

Research on the spatial cognitive reconstruction model of modern waterfront

By analysing the Shikemichi area along Horikawa Canal in Nagoya

近代水辺における空間認知再構築モデルの研究

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Waseda University Graduate School of Creative Science and Engineering

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Declaration

I hereby declare that this thesis is my original work, and it has been written by me in its entirety. I have duly acknowledged all the sources of information which have been used in the thesis.

This thesis has also not been submitted for any degree in any university previously.

Januray, 2024

ABSTRACT

Waterfront spaces, as distinctive man-made environments, hold a crucial and multifaceted position in contemporary urban landscapes. It serves not only as a crucial functional component but also carries profound social value by acting as vital connections between water bodies and land areas. Beyond facilitating international trade, logistics, and urban development, waterfront spaces also assume the role of cherished daily life spaces. In both dimensions, functionality and sociability, they encapsulate people yearning for the sea, preserve historical legacies, and offer a visionary perspective for the future.

In this study, waterfront space is a concept that refers to the land adjacent to a body of water or an urban wharf area. It is not merely linear, but a permeable interface where different activities occur between the water and the city. In different cities or at different periods of time, waterfront spaces may have different meanings.

Previous studies on waterfront spaces have focused on three key aspects: improving and optimizing transport functions, improving the spatial environment and land development on the waterfront spaces, and building related infrastructure. These studies have been conducted mainly from a physical perspective, involving the design and development of the space itself. These studies have laid a solid foundation for the enhancement and revitalization of waterfront spaces. However, they have often neglected or paid little attention to the cognition of the actual users - people, who are always the last to show up, or even missing in the process.

To fill this research gap, this study takes the waterfront spaces of Nagoya, a typical port city, as the research target. Nagoya is a city born with a canal called Horikawa, and throughout its history, Horikawa played a demanding role in the development of the city.

At the same time, it is a port city defined by Nagoya Port. Based on this historical fact, this study divides Nagoya's waterfront space into two distinct aspects. In the history of the city, the canal space is the material entity of the waterfront transformation, while the port space is the product of the development of the waterfront in the context of globalisation. Therefore, based on the relatively mature cognitions of port space, this study reconstructs people's cognitions of the space along Nagoya's modern canals by generating a sense of place model that links spaces to people. The aim is to clarify the unique positioning and significance of waterfront spaces for people in urban daily life and to create a positive image of the negative present of waterfront space. The study is structured into 6 Chapters.

Chapter 1 provides an overview of the historical context of Nagoya and its waterfront spaces, clarifying that Nagoya is a city born with a canal called Horikawa. Waterfront space is an important part of the city's economy and culture, and can be divided into two levels - canals and ports - each representing transformation and expansion. The chapter also includes fundamental concepts with reference to previous research, such as cognitive construction and waterfront spaces regeneration. A review of relevant urban design theories and a clear explanation of the motivation and purpose are also illustrated.

Chapter 2 describes in detail the methodology used to collect the preliminary data for this study, the construction and application of the sense of place model for cognitive reconstruction are also elucidated and clarifies the site selection for the case study. The model initially had three dimensions (FORM, ACTIVITY, IMAGE) as well as two scales (STREET, URBAN) and was later improved to three scales (STREET, NEIGHBORHOOD, URBAN). Of these, the STREET & NEIGHBORHOOD scale is the result of a hierarchy by the authors.

In Chapters 3 and 4, two case studies are presented, with the focus on the Shikemichi area, a waterfront space along the Horikawa Canal, as an example.

The aim of Chapter 3 is to verify the validity of the model at STREET scale. After analysing the background and current situation of the Shikemichi area, a historical waterfront space located in the upper reaches of the Horikawa Canal, the parking space will be used as the viewpoint of the case study.

First, the sense of place model was utilized to analyze and categorize the relationship between the parking spaces and the adjacent streets, considering the FORM dimension. Subsequently, based on the category results, the dimensions of 'ACTIVITY' and 'IMAGE' are analysed separately, and it is found that different parking spaces produced different results on these two dimensions, implying that cognitions of Shikemichi area have been reconstructed. The case study initially validates the validity of the proposed model at this stage, but the conclusion that "parking space gives a completely negative impact on the street in the waterfront spaces" also exposes the limitations of the model, probably because it only discusses two scales (STREET & URBAN).

In Chapter 4, based on the research in Chapter 3, the Shikemichi area is analysed using Space Syntax theory, considering parking spaces as open spaces. First, an open space analysis at URBAN scale is conducted to identify changes in the spatial status of the Shikemichi area in Nagoya. Next, pedestrian flows are simulated at NEIGHBORHOOD scale. Nodes with multiple passages were identified, indicating the potential for further development in the future, particularly in the spaces surrounding such nodes. And the majority of such spaces consisted of open spaces, including parking spaces. Open space was therefore shown to have a significant impact on the industrial landscape of the area in the future, particularly concerning the process of 'past reconstruction', which was interpreted into 6 modes in this chapter. Based on the results of this case study

validation, the mesoscale (NEIGHBORHOOD SCALE), an intermediate scale between the micro- and macro-scale, is incorporated into the model at the previous stage. Through the above-mentioned case study, the use of the model from the dimension of users' activity in the process of cognitive reconstruction was also explained.

Chapter 5 functions as a comprehensive review of the entire study. It synthesizes the current state of Nagoya's waterfront spaces and the outcomes of cognitive reconstruction. Additionally, it offers potential directions for renewal and development. At the same time, the authors attempt to suggest the possibility of multiple modes of application of the sense-of-place model, which is discussed in an additional Chapter 6. This chapter also acknowledges any unaddressed issues within the study with a point of view to inspire future research advancements.

Chapter 6 shifts its focus to the port area and functions as an additional part. Similar to other ports, Nagoya Port has undergone modernization driven by globalization and the leap in logistics technology. Currently, it is in pressing need of transitioning into a new phase that aims at integrating the port with the city. This transition presupposes the development of a fresh image of the port (IMAGE dimension in the model), which is closely tied to the reconstruction of people's cognitions. First, the concept of "urban fantasy" is introduced as an entry point for constructing the port's image, which is a concept translated from the literary category of fantasy to urban space. "Urban fantasy" is centered on the creation of a new pleasure sense based on the contradiction construction in real space. Then urban events are chosen as the medium to explore how these events can stimulate the possibility of activities (ACTIVITY dimension) and potential spatial form (FORM dimension) by creating contradictions. Finally, the cognition of urban fantasy can be constructed. Through the case study described above, it also illustrated the use of the model from the dimension of image in the process of cognitive reconstruction.

This study introduces a human cognitive perspective to existing waterfront spaces studies, which are limited to the physical elements that compose the space, utilizing the newly developed sense-of-place model as a framework for cognitive reconstruction. It elucidates the mechanism of human three-dimensional cognition of waterfront spaces through 'form, activity and image'. These findings can offer valuable insights for the future improvement design and other aspects of valuable waterfront spaces such as rivers and ports, not only from the designer's viewpoint but also from the user's viewpoint.

Keywords: waterfront space, cognition, Nagoya, Horikawa, port, historical area, Shikemichi

ABSTRACT(要旨)

現代都市において、水辺空間は特徴的な人工環境として、多方面に役割を果たしている。水域と陸地の境界線を跨いで、水辺空間は水陸を結び、貿易、物流、都市開発を促進する重要な機能を持っている。また、機能的な存在だけでなく、人々が集まる大切な日常生活空間としての社会的価値を備えている。この2つの側面から見ると、水辺空間は人類の海への憧れが結晶した場所であり、人類が造営してきた都市の歴史がこの場所に保存され、また此处から新たに都市の未来像も描かれ続ける。

本研究において、水辺空間とは水域の隣の土地や都市の埠頭エリアを指す概念である。それは単なる線状のものではなく、水と都市の間に様々な活動が発生する浸透的なインターフェースである。都市の違いまたは時期の違いによって、水辺の空間は異なる意義を持つ可能性がある。

これまで研究者の多くが水辺空間に関する研究において、交通機能の改善と最適化、水辺空間の環境改善と土地開発、関連インフラの整備という3つの側面に焦点を当ててきた。その研究の多くが水辺空間に対する設計や開発の提案など、即物的な観点からの研究で、水辺空間を活性化するために堅実な理論の基盤を築いた。しかし、他方面で、利用者の認知をめぐる観念的な視点からの研究は過去あまりなされなかったようである。

上記の研究の不在を埋めるために、本研究では近代において中部地方の海の玄関口である名古屋の水辺空間を研究対象とした。名古屋は運河と共に生まれた都市であり、その歴史の中で、堀川は都市の発展に必要な役割を果たして

いた。同時に港として定義される港湾都市である。その史実を踏まえて、本研究は名古屋の水辺空間を二つの異なる側面に分けようとする。都市の歴史の中で、運河沿いの空間は水辺の変容の物質的実体であり、港の空間はグローバル化の中での水辺の発展の産物である。したがって本研究は、港湾空間に対する比較的成熟した認知をもとに、空間と人を繋ぐ場所感覚モデル(Sense of place model)の生成によって、名古屋の近代的な運河沿いの空間のレベルに対する人々の認知を再構築(Cognitive reconstruction)するものである。その目的は、都市の日常生活における水辺空間の人々、特に利用者にとってどのような位置づけにあり、どのような意味を持つのか明らかにし、ネガティブな水辺空間の現在にポジティブなイメージを開くことである。

以下に本論文の各章の概要を述べる。

第 1 章では、まず名古屋とその水辺空間の歴史的背景について概観し、名古屋が運河と共生する都市であることを明らかにする。水辺空間は都市の経済と文化の重要な一部であり、運河と港の 2 つのレベルに分けられ、それぞれ変容と拡張を象徴している。「認知の構築」と「水辺の再生」といった基本的な概念、および関連する都市デザイン理論をこれまでの研究を踏まえてレビューし、研究のギャップを明らかにするとともに、その動機と目的を説明する。

第 2 章では、最初の情報を収集するために用いられた方法について詳述し、認知再構築のための場所感覚モデルの生成と適用についても明らかにし、ケーススタディのための場所選定を明らかにする。このモデルは最初に 3 つの次元 (FORM、ACTIVITY、IMAGE) と 2 つのスケール (STREET、URBAN) を持っていたが、後に 3 つのスケール (STREET、NEIGHBORHOOD、URBAN) に

改良された。そのうち STREET & NEIGHBORHOOD のスケールは著者による階層化の結果です。

第3章と第4章では、堀川運河沿いの水辺空間である四間道エリアに焦点を例に、2つのケーススタディを示す。

第3章の目的は、街路スケールでのモデルの有効性を検証することである。堀川運河の上流部に位置する歴史的な水辺空間である「四間道」背景と現状を分析した上で、駐車空間を研究の視点とすることにする。まず、駐車空間と近隣の道路との関係性を分析し、FORMの次元を考慮した場所感覚モデルを用いて分類した。その後、分類結果に基づいて、「ACTIVITY」と「IMAGE」の次元を個別に分析したところ、駐車場の違いによって、この2つの次元で異なる結果が得られることがわかり、四間道の認知が再構築されたことが示唆された。この事例検証は、現段階では提案モデルの妥当性を形の次元から実証するものであるが、「駐車場は水辺空間における街路に完全に否定的な影響を与える」という結論はモデルの限界も露呈するものでもあった。これは、このモデルが2つの尺度（STREET & URBAN）しか論じていないことに起因しているのかもしれない。

第4章では、第3章の研究を踏まえ、駐車空間をオープンスペースとして考え、Space Syntax理論を用いて四間道エリアを分析する。まず、名古屋における四間道エリアの空間的位置づけの変化を確認するため、都市的なスケール（URBAN SCALE）でのオープンスペース分析を行う。次に、地域的なスケール（NEIGHBORHOOD SCALE）における歩行者の流れのシミュレーションを行う。複数回の通過が認められたノードを明らかにしたことで、特にそのノードを取

り巻く空間で今後更なる開発が行われる可能性を示すことができた。そして、そうした空間の大部分が駐車場を含むオープンスペースで構成されていた。したがって、オープンスペースが、今後にわたって、この地域の産業の変容（Industrial landscape）に、特に過去を再構築する（Past reconstruction）プロセスに関連して、大きな影響を与えることが示された。本章では、過去の再構築のパターンを 6 つのカテゴリーに分けて解釈する。この事例検証の結果に基づき、前段階のモデルにはミクروسケールとマクروسケールの中間的スケールである「メソスケール」（NEIGHBORHOOD SCALE）が取り入れられている。また、上述の事例検証を通じて、認知モデルの再構築のプロセスにおいて、利用者の活動という次元からのモデルの使い方も説明した。

第 5 章は、研究全体の包括的なレビューである。名古屋の水辺空間の現状と認知再構築の成果を総括し、再生と発展の可能性を提示する。同時に、著者らは場所感覚モデルの複数の適用モードの可能性を示唆しようと試みており、これについては追加の第 6 章で説明する。また、この章では、今後の研究の進展を促す視点をもって、研究の中で未解決の問題点を認めている。

補足研究として第 6 章では、名古屋港の埠頭空間に焦点を移す。他の港湾と同様に、名古屋港もグローバル化と物流技術の飛躍によって近代化を遂げてきた。現在、港と都市の一体化を目指す新たな段階への移行が急務となっている。この移行は、人々の港に対する新しい想像力（IMAGE の次元）の形成を前提とし、それは認知の再構築と密接に結びついている。まず、その想像力を形成するための着目点として、文学のカテゴリーであるファンタジーを都市空間に置き換えた「都市ファンタジー」という概念を導入する。「都市ファンタジ

一」とは、現実空間における矛盾の構築に基づいて、新たな快樂感覚を創造することを中心とする。次に、都市イベントをメディアとして選び、これらのイベントが矛盾を生み出すことによって、どのように活動の可能性（ACTIVITYの次元）と潜在的な空間形態（FORMの次元）を刺激することができるかを示す。最後に、都市ファンタジーの認知を構築する。また、上述の事例検証を通じて、認知モデルの再構築のプロセスにおいて、利用者の想像力という次元からのモデルの使い方も説明した。本章の内容は筆者が個人的思考と他分野の理論の参考に基づいて作成するであり、個人的思考で異なる見解に導いて、より価値のある高言を引き出せる呼び水とすることである。によって本章は本論の主内容ではなく、本研究の補充でありながら、未来の関連研究の礎石となる。

本研究は、認知モデルの再構築の枠組みとして新たに生成した場所感覚モデルを活用し、空間を構成する要素を即物的なものに限った既存の水辺空間の研究に人間の視点を導入するものである。これにより、水辺空間に対する人間の「形・活動・想像」による三次元的な認知の仕組みを明らかにした。これらの知見は、河川や港湾などの土木計画に人間空間の視点を持ち込み、さらには、計画者だけでなく利用者の視点を含めた今後の貴重な水辺の空間設計に寄与するものである。

キーワード：水辺空間、認知、名古屋、堀川、港、歴史的地域、四間道

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CHAPTER 1

BACKGROUND AND INTRODUCTION

1.1 Background

1.1.1 The development of Nagoya: A city born with a canal

The city of Nagoya holds the distinction of being the fourth-largest city in Japan and serves as the central nexus for both economic activity and transportation within the Chubu region. This region encompasses five prefectures, accommodating a population of 17 million residents and sustaining around 8.8 million job opportunities¹. Positioned strategically within the Chubu region, Aichi Prefecture, the capital of this prefectural domain, is geographically situated in the western periphery of the Chubu Mountain range. Additionally, it occupies a northern expanse along the Ise Bay, thereby anchoring itself in the southeastern extremity of the Nobi Plain. This plain constitutes the largest lowland expanse situated between the prominent urban centres of Tokyo and Osaka (**Fig. 1-1**).

The downtown area (Naka Ward, Higashi Ward, Showa Ward, Mizuho Ward, Minami Ward, and parts of Atsuta Ward) is situated on a flat plateau at an elevation of about 10 to 15 metres above sea level and slopes gently from north to south. In addition, in the city centre, the Horikawa Canal, which was dug during the construction of Nagoya Castle, runs north-south along the bottom of the plateau.²(**Fig. 1-2**)

¹ According to the National Land Agency in the Grand Design for the 21st Century: Comprehensive National Development Plan, Japan's Chubu or Central Region encompasses Nagano, Gifu, Shizuoka, Aichi, and Mie Prefectures(or Ken in Japanese).

² Refer to: City of Nagoya official website, page ID:1752.



Fig. 1-1 Map of Chubu mountain range in Japan

(Source: Planning For Nagoya, 1997. Nagoya City Planning Bureau)



Fig. 1-2 The Nagoya Plateau and Horikawa Canal

(Source: City of Nagoya Official Website, Page ID: 3531)

The nomenclature of the city of Nagoya finds its origins in a renowned manor known as "Nagano"(名古屋市, 1937)³. Although the dissolution of this manor transpired in the 14th century, the appellation persevered, albeit with a subtle alteration in pronunciation. Subsequent to the 16th century, Nagoya officially evolved into the designated name for the region (新修名古屋市史編集委員会, 1997, 林英夫, 1981)⁴. Historical accounts

³ 名古屋市. (1937). 大名古屋. 名古屋市.

⁴ Refer to: 日本歴史地名体系 23 愛知県の地名, 平凡社, 1981, p79.

新修 名古屋市史 第二巻, 新修名古屋市史編集委員会 編, 名古屋市, 1997, p47.

indicate that the initial settlement was established in the vicinity of the Atsuta Shrine, situated at the southern terminus of the city. The Atsuta Shrine occupies a paramount role within the realm of Shintoism (神道) in Japan, with records suggesting its construction predating 1900⁵. However, the preponderance of documented evidence attests to Nagoya's true zenith materializing around the year 1610. This pivotal period is intricately linked with the historic relocation of the capital, as during this epoch, the entirety of Kiyosu was transposed to the environs surrounding Mount Nagoya. This relocation was spurred by the recurring inundations that plagued Kiyosu, compelling Tokugawa Ieyasu, the reigning Japanese Shogun of the time, to issue directives for his subjects to migrate to Mount Nagoya, the precise locale where Nagoya Castle now stands (西別府 順治, 2011)⁶.

Nagoya Castle primarily functioned as a pivotal military stronghold for the feudal domain of Owari. Its strategic centrality endowed the Tokugawa family with enhanced control over the feudal lords situated in the Kansai Plain, situated to the west of Kyoto⁴. Consequently, the original establishment and the subsequent robust expansion of the city can be attributed significantly to its strategic location at the heart of the Tokaido region. This region encompasses an unbroken expanse of urbanized terrain, extending for nearly 350 miles, meticulously following the ancient Tokaido Highway—a historic thoroughfare that historically linked Japan's eastern capital, Edo (now Tokyo), with its western counterpart, Kyoto (Eyre, 1982)⁷. It is on account of this pivotal location that the

⁵ Refer to:名古屋都市計画史, 名古屋市建設局 編, 名古屋市, 1975, p11.

⁶西別府 順治, 名古屋港と三大運河 水運から見た名古屋開府 400年 堀川・新堀川・中川運河, 中日出版社, 2011.

⁷ Refer to: Eyre, J. D. (1982). "Nagoya: the changing geography of a Japanese regional metropolis."

metropolitan entity of Nagoya, often referred to as the "central capital," has evolved into a substantial metropolitan conurbation of considerable prominence.

In the 17th century, Nagoya was primarily characterized as a castle-centered urban milieu, comprising predominantly of samurai clans, artisans, and a burgeoning merchant class. This population stratum primarily catered to the needs and service requirements of the castle's inhabitants. However, as the city's non-military populace expanded, substantial urban sprawl materialized in the western and southern peripheries of the castle precinct. In the western sector, the construction of the Horikawa Canal was instrumental for the transportation of essential materials and resources indispensable for the castle's development. Over time, this canal evolved into the epicenter of a burgeoning timber industry. Along the western shoreline of Ise Bay, situated to the south of the castle, the port city of Atsuta thrived, serving as a pivotal hub for tourism and small-scale maritime trade.(名古屋観光文化交流局歴史まちづくり推進室, 2011)⁸

By the 18th century, Nagoya had metamorphosed into a regional epicenter of commerce, extending its influence far beyond the boundaries of Owari. Upgrades to the Tokaido and Nakasendo routes acted as magnets, luring new waves of merchants and artisans to the area.⁴ Propelled by the flourishing commercial endeavors along the banks of the Horikawa Canal and the burgeoning entertainment establishments in Atsuta, Nagoya acquired renown as the most prosperous urban center bridging the expanse between Edo and Kyoto. Consequently, by the mid-18th century, Nagoya's population

⁸ 名古屋観光文化交流局歴史まちづくり推進室, 名古屋市歴史まちづくり戦略, 名古屋観光文化交流局, 2011: 第二章.

had burgeoned to 75,000 inhabitants, with an additional 15,000 residents residing in Atsuta (Eyre, 1982)⁹.

In the mid-19th century, Nagoya's urban development faced significant challenges due to various natural factors, the collapse of the Shogunate, and historical events like the arrival of the Black Ships in Japan. However, by the mid to late 19th century, as the new central government embarked on a mission to rebuild Japan and boost its economy through the adoption of foreign technology and increased trade with Western countries (Morishima, 1982)¹⁰, Nagoya's population began to grow.⁷ The population in Owari kuni reached a total of 700,000 people during this period.(Hanley and Yamamura, 2015)¹¹

Nagoya emerged as a significant textile center in the 1880s, driven by the establishment of Aichi Prefecture and the successful employment of samurai transitioning from the pre-demobilization era to post-demobilization jobs. Furthermore, the completion of the Tokaido Railway in 1889 marked a turning point, ushering in a period of increased prosperity in industry and commerce. In July of that year, Nagoya achieved the distinction of becoming the first city in Aichi Prefecture.

The preceding narrative offers a concise historical overview of Nagoya's evolution, transitioning from a castle-centric settlement to a thriving urban center. This historical progression underscores the pivotal significance of the Horikawa Canal and the Atsuta Port in catalyzing subsequent phases of affluence and prosperity. Indeed, it becomes evident through this developmental trajectory that the man-made canal and the distinctive

⁹ Eyre, J. D. (1982). "Nagoya: the changing geography of a Japanese regional metropolis", p22.

¹⁰ Morishima, Michio. Why has Japan succeeded?": Western technology and the Japanese ethos. Cambridge University Press, 1982.

¹¹ Hanley, Susan B., and Kozo Yamamura. Economic and demographic change in preindustrial Japan, 1600-1868. Princeton University Press, 2015: p52.

geographical attributes bestowed by the Atsuta Port constitute the foundational elements of Nagoya's urban identity.

1.1.2 The development of the Nagoya waterfront: from Horikawa Canal to Nagoya Port

In contemporary times, the port of Nagoya has an important place in the city, not only as a symbol of Nagoya's vast waterfront, but also as a representative symbol of the city itself. Within this modern framework, the function of the associated canals seems to be subordinated to the prominence of the port. However, upon delving into history and scrutinising the historical significance and evolutionary process between the port and the canals, an alternative viewpoint can be identified. It suggests that at the beginning of Nagoya's historical trajectory, the canal symbolised the city's water transport. From this historical perspective, we can discover the true origins of water transport in Nagoya, of which canals, especially those represented by the Horikawa Canal, were the most important constituent elements. Based on this historical perspective, this study attempts to divide Nagoya's waterfront zoning into two distinct levels. The first is the canal level, which is a timeless symbol of the evolution and adaptation of waterfront space throughout history. The second is the port level, which symbolises the continuous development of waterfront space in the context of globalisation and the relentless pursuit of a vision of the future (**Fig. 1-3**).

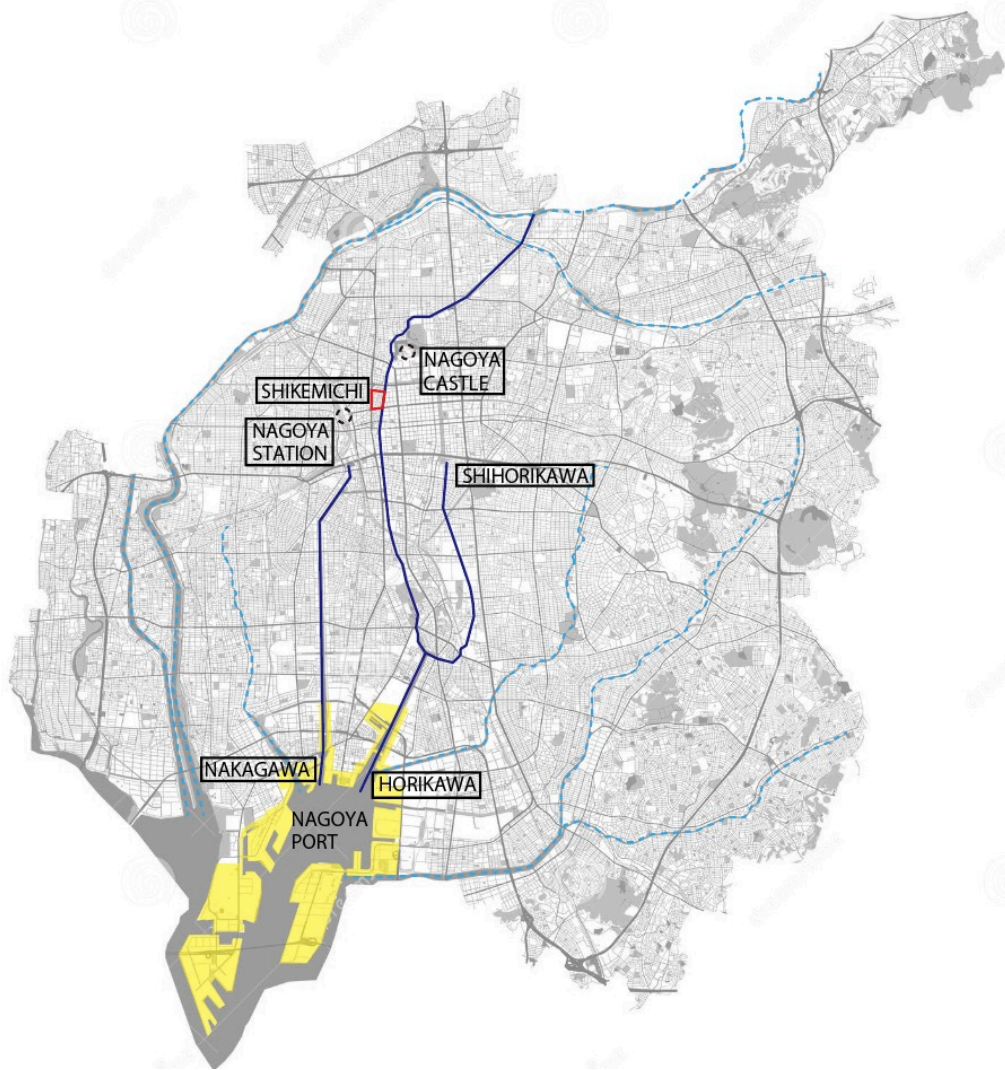


Fig. 1-3 Main waterfront spaces in Nagoya (by author: based on the Nagoya map¹²⁾)

①From Horikawa Canal to Horikawa Canal system

The Horikawa Canal, a water transport facility dug at the same time as the construction of Nagoya Castle, was the lifeblood of materials that supported the development of Nagoya from the Seven Points. The Horikawa Canal is a man-made canal

¹² 名古屋市都市計画情報提供サービス：都市計画基本情報（S48ーS52 基本図）

that is intrinsically linked to Nagoya Castle (Nagoya) and the emerging castle town. Its importance was manifested in two different ways.

Firstly, the site of Nagoya Castle was chosen primarily on the basis of the defensibility of the terrain. The aim was that the castle could be a stronghold to deter possible invaders from coming. However, this defensive advantage came with a corresponding problem - the towns that supported Nagoya Castle's growth could not be self-sufficient in food and household goods. The needs of this new castle town were greater than the traditional means of transport (i.e., human and horseback transport) could support at the time. Therefore, the construction of the Horikawa Canal became necessary to keep the town running. At the same time, the canal connected the castle town to the nearest port, Atsuta Port, which not only compensated for the lack of land transport, but also extended the connection with the sea.

Secondly, the Horikawa Canal also functioned as a key defensive fortress in times when Nagoya entered a state of war. Specifically, if the Kiso River, which is located upstream, was breached by enemy forces, the Horikawa Canal could function as the final line of defence. The multiple roles and functions of the Horikawa Canal - both as a lifeline to sustain livelihoods and as a final fortification - are strong evidence of the fact that it is inseparable from the history of Nagoya's urban development.

The Horikawa Canal, which was dug for the above reasons, can be considered as the infrastructure of Nagoya Castle in the early planning stage. According to the only surviving map records and historical topography of the time, the Horikawa Canal was a newly dug canal with no natural river base at all (橋弘志 and 高橋鷹志, 1997)¹³.

¹³ 橋弘志 and 高橋鷹志 (1997). "地域に展開される高齢者の行動環境に関する研究: 大規模団地と既成市街地におけるケーススタディー." 日本建築学会計画系論文集 62(496): 89-95.

Furthermore, it is reasonable to infer that the excavation process resulted in the removal of substantial quantities of soil and sediment, fundamentally altering the landscape of the surrounding area. In an era when transportation was both laborious and time-consuming, it becomes evident that the excavated material, predominantly consisting of sand and soil, would have been pragmatically repurposed. This repurposing likely entailed the construction of roads and the development of residential land along the coastal regions, a practice necessitated by the practicalities of both resource management and urban expansion.

Hence, the ramifications of the Horikawa Canal's excavation transcended the mere creation of a new waterway. It unfolded as a catalyst for large-scale urban development, profoundly reshaping the topography and spatial layout of the surrounding region. The pragmatic utilization of the excavated materials not only facilitated infrastructural enhancements but also spurred the growth of residential communities along the water's edge. In this manner, the Horikawa Canal's construction and the subsequent urban development were interwoven, marking a pivotal juncture in the historical evolution of the area.

Throughout the span from the early Edo period to the onset of the Showa period, a diverse array of daily necessities sourced from the Atsuta Port (now Nagoya Port) coursed upstream along the Horikawa Canal, enriching the livelihoods of the castle's samurai inhabitants and townspeople (citizens). Along the riverbanks, a plethora of merchants specialized in commodities such as salt, rice, dry goods, and fertilizers, with particular emphasis on the timber industry. During the Meiji era, a substantial volume of "Seto goods (瀬戸物)" from the inland Seto region was transported via the Horikawa Canal

from the Port of Nagoya to various corners of Japan and internationally, notably Europe and the United States¹⁴.

In the year of 1936, a period that marked the zenith of activity along the Horikawa Canal, an annual transportation volume of 1.91 million tonnes of goods traversed from the Horikawa Canal to the Port of Nagoya. This figure accounted for a quarter of the total cargo throughput at the Port of Nagoya during that era (名古屋港管理組合, 2008)¹⁵. However, subsequent to this pinnacle, waterborne transportation began to wane in favor of land-based transport modes such as rail and road. Correspondingly, water pollution escalated, leading to environmental degradation. Nonetheless, concerted efforts in environmental stewardship, bolstered by the enforcement of the Water Pollution Prevention Law and active civic participation, have kindled heightened public consciousness regarding the waterfront (渡辺泰 and 小栗秀夫, 2003)¹⁶. This transformation has fostered a more vibrant ambiance along the waterfront in Nagoya, despite its relatively limited waterfront expanse.

In alignment with a series of nationwide initiatives, including the "Horikawa: My Town, My River Project" inaugurated in June 1968, the rejuvenation of the Horikawa Canal is presently being advanced¹⁷. Conversely, to the west of the Horikawa Canal, the Nakagawa Canal, completed in the year of 1930, represents another pivotal aquatic feature in Nagoya's landscape. The "Panama Canal Way," equipped with ship locks,

¹⁴ 堀川まちづくりの会企画展. 名古屋を作った堀川と鉄道: 瀬戸電堀川駅 陸運と水運の接点.

¹⁵ 名古屋港開港 100 年史, 名古屋港開港百年史編さん委員会編. 名古屋港管理組合, 2008.3.

¹⁶ 渡辺泰, & 小栗秀夫. (2003). 名古屋の都市河川・堀川浄化に関する一考察. 水資源・環境研究, 2002(15), 49-58.

¹⁷ 名古屋市, 緑政土木局河川部河川計画課堀川総合整備担当, 堀川総合整備構想.

linked the Horikawa Canal to the Port, Sasajima Station (present-day Nagoya Station), and an array of branch lines and the Matsushige sluice gate (**Fig. 1-5**). Warehouses and factories adorned the canal's flanks, and during the zenith of waterborne transport, approximately 70,000 vessels traversed the canal annually in 1964¹⁸. However, this mode of transport gradually relinquished its prominence to land-based alternatives. Presently, as part of the maritime traffic, the city is striving to capitalize on the valuable waterfront assets that grace its urban landscape, including the Horikawa Canal.

Notably, the Horikawa Canal itself underwent a process of renewal and replacement, culminating in the construction of a new canal, as it could no longer meet the logistical demands of the modern era. In essence, logistics is intricately intertwined with what David Harvey has termed the "secondary circulation of capital," representing the flow of capital towards the production of the built environment. Development driven primarily by logistical considerations may also incorporate office, commercial, and residential functions, ultimately giving rise to vast expanses of urban space. This process engenders a self-propelled development, as postulated by McCormack, which unconsciously gravitates towards an autonomous proliferation of infrastructure (McCormack, 2001)¹⁹. (**Fig. 1-4** Development of the Horikawa Canal System)

¹⁸ 名古屋港管理組合, 名古屋港の紹介 ふ頭別の紹介, 施設案内: 中川運河.

¹⁹ McCormack, G. (2001). *The emptiness of Japanese affluence*. ME Sharpe.

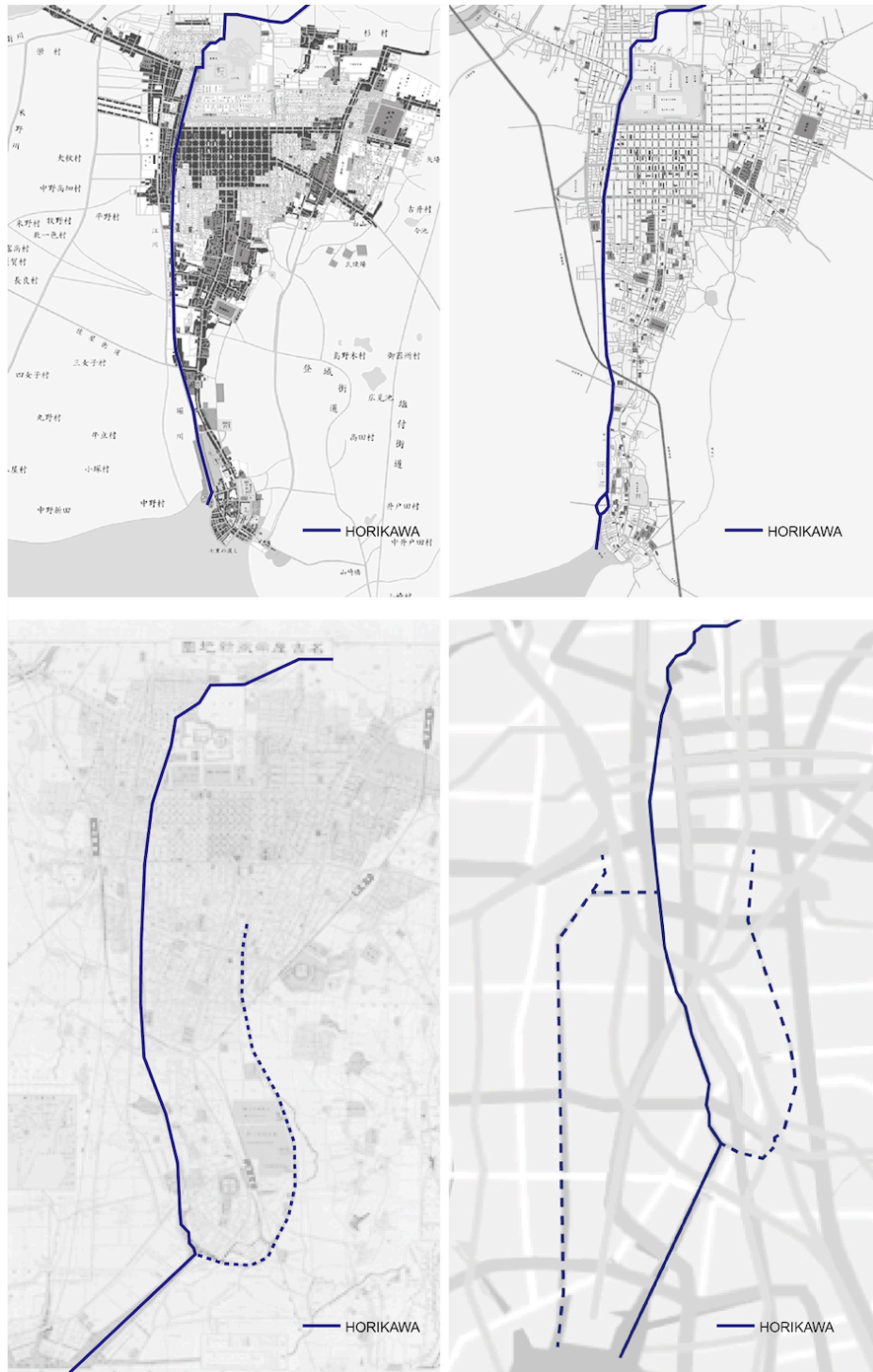


Fig. 1-4 Development of the Horikawa Canal System²⁰

²⁰ The source of the maps: <https://network2010.org/edomap> (top left); <https://network2010.org/meijimap> (top right) https://lapis.nichibun.ac.jp/chizu/map_detail.php?id=002862456 (bottom left);Google map APIs (bottom right)

For the rest of the details of Horikawa, please refer to the chronology of Horikawa history (Table 1-1).



Fig. 1-5 Matsushige sluice gate nearing completion in 1932 (Source: Nagoya City Archives)

Table 1-1 A Chronological History of the Horikawa Canal (Source: Nagoya City Website²¹)

Intercalary 2nd Month, 1610	Construction started on the Nagoya Castle. It was mostly completed by December, 1612.
June, 1610	General Masanori Fukushima became the Magistrate-General of Construction and started excavation work on the Horikawa Canal.
June, 1611	Entry of rafts became possible between Tatsunokuchi and Atsuta. Excavation work commenced to enable shipping from Atsuta to the Nagoya Castle construction site.
1613	The " <i>Kiyosugoshi</i> " ("move from Kiyosu") was mostly accomplished. The foundations of the Nagoya Castle town was built.
Around 1629	The Shirotori Lumbervard was established (founded on the east bank of the Horikawa Canal).

²¹ From the website: <https://www.city.nagoya.jp/ryokuseidoboku/page/0000009474.html>

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1633	8 wholesale fish stores were set up in Kinome and Oseko (present Atsuta Ward) and the fish markets were established.
May, 1663	The Horikawa Canal embankment-protections were gradually collapsing during the winter-time, so an order was made to cover the banks with stone walls.
Summer, 1663	Excavation of the Goyosui Waterway from the Shonai River at Ryusenji, present-day Moriyama Ward to the moat of the Nagoya Castle.
January, 1784	An order was issued to dredge the Horikawa Canal.
Winter, 1784	Construction work to connect the Daiko River with the Horikawa Canal was carried out.
1804	The Magistrate of Building Yakuro Hori planted hundreds of peach and cherry trees along the banks of the Horikawa Canal around near the Hioki Bridge
1836	"Myogazarae" ("cleaning mud on the riverbed") on the Horikawa Canal was carried out by local residents. It was carried out again in 1849
April, 1844	Marusho started to sell Crucian carp caught in the Horikawa Canal which was then boiled in soy sauce, at Fukuromachi 4-chome (present Naka Ward).
August, 1850	Designation as an "Otomegawa" preserve was removed and a prohibition on the killing of animals was lifted between the Asahi Bridge and the boathouse district (present-day Shirotori Garden area).
February, 1860	Cherry trees were planted in the Nagaune area.
July, 1871	Aichi Prefecture commenced regular dredging of sediment in the Horikawa Canal began.
October 10th, 1877	Excavation of the Kurokawa River was completed.
September 29th, 1886	Aisen Inc.'s opening ceremony was held. (Shipping transportation between Nagoya and Inuyama. Abolished in 1924)
May 1st, 1891	Ships over 300 koku (54,000 l) were prohibited from traveling between the Naya Bridge and upstream areas.
October 1st, 1899	Regulations concerning public landing places and riverbank areas along the Horikawa Canal came into effect.
September 16th, 1906	Bills covering construction costs for improvements on the Horikawa Canal (dredging and partial embankment work) were passed by the Aichi Prefectural Assembly. (4-year construction term)
February 23rd, 1910	Excavation of the ShinHorikawa Canal was accomplished.
October 1st, 1911	The Seto Denki Tetsudo (present-day Meitetsu Seto Line) opened between Horikawa and Seto. Horikawa Station was opened.
1925	Aichi Prefecture carried out dredging work between the Asahi Bridge and the Keiun Bridge and between the Suzaki Bridge and the Sanno Bridge.
October 1st, 1932:	The entire Nakagawa Canal was excavated, connecting it to the Horikawa Canal.

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March, 1933	Improvement-construction works completed between the Daiko River junction and the Asahi Bridge. (Started in 1931)
Around 1935	Water quality decreased in the Horikawa Canal, with BOD reaching approximately 35 mg/l.
March 31st, 1939	Improvement-construction works completed between the Asahi Bridge and Nagoya Port. (Started in 1927)
February 5th, 1959	Nagoya Seikokai Inc. was established and clean-up work commenced on the Horikawa Canal.
September 26th, 1959	The Horikawa Canal was severely damaged by the Ise Bay Typhoon.
May 2nd, 1963	In an effort to clean up the Horikawa Canal, a trial commenced with water flowing into the Horikawa Canal from the Shonai River (until 1975).
August 15th, 1964	The tide gate at the mouth of the Horikawa Canal was completed.
December 7th, 1965	Aichi Prefecture commenced dredging work (continued until FY1983). Nagoya City contributed half of the construction costs.
November 1st, 1968	The Matsushige Lock Gate in the Nakagawa Canal was closed due to reductions in the numbers of passing ships.
April 1st, 1969	The designation of the Horikawa Canal was upgraded to Class A status.
September 1st, 1970	Designation of the "type of water area" according to environmental standards on water pollution.
February 14th, 1976	The line from Horikawa Station to Doishita Station was abolished on this day due to the extension of the Meitetsu Seto Line to Sakae.
October 10th, 1981	Reconstruction of the Naya Bridge was accomplished. (The parapets from the old bridge built in 1913 were reused.)
April in 1983	A project to conduct water from the Kiso River into the Horikawa Canal was commenced. (Abandoned in 2000)
1988	Designation of the Horikawa Canal as the first river developed by the "My Town, My River Improvement Project".
March 31st, 1989	The Horikawa Canal General Development Plan was officially announced.
January 13th, 1992	The plan of the "My Town, My River Improvement Project" was approved, followed by full-scale development.
1994	Dredging work to remove sludge began.
September 27th, 1998	Groundwater discharge into the Horikawa Canal began following the construction of the Kamiida Subway Line. (Continued until August 2001)
July 23rd, 2001	Raw water conveyance from the Shonai River began at 0.3 m' per second.
March 25th, 2002	Proposal of the "Nagoya, Horikawa Canal Project 21" by the Horikawa Seibi ni Kansuru Kondankai (Horikawa Canal Improvement Conference).

August 26th, 2004	Announcement of the phase II emergency action plan for improvement of water environment called "Clean River Renaissance II".
January 21st, 2005	Designation of the social experiment area according to special measures pursuant to the regulations of permission for the exclusive use of a river sight.
January 22nd, 2005	Opening of the "Horikawa Gallery" (in the Old Kato Trading Company Building).
March 27th, 2007	Commencement of the social experiment to convey raw water from the Kiso River at 0.4m' per second
April 1st, 2007	Transfer of river management authority from Aichi Prefecture to the City of Nagoya.

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② Important historical Horikawa bridges and the surrounding area

1) Gojo Bridge

Gojo Bridge boasts a rich historical legacy that harks back to its origins as a crossing over the Gojo River within the confines of Kiyosu Castle. Its intriguing history unfolds as it was transplanted to its current location in 1610, marking the inception of the Kiyosu River crossing project (オフィス・ヒライ, 2017)²². Remarkably, an inscription from the seventh year of Keicho adorns the bridge, predating the fifteenth year of Keicho when the Horikawa excavation took place.

During the Keicho era, this wooden bridge made a transformative journey to Nagoya, which was commonly known as Kiyosugoshi at the time. Importantly, the bridge retained its original nomenclature, preserving its historical link to Kiyosu Castle. In 1938, the bridge underwent a reconstruction phase, resulting in the contemporary three-span reinforced concrete bridge that we see today. Strikingly, the design of this modern

²² オフィス・ヒライ.(2017). 古地図で歩く 名古屋 歴史探訪ガイド. メイツ出版.

incarnation pays homage to the aesthetics of the original wooden bridge. (新修名古屋市史編集委員会, 1997)²³

In addition, new elements such as granite pillars, balustrades and stone paving have been added to enrich the ambience of the Five Bridges. This combination of past and present elevates Gojo Bridge to a place of historical charm and cultural significance.

Fig. 1-6 is a historical painting from the Owari Meiyō Zue, depicting the area around the Gojo bridge in the Edo period.

This painting shows a view of the Horikawa from the east bank. The right bank depicts Omotezo and Minoji, while the stone wall and stone steps of the communal landing site can be seen at the bridge.

Kyomachi Suji and Kobikicho Dori are depicted on the left bank.



Fig. 1-6 The middle section of the street leading to Minoji Street, where people can experience the bustle of Nagoya City (Source: Owari Meiyō Zue²⁴ section 1)

The photograph (**Fig. 1-7**) captured in 1936, looking from east to west of the Gojo Bridge spanning the Horikawa Canal, provides a captivating glimpse into the past. The

²³ 新修 名古屋市史 第三巻, 新修名古屋市史編集委員会 編, 名古屋市, 1997. 第二章.

²⁴ 尾張名陽図会. 高力種信著 (愛知郷土資料叢書, 第7集) 愛知県郷土資料刊行会, 1971.9.

prominent structure on the left, a modern Western-style building crowned with a chimney, stands as the Benkei Yu public bathhouse. This bathhouse, which commenced operations in 1888, remained an integral part of the daily lives of ordinary people for nearly a century until its eventual demolition in 2002.



