutions that, despite their complexity, remain vulnerable in the face of climate change and rising sea levels. An alternative perspective envisions water not as a crisis factor but as an architectural element capable of shaping new spatial and social configurations.
The centerpiece of the project is the artificial lake, conceived not only as a response to various problems, but as a spatial device capable of redefining urban structure and fostering new practices.
In the conclusions of the research, it is emphasized that the ultimate goal is not to persuade about the concrete realization of such a proposal, but to stimulate critical reflection on the political, economic and social issues underlying urban transformations. Thus, the project takes the form of a provocative element, aimed at stirring up debate and highlighting the need to pursue alternative paths for the future of cities exposed to water risk.





Artificially Sealed Surface

Surface Mixed Land Use (50% Sealed, 50% Permeable)

Predominantly Walkable

Water

Tokyo in crisis: What if engineering fails?

1

The politics of the void seems to be arousing growing interest among architects. More and more studies justify a move away from large-scale urban design, moving towards analysis and intervention on residual spaces. This direction was explicitly stated by architect Momoyo Kaijima, a member of the Atelier Bow-Wow studio. As emerges from an interview, the studio adopts an approach that balances analysis and design, exploring urban spaces and activities through diversified readings but united by an innovative vision of the urban fabric of Tokyo. Tokyo, a complex and kaleidoscopic city, is elevated to the subject of an in-depth study, in the belief that understanding the phenomena that characterize it can provide useful tools for formulating new design hypotheses.

The opposition between the approaches of the Metabolists and Atelier Bow-Wow is evident: Yoshiharu Tsukamoto and Momoyo Kaijima reject the idea of superimposing a rigid model on the existing city. Instead, they work on processes that are already in place, favoring a global vision that does not require integral design. Unlike the Metabolists, who promoted a rigid and mechanical infrastructural system, Atelier Bow-Wow accepts the existing urban layout and focuses attention on the quality and specificity of the punctual elements. This perspective introduces a new autonomy of action for planning and architecture, without compromising the role of architecture in the construction of urbanity. In this context, the concept of emptiness takes on a renewed value. Some authors, such as Professor Nicola Russi, praise the approach of Atelier Bow-Wow, which enhances "void metabolism" and "pet architecture". Both

1.
Robin, Op. cit.

emphasize individuality, contrary to the "core metabolism" of metabolists which tended to standardize elements to facilitate expansion adaptable to future changes. The concept of "cell" also changes perspective: if in the "core metabolism" the cell was understood as part of a rigid system, in the "pet architecture" it becomes an expression of the individual, manifesting itself even outside buildings. This approach departs from the idea that the metabolist movement is limited to the cell as a rigid unit and instead suggests a greater focus on the individual dimension. However, this research argues that there should not be a dichotomy between the two approaches: "void metabolism" and "core metabolism" can coexist, enriching Tokyo and preserving its identity. It is crucial, however, that design starts with spaces for collective well-being, before focusing on the individual. It is paradoxical that architecture, born as a discipline at the service of the community, has now shifted towards an almost exclusive attention to the individual, especially in a dense city like Tokyo. Architects, with their knowledge, could contribute significantly, as several scholars have pointed out. The metabolist approach aimed to propose innovative solutions, capable of stimulating reflection and questioning established certainties. This research does not intend to re-propose the construction principles of the Metabolists, but to assimilate their theoretical approach even if indeed if some of the urban plans of the group had been realized what would have happened if their proposals of the 60s had been realized. Probably, the current situation would be different, less uncertain. Of course, because they envisaged water as a future terrain of ex-anxiety and, as mentioned in the previous chapter, it indicates one of the greatest challenges facing the city of Tokyo today.

Water represents one of the main challenges for Tokyo, an unresolved or problematic issue. Despite the perception of water as a threat, Japanese society trusts in technologies to control it. This approach contrasts with the tradition of promoting ephemeral architecture, aware of the uncertainty of the natural context. Tokyo, a city of innovation and tradition, alternates skyscrapers with temples and, sometimes,

3.
In his essay -Space City- Kurokawa identifies the main problem in the reconstruction of the city, which occurs mainly through the development of residential areas. He calls this urban configuration a "bed town," characterized by the lack of functional and diverse spaces necessary to support the new dynamics of post-war society and the advent of progress. This urban model, according to Kurokawa, is unable to respond to the needs of a modern community, as it reduces the city to a place exclusively dedicated to rest, devoid of significant connections with work, culture and sociality.

ruined buildings, reflecting an apparent chaos that hides an underlying logic. The desire to control every aspect of the city also extends to water, but the proposed solutions, although technologically advanced, can generate significant inconvenience and lack absolute certainties. Architecture could offer answers, but it is often limited to issues of lesser impact, such as the management of residual spaces or the creation of urban greenery. Tokyo is often reduced to an environment characterized by "pet architecture" and "void metabolism", but an approach is needed that considers collective well-being first and foremost, and then integrates individuality, in a synthesis that enriches the city without losing sight of its essence.
The Metabolist approach, with its bold ambition to propose innovative solutions, represented an attempt to stimulate critical reflection and question the established certainties of urban planning. This research does not aim to re-propose the constructive principles of the Metabolist movement, but rather to assimilate its theoretical approach, questioning what the evolution of Tokyo would have been if some of the urban visions of the sixties had been fully realized. It is plausible to hypothesize that the current urban scenario would be radically different, perhaps less marked by uncertainty, precisely because those proposals conceived water not only as an element of challenge, but as an opportunity and future ground for expansion. Water, in fact, today represents one of the biggest unresolved issues for Tokyo, an issue often addressed in a fragmented and problematic way. Although perceived as a threat, Japanese society continues to rely on technologies to dominate it, manifesting an intrinsic tension between the desire for control and the awareness of the uncertainty inherent in the natural context. This tension appears in contrast with the Japanese architectural tradition, historically oriented towards lightness and the ephemeral, in harmony with the unpredictability of the landscape. Tokyo is thus configured as a complex palimpsest, in which innovation and tradition are intertwined: futuristic skyscrapers coexist with thousand-year-old

temples, and even ruined buildings help define the character of the city. This apparent chaos hides an underlying logic, a dynamic balance that reflects the very essence of Tokyo. However, this desire for control, which is also evident in the management of water resources, raises fundamental questions. Although the technological solutions adopted are advanced, they risk generating significant inconvenience, lacking absolute certainty and sometimes neglecting the value of the social and cultural context.
In this context, architecture could offer deeper and more significant answers. However, it is often limited to marginal issues, such as the management of residual spaces or the creation of green areas in an already dense urban context. The city is thus reduced to a set of punctual interventions, such as "pet architecture" and "void metabolism", without a real confrontation with the broader challenges. Instead, an approach is needed that places collective well-being at the center, and then integrates the individual dimension into a harmonious synthesis. Only in this way will Tokyo be able to enrich itself without losing its essence, continuing to evolve as a living and resilient urban organism, capable of dialoguing with its complexities and contradictions.
In this apparent chaos there is a precise order, an underlying logic that guides the project towards a reinterpretation of the role of architecture and urban planning.

Number of people living in at-risk areas
LOW

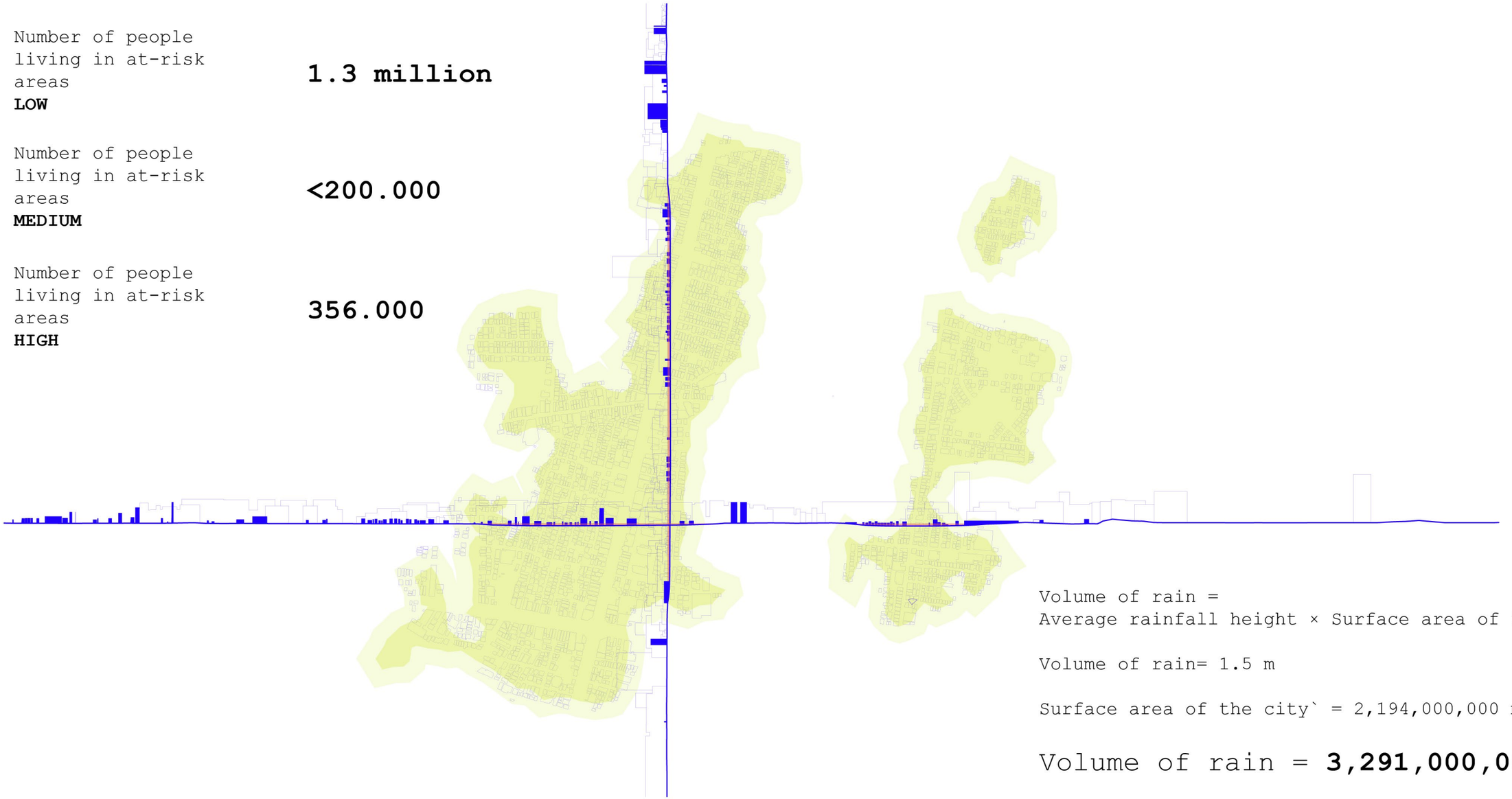
1.3 million

Number of people living in at-risk areas
MEDIUM

<200.000

Number of people living in at-risk areas
HIGH

356.000



Volume of rain =
Average rainfall height × Surface area of the city

Volume of rain= 1.5 m

Surface area of the city` = 2,194,000,000 m²

Volume of rain = **3,291,000,000m³**

A new water body as pilot

If today water is perceived as a hostile element, in the past it was a founding principle of urban identity. It was not just a constraint to be governed, but a resource around which to shape the development of the city. Japanese architecture, which has always been called upon to confront environmental dynamics, has declined this relationship in different forms over the centuries. While water is currently seen as a factor of hydrogeological instability, in earlier eras it represented a matrix for urban expansion. And if today we tend to contain it through engineering devices, tomorrow it could be reinterpreted as an architectural device, an active element capable of shaping the urban landscape and offering innovative responses to climate challenges.

The evolution of the perception of water is evident by analyzing the city's transformations over time. During the Edo period, Tokyo was known as the “city of water,” an urban fabric strongly integrated with its waterways, which not only ensured mobility and supply, but defined the very structure of daily life. Rivers, canals and bays were not merely functional infrastructure, but constituent elements of the cityscape. Modernization and industrialization, however, marked a break with this pattern. Many waterways were silted up to facilitate infrastructural expansion, while progressive pollution compromised their ecological quality. This process resulted in a twofold attitude toward water: on the one hand, a perception that it was a problem to be eliminated, and on the other, an awareness of its potential as a tool for development.

In the 20th century, with the need to rebuild Tokyo, water was gradually reevaluated as a spatial opportunity. After World War II, architectural and urban planning debate began to explore alternative scenarios, envisioning an expansion of the city that was no longer exclusively terrestrial, but also aquatic.

The Metabolist movement embraced this idea in a visionary way, proposing floating structures and modular systems capable of adapting to the water environment. These proposals were not mere speculative exercises, but expressions of a broader reflection on the relationship between urbanity and nature, in which water was no longer conceived as an element to be confined, but rather as a transformative agent of the city.

Today, in the face of worsening climate change and the increasing frequency of extreme events, the need to rethink the relationship between city and water is once again becoming a priority. Current strategies, based on containment devices such as dams, pumps and barriers, are proving their limitations. The idea of rigidly separating water from urban space is proving ineffective in the face of increasingly unpredictable and intense phenomena. If these systems were to fail, what scenario would emerge? The inability to integrate water into the city fabric could lead to a condition of extreme vulnerability, leaving the city exposed to the effects of flooding and sea level rise.

In this context, architecture could assume a decisive role, no longer relegated to the construction of buildings or emergency mitigation, but as a tool to redefine the very paradigm of the city. Overcoming the traditional dichotomy between built space and the natural environment, water could be recognized as an architectural device, that is, a generative element capable of reorganizing the urban landscape according to principles of adaptability and resilience.

But what does this perspective imply in concrete terms? It means abandoning the idea of water as a threat and conceiving of it as a structural component of the city, capable of influencing its morphology and functioning. Rather than being excluded from urban space, it could be reintegrated strategically, through the redevelopment of basins, the rehabilitation of canals or the creation of controlled expansion zones. Such an approach would not only mitigate the impact of extreme weather events, but also generate new opportunities for interaction between the built fabric and the water element.

1.
Robin, Op. cit.

3.
In his essay -Space City- Kurokawa identifies the main problem in the reconstruction of the city, which occurs mainly through the development of residential areas. He calls this urban configuration a "bed town," characterized by the lack of functional and diverse spaces necessary to support the new dynamics of post-war society and the advent of progress. This urban model, according to Kurokawa, is unable to respond to the needs of a modern community, as it reduces the city to a place exclusively dedicated to rest, devoid of significant connections with work, culture and sociality.

Responses: Living with water

2

As previously addressed, faced with the progressive failure of traditional engineering strategies in containing water risk, it becomes necessary to rethink the role of water within the urban fabric, no longer just as an issue to be addressed, but as a resource to be enhanced. A paradigm shift is essential that transforms the perception of water from an extraneous and dangerous element to an ordering principle capable of redefining and reorganizing urban spaces in a more integrated and dynamic way.
Instead of considering it as a foreign element to be rigidly separated and controlled, water can be reinterpreted as an ordering principle of space, a design device capable of redefining the morphology of the city and its relationship with natural dynamics. This approach is based on the idea that water management should not be limited to the construction of physical barriers, but can become an integral part of architectural and urban design language.
Water as an Architectural Device is therefore not a simple containment infrastructure, but an active design element, capable of generating new balances between the built environment and the natural landscape.
Within this perspective, the creation of new water bodies represents a key strategy for integrating water into the urban system, transforming it from a threat to a spatial resource. In addition to mitigating flood risk and fostering a better ecological balance, the introduction of reservoirs can become an opportunity to redefine the quality of public space and the relationship between city and land. From this perspective, the design of a new artificial lake is not just a technical response to water management, but a design act that reconfigures urban spaces, returning previously reclaimed areas to water and reducing dependence on forced drainage systems.

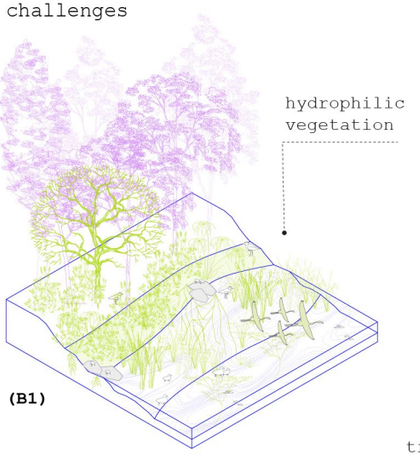
The proposed scenario fits within this logic and is based on the analysis of Hazard Maps and the study of urban topography to identify the most vulnerable areas and identify opportunities for a water reconfiguration of the territory.
The project involves the creation of an artificial lake that, in addition to serving as a regulating basin for rainfall, becomes a new structuring element of the city. Unlike traditional engineering visions, such as Shinohara's, which proposed the transformation of the area into a lagoon by the forced eviction of more than 500,000 people, this approach aims to combine environmental and social needs while maintaining a balance between humans and nature.
The intervention is not limited to the creation of a new body of water, but proposes an adaptive system that responds flexibly to water and urban needs. At the center of the project is an artificial lake, which is the heart of the system, an element not only of hydraulic regulation but also the ordering principle of space. This lake redefines the urban landscape and the city's relationship with nature, transforming water from a threat to a design device that structures the urban environment.
Several elements develop around this lake that define the configuration of the area. Water, as a central element of the project, not only regulates hydraulics, but also becomes a principle that reorganizes space and the relationship between nature and the city. Buffer zones, designed to act as an ecological interface between the lake and the city, play a crucial role in absorbing excess water, improving the quality of the environment and promoting ecological integration. The new residences, developed in tune with the presence of water, fit harmoniously into the natural context, while the existing city is reconfigured to accommodate the new water spaces and climate change adaptation strategies. In this way, the project does not propose predefined solutions, but offers a flexible matrix that allows it to respond to the specific needs of each urban context, creating dynamic and continuously adapting configurations.
A key aspect of the project is the creation of buffer zones,

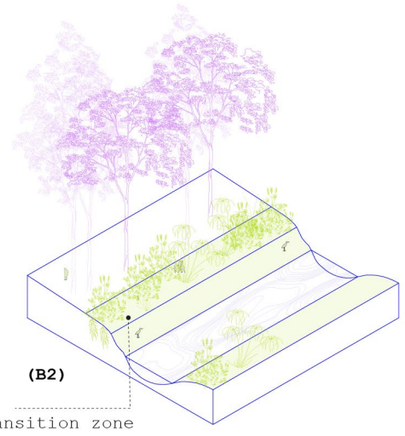
which serve an essential ecological and hydraulic function. These areas, divided into wetlands, buffer forests and terraces, not only contribute to hydraulic regulation and biodiversity, but also improve the quality of urban life by creating spaces of tranquility and enjoyment for the community. Wetlands, in particular, are designed to recreate portions of natural shorelines, characterized by muddy and tidal soils, which encourage the proliferation of local flora and fauna. Acting as true natural sponges, these zones are able to expand during heavy rains, slowing the flow of water and storing nutrients such as nitrogen and phosphorus, carried by rainwater.
In this way, buffer zones not only respond to specific ecological and hydraulic problems, but also contribute to integrated water management, promoting a symbiosis between the city and nature. These areas become vital spaces for urban resilience, combining the beauty of the natural landscape with the functionality needed for effective adaptation to climate change.In addition, buffer forests and terraces improve the landscape and play a crucial ecological role, such as CO_2 absorption and phytoremediation. The buffer strips expand the transition zones between the lake and the city, creating multifunctional spaces that support biodiversity and the well-being of the inhabitants. This approach also responds to the critical issues related to the past reclamation of marshy areas, historically dried up for reasons of health, and aims to reintroduce natural elements in a highly urbanized context.
The area under study, located in the lowland of Tokyo, represents an emblematic case of precarious balance between nature and urbanization. This territory, once lagoon and later transformed into a sort of "Japanese Venice," today presents itself as a strategic residential district, close to the main social life poles of the metropolis. By analyzing different scenarios, the project hypothesizes the failure of current protection systems, such as dams and pumping systems, proposing an intervention that intensifies the presence of water bodies where the topography allows it.