Fig. 1-7 A photo of the Gojo bridge taken in 1936 (Source: Nagoya Urban Institute)

During the period when this photograph was taken, fuel was in short supply. The bathhouse's owner resorted to pulling a wheeled cart in search of scrap wood to heat the bathwater. Notably, during the wartime era, on days when soldiers from the nearby training camp in Meijo Park would visit the bathhouse, they would form queues along the parapet of the bridge. On the opposite side of the line, mothers who had gathered to catch a glimpse of their sons would quietly stand, their hearts filled with a mix of pride and worry.

The photograph prominently features the arch of Nagoya's oldest shopping arcade, known as Endoji. Although constructed in 1964, Endoji Arcade exudes a nostalgic ambiance reminiscent of the Showa period. Venturing into one of its narrow alleys transports visitors back to a bygone era. Adjacent to the western side of the bridge lies

Minoji, a historic thoroughfare that connects Miyajuku on the Tokaido Highway and Taruijuku on the Nakasendo Highway. Along Shikemichi, which runs parallel to the western edge of Minji, one can still observe old townhouses and warehouses that once belonged to affluent merchants during the Edo period. These structures serve as poignant reminders of the castle town's rich history and heritage.

As one crosses the Gojo Bridge and ventures westward, a captivating townscape unfolds, each corner whispering tales of days long past.

2) Naka Bridge

Naka Bridge, though less renowned, holds a significant place in the historical tapestry of the area, quietly nestled between Gojo Bridge and Sakura Bridge. It is one of the "Horikawa Seven Bridges," constructed during the development of the Horikawa Canal. During that era, it bore the name "Naka (It means "middle" in Japanese)" owing to its location between Gojo Bridge and Tenma Bridge (ASAI et al., 1991)²⁵.

The present incarnation of the bridge dates back to 1917, making it the oldest extant bridge in the Horikawa district. In the vicinity, a shrine dedicated to the deity of roofs adds to the serene ambiance, along with Shikemichi and its numerous warehouses, imparting an air of tranquility.

The east side of the bridge once bustled with merchants engaged in the trade of timber, bamboo, firewood, and charcoal, among other commodities. Districts on the east side were bustling hubs of activity. On the west side of the bridge, a different commercial scene unfolded, with merchants specializing in rice, miso, soy sauce, fertilizers, and more. They constructed riverside warehouses along the banks of the Horikawa Canal and

²⁵ ASAI, A., MURASE, K., SHAMOTO, M., & MIZUNO, T. (1991). History of Nayabashi-bridge and It's Landscape Design. HISTORICAL STUDIES IN CIVIL ENGINEERING, 11, 319-325.

established shops and residences on the west side of the bridge, facing Minoji. This thriving commerce was propelled by the traffic on the river and the use of rafts for transport.(歴史的環境研究会, 1980)²⁶

The area around Naka Bridge possessed a distinctive character, functioning as a distribution hub, wholesale market, and lumber complex within the confines of a castle town. The bridge itself served as an indispensable artery for the town's industrial endeavors, seamlessly connecting both sides of the river. **Fig. 1-8** offers a glimpse of Naka Bridge as it evolved throughout its storied history, reflecting the dynamic interplay of commerce, culture, and community that defined this vital bridge and its surroundings. At the foot of the bridge, there are stones and a lantern.

²⁶ Refer to: 名古屋市教育委員会 (1980). 歴史的環境研究会編: 四間道と有松 : 名古屋市伝統的町並保全基礎調査: p21.



Fig. 1-8 Various people look at the canal from the bridge

(Source: from Owari Meiyō Zue²⁴section1)

The historical account in Owari Meisho Zue, titled "Dōfu no Shōshō (當府之繁昌)" or the "Prosperity of Nagoya," vividly captures scenes from the festival in Kobikicho, offering a glimpse into the prosperity of the era (Fig. 1-9). The grandeur of the festival also gives a side view of the prosperity of Nagoya at that time.



Fig. 1-9 Dōfu no Shōshō (當府之繁昌) (Source: Owari Meisho Zue²⁷ 2-15)

Additionally, on the southeast side of the bridge, there is a display illustrating the rise of the water level in the Horikawa Canal during the Ise Bay Typhoon of 1959. The water surged to the height of the road (3.5m)(Shuto and Fujima, 2009)²⁸, radically transforming the usually placid river into a turbulent and turbid natural disaster. This record is a constant reminder of the power and unpredictability of nature and the inevitable vulnerability of waterfront spaces.

3) Tenma Bridge

The Tenma Bridge, now calmly nestled between Nishiki Bridge and Sakura-dori, bears witness to the ceaseless flow of contemporary automobiles. Nevertheless, in ages

²⁷ 尾張名所図会前編, 岡田啓, 野口道直撰, 小田切春江画, 1844. 愛知県図書館.

²⁸ SHUTO, Nobuo; FUJIMA, Koji. 日本海啸研究与对策简史. 日本学士院学, B 系, 2009, 85.8: 267-275.

past, this bridge held the distinction of being the liveliest and most bustling thoroughfare along the Horikawa and Minoji streets.

This ancient bridge not only witnessed the grand processions of daimyo traveling between their domains and Edo but also hosted shoguns, the paramount figures of the Edo Shogunate, returning from Chosen. Furthermore, it accommodated processions responsible for delivering tea to the shoguns²⁹. An ancient work describes this locale as a vibrant place, where individuals of both high and humble station perpetually intermingled (Owari Meiyō Zue)²⁴.

Approximately 800 meters east of Tenma Bridge lies Fudanotsuji, a bustling crossroads intersecting with Honmachi. In days of past, this place stood as the epicenter of Nagoya's bustling activity. Here, two historic routes, Iida Street and Zenkoji Street, converged, underscoring the district's profound historical significance. Tenma Bridge, an integral component of the "Horikawa Seven Bridges" constructed during the excavation of the Horikawa Canal, bears the inscription "Keicho 7" (1602), a marker dating back to the year preceding the commencement of the Horikawa Canal's excavation. Legend has it that the bridge was originally situated in Kiyosu and was transported to its current location. The name of the bridge finds its origin in the town of Tenma, the area where it was initially located.

As can be observed from **Fig. 1-10**, North-west of the Tenma Bridge is a timber-based neighbourhood, so, The banks are lined with timber.

The embankment is masonry as it is in the heart of the city.

²⁹ Refer to: 堀川まちづくりの会, 企画展 堀川七橋ものがたり ぶらす, 美濃路が通る橋 伝馬橋.



Fig. 1-10 Tenma Bridge and the timber (Source: Owari Meiyō Zue²⁴ section 2)

4) Naya Bridge

The Naya Bridge also holds a distinct position as one of the "Horikawa Seven Bridges," its origins dating back to the year of 1610, coinciding with the excavation of the Horikawa Canal. Historical records suggest that the construction of this bridge was necessitated by the existence of Yanagi Street, which extended from the castle town to the present Nakamura Ward.(浅井章治 et al., 1991)³⁰

During the era when the Naya Bridge was built, Hirokoji marked the southern terminus of the castle town. Naya Bridge, which spans the intersection of Horikawa Canal and Hirokoji street, was realised for its important role in urban space and its symbolic

³⁰ 浅井章治, 村瀬勝美, 社本英, & 水野孝. (1991). 納屋橋の歴史と橋梁景観. 土木史研究, 11, 319-325.

significance of connecting different worlds (尾関利勝 et al., 2010)³¹. At that time, Hirokoji(広小路) was not particularly vibrant, and the nearby Tenma Bridge, situated at the intersection of Minoji, enjoyed far more activity and prominence than the Naya Bridge.

As for the nomenclature of the bridge, it is worth noting that despite its historical significance and longstanding existence, there is no consensus regarding the origin of its name. The prevailing theory suggests that the current name reflects a historical function of the vicinity, which involved storing annual tributes in warehouses.(伊藤正博 and 沢井鈴一, 2014)³²

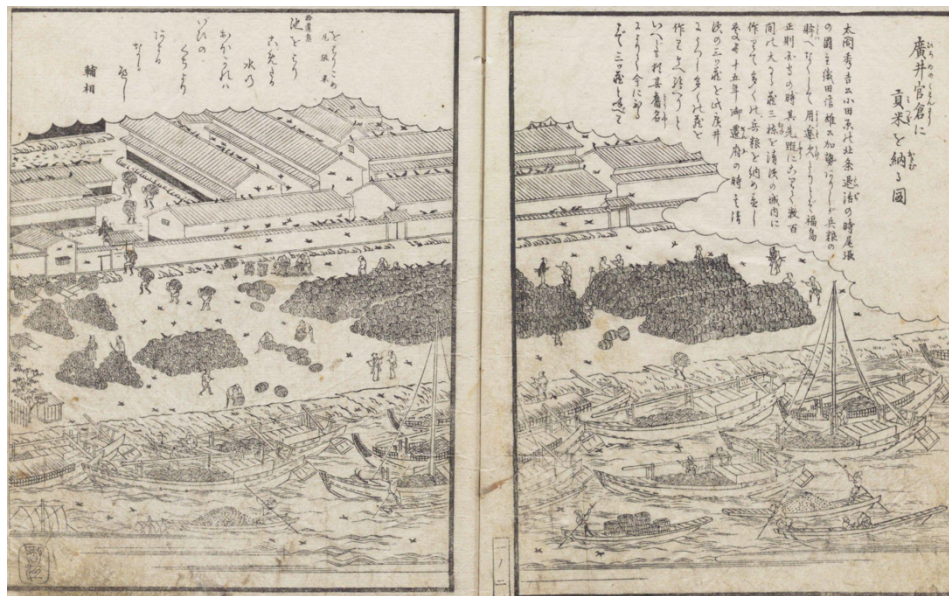


Fig. 1-11 Naya Bridge storehouses (Source: Owari Meisho Zue²⁷ 1-2)

³¹ 尾関利勝, 井澤知旦, & 栗原徹. (2010). 名古屋の街を歩いて, その魅力を探る. 都市住宅学, 2010(68), 87-92.

³² 伊藤正博, 沢井鈴一. (2014). 堀川: 歴史と文化の探索. 名古屋: あるむ. 2014.6.



Fig. 1-12 Naya Bridge and the warehouses (Source: part of 御船御行列之図³³)

In **Fig. 1-11**, in the foreground is the Horikawa Canal, with many boats carrying rice. They are carrying bales from the boats, and the rice is piled up in a square on the riverbank. People are examining the rice and re-packing it into bales. There are many storehouses at the back of the house.

And in **Fig. 1-12**, the building on the other side of the river is the clan warehouse where the annual tribute was stored. The Naya bridge is on the left.

5) Hioki Bridge

The Hioki Bridge, spanning the Horikawa Canal, holds a distinguished position as one of the seven extant bridges that traverse the river. During the Edo period, this bridge

³³ 御船御行列之図・桜見与春之日置・絵本江崎之春/[高力猿猴庵][著];名古屋市博物館編,2006.2

was renowned as one of the Seven Views of Nagoya, celebrated for its scenic beauty during the cherry blossom season(小野佐和子, 1987)³⁴.

The area along the Horikawa Canal, stretching from the present-day Wakamiya Odori to the southern vicinity of the Hioki Bridge, was once adorned with peach and cherry trees, making it the most iconic cherry blossom viewing location in Nagoya³⁵. Countless historical paintings capture the enchanting landscape surrounding the Hioki Bridge, providing a glimpse into how people of that era cherished the arrival of spring in this picturesque setting.

Fig. 1-13 and **Fig. 1-14** illustrates the scene of people enjoying cherry blossoms on the bridge. The crowds that pass by on both banks, the boats on the water and the flowers up and down. It is a place of no less beauty than Arashiyama mountain in Kyoto or the Sumida River's spring in Tokyo.

³⁴ 小野佐和子. 城下町名古屋の行楽地と農村. 農村計画学会誌, 1987, 6.1: 19-28.

³⁵ Refer to: 堀川まちづくりの会, 企画展 堀川七橋ものがたり ぶらす, 日置橋の桜を描いた絵 日置橋.



Fig. 1-13 View of the cherry blossoms on both banks from the Hioki Bridge

(Source: Owari Meiyō Zue²⁴ 2-27)



Fig. 1-14 View from the north-west of the Hioki Bridge (Source: 高力種信, 2006³⁶)

³⁶ 高力種信; 名古屋市博物館編集, "御船御行列之図・桜見与春之日置・絵本江崎之春". 名古屋市博物館, 2006.2

The intimate relationship between the people and these infrastructural bridges gave rise to a unique form of attachment, endowing these structures with a special place in the collective imagination. Bridges, therefore, readily evoke a sense of nostalgia and familiarity (as illustrated in **Table 1-2**), serving as an embodiment of Jane Jacobs' concept of "legibility" within the urban landscape. In this context, legibility refers to the comprehensibility and navigability of the urban environment, where bridges function as key reference points, aiding individuals in understanding and navigating their surroundings.

Table 1-2 The ambience of the waterfront spaces of the five historic bridges (by author)

Gojo Bridge	as a shortcut to experience Nagoya City
Naka Bridge	as the coordinates of economic prosperity
Tenma Bridge	as the gateway to Nagoya and the melting pot with the highest level of human mixing
Naya Bridge	with a view of neatly arranged warehouses around it
Hioki Bridge	as a flower viewing spot in the suburbs and a waterfront oasis outside town life

③ The Rise and Fall of Horikawa Canal system

In March of 1935, significant progress had been made in the “Showa Renovation project” of the Horikawa Canal³⁷. Concurrently, within Nagoya City, specific sites of Nagoya Port, as well as the coastal regions encompassing the Horikawa, Shin-Horikawa,

³⁷ 堀川改修工事: 愛知県河川整備計画流域委員会, 流域の歴史.

and Nakagawa Canals, were officially designated as Urban Plan Industrial Areas—a classification that pertained to the zoning of industrial land(梅原浩次郎 et al., 1997)³⁸.

This juncture in history witnessed Nagoya undergoing rapid industrialization, with the waterfront district serving as the epicenter of this transformative process. Concurrently, the Port of Nagoya was surging in port capacity³⁹, while waterborne transportation along the Horikawa, Shin-Horikawa, and Nakagawa Canals exhibited robust activity.

During the same year, the Port of Nagoya handled a substantial cargo volume, amounting to 6,606,000 tonnes. Significantly, the combined tally of ships and cargo volumes attributed to the three principal canals, which represented a significant portion of the expanded Port of Nagoya, were as follows: 44,000 vessels transporting 1.907 million tonnes on the Horikawa, 30,000 ships carrying 804,000 tonnes on the Shin-Horikawa, and 54,700 vessels moving 731,000 tonnes on the Nakagawa Canal. This accolade firmly established the Horikawa Canal as the paramount hub for inland water transportation. (西別府順治, 2011)⁶

Remarkably, of the ships navigating the Horikawa, a noteworthy contingent—comprising 18,000 vessels—transited from the Nakagawa Canal through the Matsushige sluice gate. This transitional route substantially reduced the time required to traverse the Matsushige sluice gate, diminishing it from two-thirds to one-third of the time needed for passage through the Horikawa Port. This phenomenon was widely recognized as the "bridging effect" of the Nakagawa Canal, a phenomenon acknowledged as the

³⁸ 梅原浩次郎; 鶴田佳子; 佐藤圭二. 戦前名古屋の用途地域指定と区画整理の関連に関する研究 特に工業地域指定を中心として. 都市計画論文集, 1997, 32: 67-72.

³⁹ Refer to: 名古屋港統計年報.

"Nakagawa Canal Bridge Effect." Consequently, it led to an influx of numerous vessels entering the Horikawa Canal via the Nakagawa Canal route.(西別府順治, 2011)⁶

On the contrary, the low-lying region surrounding the Nakagawa Canal in the southwestern expanse of Nagoya City experienced urbanization and development concurrent with the canal's excavation. However, this development primarily consisted of small and medium-sized factories and warehouses, with no major foundational enterprises discernible along the coastline.(栗原光政, 1968)⁴⁰

A comparable trend can also be observed in the vicinity of the Shin-Horigawa Canal. Nonetheless, noteworthy transformations in this area transpired with the modification of preexisting Japanese vehicle and weapon factories, followed by the establishment of Japanese insulator facilities, ultimately bestowing substantial economic benefits upon the region.(栗原光政, 1968)⁴⁰

Furthermore, the formation of the Chukyo industrial zone, one of the four major industrial zones in Japan, which included the coastal area of Nagoya, also grew at a rapid pace until the 1960s (栗原光政, 1961)⁴¹. The proliferation of the industrial sector, coupled with a proportional surge in cargo volumes, constituted the primary impetus behind the enlargement of the Port of Nagoya's precincts.

Since the inception of the Port of Nagoya, the inland water transport facilitated by the Horikawa, Shin-Horikawa, and Nakagawa canals efficiently linked with the port, proficiently discharging logistical functions during the initial phases. However, as the real estate sector flourished, the landscape demanded the incorporation of foundational

⁴⁰ 栗原光政. 工業地域の形成と構造に関する研究—中京地域を事例として—. 1968.

⁴¹ 栗原光政. 中京工業の成長について—(1950~59年)—. 1961.

industries such as steel mills and power plants within the waterfront area. Simultaneously, the global adoption of sea transport containerization, along with active promotion of the expansion of the Port of Nagoya's western and southern sectors, contributed to the gradual diminishing of the interconnectedness of the three canals with the Port of Nagoya. This transformation is evident in the current management structure of the Nagoya Port Authority, which has amalgamated the administration of diverse districts spanning four cities and one village (Nagoya city, Tokai city, Chita city, Yatomi city and Tobishima village).

Furthermore, the Showa era's onset witnessed the rapid advancement of freight transport automobilization, which intensified over the ensuing two decades. This transformation played a pivotal role in the decreasing necessity for inland water transport. In response, Nagoya City initiated a comprehensive overhaul of its road network during the 1940s⁴², thereby expediting the adoption of automobiles.

As a result, the 1940s witnessed a new era characterised by containerisation, which dramatically changed the picture of port handling activities. Moreover, the renovation of the Port of Nagoya and the expansion of its port precincts precipitated a rapid decline in the traditional practice of conveying goods via "sampan," supplanted by a notable shift towards road-based trucking.

The Horikawa and Shin-Horikawa Canals, which had once teemed with activity due to the increasing cargo volumes at the Port of Nagoya, and the Nakagawa Canal, conceived with great anticipation as a potential savior, found themselves grappling with mounting challenges. Among these waterways, the Nakagawaguchi locks boasted an

⁴² 名古屋都市センター. 平成 24 年度 NUI 特別レポート, 戦前の名古屋都市計画公園史について.2013.3.

annual operational capacity of 3.45 million tonnes, surpassing that of the Horikawa and Shin-Hori rivers. However, as the surroundings of the Port of Nagoya underwent transformative shifts, the waterborne transport of the Nakagawa Canal experienced a steady decline, gradually receding after reaching its zenith at 4.01 million tonnes (with 75,090 ship transits) in 1964. The Horikawa and Shin-Horikawa Canals faced similar circumstances, signaling the inevitable decline of Nagoya's inland water transport.⁴³

Subsequently, on November 1, 1968, the Matsushige sluice gate, serving as the connecting conduit between the Horikawa and Nakagawa canals through the water gate, was sealed⁴⁴ (**Fig. 1-15**).

⁴³ Data source: 名古屋港統計年報.

⁴⁴ 日本海事広報協会. 海の産業遺産めぐり第16回 松重閘門と中川運河, ラメール 海と船の雑誌., 2008.11.



Fig. 1-15 Matsushige sluice gate nowadays (by author, 2022)

The Matsushige sluice gate embodied the vibrancy of Nagoya's inland waterways and thrived amidst the bustling boat traffic. In addition, the four majestic towers exude an exotic atmosphere reminiscent of a trade-based Japan that navigated waters near and far.

For many who witnessed the closure of the Matsushige Locks, this event was a symbol of the fading era of inland water transport.

The sluice gate was then permanently sealed with concrete, marking its official status as a historical property (**Fig. 1-16**).



Fig. 1-16 The closure of the Matsushige sluice gate (by author, 2022)

Artificially constructed infrastructures, especially those built with a purely profit motive, often fail to establish a strong connection between people and the space they occupy at any given time. This is precisely why modern port expansion infrastructures have experienced a water transport heyday to a trough. At some point these infrastructures may no longer be able to meet people's needs and therefore need to be dismantled or extensively remodelled to enter a new cycle.

④ The port before and after modernization

The Port of Nagoya stands as a preeminent international trade port in Japan and ranks among the foremost container hub ports of significance within the Asian continent. Its historical trajectory has been characterized by a transformative evolution that spans several phases, transitioning from its origins as an estuarine port to the establishment of a deepwater port. Subsequently, it evolved from being primarily an industrial port into a comprehensive port. Furthermore, this evolution encapsulated a shift from its traditional identity to a modernized port of immense stature. In tandem with these transformations, the waterfront space associated with the Port of Nagoya has undergone a profound metamorphosis. It has progressively evolved from serving as a singular domain exclusively dedicated to cargo loading and unloading operations to assuming a multifaceted character that accommodates a diverse array of public activities.⁴⁵

In the historical context before modernization, the Port of Nagoya bustled with activity at gateway and Tsukiji(築地). Numerous laborers were employed at the port, and their families resided in the vicinity, at the intersection of the maritime and terrestrial domains. Furthermore, seafarers hailing from diverse corners of Japan and the world would disembark here to rejuvenate their weary bodies following long sea voyages. This locale became a melting pot where individuals of various races and cultures converged to partake in food, libations, and souvenir shopping, thereby epitomizing a space where diverse cultures and prominent ethnicities converged.

However, recent times after modernization have witnessed the rapid mechanization and streamlining of port cargo handling, resulting in reduced loading and unloading times and consequently shorter ship anchorage durations. This shift and the modernisation of

⁴⁵ Nagoya Port Authority (1995). Nagoya Port Information, History in Brief, Nagoya, Japan.

the ships themselves, two factors that have led to an irreversible result, are the plummeting of crew numbers. Those who do remain aboard often find themselves with limited opportunities for shore leave.

The overall evolution of Nagoya's transport system, including land and water transport, as mentioned above, is summarised in **Fig. 1-17**.

The modern port, much like the historical Horikawa Canal, cannot be considered a naturally occurring entity; rather, it is a product of deliberate and artificial development. In this regard, the fundamental characteristics of its infrastructure bear similarities to those of the Horikawa Canal. However, the trajectory and outcomes of its development differ significantly from historical precedents. Notably, the transformation of the modern port involves a dramatic alteration of the coastal landscape, undertaken to maximize its efficiency as a logistical hub. This endeavor necessitates substantial investments in infrastructure.

One well-recognized model that delineates the development of port infrastructure over time and space is the Any Port-model, as mentioned before, formulated by Bird in 1971. This conceptual framework identifies five distinct stages of port development, driven by the escalating volume of cargo handled and the influence of advancing land-based transportation systems, particularly railways, on port demands. As a port evolves, there is a discernible trend towards the establishment of larger and more numerous terminals, coupled with the expansion of warehouse storage capacities. Bird's model even encompasses a phase preceding the advent of containerization, and this incremental expansion trajectory became more pronounced as container technology and shipbuilding capabilities advanced.

Consequently, these extensive port infrastructures extend seaward, often presenting an otherworldly and surreal aspect, as if they were estranged from the very sky above.

This transformation underscores the powerful interplay between logistics, urban development, and infrastructure expansion, culminating in the creation of environments that appear surreal and divorced from conventional urban landscapes. It is also absolutely dominant in the cognition of waterfront spaces.

The economist Schumpeter coined the term "creative destruction" to describe the revolutionary process within capitalism—a continuous cycle of inventing new products and production methods while discarding the old (Schumpeter, 2013)⁴⁶. In the context of the built environment, including transport infrastructure, creative destruction takes on a literal meaning: the regular demolition of old structures to make way for new ones (Gilliland, 2004)⁴⁷. The transformation of Nagoya's transport system follows this pattern, as new technologies and structures render old facilities and methods obsolete. The port area, in particular, must undergo reconstruction to accommodate larger and faster ships and handle increasing cargo volumes, meeting the growing demand from people for transport efficiency. Canals will be widened, new wharfs added, and land transport integrated. Each cycle of creative destruction has enhanced the efficiency of circulation while significantly influencing cognitions of the original waterfront, because each round of new infrastructure serves 'to tear down every spatial barrier to intercourse', and to 'annihilate this space with time' (Marx, 2005)⁴⁸.

During the non-port era in Nagoya, the canals represented the economic lifeblood and served as the primary basis for cognitions of the waterfront. However, the advent of

⁴⁶ Schumpeter, Joseph A. *Capitalism, socialism and democracy*. routledge, 2013: p83.

⁴⁷ Gilliland, Jason. "Muddy shore to modern port: redimensioning the Montréal waterfront time - space." *Canadian Geographer/Le Géographe canadien* 48.4 (2004): 448-472.

⁴⁸ Marx, Karl. *Grundrisse: Foundations of the critique of political economy*. Penguin UK, 2005.

the port era expanded the scope of the waterfront, fundamentally altering the material basis for its cognition. The Port of Nagoya has indeed burgeoned into a comprehensive, industrial port in Japan, boasting significant cargo throughput and trade volumes⁴⁹. Technological innovations such as containerization and land transport have rendered canal transport an outdated technology to be discarded. As a result, canal spaces are gradually evolving into "subsidiary spaces" or even "spatial barriers." This cognitive reconstruction, driven by creative destruction, exhibits a strong functional dependency and yields different outcomes in various eras, as further elaborated in section 1.1.3. For a brighter future of modern waterfront spaces, reconstructing cognition is a necessary pathway and the main focus of this study.

⁴⁹ The total cargo throughput of the Nagoya Port is 177.79 million tonnes, ranking first in Japan for 20 consecutive years since 2002.(according to Nagoya Port Authority, 2022 Statistics)

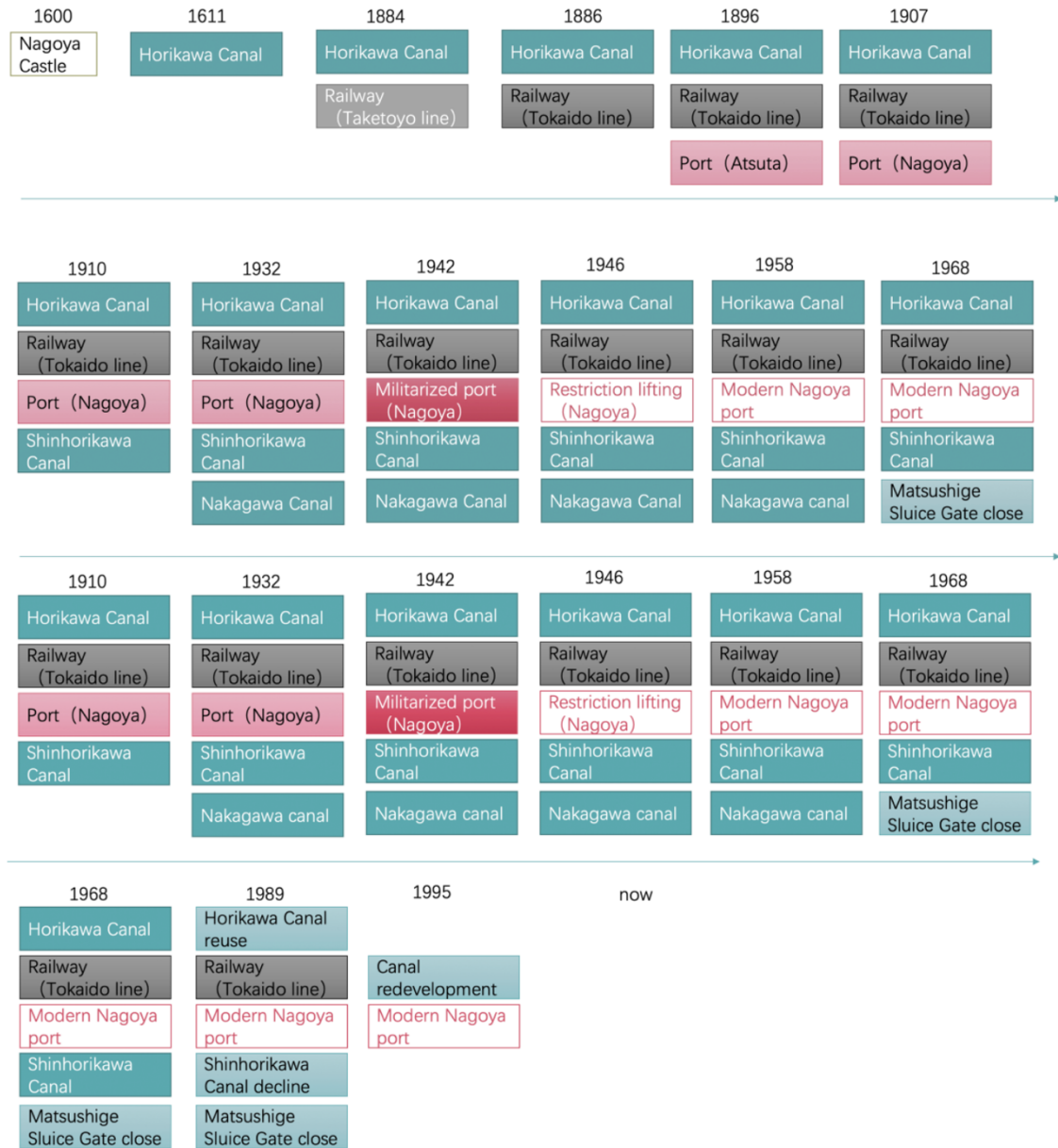


Fig. 1-17 The development of the transport system in Nagoya (by author)⁵⁰

⁵⁰ Refer to: 名古屋都市計画史(大正期～昭和44年)(年表編), 名古屋都市計画史II(昭和45年～平成12年度)(年表編)

1.1.3 Vulnerability of waterfront spaces and the lessons from Ise Bay typhoon

Although waterfront spaces are an engine of economic development in Nagoya, the natural characteristics of waterfront spaces inevitably show vulnerability in the face of natural disasters.

History shows quite clearly that waterfront spaces are high-risk areas. Water-related disasters such as hurricanes, tsunamis, river flooding, typhoons, etc., have already affected waterfront areas in the past decades, causing huge economic losses involving millions of people.(Giovinazzi and Giovinazzi, 2008)⁵¹ Unfortunately, the exposure of large numbers of people and goods, at the global scale, to the effects of rising levels is one of the major challenges of this century.(Hanson et al., 2011)⁵²

In the annals of Nagoya's history, the Ise Bay Typhoon stands as a natural disaster that cannot go unmentioned, leaving an enduring impact on the ongoing development of the local city.

On the evening of September 26, 1959, Typhoon No. 15 made landfall at Kii Peninsula, precipitating extensive devastation across Japan. However, the Ise Bay and its proximate environs, particularly the deeper reaches of the bay and the low-lying coastal expanse centered around Nagoya, bore the brunt of an unprecedented disaster, subsequently designated the Ise Bay Typhoon.

⁵¹ Giovinazzi, Oriana, and Sonia Giovinazzi. "Waterfront planning: a window of opportunities for post-disaster reconstruction." (2008).

⁵² Hanson, Susan, et al. "A global ranking of port cities with high exposure to climate extremes." *Climatic change* 104 (2011): 89-111.

The toll exacted by the Ise Bay Typhoon was profoundly significant, with reported deaths and disappearances totaling 5,098—a grim milestone unparalleled since the Meiji Era. Distinguished by its extensive geographical reach, the disaster spanned 32 prefectures, with an overwhelming 83% of its impact concentrated in Aichi and Mie prefectures.

Remarkably, the tsunami unleashed by the typhoon resulted in the highest recorded water level at the Port of Nagoya in the annals of observation, reaching 5 meters and 31 centimeters—exceeding the elevation of the coastal embankment (4 meters and 80 centimeters). In the port area, the dikes broke due to the more severe damage caused by the tsunami, and other areas were also hit by the tsunami, exceeding the protection of the dikes. In Nagoya City, 1,851 people were killed or missing as a result of the severe damage caused by the disaster.⁵³

Simultaneously, this extreme tidal event inflicted substantial damage to the southern perimeter of the wood storage yard located at Site 8, presently known as Shinpo Wharf. In the immediate aftermath, a colossal volume of timber surged forth from storage yards at various locations, including Site 8 and Nagoya port, as well as from the canals, akin to a ferocious deluge, resulting in extensive damage to the surrounding environs.

Among the canals, the Horikawa bore the brunt of the devastation, with timber debris strewn in front of roads and structures following the recession of floodwaters, impeding subsequent restoration efforts.

In 1959, as Nagoya's timber-related facilities approached the brink of their operational capacity, a resounding consensus emerged within the timber industry,

⁵³ 中央防災会議 災害教訓の継承に関する専門調査会. 1959 伊勢湾台風報告書.2008.3.

underscoring the undeniable necessity of constructing a large-scale timber port. This consensus was underpinned by a collective understanding that such an endeavor was imperative to effectively address the foreseen escalation in demand for timber storage in the years to come. The entire timber industry, encompassing diverse stakeholders, industry leaders, and policy makers, found common ground in acknowledging the pressing need for a substantial timber port.

The backdrop against which this consensus crystallized was of course the evolving industrial landscape characterized by trade in timber resources and the shifting dynamics of the timber market. Nagoya, a burgeoning economic hub, found itself in the midst of a transformative period marked by rapid urbanization and industrial expansion. The demand for timber as a fundamental resource for construction, manufacturing, and various other sectors was on an upward trajectory, mirroring the city's growth.

But another key opportunity was when the disastrous Ise Bay typhoon struck, leaving devastation in its wake. During the devastation, forward-thinking individuals saw an opportunity to catalyze a comprehensive dialogue on the imperative construction of a large-scale timber port. This natural disaster, despite its tragic consequences, served as a catalyst for discussions on the vulnerability of waterfront spaces and led to the recognition of the urgent need to strengthen timber infrastructure to mitigate the effects of future disasters and to meet the timber demand of the growing industry in Nagoya.

As a result of the discussions, the industry agreed that Nagoya needed a large timber port, then the Port of Nagoya Management Group swiftly embarked on a strategic planning process. In October of the pivotal year 1959, the Management Group took decisive action by formulating a comprehensive blueprint for the establishment of a western lumber port. This ambitious programme is seen as key not only to meeting the

growing demand for timber storage in Nagoya, but also to resisting the vulnerability of Nagoya's waterfront spaces.

In December of the same year, the Port of Nagoya Management Group issued an announcement outlining its views on the current state and prospects for the Port of Nagoya and the wider timber industry, thus further reinforcing expectations for a strong timber port. This announcement signalled that the objectives of the timber industry were already very much aligned towards a strategic plan for a timber port.

In October 1960, a comprehensive blueprint called "Western Timber Port Construction Plan" was launched. This plan of great significance sought not only to remedy existing deficiencies in timber-related facilities, but also to actively reduce the vulnerability of waterfront space to natural disasters.

Following these key developments, Nagoya has seen a major shift in the relationship between timber and the waterfront, with implications at both its industrial and spatial levels.

The effects of this transformation were not limited to the economic realm, but naturally extended to the spatial realm, leading to profound changes in the configuration and use of waterfront space.

1.1.4 Identification of the research object

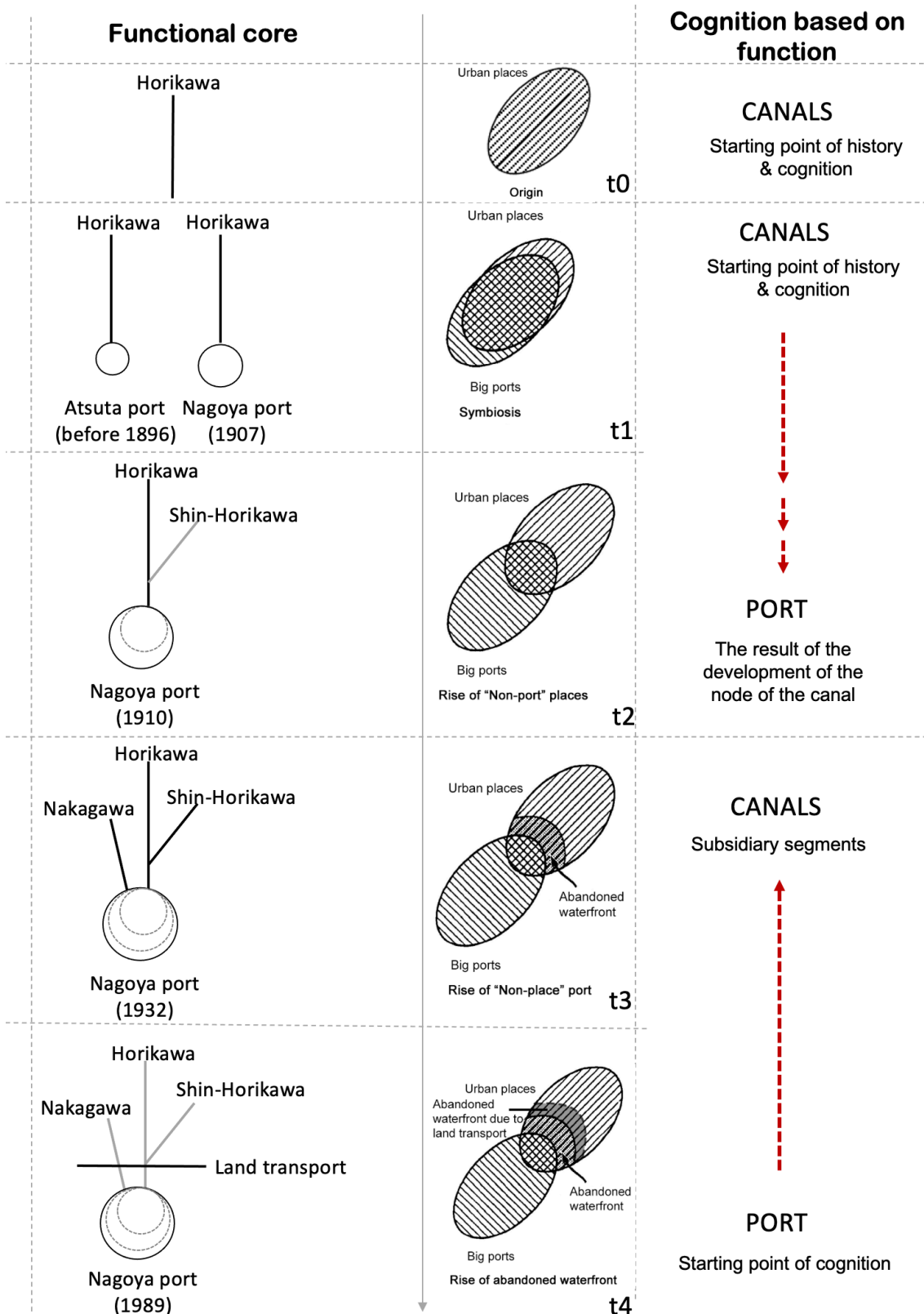


Fig. 1-18 Cognitive comparison based on function (by author)

In contemporary discourse, the term "waterfront" frequently conjures images of modern ports, as waterfront has always appeared alongside the post-industrial era. Waterfronts are often cited as an unusual outcome of post-industrial cities, and many waterfronts are, or were, port districts, with distinctive features still visible (Bruttomesso, 2004)⁵⁴. Such a definition applies to most port cities that have undergone post-industrial processes and is in line with cognitions based on the vast majority of modern ports. Correspondingly, in Japanese nowadays, "Waterfront" often refers to the space around a "kouwan(港湾)" or "minato(港)", such as the Port of Tokyo(東京港) and the Port of Osaka(大阪港). However, this nomenclature represents a relatively recent concept and tends to overlook the inner-city rivers that have lost their primary transportation function over time. The evolution of these waterfront spaces in Japan, including the various stages that preceded the establishment of modern ports, reveals an array of terms used to describe them. These names have included "semba" (船場), "minato" (湊), "hatoba" (波止場), "hama" (浜), "kashi" (河岸), and so on.(Fig. 1-19)

These diverse names all point to a common type of space: the area at the water's edge. However, the changing terminology over different historical periods signifies shifts in the groups of people who use these spaces or alterations in how these spaces are perceived by the same groups. The various evaluations people have made of space (e.g. the nomenclature changes described above) have individually and collectively shaped human behaviour in space, the environments people have built, the changes people have made to the earth's surface and the responses people have made to the landscape (Geographic

⁵⁴ Bruttomesso, Rinio. "Complexity on the urban waterfront." *Waterfronts in post-industrial cities*. Taylor & Francis, 2004. 47-58.

effects of spatial concepts). (Sack, 1980)⁵⁵ The above discussion demonstrates that the specific designation of waterfront changes over time.

On the other hand, the term "waterfront" often serves as a representative label rather than a descriptive one, used for the convenience of reference and brevity. So for specific waterfront spaces in different cities, there may be different situations.

If the specific differences of time and place are ignored in discussing the waterfront, the waterfront is, by definition, the land adjacent to a body of water, or the marina area of a town or city. However, the waterfront should not be seen simply as a line but should be more correctly conceived as a network of places, functions, additions and hubs, between the coast and the city, between the port and urban activities. It is not a closed and protected area, but a permeable interface with a permeable perimeter. The waterfront is therefore a complex system that has evolved over time from historical waterways and related spaces (**Fig. 1-19**).

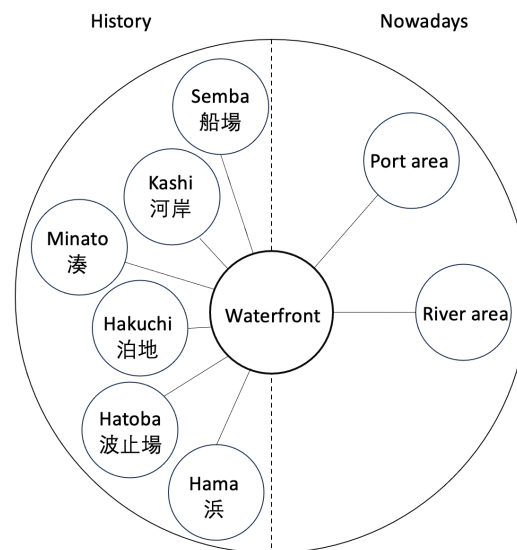


Fig. 1-19 Spaces referred to by waterfront (by author)

⁵⁵ SACK, Robert David. The societal conception of space. *Conceptions of Space in Social Thought: A Geographic Perspective*, 1980, 167-193.

By tracing the historical role of urban waterfronts in the development of cities, waterfronts change in response to demands for new uses (Wrenn, 1983)⁵⁶. In other words, the cognition transformation of the waterfront in different periods is primarily rooted in the fulfillment of functional needs. Taking this perspective into account and aligning it with other researchers' delineation of stages in waterfront modernization (Norcliffe et al., 1996)⁵⁷ (t1~t3), it's possible to broadly categorize the functional transformation of Nagoya's waterfront into five stages (**Fig. 1-18**).

It is clear that in contemporary times the port of Nagoya plays a crucial role as a symbol not only of Nagoya's extensive waterfront, but also of the city itself. Within this modern framework, the function of the associated canals seems to be subordinated to the prominence of the port.

Nonetheless, delving into Nagoya's history, it becomes evident that the Horikawa Canal was the primary lifeline that facilitated Nagoya's initial growth. The development of the port area followed later. The differing perspectives both have their merits and reflect distinct views of waterfront spaces.

However, what cannot be disputed is that Nagoya's waterfront encompasses the historic Horikawa Canal, along with the later expansion of Nakagawa Canal and Shinhorikawa Canal, and their surrounding spaces. Additionally, it includes the Nagoya Port space. These two spaces are of equal significance in the composition of Nagoya's waterfront spaces, as they represent indispensable aspects of Nagoya's history and modernity as important parts of the city. The symbiotic relationship between the

⁵⁶ Wrenn, Douglas M. "Urban waterfront development." . *Mary's LJ* 15 (1983): 555.

⁵⁷ Norcliffe, Glen, Keith Bassett, and Tony Hoare. "The emergence of postmodernism on the urban waterfront: geographical perspectives on changing relationships." *Journal of Transport Geography* 4.2 (1996): 123-134.

Horikawa Canal system ensemble and the Nagoya Port is pivotal in encapsulating the essence of Nagoya's urban waterfront character.

1.2 Literature Review

1.2.1 Concept of “cognitive construction” and related research

Cognitive (re)construction, as mentioned in the title, was originally a term of art in psychology and philosophy. The concept was introduced by Mark Baldwin in the last century (Cahan, 1984)⁵⁸ and later expanded by Jean Piaget to become constructivism (Piaget, 2013)⁵⁹ and became widely known. The map (**Fig. 1-20**) below illustrates the evolution of constructivism and its connection to student learning. It also outlines some best practices for individuals seeking to implement constructivism in education. Within these practices, the constructivist instructional model, as well as scaffolding for others, serves as the guiding framework for this study and forms the foundational position of this study within this map.

Constructivists claim that people construct their understanding and knowledge of the world through their experiences and reflection on those experiences. Learning is seen as a process of conceptual change whereby individuals construct new understandings of reality (Maltby and Whittle, 2000)⁶⁰. Knowledge is not passively received from the

⁵⁸ Cahan, E. D. (1984). The genetic psychologies of James Mark Baldwin and Jean Piaget. *Developmental Psychology*, 20(1), 128.

⁵⁹ Piaget, J. (2013). *The construction of reality in the child* (Vol. 82). Routledge.

⁶⁰ Maltby, J. R., & Whittle, J. (2000). Learning programming online: Student perceptions and performance. In *Proceedings of the ASCILITE 2000 Conference*.

Ramsden (1992) defines it as "... a qualitative change in a person's view of reality ..." and maintains that "... vital competencies in academic disciplines consist in understanding."

environment (i.e., the teacher), but is actively constructed by the learner. It is "...the result of an individual subject's constructive activity, not a commodity that somehow resides outside the knower and can be conveyed or instilled by diligent perception or linguistic communication" (Von Glaserfeld, 1990)⁶¹.

While the concept of cognitive construction originally found its roots in explaining children's cognitive development and learning behavior, its application in understanding the construction of a commonplace waterfront space in everyday life presents a more limited process. Most people experience a cognitive burden when dealing with a completely unstructured domain, as there is typically no specialist teacher or systematic knowledge readily available. Consequently, the quality of cognitive construction may not necessarily correlate with the age or status of the person constructing it.