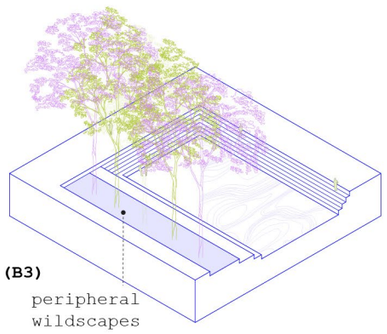
The initial idea was a series of small water basins, avoiding large excavation operations. However, through hydraulic calculations and discussion with experts, it was decided to design a main artificial lake, connected to the Arakawa River and extending for two kilometers towards Tokyo Bay. Thisintervention involved the demolition of about 20,000 buildings, depriving as many inhabitants of their housing. This action inevitably raises questions related to the theme of living: how to redesign homes in a transformed context, where water becomes a founding element of the new urbanity? The project, in addition to proposing solutions for environmental restoration, intends to provide a scenario that combines functionality and livability, creating a balanced and resilient urban space, capable of responding to the challenges posed by climate change and rising sea levels.
Initially, it was thought to insert the new homes directly into the new reservoir created, but this solution proved to be not very functional from a design point of view. In fact, the expansion of the body of water would have required massive excavations, creating a situation that would not have been optimal either in terms of functionality or environmental impact. Therefore, a solution was opted for that would involve the use of the edge of the basin, a place that would serve as a transitional space between the new blue infrastructure and the existing city. The concept of "edge" plays a central role in this project. It is not limited to being a simple physical boundary, but is configured as a visual and spatial filter that separates the new infrastructure from the existing urban environment. The edge, in fact, has an aesthetic and symbolic function, as it acts as a visual barrier that partially masks the body of water, treating it according to a typically Japanese conception. The choice not to make the lake immediately visible reflects a Japanese cultural tradition that favors "Oku", or the idea of "interior" or "depth". In this context, the concept of "Oku" is not limited to a physical dimension, but embraces a spatial and philosophical dimension that is reflected in all forms of Japanese art and architecture. In Japanese cities, in fact, there is no recogni

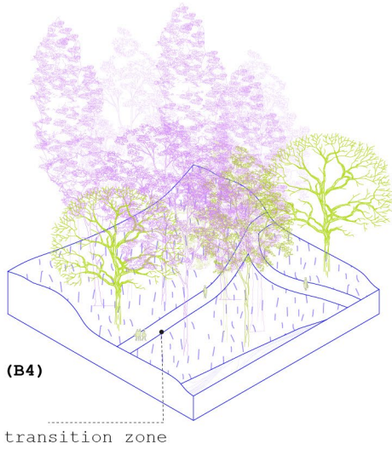
zable urban center as it happens in European cities, but a series of centers distributed in a widespread way. This approach to the city, which does not privilege a physical centrality but rather a series of dislocated focal points, is reflected in the project. The artificial lake becomes a hidden element, reachable only after embarking on a complex and fragmented path, which invites the inhabitants to a journey through the fog, a metaphor for the search for hidden beauty, which is found only after a long journey. This path is not only physical, but also symbolic, as it represents a path of discovery and relationship between the existing city and the new infrastructure. The artificial lake, which stretches for two kilometers along the Arakawa River, thus becomes a central element in the new configuration of the Lowland. Its function is not only to protect the city from flooding, but also to offer a space of refuge and living for residents. The creation of this water area implies the demolition of numerous buildings and the reorganization of urban life, with the need to find solutions for the resettlement of people who will lose their homes. In this phase, the project explores different possibilities for the reconstruction of homes, in order to respond to the functional and social needs of a population that will have to adapt to a new form of urban life.
The concept of "edge" and "filter" between the existing city and the lake is developed in four main construction types.
The first of these is the one that involves the creation of an island inside the basin, on which duplexes are arranged, reminiscent of traditional Japanese homes. These houses are designed to be located in a high-altitude area, compared to the neighboring part of the basin, in order to preserve a low construction density. This type of residence is configured as a small isolated community, which allows the inhabitants to live in a more intimate and protected way. The other types of housing are developed along the edge of the basin, adapting harmoniously to the landscape without imposing themselves on it. Towers with common spaces, courtyard buildings crossed by internal roads, and flexible linear dwellings are designed to encourage coexistence and

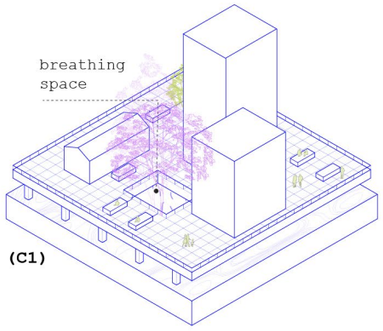
strengthen the bond between the inhabitants and the water. Architecture does not merely define built volumes, but becomes a device for new ways of living, where the void is no longer an absence, but a resource for collective life.
This project does not offer a rigid and definitive solution, but paves the way for future scenarios. Tokyo is no longer a city that fights water, but an organism that integrates and transforms it into a generative element. The urban landscape is not reconfigured through imposed patterns, but through a dynamic balance between nature and artifice, an unstable but necessary arrangement to meet the challenges of climate change without repeating the mistakes of the past.
New residences offer a higher quality of life through shared spaces and a close relationship with the natural context. In this scenario, the concept of “sharing” and “spatial proximity” becomes central, with the aim of fostering closer relationships not only within dwellings but also in public spaces, strengthening the sense of community and social interaction.
The idea of "spatial proximity" is based on Melvin Webber's concept of "community without propinquity", which emphasizes that social relationships do not necessarily have to be linked to physical proximity, but can be promoted through interaction in public and shared spaces. This concept is also applied in the project, where public spaces become the privileged place for interaction and exchange between residents, and are designed in such a way as to be transparent and conflict-free, but at the same time capable of stimulating the relationship between different communities and different values. The project, therefore, is part of a broader reflection on "socio-diversity", a concept that is linked to the theories of Bourdieu, Barthes and Foucault, and which finds expression in the city as a porous and interconnected system. In this context, ecological and functional densification becomes a strategy to promote social diversity and cohesion among different communities.

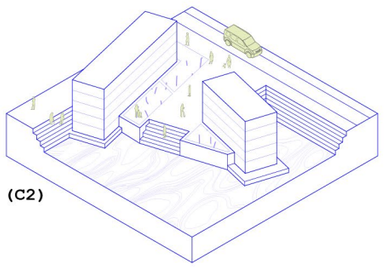

hydrophilic
vegetation
(B1)

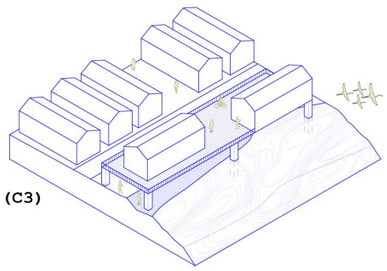

(B2)
transition zone

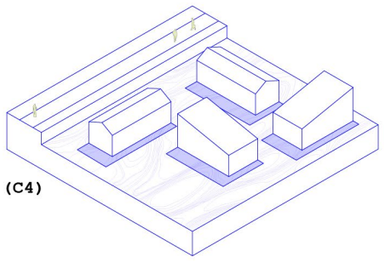

(B3)
peripheral
wildscapes

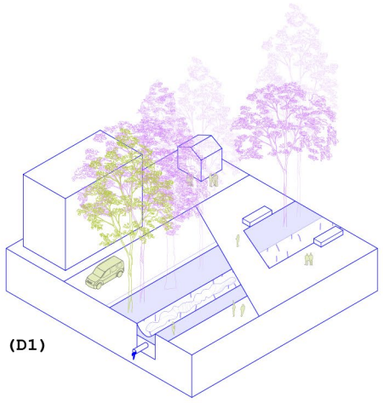

(B4)
transition zone

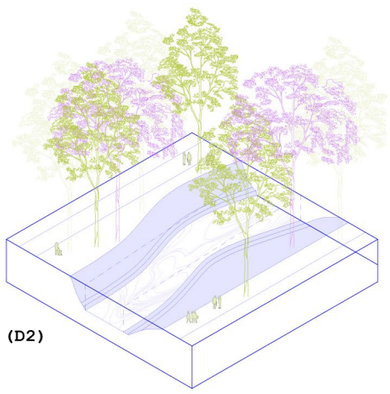

breathing
space
(C1)

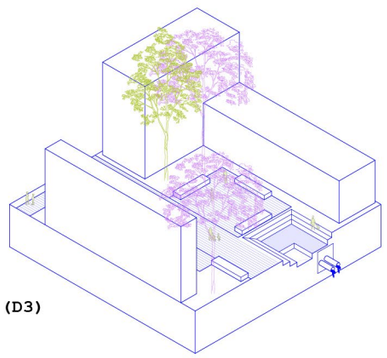

(C2)

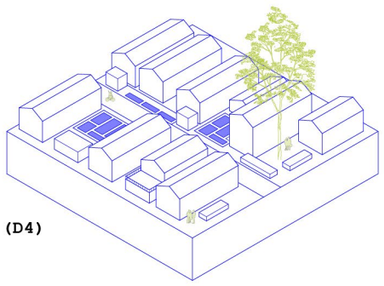

(C3)


(C4)


(D1)


(D2)


(D3)


(D4)

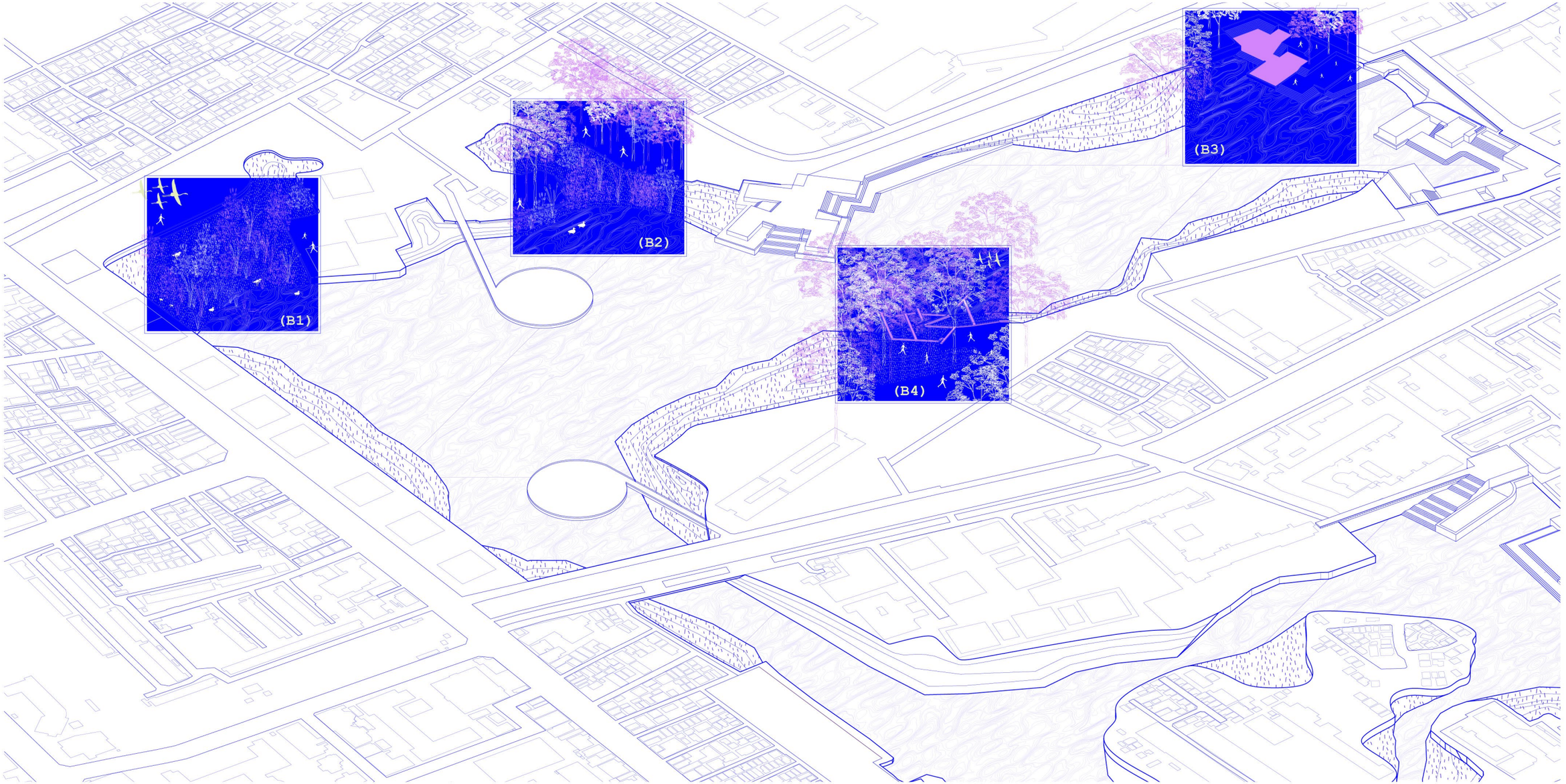

Scenario
Flooding water
Trees
Artificial land
Buffer zone
Buildings
Water

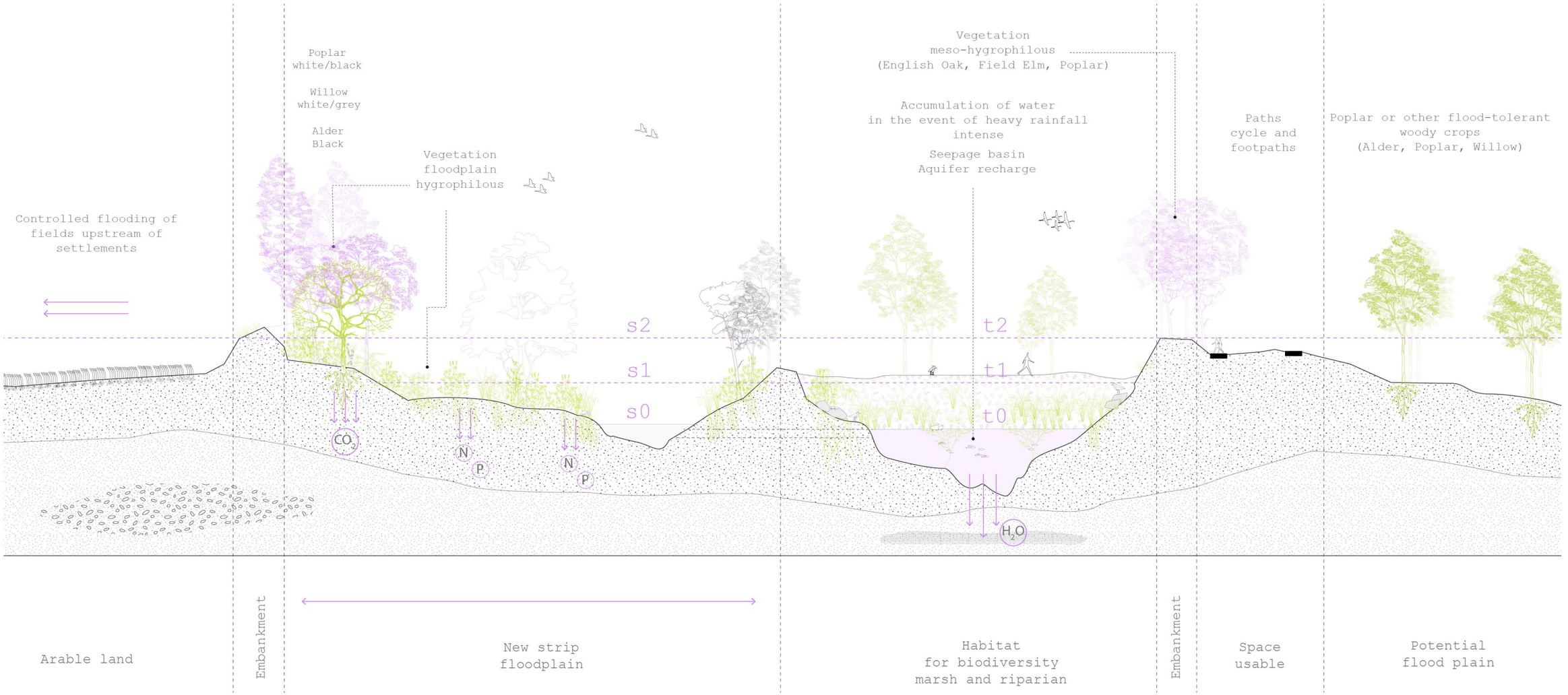
「ゆく河の流れは絶えずして、
しかももとの水にあらず。」

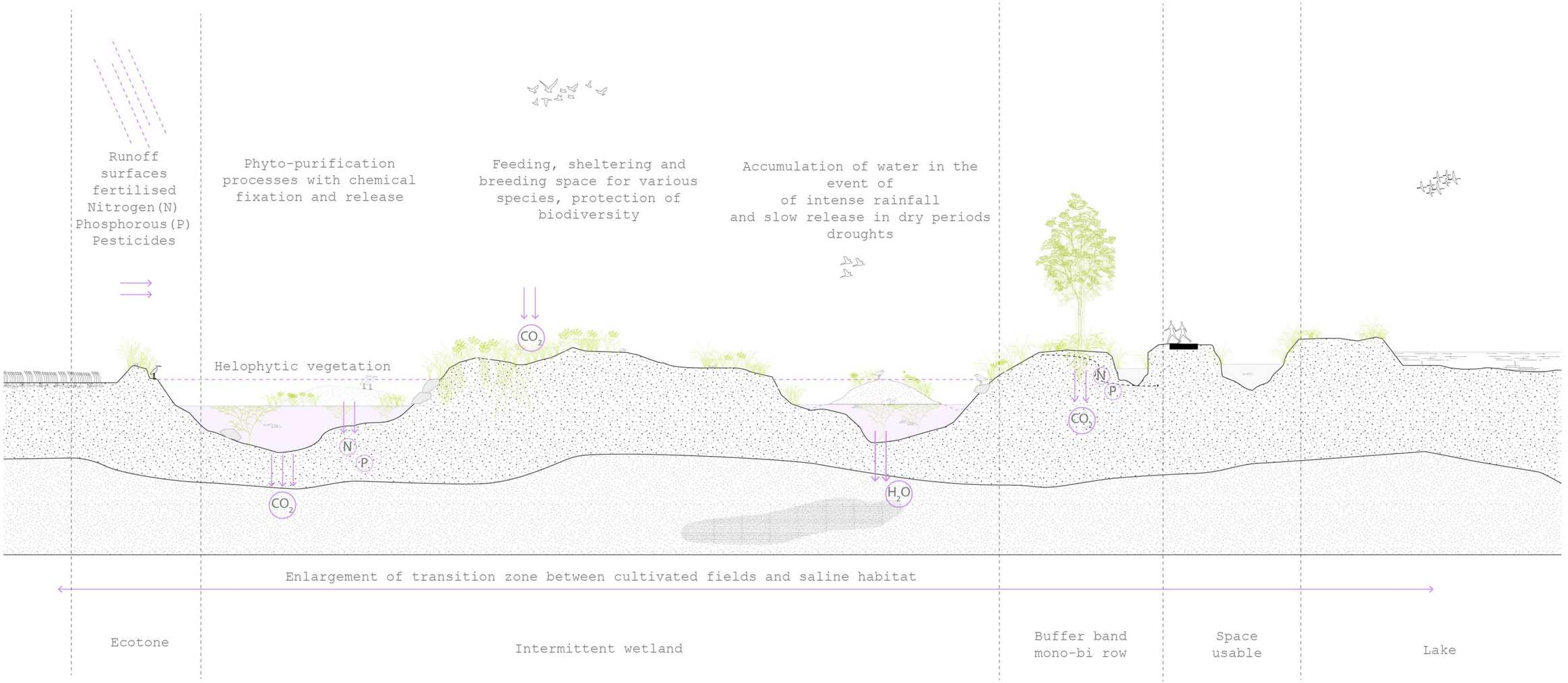
"The flow of the river never stops, but the water is never the same."[1]

Kamo no Chōmei

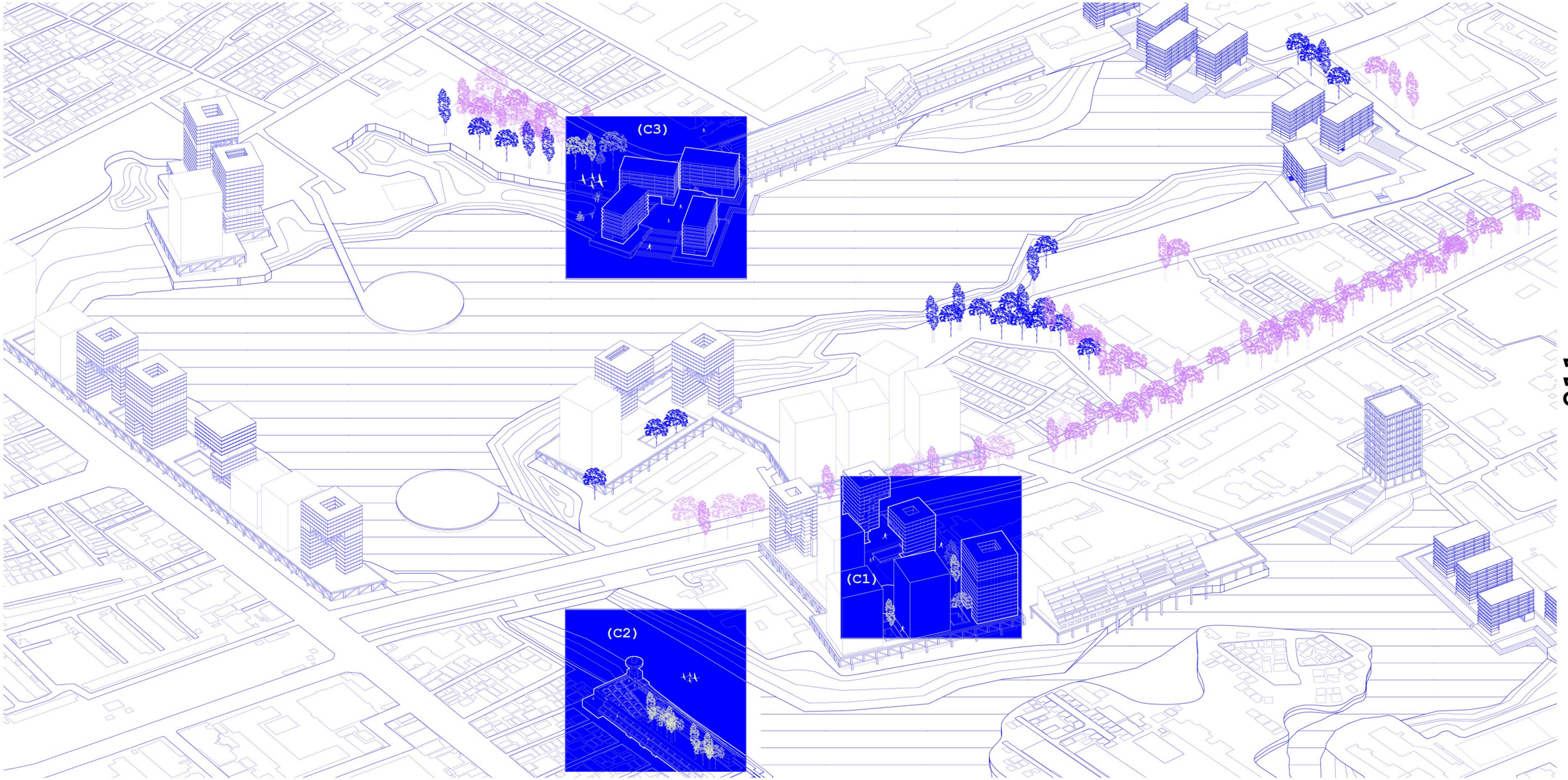
1. Although the river seems unchanging, the water flowing through it is constantly changing. Likewise, life flows in a continuous stream, in which nothing remains the same, even when appearance suggests stability. This principle, deeply rooted in Buddhist philosophy and Japanese literature, is echoed in the project of transforming a city into a lake. Such metamorphosis represents the dynamism of the relationship between man and nature: what is now urbanity can become an aquatic ecosystem, demonstrating that even the most solid structures are part of an unceasing process of transformation and rebirth.


(B1)
(B2)
(B3)
(B4)


Poplar
white/black
Willow
white/grey
Alder
Black
Vegetation
floodplain
hygrophilous
Vegetation
meso-hygrophilous
(English Oak, Field Elm, Poplar)
Accumulation of water
in the event of heavy rainfall
intense
Seepage basin
Aquifer recharge
Paths
cycle and
footpaths
Poplar or other flood-tolerant
woody crops
(Alder, Poplar, Willow)
Controlled flooding of
fields upstream of
settlements
s2
s1
s0
t2
t1
t0
CO2
N
P
N
P
H2O
Arable land
Embankment
New strip
floodplain
Habitat
for biodiversity
marsh and riparian
Embankment
Space
usable
Potential
flood plain


Runoff
surfaces
fertilised
Nitrogen (N)
Phosphorous (P)
Pesticides
Phyto-purification
processes with chemical
fixation and release
Feeding, sheltering and
breeding space for various
species, protection of
biodiversity
Accumulation of water in the
event of
of intense rainfall
and slow release in dry periods
droughts
Helophytic vegetation
CO2
N
P
CO2
H2O
N
P
CO2
Enlargement of transition zone between cultivated fields and saline habitat
Ecotone
Intermittent wetland
Buffer band
mono-bi row
Space
usable
Lake


s2
s1
s0
CO_2
CO_2
N
P
H_2O
Peri-urban park
Trail
Woodland edges
Trail
Ecotone
Habitat
for biodiversity
marsh and riparian
Potential
flood plain
Lake


(C3)
(C1)
(C2)

TYPOLOGY I: Tower-house

"The Social Fabric of the Tower: Unveiling Urban Continuity"

The proper distance between buildings, people, functions, and imaginaries is a key element in designing a more inclusive and livable city. Through careful spatial configuration, it is possible to foster spontaneous interactions among inhabitants, promoting socialization and the sharing of urban life.

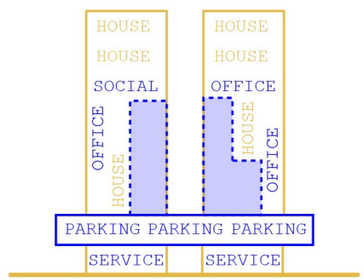
Based on these principles, a design logic was developed, initially applied to a basic typology and later adapted to the specific characteristics of different contexts. The first typology is distinguished by buildings with imposing facades, positioned along major urban arteries, where they act as defining elements of the cityscape. However, these towers are not conceived as monolithic volumes; instead, they are strategically "hollowed out" to create open spaces that establish a dialogue with the surrounding landscape.

For instance, near parks, certain sections of the tower are removed to generate a sense of continuity between the architecture and green spaces, creating the impression that the park extends within the structure itself. In areas characterized by high-density developments, on the other hand, subtracting portions of the tower ensures better natural lighting, reducing the impact of shadows on public spaces. This design approach makes the tower a dynamic element, shaped in response to the specific conditions of the urban fabric.

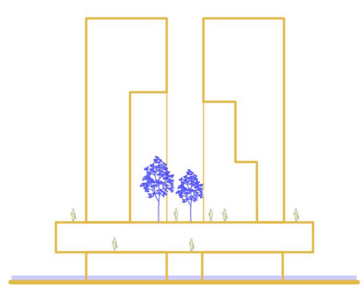
When towers are located near buffer zones rather than in a densely built environment, they are positioned on elevated platforms, introducing the concept of "artificial land." In these cases, the platform functions as a second level of artificial ground, designed to provide public spaces and services for citizens. Additionally, parking areas are integrated within the platform, optimizing space utilization and enhancing the overall livability of the urban environment.

Through these strategies, the tower is no longer merely an isolated vertical element but becomes an adaptive architectural feature—one that mediates between density and openness, built form and nature, private and collective life.

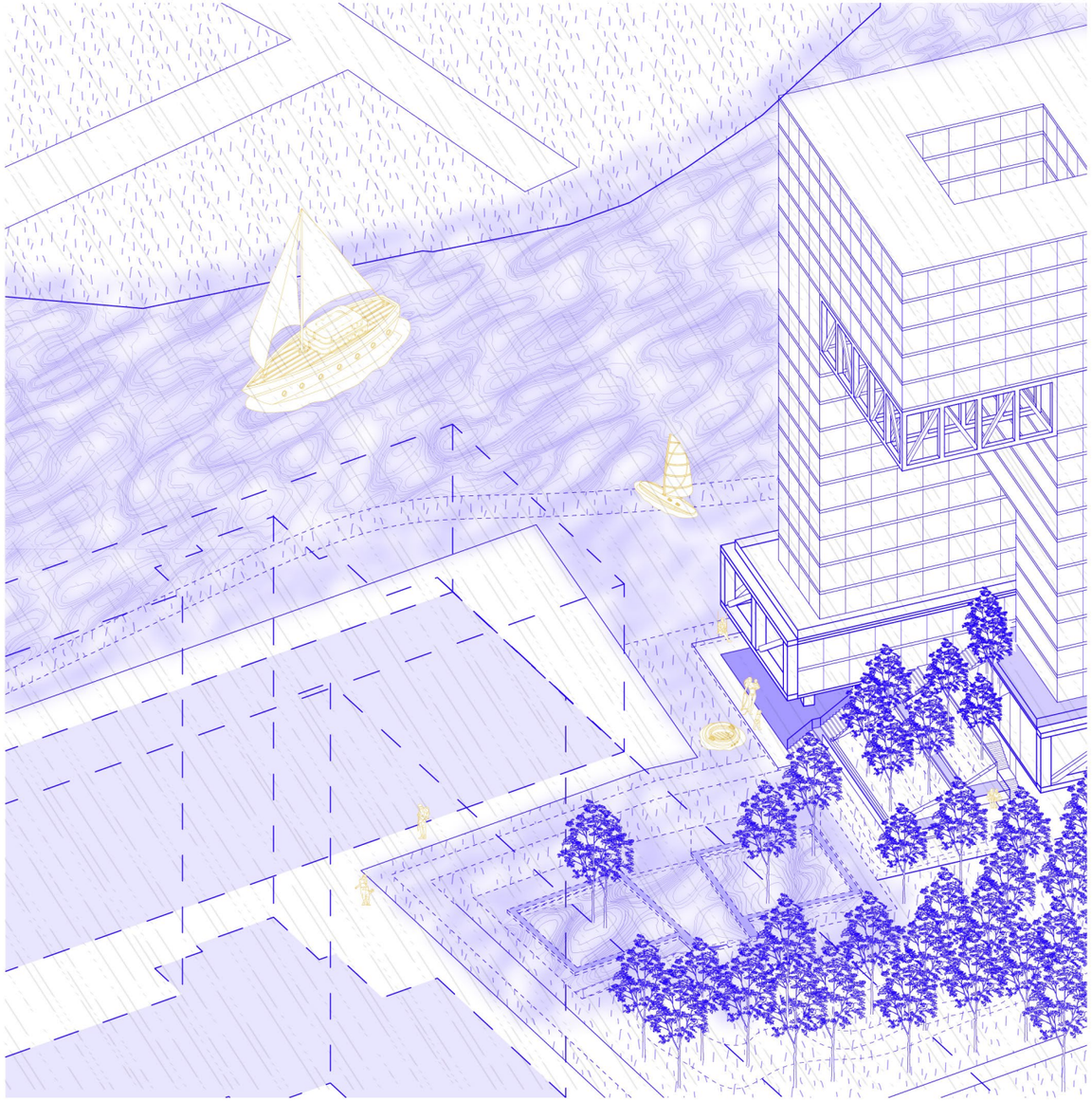
app. about 80 mq and 100 mq

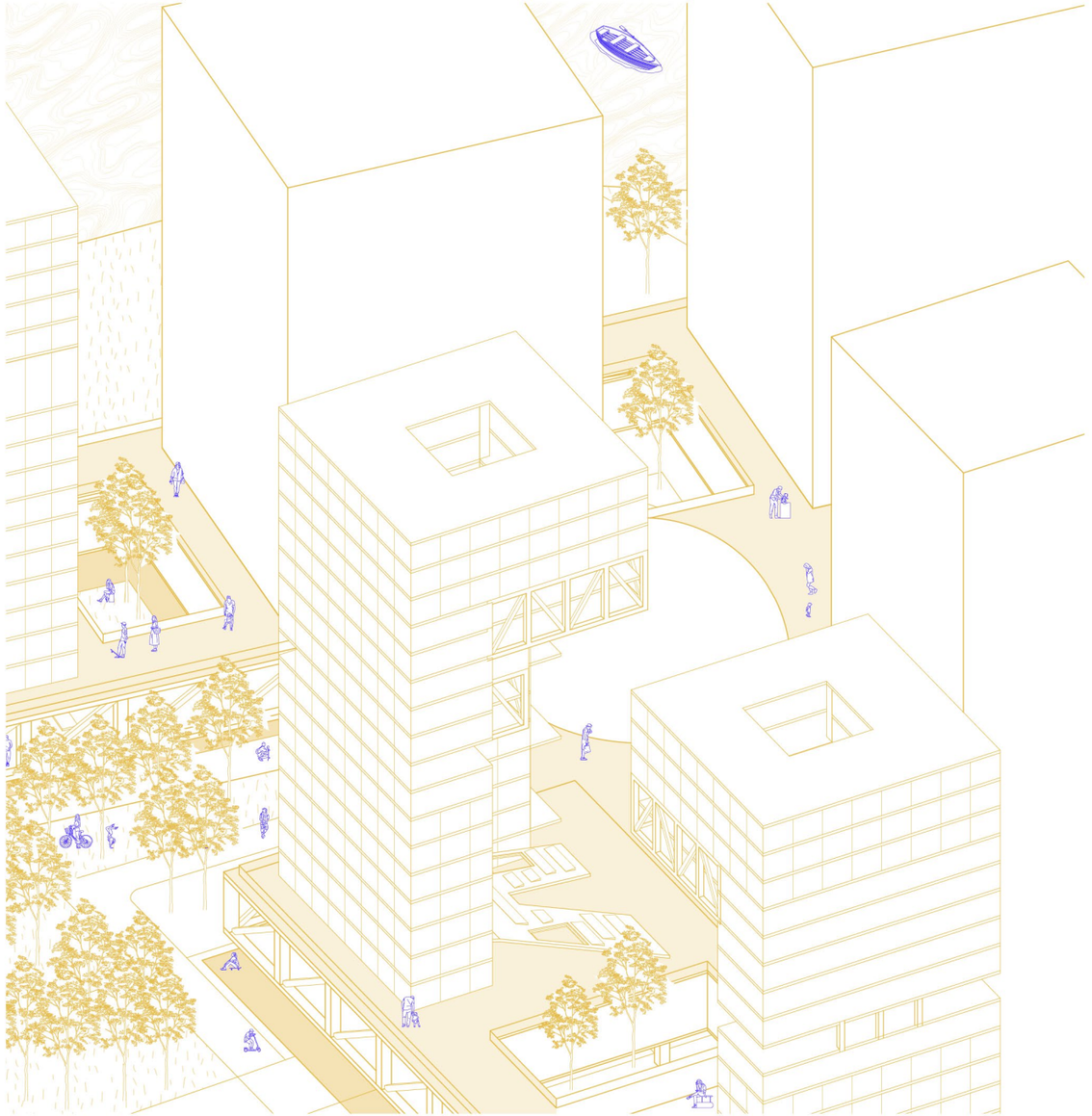


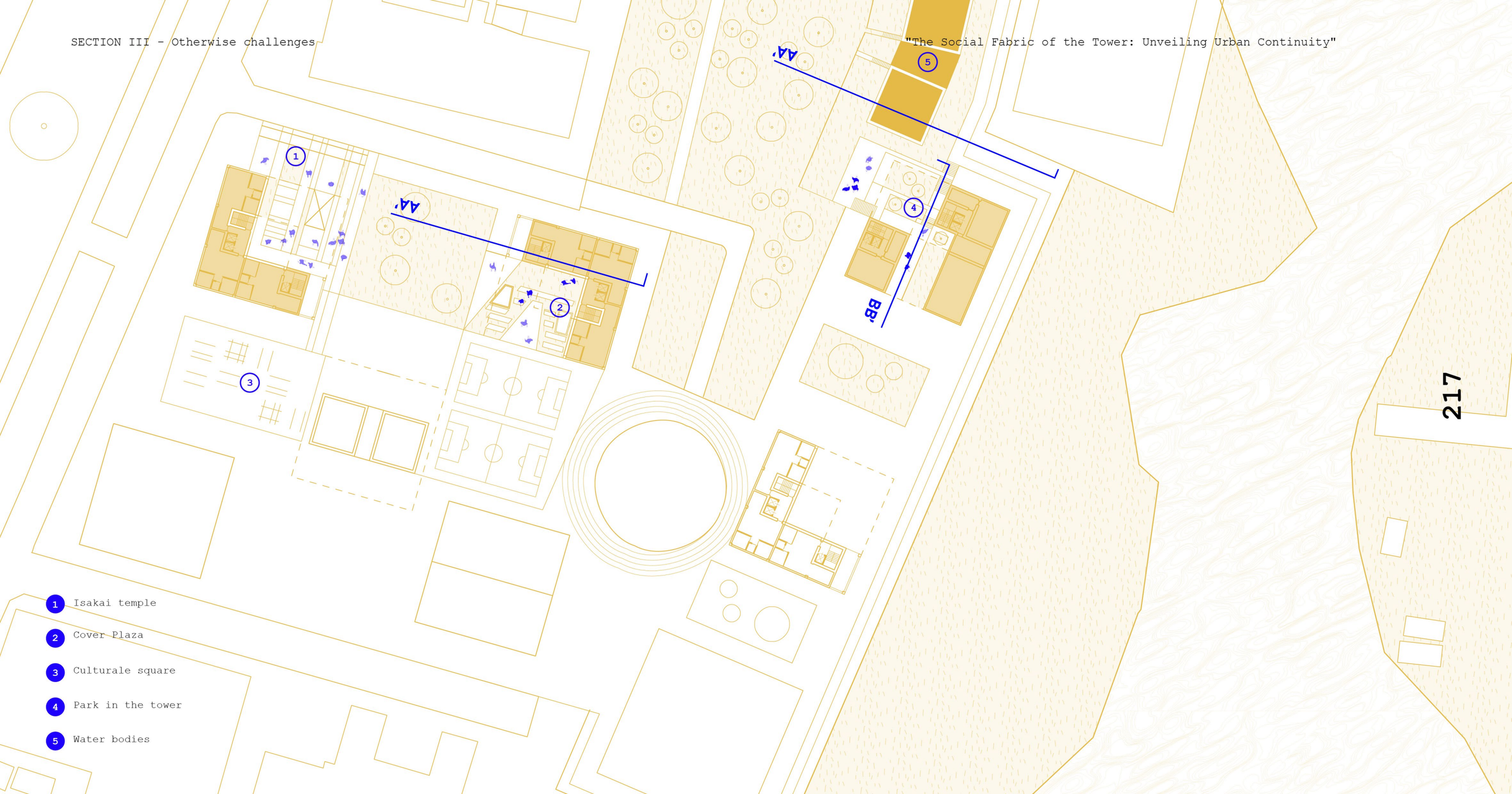
mixitè of interior and creating some social void