⁶¹ Von Glaserfeld, E. (1990). Environment and communication' in Steffe, L. and Wood, T.(eds) Transforming Children's Mathematics Education: International Perspectives. Hillsdale, NJ: Laurence Erlbaum.

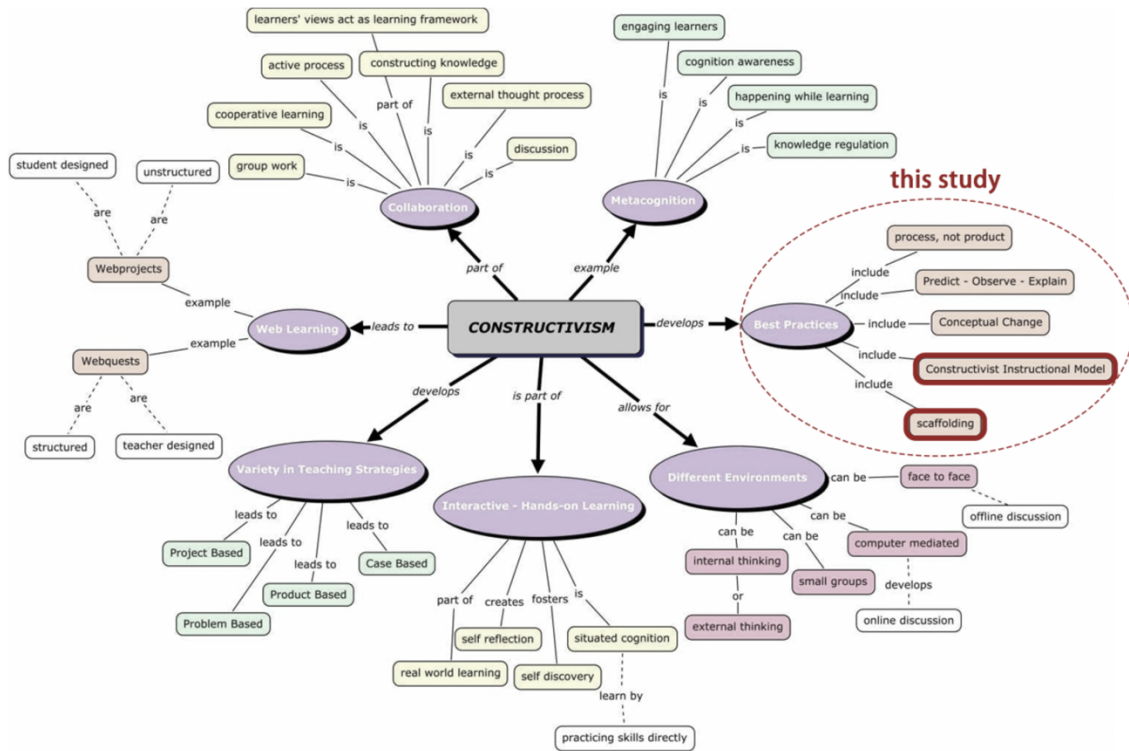


Fig. 1-20 Constructivism concept map and the position of this study on the map (original map edited by Michel Lacoursiere)

(source: <http://constructivism512.pbworks.com/Constructivism-Concept-Map>)

The concept of waterfront space, which plays a significant role in daily life, is initially constructed by both local residents and tourists through their daily experiences. However, as mentioned earlier, without the guidance of professional educators or systematic knowledge, developing a comprehensive cognition can be challenging. Therefore, the aim of this study is to assist individuals in re-constructing their cognition of waterfront spaces by introducing cognitive models.

In fact, there are precedents of previous studies that have attempted to cognitively construct waterfront spaces through the model of cognitive mapping, and these cognitive maps are often constructed in relation to environmental evaluation or satisfaction. Japanese researchers are more representative in this aspect. For example, the waterfront

space evaluation model from Kuroyanagi Akiko and others (畔柳昭雄 et al., 1993)⁶². Their series studies initially investigated people's evaluations of waterfront spaces by surveying water-friendly activities of residents in Tokyo and their related satisfaction levels. They identified a structure comprising 11 relevant individual factors that influence people's evaluation of waterfront spaces (畔柳昭雄 et al., 1993, 畔柳昭雄 and 渡辺秀俊, 1994)⁶³. Fig. 1-21 shows the cognitive map proposed by the researchers during the above mentioned study.

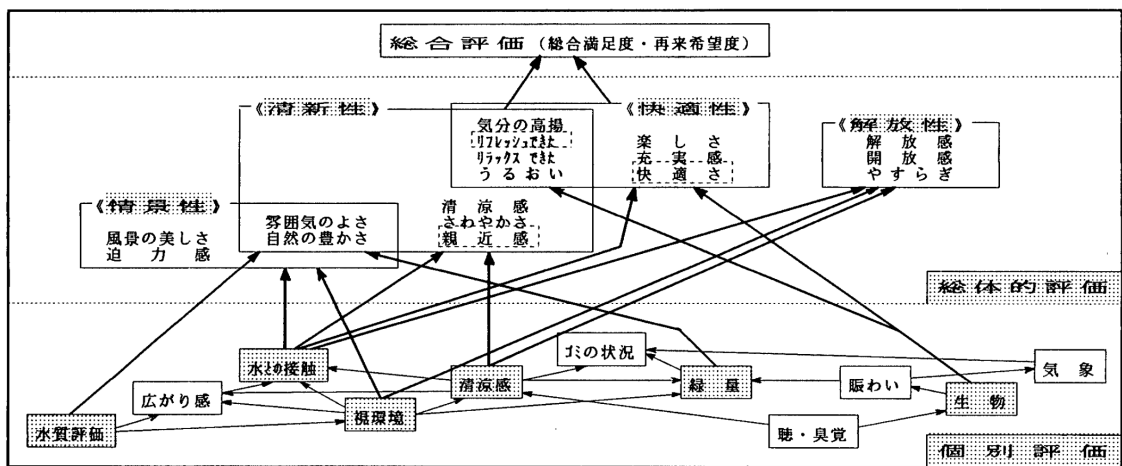


図-8 水辺環境評価構造の総括図

Fig. 1-21 Maps of waterfront environmental evaluation constructions (source: Note¹⁸)

Their studies also explored neighborhood open spaces closely linked to the waterfront, providing a more comprehensive perspective on waterfront research. (渡辺秀

⁶² 畔柳昭雄; 渡辺秀俊; 長久保貴志. 都市臨海部の水辺空間における利用者の水辺環境評価に関する研究: 都市住民の親水行動特性に関する研究 その2. 日本建築学会計画系論文報告集, 1993, 454: 197-205.

⁶³ 畔柳昭雄; 渡辺秀俊. 都市臨海部の水辺空間における利用者の親水活動特性に関する研究: 都市住民の親水行動特性に関する研究 その3. 日本建築学会計画系論文報告集, 1994, 59.459: 195-203.

俊 and 畔柳昭雄, 1995, 渡辺秀俊 et al., 1995)⁶⁴ A research after the above ones also emphasized that activities at the waterfront play a vital role in shaping people's evaluations (佐々田道雄 et al., 2003)⁶⁵. Fig. 1-22 shows a cognitive map based on waterfront activities.

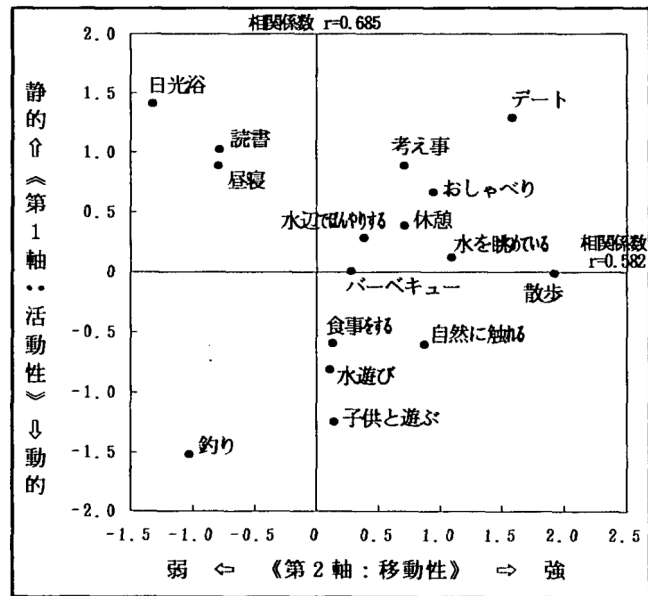


図-3 数量化Ⅲ類による親水活動の布置図

Fig. 1-22 Waterfront activities cognitive map using a coordinate system (source: Note²¹)

⁶⁴ 渡辺秀俊; 畔柳昭雄. 都市住民のオープンスペース利用行動に見られる水辺空間の選好性に関する研究: 居住環境における水辺空間価値に関する研究 その3. 日本建築学会計画系論文集, 1995, 60.471: 203-212.

渡辺秀俊; 畔柳昭雄; 長久保貴志. 都市内の水辺空間と居住環境評価の関連性に関する研究: 居住環境における水辺空間価値に関する研究 その2. 日本建築学会計画系論文集, 1995, 60.468: 199-206.

⁶⁵ 佐々田道雄; 畔柳昭雄; 渡辺秀俊. 都市臨海部における利用者の親水結動特性に関する研究: 都市住民の親水行動特性の変容に関する研究 その2. 日本建築学会計画系論文集, 2003, 68.568: 185-192.

Nagai, Kodama et al. conducted a survey of exemplary river managers and local self-governance organizations to clearly identify success factors in using rivers to enhance towns and cities. (永井儀男 et al., 2008)⁶⁶

Ito, Harano et al. conducted factor and correlation analyses using a questionnaire survey of residents in Mishima City, Shizuoka Prefecture, to clarify the reasons behind the continuation of regional activities, including waterfront-related activities. (伊藤嘉奈子 et al., 2009)⁶⁷ Nakashima, Tanaka et al. examined the main reasons for the continuity of local communities by conducting interviews, literature surveys, and fieldwork related to the use of waterfronts by local residents and the actual situation of local rules in Gujo Hachiman area of Gifu Prefecture in Japan. (中嶋伸恵 et al., 2008)⁶⁸

Aspects about residents' sense are mentioned in these studies, as well as the intricate possibilities of residents' sense. Some studies employ covariance structure analyses to quantitatively explore the relationship between people's willingness to engage in these spaces and their activities or their sense of the area, often based on a large sample size (服部純司, 2022)⁶⁹.

⁶⁶ 永井儀男; 児玉好史; 井上英彦. 河川を活かしたまちづくりの成功要因について. リバーフロント研究所報告, 2008, 19: 135-143.

⁶⁷ 伊藤嘉奈子, et al. 水辺などにおける地域活動と地域住民の持つ特性との関係に関する研究. In: 環境システム研究論文発表会講演集= Proceedings of Annual Meeting of Environmental Systems Research. 土木学会, 2009. p. 343-350.

⁶⁸ 中嶋伸恵; 田中尚人; 秋山孝正. 水辺空間を基盤とした地域コミュニティの形成に関する研究. 土木学会論文集 D, 2008, 64.2: 168-178.

⁶⁹ 服部純司 (2022). 名古屋市内の水辺に対する市民の意識とこれからの活用. 令和4年度の調査・研究成果, 名古屋都市センター.

Furthermore, there are studies that have surveyed buildings in and around Dotonbori River in Osaka, to identify various factors related to waterfront spaces and consciousness, including “water-considered buildings” (田島洋輔 and 岡田智秀, 2019)⁷⁰.

While these studies provide a wealth of credible data and some insights into human cognition, they often present results based on available data and lack an abstract methodology to aid residents in reconstructing their cognition.

1.2.2 Waterfront regeneration

The modern industrial economy drove urbanisation in the late 19th and early 20th centuries, often along urban waterways (Hein, 2011, Hoyle, 1997)⁷¹. Indeed, the collision of the two did not occur by chance, as the dynamics of industrialised economic development could not be separated from the geographical advantages provided by waterways.

During this critical period of urban change, industrialisation greatly contributed to the prosperity and advancement of manufacturing. As a result, the necessity for factories and warehouses made it important for cities to expand at the pace of industrial development, ensuring that processing and storage needs could be accommodated in a relatively centralised space. Whether it was the macro-space of the city or the micro-space

⁷⁰ 田島洋輔; 岡田智秀. 水辺環境を活かした河川空間の魅力形成に関する研究-水都大阪・水の回廊エリアにおける船着場と遊歩道と水辺を意識した建物の空間的波及と管理運営者の戦略プロセス. 日本建築学会計画系論文集, 2019, 84.762: 1769-1778.

⁷¹ Hoyle, B. (1997). "The New Waterfront: A Worldwide Urban Success Story." *Journal of Transport Geography* 4(5): 304-306.

Hein, C. (2011). "Port Cityscapes: A networked analysis of the built environment." *Port cities: Dynamic landscapes and global networks*: 1-23.

of factories and other additions, necessary resources such as water, energy and transport were essential, and urban waterways provided a near-perfect solution.

Thus, the early advantages of waterways in cities are mainly in two areas.

The first is the significant contribution of waterways to the reduction of production costs. On the one hand urban waterways provide most of the raw materials for industrial production or support machines for industrial production, and the proximity of factories to water sources significantly reduces production costs, and on the other hand, the lower cost of transport by waterways compared to land transport allows the market to expand appropriately in order to create greater economic value. Helping to reduce costs is one of the fundamental drivers of rapid industrial development.

Secondly, the reliance of factories on water sources promoted compact urban spatial layouts.

Factories and industrial areas clustered along these waterways, creating certain axes or special structures in the city. As the riverbanks became industrial corridors, warehouses and processing plants, etc., increased in number, creating distinctive industrial districts in the city, such as Nagoya's timber production and processing districts lined up along the canals. The concentration of industry has had a knock-on effect on neighboring communities, affecting the development of infrastructure, housing and related businesses.

However, as water transport and waterfront spaces continue to develop, negative consequences are becoming apparent. For example, the pollution caused by the discharge of industrial wastewater into these waterways has become an environmental problem that cannot be ignored; and the difficulty of expanding capacity has forced people to turn to land transport. Therefore, the development of waterfront spaces in cities has been adjusted in order to reduce pollution and adapt to greater transport needs.

This adjustment can be attributed to several key factors, including shifts in industrial production, changes in global trade dynamics, and the evolution of urban planning and development strategies (Hall, 2009)⁷². As a result, significant changes have occurred in the allocation of land, commercial activities and spatial design of urban waterfronts.

1) **Globalization and Trade Diversion:** One of the main drivers behind these changes is the globalization of trade. Changes in global trade patterns and logistics have also played a role in reshaping urban waterfronts. As trade routes and ports have evolved, some waterfronts have experienced a decline in maritime trade activity. These changes have often resulted in a redistribution of maritime trade activity, with some ports losing their prominence. Simultaneously, new developments in containerization and transportation technologies have led to the expansion of container terminals in other locations, often away from city centers (McCain, 2015)⁷³. This shift has influenced the types of economic activities and businesses that now populate urban waterfronts, with a greater emphasis on leisure, tourism, and services (Evans et al., 2022)⁷⁴.

2) **Deindustrialization and Redevelopment:** One of the primary drivers of change in urban waterfronts has been the deindustrialization of inner-city areas (Norcliffe, 1996)⁷⁵. As heavy manufacturing and industrial activities have moved to more peripheral

⁷² Hall, P. (2009). "Looking backward, looking forward: the city region of the mid-21st century." *Regional Studies* 43(6): 803-817.

⁷³ McCain, K. G. (2015). *The Fluid City| The Integration of Architecture and Urban Design to Reconnect the City of Erie to its Post-Industrial Waterfront and the Temporal Environment Beyond*.

⁷⁴ Evans, C., M. S. Harris, A. Taufen, S. J. Livesley and L. Crommelin (2022). "What does it mean for a transitioning urban waterfront to "work" from a sustainability perspective?" *Journal of Urbanism: International Research on Placemaking and Urban Sustainability*: 1-24.

⁷⁵ Norcliffe, G. (1996). "Canadian urban landscape examples--16: Mapping deindustrialization: Brian Kipping's landscapes of Toronto." *Canadian Geographer* 40(3): 266.

locations due to factors like the availability of larger spaces and reduced land costs, urban waterfronts have gradually shifted away from being hubs of heavy industry (Roberts, 2010)⁷⁶. This transformation has opened up the possibility of repositioning former industrial sites into more multifunctional functional developments such as commercial or residential spaces. Abandoned factories and warehouses can be refashioned into museums or galleries with similar spatial needs, while vacant lots after the demolition of original buildings have more means of development, and these modern developments can contribute to the revitalization of the area.

3) Urban Planning and Waterfront Redevelopment: Many cities have recognized the potential of their waterfront areas as valuable assets for urban renewal and economic development. Urban planning initiatives have focused on transforming these spaces into attractive destinations for residents and visitors alike (Ameel, 2020)⁷⁷. This can facilitate the creation of waterfront promenades, parks, arts and recreational facilities. Waterfronts are increasingly recognized as public spaces that contribute to the quality of daily life and provide opportunities for recreation.

4) Environmental Considerations: Environmental concerns have become increasingly important in waterfront redevelopment efforts (Wakefield, 2007, Vollmer, 2009)⁷⁸. Cities have sought to improve water quality, restore natural habitats, and mitigate

⁷⁶ Roberts, L. (2010). "Dis/embedded geographies of film: Virtual panoramas and the touristic consumption of Liverpool waterfront." *Space and Culture* 13(1): 54-74.

⁷⁷ Ameel, L. (2020). *The narrative turn in urban planning: Plotting the Helsinki waterfront*, Routledge.

⁷⁸ Wakefield, S. (2007). "Great expectations: waterfront redevelopment and the Hamilton Port Waterfront Trail." *Cities* 24(4): 298-310.

Vollmer, D. (2009). "Urban waterfront rehabilitation: can it contribute to environmental improvements in the developing world?" *Environmental Research Letters* 4(2): 024003.

the impact of climate change in waterfront areas. Sustainable design practices, such as green infrastructure and eco-friendly architecture, are often incorporated into redevelopment projects to create resilient and environmentally conscious waterfronts.

5) Mixed-Use Development: A prevalent trend in waterfront redevelopment is the promotion of mixed-use development. This approach combines residential, commercial, cultural, and recreational components within the same area, fostering a vibrant and diverse urban environment (Wrenn, 1983)⁷⁹. Mixed-use developments encourage round-the-clock activity and contribute to the economic viability of waterfront spaces (Samant and Brears, 2017)⁸⁰.

The transformation of the city's waterfront symbolises a critical moment in the city's development, provoking reflection and retrospection from different stakeholders. Within this dynamic landscape, urban designers, landscape architects, city planners, developers, and investors have discovered an alluring and multifaceted terrain that beckons them to recalibrate the historical imbalances they perceive as inheritances from the industrial age (Breen and Rigby, 1996, Gastil, 2002)⁸¹.

1) For urban designers and landscape architects: The waterfront's transformative potential lies in their ability to reshape and reinterpret the very essence of urban spaces. With their keen understanding of aesthetics, human interaction, and spatial dynamics, they have harnessed the waterfront's latent charms to craft spaces that evoke a sense of wonder, beckoning communities to reconnect with their natural surroundings (Timur,

⁷⁹ Wrenn, D. M. (1983). "Urban waterfront development." *Mary's LJ* 15: 555.

⁸⁰ Samant, S. and R. Brears (2017). *Urban waterfront revivals of the future. Greening cities: forms and functions*, Springer: 331-356.

⁸¹ Breen, A. and D. Rigby (1996). "The new waterfront: A worldwide urban success story."

Gastil, R. (2002). *Beyond the edge: New York's new waterfront*, Princeton Architectural Press.

2013)⁸². Through artful manipulation of the built environment, they have bridged the divide between industry and nature, transforming previously neglected zones into vibrant, green oases that resonate with contemporary sensibilities(Hou, 2009)⁸³.

2) For City planners: They have seized upon waterfronts as a stage for orchestrating urban symphonies of unparalleled complexity. In these areas, they've wielded their expertise to harmonize a diverse ensemble of land uses, transportation networks, and public amenities. The result is often a choreographed ballet of mixed-use developments that balance the demands of commerce, residential living, and recreation (Galland and Hansen, 2012)⁸⁴. By drawing inspiration from historical precedents while embracing innovative solutions, city planners have endeavored to create environments where the confluence of work and leisure fosters a vibrant and inclusive urban tapestry.

3) For developers and investors: Waterfronts represent both a site of potential profit and a canvas for architectural ingenuity. These entrepreneurs are driven by the allure of waterfront real estate, recognizing the intrinsic value of these locations in the contemporary urban milieu. By infusing these spaces with new developments, they not only aim to reap financial rewards but also to serve as agents of change, reshaping the urban fabric and contributing to the economic vitality of the region(A. Gordon, 1997)⁸⁵. In doing so, they navigate the delicate balance between profitability and social

⁸² Timur, U. P. (2013). Urban waterfront regenerations. *Advances in landscape architecture*, IntechOpen.

⁸³ Hou, D. (2009). *Urban waterfront landscape planning*.

⁸⁴ Galland, D. and C. J. Hansen (2012). "The roles of planning in waterfront redevelopment: From plan-led and market-driven styles to hybrid planning?" *Planning Practice and Research* 27(2): 203-225.

⁸⁵ A. Gordon, D. L. (1997). "Financing urban waterfront redevelopment." *Journal of the American Planning Association* 63(2): 244-265.

responsibility, seeking to align their ventures with the broader goals of community betterment and sustainable urbanization(Desfor and Laidley, 2011)⁸⁶.

In addition to the above factors common to the waterfront redevelopment process, the patterns of waterfront regeneration can be broadly categorised as follows.

a. New Urban Expansion

Waterfront regeneration often represents a form of "New Urban Expansion," which entails the revitalization and redevelopment of previously underutilized or postindustrial waterfront areas to accommodate urban growth and create new urban spaces. This approach reflects changing patterns of urbanization, with cities increasingly turning their attention to underutilized waterfronts as valuable assets for expansion and economic development. An example is the redevelopment of underutilised land. Waterfront regeneration typically involves the reuse of land that was previously industrial or of limited use. By transforming these areas into mixed-use developments, cities can make more efficient use of valuable urban real estate. Or even extend the boundaries of the urban core. In many cases, such expansion allows cities to accommodate population growth and address housing shortages while avoiding overextension into remote areas.

b. Waterfront regeneration and great events

Waterfront regeneration and great events often intersect in urban planning and development, creating opportunities for cities to leverage major events as catalysts for the revitalization of waterfront areas. Examples include event-orientated regeneration, where cities hosting major events such as international sporting

⁸⁶ Desfor, G. and J. Laidley (2011). Reshaping Toronto's waterfront, University of Toronto Press.

competitions (e.g. the Olympics or World Cup), world expositions or major cultural festivals often use these occasions as catalysts for waterfront regeneration. The infrastructure and facilities required for such events can catalyse investment in the waterfront area and thus its regeneration. In general, major events require significant infrastructure development, including transport, venues, accommodation and public space. Waterfront areas may therefore benefit from new or upgraded infrastructure such as improved public transport, roads, bridges and promenades to accommodate event-related activities and visitors.

c. New Urban Waterfront Route

Waterfront regeneration and the creation of new urban waterfront itineraries are closely related concepts in urban planning and development. They involve the revitalization and reimagining of waterfront areas to make them more accessible, attractive, and functional for both residents and visitors (Davidson, 2009)⁸⁷. For example, to improve public access, waterfront redevelopment projects often prioritize increasing public access to the waterfront. This may involve the creation of new urban waterfront routes such as walkways, bikeways, and scenic trails. These itineraries allow people to explore and enjoy the waterfront and promote physical activity and recreation. They may also include parks, green spaces, playgrounds and seating areas (Martí et al., 2018)⁸⁸. As part of waterfront regeneration, these facilities are often improved or added to make the waterfront a more enjoyable destination for residents and visitors.

⁸⁷ Davidson, M. (2009). *London's Blue Ribbon Network: riverside renaissance along the Thames*, Routledge: London.

⁸⁸ Martí, P., C. G. Mayor and A. Melgarejo (2018). "Waterfront landscapes in Spanish cities: Regeneration and urban transformations." *WIT Trans. Built Environ* 179: 45-56.

d. Bringing the core of cities back to the water

In essence, "waterfront regeneration" is the practical and tangible process of physically transforming waterfront areas to make them more attractive and functional, while "bringing the core of cities back to the water" is a visionary and psychological shift that seeks to rekindle the historical and cultural importance of waterfronts within the urban context.

1.2.3 Incorporating urban design theory into waterfront

The study of waterfront spaces and their perception constitutes a unique spatial typology within the broader urban scale. Although it may not entirely align with traditional urban design theory, the screening and translation of urban design theories remain essential in comprehending the intricacies of waterfront spaces. As this study revolves around human perception of space, it is crucial to draw upon the wealth of knowledge and insights derived from theories centered on the sense of space in urban design. Urban design theory offers valuable lessons and concepts that can be applied to the investigation of waterfront spaces. Exploring how individuals perceive and interact with their urban environment has been a fundamental aspect of urban design research. Insights from urban design theory can illuminate how people experience and navigate waterfront spaces, considering aspects such as accessibility, safety, and comfort. Furthermore, theories related to placemaking, environmental psychology, and sensory experience can enhance our understanding of how waterfront spaces evoke emotions and shape human behavior.

Incorporating principles of urban design theory into the study of waterfront spaces allows for a more comprehensive analysis of the multifaceted factors influencing human experiences and interactions with these unique environments. As waterfront spaces play

a significant role in urban life, understanding their perception can inform effective design strategies and policies to create more vibrant, inclusive, and sustainable waterfront areas that cater to the needs and desires of residents and visitors alike. By bridging the gap between waterfront spaces and urban design theory, this study seeks to contribute to a deeper appreciation of the intricate relationship between humans and their built environments and facilitate the creation of more harmonious and engaging waterfront spaces within urban contexts.

Over the years, extensive research on waterfront spaces with the port at their core has unfolded, encompassing multifaceted dimensions that shed light on various aspects of port dynamics and evolution, each contributing to a deeper comprehension of their significance within the global trade landscape.

One pivotal area of exploration delves into the logistics function of ports, revealing how logistics integration and network orientation within the port and maritime industry have redefined the functional role of ports in value chains. This transformation has engendered novel patterns of freight distribution and innovative approaches to port hierarchy (Notteboom* and Rodrigue, 2005)⁸⁹. Additionally, efforts to enhance marine transport efficiency through optimal loading and unloading layouts have become imperative, recognizing modern maritime ports as essential nodal components within freight transport networks (Stopka and Kampf, 2018)⁹⁰. Conventional port layout planning, known for its space underutilization and limitations on logistics speed and economic growth, has prompted researchers to explore more efficient arrangements

⁸⁹ Notteboom*, T. E. and J.-P. Rodrigue (2005). "Port regionalization: towards a new phase in port development." *Maritime Policy & Management* 32(3): 297-313.

⁹⁰ Stopka, O. and R. Kampf (2018). "Determining the most suitable layout of space for the loading units' handling in the maritime port." *Transport* 33(1): 280-290.

through the calculation of the port economy (Zeng and Wan, 2018)⁹¹. Innovative concepts such as short-term space allocation have been proposed to further optimize port operations (Jiang et al., 2014)⁹².

Another vital line of inquiry revolves around the port geography and its intricate connections to the local setting and regional hinterland (Wilmsmeier and Monios, 2015)⁹³. Understanding a port's embeddedness within its broader socio-economic context provides invaluable insights into its regional impact and interdependencies with the surrounding areas.

The redevelopment stage of ports constitutes yet another compelling area of research. As the global landscape evolves, the emergence of port-operating Transnational Corporations (TNCs) calls for a fundamental shift in conceiving ports, reconceptualizing them as networks of terminals operating under corporate logics rather than single, fixed spatial entities (Olivier and Slack, 2006)⁹⁴. Pioneering European port studies have proposed a new phase in modern port development, encapsulated in the Any Port-model (Wiegmans and Louw, 2011)⁹⁵. This model illustrates the evolving nature of port infrastructure over time and space. In this model, each phase of a port features unique infrastructure and functional layouts (**Fig. 1-23**). These phases are typically triggered by

⁹¹ Zeng, J. and R. Wan (2018). "Multilevel Layout Planning of Port Space Designs in Marine Transportation Systems." *Journal of Coastal Research*(82): 163-167.

⁹² Jiang, X., E. P. Chew, L. H. Lee and K. C. Tan (2014). "Short-term space allocation for storage yard management in a transshipment hub port." *OR spectrum* 36: 879-901.

⁹³ Wilmsmeier, G. and J. Monios (2015). "The production of capitalist "smooth" space in global port operations." *Journal of Transport Geography* 47: 59-69.

⁹⁴ Olivier, D. and B. Slack (2006). "Rethinking the port." *Environment and Planning A* 38(8): 1409-1427.

⁹⁵ Wiegmans, B. W. and E. Louw (2011). "Changing port-city relations at Amsterdam: A new phase at the interface?" *Journal of Transport Geography* 19(4): 575-583.

technological advancements in water transport and cargo handling. For example, significant technological leaps in containerized freight transport lead to substantial changes in the distribution of warehouses and loading/unloading facilities, subsequently affecting the layout of port lands. A notable example is the construction of finger piers, which had a profound impact on the city's port. Activities that couldn't be accommodated within the old city were shifted to these new piers, completely transforming the function and layout of the space, marking the commencement of a new phase (Gilliland, 2004)⁴⁷. This phase transition is reflected not only in the form and distribution of space but also gradually changes people's basis of cognition as it disconnects their lives from water transport, which is a part of Any Port-model that has not yet been paid attention to.

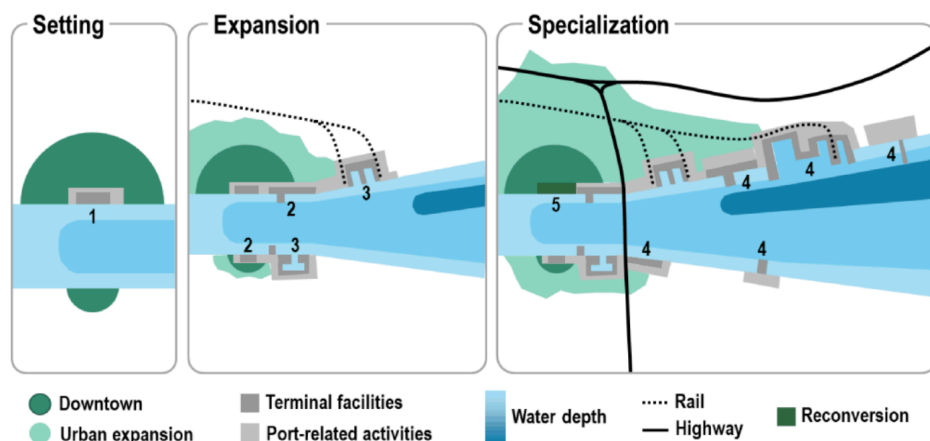


Fig. 1-23 Any Port model (adapted by (Rodrigue, Comtois & Slack, 2006)⁹⁶)

Further, deeper analyses have introduced new geopolitics that transcend physical geography to explain shifts in the distribution of warehouse clusters, which highlight how clusters of warehouses, including containers, are dispersed across the oceans on a global information map (渡邊大志, 2017)⁹⁷.

⁹⁶ Rodrigue, J.-P., Comtois, C., & Slack, B. (2006). *The Geography of Transport Systems*: Routledge.

⁹⁷ 渡邊大志. 東京臨海論：港からみた都市構造史. 東京大学出版会, 2017, 2.

Simultaneously, there is a body of research emphasizing the redevelopment of port spaces into residential areas, urban hubs, and tourist attractions (Kato, 2014)⁹⁸ to reshape the waterfront's image, enhance accessibility, and manage the quality of the physical environment (Gordon, 1996)⁹⁹. Studies on such development cases can be found across Europe and Asia. These perspectives open up an entirely new dimension in understanding the relationship between ports and cities within the context of port modernization.

Other recent studies have stimulated interest in examining port spaces as key sites of memory for those who once lived and worked in the area (Balderstone et al., 2014)¹⁰⁰. Port space's profound linkage to the history of port cities is evident in studies of migration and labor, revealing a deep-rooted connection between people and their port cities (Lee, 2005)¹⁰¹. However, while official and elite perspectives dominate the literature, studies from the standpoint of civilians or vulnerable groups remain relatively scarce. And recent research on waterfront regeneration has shown the importance of historical studies of port culture in addressing planning issues, as many potential urban planning decisions are consciously or unconsciously related to these past images and experiences (Hein, 2016)¹⁰².

Overall, this diverse array of research endeavors offers a comprehensive view of the intricate interplay between port functionality, spatial dynamics, historical transformation,

⁹⁸ Kato, H. (2014). "Portscape tourism in Japan: diversified and sustainable port space function." *Sustainable Tourism* VI 187: 105.

⁹⁹ Gordon, D. L. (1996). Planning, design and managing change in urban waterfront redevelopment. *The Town Planning Review*, 261-290.

¹⁰⁰ Balderstone, L., G. J. Milne and R. Mulhearn (2014). "Memory and place on the Liverpool waterfront in the mid-twentieth century." *Urban History* 41(3): 478-496.

¹⁰¹ Lee, R. (2005). "Configuring the city: In-migration, labour supply and port development in nineteenth-century Europe." *International Journal of Maritime History* 17(1): 91-122.

¹⁰² Hein, C. (2011). "Port Cityscapes: A networked analysis of the built environment." *Port cities: Dynamic landscapes and global networks*: 1-23.

and societal implications. By examining the multifaceted dimensions of ports, researchers continue to enrich our understanding of their past, present, and future roles in shaping global trade and urban development, providing essential insights to optimize their efficiency, sustainability, and inclusive development for all stakeholders involved.

In the realm of urban planning and design, the urban renewal activities in Paris during the mid-19th century marked the beginning of modern urban design. This transformation occurred under the leadership of Napoleon III and the guidance of Georges-Eugene Haussmann's Paris Alteration Program (Kirkland, 2013)¹⁰³. At the practical level, this urban renewal initiative is commonly referred to as the "City Beautiful Movement"(Peterson, 1976)¹⁰⁴.

Urban design, as a formal discipline, didn't emerge until the 1950s. It was during this period that research and exploration of urban design theory formally commenced. The initial foundations of urban design theory were rooted in the critique of Haussmann's renovation plan for Paris, with a focus on the aesthetics of urban space (Sitte, 1979)¹⁰⁵. This era witnessed significant developments in urban design theory.

One of the key figures during this period was Camillo Sitte, who, in his book "City Planning According to Artistic Principles", explicitly articulated the artistic principles of urban space design. He advocated for visually stimulating built environments, an enriched public realm, and the creation of a strong sense of place.(Sitte, 1965)¹⁰⁶

¹⁰³ Kirkland, S. (2013). Paris reborn: Napoléon III, Baron Haussmann, and the quest to build a modern city. St. Martin's Griffin.

¹⁰⁴ Peterson, J. A. (1976). The city beautiful movement: Forgotten origins and lost meanings. *Journal of Urban History*, 2(4), 415-434.

¹⁰⁵ Sitte, C. (1979). *The art of building cities: city building according to its artistic fundamentals*. Ravenio Books.

¹⁰⁶ Sitte, C. (1965). *City planning according to artistic principles*. Phaidon.

Another important concept from this era was the idea of "organic order" and "natural growth," proposed by Eliel Saarinen. This concept emphasized the importance of allowing cities to grow and evolve naturally over time, in contrast to rigid, top-down planning.(Saarinen, 1985)¹⁰⁷

Additionally, Thomas Gordon Cullen introduced the notion of the townscape as a continuous system of spatial awareness, rooted in human-scale design principles (Cullen, 2012)¹⁰⁸. These developments and ideas laid the groundwork for modern urban design as a field of study and practice.

Subsequently, in the 20th century, due to the urgency of solving the real problems is more prominent than the aesthetic design of urban space, urban design began to weaken aesthetic and artistic principles and underwent a major shift. This shift gave rise to functionalism, with Le Corbusier emerging as one of its most prominent representatives. Functionalism was a dominant idea in the early to mid-20th century and had a wide influence. It aimed to make urban environments more functional and responsive to the needs of social development. Functionalism primarily concerned itself with the material functions of urban space, and it, to a certain extent, moved away from the strict limitations of urban space forms.(Lang, 2007)¹⁰⁹

However, as the 20th century progressed, particularly in the middle and later years, with advancements in social and economic development and growing awareness of individual and social concerns, it became apparent that urban spaces designed solely

¹⁰⁷ Saarinen, E. (1985). *The search for form in art and architecture*. Dover Publications.

¹⁰⁸ Cullen, G. (2012). *Concise townscape*. Routledge.

¹⁰⁹ Lang, J. (2007). Functionalism. In *Urban design reader* (pp. 213-225). Routledge.

based on functionalist principles had limitations and challenges (Hseuh-Bruni, 2015)¹¹⁰. Urban design theory began to shift its focus from merely fulfilling the social needs of the urban environment to understanding the interaction between individuals and the urban environment, as well as the social interests closely tied to urban spaces. This shift led to a more holistic perspective on urban design, considering not only functionality but also social, psychological, and political aspects.

The critique of functionalism in urban design was mainly rooted in the fields of sociology, political science, and psychology. This critique aimed to address the shortcomings of functionalist approaches and promote a more comprehensive understanding of urban environments.

In the field of sociology, urban design theory delves into the complex relationship between individuals and social groups within urban environments, exploring the associated social issues and challenges that arise within these spaces. This sociological perspective emerged as a response to the functionalist approach in material space design, which was criticized for its lack of consideration regarding the equitable distribution of interests among different societal groups. This criticism highlighted that functionalism could lead to a series of social problems within urban areas.

Sociological urban design theory seeks to understand how social problems are related to the construction and organization of urban environments. Researchers in this field employ inductive summarization methods and adopt a problem-oriented way of thinking to address the social challenges faced by cities.

¹¹⁰ Hseuh-Bruni, Alessandro(2015). "Le Corbusier's Fatal Flaws – A Critique of Modernism". The First-Year Papers (2010 - present).

Notable researchers in this area of urban design theory include Jane Jacobs and Amos Rapoport, among others. They have made significant contributions to the understanding of the social dynamics and interactions within urban spaces and how these elements influence the quality of life for city dwellers.(Rapoport, 2016, Fuller and Moore, 2017)¹¹¹

In the realm of political science, the focus of urban design theory lies in the examination of the policy processes through which individuals and social groups conceive and execute urban environments. This field of study critically evaluates the allocation of urban resources, identifying issues related to conflicts, inconsistencies, and inefficiencies stemming from varying interests and the implementation procedures within urban construction and development.

The objective of political science in urban design is to enhance the efficiency and optimize the outcomes of urban planning and construction practices. This is achieved through a comprehensive understanding of the planning and design process that takes into account the complexities of policy-making, governance, and stakeholder involvement. Prominent figures in this field, such as Jonathan Barnett, have contributed significantly to advancing our understanding of urban planning and design processes within the context of political science(Barnett, 2018)¹¹². Their work aims to improve the governance and policy framework of urban development, ultimately leading to more effective and beneficial urban environments for communities.

¹¹¹ Rapoport, A. (2016). *Human aspects of urban form: towards a man—environment approach to urban form and design*. Elsevier.

Fuller, M., & Moore, R. (2017). *An Analysis of Jane Jacobs's The Death and Life of Great American Cities*. Macat Library.

¹¹² Barnett, J. (2018). *The fractured metropolis: Improving the new city, restoring the old city, reshaping the region*. Routledge.

Psychological research within the field of urban design focuses on examining the cognitive perceptions of individuals and social groups regarding the urban environment. It seeks to understand the nature and origins of individual cognition, including the factors that influence how people perceive, react to, and behave within urban settings.

In this context, psychology critiques functionalist spatial design for its failure to adequately consider human scale and the impact of environmental factors on individual cognition, reactions, and behaviors within the urban environment. One of the most prominent figures in this area is Kevin Lynch (Lynch, 1964)¹¹³, who has contributed significantly to this field. Lynch's work involves deconstructing and comprehending the mental images that society forms about their urban surroundings. By understanding the environmental elements that influence these cognitive perceptions, he provides guidance for urban design to enhance the quality of the urban environment and address issues related to urban development (Pearce and Fagence, 1996)¹¹⁴.

Psychological research in urban design plays a crucial role in developing environments that are not only functional but also considerate of human cognition and behavior, ultimately contributing to improved urban development.

In contemporary urban space research, there is a continuous subdivision and specialization of studies. The waterfront space, which is the central focus of this study, falls within the category of urban space. Given the relatively human-scale spatial characteristics of waterfront areas, this study primarily examines researchers and their associated theories that emphasize a more human-centric perspective. Established

¹¹³ Lynch, K. (1964). *The image of the city*. MIT press.

¹¹⁴ Pearce, P. L., & Fagence, M. (1996). The legacy of Kevin Lynch: research implications. *Annals of Tourism Research*, 23(3), 576-598.

theories that predominantly address macro-level urban planning are used as general references in the study but are not the primary focus.

Jane Jacobs stood as a fervent protestor against the vision of the "rationalist" planners of the 1950s and 1960s (Ikeda, 2020)¹¹⁵. These planners sought to simplify, beautify, and optimize urban areas with abstract ideas and stereotypical models, ignoring the diverse, vibrant, and organic nature of cities. Their approach resulted in poverty, segregation, and decay in urban communities. In stark contrast, Jacobs championed the importance of embracing the complexity and dynamic nature of cities, exemplified by her beloved Greenwich Village in New York. She demonstrated how a lively and creative urban community functions and resists the destruction wrought by the "rationalist" planners.

Ebenezer Howard, a 19th-century British urbanist, introduced the concept of the "garden city" – a planned urban community with commercial centers for suburbs, green belts, and a specified maximum number of inhabitants (Howard, 1965). He also focused on addressing the perceived problem of population density in cities by constructing towering skyscrapers that stood apart from the ground-floor shops like Le Corbusier. However, Jacobs advocated a completely different perspective, emphasizing that density is what gives urban life its appeal. She argued against segregating city dwellers from each other, as friction between diverse individuals and activities is essential in shaping the vibrant essence of a city.

Jacobs put forth four essential conditions for evaluating the dynamism and diversity of an urban area. First, "mixed use" refers to the presence of different building types and

¹¹⁵ Ikeda, S. (2020). Jane Jacobs and the Knowledge Problem in Cities. *Critics of Enlightenment Rationalism*, 263-278.

activities with distinct functions within the same area. Second, "short blocks" imply frequent street intersections that offer a plethora of choices and orientations. Third, the presence of "aged buildings" – structures of varying ages, styles, and values – adds to the city's richness and character. Finally, "density," i.e., a high concentration of people and buildings, leads to compact and efficient use of space, fostering interactions and opportunities for various needs.(Jacobs, 2012)¹¹⁶

Drawing inspiration from the work of Christopher Alexander (Alexander, 1966)¹¹⁷, Jacobs acknowledged that cities, like their inhabitants, are living systems, constantly adapting to change and innovation. Alexander advocated for small-scale, humanized elements in building and urban environments, emphasizing the importance of "ordered complexity" over a tree-like structure, supporting the idea that urban spaces should cater to different human experiences.

In the late nineteenth century, modern man's fascination with empirical science and its resulting prosperity led to the neglect of vital issues essential to real people. The exclusive focus on fact-only science created individuals who saw only the tangible and measurable aspects of life, neglecting the fundamental question of the meaning of life as a whole. This inquiry becomes increasingly crucial during times of profound changes in human destiny.

In conclusion, multidimensional researchers, represented by Jane Jacobs' perspectives and her emphasis on the complexity and human-centric nature of urban spaces have revolutionized the field of urban design.

¹¹⁶ Jacobs, J. (2012). " The Uses of City Neighborhoods": From The Death and Life of Great American Cities (1961). In The Urban Sociology Reader (pp. 50-57). Routledge.

¹¹⁷ Alexander, C. (1966). A city is not a tree. Design Council.

To sum up, the literature review in sections 1.2.1 to 1.2.3 provides a comprehensive examination of the research results related to waterfront spaces. It not only summarises the various types of regeneration, but also offers a wealth of credible data and insights into human cognition. Models and theories related to waterfront spaces, particularly those centered around ports, as well as urban design theories, have seen substantial development.

However, there has been a noticeable lack of research aimed at creating a holistic understanding of how individuals in port cities perceive waterfront spaces. Furthermore, much of the pioneering research on waterfront spaces has concentrated on the physical built environment and adopted a macro perspective on urban planning, often overlooking the role and position of the general public in this process. Addressing this research gap will be a specific point of discussion in section 1.3.

1.3 Research Gap

1.3.1 Complementary people-oriented perspectives

Past research on waterfront spaces has predominantly focused on three key aspects: improving and optimizing transport functions, enhancing the spatial environment and land development along the waterfront, and constructing relevant infrastructures. These studies primarily approach the subject from a physical standpoint, involving the design and development of the space itself (see Top of **Fig. 1-24**). While these investigations lay a solid foundation for the advancement and revitalization of waterfront spaces, they often overlook or place minimal emphasis on the emotions and perceptions of the actual users—human beings, always the last to appear or even missing in the process.

In reality, contemporary waterfront spaces play a vital role in urban life. They are both a natural outcome and a cultural expression. Throughout Nagoya's urban history,

these waterfront spaces have typically been open to the public, shaped by custom and law. As these spaces are shared by the majority of the population, each individual, as a member of the public, forms their unique perceptions of these areas. They materially and culturally participate in shaping these spaces and have a voice in decisions regarding their development.

Waterfront spaces have consistently played an active role in a city's development, and Nagoya exemplifies this notion effectively. For most Nagoya residents, waterfront spaces have evolved into the city's primary physical landmark and a significant spiritual space. These spaces not only contribute to the city's spatial configuration but also mold people's cognition of Nagoya as a city. Consequently, evolving perceptions and sentiments about waterfront spaces offer a distinct vantage point for comprehending the current state and progression of these areas.

With this in mind, the authors of this study have recognized the importance of adding the human perspective to the cognitive construction of waterfront spaces. The goal is to provide a scaffolding for cognitive construction that is accessible to the vast majority of people through the construction of a place model specifically designed for waterfront spaces. This model aims to help individuals develop a more comprehensive and in-depth understanding of waterfront spaces when applied, ultimately leading to the formation of preferences and expectations for these spaces. By actively participating in the processes of regenerating and optimizing waterfront spaces, the hope is to make these spaces more engaging and accessible to a broader audience.