living with water pt.1







1. Isakai temple
2. Cover Plaza
3. Culturale square
4. Park in the tower
5. Water bodies

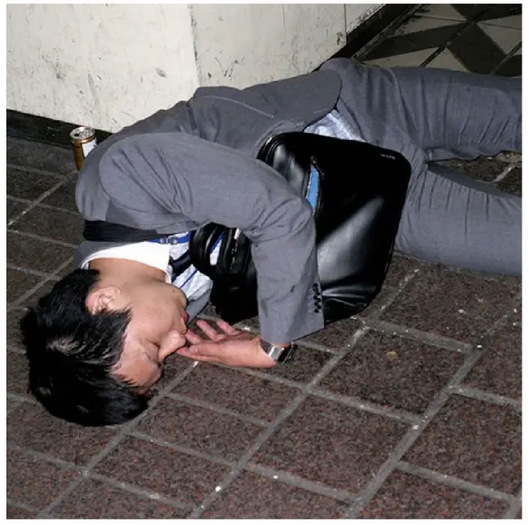
CASE I:
the case of IZAKAYA

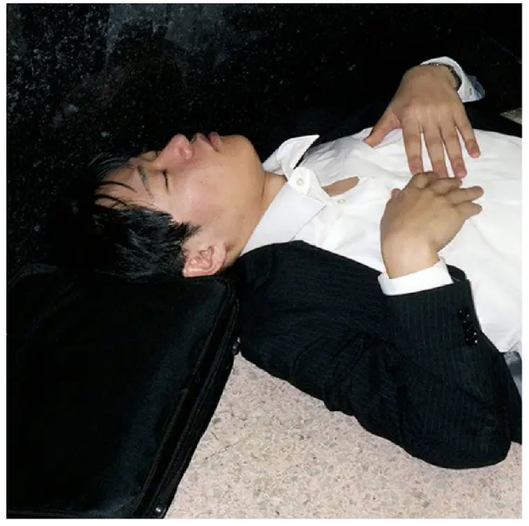
「街灯の下、酔いどれた男の夢は、儚い月影のよう。」

"Under the lamppost, the drunken man's dream is like an ephemeral shadow of the moon."[2]

Matsuo Bashō

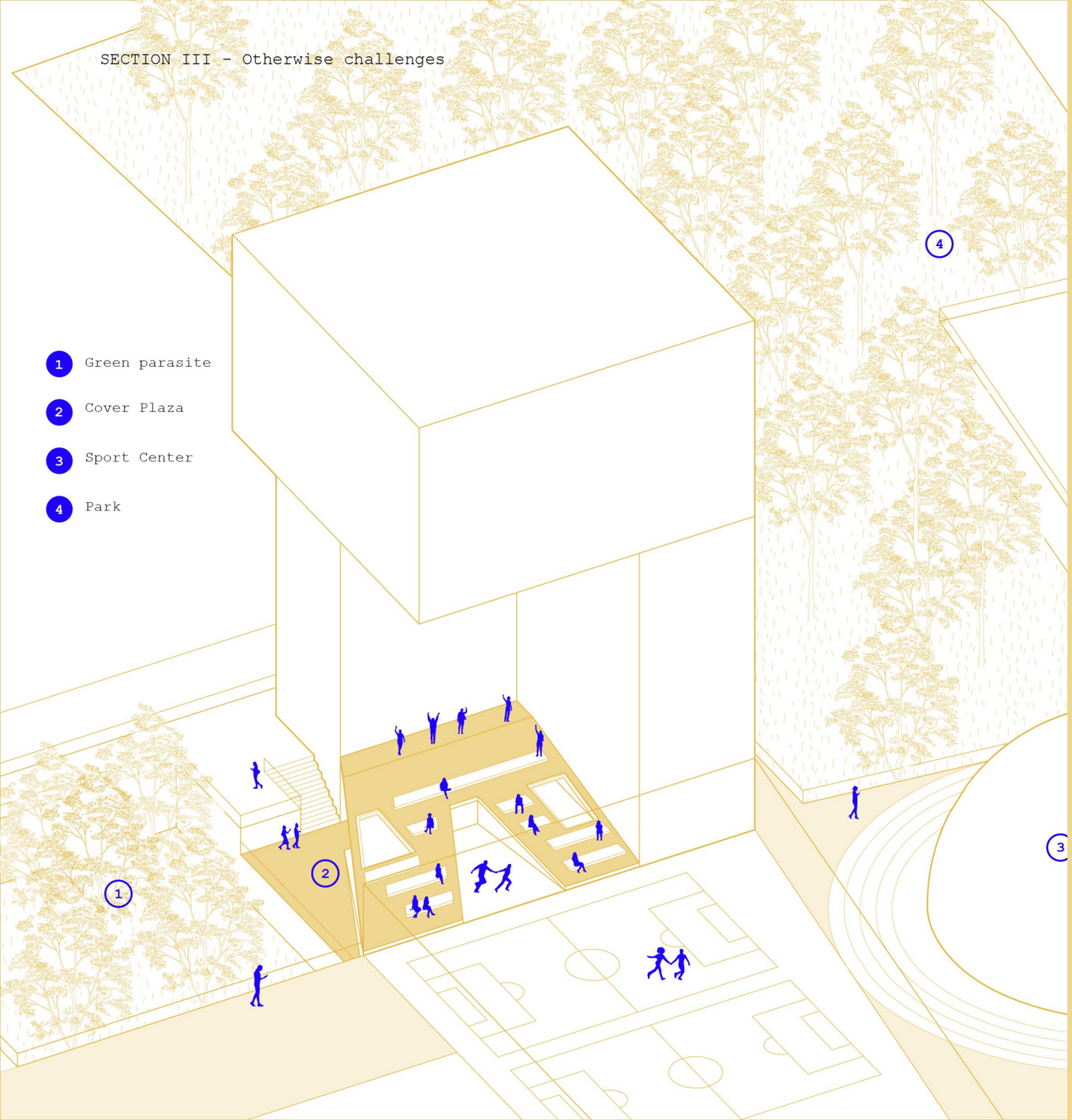
2. Exploring the ephemerality of life, contrasting the rigidity of daylight, illuminated by the clear light of day, with the freedom of the night, when conventions fade and the soul surrenders to the moon's soft shadow, revealing its vulnerability like an elusive dream that vanishes by morning.



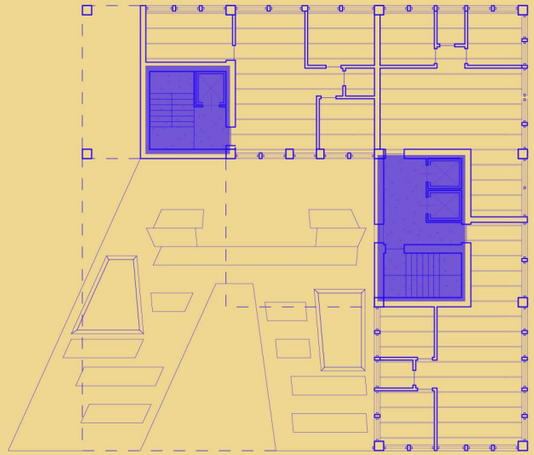


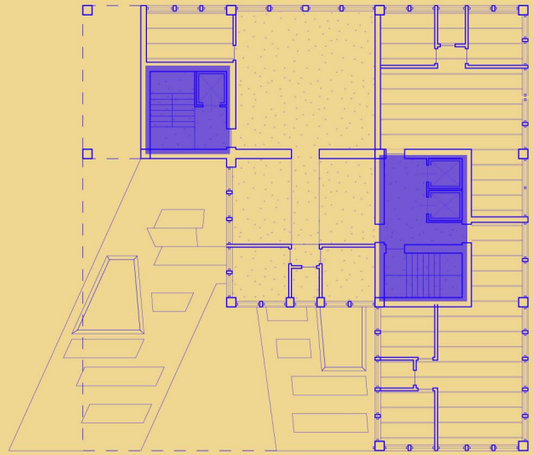
SECTION III - Otherwise challenges

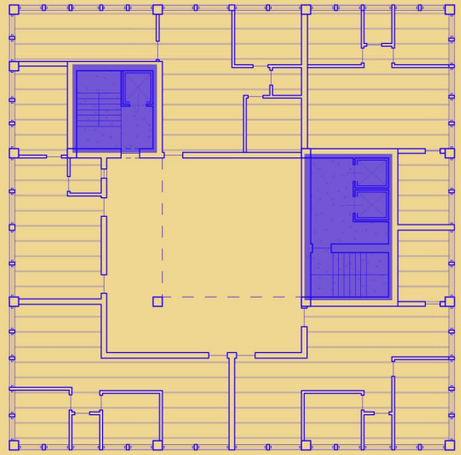
1. Green parasite
2. Cover Plaza
3. Sport Center
4. Park

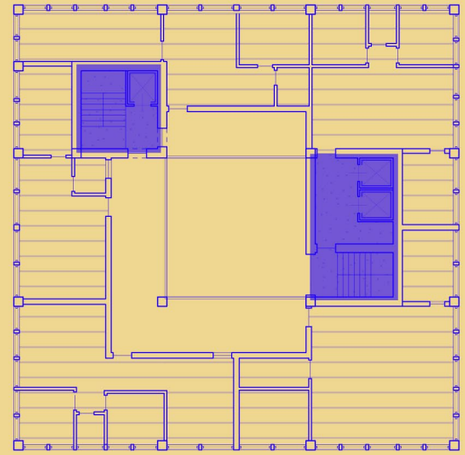


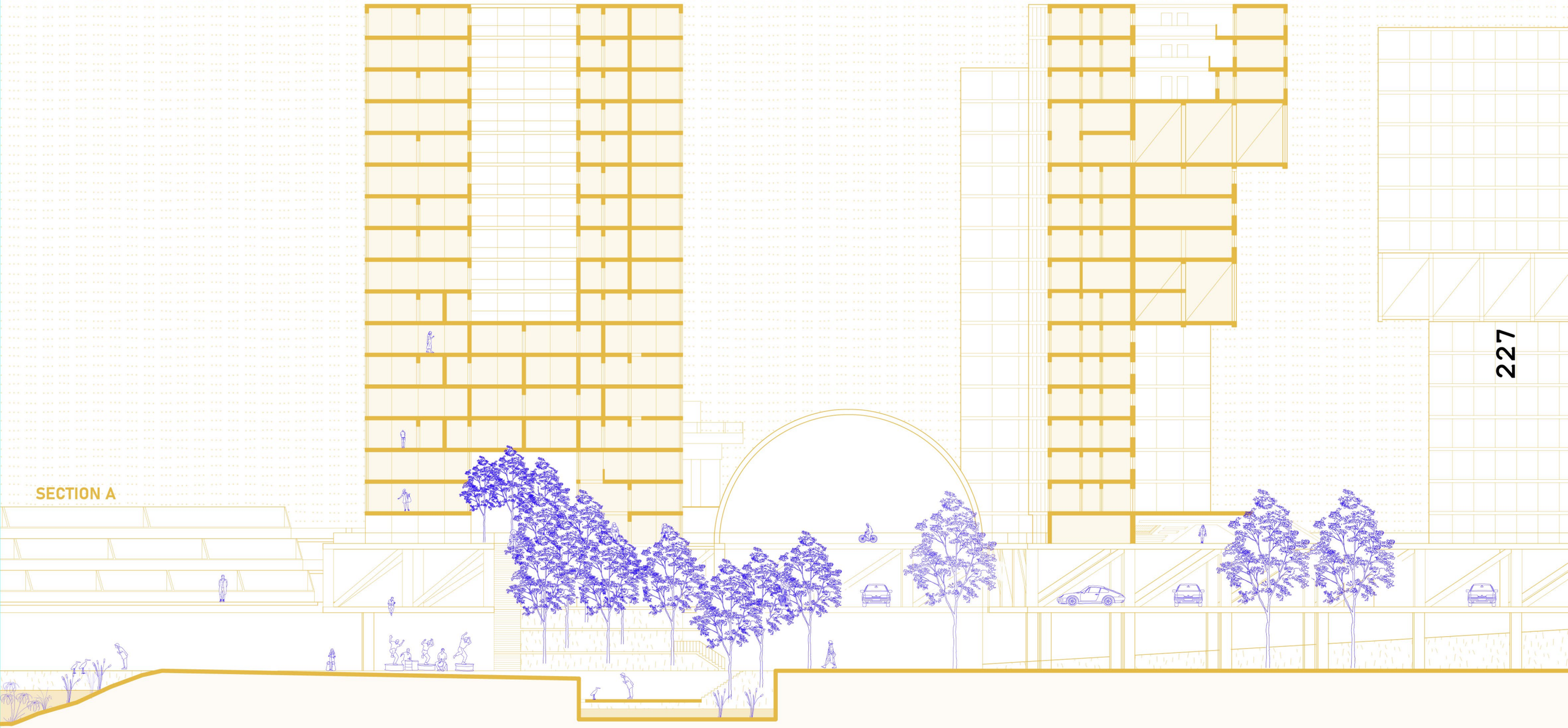
"The Social Fabric of the Tower: Unveiling Urban Continuity"



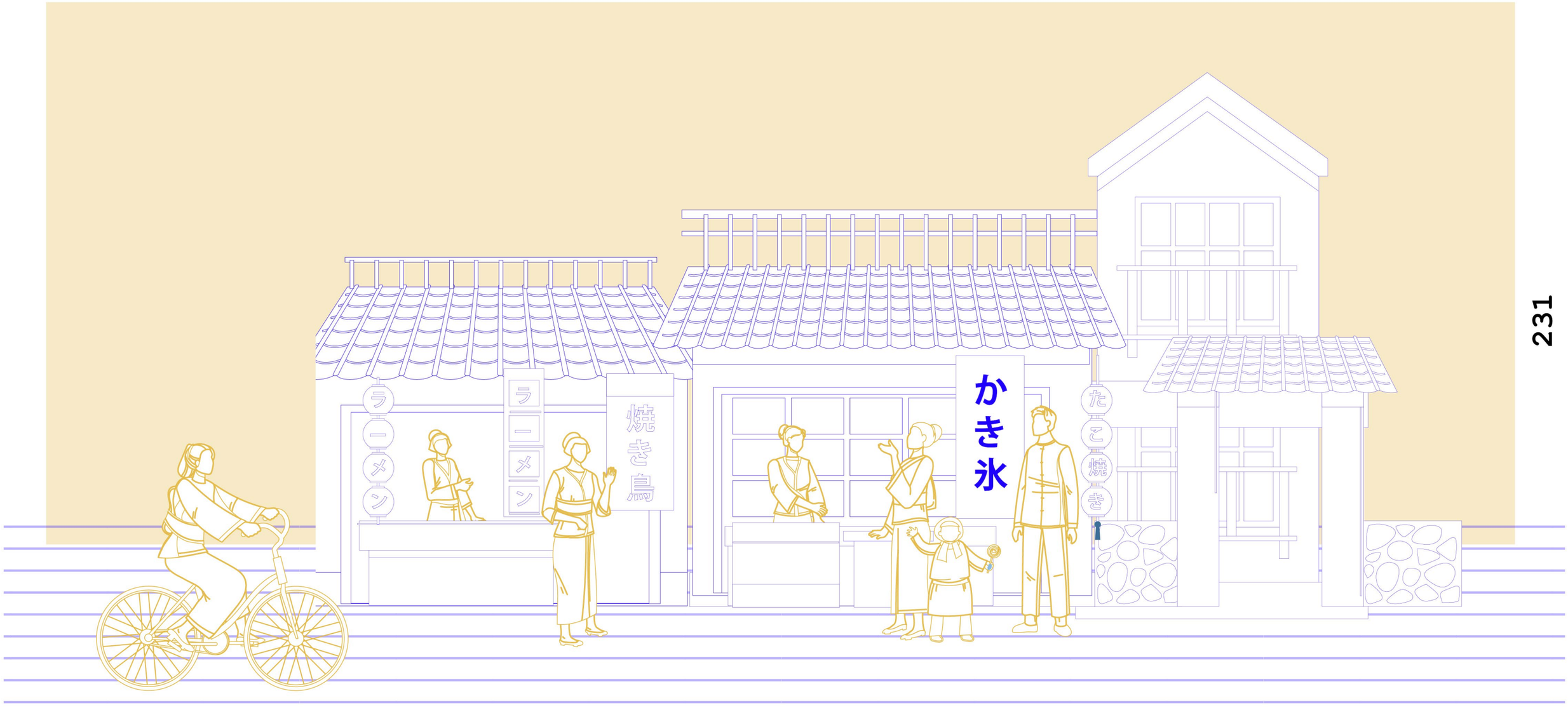







SECTION A
227


SECTION B

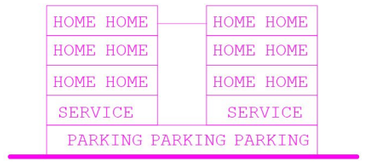

ラーメン
ラーメン
焼き鳥
かき氷
たこ焼き

TYPOLOGY II:
Courtyard-house

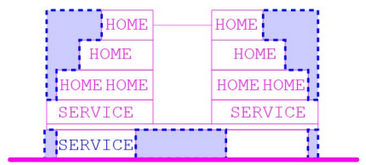
"The Social Fabric of the Courtyard: Weaving Community Spaces"
Courtyard buildings are located along streets of lesser importance, the so-called semi-private streets. This approach is particularly interesting as it reflects the predominantly residential nature of the district, where the streets are conceived as extensions of the house, in line with Japanese culture. The narrowest streets, often one-way and without sidewalks, are animated by plants and other elements that transform them into real shared gardens. Following this logic, the courtyard buildings reproduce the principle of the "garden-street" even within their configurations, integrating pedestrian streets on each floor, bordered by filter spaces that evoke the atmosphere of the surrounding streets. On the ground floor, the buildings are crossed by passages that ideally extend the external streets, making them porous and in tune with the urban context.
This configuration responds to two design hypotheses:

In the metropolitan contexts of advanced economies, the most intense social relations develop in opaque, dense and permeable contexts, within the interiors where different social groups and individuals can build their niches and spaces.