Therefore, this study departs from the perspective of previous research and centers its attention on human emotions and cognitions. It reconstructs cognitions of Nagoya's waterfront spaces through three key facets: developing a sense of place model, reconstructing the past, and constructing an urban fantasy. By doing so, this research aims

to provide a more comprehensive understanding of contemporary waterfront spaces, allowing for a richer comprehension of them. (see Bottom of **Fig. 1-24**)

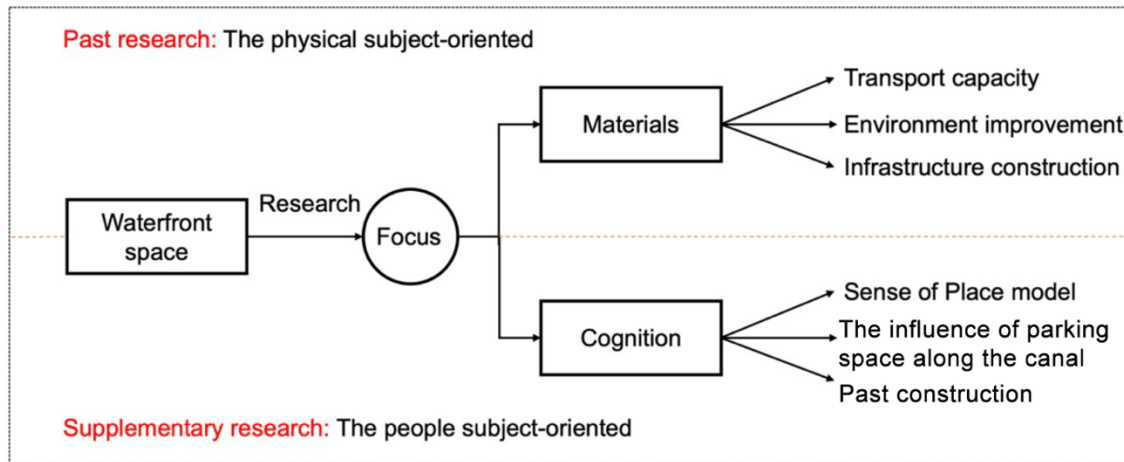


Fig. 1-24 Complementary perspectives (by author)

1.3.2 Research questions embedding of local genes

From the examination of the existing literature, it becomes evident that a substantial body of theoretical research findings exists in the realm of waterfront and urban space redevelopment. However, the idiosyncrasies and disparities among different regions render generalizations difficult, even when confining the focus to Nagoya's urban waterfront spaces. The concept of "placelessness" arises when a locale begins to shed its distinctive traits (Relph, 1976)¹¹⁸, making it considerably challenging to directly transpose established research outcomes to the context of Nagoya's waterfront development.

¹¹⁸ Relph, E. (1976). Place and placelessness (Vol. 67). London: Pio

While this study represents a comprehensive cognitive reconstruction of Nagoya's waterfront space as a whole, it is important to acknowledge that Nagoya's waterfront exhibits distinct zoning characteristics. Merely scrutinizing the broader cultural and social genes of Nagoya can result in placelessness within the city if these unique place-specific attributes are not deeply embedded within the various, relatively small-scale areas. The central questions this study seeks to address are:

1. What are the defining historical features and identities of modern waterfront spaces in Nagoya?
2. How can individuals grasp the attributes of the modern waterfront spaces?
3. Are there clear expectations regarding the future development of the modern waterfront spaces?

1.4 Motivation and purpose of this dissertation

The variation in the physical shape of waterfront spaces over time is merely a surface manifestation; the deeper disparity lies in the evolving perspectives of public life held by the people it reflects. There exists a reciprocal and transformative connection between space and cognitions: individuals' cognitions serve as a guiding force in shaping the spaces they inhabit, and the spaces they craft exert a profound influence on their cognitive processes.

In the preceding section, three pivotal research inquiries were formulated with the intent of addressing the gap within the current body of research pertaining to waterfront spaces, as well as to inject a human-centric dimension into the discourse.

The objectives of the study are based on answering the above research questions:

1. Provide a Detailed Description of Historical Characteristics: The study aims to offer a comprehensive description of the distinct characteristics of Nagoya's waterfront

spaces and define the identity of various areas within it. This goal differs from previous studies as it further subdivides Nagoya's waterfront space, focusing on a near-street scale, which aligns more closely with human cognition.

2. Utilize the Sense of Place Model for Improved Understanding: The second objective involves utilizing a sense of place model to enhance people's comprehension of the underlying principles that determine the quality of a place. It aims to move beyond superficial judgments and macro-level perceptions. Instead, it seeks to provide a detailed and specific evaluation model, which can effectively guide targeted improvements in underperforming spaces. This approach aims to avoid speculation-driven urban development or the "McDonaldization" (Ritzer, 2002)¹¹⁹ often associated with the process of optimizing space for urbanization.

3. Redefine Waterfront Spaces and Reconstruct People's Cognition: The third objective is to reconstruct the identity of waterfront spaces by considering its historical precursors and current situations. Previous literature on waterfront spaces, particularly in the context of waterfront regeneration studies, has been limited to relatively narrow boundaries, that is, within the limits of an area directly connected to a water body. However, this study seeks to move beyond the limitations of previous conceptualizations and redefine waterfront spaces by exploring the relationship between people's activities and the waterfront at different historical periods. An important aspect of this expanded concept is the inclusion of spaces located beyond the water-facing, which serve as the overall stage for accommodating activities that are symbiotic with the water. These

¹¹⁹ See for the reference: Ritzer, G. (2002). An introduction to McDonaldization. *McDonaldization: The Reader*, 2, 4-25. Ritzer's main point: the principles of the fast - food restaurant have come to dominate and alter more and more sectors of American society (and the rest of the world). Ritzer calls this process McDonaldization.

hinterland spaces, and the people who inhabit them, become the key factors that contribute to the evolution and sustainability of the waterfront. Thus, the broad definition can reach a comprehensive understanding of the waterfront landscape, encompassing not only the water-facing spaces but also touching on the socio-spatial structures that extend into the hinterland area as a result. It intends to help individuals understand the identity of these spaces and construct cognition of their present and future role in urban daily life. This objective encourages people to explore the possibilities inherent in their waterfront surroundings. In the subsequent case studies of this study, the choice of scope is in keeping with the expanded concept described above, and the space used for analysis goes beyond the direct adjacency of the canal.

While the historical identity of an area remains fixed, its role in contemporary society is dynamic. Thus, even historically significant areas can undergo unforeseeable changes. There is no single, universally correct identity, but an identity rooted in history that serves the present and resonates with the majority of the population is more desirable. The future of waterfront spaces holds countless possibilities, shaped by people's cognitions. This perspective underscores the necessity and motivation for this research from a cognitive construction standpoint.

The research outlined above, tailored to the genetic makeup of the area, serves as a complement to previous studies on waterfront spaces conducted at a macro level. In future explorations of other waterfront spaces, similar logics and research methods can be applied to optimize and refine the waterfront regeneration process. This study can be valuable for all waterfront spaces, including those that have already undergone modern redevelopment.

1.5 Reference

- 渡辺泰 & 小栗秀夫 2003. 名古屋の都市河川・堀川浄化に関する一考察. *水資源・環境研究*, 2002, 49-58.
- 渡辺秀俊 & 畔柳昭雄 1995. 都市住民のオープンスペース利用行動に見られる水辺空間の選好性に関する研究: 居住環境における水辺空間価値に関する研究 その3. *日本建築学会計画系論文集*, 60, 203-212.
- 渡辺秀俊, 畔柳昭雄 & 長久保貴志 1995. 都市内の水辺空間と居住環境評価の関連性に関する研究: 居住環境における水辺空間価値に関する研究 その2. *日本建築学会計画系論文集*, 60, 199-206.
- 渡邊大志 2017. *東京臨海論: 港からみた都市構造史*, 東京大学出版会.
- 服部純司 2022. 名古屋市内の水辺に対する市民の意識とこれからの活用. *令和4年度の調査・研究成果*. 名古屋都市センター.
- 橘弘志 & 高橋鷹志 1997. 地域に展開される高齢者の行動環境に関する研究: 大規模団地と既成市街地におけるケーススタディー. *日本建築学会計画系論文集*, 62, 89-95.
- 栗原光政 1961. 中京工業の成長について—(1950~59年)—.
- 栗原光政 1968. 工業地域の形成と構造に関する研究—中京地域を事例として—.
- 歴史的環境研究会 1980. *四間道と有松: 名古屋市伝統的町並保全基礎調査*, 名古屋市教育委員会.
- 林英夫 1981. 愛知県の地名. *日本歴史地名大系* 平凡社.
- 梅原浩次郎, 鶴田佳子 & 佐藤圭二 1997. 戦前名古屋の用途地域指定と区画整理の関連に関する研究 特に工業地域指定を中心として. *都市計画論文集*, 32, 67-72.
- 名古屋港管理組合 2008. *名古屋港開港100年史*, 名古屋港管理組合.
- 名古屋観光文化交流局歴史まちづくり推進室 2011. 名古屋市歴史まちづくり戦略. *In: 名古屋観光文化交流局 (ed.)*. 名古屋.
- 名古屋市 1937. *大名古屋*, 名古屋市.

- 畔柳昭雄 & 渡辺秀俊 1994. 都市臨海部の水辺空間における利用者の親水活動特性に関する研究: 都市住民の親水行動特性に関する研究 その3. *日本建築学会計画系論文集*, 59, 195-203.
- 畔柳昭雄, 渡辺秀俊 & 長久保貴志 1993. 都市臨海部の水辺空間における利用者の水辺環境評価に関する研究: 都市住民の親水行動特性に関する研究 その2. *日本建築学会計画系論文報告集*, 454, 197-205.
- 浅井章治, 村瀬勝美, 社本英 & 水野孝 1991. 納屋橋の歴史と橋梁景観. *土木史研究*, 11, 319-325.
- 田島洋輔 & 岡田智秀 2019. 水辺環境を活かした河川空間の魅力形成に関する研究-水都大阪・水の回廊エリアにおける船着場と遊歩道と水辺を意識した建物の空間的波及と管理運営者の戦略プロセス. *日本建築学会計画系論文集*, 84, 1769-1778.
- 尾関利勝, 井澤知旦 & 栗原徹 2010. 名古屋の街を歩いて, その魅力を探る. *都市住宅学*, 2010, 87-92.
- 西別府順治 2011. *名古屋港と三大運河: 水運から見た名古屋開府 400 年: 堀川・新堀川・中川運河*, 中日出版社.
- 小野佐和子 1987. 城下町名古屋の行楽地と農村. *農村計画学会誌*, 6, 19-28.
- 新修名古屋市史編集委員会 1997. *新修名古屋市史 第二巻*, 名古屋市.
- 伊藤嘉奈子, 原野崇, 天野邦彦, 富田陽子, 今村能之, 藤田 & 光一. 水辺などにおける地域活動と地域住民の持つ特性との関係に関する研究. *環境システム研究論文発表会講演集= Proceedings of Annual Meeting of Environmental Systems Research*, 2009. 土木学会, 343-350.
- 伊藤正博 & 沢井鈴一 2014. *堀川: 歴史と文化の探索*, 名古屋, あるむ.
- 永井儀男, 児玉好史 & 井上英彦 2008. 河川を活かしたまちづくりの成功要因について. *リバーフロント研究所報告*, 135-143.
- 中嶋伸恵, 田中尚人 & 秋山孝正 2008. 水辺空間を基盤とした地域コミュニティの形成に関する研究. *土木学会論文集D*, 64, 168-178.
- 佐々田道雄, 畔柳昭雄 & 渡辺秀俊 2003. 都市臨海部における利用者の親水結動特性に関する研究: 都市住民の親水行動特性の変容に関する研究 その2. *日本建築学会計画系論文集*, 68, 185-192.

- A. GORDON, D. L. 1997. Financing urban waterfront redevelopment. *Journal of the American Planning Association*, 63, 244-265.
- ALEXANDER, C. 1966. A city is not a tree. Design Council.
- AMEEL, L. 2020. *The narrative turn in urban planning: Plotting the Helsinki waterfront*, Routledge.
- ASAI, A., MURASE, K., SHAMOTO, M. & MIZUNO, T. 1991. History of Nayabashi-bridge and It's Landscape Design. *HISTORICAL STUDIES IN CIVIL ENGINEERING*, 11, 319-325.
- BALDERSTONE, L., MILNE, G. J. & MULHEARN, R. 2014. Memory and place on the Liverpool waterfront in the mid-twentieth century. *Urban History*, 41, 478-496.
- BARNETT, J. 2018. *The fractured metropolis: Improving the new city, restoring the old city, reshaping the region*, Routledge.
- BREEN, A. M. & RIGBY, D. *The New Waterfront: A Worldwide Urban Success Story*. 1996.
- BRUTTOMESSO, R. 2004. Complexity on the urban waterfront. *Waterfronts in post-industrial cities*. Taylor & Francis.
- CAHAN, E. D. 1984. The genetic psychologies of James Mark Baldwin and Jean Piaget. *Developmental Psychology*, 20, 128.
- CULLEN, G. 2012. *Concise townscape*, Routledge.
- DAVIDSON, M. 2009. *London's Blue Ribbon Network: riverside renaissance along the Thames*, Routledge: London.
- DESFOR, G. & LAIDLEY, J. 2011. *Reshaping Toronto's waterfront*, University of Toronto Press.
- EVANS, C., HARRIS, M. S., TAUFEN, A., LIVESLEY, S. J. & CROMMELIN, L. 2022. What does it mean for a transitioning urban waterfront to “work” from a sustainability perspective? *Journal of Urbanism: International Research on Placemaking and Urban Sustainability*, 1-24.
- EYRE, J. D. 1982. Nagoya: the changing geography of a Japanese regional metropolis. (*No Title*).
- FULLER, M. & MOORE, R. 2017. *An Analysis of Jane Jacobs's The Death and Life of Great American Cities*, Macat Library.
- GALLAND, D. & HANSEN, C. J. 2012. The roles of planning in waterfront redevelopment: From planned and market-driven styles to hybrid planning? *Planning Practice and Research*, 27, 203-225.
- GASTIL, R. 2002. *Beyond the edge: New York's new waterfront*, Princeton Architectural Press.

- GILLILAND, J. 2004. Muddy shore to modern port: redimensioning the Montréal waterfront time - space. *Canadian Geographer/Le Géographe canadien*, 48, 448-472.
- GIOVINAZZI, O. & GIOVINAZZI, S. 2008. Waterfront planning: a window of opportunities for post-disaster reconstruction.
- GORDON, D. L. 1996. Planning, design and managing change in urban waterfront redevelopment. *The Town Planning Review*, 261-290.
- HALL, P. 2009. Looking backward, looking forward: the city region of the mid-21st century. *Regional Studies*, 43, 803-817.
- HANLEY, S. B. & YAMAMURA, K. 2015. *Economic and demographic change in preindustrial Japan, 1600-1868*, Princeton University Press.
- HANSON, S., NICHOLLS, R., RANGER, N., HALLEGATTE, S., CORFEE-MORLOT, J., HERWEIJER, C. & CHATEAU, J. 2011. A global ranking of port cities with high exposure to climate extremes. *Climatic change*, 104, 89-111.
- HEIN, C. 2011. Port Cityscapes: A networked analysis of the built environment. *Port cities: Dynamic landscapes and global networks*, 1-23.
- HEIN, C. 2016. Port cityscapes: conference and research contributions on port cities. *Planning Perspectives*, 31, 313-326.
- HOU, D. 2009. Urban waterfront landscape planning.
- HOWARD, E. 1965. *Garden cities of to-morrow*, Mit Press.
- HOYLE, B. 1997. The New Waterfront: A Worldwide Urban Success Story. *Journal of Transport Geography*, 4, 304-306.
- HSEUH-BRUNI, A. 2015. Le Corbusier's Fatal Flaws—A Critique of Modernism.
- IKEDA, S. 2020. Jane Jacobs and the Knowledge Problem in Cities. *Critics of Enlightenment Rationalism*, 263-278.
- JACOBS, J. 2012. "The Uses of City Neighborhoods": From The Death and Life of Great American Cities (1961). *The Urban Sociology Reader*. Routledge.
- JIANG, X., CHEW, E. P., LEE, L. H. & TAN, K. C. 2014. Short-term space allocation for storage yard management in a transshipment hub port. *OR spectrum*, 36, 879-901.

- KATO, H. 2014. Portscape tourism in Japan: diversified and sustainable port space function. *Sustainable Tourism VI*, 187, 105.
- KIRKLAND, S. 2013. *Paris reborn: Napoléon III, Baron Haussmann, and the quest to build a modern city*, St. Martin's Griffin.
- LANG, J. 2007. Functionalism. *Urban design reader*. Routledge.
- LEE, R. 2005. Configuring the city: In-migration, labour supply and port development in nineteenth-century Europe. *International Journal of Maritime History*, 17, 91-122.
- LYNCH, K. 1964. *The image of the city*, MIT press.
- MALTBY, J. R. & WHITTLE, J. Learning programming online: Student perceptions and performance. Proceedings of the ASCILITE 2000 Conference, 2000.
- MARTÍ, P., MAYOR, C. G. & MELGAREJO, A. 2018. Waterfront landscapes in Spanish cities: Regeneration and urban transformations. *WIT Trans. Built Environ*, 179, 45-56.
- MARX, K. 2005. *Grundrisse: Foundations of the critique of political economy*, Penguin UK.
- MCCAIN, K. G. 2015. *The Fluid City| The Integration of Architecture and Urban Design to Reconnect the City of Erie to its Post-Industrial Waterfront and the Temporal Environment Beyond*.
- MCCORMACK, G. 2001. *The emptiness of Japanese affluence*, ME Sharpe.
- MORISHIMA, M. 1982. *Why has Japan succeeded??: Western technology and the Japanese ethos*, Cambridge University Press.
- NORCLIFFE, G. 1996. Canadian urban landscape examples--16: Mapping deindustrialization: Brian Kipping's landscapes of Toronto. *Canadian Geographer*, 40, 266.
- NORCLIFFE, G., BASSETT, K. & HOARE, T. 1996. The emergence of postmodernism on the urban waterfront: geographical perspectives on changing relationships. *Journal of Transport Geography*, 4, 123-134.
- NOTTEBOOM*, T. E. & RODRIGUE, J.-P. 2005. Port regionalization: towards a new phase in port development. *Maritime Policy & Management*, 32, 297-313.
- OLIVIER, D. & SLACK, B. 2006. Rethinking the port. *Environment and Planning A*, 38, 1409-1427.
- PEARCE, P. L. & FAGENCE, M. 1996. The legacy of Kevin Lynch: research implications. *Annals of Tourism Research*, 23, 576-598.

- PETERSON, J. A. 1976. The city beautiful movement: Forgotten origins and lost meanings. *Journal of Urban History*, 2, 415-434.
- PIAGET, J. 2013. *The construction of reality in the child*, Routledge.
- RAPOPORT, A. 2016. *Human aspects of urban form: towards a man—environment approach to urban form and design*, Elsevier.
- RELPH, E. 1976. *Place and placelessness*, Pion London.
- RITZER, G. 2002. An introduction to McDonaldization. *McDonaldization: The Reader*, 2, 4-25.
- ROBERTS, L. 2010. Dis/embedded geographies of film: Virtual panoramas and the touristic consumption of Liverpool waterfront. *Space and Culture*, 13, 54-74.
- SAARINEN, E. 1985. *The search for form in art and architecture*, Dover Publications.
- SACK, R. D. 1980. The societal conception of space. *Conceptions of Space in Social Thought: A Geographic Perspective*, 167-193.
- SAMANT, S. & BREARS, R. 2017. Urban waterfront revivals of the future. *Greening cities: forms and functions*. Springer.
- SCHUMPETER, J. A. 2013. *Capitalism, socialism and democracy*, routledge.
- SHUTO, N. & FUJIMA, K. 2009. A short history of tsunami research and countermeasures in Japan. *Proceedings of the Japan Academy, Series B*, 85, 267-275.
- SITTE, C. 1965. *City planning according to artistic principles*, London, Phaidon.
- SITTE, C. 1979. *The art of building cities: city building according to its artistic fundamentals*, Ravenio Books.
- STOPKA, O. & KAMPF, R. 2018. Determining the most suitable layout of space for the loading units' handling in the maritime port. *Transport*, 33, 280-290.
- TIMUR, U. P. 2013. Urban waterfront regenerations. *Advances in landscape architecture*. IntechOpen.
- VOLLMER, D. 2009. Urban waterfront rehabilitation: can it contribute to environmental improvements in the developing world? *Environmental Research Letters*, 4, 024003.
- VON GLASERFELD, E. 1990. Environment and communication'in Steffe, L. and Wood, T.(eds) Transforming Children's Mathematics Education: International Perspectives. *Hillsdale, NJ: Laurence Erlbaum*.

WAKEFIELD, S. 2007. Great expectations: waterfront redevelopment and the Hamilton Harbour Waterfront Trail. *Cities*, 24, 298-310.

WIEGMANS, B. W. & LOUW, E. 2011. Changing port-city relations at Amsterdam: A new phase at the interface? *Journal of Transport Geography*, 19, 575-583.

WILMSMEIER, G. & MONIOS, J. 2015. The production of capitalist “smooth” space in global port operations. *Journal of Transport Geography*, 47, 59-69.

WRENN, D. M. 1983. Urban waterfront development. . *Mary's LJ*, 15, 555.

ZENG, J. & WAN, R. 2018. Multilevel Layout Planning of Port Space Designs in Marine Transportation Systems. *Journal of Coastal Research*, 163-167.

オフィス・ヒライ 2017. *古地図で歩く名古屋 歴史探訪ガイド*, メイツ出版.

CHAPTER 2

RESEARCH STRUCTURE AND METHODOLOGIES

2.1 The structure of the whole research

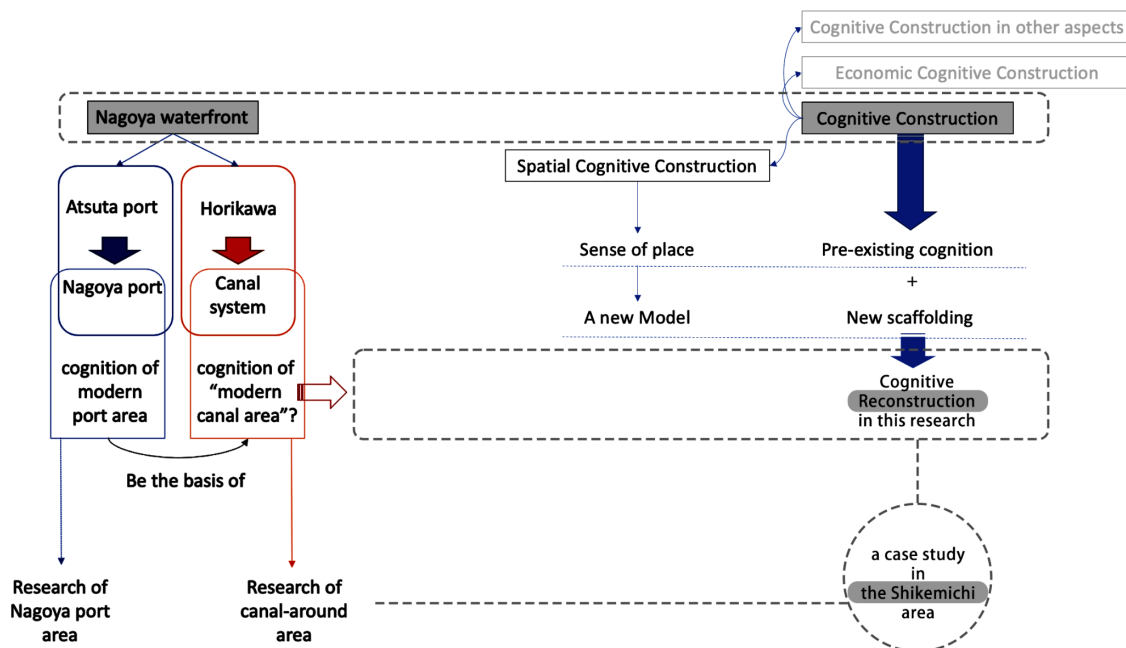


Fig. 2-1 Formative logic of this research (by author)

This study unfolds along two principal clues: one about the waterfront space itself and the other about the cognitive construction of the users. (Fig. 2-1)

(i) The conceptual complexity inherent in waterfront spaces has prompted numerous studies to offer definitions grounded in their specific scopes. As mentioned earlier, previous definitions of waterfront space were usually limited to those areas directly connected to a water body, whereas this study expands the concept to include those spaces that are located behind and accommodate water-related activities. There are subtle

differences between the definitions from study to study, so the author believes that it is necessary to identify the characteristics of waterfront spaces in Nagoya based on the expanded definition. According to the review of Nagoya's history in Chapter 1, it is possible to identify two very clear layers of Nagoya's waterfront spaces, the Nagoya Port, which developed from the Atsuta Port, and the canal system, which developed from the Horikawa Canal (including Nakagawa and Shinhorikwa). In fact, there is no lack of research on the port of Nagoya due to the pattern and continuity of port development. Like other ports that have experienced modernisation and globalisation, the cognition of the port of Nagoya can be said to be well established, and reference can also be made to other cognitions concerning modern ports. Therefore, this direction is not the focus of this study. Instead, our attention centers on the modern cognition of canal surroundings, as the contemporary significance of canal spaces markedly diverges from their historical roles, necessitating a profound reconstruction of cognitions at this level.

(ii) As introduced in the previous chapter, cognitive construction is a concept developed in psychology and education, and therefore it covers a comprehensive range, and this study focuses on only one branch of it which is spatial cognition. Therefore, in this paper, the concept of sense of place, which is also widely recognised in the field of urban design, is used to represent the spatial cognition that already exists. Based on people's existing cognitions, a new sense of place model is constructed as a scaffolding to help people reconstruct new cognitions, which is the “cognitive reconstruction” really referred to in this study. While the primary focus of cognitive reconstruction here is the canal space, due attention is accorded to the existing cognitive foundation of the port space. Consequently, the detailed background of the case study consistently incorporates the developmental context of the Nagoya Port space.

Combining these two clues, this study selected a historical waterfront area upstream of the Horikawa canal called the Shikemichi area for two case studies.

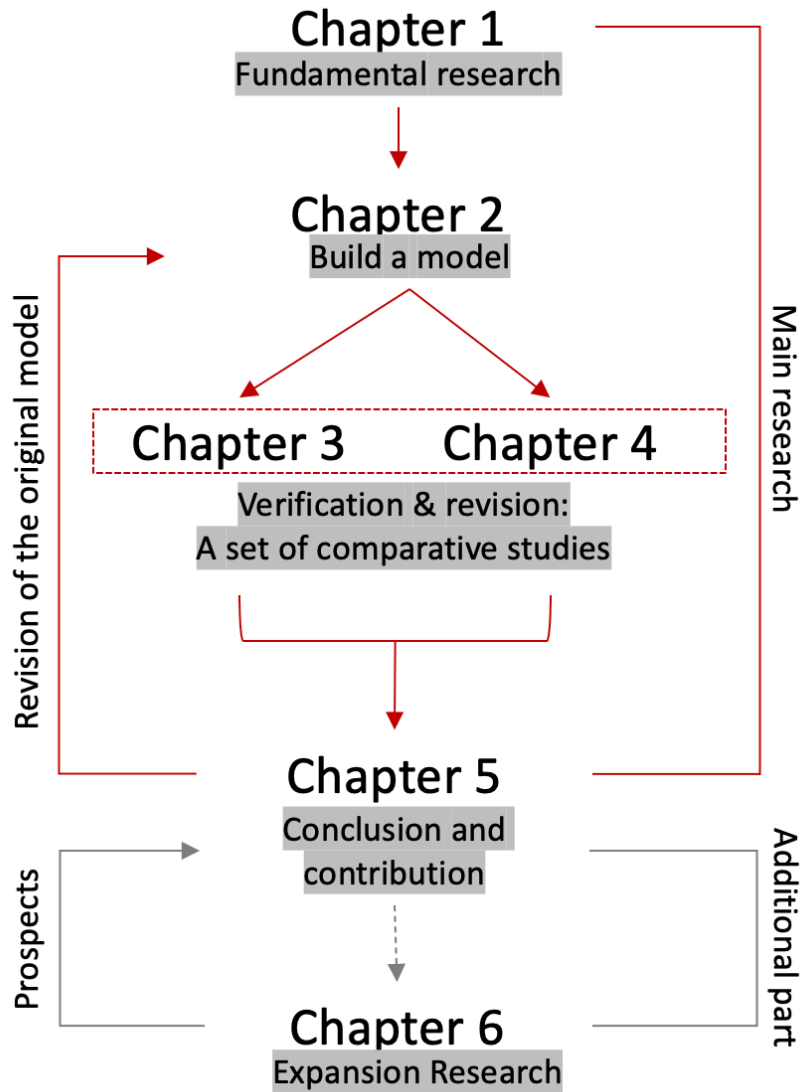


Fig. 2-2 The structure of the chapters (by author)

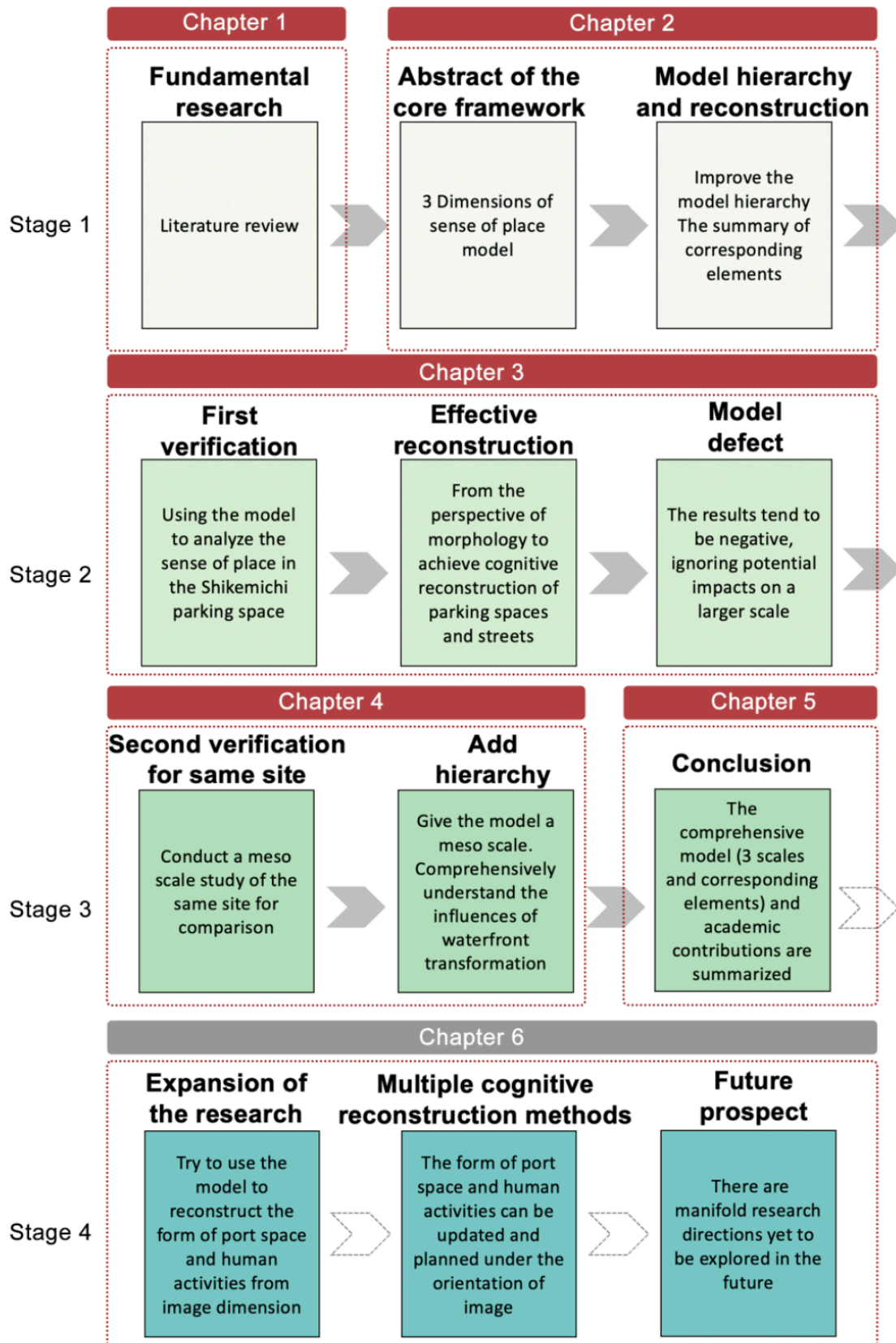


Fig. 2-3 The structure of the whole research (by author)

To alleviate the cognitive burden associated with people's cognitions of modern waterfronts and to offer a scaffolding for cognitive reconstruction, this study embarked on establishing a comprehensive sense-of-place model. This model was built through meticulous field research, taking into account the situational context of the waterfront spaces and the pre-existing cognitions of individuals. Additionally, this model drew insights from previous urban research as a foundational reference point.(**Fig. 2-3** Stage 1)

Through this approach, the research sought to bridge the gap between empirical observations, existing cognitive patterns, and insights from prior urban studies, culminating in a comprehensive framework for understanding and reconstructing cognitions of modern waterfront spaces.

After initial modelling of the sense of place, the street scale of the model was applied in the first case study to cognitively reconstruct the parking space near the street as a result of the decline of water transport. The outcome of this reconstruction provided a clear rationale for understanding the adverse effects of parking spaces on the street, which, in turn, facilitated the exploration of targeted solutions. However, during this validation process, some limitations of the model were revealed. The study's scale was primarily focused on the open space itself, making it challenging to analyze potential impacts on a broader area. Here, "broader" implies a scale beyond the street space alone but still smaller than the scale of the urban plan. This is crucial as it remains closely connected to human cognition.(**Fig. 2-3** Stage 2)

Consequently, a second case study was undertaken, focusing specifically on the open spaces within the same site. The process of reconstructing the past in the area involved simulating the movement patterns of individuals throughout the neighborhood. This interpretative aspect of the 'past,' contextualized within the present situation, was deemed pivotal for cognitive reconstruction. The inclusion of a mesoscale analysis—operating at

the neighborhood scale—marked the second phase of validation (**Fig. 2-3** Stage 3). This addition, in conjunction with street-scale analyses, substantially enriched the cognitive reconstruction of the waterfront by offering a more comprehensive perspective.

The validation of these two cases and subsequent refinements to the model resulted in the development of sense-of-place model encompassing three distinct scales. This revised model featured more precise and specific elements corresponding to the 3 dimensions than the initial single-scale models. Consequently, it can serve as a valuable tool for analyzing the characteristics of localized waterfront spaces within the city and reconstructing cognitions associated with these spaces.

Given that the initial validations primarily focused on spatial forms and human activities, with comparatively less attention directed towards the interpretation of IMAGE, a third case study was incorporated as a research extension following the completion of the comprehensive model (**Fig. 2-3** Stage 4). This extended study sought to explore the dimension of IMAGE by centering its focus on the port space. The introduction of the concept of urban fantasy aimed to reimagine and construct a new image for the existing, somewhat standardized port area. The goal was to illustrate how the forms and activities within the port space could be rejuvenated and strategically planned under the influence of this conceptual image.

Urban fantasy, a concept proposed by the author concerning the imagination of the waterfront space, represents one approach within the abstract category of IMAGE. However, it's crucial to note that there exist diverse interpretations of this abstract notion of IMAGE, suggesting that there are manifold research directions yet to be explored in the future within this domain.

2.2 Methodologies

2.2.1 On-site investigation

To gain a profound insight into the local waterfront spaces of Nagoya, a multifaceted research approach was undertaken. The first crucial step involved a meticulous examination of maps to identify the specific area of study. While initial knowledge about Nagoya's history was primarily drawn from documentary sources, it became apparent that preconceived notions often diverged significantly from the stark realities on the ground. These disparities between preconceptions and actual observations acted as catalysts, propelling the research in more nuanced and insightful directions.

As an outsider to the local context, I embarked on a field research expedition to Nagoya. The objective was to engage as an impartial bystander, experiencing the raw essence of existing waterfront spaces firsthand. This immersive approach, as a foreigner in a new environment, enabled me to detach from preconceived biases and provided an authentic perspective on these spaces. This detachment from familiar preconceptions was instrumental in enriching the depth and breadth of the research.

Photography served as the primary tool for documenting the waterfront spaces encountered during the field research. At the outset of the photographic process, the guiding principle was to comprehensively capture every facet, ensuring that no detail escaped scrutiny. This approach allowed for the accumulation of an extensive visual archive. Subsequently, a meticulous review process was implemented, sifting through the amassed images to identify superfluous or redundant photographs. Spaces that had not been adequately photographed were meticulously marked for further investigation. This systematic strategy facilitated the gathering of materials in a structured and purposeful manner.

In essence, this research methodology, comprising map analysis, immersive fieldwork, and photography, laid the foundation for a holistic and authentic comprehension of Nagoya's waterfront spaces. It underscored the importance of approaching research with an open mind, prepared to embrace the unexpected realities that can emerge when the theoretical collides with the tangible. Ultimately, this approach enriched the research process, fostering a deeper understanding of the subject matter and unveiling layers of nuance that might otherwise have remained concealed.

2.2.2 Interviews

Engaging with local residents and garnering their perspectives on Nagoya's waterfront spaces proved to be an indispensable aspect of the research methodology. Here, we elaborate on the significance of these interactions and the organic nature of the interviews.

Table 2-1 Summary of the interview (by author)

Interview area	Waterfront of Horikawa Canal and Nagoya Port
Objective	Random pedestrians in the waterfront space
Method	Random interview and photo identification
Time	2022.05.16 and 2022.11.14
Number of interviewees	35

Understanding Nagoya's waterfront spaces as a non-local researcher necessitated active engagement with the local community. While firsthand experiences on the ground were valuable, it became evident that authentic comprehension would only be achieved through meaningful dialogue with the residents. Random conversations with locals emerged as a crucial avenue for gaining insights into the collective knowledge and perceptions of these spaces within the contemporary context. A summary about the

interview is recorded in **Table 2-1**. The first interview took place in May 2022. However, after data analysis, it was determined that the sample size was inadequate. Subsequently, a second interview and field research were conducted in November 2022.

These interviews were conducted spontaneously, often initiated on the streets (**Fig. 2-4**), in shops, or in local restaurants (**Fig. 2-5**). It is essential to note that none of the respondents were subjected to professional training or guided by predefined questionnaire options. The aim was to capture unfiltered, genuine responses that emanated from their personal experiences and perspectives. Also, the identity of the interviewees (whether they were locals or tourists) was not deliberately selected, and although different identities can have an impact on the capture and presentation of information¹²⁰, in this study, all respondents were equal at this stage of collecting elements that reflect the cognition of the waterfront. While specific details about the respondents, such as gender, age, and occupation, were not distinguished, the interviews did take into account the respondents' backgrounds related to their familiarity with the area and the purpose of using the space. This differentiation was primarily made between visitors and locals, with locals further categorized into those residing in the neighborhoods around the waterfront and those in other areas (**Fig. 2-6**). To facilitate these conversations and provide context, we occasionally supplemented the discussions with photographs taken during our fieldwork (as mentioned in Section 2.1).

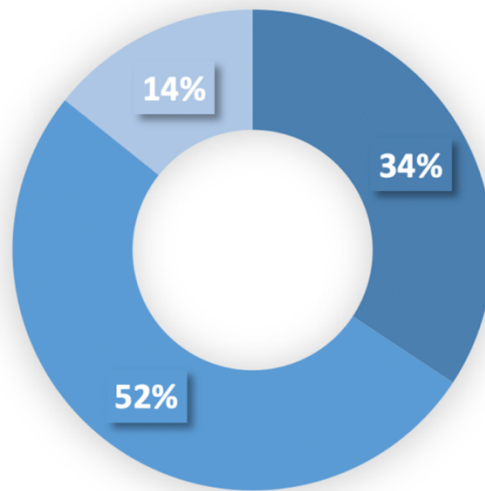
¹²⁰ Refer to: 名古屋港管理組合 総務部振興課, 名古屋のイメージに関する調査, 1987.5, p4: "...The role of the port for citizens is buried by the complex social, geographical structure. On top of that, the people called citizens are not completely homogeneous and they live in their own unique positions in their daily lives. Therefore, a simple conceptualisation of citizens is not possible nor should it be considered."



Fig. 2-4 Interview near Naya Bridge (author)



Fig. 2-5 Interview at the bank restaurant (author)



Number of local people among the interviewees	23	Number of who living in the neighbourhood	18
Number of tourists among the interviewees	12	Number of who living far away from waterfront	5

Fig. 2-6 Number of interviewees with different attributes (by author)

An essential aspect of these interviews was their informal and conversational nature. They were intentionally conducted to resemble friendly chats rather than structured academic inquiries. The exchanges were recorded using a tape recorder to ensure that no valuable insights were lost. Subsequently, these recordings were reviewed to extract key information. It is worth noting that not all conversations centered on waterfront spaces,

but this organic approach allowed for the emergence of a diverse range of perspectives and experiences.

The inclusion of local voices through spontaneous and unscripted interviews was instrumental in enriching the research process. It provided a more holistic and nuanced understanding of Nagoya's waterfront spaces, rooted in the lived experiences and perceptions of the people who inhabit them. These organic interactions elevated the research beyond a purely academic exercise, infusing it with the vibrancy and authenticity of the local community's collective wisdom.

During the course of the interviews, there were two main issues related to this study:

1) If you were asked to describe the waterfront space in Nagoya, how would you describe it?

2) In this photograph, what do you think is the element that identifies this space as being a waterfront space?

Addressing the first question, respondents initially provided simple and often common adjectives to describe Nagoya's waterfront spaces. These included terms such as "natural," "smelly," "scenic," "with a view of the river," "where you can take a boat ride," and "around the port of Nagoya." These descriptions, while straightforward, were closely tied to specific areas in their minds. For instance, "natural" might correspond to the riverside near Shirotori Park, "smelly" to a polluted section upstream of Horikawa, and "scenic" to the port space or areas with cherry blossom trees. It's important to note that these descriptions were neither incorrect nor incomplete, as most individuals tend to form perceptions of waterfront spaces based on their experiences in specific locations.

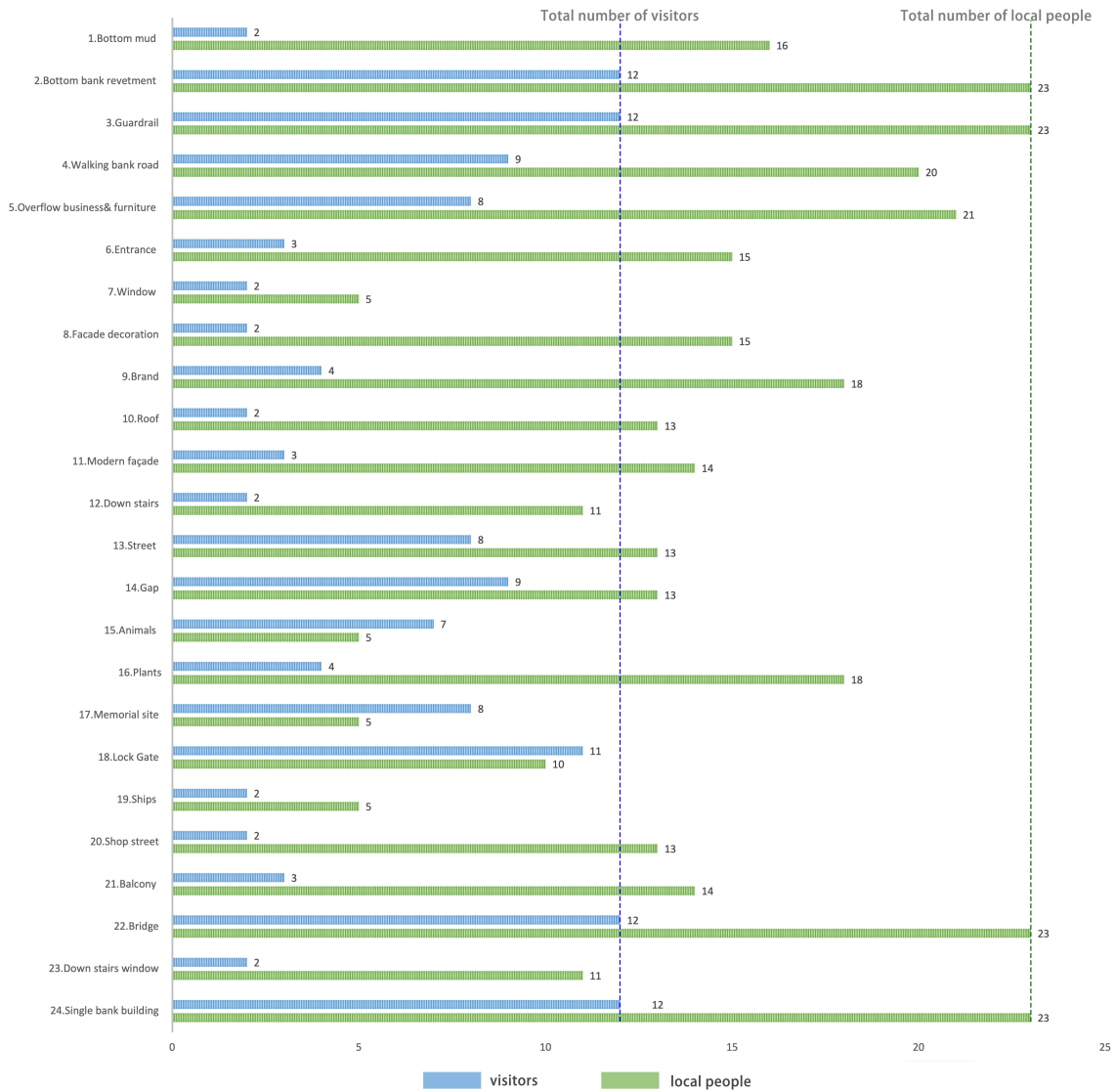

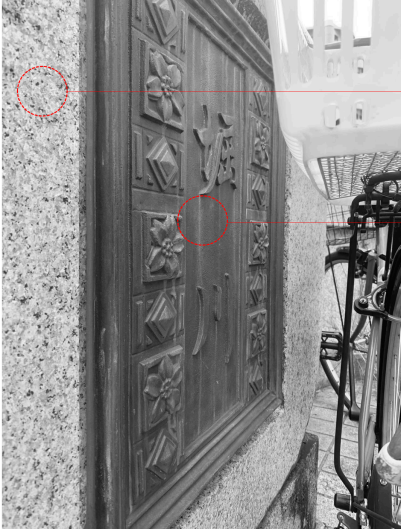



Fig. 2-7 Number of people mentioning different identifying elements

To encourage respondents to delve deeper into the characteristics and defining elements of waterfront spaces, the second question became increasingly significant. When presented with photographs taken during our fieldwork, many interviewees were adept at identifying a waterfront space, even when it did not exhibit the characteristics they had initially described (**Fig. 2-7**). The author was pleasantly surprised by the number of details they pointed out, many of which might have overlooked by the author before, yet they effectively symbolized the essence of waterfront spaces.