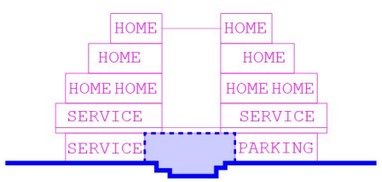
Some urban spaces or devices, understood as an expression of local spatial thoughts, can be adapted and exported to other contexts.



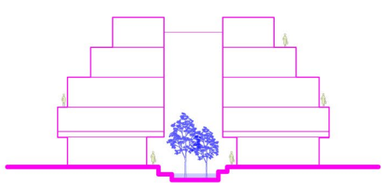
app. about 40 mq and 60 mq



streets on elevations



creating the central void


living with water pt.2

CONNECTOR

The connection bridges are designed to provide seamless passage between different areas, ensuring easy access to all spaces. These bridges become particularly essential during periods of road flooding or when the garden area overflows, offering a reliable route to maintain connectivity and mobility across the site, regardless of changing environmental conditions.

HOUSING

The housing units are characterized by their own filter space, which can function as a garden or private retreat, adaptable to the owner's preferences.

GARDEN OF COEXISTENCE

A harmonious garden designed to foster unity and connection, where diverse elements coexist peacefully within a shared space.

FLEXBIBLE PLAZA

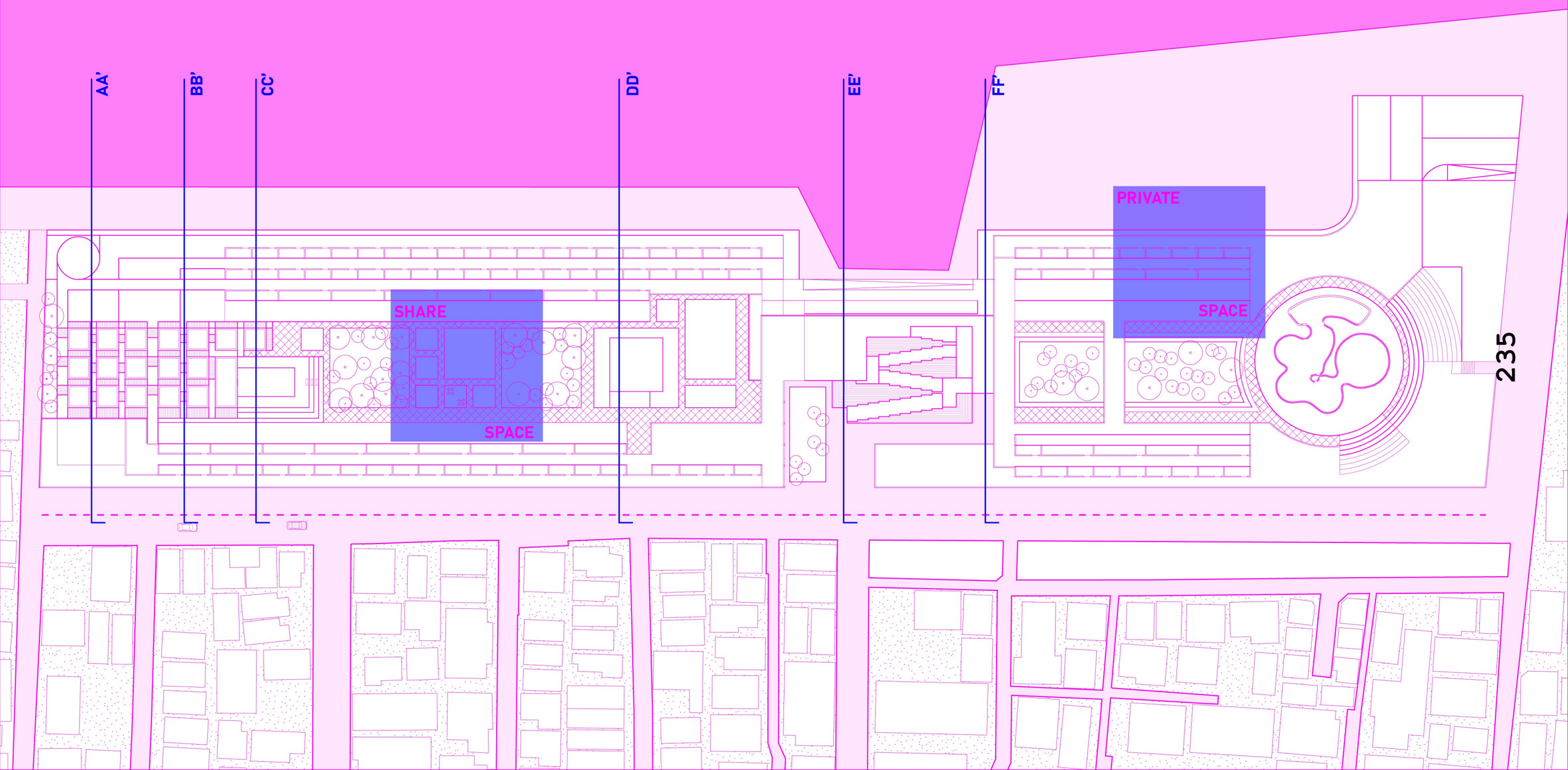
The Flexible Plaza serves as a versatile belvedere overlooking the lake, adaptable for various events and gatherings. Its open design offers stunning views while providing a space for diverse activities.

WATERPLAZA

A dynamic public space where water features create a refreshing and interactive environment, blending nature with urban life

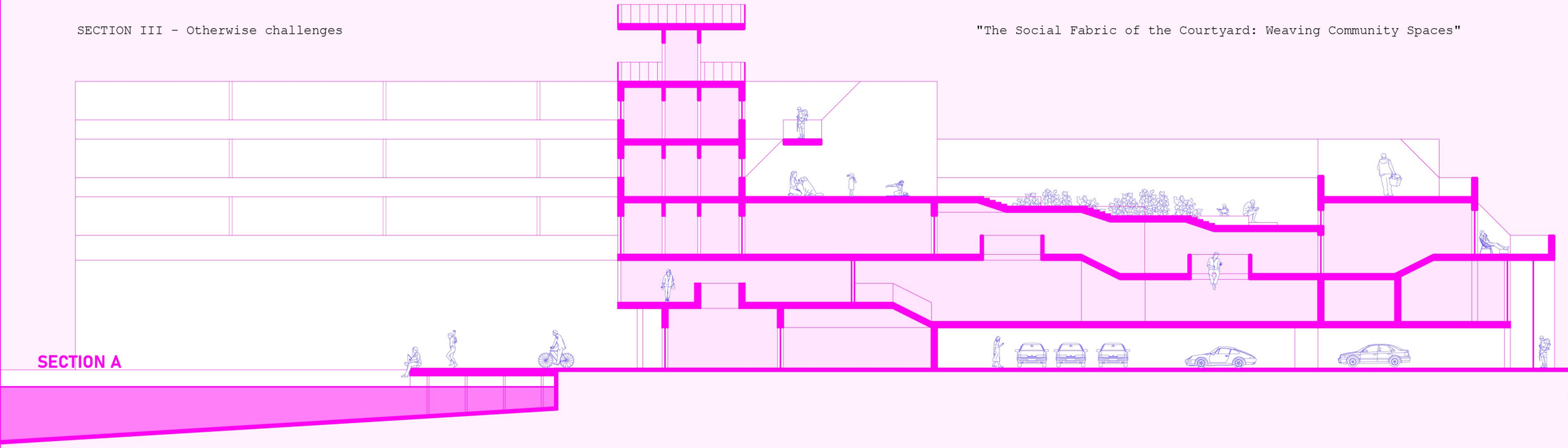
BLECHERS

The stepped terraces overlooking the Water Plaza create a dynamic, multi-level space, offering scenic views and inviting visitors to engage with the water features below.

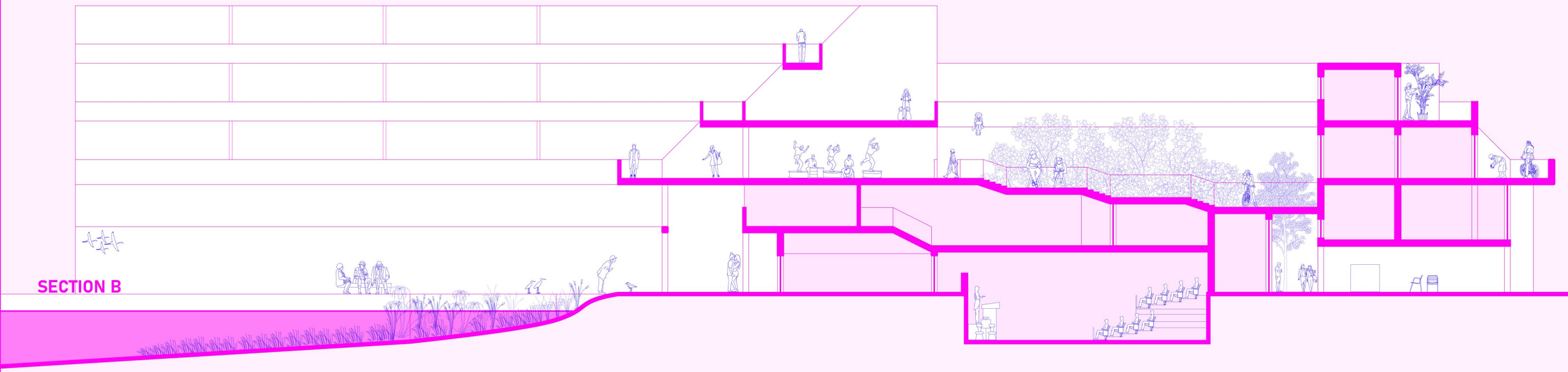

AA'
BB'
CC'
DD'
EE'
FF'
SHARE
SPACE
PRIVATE
SPACE
235

which serve an essential ecological and hydraulic function. These areas, divided into wetlands, buffer forests and terraces, not only contribute to hydraulic regulation and biodiversity, but also improve the quality of urban life by creating spaces of tranquility and enjoyment for the community. Wetlands, in particular, are designed to recreate portions of natural shorelines, characterized by muddy and tidal soils, which encourage the proliferation of local flora and fauna. Acting as true natural sponges, these zones are able to expand during heavy rains, slowing the flow of water and storing nutrients such as nitrogen and phosphorus, carried by rainwater.
In this way, buffer zones not only respond to specific ecological and hydraulic problems, but also contribute to integrated water management, promoting a symbiosis between the city and nature. These areas become vital spaces for urban resilience, combining the beauty of the natural landscape with the functionality needed for effective adaptation to climate change.In addition, buffer forests and terraces improve the landscape and play a crucial ecological role, such as CO_2 absorption and phytoremediation. The buffer strips expand the transition zones between the lake and the city, creating multifunctional spaces that support biodiversity and the well-being of the inhabitants. This approach also responds to the critical issues related to the past reclamation of marshy areas, historically dried up for reasons of health, and aims to reintroduce natural elements in a highly urbanized context.
The area under study, located in the lowland of Tokyo, represents an emblematic case of precarious balance between nature and urbanization. This territory, once lagoon and later transformed into a sort of "Japanese Venice," today presents itself as a strategic residential district, close to the main social life poles of the metropolis. By analyzing different scenarios, the project hypothesizes the failure of current protection systems, such as dams and pumping systems, proposing an intervention that intensifies the presence of water bodies where the topography allows it.

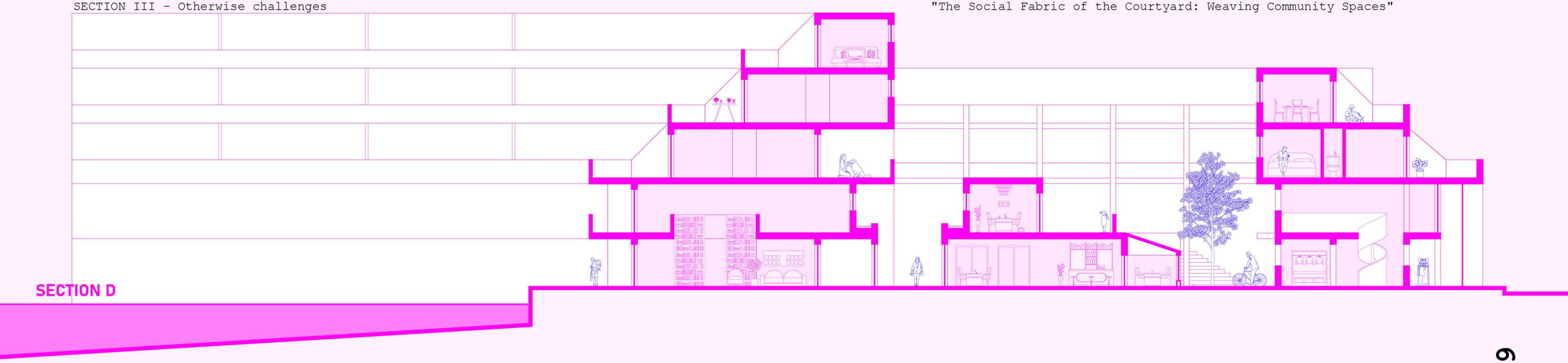
The initial idea was a series of small water basins, avoiding large excavation operations. However, through hydraulic calculations and discussion with experts, it was decided to design a main artificial lake, connected to the Arakawa River and extending for two kilometers towards Tokyo Bay. Thisintervention involved the demolition of about 20,000 buildings, depriving as many inhabitants of their housing. This action inevitably raises questions related to the theme of living: how to redesign homes in a transformed context, where water becomes a founding element of the new urbanity? The project, in addition to proposing solutions for environmental restoration, intends to provide a scenario that combines functionality and livability, creating a balanced and resilient urban space, capable of responding to the challenges posed by climate change and rising sea levels.
Initially, it was thought to insert the new homes directly into the new reservoir created, but this solution proved to be not very functional from a design point of view. In fact, the expansion of the body of water would have required massive excavations, creating a situation that would not have been optimal either in terms of functionality or environmental impact. Therefore, a solution was opted for that would involve the use of the edge of the basin, a place that would serve as a transitional space between the new blue infrastructure and the existing city. The concept of "edge" plays a central role in this project. It is not limited to being a simple physical boundary, but is configured as a visual and spatial filter that separates the new infrastructure from the existing urban environment. The edge, in fact, has an aesthetic and symbolic function, as it acts as a visual barrier that partially masks the body of water, treating it according to a typically Japanese conception. The choice not to make the lake immediately visible reflects a Japanese cultural tradition that favors "Oku", or the idea of "interior" or "depth". In this context, the concept of "Oku" is not limited to a physical dimension, but embraces a spatial and philosophical dimension that is reflected in all forms of Japanese art and architecture. In Japanese cities, in fact, there is no recogni



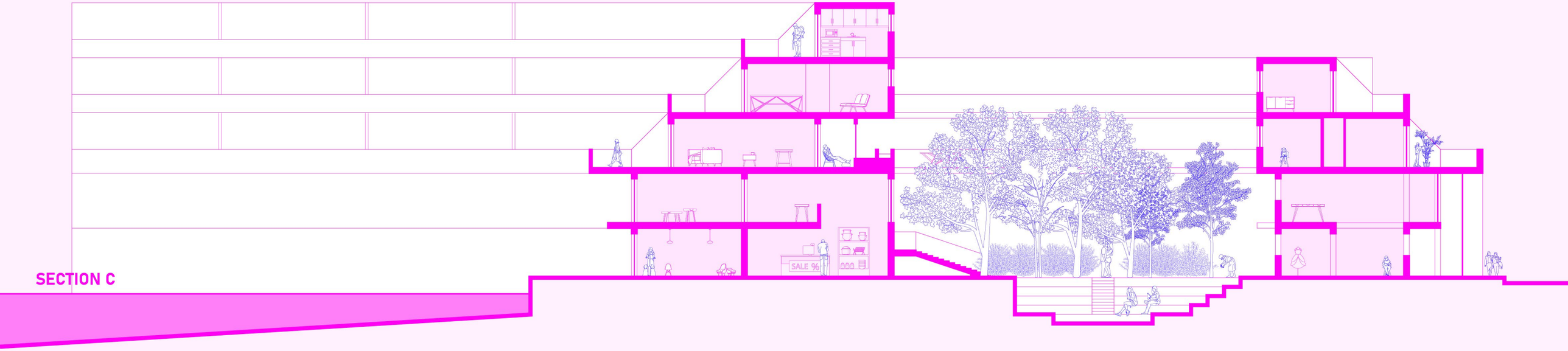
SECTION A



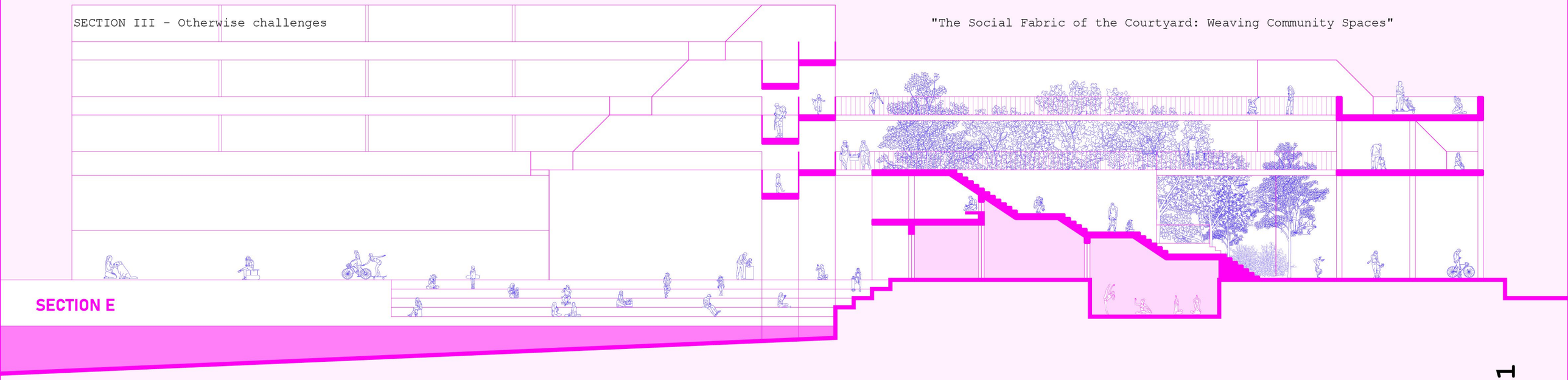
SECTION B



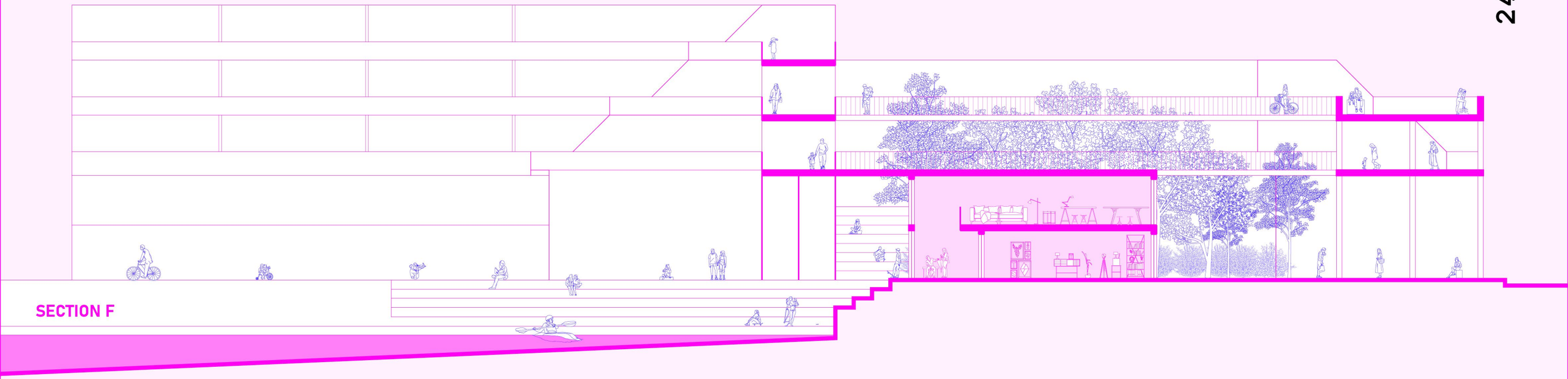
SECTION D



SECTION C

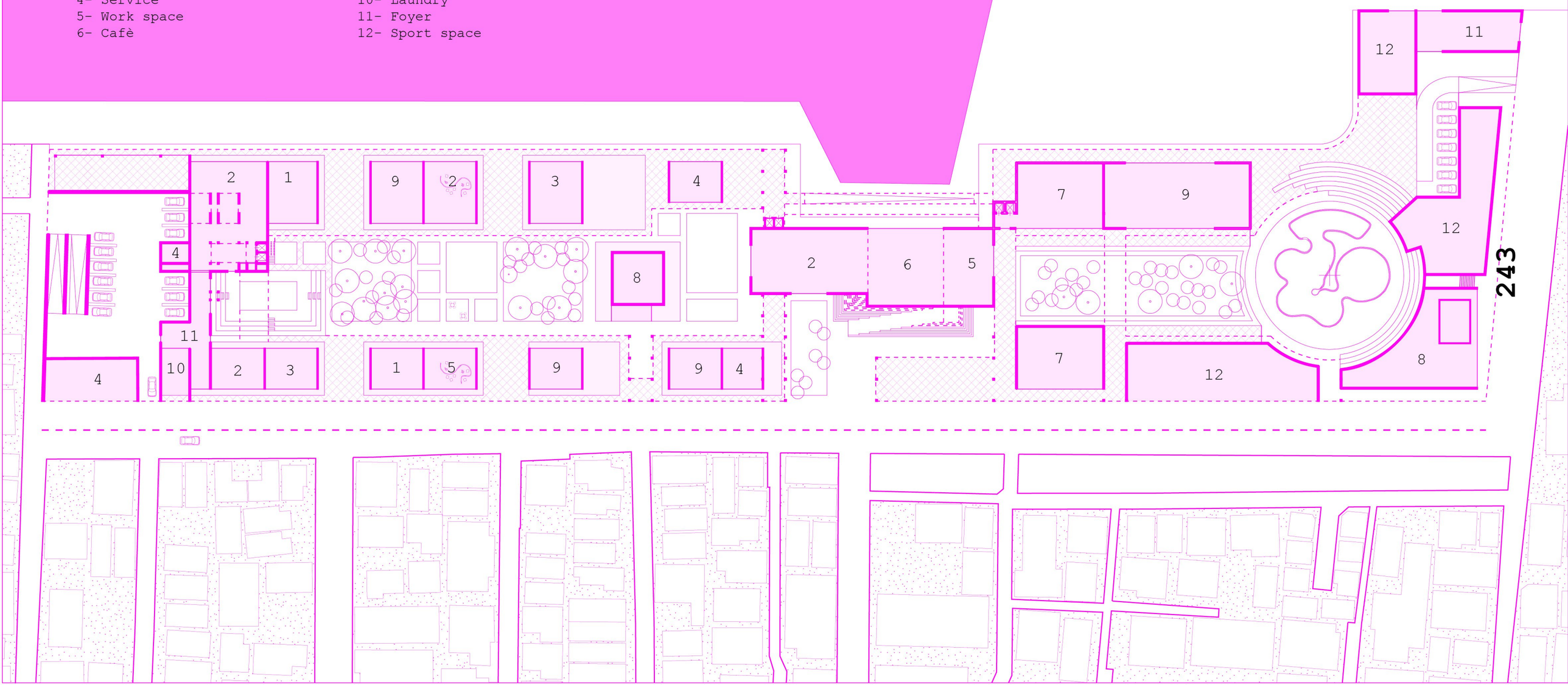


SECTION E



SECTION F

1- Cultural space
2- Library
3- Leisure space
4- Service
5- Work space
6- Cafè
7- Office
8- Restaurant
9- Shop
10- Laundry
11- Foyer
12- Sport space



CASE II:
the case of LOVE HOTEL

「秘密の場所で交わされる言葉には、特別な力が宿る。」

"Words exchanged in a secret place possess a special power."[3]

Yasunari Kawabata

3. From his interest in the intimacy and delicacy of human relationships, Kawabata would have appreciated the symbolic significance of these places as spaces of confession and vulnerability.


HOTEL
Baby Kiss


HOTEL
Flower Style


HOTEL AI


HOTEL
ARTIA
SEA STORK


HOTEL


HOTEL


HOTEL
Ryu-Gun
IN


CLUB
ASUKA
基本休憩 3時間
宿泊 最大 18時間
¥2,480
¥3,080
¥3,300〜
¥4,400〜


HOTEL


HOTEL
Flower Style

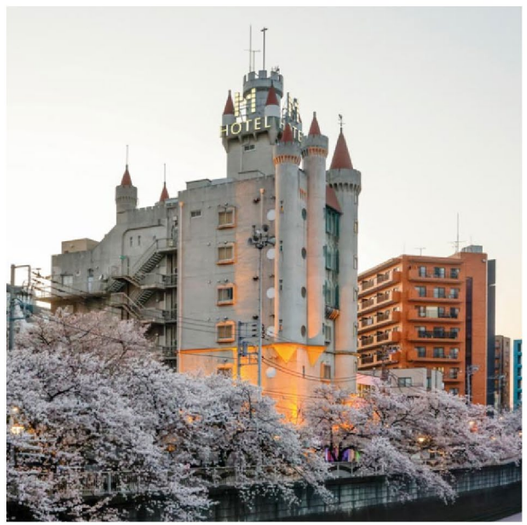

UTSUNOMIYA


露天風呂5室
パーティールーム
誕生


MERRY CHRISTMAS

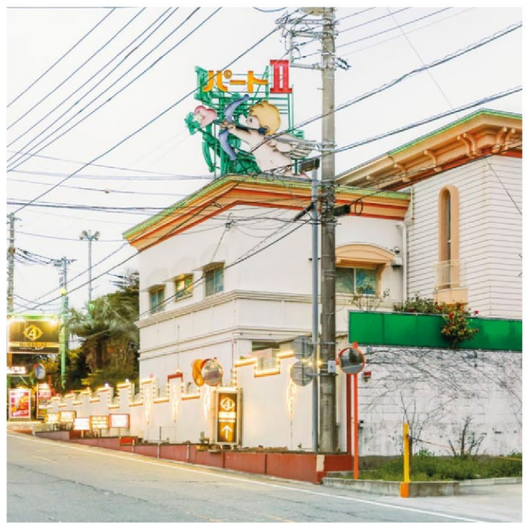

HOTEL


LOVE




アイネ
ANNEX


ホテル ガラスの恋


パート II

"The Social Fabric of the Courtyard: Weaving Community Spaces"

LOVE HOTEL

5*

TERRACES OF COEXISTENCE

4*

BELVEDERE PLAZA

3*

2*

1*

COVERED MARKET

RESIDENCES

FIRST DATE 1*

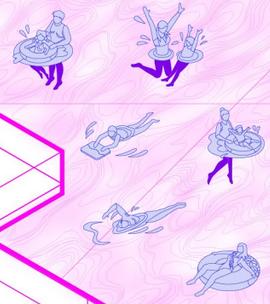
A simple bench, oriented towards the panorama, defines a minimal and intimate space designed for the first exchange of glances..

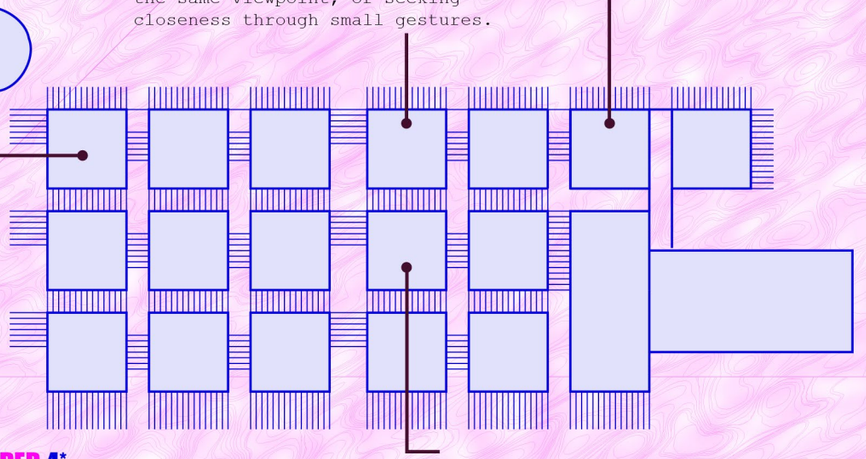
QUIET CONVERSATION 3*

A multi-level environment that allows for different proximity configurations: sitting side by side, staying apart while sharing the same viewpoint, or seeking closeness through small gestures.

INTIMATE ESCAPE 5*

The final space before complete intimacy. A long circular open corridor, with colored concrete walls, creates a path leading to a large dark portal: a clear threshold between the outside and the inside, between anticipation and the realization of desire.





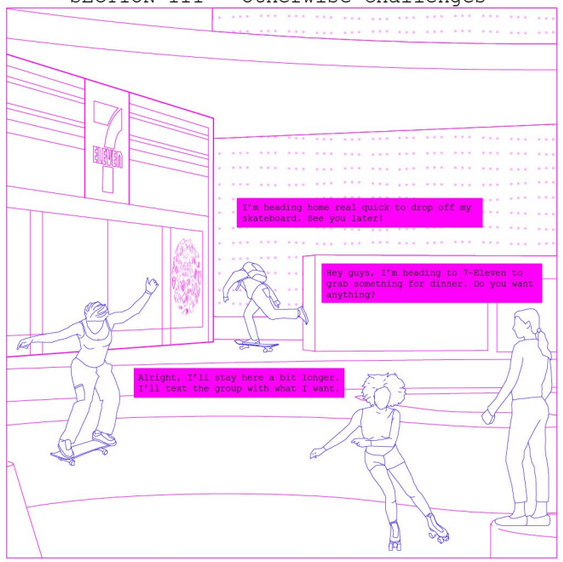
DESIRE UNFOLDED 4*

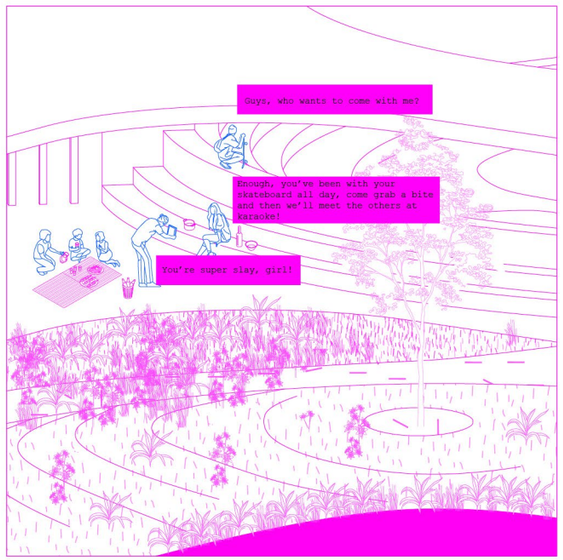
A place of suspension, where architecture shapes the perception of space. Curved walls, immersed in wild plants, define private corners, screening the view and revealing only fragments of each other's presence. Here, tension transforms into conscious attraction.

ROMANTIC PICNIC 2*

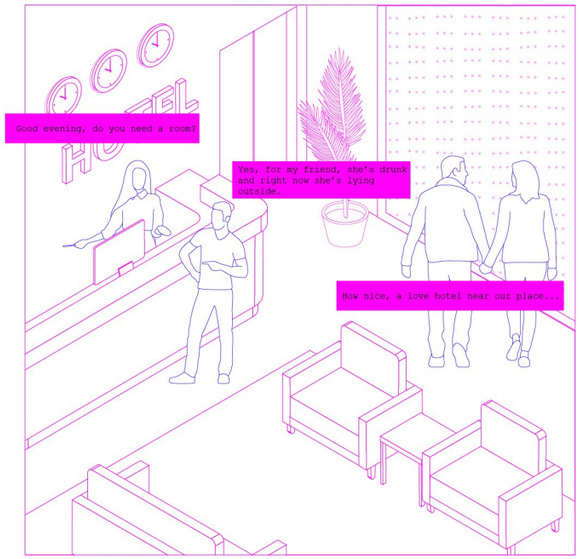
A suspended garden that invites sharing and complicity. The natural setting helps break down initial barriers and encourages the first spontaneous gestures, like brushing hands while sharing a meal.

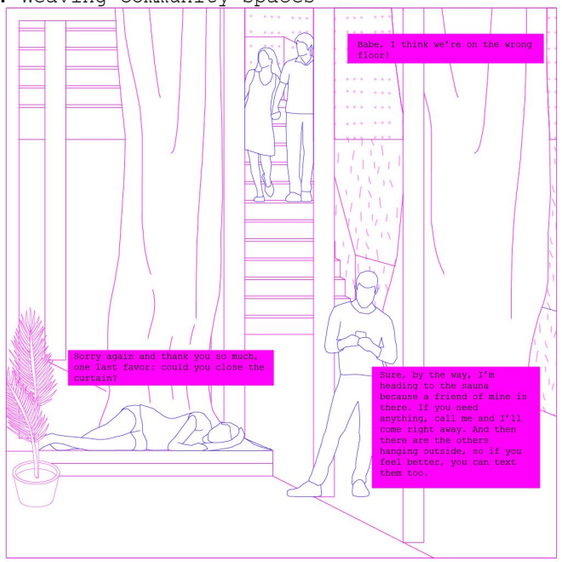
SECTION III - Otherwise challenges

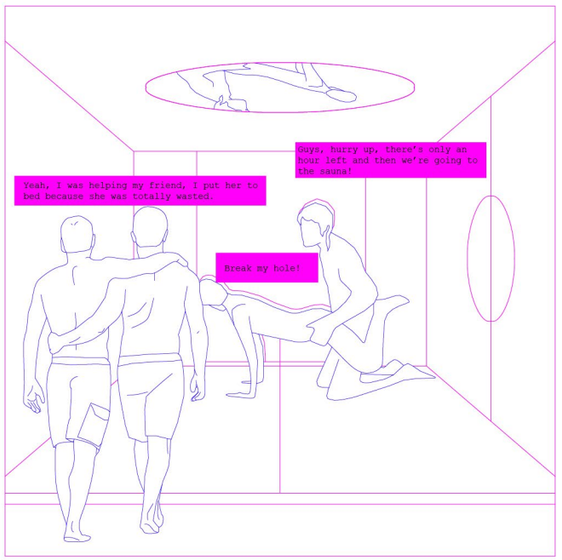


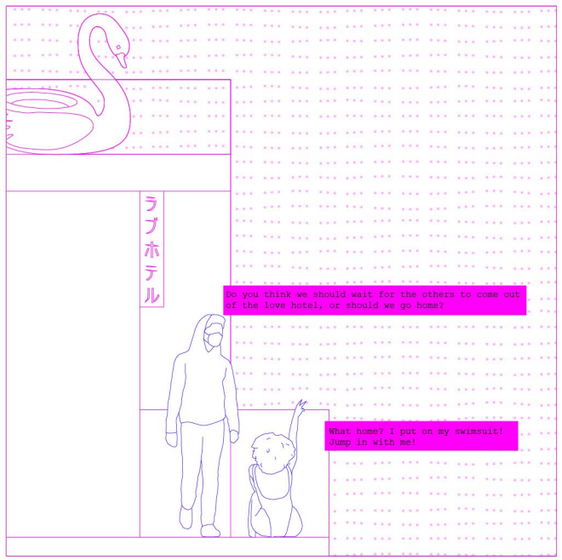


"The Social Fabric of the Courtyard: Weaving Community Spaces"





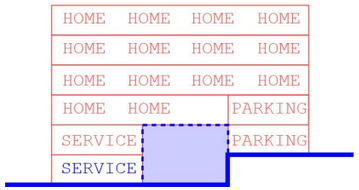




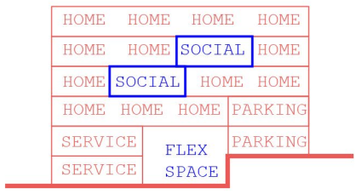
TYPOLOGY III: Row-house

"The Social Fabric of Rowhouse: Crafting Flexible Spaces"
The filter space, open and customizable, represents a synthesis between deep respect for Japanese architectural tradition and contemporary urban strategies. This concept aligns with the principles of behaviorology, an approach extensively explored by architectural studios such as Atelier Bow-Wow, which emphasizes the interaction between the built environment and human behavior. In a densely populated urban context where living space is highly constrained, outdoor areas play a crucial role in fostering social interactions and creating a sense of community. These spaces compensate for the limited interior space within homes, offering residents the opportunity to connect with their surroundings, relax, and build relationships with neighbors in an environment designed with well-being in mind.
Regarding the third typology, represented by linear buildings, the same architectural approach has been maintained but adapted to a smaller scale. This typology is designed with a strong focus on efficiency, responding to Japan's growing trend toward minimal and flexible housing. The interior apartments are conceived to be highly adaptable, allowing residents to reconfigure spaces according to their evolving needs—whether for living, working, relaxing, or recreational activities. This flexibility ensures that each unit can accommodate a wide range of lifestyles, promoting a dynamic and responsive urban experience.
On the ground floor, shared spaces such as cafés, co-working areas, and communal lounges enhance the quality of life by encouraging spontaneous interactions and strengthening the sense of belonging among residents. At the same time, the open square outside serves as a connecting element between the buildings, transforming into a vibrant urban hub where residents and visitors can meet, socialize, and participate in cultural or recreational activities.