In **Table 2-2** below, the author has curated a selection of representative photographs with numerous identifiable features. The relevant elements mentioned by the respondents in the accompanying diagrams have also been indicated. These findings offer a visual representation of how people construct their cognitions of waterfront spaces, often drawing on a wide range of distinct attributes.

Table 2-2 Photo interview and the identified elements (by author)

Photo of the waterfront space	Elements that identify the waterfront
	<ul style="list-style-type: none">→ building→ Stone bank revetment→ road→ Water surface→ Bank bottom→ Handrail
	<ul style="list-style-type: none">→ pier→ brand
	<ul style="list-style-type: none">→ plant→ Stone bank revetment



Stairs down



Gaps between bank buildings

Stairs to canal



Historical building



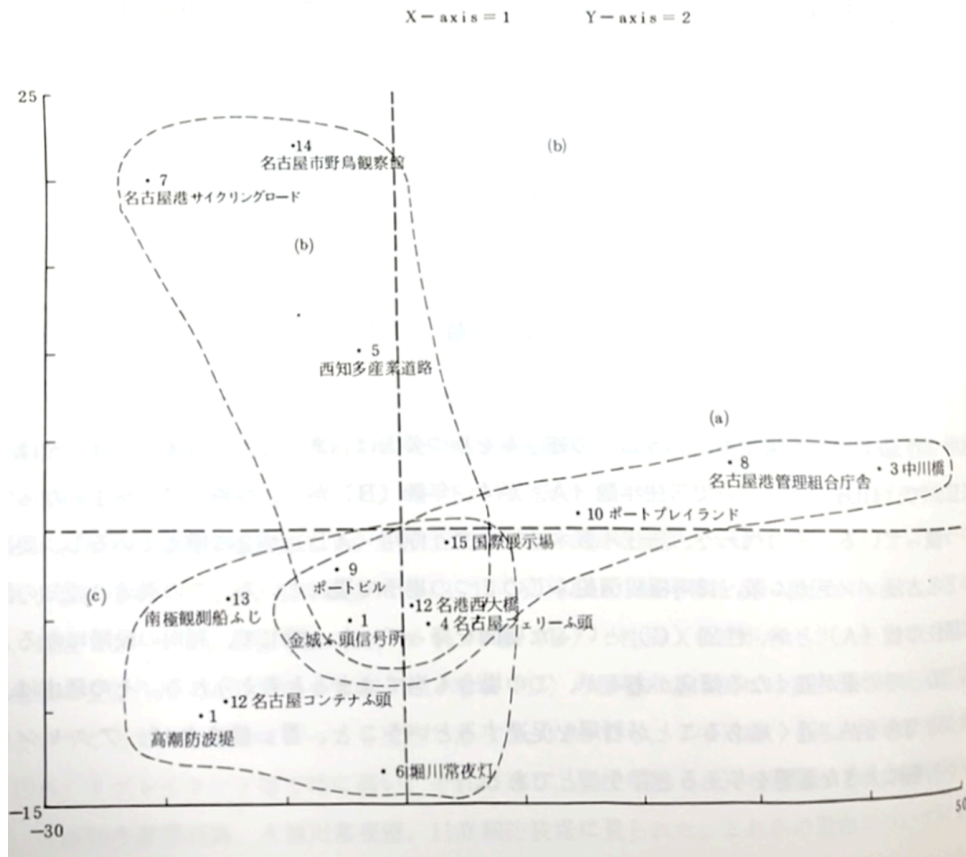


2.2.3 Formation of cognitive maps

Creating a two-dimensional coordinate system to map people's cognitions of specific elements is a relatively common attempt, and similar analyses have been employed in various studies based on data collected regarding people's cognitions or evaluations. For instance, Nagoya Port Authority conducted a survey to explore the image that Nagoya citizens have of the port. This survey aimed to uncover the diverse impressions that different citizens held of the Port of Nagoya¹²¹. One primary focus of the survey was to understand how urban facilities within the city of Nagoya and the Port were understood and utilized by the residents, and a preliminary cognitive map was generated using the survey data (**Fig. 2-8**).

¹²¹ 名古屋港管理組合 総務部振興課, 名古屋のイメージに関する調査, 1987.5.

第 2 - 6 図 名古屋港施設の認知類型

Fig. 2-8 Cognitive Types of Nagoya Port Facilities (source: Note ¹²¹)

This study also seeks to employ the same method of creating a two-dimensional coordinate system to initially visualize the investigation research findings.

Based on the results of the interviews conducted in Section 2.2.2, we have gained a preliminary understanding of how people perceive waterfront spaces. To summarize and represent the various elements mentioned in these interviews more clearly, the author has established a two-dimensional coordinate system centered on the water surface of the canal (Fig. 2-9). In this coordinate system, the horizontal axis signifies the horizontal distance of an element from the canal, while the vertical axis represents the height of an element relative to the canal's water surface. Using this system, the author has developed

a fundamental cognitive map by roughly categorizing the elements derived from the interviews conducted in Section 2.2.2 and determining their positional distribution.

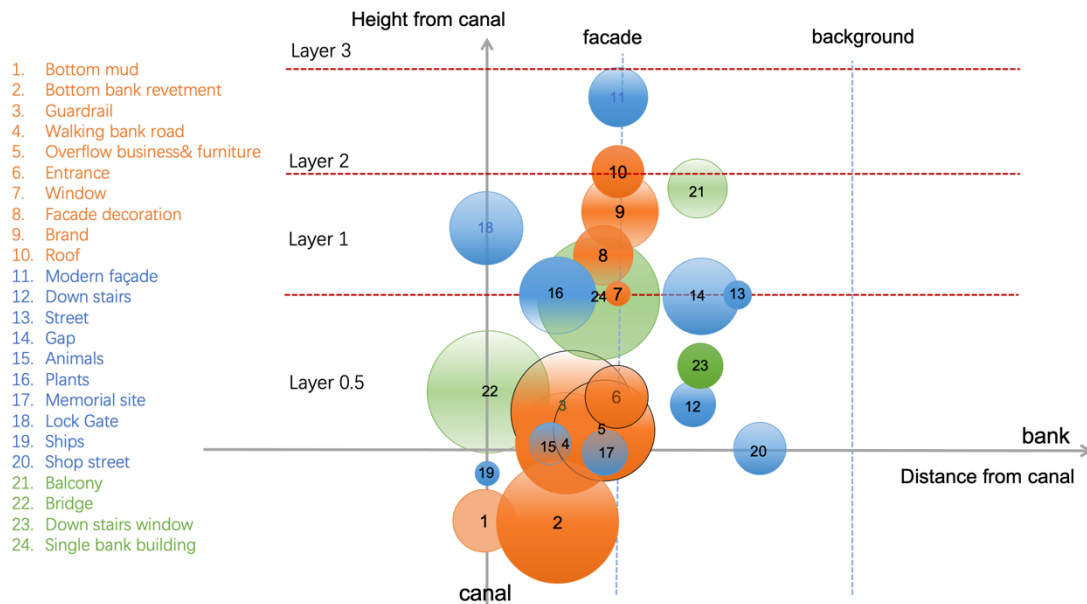


Fig. 2-9 Cognitive map (by author)

When analyzing the distribution patterns of these elements on the cognitive map, the author has established several points of reference based on real-world observations. Firstly, the vertical axis has been divided into four layers, taking into account the typical range of human perception and judgment. These layers are labeled as Layer 1, Layer 2, Layer 3, and Layer 0.5. The division between these layers is generally based on the number of stories or floors in a building, with 0.5 Layer representing an approximate height of 1.5 meters, which corresponds to the typical eye level of an individual.

Secondly, in the horizontal direction, two primary layers have been identified: the waterfront-facing façade of buildings and the taller structures that appear as a background to the waterfront landscape. These distinctions help us categorize elements based on their relative positioning in the waterfront space.

Simultaneously, by representing the frequency with which various elements are mentioned by individuals through the size of circles, it becomes feasible to visualize the locations where the most prevalent perceptions of the waterfront emerge and which elements are overlooked by certain individuals.

The distribution of elements on the coordinate map provides valuable insights into people's fundamental cognitive perception of waterfront spaces. It is evident that most of the elements mentioned in the interviews are positioned closer to the water surface. However, it is essential to recognize that the perception of waterfront space is not solely based on elements in close proximity to the water's edge.

A crucial consideration is how to enhance the elements of waterfront spaces through spatial planning and design, especially when those elements are situated further away from the water's edge. By emphasizing and strategically integrating elements that extend beyond the immediate waterfront, urban planners and designers can work to strengthen the overall character of waterfront spaces. This approach allows for a more comprehensive and coherent perception of waterfront areas, ensuring that their unique spatial qualities are clearly articulated and experienced by both residents and visitors.

Therefore, this cognitive map serves as a valuable tool for visualizing and analyzing how individuals perceive and conceptualize waterfront spaces in Nagoya. It allows us to better understand the relative importance and spatial relationships of various elements as they contribute to the overall perception of these spaces.

Concurrently, a basic correspondence was established between the compiled cognitive elements and the activities associated with them, as reported by individuals (**Fig. 2-10**). The findings indicated that the activities linked to people's existing perceptions of the waterfront space were primarily centered around observation and strolling.



Fig. 2-10 Activities corresponding to the elements (by author)

However, it was noteworthy that only a limited number of individuals could delve further into articulating and elaborating upon the sensory dimensions of these observation and movement behaviors. For instance, very few individuals mentioned experiences like pleasurable observation, tension-filled observation, or engaging in leisurely strolls for sightseeing purposes.

In summary, the cognitive map generated from the interview responses serves as the foundation for comprehending the distribution and clarity of elements influencing cognitions of the waterfront space. It underscores the uneven balance in cognitions of waterfront-related factors, particularly the limited recognition of activities compared to physical aspects, with even fewer references to overall perceptual dimensions (It is an important dimension of “sense of place” in this study and will be detailed in section 2.2.4). This map depicting current cognitions is insufficient for constructing a well-defined and engaging cognition of the waterfront.

2.2.4 Modelling of cognitive maps: cognitive reconstruction

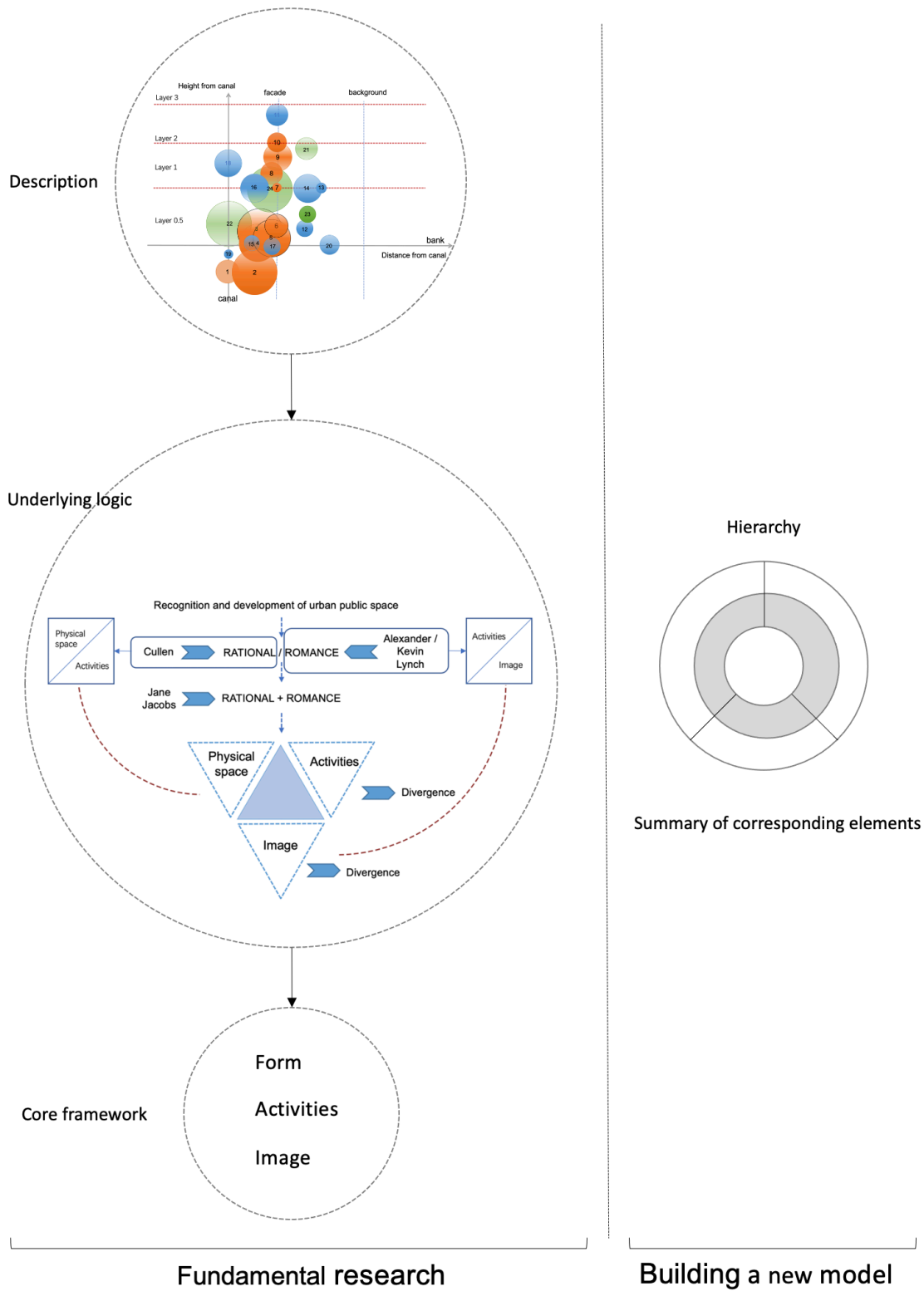


Fig. 2-11 Logic and foundations of modelling (by author)

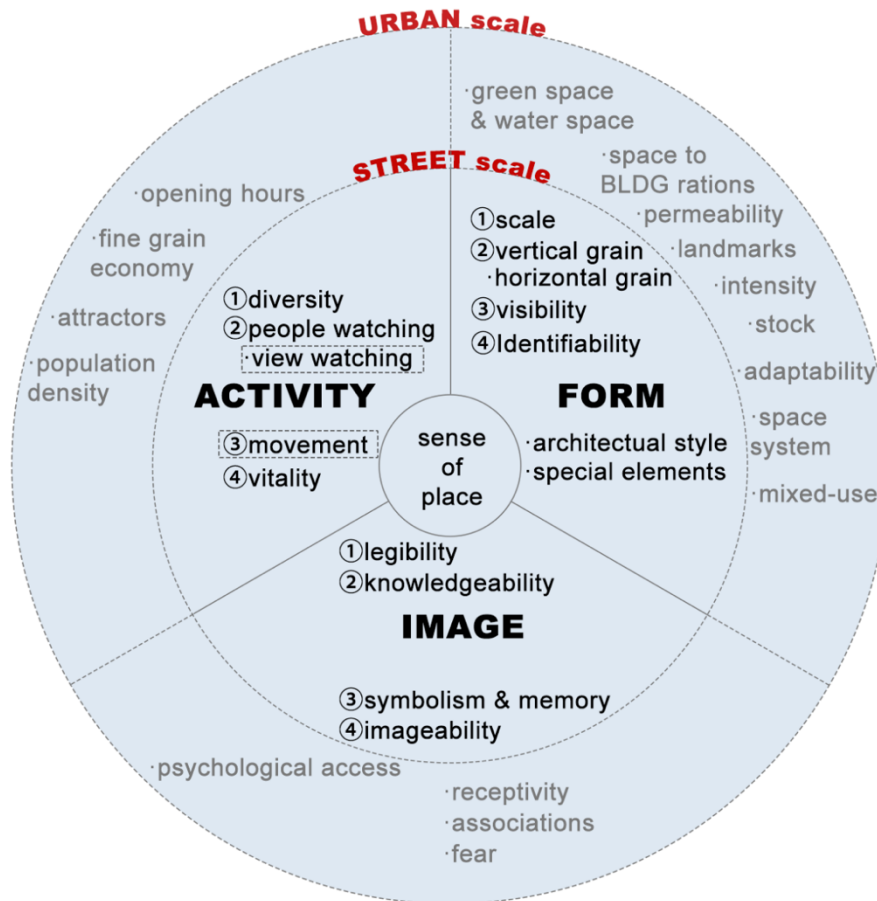


Fig. 2-12 Modelling of sense of place for cognitive reconstruction (by author)¹²²

In section 2.2.3, the cognitive map was initially presented, but it serves as an intuitive representation of fragmented information and is not suitable for practical design and spatial analysis. Indeed, providing a description and forming a subjective judgment can be relatively straightforward tasks. However, the real challenge lies in highlighting the distinctions between two identical judgments or explaining the rationales behind differing conclusions between two distinct judgments. Going beyond mere descriptions and

¹²² The keywords marked with dotted lines are specified by the author based on section 2.3

INDICATORS OF SUCCESSFUL URBAN PLACES

- (1) Planning will be invisible and the results will look natural, as though they happened of their own accord
- (2) There will be interesting and stimulating shapes
- (3) The 'familiarity' of streets and street life will be celebrated
- (4) There will be secret places which once discovered grow on you, making you look deeper to find more
- (5) There will be surprises, to keep citizens awake, provide topics of conversation, prevent ennui
- (6) Experiments will be encouraged, and there will be exciting things to do
- (7) There will be areas and opportunities for informal, casual meetings to take place, including warm and friendly bars and pubs
- (8) Food and drink will be a treat, and people will be able to purchase and consume it at varying prices and degrees of leisure
- (9) There will be a variety of comfortable places to sit and wait—a city worth living in has to be a city worth sitting in
- (10) There will be a good balance between the need to prevent loneliness and to preserve anonymity and privacy
- (11) Changing seasons will not draw attention away from the sterner pursuits of daily life but rather will be an integral part of a continually changing city, and celebrated as such
- (12) The senses will be heightened: affection/friendliness/hospitality; a sense of belonging; historical and cultural continuity; a sense of fun/humour; opportunities for gossip; open-mindedness; vitality; fantasy; flamboyance; colour; beauty/aesthetic stimulus

Fig. 2-13 Indicators of successful urban places (Adapted from Note ¹²⁴, author)

judgments, as mentioned earlier, to comprehend and reflect upon the underlying reasons and methods for altering conclusions in varying judgments is at the core of cognitive construction. It's like asking this question “*What makes some places a pleasure and others hopelessly dull?*”¹²³ Throughout history, numerous urban scholars have tried to compile a list of indicators that delineate urban success, aiming to answer this question.

Here I have put a relatively representative example (**Fig. 2-13**) (Sherman, 1988)¹²⁴.

However, understanding the generation of these indicators—unearthing the underlying logic—has proven elusive. Simply possessing knowledge of these indicators

¹²³ The question is from: Gummer, J. [secretary of state for the Environment]: Speech to the Civic Trust, 30 March, 1995

¹²⁴ B. Sherman, *Cities fit to live in: themes and variations: A to Z*. Produced for Channel 4 by Good Books, 1988.

fails to rationally make informed judgements about how good places are and how to create a good sense of place.

To address this limitation, this section aims to further condense and categorize the elements depicted on the map based on human cognitive patterns, resulting in a more abstract model (**Fig. 2-12**). This refined model will provide a more structured framework for design and spatial analysis (**Fig. 2-11**).

At the core of this model, the keyword "sense of place" has been employed. In this study, the focus is primarily on human cognition related to the perception of space, and the choice of the term "place" carries connotations that align with the concept of the "spirit of place (Genius loci)," as proposed by Schulz (Norberg-Schulz, 2019)¹²⁵. This term encompasses the deeper, emotional, and cultural aspects associated with a particular location, enriching our understanding of how people connect with and perceive spaces.

The underlying logic about the three main classification divisions in the model comes from the relevant theoretical development about urban public space, the development and screening of the theory is described in detail in section 1.2.3. Over the years, the concept of a "sense of place" within urban spaces has been a subject of debate among urban designers, leading to distinct perspectives and approaches. Early research about urban public space is mainly divided into two schools if thinking from human scale, one is the rational school represented by Thomas Gordon Cullen, and the other is the Romantic school represented by Alexander and Kevin Lynch, and then Jane Jacobs organically integrates the two directions, which makes the research about urban public space into a completely new stage of research (**Fig. 2-14**).

¹²⁵ Norberg-Schulz, C. (2019). "Genius loci: towards a phenomenology of architecture (1979)." *Historic Cities: Issues in Urban Conservation* 8: 31.

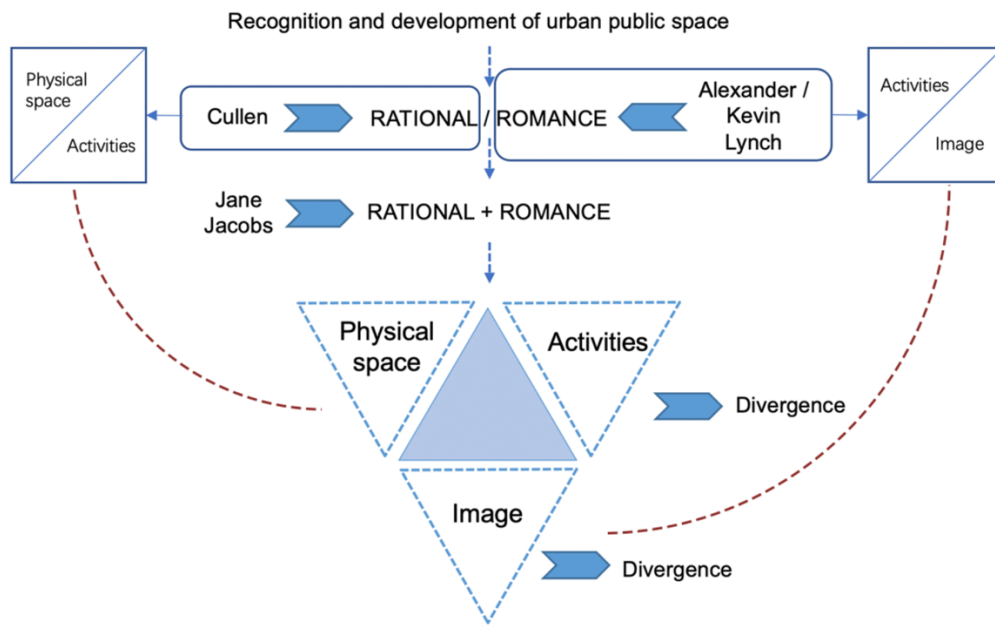


Fig. 2-14 The development of urban public space (Based on section 1.2.3, author)

Firstly, we find the classical view of urban design, characterized by a rational and objective stance. This perspective, as exemplified by the works of Cullen, emphasizes the physical aspects of urban spaces, such as architectural style, decorative elements, and building layout (Gosling et al., 1996)¹²⁶. The term "serial vision" was originally introduced by this British architect and urban designer in his influential book "*Townscape*"¹²⁷, which explored principles of urban design and the visual perception of urban environments. He emphasized the importance of considering serial vision when designing cities, noting that people "understand the urban environment through kinesthetic experience". This aligns with the findings in section 2.2.3, where people associated specific elements with activities such as watching and walking. It can be argued that this rational design approach, centered around visual and movement aspects,

¹²⁶ Gosling, D., N. Foster and G. Cullen (1996). Gordon Cullen : visions of urban design, Academy Editions.

¹²⁷ Gordon Cullen, *Townscape*, The Architectural Press (1960)

significantly influences how people perceive urban spaces. But actually, according to Cullen, serial vision transcended mere visual perception; it encompassed the emotional and psychological journey one undergoes while moving through a space. Cullen placed significant emphasis on the dramatic and theatrical aspects of navigating an urban environment. He focused on the interplay between the various elements and locations one might encounter along the way, including elements like trees, architectural structures, traffic, and more (Fig. 2-15).

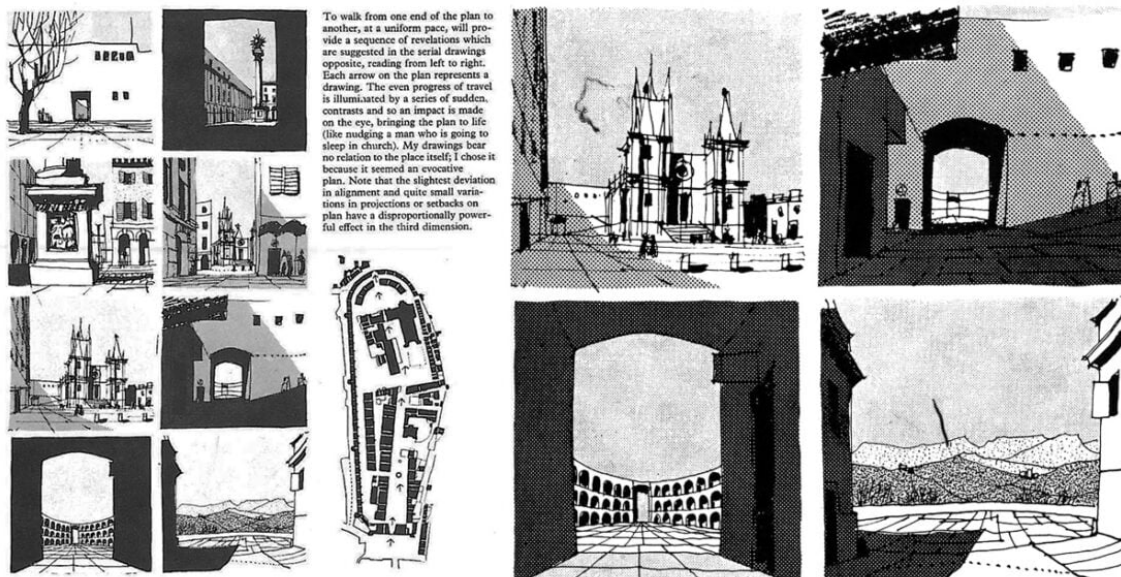


Fig. 2-15 Serial vision: Gordon Cullen drawings (Source: *Townscape* (1960)⁸⁰)

Cullen believed that this sequence of visual events could be woven into a compelling narrative, capable of eliciting powerful emotional responses. He thought that urban environments had the potential to offer experiences filled with discovery and intrigue, achieved through a series of "jerks and revelations", unfolding vistas, surprises, and "sudden contrasts." However, it's important to note that Cullen's research primarily focused on the physical form of space, and during the town planning processes of the

1960s that he influenced, the human psychology often played a secondary or even overlooked role in shaping the urban spatial design.

On the other hand, there is the romantic and subjective viewpoint, advocated by thinkers like Alexander and Lynch. This approach delves into the psychological dimensions of place, exploring how individuals perceive and experience their surroundings on an emotional level (Alexander, 2017)¹²⁸. Here, the focus switches to sensory and experiential aspects, considering how people's senses interact with the urban landscape to invoke feelings of safety, comfort and vitality. The subjective viewpoint acknowledges that each person's unique experiences and perceptions play a crucial role in shaping their sense of attachment and connection to the urban environment.

The divergence between these two perspectives has sparked ongoing discussions within the field of urban design, with proponents of each approach highlighting their concerns and related elements. The classical view accentuates the importance of physical form and structure in creating an aesthetically pleasing and functional urban space. In contrast, the romantic viewpoint emphasizes the significance of human experiences and emotions in shaping the identity and character of a place.

As urban designers endeavour to create vibrant and humane urban spaces, reconciling these different perspectives becomes crucial. By combining rational urban form and pleasurable subjective experiences, urban spaces not only fulfil functional needs, but also resonate deeply with people's emotions, resulting in a stronger sense of place, i.e. a greater sense of belonging for city dwellers. It is therefore clear that the concept of sense of place requires comprehensive and multi-faceted consideration. Whilst the skillful integration of

¹²⁸ Alexander, C. (2017). *A city is not a tree*, Sustasis Press/Off The Common Books.

appropriate physical elements can undoubtedly contribute to the quality of a space, the essence of a sense of place lies more closely in the social and psychological dimensions of the urban environment. Jane Jacobs, one of the pioneers in exploring the concept of urban quality through this lens, has argued that activity plays a key role in generating and reflecting the quality of the built environment (Jacobs and Epstein, 2011)¹²⁹.

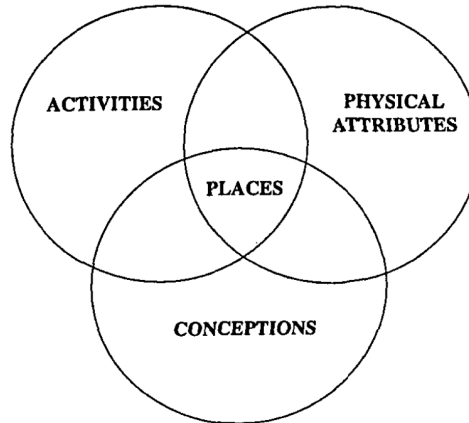
The concept of place encompasses all the activities, information flows and events that take place within a particular physical space, giving a specific space a unique identity and DNA. A successful urban place must therefore be more than just a physical arrangement of buildings and structures; it should be a vibrant and fluid ecosystem with culture as its DNA, fostering a collective consciousness through physical space.

In short, the key to realising a successful urban place lies in the harmonious integration of three indispensable elements: physical space, sensory experience and activity. Sensory experience refers to how people energise and give meaning to places by engaging in activities and defining the environment. Activities, events and social interactions enliven spaces and create the rich and varied experiences that are the essence of a sense of place.

By integrating physical design, sensory experiences and meaningful activities, urban designers can create vibrant and cohesive urban spaces. In turn, these enriched spaces will foster a deep sense of place, allowing residents and visitors alike to find a sense of identity with a particular space.

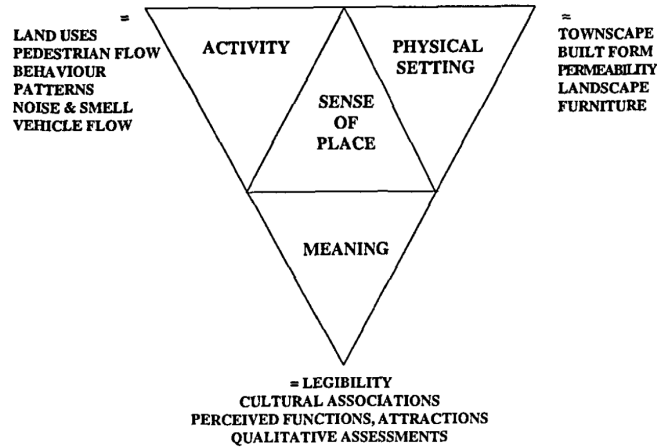
¹²⁹ Jacobs, J. and J. Epstein (2011). *The death and life of great American cities*, Modern Library.

Table 2-3 The development of “place model” or “sense of place model”



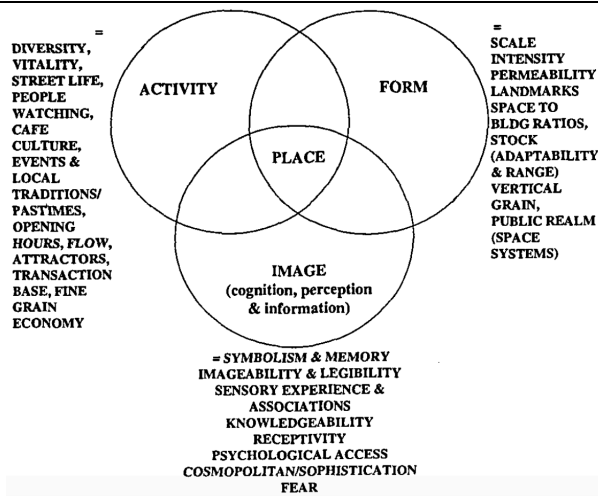
Canter (1977)

A visual metaphor for the nature of places



Punter (1991)

A model that is more helpful because of the components of a sense of place



Montgomery (1998)

A composite-derived model combining all the elements of a good place

Table 2-3 illustrates a comprehensive development process and a composite model derived from various components of the sense of place proposed by eminent scholars such as Canter (Canter, 1977)¹³⁰, Punter(Punter, 1991)¹³¹, Montgomery (Montgomery, 1998)¹³², Carmona(Carmona, 2021)¹³³, and others.

In the process of refining the sense of place model based on the work of previous researchers, it's evident that the three fundamental dimensions of the model—form, activity, and image—have been consistently verified. De Certeau argues that the meaning of place is constantly being constructed and reconstructed through the acts of everyday life: like words, places are articulated by a thousand usages (De Certeau, 1985)¹³⁴. It is implied here that activity is an important dimension of sense of place. Lefebvre's views also largely coincide with these three dimensions, arguing that many of the pleasures of the city (corresponding to image) are related to different forms of spatial practices and experiences (corresponding to activities) that may occur in liminal and interstitial spaces (corresponding to form) such as beaches and waterfronts, which have somehow escaped the instrumentalisation of the market (Lefebvre et al., 1996, Lefebvre, 1991)¹³⁵. Japanese researchers, employing spatial evaluation system, have also obtained similar outcomes **(Fig. 2-16)**.

¹³⁰ Canter, D. (1977). *The psychology of place*, Architectural Press.

¹³¹ Punter, J. (1991). "Participation in the design of urban space." *Landscape Design* 200: 24-27.

¹³² Montgomery, J. (1998). "Making a city: Urbanity, vitality and urban design." *Journal of urban design* 3(1): 93-116.

¹³³ Carmona, M. (2021). *Public places urban spaces: The dimensions of urban design*, Routledge.

¹³⁴ De Certeau, M. (1985). *Practices of space*. On signs, 129, 122-45.

¹³⁵ See: Lefebvre, H., Kofman, E., & Lebas, E. (1996). *Writings on cities* (Vol. 63). Oxford: Blackwell. and Lefebvre, Henri; Nicholson-Smith, Donald. *The production of space*. Vol. 142. Oxford: Blackwell, 1991.

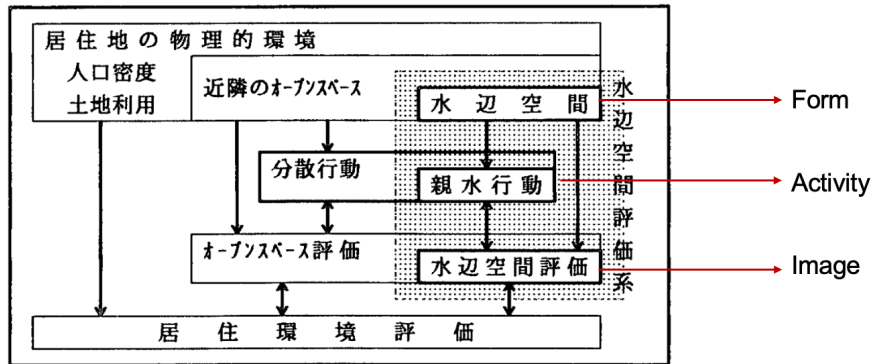


Fig. 2-16 3 dimensions of the waterfront evaluation framework by Kuroyanagi et al. (Based on Note⁶³)

The modified model proposed by the author in Fig. 2-12 incorporates these three main aspects. Considering the scale of the study, the model is divided into two levels corresponding to different scales in order to define more precisely the key elements that shape the sense of place in waterfront spaces. This new sense of place model helps to integrate the theoretical framework of urban design with the spatial characteristics of waterfront streets. In the initial phase of this study (Fig. 2-3 Stage 1), street scale was prioritised over the overall urban plan because street scale is closely related to human perception.

Regarding these three dimensions, they are specified as follows. er city-wide planning, as the street scales are intricately linked to human perception.

①**FORM**: The form of a space has a tangible impact on the situation of human activity in the environment and greatly shapes the overall image of the street space. The scale and proportions of the street, including width and boundary heights, play a key role in determining the sense of openness or intimacy that a person experiences in the space. These physical attributes also influence the 'sky rate', i.e. the extent to which the sky can be seen from different vantage points.

Permeability is an important aspect of street form, indicating the level of accessibility and opportunities for pedestrian movement within and around the area. A street design with high permeability attracts foot traffic from neighbouring neighbourhoods, and increased foot traffic means that the overall vitality of the street is enhanced. In addition, the clarity and transparency of boundaries between the public and private realms within a street space plays a critical role in creating a coherent and pleasant environment. Clear boundaries not only provide a sense of security, but also help to establish a hierarchy of privacy within the street, delineating public, semi-public and private areas.

Architectural elements further enhance the impact of the built form on the character of the street. The continuous and harmonious arrangement of horizontal and vertical textures within a unified architectural style creates a strong and distinctive visual identity for the street. The visual coherence creates a sense of unity and continuity that brings aesthetics to pedestrians and reinforces the overall character of the street.

In general, form is extremely important to the architect or urban planner. By iteratively revising scale, proportion, permeability, boundary clarity and other elements, the space should be designed not only to accommodate a variety of activities, but also to elicit positive perceptions and favourable emotional responses from its users.

② **ACTIVITY:** The vitality of a space is directly influenced by the dynamic and varied activities that unfold within it, serving as a testament to the vibrancy of the street space. The bustling presence of people at different times of the day, the frequent utilization of local amenities and facilities, and the palpable energy exuded by a thriving street life all indicate the health and vigor of the urban environment. For long-term sustainability, street spaces must offer a rich tapestry of opportunities for diverse activities, encompassing leisurely strolls, immersive sightseeing experiences, vibrant trading activities, people-watching moments, and other forms of engaging public interactions.

This multifaceted diversity not only ensures the constant animation of the street but also fosters a sense of natural surveillance, as an active and engaged street life naturally keeps a watchful eye on its surroundings, enhancing safety and security.

Moreover, the blend of public and private roles enacted on the street further enriches the tapestry of urban life. The coexistence of public gatherings, social interactions, and communal celebrations intermingles with private activities like window-shopping, café conversations, and the intimacy of personal exchanges. This harmonious cohabitation of public and private realms adds depth and complexity to the urban fabric, creating a captivating urban experience where the street space transforms into a lively stage for the interplay of human interactions and urban drama.

③ **IMAGE:** Within the urban landscape, each place possesses a distinct and singular identity, shaping its individual image. These two concepts, identity and image, though related, may not always perfectly align. Identity, as an objective attribute, encompasses the intrinsic characteristics and features that define a place. Meanwhile, however, the description of a place's image by different people is a highly subjective process, based first and foremost on people's perceptions and upbringing, a basis that varies from person to person. At the same time the information gathered about the place by different people influences the judgement. Even if the information gathered is more similar or limited for tourists, how this information is filtered can affect the final image of the place.

Renowned urban theorist Kevin Lynch emphasized the significance of imaginability in the urban environment, which influences how individuals perceive and comprehend the space around them. Imaginability refers to the ease with which people can mentally visualize and navigate the urban environment. In turn, this concept is shaped by urban

legibility¹³⁶ (Lynch, 1964)¹³⁷, a term coined by Lynch, referring to the clarity and coherence of the urban fabric that enables easy wayfinding and comprehension of the city's layout.

Impressions of places are often formed through a bottom-up process, where individuals draw on direct physical forms and symbolic cues to construct their perception of a place. These impressions are also shaped by memories and past experiences associated with the place, forging mental pathways that influence a person's sense of belonging and their willingness to actively engage and participate in the urban realm.

The image of a place, therefore, emerges from the interplay of objective identity and the subjective perceptions of its inhabitants and visitors. It is an intricate amalgamation of tangible elements and intangible associations, reflecting the collective understanding and emotional connections that people forge with the place. As such, enhancing the image of a street space requires a thoughtful consideration of the physical attributes, the symbolic significance, and the intangible stories that infuse the urban fabric with meaning and character. Ultimately, an evocative and well-crafted image amplifies the sense of place, shaping the perception of the street space and contributing to its enduring legacy as a cherished and cherished part of the urban structure.

2.2.5 The selection of the case study of the Shikemichi area

Upon establishing the preliminary model, a crucial phase entails its validation within the authentic waterfront spaces surrounding the canal. While Nagoya boasts an extensive

¹³⁶ legibility: The extent to which the different elements of the city (defined as paths, edges, districts, nodes, and landmarks) are organised into a coherent and recognisable pattern. By collecting information about these elements, individuals create an image of the city and a frame of reference.

¹³⁷ Lynch, K. (1964). *The image of the city*, MIT press.

canal system, the quintessential representation of the city's founding and developmental history lies in the Horikawa Canal, a fixture since the city's inception. Consequently, the primary focus of the analyses in this study centers on the spaces along the Horikawa Canal. The author believes that the models and research methodologies validated through the Horikawa Canal can serve as a robust framework applicable to other post-excavation canals in subsequent studies.

Considering the developmental process of waterfront spaces in Nagoya, the area delineated by the five pivotal historical bridges emerges as possessing heightened historical significance. Among these, the Shikemichi area stands out as a locale that has preserved its street structure since the post-war period, exhibiting a more continuous evolution of spatial dynamics. Distinctively, it has eluded the disruptive impacts of urban redevelopment, rendering it the sole government-designated traditional landscape preservation area with a wealth of collective knowledge. It provides a unique opportunity to trace the transformations in spatial attributes before and after the decline of water transport. Simultaneously, the neighborhood's modernization has unfolded in tandem with the city's development, resulting in a waterfront space that embodies both historical and modern spatial elements. Consequently, the Shikemichi area is considered an ideal setting for comparative analysis between past and modern times, which has been selected as the sample area for cognitive reconstruction in this study.

2.2.6 Localised detailed analysis using models

Indeed, the highly abstract model presented in section 2.2.4 serves as a foundational framework for analytical logic and fundamental insights into space. In order to truly

understand Nagoya's waterfront space, a typical area has been selected for in-depth analysis in 2.2.5.

Taking into account the research perspective and the study's objectives, this section primarily employs a qualitative approach. According to Creswell, qualitative research is characterized as an evolving process rather than one that is strictly predetermined.

Qualitative methods emphasize the collection and analysis of non-numeric data within the context of a single case study.(Creswell and Creswell, 2017)¹³⁸

Yin (2013) defines the case study method as an empirical investigation that delves into a contemporary phenomenon situated in a real-world context with blurred boundaries between the phenomenon and its surroundings. It relies on multiple sources of evidence. For this study, qualitative methods were employed to facilitate in-depth data collection concerning the physical attributes of the space, observable activities, and spatial perceptions.

In this context, "in-depth data" mainly refers to primary data collected from field observations and interviews, as discussed in sections 2.2.1 and 2.2.2, as well as secondary data derived from historical sources and official documents¹³⁹. The study's focal point is a highly specific case study area—the historically significant waterfront Shikemichi area, often referred to as the *genius loci* or the origin of Nagoya. Further elaboration on this area's distinct context and characteristics is provided in subsequent chapters. The focus

¹³⁸ ¹³⁹ See for the reference: Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications. In Chapter 9, Data collection procedures in qualitative research have been categorised into four basic types, which are qualitative observation, qualitative interviews, qualitative documentation and qualitative audio-visual materials.

was on analyzing open spaces typified by parking areas, core spaces represented by pedestrian movement zones, and port spaces centered around large-scale events. The specific analyses were conducted as follows:

- ① Parking space at the canal waterfront : morphology-based analysis-Chapter3
- ② Parking space at the canal waterfront : colour-based analysis-Chapter3
- ③ Open Spaces at the canal waterfront : movement-based analysis-Chapter4
- ④ Urban fantasy at the Nagoya port waterfront : event-based analysis-additional part:

Chapter6

These localized analyses mentioned above, grounded in the sense of place model, serve to gradually elucidate the distinctive features and key influence of Nagoya's canal-along spaces. Moreover, they contribute to the step-by-step development of a more precise and comprehensive understanding of how people perceive these waterfront areas.

2.3 Reference

- ALEXANDER, C. 2017. *A city is not a tree*, Sustasis Press/Off The Common Books.
- CANTER, D. 1977. *The psychology of place*, Architectural Press.
- CARMONA, M. 2021. *Public places urban spaces: The dimensions of urban design*, Routledge.
- CRESWELL, J. W. & CRESWELL, J. D. 2017. *Research design: Qualitative, quantitative, and mixed methods approaches*, Sage publications.
- DE CERTEAU, M. 1985. Practices of space. *On signs*, 129, 122-45.
- GOSLING, D., FOSTER, N. & CULLEN, G. 1996. *Gordon Cullen : visions of urban design*, Academy Editions.
- JACOBS, J. & EPSTEIN, J. 2011. *The death and life of great American cities*, Modern Library.
- LEFEBVRE, H., KOFMAN, E. & LEBAS, E. 1996. *Writings on cities*, Blackwell Oxford.
- LEFEBVRE, H. N.-S., DONALD 1991. *The production of space*, Blackwell, Oxford.

LYNCH, K. 1964. *The image of the city*, MIT press.

MONTGOMERY, J. 1998. Making a city: Urbanity, vitality and urban design. *Journal of urban design*, 3, 93-116.

NORBERG-SCHULZ, C. 2019. Genius loci: towards a phenomenology of architecture (1979). *Historic Cities: Issues in Urban Conservation*, 8, 31.

PUNTER, J. 1991. Participation in the design of urban space. *Landscape Design*, 200, 24-27.

SHERMAN, B. 1988. *Cities fit to live in: themes and variations: A to Z*, Produced for Channel 4 by Good Books.