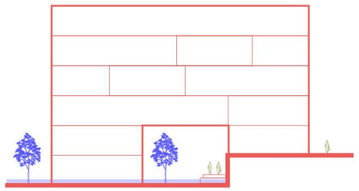
app. about 20 mq and 40 mq



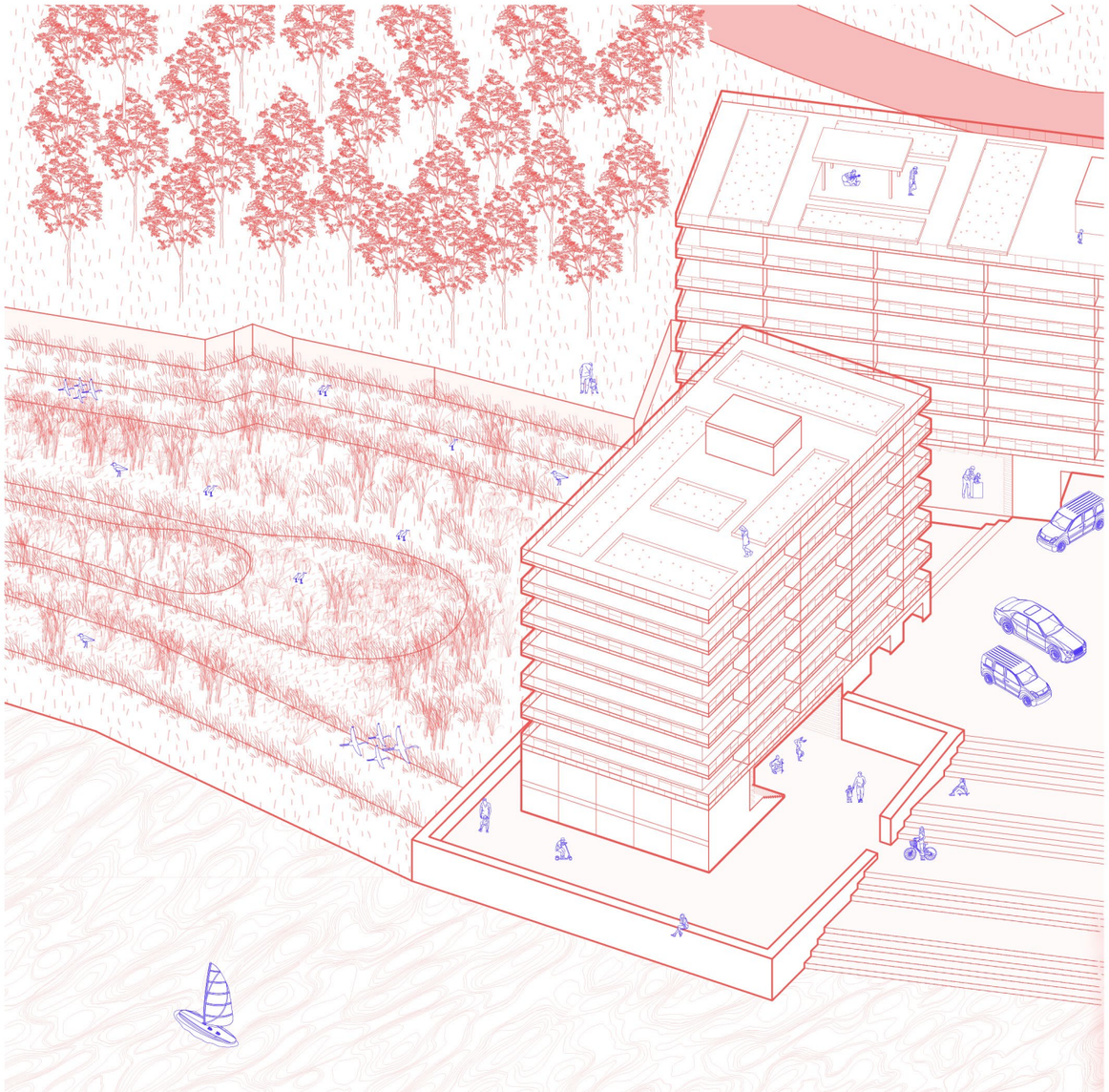
locating facing the blenchers

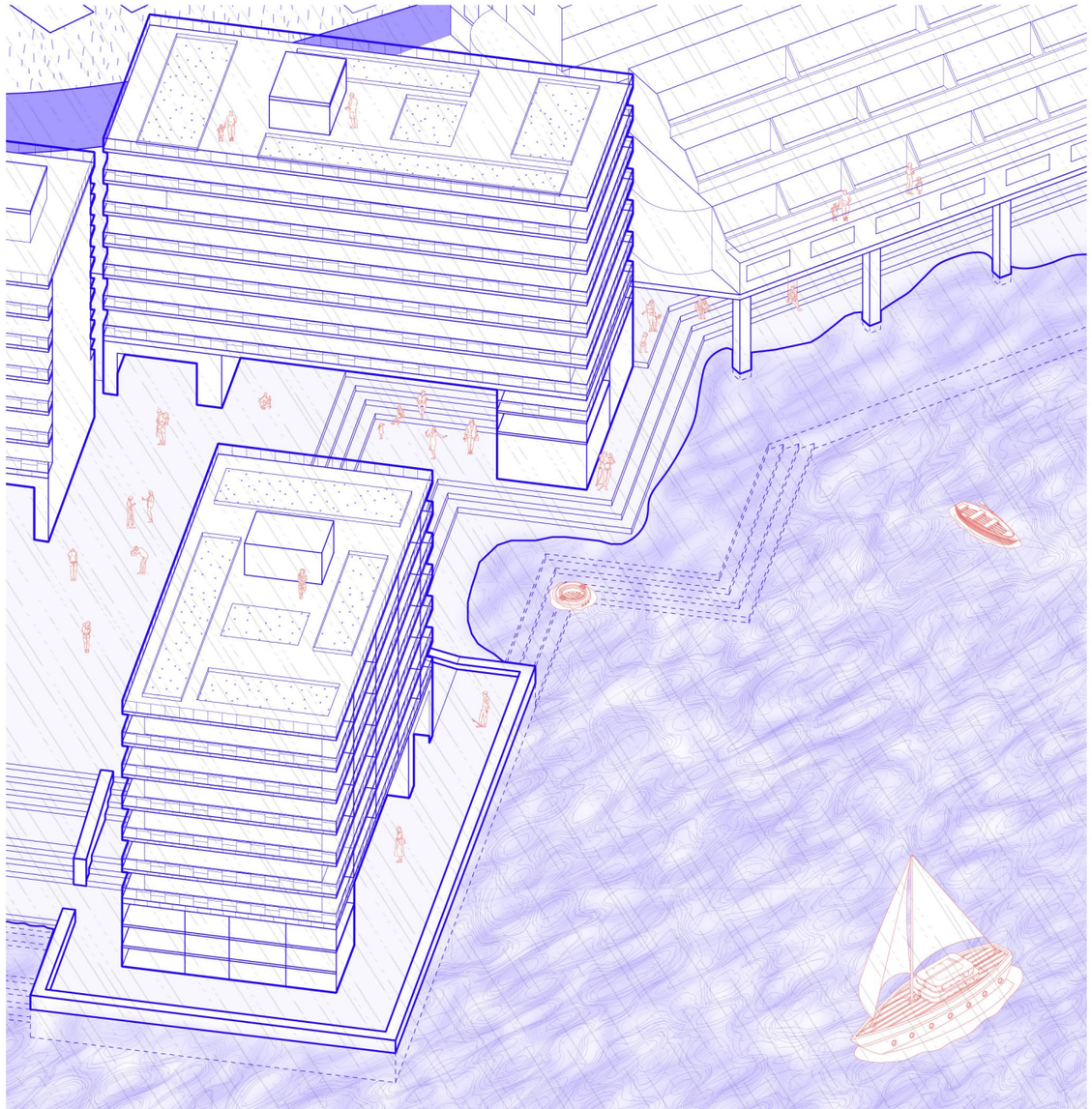


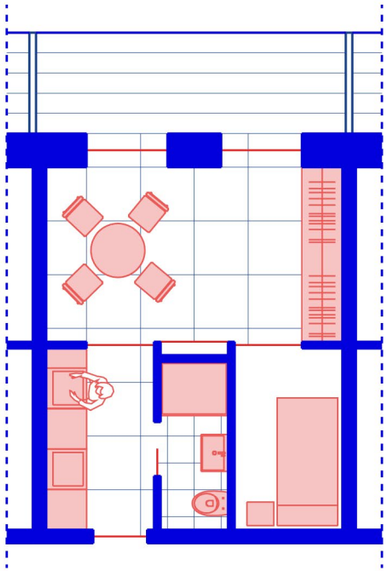
introducing space for sociality

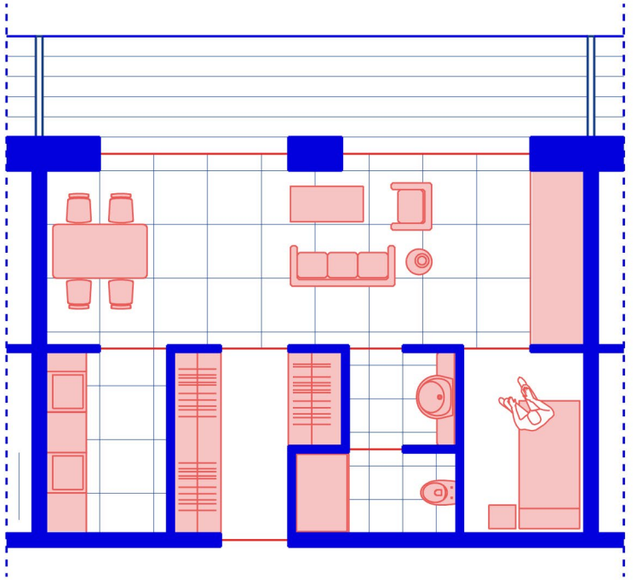


living with water pt.3

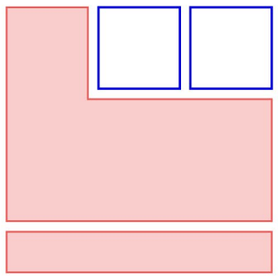




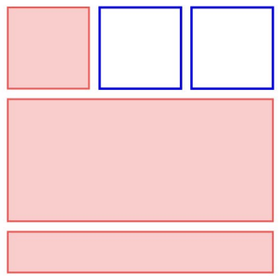




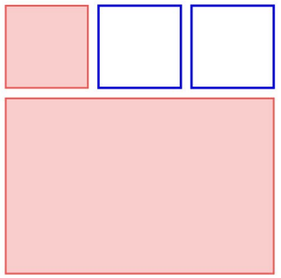
CASE II:
the case of FLEXIBLE HOUSE



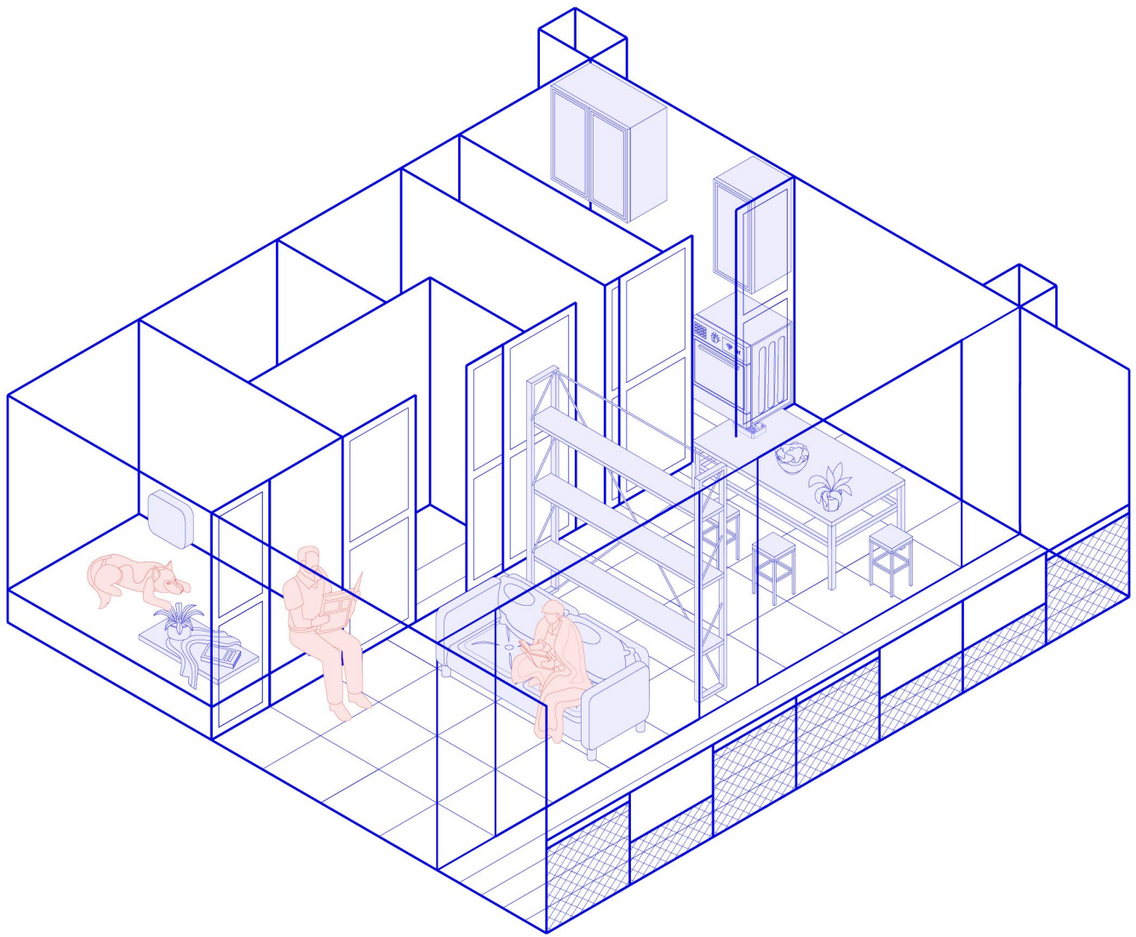
A Extension B zone
B Living Area
C Balcony

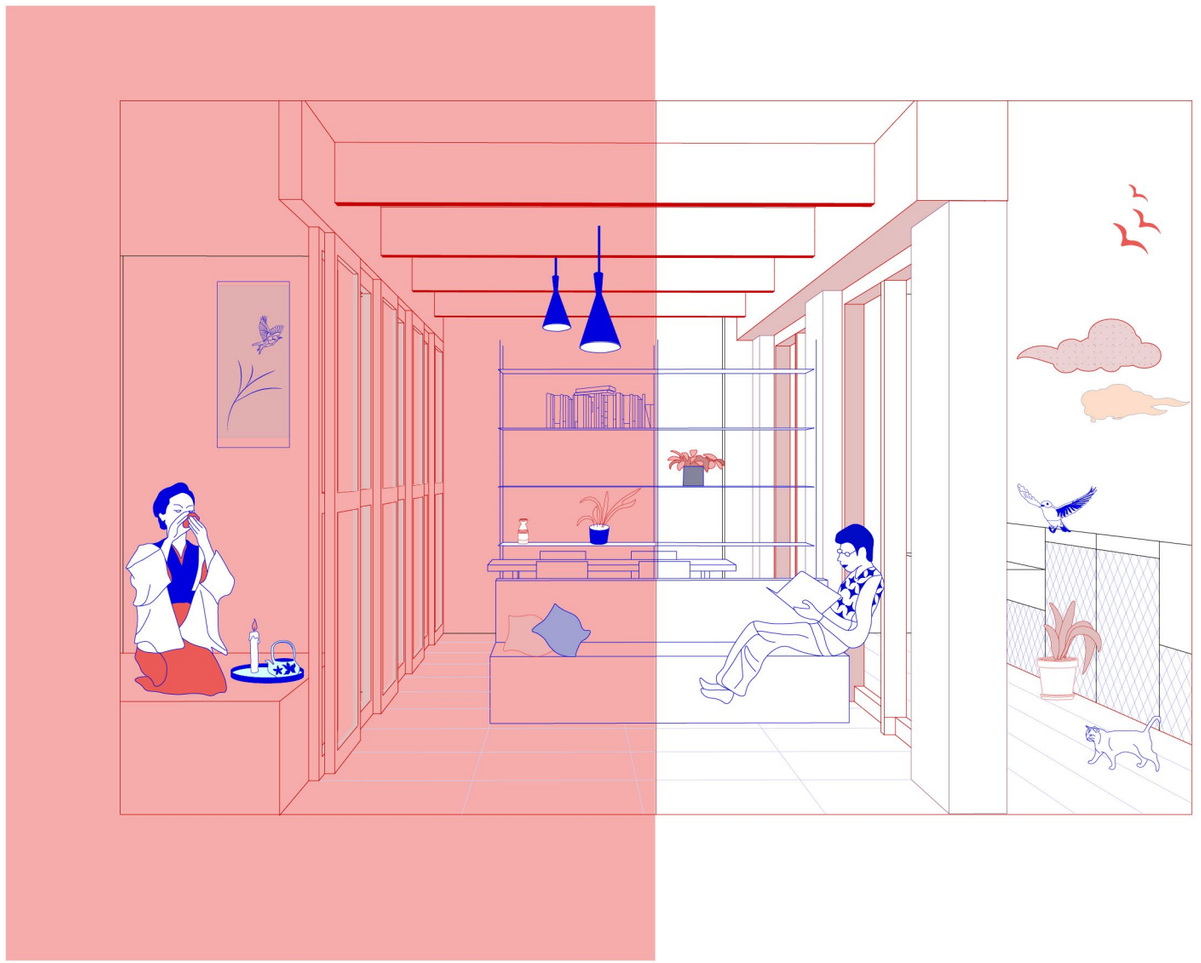


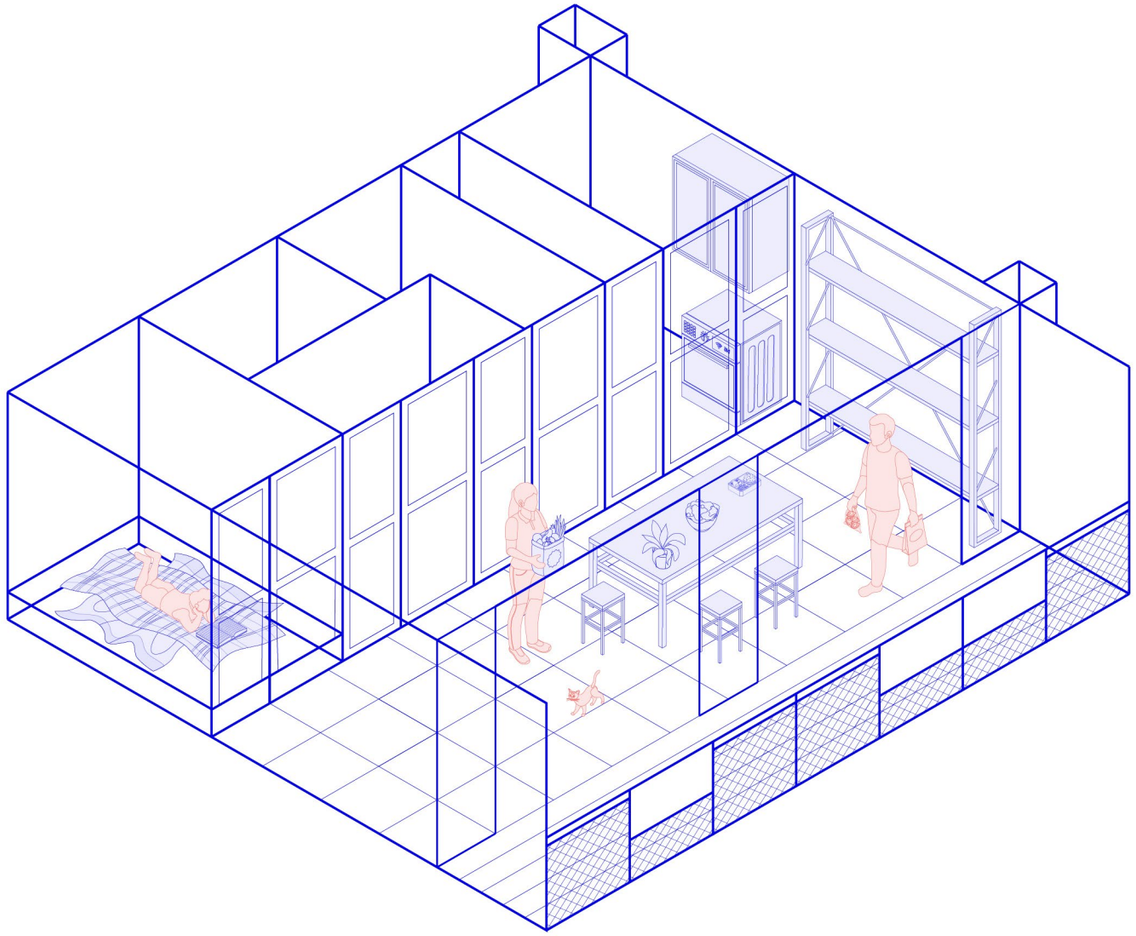
A Bedroom
B Living Area
C Balcony

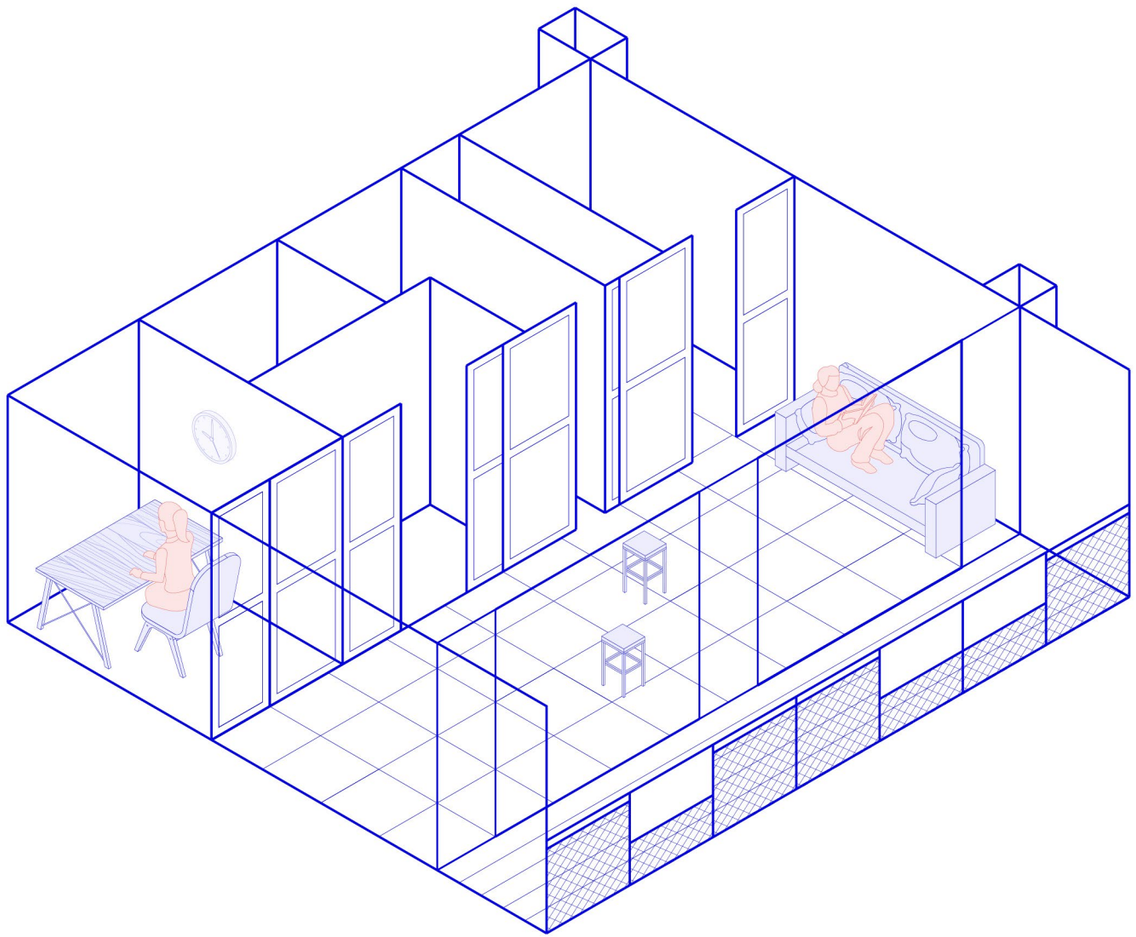


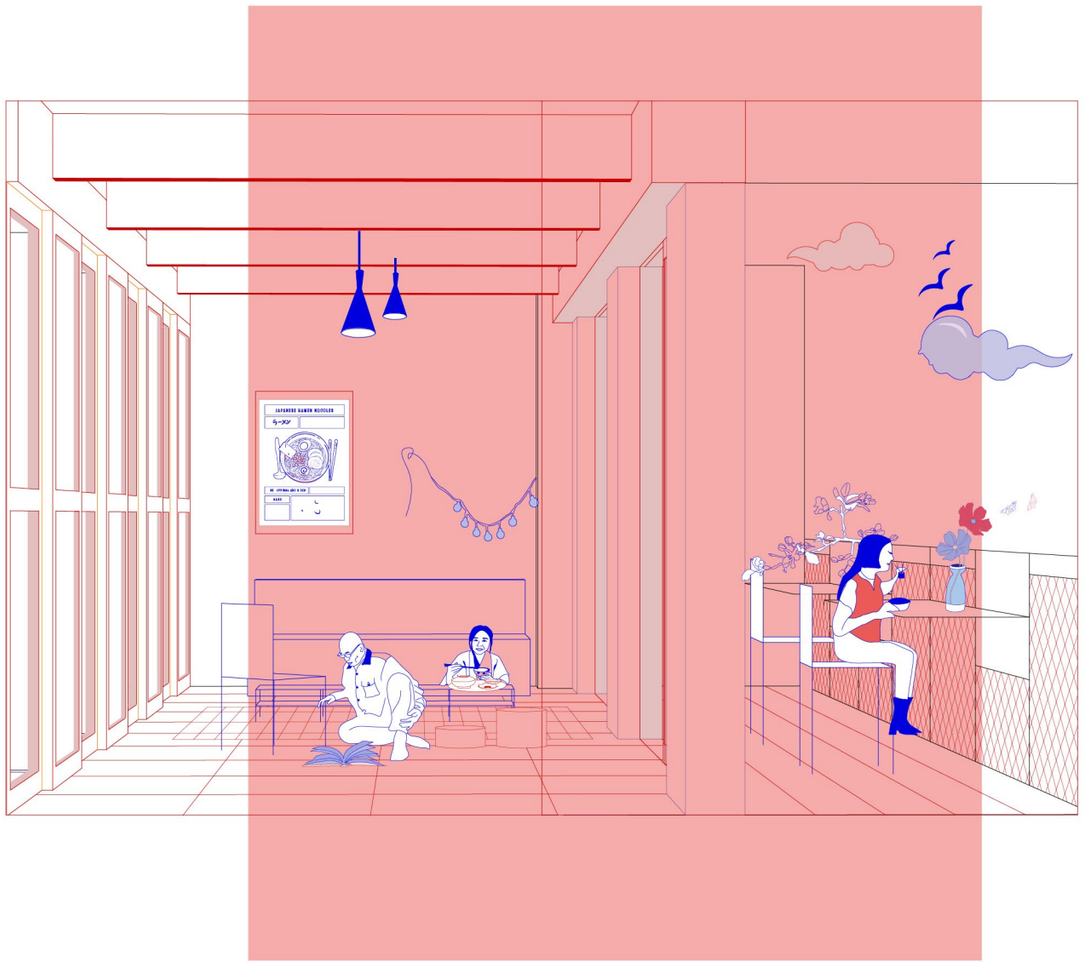
A Private Office
B Living Area
C Extension B zone











Bibliography

SECTION I

Tange Kenzo, *Un piano per Tokio*, in "Casabella", II, 258, 1961, pp. 7-17

Tange Kenzo, *Un piano per Tokio*, in "Casabella", II, 258, 1961, pp. 7-17

Tafuri Manfredo, *L'architettura moderna in Giappone*, Cappelli, Bologna, 1964

Tafuri Manfredo, *L'architettura moderna in Giappone*, Cappelli, Bologna, 1964

Boyd Robin, *New Directions in Japanese Architecture*, New York, G. Braziller, 1968

Riani Paolo, *Esperimenti dal Giappone*, in "Casabella", I, 334, 1969

Kurokawa K., *Metabolism in Architecture*, Londra: Studio Vista, 1977

Kisho Kurokawa, *Metabolism in Architecture*, Londra, Studio Vista, 1977

Smith H.D., *Tokyo as an Idea: An Exploration of Japanese Urban Thought until 1945*, in "Journal of Japanese Studies", vol. 4, n. 1, 1978

Banham Reyner, *Le tentazioni dell'architettura. Megastrutture*, Laterza, Bari, 1980

Suzuki H., Banham R., Kobayashi K., *Contemporary Architecture of Japan 1958-1984*, New York, Rizzoli International, 1985

Frampoton Kenneth, *A New Wave of Japanese Architecture*, New York, IAUS, 1987

Stewart David B., *The Making of a Modern Japanese Architecture: 1868 to the present*, Tokyo and New York, Kodansha International, 1987

Sassen S., *The Global City: New York*, London, Tokyo, Princeton, Princeton University Press, 1991

Kurokawa Kisho, *Kisho Kurokawa: from Metabolism to Symbiosis*, Tokyo, Academy Editions, 1992

Gregotti V., *Una modernità dis-orientata*, in "Casabella", LVII, 608-609, 1994

Kurokawa Kisho, *Kisho Kurokawa* (Monographie d'architecture = Architectural Monograph), Parigi, Moniteur, 1995

Kisho Kurokawa, *Each One a Hero. The Philosophy of Symbiosis*, Tokyo, Kodansha Amer Inc, 1997

Kurokawa Kisho, *Kisho Kurokawa: From the age of the machine to the age of life*, Londra, BookArt, 1998

Kurokawa Kisho Architect and associates, *Selected and Current Works*, Mulgrave, Images Publishing, 2000

Kurokawa Kisho, Sharp Dennis, *Kisho Kurokawa: Metabolism + recent work*, Londra, BookArt, 2001

Mumford Eric, The CIAM Discourse on Urbanism, 1928-1960, Cambridge, MIT Presse, 2002

Nuttgens Patrick, *Storia dell'architettura*, Mondadori Bruno, Marzo 2002

Sorensen A., *The Making of Urban Japan*, Cities and planning from Edo to the twenty first century, Londra, Routledge, 2002

Sacchi L., *Tokyo-to. Architettura e città*, Milano, Skira, 2004

Isozaki A., *Japan-ness in Architecture*, London, The MIT Press, 2006

Pernice Raffaele, *"The Transformation of Tokyo During the 1950s and Early 1960s Projects Between City Planning and Urban Utopia"*, in Journal of Asian Architecture and Building Engineering, Novembre, n° 260, pp. 253-260 (2006)

Kucharek Jan-Carlos, *Pod cast Nakagin Capsule Tower*, in "RIBA journal", Aprile 2007, pp. 63-64

Yoshiharu T., Momoyo K. (Atelier Bow-Wow) *Graphic anatomy Atelier Bow-wow*. Tokyo: Toto, 2007.

Bognar Botond, *Beyond the Bubble: The New Japanese Architecture*, London, Phaidon, 2008

Maki F., *Nurturing Dreams: Collected Essays on Architecture and the City*, MIT Press., 2008;

Stern Robert A. M., *Architecture on the edge of Post-Modernism*, New Haven, Yale University Press, 2009

Ourousoff Nicolai, *Futur Vision Banished to the Past*, in New York Times, 6 Luglio 2009

Yamazaki, R. *Nakagin Capsule Tower: Japanese Metabolist Landmark on the Edge of Destruction*. New York: Michael Blackwood Productions, 2010

Zhongjie Lin, *Kenzo Tange and the Metabolist Movement: Urban Utopias of Modern Japan*, London ,Routledge, 2010

McGuirk Justin, *The Metabolism Utopia*, in "Domus", n. 946 (2011), Lima, 2011

Buntrock Dana, *Metabolism: The City of the Future*, in "Journal of the Society of Architectural Historians" n. 71, California, University California Press, 2012, pp. 408 409

Koolhaas R., Obrist H.U., *Project Japan: Metabolist Talks*, Colonia, Taschen, 2011

Zhongjie Lin, *Nakagin Capsule Tower, revisiting the future of the recent past*, in "Journal of architectural education", vol. 65, no 1(2011), pp. 13-32

Koolhaas Charlie, *Metabolism Trip*, Tokyo, Heibonsha, 2012

Magalhaes Felipe, Soares Ana Luisa, *The Metabolism routine*, in "Domus", n. 969 (2013), Tokyo, 2013

Sand Jordan, *Tokyo Vernacular: Common Spaces*, Local Histories, Found Objects, Berkeley, University of California Press, 2013

Miyamoto Kenji, *The 100 most amazing Buildings of Tokyo*, Tokyo, X-Knowledge, 2013

Koolhaas R., Carver J., OteroPailos J., *Preservation is overtaking us*, New York, Columbia University Graduate School, 2014

Suzuki Hiroyuki, *The 167 Masterpieces of Japanese Architecture*, 1950 -2013, Tokyo, Gihodo, 2014

Minami N., *Nakagin Capsule Tower 1972*. Heidelberg: Kehrer Verlag, 2015.

Spita Leone, *A Japenese Anthology*, Roma, Gangemi Editore, 2015

Tewari S., D. Beynon, *"Tokyo's Dojunkai experiment: courtyard apartment blocks 1926-1932"*, in Planning Perspectives, Routledge, (2015), 469-483

SECTION II

Jinnai H., *Tokyo: A Spatial Anthropology*, Berkeley, University of California Press, 1995

Whitehead, J. C., Edwards, B., Van Willigen, M., Maiolo, J. R., Wilson, K., & Smith, K. T. (2000). *Heading for higher ground: factors affecting real and hypothetical hurricane evacuation behavior*, Global Environmental Change Part B: Environmental Hazards, 2(4), 133-142.

Sorensen A., *The Making of Urban Japan: Cities and planning from Edo to the Twenty first century*, Londra, Routledge, 2002;

Alexander J. C., *Toward a Theory of Cultural Trauma*, in J. C. Alexander , R. Eyerman , B. Giesen , N. J. Smelser , P. Sztompka, Cultural Trauma and Collective Identity, University of California Press, 2004;

Kuroiwa J., *Disaster Reduction, Living in Harmony with nature*, Intl Code Council, 2004;

Schencking J. C., Catastrophe, *Opportunism, Contestation: The Fractured Politics of Reconstructing Tokyo following the Great Kantô Earthquake of 1923*, in Modern Asian Studies, vol. 40, n. 4, 2006, pp. 833-873;

Kaijima M., Kuroda J., Tsukamoto Y., *Made in Tokyo*, Tokyo, Kajima Institute, 2010

Funabashi Y.,Takenaka H., *Lessons from the Disaster: Risk management and the compound crisis presented by the Great East Japan Earthquake*, Tokyo, The Japan Times, 2011;

De Pieri F., *How Tokyo became small*, in "Territorio", XIX, 74, 2015: pp 20-29

Yun. N.Y. and Hamada. M. (2015). *Evacuation Behavior and Fatality Rate during the 2011 Tohoku-Oki Earthquake and Tsunami*, Earthquake Spectra, 31 (3), 1237-1265.

Suzuki Y., Hayashi Y., Tsukahara K., *Disaster Resilient cities*, Butterworth Heinemann, 2016;

Imamura Y., *The Sumida River Renaissance: A New Policy for the Development*, in Caroli R., Soriani S., Fragile and resilient cities on water : perspectives from Venice and Tokyo, Cambridge Scholars Publishing , 2017;

Jinnai H., *Considering the Redevelopment of the Tokyo Bay Area from the Basics*, in Caroli R., Soriani S., Fragile and resilient cities on water : perspectives from Venice and Tokyo, Cambridge Scholars Publishing , 2017;

Kubota A., Honda T., Otsuki T., Hatoh E., Imoto S., Shinohara T., Naito M., *Urban Redesign Studies Unit*, Associazione della stampa dell'Università di Tokyo, 2017;

Takabatake, T., Shibayama, T., Esteban, M., Ishii, H. and Hamano, G. (2017) *"Simulated Tsunami Evacuation Behaviour of Local Residents and Visitors in Kamakura, Japan"*.

Tsuchiya N., Loss and Recovery of Lowland Rivers in Tokyo, in Caroli R., Soriani S., *Fragile and resilient cities on water : perspectives from Venice and Tokyo*, Cambridge Scholars Publishing , 2017;

Wei, H-L., Wu, H-C., Lindell, M.K., Huang, S-K., Shiroshita, H., Johnston, D.M. & Becker, J.S. (2017). *Assessment of households' responses to the tsunami threat: A comparative study of Japan and New Zealand*. International Journal of Disaster Risk Reduction, 25, 274-282. DOI: 10.1016/j.ijdrr.2017.09.011

Tanimoto, T. and Sano, M. (2018) *"VR Disaster Training System for Improving Disaster Awareness"*, IPSJ Interaction 2018 of Information Processing Society of Japan, pp.353-358 (in Japanese)

Jinnai H., *The revival of Tokyo as a city of Water and a future Vision for the city*, in Caroli R., Soriani S., Tokyo and Venice as cities on water : past memories and future perspectives, Cambridge Scholars Publishing , 2023

Shin M., Kinoshita Y., Danchi and Tower Mansions. *The origin and Current situation of Collective Housing in Tokyo: From Centre to Periphery*, in Caroli R., Soriani S., Tokyo and Venice as cities on water : past memories and future perspectives, Cambridge Scholars Publishing , 2023

SECTION III

Ashihara Yoshinobu. *L'ordine nascosto: Tokyo attraverso il Ventesimo Secolo*, Roma, Gangemi, 1995.

Ganni Enrico (a cura di)Benjamin Walter; Szondi Peter, *Immagini di città - nuova edizione*, Torino, Einaudi, 2007.

Di Campli Antonio, *Forme di comunità: l'abitare condiviso a Ibiza, Skopje, Hiroshima*, Roma, Carocci, 2013.

Di Campli Antonio e Gabbianelli Alessandro (a cura di), *Delinking: lo spazio della coesistenza,* Siracusa, LetteraVentidue, 2022.

Jonas Marieluise, Rahmann Heike, *Tokyo void: possibilities in absence*, Berlin, Jovis, 2018.

Russi Nicola, *Background: il progetto del vuoto*, Macerata, Quodlibet, 2019.

Hajime Yatsuka, *Hyper-den City* - Tokyo Metabolism 2, INAX, 2011

Almazan Jeorge, McReynolds Joe + Studio Lab, Emergent Tokyo: designing the Spontaneus City, Oro editions 2022

I am grateful for the absence of those who were not present, for even in selfishness, an unconscious form of support may reside—one that has eased my path and allowed me to devote myself fully to this research.

Ringrazio l'assenza di coloro che non sono stati presenti, poiché, anche nel loro egoismo, si può celare un'inconsapevole forma di sostegno, che ha agevolato il mio percorso e mi ha permesso di dedicarmi pienamente a questa ricerca.