CHAPTER 3

WATERFRONT AND PARKING SPACES IN HISTORICAL STREETS

3.1 Structure of the first verification

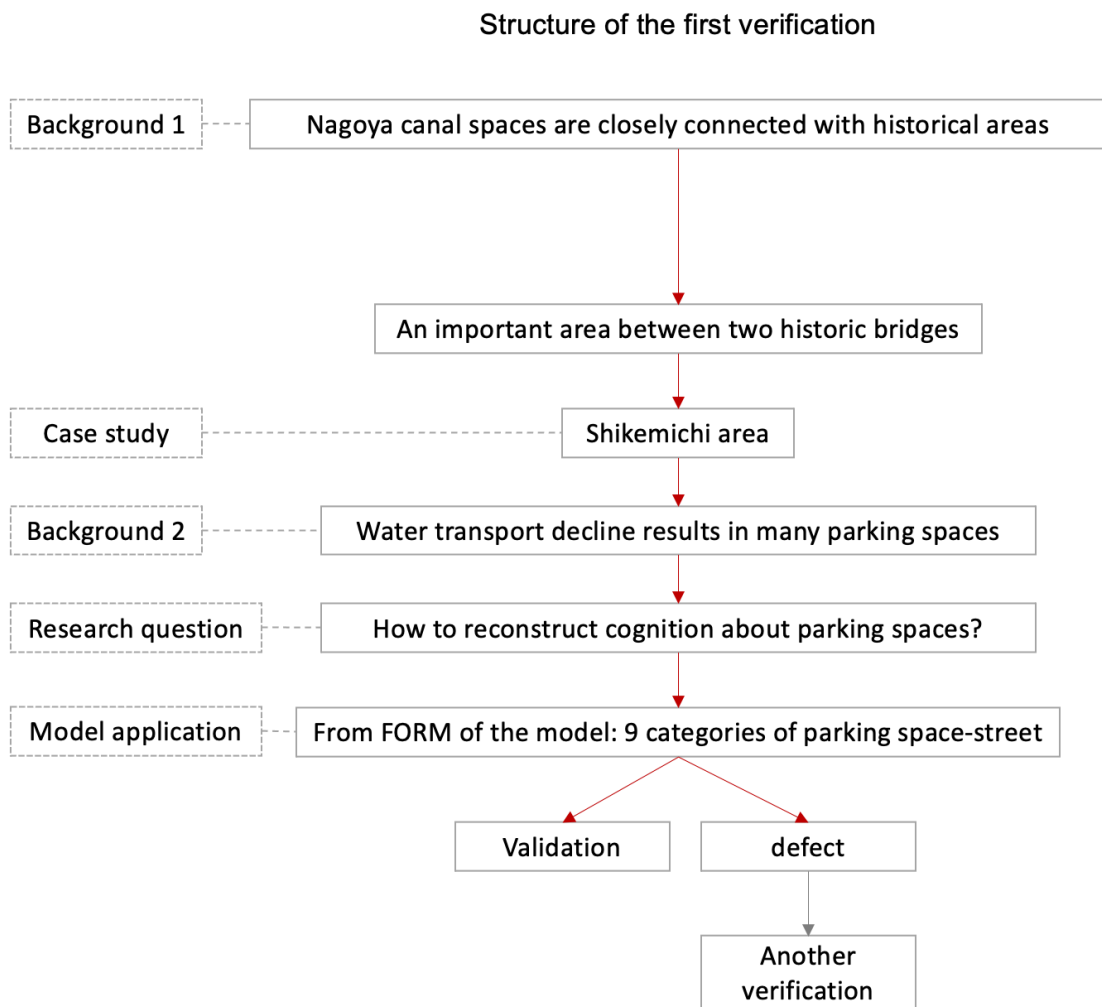


Fig. 3-1 Structure of the first verification of the sense of place model

The purpose of this chapter is to verify the validity of the model at the STREET scale. After analysing the background and current situation of the Shikemichi area, a historic

waterfront space located at the upper reaches of the Horikawa Canal, the large number of parking spaces appearing around the historic streets represents a major spatial change in this area in modern times. Therefore, the case study in this chapter uses the parking space as the perspective of the study.

In the specific application of the model, firstly, the relationship between parking spaces and neighboring streets is analysed and classified using the sense of place model, taking into account the FORM dimension. Subsequently, based on the classification results, the two dimensions of "activity" and "image" are analysed separately.

Different parking spaces produced different results on these two dimensions, implying that the cognition of the Shikemichi area has been reconstructed. While the case study initially verifies the validity of the proposed model at this stage, the conclusion that "parking has a completely negative impact on the street in the waterfront space" also exposes the limitations of the model, probably because it only discusses two scales (STREET and URBAN).

3.2 Water Decline and Parking Space in the Shikemichi area

This section sheds light on the pressing issue of excessive parking spaces, using the example of the Shikemichi district, an important traditional conservation area located in Nagoya, a city closely associated with water transport. This dilemma is caused by the decline of water transport along the Horikawa Canal as the era of port modernisation approaches, making it difficult to make rational use of vacant land for a while.

This section provides an in-depth analysis of the current distribution of parking spaces in this historically important area in the history of water transport, starting with a classification of nine types of parking spaces according to their specific form and

morphological relationship to the street. The purpose of this case study is to examine in depth the specific impact of these nine different types of parking spaces on the sense of place of the historic streets of the Shikemichi area. By explaining in detail the interplay between parking spaces and the street's sense of place, the case study aims to reveal the logic behind why this area, once so vibrant with water transport, is now in contemporary times mired in a sense of place due to an overabundance of parking spaces.

Unlike previous studies on the spatial impacts of various types of spaces, this study not only determines whether the sense of place is good or bad, but also tries to distinguish whether different spaces have different reasons for being good or bad. Especially for negative spaces, it is more important to know the specific aspects of negativity than to simply make a judgement. Because of the negative spaces, trying to find corresponding solutions to breathe new life into the Shikemichi area is another important goal of this study.

3.2.1 Background and purpose of the case study

The rapid development of main streets and other essential street infrastructure within the city has undoubtedly facilitated urban growth and enhanced accessibility. However, this modernization has also brought about unintended consequences, including a surge in automobile usage and the unfortunate demolition of dilapidated buildings, leading to the creation of vacant lands. To address the pressing need for temporary land utilization, the introduction of outdoor ground parking spaces, comprising coin-operated parking lots, monthly car parks, and dedicated parking spots (hereafter referred to collectively as parking spaces), has emerged as a popular solution.

Unfortunately, this primary development triggered a chain reaction that led to an increase in parking aids, such as wide asphalt pavements in urban areas. This, in turn,

fuelled the creation of more parking spaces - a vicious cycle that can have a number of detrimental effects on urban environments, including an increased heat island effect, a decline in landscape quality, and a sharp reduction in overall investment opportunities. On the other hand, the erosion of the natural environment and historical heritage by the uncontrolled proliferation of parking spaces becomes another vicious cycle (**Fig. 3-2**).

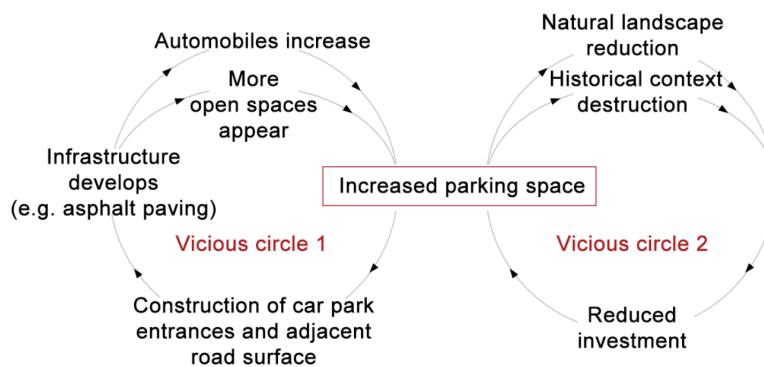


Fig. 3-2 Vicious circles caused by increased parking space (Based on 国土交通省 都市局 街路交通施設課:駐車対策の現状¹⁴⁰, author)

Therefore, in order to try to avoid the worrying potential consequences mentioned in the previous question, various proposals for optimising the provision of parking space have been attempted. Among the solutions proposed, the concept of underground car parks seems to have become a widely accepted solution, as it allows for an efficient use of space without affecting the urban landscape. In addition, combining parking spaces with other uses related to daily activities, or locating them away from heavily trafficked

¹⁴⁰ Refer to Ministry of Land, Infrastructure, Transport and Tourism, City Bureau: The current situation with parking policies (Version released on 4 March 2022) (国土交通省 都市局 街路交通施設課:駐車対策の現状, 令和4年3月4日)

core areas and around remote areas, are also viable ways to mitigate the negative impacts of car park expansion.

On the other hand, at a time when both globalisation and local identity are in the spotlight, many cities are beginning to realise the negative consequences of an imbalance between urban development and the preservation of historic environment. At the same time, the optimisation of historic spaces undergoing development has become an area of widespread interest. The search for innovative parking solutions is therefore not only an urban planning exercise, but also a commitment to shaping sustainable historic environments in contemporary times. It is about preserving the precious cultural heritage generated by a unique history while meeting modern needs.

In the 25 years between 1996 and 2021, car ownership in Japan has increased dramatically, with the number of registered vehicles surging from 68.74 million to 82.56 million. Correspondingly, the increase in car parking spaces has experienced an unprecedented surge, tripling over the same period, soaring from 2.51 million to a staggering 5.386 million. It is worth noting that Aichi Prefecture has the highest rate of car ownership in Japan, so it can be assumed that the number of parking spaces in this region far exceeds that of other prefectures and cities.

Nagoya is a port city with a long history of water transport, and the modernisation of the port infrastructure has inevitably led to the relocation of the canals and port spaces that have historically coexisted with the urban core. As a result, the economic significance of the canals declined and the numerous buildings surrounding the Horikawa Canal fell into disrepair (Hoyle, 2000)¹⁴¹. As urban planners attempted to redevelop the waterfront,

¹⁴¹ Hoyle, B. (2000). "Global and local change on the port - city waterfront." *Geographical review* 90(3): 395-417.

the empty spaces temporarily used as car parks inadvertently contributed to the hollowing out of the urban landscape. This in turn has raised concerns about the impact on the natural landscape and historic streetscape.

The Horikawa Canal is one of the more lacking water features in Nagoya. The surrounding historic area is rich in waterborne cultural heritage, which highlights the importance of preserving the cultural heritage of its neighbourhoods. Given these particularities, the erosion of the street structure by parking spaces is an issue that deserves particular attention and in-depth consideration.

While the proliferation of car ownership is undoubtedly a symbol of Japan's modernity and prosperity, the uncontrolled expansion of parking spaces also poses a considerable challenge to the city. How to strike a balance between modern transport needs and the preservation of historical and natural landscapes remains an issue that requires further research.

The main objective of this study was to conduct a field survey of the distribution of parking spaces in the Shikemichi area. By carefully examining the spatial layout of these parking facilities in relation to the surrounding streets, the sense-of-place model proposed in Chapter 2 is verified, while revealing how different parking spaces would specifically affect the surrounding street space. In addition, as part of the research underpinning this case study, the authors also delve into the underlying processes that have generated parking spaces in this historically significant area.

The ultimate goal of this study is to determine the specific impacts of different parking spaces on the surrounding streets in three dimensions: form, activity and image, through an in-depth examination of the spatial relationship between parking spaces and the surrounding streets. The specific idea is to provide a well-reasoned and comprehensive assessment through the use of a sense-of-place model, which will provide

a valuable reference for the development of the Shikemichi area in contemporary times. By grasping the logic of the specific impacts, it will be possible to propose targeted and more relevant solutions by addressing the impacts generated in each dimension, which is not only a future approach to spatial regeneration in the Shikemichi area, but also a possible path for similar waterfront spaces to follow.

3.2.2 Investigation and determination of the area boundaries

In the pursuit of comprehensive insights into the urban dynamics of the Shikemichi area, this research conducted a meticulous investigation encompassing the historic district of Shikemichi and its closely associated street space, as visually depicted in **Fig. 3-3**. The research also acknowledges the significance of preservation efforts, exemplified by the area designated for conservation by the Nagoya City Board of Education(名古屋市教育委員会, 1986)¹⁴², which is illustrated in the same figure. However, intriguing findings emerged, revealing that the western part of Shikemichi underwent considerable development during the late modern period, presenting an intriguing blend of historical preservation and contemporary transformation within the district.

¹⁴² (Nagoya), B. o. e. (1986). Nagoya Shikemichi Townscape Preservation District Preservation Plan.

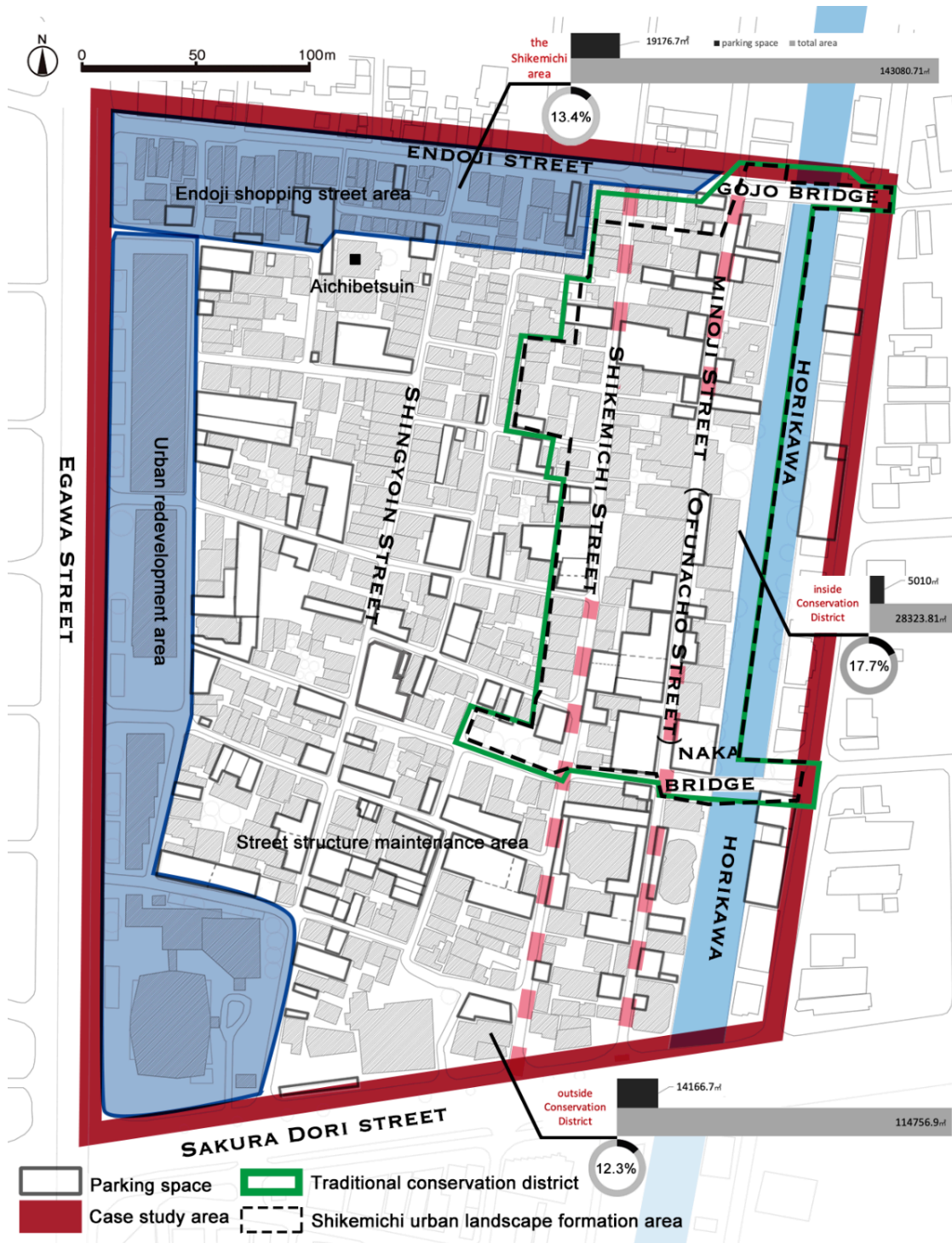


Fig. 3-3 Case study area & Conservation historic district & Distribution of parking spaces in the area

(Based on investigation, author)

Of particular interest is the area's neighbouring egawa Street, which has also undergone urban development and redevelopment. Despite these modernisations, the construction of Egawa Street dates back to the basic structure of the Second World War.

In addition, the Endoji Shopping Street, which has recently come back into the spotlight, is a vibrant area that provides the entire shikemichi district with a spatial vitality generated by a different history with water transport. The re-emergence of the Endoji Shopping Street is closely linked to the wider redevelopment that is taking place within this space. Endoji Shopping Street's revitalisation has also acted as a catalyst in the regeneration of waterfront spaces. The interplay between the revitalisation of the Endoji shopping street and the wider regeneration programme for the waterfront spaces emphasises the inextricable link between commercial vitality, historical context and the overall transformation of the Shikemichi area.

The final study area was meticulously defined, bounded by important streets and historical landmarks of cultural and urban significance. To the north of the study area is the bustling Endoji Street, a famous and important commercial street in Nagoya, whose roots in development are inextricably linked to the historically important Gojo bridge, an iconic bridge that connects the bustling commercial street to the rest of the city. Sakuradori Street is located on the southern border, which is the dividing line between the historic area and the post-war development area.

To the west of the study area is the historic Egawa Street, the basic structure of which has remained intact since the Second World War, symbolising the progression of Nagoya's historical development. The eastern boundary of the study area is marked by the Horikawa Canal, a canal that is an integral part of Nagoya's history and has witnessed the ups and downs of the city's waterfront life over the centuries. Historically, Nagoya Castle was built just north of the Horikawa Canal. (as depicted in **Fig. 3-4**). This historical origin highlights the close connection between the Shikemichi area and the political centre, Nagoya Castle, and provides side evidence of the historical logic of the area in relation to the development of the city and the activities around the canal.

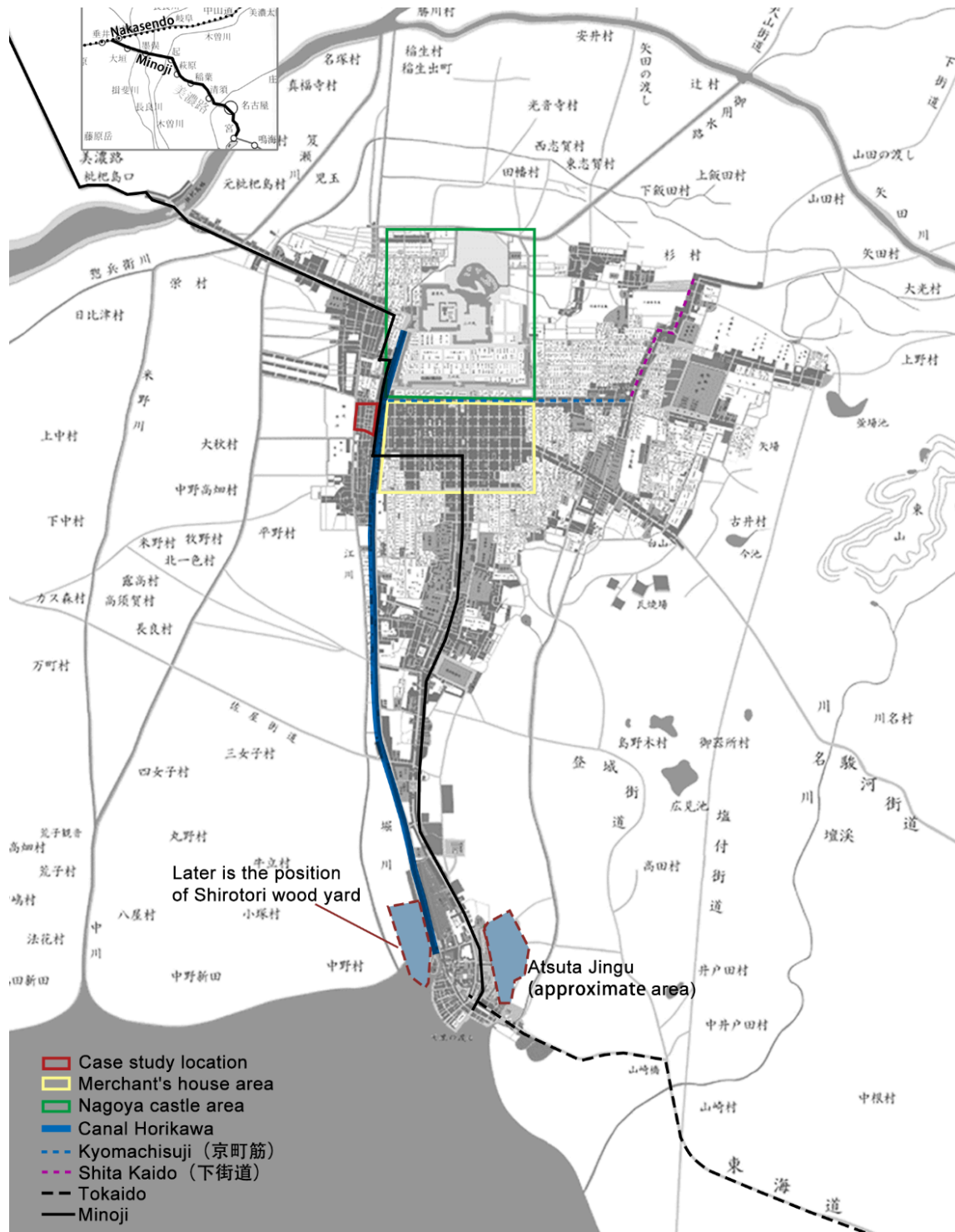


Fig. 3-4 Location of the Shikemichi area in Nagoya Castle Town (Map source: Network 2010)

Within the study area, two major streets - Shikemichi Street and Minoji (Ofunacho) Street - run parallel to the Horikawa River to the east, providing the framework for the

foundation of the area's unique structure that symbolises the history of water transport. During the prosperous period of the Horikawa River, Minoji (Ofunacho) Street was virtually an artery of trade, connecting with Minoji, a historical trade route connecting the Tokaido and the Nakasendo, and facilitating commercial and cultural exchanges between the different regions. The historical significance of Minoji (Ofunacho) Street derives from the linkage of its main trade routes, and such a linkage further describes the unique context of the Shikemichi area, emphasising its connection to Nagoya's wider historical position as the commercial centre of Chubu.

For this study, all areas referred to as the "the Shikemichi area" are areas bounded by the four lines mentioned above.

3.2.3 Basic information on parking spaces in the Shikemichi area

During the period when Horikawa served as the vibrant artery of life in Nagoya, the Shikemichi area thrived despite facing the challenges of four major fire¹⁴³. This historical context nurtured a distinctive mixed neighborhood, characterized by a harmonious coexistence of merchants and laborers engaged in transport-related activities as the primary occupants. The area's unique landscape was adorned with a remarkable array of continuous warehouses, showcasing its commercial and trading prowess.

However, with the advent of the Nagoya port's opening and the rapid expansion of land transport options, the once bustling water transport function of Horikawa began to wane. As a consequence, the Shikemichi area witnessed a surge in the demolition and abandonment of buildings, with many vacant spaces converted into land parking lots. This shift in the urban landscape was a manifestation of the evolving transportation trends

¹⁴³ The four great fires occurred in the year of 1700, 1724, 1757 and 1811.

and urban development strategies, which increasingly prioritized automobile use over traditional water-based transportation.

To shed light on this transformation, **Fig. 3-5**¹⁴⁴ and **Fig. 3-6**¹⁴⁵ presents a comprehensive analysis of the year-by-year progression of automobile numbers in both Japan and the Nishi district of Nagoya, where the Shikemichi area is located. Comparing the trend in car ownership across Japan with that in the Nishi district, it becomes evident that the changes in automobile numbers diverge significantly, leading to three distinct phases. The first phase witnessed high growth in automobile ownership before the 1980s, reflecting the rapid motorization of the society during this period. The second phase, spanning from the 1980s to the 1990s, marked a period of slowing growth in automobile numbers, attributed to maturing urban infrastructure and saturation of vehicle ownership. Finally, the third phase, observed after the 1990s, saw a notable decline in automobile numbers, indicative of changing transportation preferences and environmental concerns.

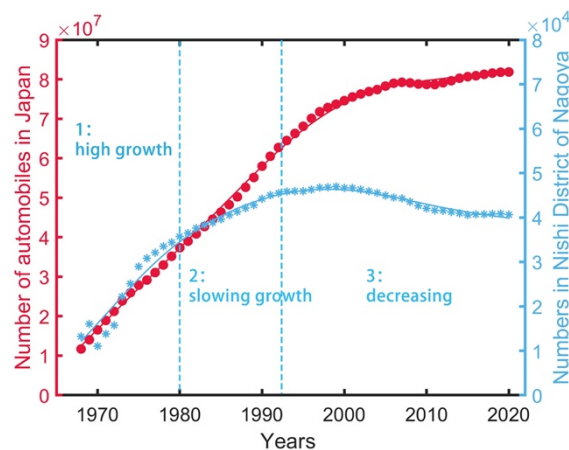


Fig. 3-5 Evolution of the number of automobiles and parking spaces in Nagoya

(Based on Note¹⁴⁴, author)

¹⁴⁴ Data source: 名古屋市政情報, 区別自動車台数の推移. 総務局企画部統計課解析活用係.

¹⁴⁵ 国土交通省, 数字で見る自動車 2021.

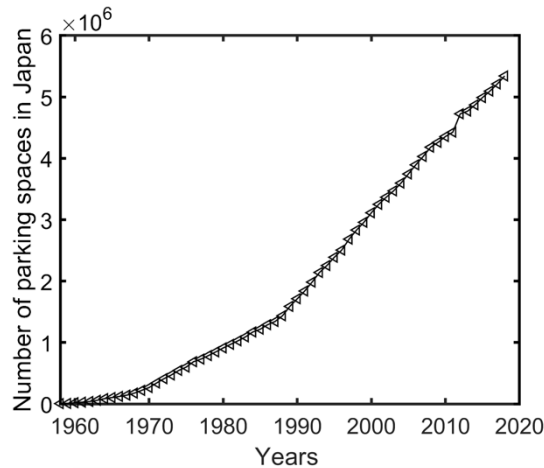


Fig. 3-6 Evolution of the number of automobiles and parking spaces in Japan

(Based on Note ¹⁴⁵, author)

In stark contrast, the parking capacity in Japan displayed a consistent pattern of steady growth throughout these phases, underscoring the efforts to accommodate the increasing number of vehicles. This trend in parking capacity aligns with the changing transportation landscape and the growing reliance on automobiles as a primary mode of transportation.

The data presented above provides an important reference for understanding the current state of parking in nishi districts, particularly within the Shikemichi area. The data highlights an important point: a single-minded emphasis on increasing parking facilities will not necessarily meet future demand. Trends in the West End suggest that the single occurrence of a significant decline in car counts can lead to the area facing a surplus of parking spaces.

The changing profile of car numbers indicates which mode of travel is preferred at a given time. Increased accessibility to public transport may also affect these values. As the number of vehicles on the road decreases, the need for a large number of parking facilities decreases accordingly. The traditional approach of continually adding more parking

spaces does not appear to take sufficient account of evolving traffic conditions and changing community needs.

Fig. 3-3 presents a comprehensive depiction of the parking space distribution within the study area as of 2022. Notably, parking spaces cover a significant portion, accounting for 13.4% of the entire Shikemichi area (with parking spaces occupying 19,176.7 m² out of the total area of 143,080.71 m²). Furthermore, there is a conspicuous discrepancy between the extent of parking spaces within and outside the designated Conservation District, with percentages of 17.7% and 12.3%, respectively. The visual representation in **Fig. 3-7** offers insights into the spatial arrangement of existing parking spaces in 1975 (Group, 1980)¹⁴⁶, revealing that most of these spaces were developed by repurposing open areas that were once occupied by dismantled historical buildings.

¹⁴⁶ 名古屋市教育委員会 (1980). 歴史的環境研究会編: 四間道と有松 : 名古屋市伝統的町並保全基礎調査:p37-38.



Fig. 3-7 Sources of parking spaces generation before 1975 (by author)¹⁴⁷

¹⁴⁷ Data on the basic dimensions and outline details of the buildings & streets are verified by the Nagoya City Urban Planning Information Service: Basic Urban Planning Information (S48-S52 Basic Map)((名古屋市都市計画情報提供サービス: 都市計画基本情報 (S48-S52 基本図))

To delve deeper into the origins of the old buildings converted into parking spaces, the original functions of these structures were meticulously investigated, as depicted in **Fig. 3-8**. The findings underscored that a considerable proportion of the converted buildings were originally residential, closely followed by wholesale shops and warehouses. Based on the distribution of buildings before the proliferation of parking spaces, the study area was classified into four distinctive categories.

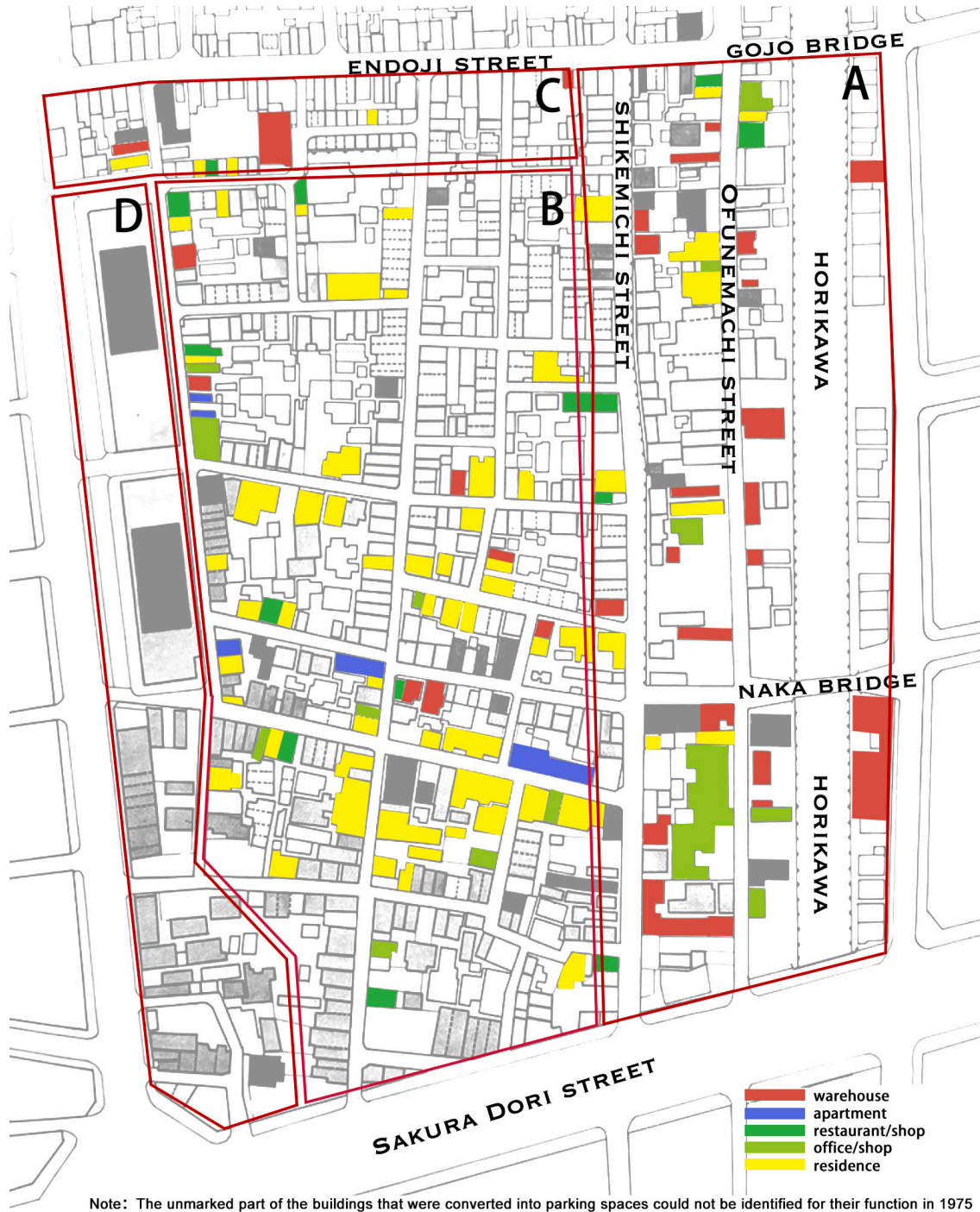


Fig. 3-8 Original functions of the old buildings and 4 areas (by author)¹⁴⁸

¹⁴⁸ Refer to: 名古屋市教育委員会 (1980). 歴史的環境研究会編: 四間道と有松: 名古屋市伝統的町並保全基礎調査: p37.

Area A, characterized by its high historical landscape value, thrived as a hub of commercial activities related to water transport along Horikawa during the modern and contemporary periods. On the other hand, Area B constituted a significant portion of the study area, primarily comprising shimotaya (仕舞屋)¹⁴⁹ and nagaya (長屋)¹⁵⁰ structures built before the war to cater to laborers intricately linked to canal activities. Many of these structures have been carefully preserved over time.

Meanwhile, Area C stood as a typical shopping street space, and Area D exemplified the landscape of urban redevelopment. The research indicated that a majority of the existing parking spaces were concentrated in Areas A and B, predominantly due to the decline of the canal economy, which led to the abandonment of numerous warehouses and offices in Area A. Simultaneously, the rental market for houses in Area B became unsustainable, as it had previously served laborers engaged in transport-related work. As a result, many residential properties in Area B underwent the same process of vacancy as the warehouses in Area A.

¹⁴⁹ Shimotaya: the owner is a person who used to be a merchant, but has ceased to be in the trade. Also, their buildings. Wealthy households ostensibly not in business, but living off their family crops, land rent and interest.

¹⁵⁰ Nagaya: a type of housing complex, and unlike communal dwellings, where two or more units share stairs, corridors, halls, lifts, etc., row houses have no communal areas other than shared boundary walls.

3.2.4 The application of Sense of Place model

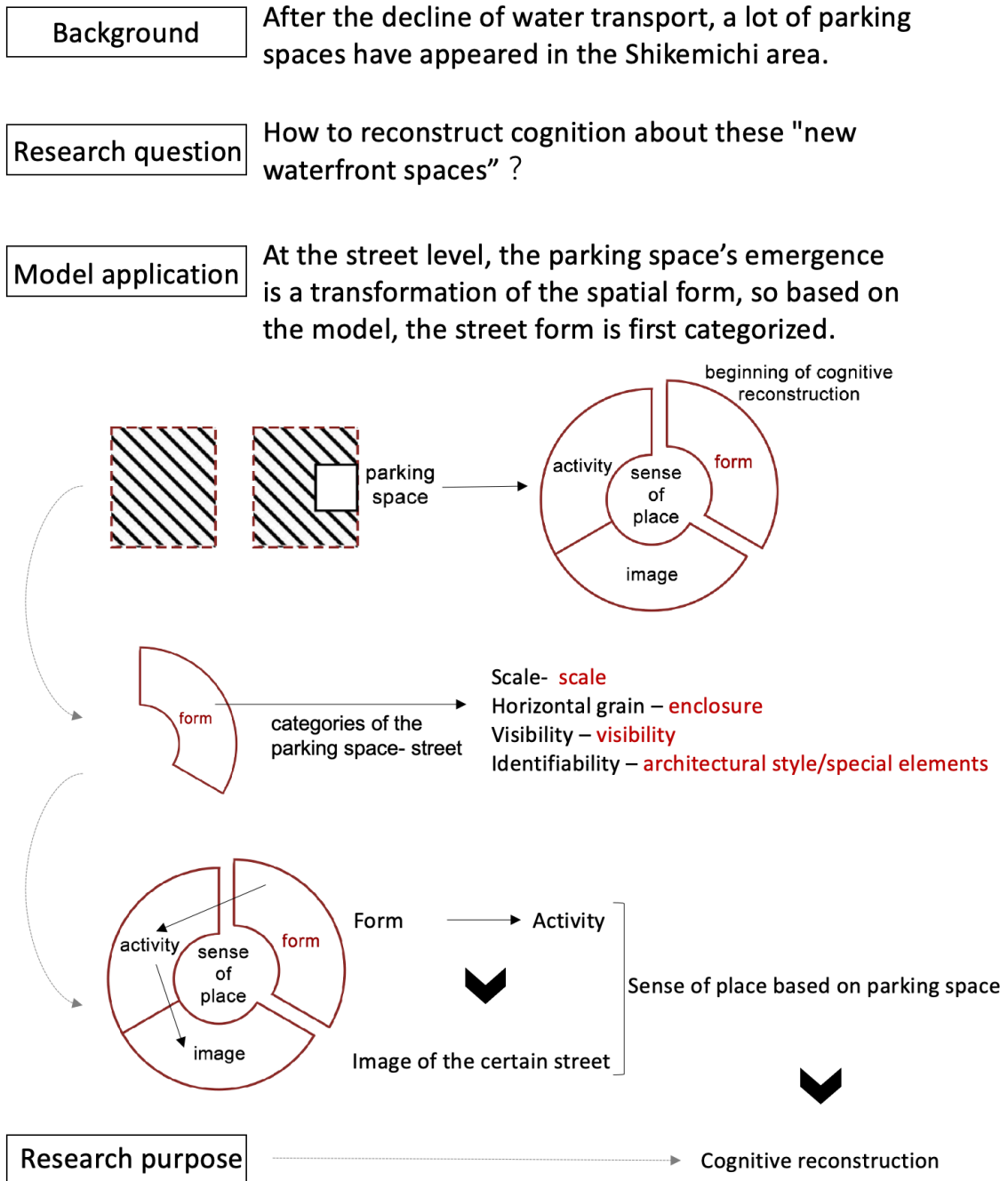


Fig. 3-9 logic of the case study of parking spaces in Shikemichi (by author)

Upon selecting the Shikemichi area for the case study, the research question revolved around how to cognitively reconstruct the waterfront space, particularly parking spaces

that have proliferated in response to the decline of water transport as a result of social transformations. To address this question, the sense of place model was employed for cognitive reconstruction. In this newly established sense of place model, the street level was incorporated. At this spatial scale, the emergence of parking spaces directly impacts the original spatial structure of the street. Consequently, the form within the model was taken as the beginning for the analysis of parking spaces. Building upon the research findings in Section 3.2.3, it was evident that there are various types of parking spaces in the area, each with different influences on the form of distinct streets. Therefore, an initial attempt was made to categorize the diverse form relationships between streets and parking spaces.

For different categories of parking spaces, the four dimensions of form within the model – scale, horizontal grain, visibility, and identifiability – were individually analyzed. This analysis corresponded to the four elements of scale, enclosure, visibility, and architectural style/special elements.

Subsequently, the examination continued by analyzing the impact of these changes in form on the four elements, which, in turn, contributed to shaping the image of a certain street. This comprehensive process allowed for the creation of a sense of place centered around parking spaces and facilitated the cognitive reconstruction of the waterfront space. **(Fig. 3-9)**

The elements within the street space, which are directly relevant to the scope of this study, are succinctly elaborated upon below. This concise explanation highlights their significance in contributing to the overall sense of place in the Shikemichi area. Through this approach, we aim to shed light on the nuanced interplay of design elements and human cognitions that collectively imbue a street space with its unique identity and character.

By adopting the composite model (mentioned in section 2.2.4), it is possible to gain a deeper understanding of the multifaceted nature of urban public space and how the various elements interact with each other to create a sense of place that is relevant to each parking space. With the results of these analyses, it is possible to develop more targeted war strategies to enhance the parked spaces, both at the street scale in historic neighborhoods like Shikemichi and at the urban scale in the broader urban context.

At this point, the abstract elements proposed in the model can be evaluated on a case-by-case basis in the actual street, applying the tangible spatial characteristics of the starting space. Furthermore, in order to ensure a more accurate and in-depth investigation of the impact of parking spaces, we have also divided the different street spaces into subsections based on the spatial structure of the streets themselves. This subdivision allowed us to examine the nuances and variations of each street in greater depth, in order to gain a comprehensive understanding of how parking affects the overall spatial experience and sense of place. This spatial analysis at the street scale is based on the three dimensions of the sense of place model. Through this process of applying the model, we were able to gain insight into the specific interactions between different parking spaces and each of the surrounding streets, thus revealing the logic behind the perceptions and characteristics that shape these street spaces.

By carefully comparing the model elements with the perceived deficiencies of the waterfront space, specific deficiencies that hinder the successful development of a sense of place can be pinpointed. Through this identification process, targeted and tailored policy measures or design interventions can be developed at later stages of regeneration or redevelopment work. With a comprehensive understanding of the factors that impede the realisation of an ideal sense of place, it is possible to refine the human experience in the waterfront environment by making corresponding improvements to specific factors.

The model not only provides a framework for analysis, but can also be used as a tool for design that contributes to the creation of more individual and culturally inclusive waterfront spaces.

In Section 1.2, we introduced various theories and definitions related to a sense of place in urban studies, elucidating the three essential elements that contribute to this concept. However, it is important to recognise that these elements have largely been refined and validated at a wider urban scale and may not always be directly applicable when analysing a sense of place in a waterfront environment. Therefore, in this study we endeavour to address this challenge by refining and adapting existing models to better suit the specific context of waterfront spaces.

3.2.5 Categories of the parking spaces

The study area is a neighborhood that has retained its original street structure, which is now preserved as it existed long before automated vehicles became widely available. A distinctive feature of these preserved street structures is that there is no clear demarcation between pedestrians and vehicles, i.e., there is no distinction between carriageways and pavements. The width of the street space is mostly around 5 metres, and there is ample space for both walking and stopping to interact in these streets. In contrast, Endoji Street, which is a commercial street, is even wider, with a width of 6.5 metres. In addition, there are a number of narrow alleys of about 2 metres in width that are completely closed to vehicular traffic, creating pleasant areas for pedestrians to walk and adding to the walkability of the area.

Architecturally, most buildings within the study area boast a modest height of up to three storeys (**Fig. 3-7**). Such low-rise buildings help to provide an intimate and humane experience for pedestrians and enhance their connection with the urban environment. The

harmonious ratio of building height to street width gives a sense of enclosure and comfort as well as a reflection of the concept of pedestrian-friendly spaces. Even on wider streets such as Shikemichi Street, which is 7 metres wide, this inherent sense of comfort remains as the warehouse building is built on an elevated stone foundation, effectively maintaining a favourable height-to-width ratio.

In essence, the study area retains its unique appeal through its historic street layout, accommodating pedestrians and vehicles in a very different way to the modern day. The arrangement of low-rise buildings and the intimate scale of the streetscape contribute to a unique sense of place. As the subsequent analyses progress, we will attempt to explain through what specific elements this distinctive sense of place is ultimately manifested, and explore how these senses of place interact with the introduction of new elements such as self-driving cars. By understanding in more detail the elements that make up a sense of place, we can develop more targeted policies or designs for the future development and enhancement of the study area.

The Shikemichi historic district has a street network that differs significantly from modern streets, characterised by a mixed layout of T- and L-shaped streets and two long, uninterrupted, straight streets. Among these unique streets, the continuous row of warehouses on both sides of Likemichi Street creates a sense of closure unique to the warehouse streets of the water transport period. There is no entrance to the middle part of such a long, straight street, so it can be said that it is completely closed to pedestrians. This limited openness creates a uniquely immersive experience for the contemporary walker, i.e. without the fear of vehicular and traffic disruption, and differs markedly from the open grid blocks more common in other urban environments. The openness of a street's boundaries plays a crucial role in shaping people's sense of space and patterns of movement within the area.

However, the sense of enclosed and orderly space that is unique to the streets of the aforementioned waterside neighbourhoods would be undermined by the presence of parking spaces. Because these parking spaces need to meet the physical needs of the surrounding buildings, they will inevitably alter the original street boundaries and traditional layout of the streetscape. The presence of parking spaces on the street may disrupt the sense of fluidity for pedestrians walking and may impede the visual coherence of the street in the waterside neighbourhood.

In addition, the introduction of car parking can change the perception of the street. The sense of closure and intimacy that enclosed streets once provided may be greatly reduced as parking spaces create pedestrian disruption and potential congestion. This in turn will alter the overall ambience and sense of security of the historic neighbourhood and may diminish the unique sense of place it embodies.

The authors therefore believe that the location of parking spaces within the Shikemichi historic district and the specific impacts of different locations need to be further considered.

In order to comprehensively assess the impact of parking spaces on the surrounding street space, this study systematically classified nine relationships between parking spaces and streets. The classification is based on the morphological characteristics of the parking spaces themselves and their layout in relation to the surrounding streets. By analysing the different parking spaces one by one, this case study aims to reveal the specific ways in which the parking spaces generated in the waterfront spaces affect the historic streets around them.

3.2.6 Parking space on side of T-street

Spatial characteristics of T-street

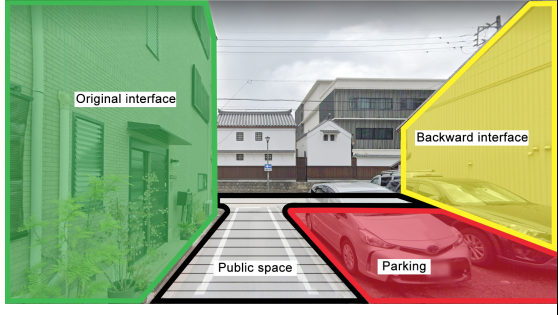
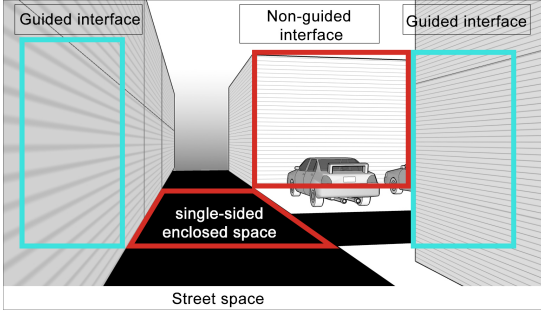
The unilateral closure of the T-street creates an intriguing spatial layout that produces two inwardly orientated closure zones (designated as *a* and *b*) and a continuous street interface (designated as *c*). In addition, this unique layout provides a safer pathway for pedestrians than the traditional grid-like street design, as vehicles are not expected to be present at all times, which psychologically enhances the pedestrian's sense of security.

A distinctive feature of this type of street is its clear axiality, which creates a clear directionality through the clear intersecting form of the two streets. That is to say, this particular structure creates two clear and well-defined axes, the vertical (X-axis) and the horizontal (Y-axis). The advantage of clear directionality for pedestrians is that it facilitates their orientation, and their sense of direction, which is not easily confused, enhances their spatial experience within the street.

The one-sided closure of T Street reflects the unique street character of the Historic Waterfront District. While it reduces accessibility to a certain extent compared to a grid-like block, it also strikes a balance between privacy and openness.

Category 1: Parking space at the corner of a T-junction

Table 3-1 Category 1: photo & people view analyse (by author)

											
Activity					Form						
① Diversity	<input checked="" type="radio"/> A ₁	<input checked="" type="radio"/> A ₂	<input type="radio"/> B ₁	<input checked="" type="radio"/> B ₂	<input checked="" type="radio"/> B ₃	① Scale	<input checked="" type="radio"/> A ₁	<input checked="" type="radio"/> A ₂	<input type="radio"/> B ₁	<input checked="" type="radio"/> B ₂	<input checked="" type="radio"/> B ₃
② People watching	<input checked="" type="radio"/> A ₁	<input checked="" type="radio"/> A ₂	<input type="radio"/> B ₁	<input checked="" type="radio"/> B ₂	<input checked="" type="radio"/> B ₃	② Enclosure	<input type="radio"/> A ₁	<input checked="" type="radio"/> A ₂	<input type="radio"/> B ₁	<input checked="" type="radio"/> B ₂	<input checked="" type="radio"/> B ₃
③ Movement	<input checked="" type="radio"/> A ₁	<input checked="" type="radio"/> A ₂	<input type="radio"/> B ₁	<input checked="" type="radio"/> B ₂	<input checked="" type="radio"/> B ₃	③ Visibility	<input type="radio"/> A ₁	<input checked="" type="radio"/> A ₂	<input type="radio"/> B ₁	<input checked="" type="radio"/> B ₂	<input checked="" type="radio"/> B ₃
④ Vitality	<input checked="" type="radio"/> A ₁	<input checked="" type="radio"/> A ₂	<input type="radio"/> B ₁	<input checked="" type="radio"/> B ₂	<input checked="" type="radio"/> B ₃	④ Identifiability	<input type="radio"/> A ₁	<input checked="" type="radio"/> A ₂	<input type="radio"/> B ₁	<input checked="" type="radio"/> B ₂	<input checked="" type="radio"/> B ₃

is particular type of parking greatly disrupts the axial feel of the street, transforming the original T-junction into an almost triangular core space. The presence of these parking spaces changes the original sense of space, making the street less linear and more focused around the parking area. Unlike linear spaces, core spaces are often more suitable for lingering activities and social interactions. However, the lack of seating or other amenities in these parking spaces to facilitate people stopping or talking does not provide any space for people to stay comfortably. Conversion of intersections to core spaces therefore results in a loss of a clear sense of direction and forward motion without the potential for stopping that should be possible in return. Pedestrians may experience brief disorientation or confused walking behaviour when passing through streets with such parking spaces.

In addition, the presence of these parking spaces leads to a greater dispersion of the pedestrian's visual boundaries, in all three directions, with a consequent reduction in the sense of enclosure of the street. In this case, the presence of parked cars also enhances the sense of pedestrian surveillance. In addition, the potential for private or intimate behaviours to occur on the street around this parking space is greatly reduced, resulting in a much less diverse range of activities within the A2 and B2 areas. There would also be a noticeable reduction in the overall street vitality and pedestrian flow, as the reduction in the diversity of activities in the vicinity of the parking space would mean that it would impact on the overall vitality of the surrounding street space, including B₃ and A₁.

In essence, the presence of these disruptive parking spaces has a cascading effect on the entire street, altering its character and diminishing its vibrancy. The lack of inviting public spaces for social engagement and the reduced diversity of activities lead to a decline in pedestrian flow and street life. As urban spaces are shaped by the interactions and activities of its inhabitants, these parking spaces' negative impact on the street's sense

of place highlights the significance of thoughtful urban design in fostering dynamic and vibrant streetscapes that cater to the needs and desires of the community.

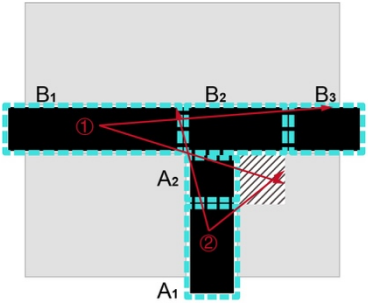
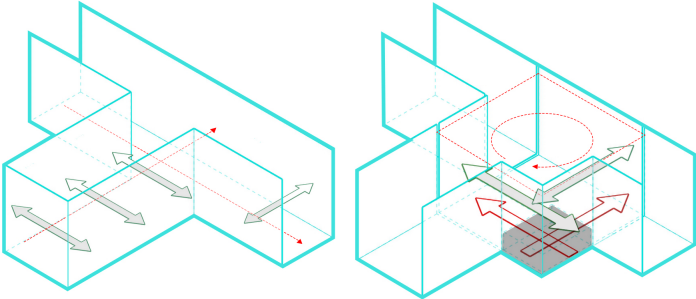
The spatial interface between A₂ and B₂ has been compromised, severely affecting the visibility and legibility of the street. Ideally, these streets should be lined with shop or restaurant windows, a transparent medium that allows the interior and exterior views to interact and extend the depth of the street space. Because this transparent interface allows people to capture and process information about the interior spaces on either side of the street, it helps to create a more detailed perception of the street. However, the absence or loss of these visible interfaces in the vicinity of pedestrian spaces can diminish the depth of understanding of street space.

On some streets, interfaces are removed from pedestrian areas but do not disappear and remain visible. Still, the increased distance from people reduces the street's permeability. In addition, if cars are parked, this further obscures the visibility of these interfaces, leading to a decrease in the memorability and recognisability of the street.

Spatial interfaces disrupted by parking spaces can also have a negative impact on the image formation of the street itself. For example, when a street lacks a transparent and attractive interface, pedestrians may feel disconnected from the street space they are in. The consequence of this sense of space is a reduced desire to interact and engage with neighbouring buildings or businesses. In detail, if the visibility of shops and restaurants is reduced, potential customers may be lost as a result, as pedestrians are less likely to find these businesses and spend money. This can also further diminish the vitality of the street as a platform for commerce and socialising. In addition, insufficiently defined interfaces can give an ambiguous sense of space and an inability to recognise the nature of the space in which they are located. For example, a lively shopping street will make

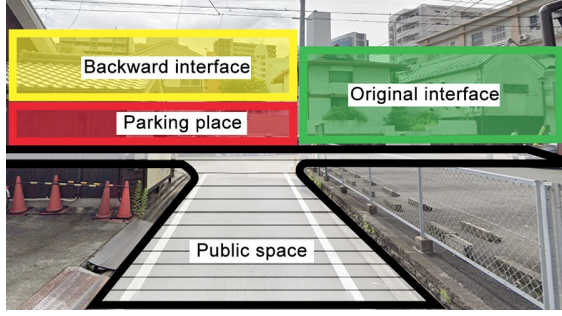
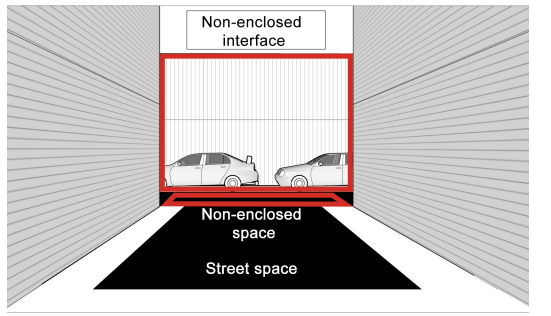
people feel safe, but unfamiliar and unclear nature of the neighbourhood may lead to concerns about the safety of the area.

Table 3-2 Category 1: analysis diagrams & impact on the street image (by author)

Type	Pattern diagram
	
Impact on the image of street	
<p>The parking space transforms a clear axial space into a core-type space, destroying the legibility of the historic street boundary. (B=Shikemichi Street)</p>	

Category 2: Parking spaces parallel to a T-junction

Table 3-3 Category 2: photo & people view analyse (by author)

							
Activity				Form			
① Diversity	<input type="radio"/> A ₁	<input checked="" type="radio"/> B ₁	<input checked="" type="radio"/> B ₂	① Scale	<input checked="" type="radio"/> A ₁	<input checked="" type="radio"/> B ₁	<input checked="" type="radio"/> B ₂
② People watching	<input checked="" type="radio"/> A ₁	<input type="radio"/> B ₁	<input checked="" type="radio"/> B ₂	② Enclosure	<input type="radio"/> A ₁	<input type="radio"/> B ₁	<input checked="" type="radio"/> B ₂
③ Movement	<input checked="" type="radio"/> A ₁	<input checked="" type="radio"/> B ₁	<input checked="" type="radio"/> B ₂	③ Visibility	<input checked="" type="radio"/> A ₁	<input type="radio"/> B ₁	<input checked="" type="radio"/> B ₂
④ Vitality	<input type="radio"/> A ₁	<input checked="" type="radio"/> B ₁	<input checked="" type="radio"/> B ₂	④ Identifiability	<input checked="" type="radio"/> A ₁	<input type="radio"/> B ₁	<input checked="" type="radio"/> B ₂

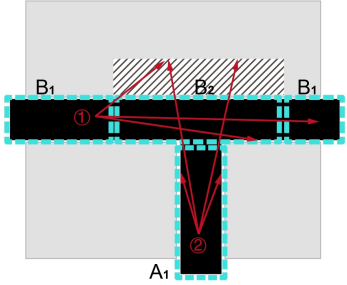
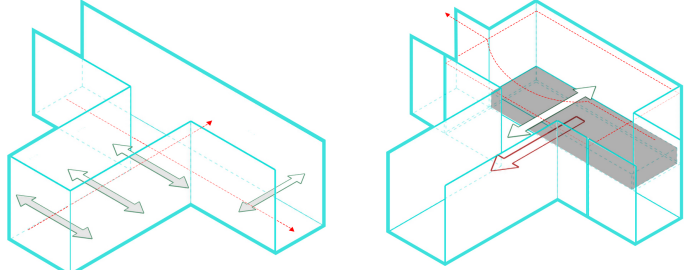
This category of parking space would have the following impact on the street space. Firstly, in terms of the continuity of the street interface, the parking space transforms the B₂ zone into a one-sided closed street with an otherwise closed street interface on both sides. As a result, the privacy of the street is reduced. In addition, cars parked along the street increase the likelihood of surveillance, and while surveillance can increase the overall security of the street, the view from the car may also give a false sense of security and private activities are less likely to occur. The diversity of activities within the A₁ and B₂ zones is also reduced as a result.

The next aspect is people's sightlines. In the B₂ zone, the street can lack a continuity feature due to the predominance of parking spaces and the random appearance of the vehicles themselves. This result hinders the ability of pedestrians to recognise the T-junction type, making it less recognisable and identifiable. On the other hand, in section A₁, the presence of parked vehicles hinders the visual permeability and the information that could be obtained through active observation is also affected, reducing the legibility

and readability of the street extending horizontally from the intersection in terms of its image dimension.

Finally, there is the dimension of people's choice of streets. People on the street will find themselves competing for limited space with cars parked on both sides. The consequence of the above is that people will choose to pass through this roadway as little as possible. This shift in human behaviour also disrupts the sight structure between sections A₁ and B₁, making the intersection less clear and easier to navigate than it would otherwise be.

Table 3-4 Category 2: analysis diagrams & impact on the street image (by author)

Type	Pattern diagram
	
Impact on the image of street	
<p>The parking space destroys the readable interface of the historic street towards the surrounding area and is substantially less attractive to people on other streets. (B= Shikemichi Street)</p>	

Overall, the generation of parking spaces in the B₂ and A₁ zones negatively impacts pedestrians' sense of place on the street space and reduces its attractiveness to local residents and visitors. If it is hoped that these historic streets will continue to be an important part of the waterfront spaces and contribute to Nagoya's overall sense of place and civic identity in future planning, there needs to be a case-by-case targeted planning for future parking spaces. By valuing the history of each street and preserving the unique

spatial sense of the waterfront spaces based on an understanding of the streets, we are essentially improving the identity of the area.

Category 3: Parking spaces perpendicular to a T-junction

Table 3-5 Category 3: photo & people view analyse (by author)

Activity				Form			
① Diversity	<input type="radio"/> A ₁	<input type="radio"/> B ₁	<input checked="" type="radio"/> B ₂	① Scale	<input checked="" type="radio"/> A ₁	<input type="radio"/> B ₁	<input checked="" type="radio"/> B ₂
② People watching	<input type="radio"/> A ₁	<input type="radio"/> B ₁	<input checked="" type="radio"/> B ₂	② Enclosure	<input type="radio"/> A ₁	<input type="radio"/> B ₁	<input checked="" type="radio"/> B ₂
③ Movement	<input checked="" type="radio"/> A ₁	<input checked="" type="radio"/> B ₁	<input checked="" type="radio"/> B ₂	③ Visibility	<input type="radio"/> A ₁	<input type="radio"/> B ₁	<input checked="" type="radio"/> B ₂
④ Vitality	<input type="radio"/> A ₁	<input type="radio"/> B ₁	<input type="radio"/> B ₂	④ Identifiability	<input checked="" type="radio"/> A ₁	<input checked="" type="radio"/> B ₁	<input checked="" type="radio"/> B ₂

Parking spaces perpendicular to the T-intersection have less of an overall impact on the continuity of the street interface and pedestrian safety than the second classification. This is because the original street interface is only interrupted for a short length. However, given the specific location and particular orientation of these bays, they can still cause difficulties for pedestrians in zones A₁ and B₁ in identifying street features.

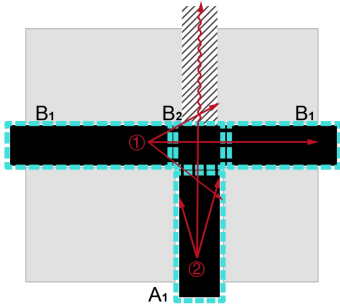
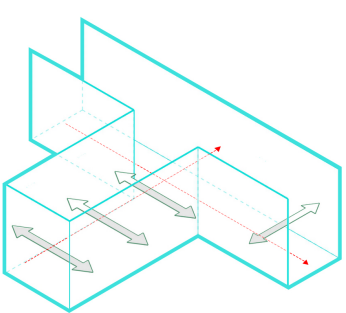
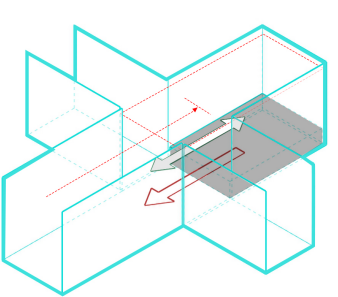
The very specific orientation of the extensions here refers to the fact that the parking spaces are perpendicular to the T-street making the spatial pattern of the T-intersection essentially indistinguishable from that of an intersection. This can lead to misjudgement of the street structure by pedestrians, i.e. it is not clear whether crossing is supported ahead. This situation is more significant for non-local pedestrians.

For pedestrians in the B₁ zone, parked cars create varying degrees of visual obstruction. Without the ability to fully observe the surrounding space, there is some difficulty in fully understanding the environment, and further identification of the continuous historic street is challenged. This visual blindness caused by the occlusion of parked vehicles reduces the legibility of the street, which is an important element in the image dimension.

Similarly, for pedestrians in the A₁ zone, the blind spot due to parked cars remains and it is difficult to distinguish whether the street ahead is being used as a parking space.

In summary, parking spaces perpendicular to T-streets do not have as much of an impact on the street interface as those in the second category, but they can still affect the street's sense of place and, in particular, its legibility.

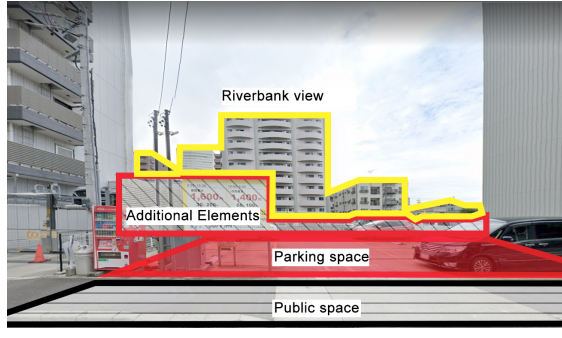
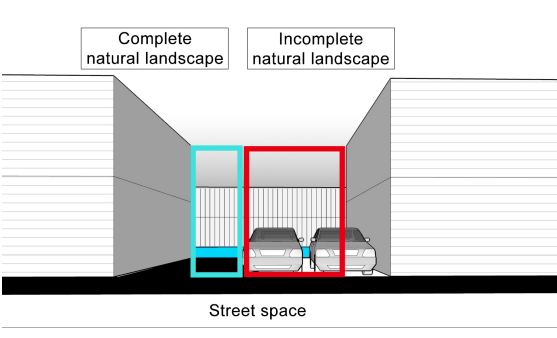
Table 3-6 Category 3: analysis diagrams & impact on the street image (by author)

Type	Pattern diagram	
		
Impact on the image of street		
<p>The parking space is visually misleading for people on streets, making it easy to misinterpret the junction as a crossroads, thus psychologically divide the block. (B= Minoji (Ofunacho) Street)</p>		

3.2.7 Pass-through parking spaces

Category 4: Parking space between the street and the canal

Table 3-7 Category 4: photo & people view analyse (by author)

									
Activity					Form				
① Diversity	<input type="radio"/> A ₁	<input type="radio"/> A ₂	<input checked="" type="radio"/> B ₁	<input checked="" type="radio"/> B ₂	① Scale	<input type="radio"/> A ₁	<input type="radio"/> A ₂	<input checked="" type="radio"/> B ₁	<input checked="" type="radio"/> B ₂
② People watching	<input type="radio"/> A ₁	<input type="radio"/> A ₂	<input checked="" type="radio"/> B ₁	<input checked="" type="radio"/> B ₂	② Enclosure	<input type="radio"/> A ₁	<input type="radio"/> A ₂	<input type="radio"/> B ₁	<input checked="" type="radio"/> B ₂
③ Movement	<input type="radio"/> A ₁	<input type="radio"/> A ₂	<input checked="" type="radio"/> B ₁	<input checked="" type="radio"/> B ₂	③ Visibility	<input checked="" type="radio"/> A ₁	<input checked="" type="radio"/> A ₂	<input checked="" type="radio"/> B ₁	<input checked="" type="radio"/> B ₂
④ Vitality	<input type="radio"/> A ₁	<input type="radio"/> A ₂	<input checked="" type="radio"/> B ₁	<input checked="" type="radio"/> B ₂	④ Identifiability	<input type="radio"/> A ₁	<input checked="" type="radio"/> A ₂	<input checked="" type="radio"/> B ₁	<input checked="" type="radio"/> B ₂

Due to the unique layout of the survey area, where streets run parallel to the canal rather than directly abutting it, open spaces between these two elements offer an exceptional opportunity for distant views of the canal. This provision of open space creates a specific vantage point from which people on the street can explore and appreciate the adjacent canal side, adding depth and transparency to the streetscape compared to other non-riverfront streets that often rely on recessed building facades or corridors to establish visual hierarchy.

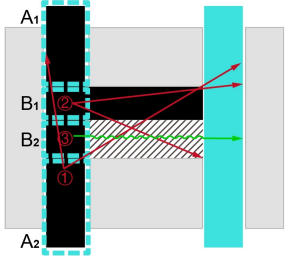
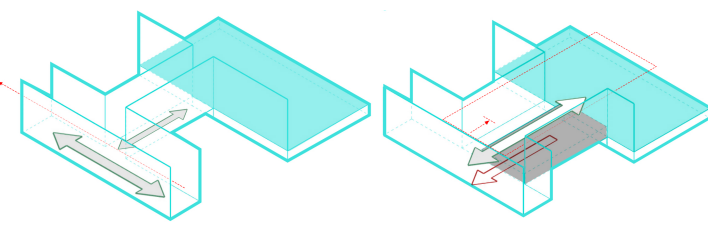
However, the scale of the parking spaces in this area often exceeds that of the open spaces between buildings, creating a disproportional favor towards parking rather than preserving and enhancing the canal view. This discrepancy disrupts the canal view definition of the site and reduces the expectation for continuous exploration of its beautiful landscape (B₂). The presence of parked vehicles further interferes with views towards the canal, diminishing street interface transparency and compromising the overall visual experience.

Importantly, only when parking spaces remain unused, an uninterrupted view of the canal becomes accessible, transforming the access to this neighborhood's natural

landscape from a continuous experience to an unpredictable and fragmented one over time. For non-residents of the area, when parking spaces entirely occupy the open spaces, it becomes challenging for them to recognize and be aware of the surrounding natural beauty, such as the canal (B₂).

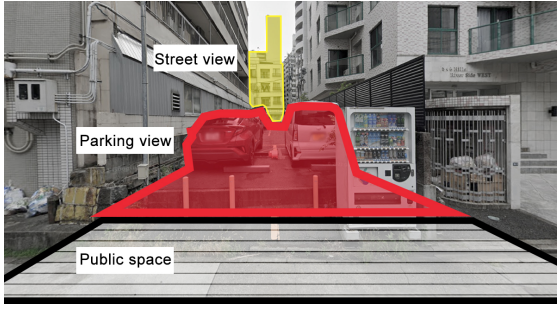
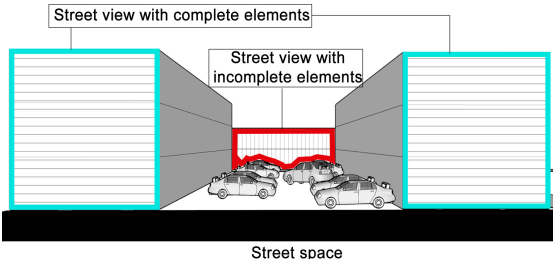
The view of the canal from the street and across its river is a crucial form of citizen participation in nearby public spaces. This right cannot be overlooked, especially when considering neighborhoods close to relatively rare natural resources. While parking areas may appear as private spaces, they significantly alter the public character of their surrounding street space, making public participation contingent on parking availability.

Table 3-8 Category 4: analysis diagrams & impact on the street image (by author)

Type	Pattern diagram
	
Impact on the image of street	
<p>The parking space displays an incomplete view of the Horikawa, even completely obscuring the canal elements, reducing the knowledgeability of the canal landscape. (A= Minoji (Ofunacho) Street)</p>	

Category 5: Parking spaces between two parallel streets

Table 3-9 Category 5: photo & people view analyse (by author)

									
Activity					Form				
① Diversity	<input type="radio"/> A ₁	<input checked="" type="radio"/> A ₂	<input checked="" type="radio"/> B ₁	<input type="radio"/> B ₂	① Scale	<input type="radio"/> A ₁	<input checked="" type="radio"/> A ₂	<input type="radio"/> B ₁	<input checked="" type="radio"/> B ₂
② People watching	<input type="radio"/> A ₁	<input checked="" type="radio"/> A ₂	<input checked="" type="radio"/> B ₁	<input type="radio"/> B ₂	② Enclosure	<input type="radio"/> A ₁	<input checked="" type="radio"/> A ₂	<input type="radio"/> B ₁	<input checked="" type="radio"/> B ₂
③ Movement	<input checked="" type="radio"/> A ₁	<input checked="" type="radio"/> A ₂	<input checked="" type="radio"/> B ₁	<input checked="" type="radio"/> B ₂	③ Visibility	<input checked="" type="radio"/> A ₁	<input checked="" type="radio"/> A ₂	<input checked="" type="radio"/> B ₁	<input checked="" type="radio"/> B ₂
④ Vitality	<input checked="" type="radio"/> A ₁	<input checked="" type="radio"/> A ₂	<input checked="" type="radio"/> B ₁	<input checked="" type="radio"/> B ₂	④ Identifiability	<input checked="" type="radio"/> A ₁	<input checked="" type="radio"/> A ₂	<input checked="" type="radio"/> B ₁	<input checked="" type="radio"/> B ₂

This type of parking space has a similar spatial relationship to the street as Category 4, but does not involve the allocation of natural resources. As a whole, its presence will still have an impact on the space on both sides of the street and the form of the interface. The specific negative impacts are as follows.

The first is in terms of the identification of street elements. These parking spaces hinder the possibility of identifying important elements on the opposite side of the street. People usually recognise the character of a street through various architectural elements such as plaques, entrances and windows that are close to the height of a person's point of view, as well as visual elements such as the material of a building's façade or the form of its roof. However, this category of parking space, while it cuts through both streets, also blocks one's view of most of the architectural elements on the opposite side of the street. The act of inducing an observation of the street across the street prevents the identification of the street (A₂).

The second issue is the perception of safety caused by the sight obstruction. Vehicles parked in these parking spaces may also pose a safety hazard to nearby pedestrians, whose

views may be obscured by oncoming traffic, especially if the parking spaces are close to intersections. Reduced visibility and potential risks may discourage pedestrians from lingering or engaging in recreational activities, thereby diminishing the vitality of the street.

In terms of streetscape aesthetics, these types of parking spaces can take away from the historic atmosphere of the surrounding streets. The uniqueness of this waterfront area and the character of the street is largely conveyed through the visual continuity of the street interface, so the experience and perception of this space may be negatively impacted by an incomplete street interface as a result.

In terms of mobility between streets, the spatial mobility between streets is impeded by the traffic barriers created by parked cars, which means that the natural flow of pedestrians that may occur is impeded, significantly weakening the connectivity between the two streets. This lack of pedestrian connectivity weakens the cohesion and unity of the waterfront spaces and prevents the different streets from functioning as integrated public spaces. In turn, limited pedestrian permeability reduces opportunities for social interaction and community engagement.


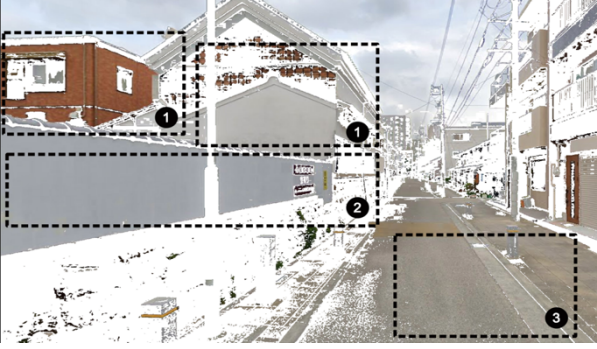

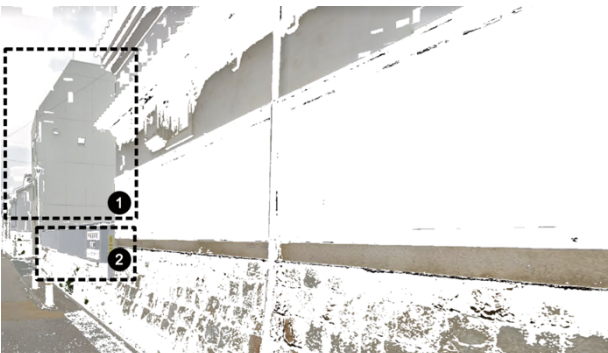


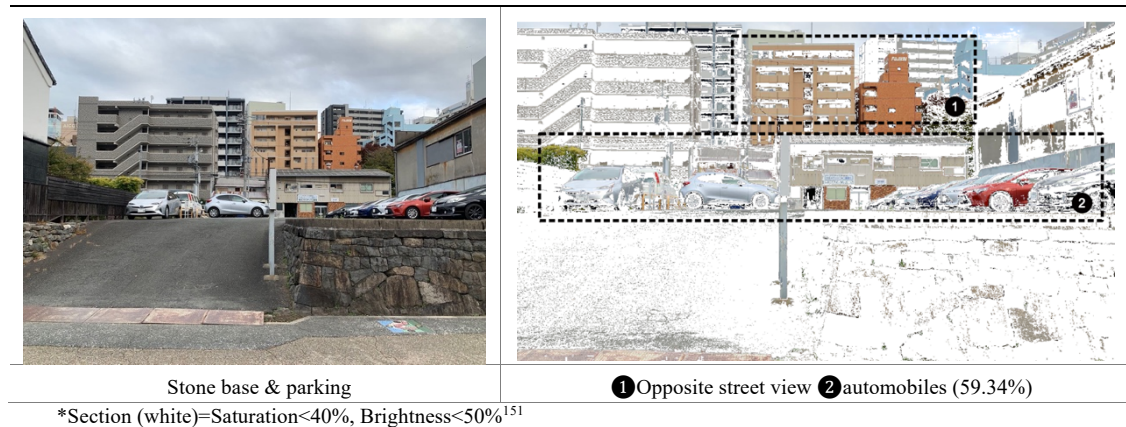
Fig. 3-10 Distribution of categories (by author)

In one particular case within this category, the parking lot owned by Adrise (Fig. 3-10) features a white enclosure on the side facing Shikemichi Street. Surprisingly, its impact on the sense of space within Minoji (Ofunacho) Street is almost identical to that of an open parking space. However, when turning to Shikemichi Street, the solid-coloured

enclosure may play a role in creating a somewhat confusing panorama. To comprehensively grasp the nuanced impact, especially regarding the color ambience, we conducted an in-depth HSB filter analysis (Table 3-10). This analysis involved examining the pedestrian view in both directions, encompassing the vicinity of this particular parking lot, and comparing it against a similar one that lacked such an enclosure - the parking lot of Toyo Plastic Industry Co., Ltd. & Times Nagono 1-chome (Fig. 3-10).

Table 3-10 Colour analysis of parking spaces with(out) closure (by author)

Original image	HSB filtering* Results & Discordant parts
	
Stone base & parking with closure	① new facade ② closure ③ road (73.80%)
	
Stone base & parking with closure	① new facade ② closure (39.68%)



The results of the HSB filter analysis show that the enclosure is visually distinct from the historic street, yet similar to the façade of the new building. A visually uniform colour block does not necessarily guarantee the harmonious aesthetics sought, and in some cases a wrong choice of colour can even have a negative aesthetic impact.

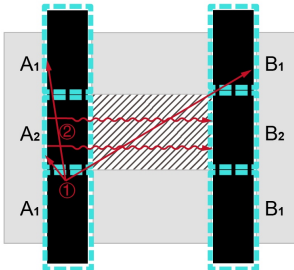
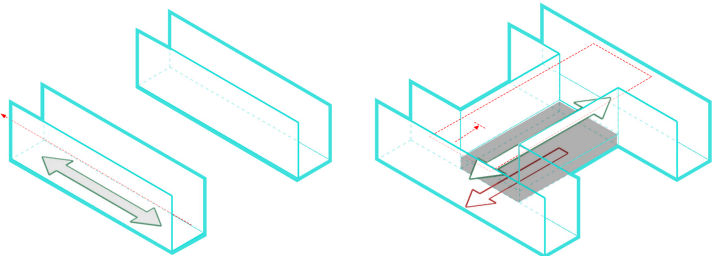
In this case, the same colour was used for the fenestration of the Adris car park, but failed to achieve visual unity. The reason for this is that this fence creates a colour separation between the historic street and the car park. The visual separation created by this enclosure may detract from the overall sense of place and diminish the pedestrian experience along Shikemichi Street. This is one of the more interesting perspectives; not only does the parking space itself cause visual clutter, but even when the car park uses a uniformly coloured enclosure and design, it still greatly affects the integration of the parking space into the surrounding streetscape and affects people's grasp of the colours of the waterfront spaces.

Careful consideration needs to be given to the choice of approach to maintenance and colour harmonisation in order to address visual disharmony such as this. This

¹⁵¹ This standard is summarized from “Urban View Formation Area View Formation Benchmark” (四間道都市景観形成地区景観形成基準)

includes the choice of texture, materials and how well it matches the surroundings. Creating a positive sense of place may be easier if the enclosure of parking spaces can be harmonised with the existing streetscape and historical context.

Table 3-11 Category 5: analysis diagrams & impact on the street image (by author)

Type	Pattern diagram
	
Impact on the image of street	
<p>The parking space shows an incomplete view of another parallel historic street, where the ground floor elements are obscured and both streets are less identifiable. (A= Shikemichi Street)</p>	

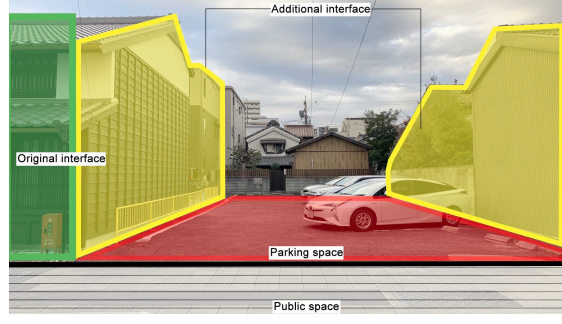
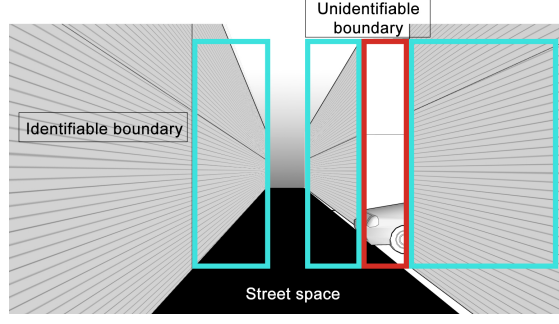
3.2.8 Parking spaces on the side of (long) straight streets

This category consists primarily of generally straight streets, a distinctive feature of the Four Days City area, which are characterised by the absence of turns, long overall distances and minimal interruptions. Modern urban planning suggests that long, straight streets with few interruptions usually lack vitality, as they can lead to self-segregation of neighbouring blocks and reduce the complexity of the street. This is of course true for the average modern neighbourhood, where people may become bored with the unchanged streetscape or lose the desire to continue exploring. However, in the case of the Shikemichi historical district, the distinctive history itself is the catalyst that stimulates the desire to explore and experience. It is therefore more important to preserve the continuity between the two bridges on the street as part of its symbolic and storehouse character as a historic waterfront spaces than to create street intersections.

Unfortunately, the introduction of parking on these long, straight streets would have a detrimental effect on their continuity. The introduction of parking disrupts the visual continuity of the streetscape and interrupts the unique sense of extension of the historic streets. It has also been mentioned several times above that haphazardly parked vehicles will obstruct the pedestrian's view, creating visual obstructions and weakening the sense of openness and continuity.

Category 6: Parking space perpendicular to long straight streets

Table 3-12 Category 6: photo & people view analyse (by author)

					
Activity			Form		
① Diversity	<input type="radio"/> A ₁	<input checked="" type="radio"/> A ₂	① Scale	<input type="radio"/> A ₁	<input checked="" type="radio"/> A ₂
② People watching	<input type="radio"/> A ₁	<input checked="" type="radio"/> A ₂	② Enclosure	<input type="radio"/> A ₁	<input type="radio"/> A ₂
③ Movement	<input type="radio"/> A ₁	<input checked="" type="radio"/> A ₂	③ Visibility	<input checked="" type="radio"/> A ₁	<input checked="" type="radio"/> A ₂
④ Vitality	<input type="radio"/> A ₁	<input checked="" type="radio"/> A ₂	④ Identifiability	<input checked="" type="radio"/> A ₁	<input checked="" type="radio"/> A ₂

This particular type of parking space is very unique and can rarely be found in other modern neighborhoods. In the Shikemichi area, these types of parking spaces are usually created by demolishing several houses. The demolition leaves narrow open spaces perpendicular to the street and extending deeper into the neighborhood that could potentially be used as parking spaces. The frontage widths of these parking spaces essentially do not exceed the frontage widths of the adjacent buildings and therefore have limited impact on the continuity of the street elevation (A₂). The impact on the continuity of the street interface has been discussed a number of times in the previous sections on

the different typologies and the magnitude of the impact is directly related to the length of the disappearing interface. Similar to the potentially confusing consequences of Category 3 on the street structure, the narrow shape of these parking spaces makes it difficult for people to accurately assess their true condition when viewed from outside the car park (A₁). This means that pedestrians may mistake these parking spaces for a real street, or for a T-junction, leading to confusion, and the wrong action may disrupt the normal flow of people walking.

If these parking spaces are created through the demolition of existing historic buildings, the result may alter the character and clear identity of the neighborhood, affecting its overall sense of place.

In addition, roads with such parking spaces have evolved from single traffic flow lines to more complex situations, such as sudden vehicle starts, which are actually potential conflicts between pedestrians and vehicles. These episodic traffic conditions can disrupt the natural flow of pedestrians and disrupt the sense of order and coherence of the street space.

Urban regeneration often poses significant challenges for historic spaces, as people deeply value these areas as essential elements of urban identity (Dougherty, 2006)¹⁵². When asked to create a mental map of a city, many individuals tend to start with historically significant landmark areas, as landmarks and paths are considered fundamental elements of spatial representation (Siegel and White, 1975)¹⁵³. Landmarks can be understood as visual elements that create strong associations in all urban

¹⁵² Dougherty, D. (2006). *Embodying the city: Identity and use in urban public space*, Virginia Tech.

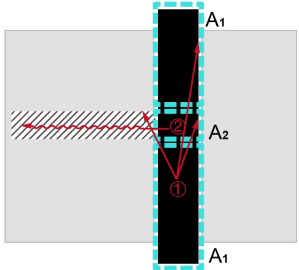
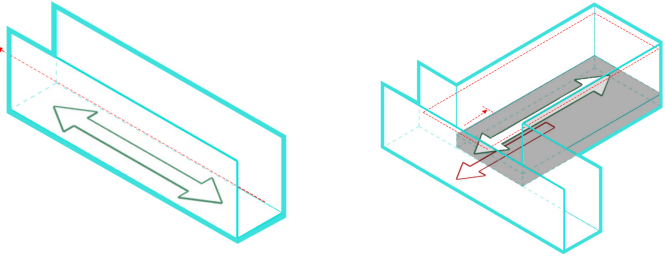
¹⁵³ Siegel, A. W. and S. H. White (1975). "The development of spatial representations of large-scale environments." *Advances in child development and behavior* 10: 9-55.

landscapes, while paths are seen as elements of movement that shape spaces with different characteristics through the experience of walking or touring.

The straight and long streets of the Shikemichi area are representative of such landmarks that can serve as starting points for cognitive maps. They are both landmarks and roads, and this dual identity should be more clearly constructed and valued.

From this perspective, the introduction of vertical parking spaces, while not having a significant impact on the continuity of the street façade, can have a misleading effect on the process of identifying the landmarks of this historic space. The sudden break in the street interface, which should always have been continuous, can lead to errors in imagining the original streetscape of the waterfront spaces warehouse, with the consequence that the parking spaces diminish the otherwise strong impression of the waterfront spaces.

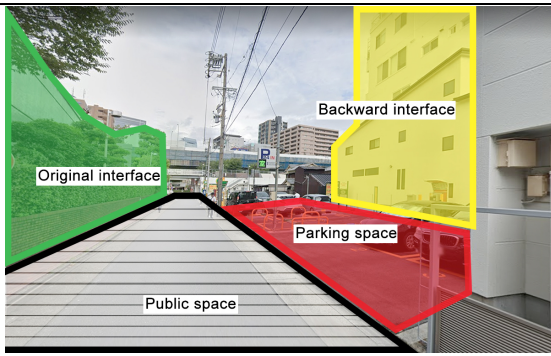
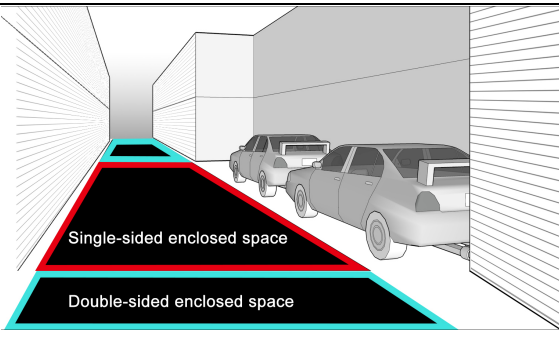
Table 3-13 Category 6: analysis diagrams & impact on the street image (by author)

Type	Pattern diagram
	
Impact on the image of street	
<p>The parking space shows an incomplete view of another parallel historic street, where the ground floor elements are obscured and both streets are less identifiable. (A= Shikemichi Street)</p>	

Category 7: Parking spaces parallel to long straight streets

The introduction of parking spaces parallel to the long straight streets in the Shikemichi area results in a complete disruption of the original street interface, transforming the once two-sided enclosed space into a single-sided one (A₂). This disruption has similar impacts on human activity as observed in Category 2. However, the effects on the street image are of particular significance, as two main factors contribute to the sense of place in these long straight streets: their closely spaced structure and the composition/texture of their interfaces.


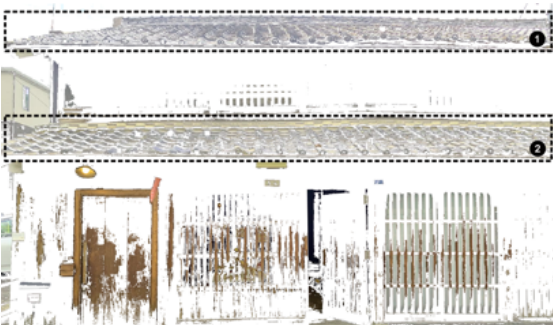
Table 3-14 Category 7: photo & people view analyse (by author)

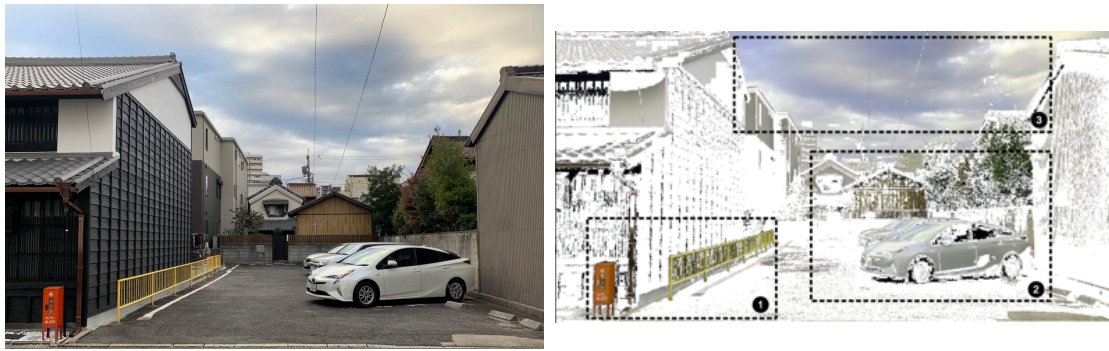
						
Activity	Form					
① Diversity	● A ₁	● A ₂	① Scale	○ A ₂	● A ₁	● A ₂
② People watching	● A ₁	● A ₂	② Enclosure	○ A ₂	● A ₁	● A ₂
③ Movement	● A ₁	● A ₂	③ Visibility	● A ₂	● A ₁	● A ₂
④ Vitality	● A ₁	● A ₂	④ Identifiability	● A ₂	● A ₁	● A ₂

In the Shikemichi area, the main long straight streets boast elements of traditional techniques, such as wooden lattice interfaces, Shitamiita, and lime coating, which have an intermediate colouring effect, creating a subdued and harmonious atmosphere. Unfortunately, this atmosphere is disrupted by the parking spaces' highly saturated signage colours and smooth hard automotive material textures, which clash with the surrounding ambience. An analysis of two representative photographs of the landscape, using image recognition to filter for colour, revealed that a significant proportion (37.84%) of landscapes containing car parks did not match the original colour tone (Remaining coloured parts of the photograph).

Moreover, the architectural setbacks created by the parking spaces lead to higher sky rates over longer areas (A_2), opening up what was once an enclosed space and diminishing the identifiability of the street as a cohesive entity (**Table 3-15**). Consequently, the parts that do not match the original colour tone are predominantly associated with the parking spaces.

Table 3-15 Colour analysis of long straight street façade (by author)

Original image	HSB filtering* Results & Discordant parts
	
Wooden lattice on the street interface	①&② Japanese tile roof (31.72%)



Shitamita (下見板張り) & parking

① Parking fence ② automobiles ③ sky (37.84%)

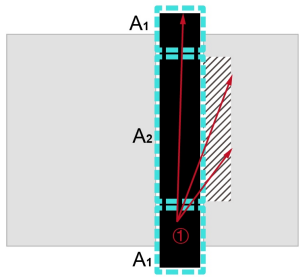
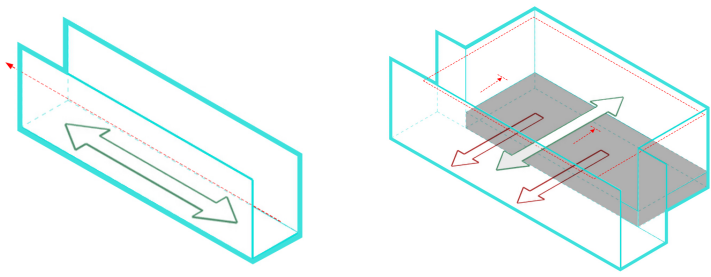
*Section (white)=Saturation<40%, Brightness<50%¹⁵⁴

The disturbance caused by the parking spaces parallel to the long, straight street has had a very noticeable negative impact on the sense of place in the Shikemichi area. On the one hand, the enclosure of the street receives a greater disturbance, specifically, the enclosed street space on both sides becomes a one-sided enclosed space. On the other hand, the visual perception of the interface of the newly generated parking space clashes with the traditional atmosphere of the street, destroying the unique aesthetics that historic streets should have.

Both of these undermine the sense of place of the long, straight historic street, especially in terms of the street's image. As waterfront spaces are regenerated and designed for the future, this consideration of how parking spaces blend into the historic streetscape becomes more important.

¹⁵⁴ This standard is summarized from “Urban View Formation Area View Formation Benchmark” (四間道都市景観形成地区景観形成基準)

Table 3-16 Category 7: analysis diagrams & impact on the street image (by author)

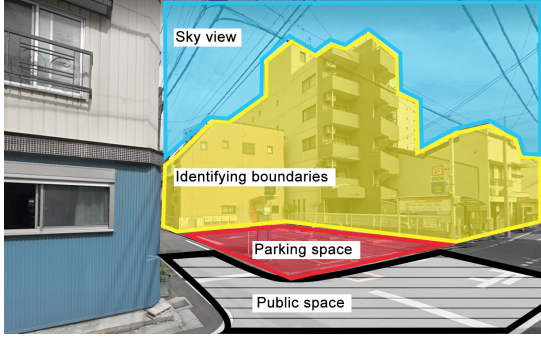
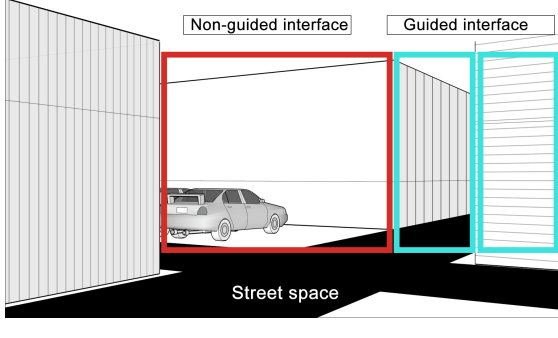
Type	Pattern diagram
	
Impact on the image of street	
<p>The parking space destroys the atmosphere of the long straight historic street, adding contradictory elements to the historic context and reducing the street's memorability. (A= Minoji (Ofunacho) Street)</p>	

3.2.9 Parking spaces around other types of streets

Category 8: Corner parking spaces at intersections

The prevalence of intersection spaces in modern urban planning makes them a common sight in many neighborhoods, usually characterized by openness and clear interfaces between different blocks. People rely on these interfaces to navigate and understand their surroundings in various directions. However, when an intersection is transformed into a parking area, it can lead to local blurring or even disappearance of the original interface (A₂B₂), significantly reducing the identifiability of complex situations. In our study area, an important bridge called Naka Bridge intersects two historic streets, creating two vital intersections—one of which serves as one of the few open spaces in the region and has historically been an essential node within the neighborhood.

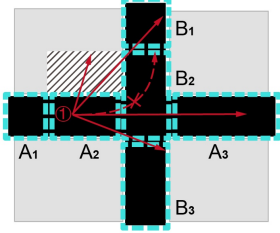
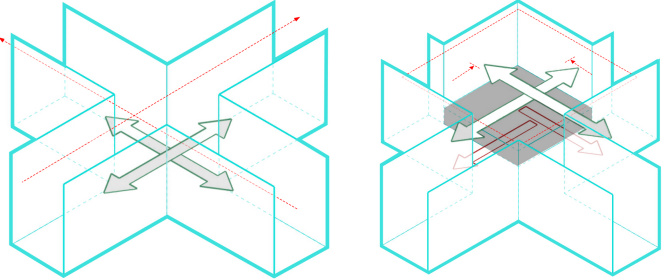
Table 3-17 Category 8: photo & people view analyse (by author)

											
Activity					Form						
① Diversity	● A ₁	○ A ₂	● A ₃	● B ₂	○ B ₃	① Scale	● A ₁	● A ₂	○ A ₃	● B ₂	○ B ₃
② People watching	● A ₁	○ A ₂	● A ₃	● B ₂	○ B ₃	② Enclosure	● A ₁	● A ₂	● A ₃	● B ₂	● B ₃
③ Movement	● A ₁	○ A ₂	● A ₃	● B ₂	● B ₃	③ Visibility	● A ₁	● A ₂	● A ₃	● B ₂	● B ₃
④ Vitality	● A ₁	○ A ₂	● A ₃	● B ₂	● B ₃	④ Identifiability	● A ₁	● A ₂	○ A ₃	● B ₂	○ B ₃

Unfortunately, the introduction of the parking area at this node disrupts the line of sight to the street from the Narko Bridge (A1) and, as an entry point to the neighbourhood, it fails to provide any meaningful information about the character or orientation of the area. In addition, due to the over-openness of the car park, pedestrians feel unsafe when passing through the road and there is a lack of diversity of activity (A2), which diminishes the overall vibrancy of the space. The change in scale caused by the car park further reduces all possible activities other than walking, thus reducing the attractiveness and engagement of the area for residents and visitors.

The parking space located at the intersection has a significant negative impact on the sense of place in the Shikemichi area. The first is the loss of a clear interface that does not provide important directional cues in the more complex spatial structure of the street. This can be psychologically disconcerting for pedestrians, who may find it difficult to get a full picture of the street as a whole and form a proper impression of its character. The second is the reduction in activity triggered by inappropriate scale.

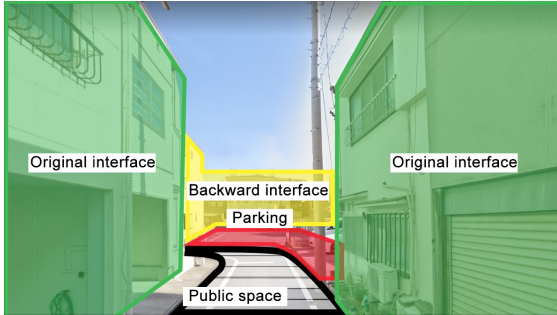
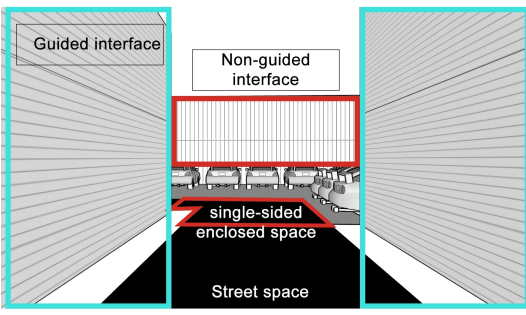
Table 3-18 Category 8: analysis diagrams & impact on the street image (by author)

Type	Pattern diagram
	
Impact on the image of street	
<p>The parking space replaces the symbolic landscape at the intersection of the bridge and the street, making the intersection as the entrance to the area lose its symbolism. (B= Minoji (Ofunacho) Street)</p>	

Category 9: Parking spaces on the outside corner of L- streets

The L-shaped street is one of the most iconic and spatially distinctive street spaces in the historic district. Its scale and intimacy creates a sense of place that is different from Shikemichi Street or other typical warehouses, and this is what sets it apart from other streets. Its own structure allows it to penetrate deep into the interior of the neighbourhood, leading to inner courtyards or rear entrances of buildings and connecting to a unique pattern of interior spatial experience. If the long straight street is the form of street that allows for a unique experience, the L-shaped street is more than just a passageway, it is an extension of the interior space of a particular parcel of land. In this environment of balanced privacy and openness, people naturally see themselves as part of a site, thus creating a sense of belonging and identity to a particular area that is generated entirely by the space itself. This is very different from the sense of identity generated through local culture and activities. Because as long as the structure of the space remains, this sense of identity will not disappear.

Table 3-19 Category 9: photo & people view analyse (by author)

									
Activity					Form				
① Diversity	● A ₁	● A ₂	● B ₁	● B ₂	① Scale	○ A ₁	● A ₂	○ B ₁	● B ₂
② People watching	● A ₁	● A ₂	● B ₁	● B ₂	② Enclosure	○ A ₁	● A ₂	○ B ₁	● B ₂
③ Movement	○ A ₁	● A ₂	○ B ₁	● B ₂	③ Visibility	○ A ₁	● A ₂	○ B ₁	● B ₂
④ Vitality	● A ₁	● A ₂	● B ₁	● B ₂	④ Identifiability	● A ₁	● A ₂	● B ₁	● B ₂

Explaining further, the intrinsic connection between the L-shaped street and the surrounding neighborhood creates an experience that is tied to the events of everyday life in a way that is unmatched by the spaciousness of the common street. As pedestrians cross these streets, they interact with the people and activities within the neighborhood, appreciating the architectural details around them, receiving hospitality from businesses, and so on.

It can be argued that in historic districts, L-shaped streets are places where past events took place, whereas today this type of street is relatively rare. The unique intimacy of these streets also represents the character of non-commercial living spaces.

As urban planning and development progresses, it is all the more important that this almost disappearing street type is well recognised and ensured that they are sensibly inherited and preserved within the overall fabric of waterfront spaces.

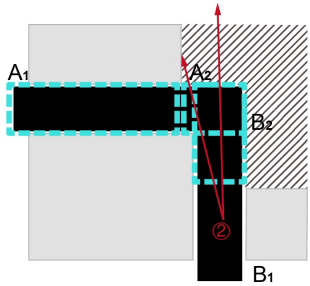
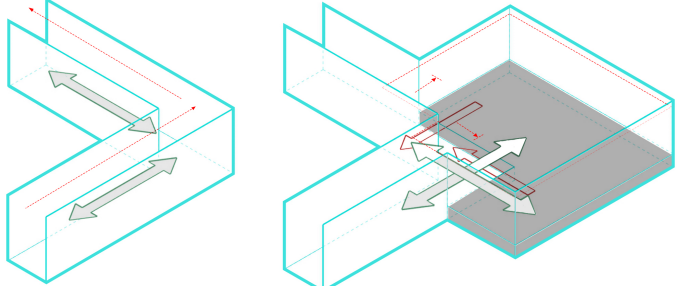
However, the car park on the corner undermines the overall sense of enclosure of the corner, which is the defining characteristic that sets the L-shaped street apart (A₂B₂). Instead of the comfort and intimacy one would experience from a fully enclosed corner,

the car park creates a separation of the area inside the L-shaped street from its surroundings, turning it into an isolated area separated from the outside world by the road. As a result, the sensation of walking along the street is no longer as described above, and perhaps the flow that should have been there has been disrupted.
















Whilst the car park provides a sense of openness reminiscent of a crossroads, it does not provide the same degree of mobility or directional choice. The mobility and cohesion previously associated with L-shaped streets and their seamless integration into the neighborhood are compromised (A_1B_1). Each street corner in the historic district has a unique identity and character, and this intrinsic symbolism is blurred or even lost by the intrusion of the car park.

Given the negative impact of car parks on corner enclosures and the distinctive sense of place of L-shaped streets, it becomes even more imperative to reconsider how to preserve the authenticity and local significance of historic districts. The negative impacts of a development approach that prioritises the convenience of parking over the human experience of walking need to be taken into account in future planning. By prioritising the unique spatial experience provided by L-shaped streets, it is possible to make modern waterfront spaces attractive again.

Table 3-20 Category 9: analysis diagrams & impact on the street image (by author)

Type	Pattern diagram
	
Impact on the image of street	

The parking space disrupts the closure of the internal street, allowing people to psychologically divide the blocks on both sides, changing the unity of the historic area. (Block=Aichibetsuin)

-
-  Original street part(interface/ space/ view)
 -  Possible sight of people  Clear movement route  New street node
 -  Street part generated by the parking space  Parking space plan
 -  Unclear movement route  Mutual people watching
 -  Space occupied by automatic vehicles  Spatial division
 -  Contradictory movement trend with sight permeability
 -  One-way watching with surveilla  Natural landscape
 -  Disturbed sight of people for identification
 -  Disturbed sight of people for the natural landscape
 - Direct serious impact ○ Indirect moderate impact ○ Weak impact
-

3.2.10 Discussions for the categories

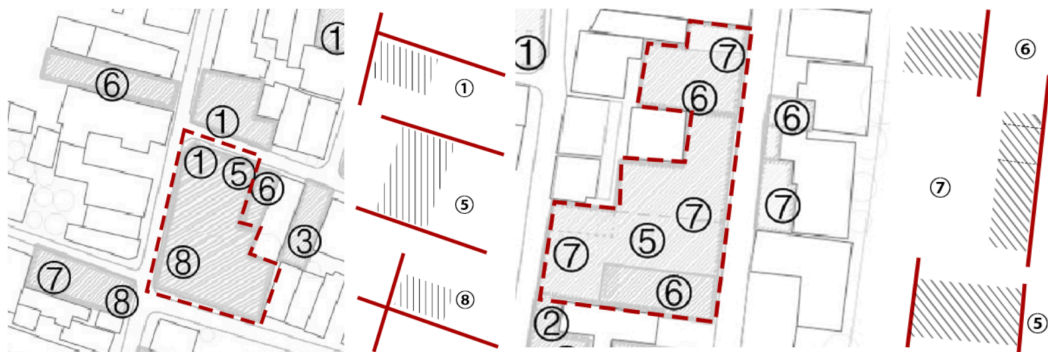
This section uses the Shikemichi area as a case study to explore the patterns of relationships between parking spaces and neighbouring streets. The purpose of this part is to clarify the current situation of parking spaces, to analyse the impact of parking spaces on street spaces from the perspective of sense of place, and to identify the negative impact that these parking spaces may have on the image of historic streets such as Shikemichi and Minoji (Ofunacho) in the area.

First, the Shikemichi area has been affected by the decline of the Horikawa waterway, which has led to the use of many vacant lots in the area as parking spaces after the abandonment or demolition of historic buildings. According to the results of the study, parking spaces accounted for 13.4 % of the total study area, and as much as 17.7 % in the conservation area, suggesting that the sense of place of parking spaces should be carefully examined.

Secondly, based on the location relationship between streets and parking spaces, combined with the morphological characteristics of the parking spaces themselves, nine

relationship models were summarized¹⁵⁵. The distribution of categories is shown in **Table 3-17**. Based on the factors of activity and form at the street level found in the Sense-of-Place model, a rough classification of their influence has been made according to the parking space recorded during the fieldwork (shown in **Table 3-1~Table 3-20**). This classification is based on the existing model, as well as the author's research. To obtain a more accurate classification of impacts, further extensive questionnaire research may be necessary. Then a thorough discussion was conducted based on the area situation to obtain commonalities of different types on the street sense of place: (i) Almost all parking spaces change the identification interfaces of streets, thus affecting people's movement directionality and reducing identifiability of street structure; (ii) Parking spaces increase a sense of unnecessary surveillance which makes it difficult for people walking near them to judge what is happening inside vehicles, leading to unequal watching; this intangible psychological pressure reduces variety of activities that can occur in streets; (iii) Existence of parking spaces set back architectural interface that should be adjacent to people, reducing visibility of streetscape (fewer windows or entrances); (iv) Parking

¹⁵⁵ The same parking space may be categorised into more than one category(left), and multiple parking spaces may also be combined to form an entirely new category, e.g. a continuous number of parking spaces along a long straight street can easily be identified as category 7 (right).



space loosens feeling of enclosure in street (amplifies sky rate). These consequences detract from overall image in street space and produce lower-quality sense of place.

In addition to the commonalities mentioned above, some categories of parking spaces have particular features in common. For example, (i) Parking spaces in **Categories 1, 3, 6 and 8** interfere with and obstruct people's visual field from multiple directions, making it difficult for them to distinguish between different street structures; thus having a negative impact on category identification. (ii) Parking spaces in **Categories 2, 7 and 9** can significantly modify the continuity of the street interface by transforming double-sided close enclosures into single-sided ones, leading people to wrongly assume that the width of streets has increased. (iii) Parking spaces in **Categories 4 and 5** make individuals form views vertical to streets which affects their understanding about landscapes along opposite sides as well as identifiability of streets on opposite sides. (iv) Even though they are distinctively different in shape, parking spaces within **Categories 6 and 7** might still affect the integrity and coherence of long straight historic streets; consequently damaging symbolism or memory associated with these streets.

The preceding discussion has shed light on the detrimental effects of parking spaces on the sense of place. However, when faced with the irrevocable presence of parking spaces, it becomes crucial to delve into the realm of possibility and identify potential avenues for positive transformation. Such conjecture and verification will be explored by the author in subsequent research.

Many urban areas lack identity due to planned or altered public spaces without considering the area's environmental and social conditions (Hough, 1990)¹⁵⁶. The

¹⁵⁶ Hough, M. (1990). *Out of place: Restoring identity to the regional landscape*, Yale university press.

introduction of parking spaces in historic districts is a planning approach that erases the street's identity, and this study found that the sense of place in the Shikemichi area is significantly diminished by parking spaces.

On the other hand, Nagoya is a city with a well-developed automobile industry, so excessive anti-car policies are inherently dangerous. While public transport may be beneficial in some cases, car travel is still an integral part of urban life and must be taken into account when designing the city.

Considering the cultural essence embedded in historic districts, it is clear that previously proposed solutions for underground or core car parks are not realistic. Therefore, there is an urgent need to optimise surface parking spaces and emphasise their key role in the overall design framework.

In order to mitigate the impact of parking on the intrinsic sense of place, it is necessary to target each street according to its different characteristics and the specific relationship of parking to the street. For example, on long straight streets, a harmonious and unified colour palette can be created by strategically closing parking spaces, thereby effectively maintaining the character of the street and promoting a sense of uninterrupted continuity. Additionally, eye-catching focal points can be added to parking spaces between two parallel streets to act as beacons, directing people to identify the actual space that is being obscured and, where feasible, facilitating the creation of welcoming pedestrian zones. For L&T-shaped corner parking spaces, greenery and carefully placed sightlines can be used to continue the unique form of the street and preserve its inherent character.

3.3 Summary

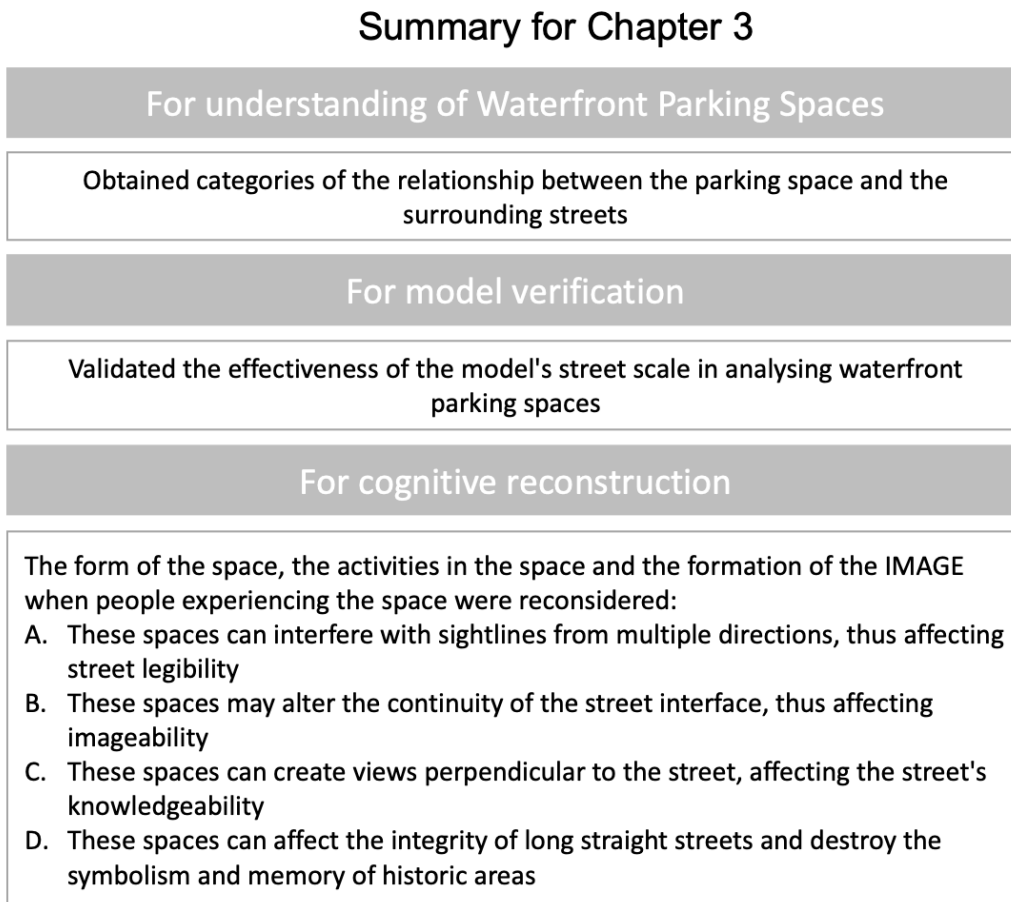


Fig. 3-11 Summary for the case study in Chapter3

The case study in this chapter serves as an initial validation of the proposed sense-of-place model by the author, specifically focusing on the cognitive reconstruction of street-scale spaces through the lens of categorizing parking areas.

During the cognitive reconstruction of open spaces like car parks, the sense-of-place model establishes a coherent framework for comprehending the unique impacts of a space on street-scale activities. These impacts are closely linked to the street's diversity, the patterns of observation and movement by individuals, and the overall vitality of the street. On this basis, the extent to which a street's image is shaped by people is substantially

increased by making clear the impact of elements such as legibility, knowledgeability, memory and imageability of the street. In addition, the model helps to reconstruct the cognition of the spatial form of the street scale based on elements such as scale, enclosure, visibility and identifiability. The results of the concrete refactoring are as follows:

- A. Modern waterfront parking spaces can interfere with sightlines from multiple directions, thus affecting street legibility
- B. Modern waterfront parking spaces may alter the continuity of the street interface, thus affecting imageability
- C. Modern waterfront parking spaces can create views perpendicular to the street, affecting the street's knowledgeability
- D. Modern waterfront parking spaces can affect the integrity of long straight streets and destroy the symbolism and memory of historic areas

These in turn provide more specific guidance for spatial optimization.

However, when examining the case study of parking space in a historic area alone, it may appear that the results analyzed through the sense of place model are predominantly negative. However, in reality, open spaces generated as waterfront spaces during urban development can have positive impacts by altering the access space and improving accessibility in a localized area. Therefore, at this section, because the sense of place model is simplified into two tiers, the illusion that some types of waterfront spaces only have negative impacts will be created. To provide a more nuanced understanding of the impacts within specific regions, the model will be further refined with additional case studies in the next chapter.

3.4 Reference

名古屋市教育委員会 1986. 名古屋市四間道町並み保存地区保存計画

DOUGHERTY, D. 2006. *Embodying the city: Identity and use in urban public space*. Virginia Tech.

GROUP, H. E. S. 1980. *Shikemichi and Arimatsu : Nagoya City Traditional Townscape Conservation Basic Survey*, Nagoya City Board of Education.

HOUGH, M. 1990. *Out of place: Restoring identity to the regional landscape*, Yale university press.

HOYLE, B. 2000. Global and local change on the port - city waterfront. *Geographical review*, 90, 395-417.

SIEGEL, A. W. & WHITE, S. H. 1975. The development of spatial representations of large-scale environments. *Advances in child development and behavior*, 10, 9-55.

*The graphs, data and analyses in this section are cited from the authors' published journal paper:

オウハクケイ: 場所感覚から見た歴史的街並みにおける駐車空間の影響に関する研究: 名古屋市四間道地区を事例として, 日本建築学会計画系論文集, 2023, 88(813): 2899-2910.

CHAPTER 4

WATERFRONT AND OPEN SPACES IN HISTORICAL NEIGHBORHOOD

The case studies in this chapter are designed to address the defects of the model exposed in the case studies in Chapter 3, and therefore the scale of the study is expanded from the street to the whole neighborhood.

Chapter 3 concludes by pinpointing the specific aspects where parking spaces have adversely affected historic streets, the objective of this chapter is to explore potential positive impacts that these parking spaces might have on contemporary waterfront spaces.

This chapter systematically examines the transformation of spatial layout based on the research in Chapter 3. Adopting spatial syntax theory to analyse the Shikemichi area, with parking spaces are considered as open spaces, the chapter uses this viewpoint as a lens to explore how the past within a historic area is inherited or transformed in the contemporary era, i.e., how the past is reconstructed, and how the reconstruction of the past is an important aspect of the cognitive reconstruction, which implies contemporary cognitions of the past in a given location.

First, an urban-scale open space analysis was conducted to identify changes in the spatial state of the Shikemichi area. Next, the flow of people in the immediate neighborhood scale was simulated. We identified nodes with multiple access routes, which indicate potential for further development in the future, especially in the spaces around these nodes. And most of these spaces are open space, including parking spaces. Therefore, open spaces have an important influence on the future industrial landscape of

the area, especially in the process of 'reconstruction of the past', which will be interpreted in six modes in this chapter. Based on the validation results of the case studies, the meso-scale (NEIGHBORHOOD SCALE), as an intermediate scale between the micro-scale and macro-scale, was included in the model in the previous stage. The use of the model was also explained in terms of the dimension of user activity in the cognitive reconstruction process through the above case study.

4.1 Structure of the second verification

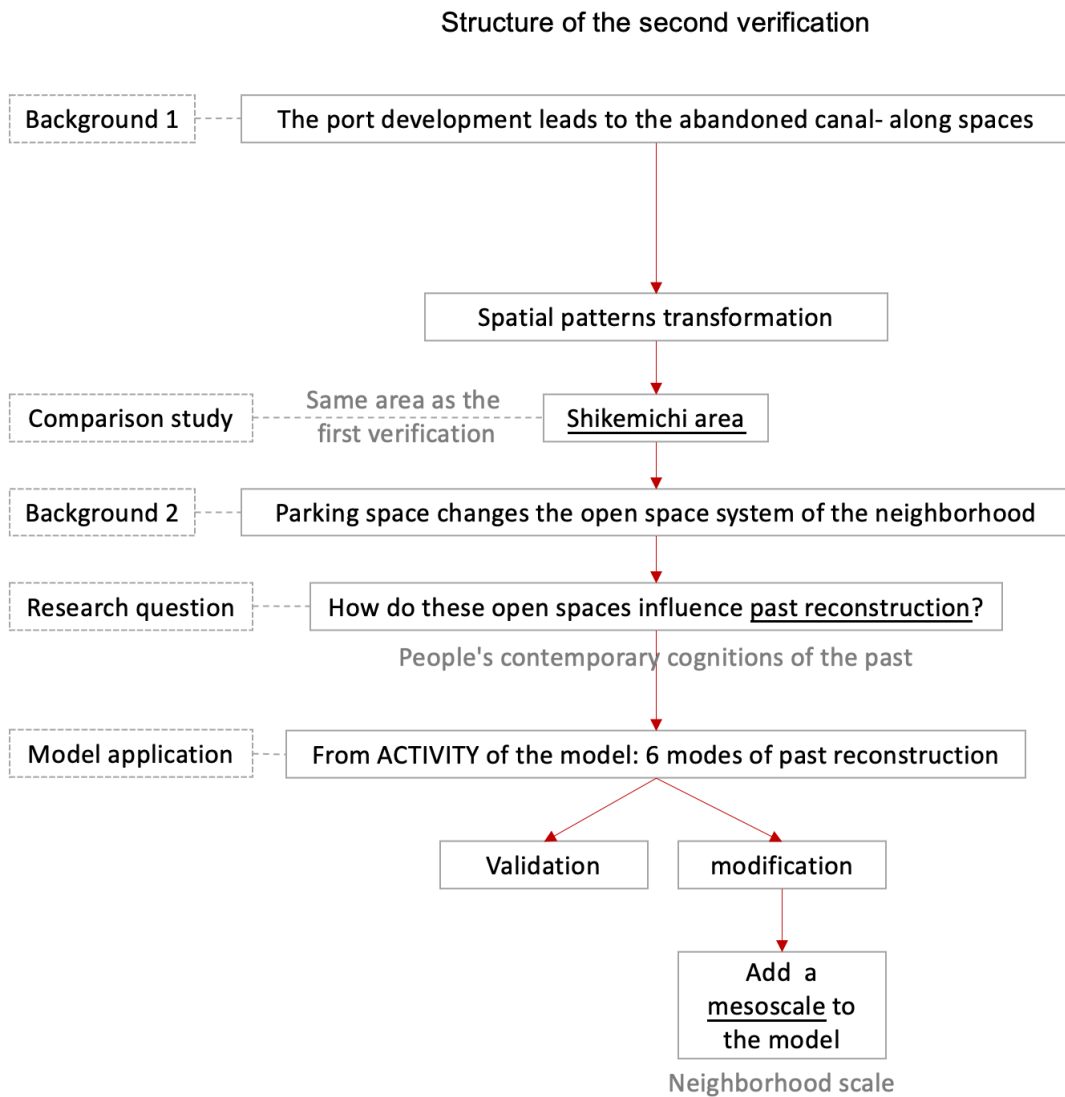


Fig. 4-1 structure of the second verification of the sense of place model

4.2 The spatial pattern and historical characteristics of the Shikemichi area

4.2.1 Explaining parking space generation at a larger scale

In the previous chapter, the fact was clarified that parking spaces are an important modern element in the evolving urban waterfront spaces, but they are also symbolic of the emergence of voids in areas that were historically bustling centres of industrial activity.

In this chapter, potential positive impacts are hopefully uncovered, so it is necessary to first discuss in detail the underlying logic of the emergence of parking spaces.






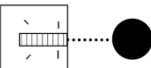
The unused vacant land that inevitably results from urban renewal processes is often used temporarily as car parking spaces due to investment costs and planning policies¹⁵⁷. This problem is common in port cities undergoing waterfront regeneration and with historic conservation areas. It is widely accepted that in a stagnant economy, surface car parks are a convenient and cost-effective way for property owners to utilise their land, whilst also providing convenient and direct parking for motorists (Oba and Iseki, 2020)¹⁵⁸. As a transitional stage of land use between different phases of urban regeneration, car parks may be one of the relatively reasonable options for historic preservation districts compared to, for example, the disappearance of historic spaces or the blind construction of fake histories. However, the uncontrolled proliferation of car parks, regardless of their size, can lead to negative externalities such as damage to the cityscape, increased

¹⁵⁷ Board of Education (Nagoya): Nagoya Shikemichi Townscape Preservation District Preservation Plan, 1986.

¹⁵⁸ Oba, Tetsuharu, and Hiroyuki Iseki. "Transportation impacts on cityscape preservation: Spatial distribution and attributes of surface parking lots in the historic central districts." *Journal of Urban Planning and Development* 146.2 (2020): 04020014.

vehicular traffic, and a reduction in the safety and comfort of the commercial and residential built environment.

Table 4-1 Impact of port modernization on the Shikemichi area¹⁵⁹

Stage	Pattern	Characteristic of Shikemichi
① Primitive port & city Ancient Nagoya castle Before 19 th century		Close spatial and functional association between city and port space (canal and waterfront) The initial morphology of the Shikemichi area forms
② Expanding port & city 19 th century to early 20 th century		Modernization of port forces port to develop beyond city confines, The connection between the port and the original core (Shikemichi area) of the canal begins to weaken
③ Modern industrial port & city Mid-20 th century		The development of containers requires more space, The canal continues to develop and the surrounding area prospers, the modern form is basically shaped
④ Retreat from the waterfront 1960s – 1980s		The rapid development of land transportation, canal economy decline, Buildings in the Shikemichi area began to be abandoned
⑤ Redevelopment of the waterfront 1970s – 1990s		Redevelopment of the original canal space begins, most of the open space in Shikemichi area is utilized as parking space
⑥ Renewal of canal space & port and city links 1980s – now – future		Urban renewal and urban redevelopment rediscover the historical and natural values of the canal space

□ city of Nagoya ■ Horikawa canal space ● port

The city of Nagoya is a major port city in Japan, and the modernisation of the port has had a significant impact on the city, leading to urban sprawl and the rejuvenation of its former core. The Horikawa Canal is a key waterway within the city of Nagoya and has played an important historical role in shaping the trajectory of the modern port of Nagoya

¹⁵⁹ The source of the pattern partly refer to: Hoyle, Brian. "Global and local change on the port - city waterfront." Geographical review 90.3 (2000): 395-417.

(Table 4-1 – Stage ①). However, with the transformation of the Port of Atsuta into the Port of Nagoya and advances in infrastructure and logistics technology, the port space formerly located in the urban core was squeezed out (Stage ②). At the same time, the canals experienced expansion as demand for water transport grew (Stage ③). As a result, as the centre of gravity of transport gradually shifted to land transport, the canal-based economy declined, and the once-booming water transport sector gradually shrank (Stage ④).

In the course of urban development, land parcels left vacant by the decline of the water transport industry found new uses through redevelopment (Stage ⑤). The current growing awareness of the value of water resources has triggered the renewal of these waterfront spaces with the aim of re-establishing symbiotic connections with people and revitalising historic areas. Symbiotic connections between people and waterfront spaces are re-established through targeted development strategies and urban activities, and the port area is reintegrated into the wider urban landscape (Stage ⑥). (Hoyle, 2000)¹⁶⁰

4.2.2 Analysis structure and methodologies

In the previous study (Section 3.2), a categorical perspective was adopted to explore the impact of car parking on the spatial characteristics of adjoining streets. This exploration was based on research into the morphological attributes of parking facilities. However, the question of how to respond to the parking that already exists is the one that really matters. Specifically, the most important thing is to explore ways to incorporate

¹⁶⁰ Hoyle, Brian. "Global and local change on the port - city waterfront." *Geographical review* 90.3 (2000): 395-417.

parking into the regeneration of waterfront spaces, that is, to try to find ways to have a positive impact without removing the parking space itself.

On the other hand, as the presence of parking spaces has proved to be unavoidable, exploring the potential positive impacts of these parking spaces is also necessary for the future. Against this background, this case study aims to shed light on how parking spaces have altered the open space composition of the Shikemichi area and influenced the redevelopment process in the past, with the ultimate goal of promoting a more rational and sustainable parking planning strategy for the Shikemichi area and similar historic areas. Therefore, the scope of analysis in this study extends from the street to the entire neighbourhood and considers parking space as a subset of open space. From the perspective of this study, since the focus of attention is on human mobility and viewing behaviours, all spaces that can accommodate these behaviours are classified as open spaces.

It is important to emphasise that our analysis does not focus on the actual function of these modern parking spaces. Instead, our focus is on a macroscopic view of the changing character of the spaces themselves. In this regard, the adoption of the spatial syntax as a research methodology is appropriate as it allows for a comprehensive exploration of evolving spatial structures and their impact on urban structure.

The case study is divided into two main parts, the base study and the spatial analysis, where the spatial analysis is subdivided into city scale and regional scale. The methods used in each of the two parts are as follows:

① Methods of fundamental research

The historical condition of the site (distribution of buildings and streets) was identified mainly through the authors' review of early maps and archival records.

For the current condition of the site, the authors conducted field surveys in the Shikemichi area in November 2022 and May 2023, confirming the basic conditions of the parking spaces therein (boundaries, ownership, and typology) as well as the surrounding businesses, and photographed and documented key historical nodes. Subsequently, Google Maps became the reference for labelling and confirming the plan. A final comparison was made with the historic maps.

② Analysis Methodology

In analyzing the parking spaces within the Shikemichi area, the authors employed the theoretical framework of spatial syntax, utilizing DepthmapX (0.8.0) software as the analytical tool. Firstly, the transformation of the spatial status of the Shikemichi area in Nagoya city was analysed. Integration, Choice and Total depth were selected as important parameters for the analysis of comparing the map of the Edo period with the modern one.

Subsequently, a pedestrian flow simulation was conducted. Maps from 1975¹⁶¹ and 2023 were selected for comparison. 1975 symbolises the landscape before the development of Nagoya Port, which essentially remains the layout that existed during the boom period of Horikawa's water transport. And it is worth noting that there was little parking in the area during this period. 2023 is the post-development era, symbolising the decline in water transport.

Finally, a series of representative areas were selected and analysed in conjunction with the past reconstruction to obtain the possible impact of parking spaces.

¹⁶¹ Data on the basic dimensions and outline details of the buildings & streets are verified by the Nagoya City Urban Planning Information Service: Basic Urban Planning Information (S48-S52 Basic Map)((名古屋市都市計画情報提供サービス: 都市計画基本情報 (S48-S52 基本図))

4.2.3 The transformation of the spatial status of the Shikemichi area in the city of Nagoya

During the Edo period, Nagoya's vibrant commercial hub gravitated towards the bustling merchant district surrounding the Horikawa Canal. Within this intricate urban context, the Shikemichi area occupied a pivotal role, enjoying close connections to both Nagoya Castle and the canal network. Its strategic location undoubtedly contributed to its significance in the city's economic life.

To gain a deeper understanding of Nagoya's urban configuration during this historical epoch, an investigation employing spatial syntax methodology was conducted, focusing on parameters such as the integration of 1000m¹⁶², the choice of 1000m¹⁶³, and the integration of the entire city, as presented in **Fig. 4-2**, **Fig. 4-3**, **Fig. 4-4**.

The integration of 1000 can also be considered as local integration.

The parameter of local integration serves as an indicator of the degree of pedestrian movement's integration within a particular area, providing insights into the scale of such movement. Its computation involves a consideration of elements related to the degree of distant depth (depth is defined as the smallest number of syntactic steps (in topological meaning) that are needed to reach one space from another, specifically limited to a depth equal to 3. Additionally, distance measurement can be conceptualized as a ray originating from the starting point, spanning approximately 1250 meters. In the context of assessing

¹⁶² 1000m refers to the analysis of each street considering the area within 1000m of its perimeter, 1000m being a more appropriate range of activity for human and horse-drawn vehicles etc. Integration refers to the degree to which a space is discrete or clustered with other spaces in its vicinity.

¹⁶³ Choice is the probability that a space will be traversed by other paths and is one of the predictors of pedestrian movement.

local integration, measurements are to be conducted within a range extending up to 5 syntactic steps.(Dettlaff, 2014)¹⁶⁴

The metric of integration serves as a comprehensive gauge of connectivity within a system, encompassing the measurement of distances from the system's starting point to all its constituent points (Hillier and Hanson, 1989)¹⁶⁵. This concept has been correlated with the presence of human activity within a space, suggesting that higher levels of integration correspond to increased human utilization of that area.

Choice measures how likely an axial line or a street segment it is to be passed through on all shortest routes from all spaces to all other spaces in the entire system or within a predetermined distance (radius) from each segment.(Hillier et al., 1986)¹⁶⁶

Choice analysis at different distances can offer different description for different configurations that are ideal for different travel modes. For example, if the choice distance is 1000 meters (R1000), that means everyone is willing to walk on foot, and where walking is much more convenient than all other modes; the potential areas for being center of neighborhood activities are identified. Since walkability is an important indicator for determining the core of an area, both for historic and modern spaces, the 1000m radius was applied to the analysis of both historic and modern Nagoya's urban structure.

Specific analyses are carried out using the depthmap software, depthmapX is an open-source, multi-platform spatial syntax software for performing a range of spatial

¹⁶⁴ Dettlaff, Weronika. "Space syntax analysis–methodology of understanding the space." PhD Interdisciplinary Journal 1 (2014): 283-291.

¹⁶⁵ Hillier, Bill, and Julienne Hanson. The social logic of space. Cambridge university press, 1989.

¹⁶⁶ Hillier, Bill, et al. "Creating life: or, does architecture determine anything?." Architecture & Comportement/Architecture & Behaviour 3.3 (1986): 233-250.

network analyses designed to understand social processes in certain environments. In preparation for area analysis, it's crucial to delineate the movement paths within the area. Typically, the centerlines of roads are used for this purpose. To illustrate this process, use Nagoya Castle Map during the Edo period is used as an example. Firstly, a map featuring a clear depiction of the roads is selected. In this study, we've chosen a map of Nagoya Castle dating back to 1709 (Fig. 4-5). The next step involves extracting the centerlines of the roads based on the map. The outcome, as shown in Fig. 4-6, highlights all the accessible roads with red lines. This road network map is then imported into the depthmap software as the foundational dataset for subsequent analyses. The software version employed in this study is depthmapX 0.8.0.

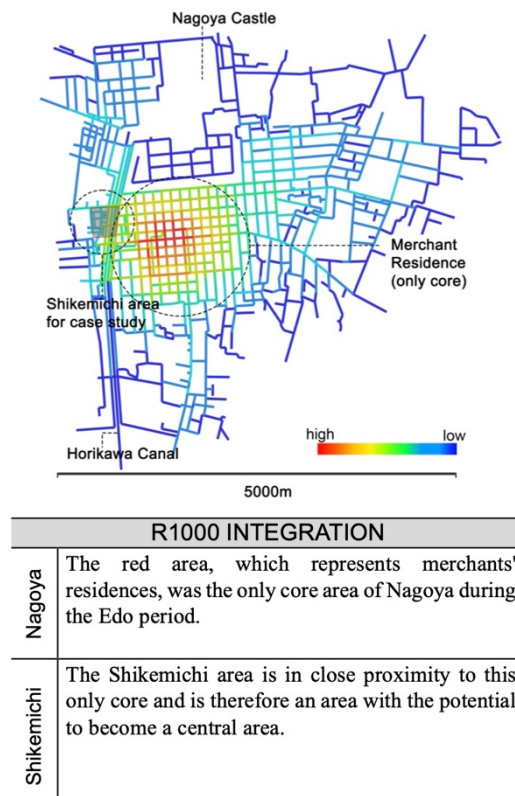


Fig. 4-2 Analysis based on space syntax of Edo period (R1000 INTEGRATION) (by author)

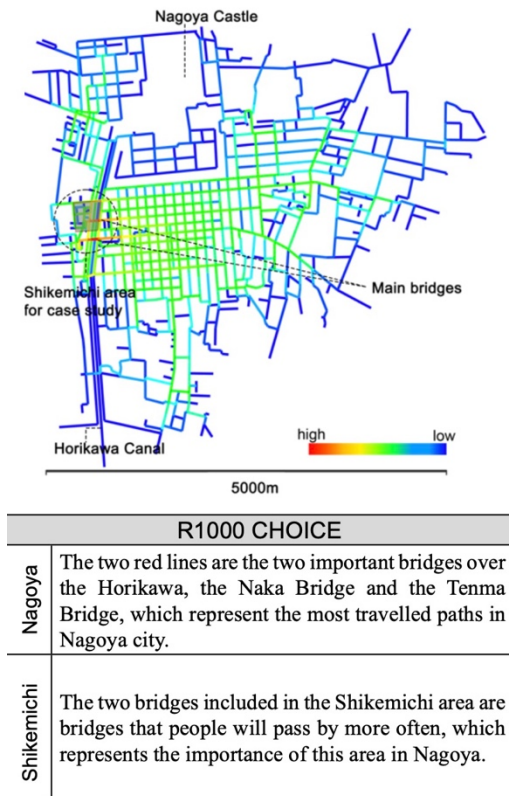


Fig. 4-3 Analysis based on space syntax of Edo period (R1000 CHOICE) (by author)

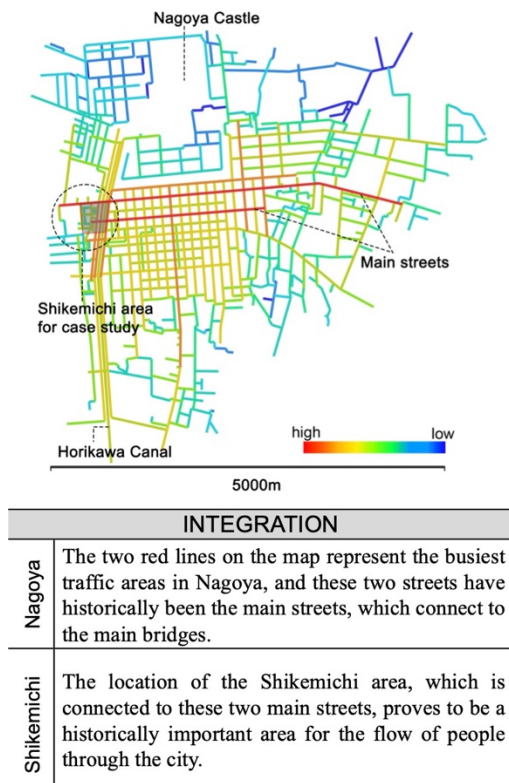


Fig. 4-4 Analysis based on space syntax of Edo period (INTEGRATION) (by author)

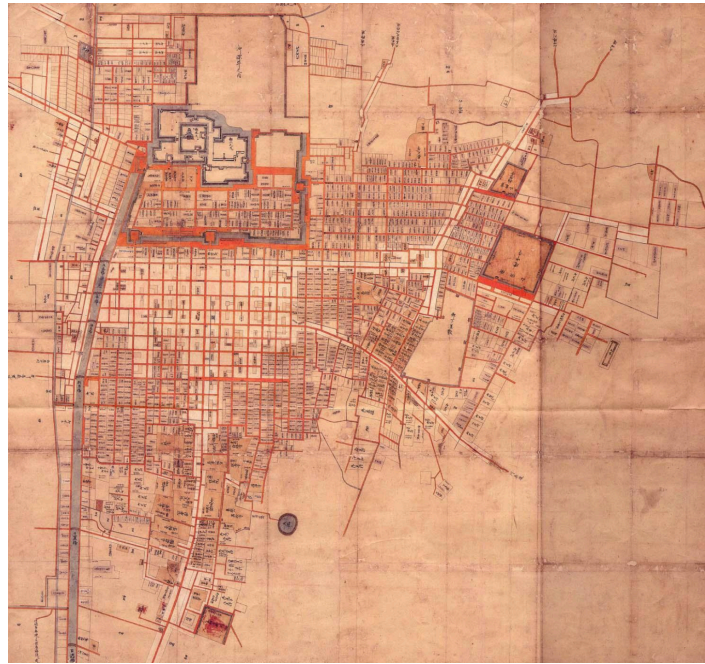


Fig. 4-5 The map of Nagoya in 1709¹⁶⁷ (Source:名古屋市蓬左文庫所蔵)

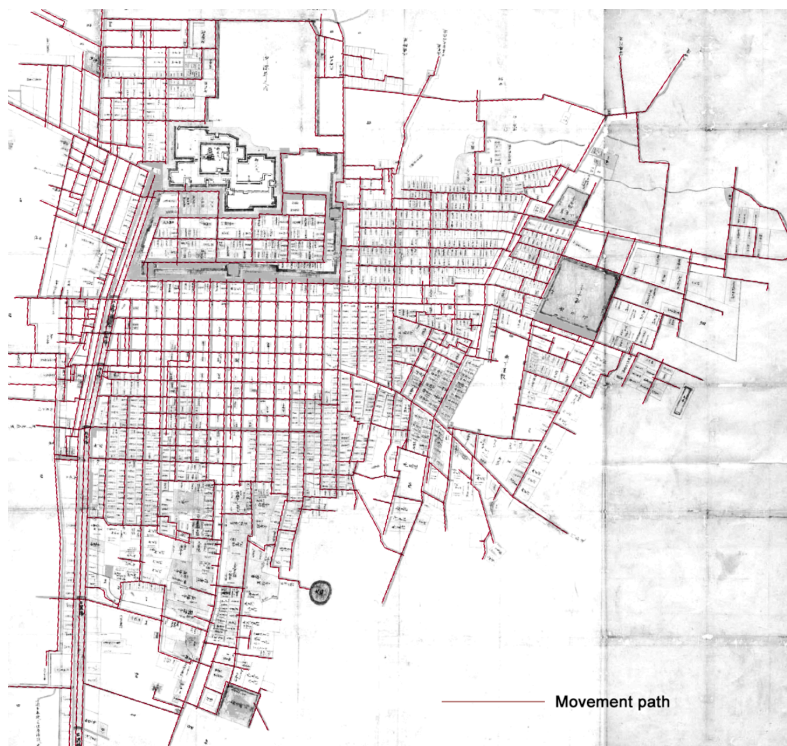


Fig. 4-6 Drawing people's movement paths based on the map (by author)

¹⁶⁷ 尾府名古屋図, 推定宝永 6 年作 (1709) 名古屋市蓬左文庫所蔵

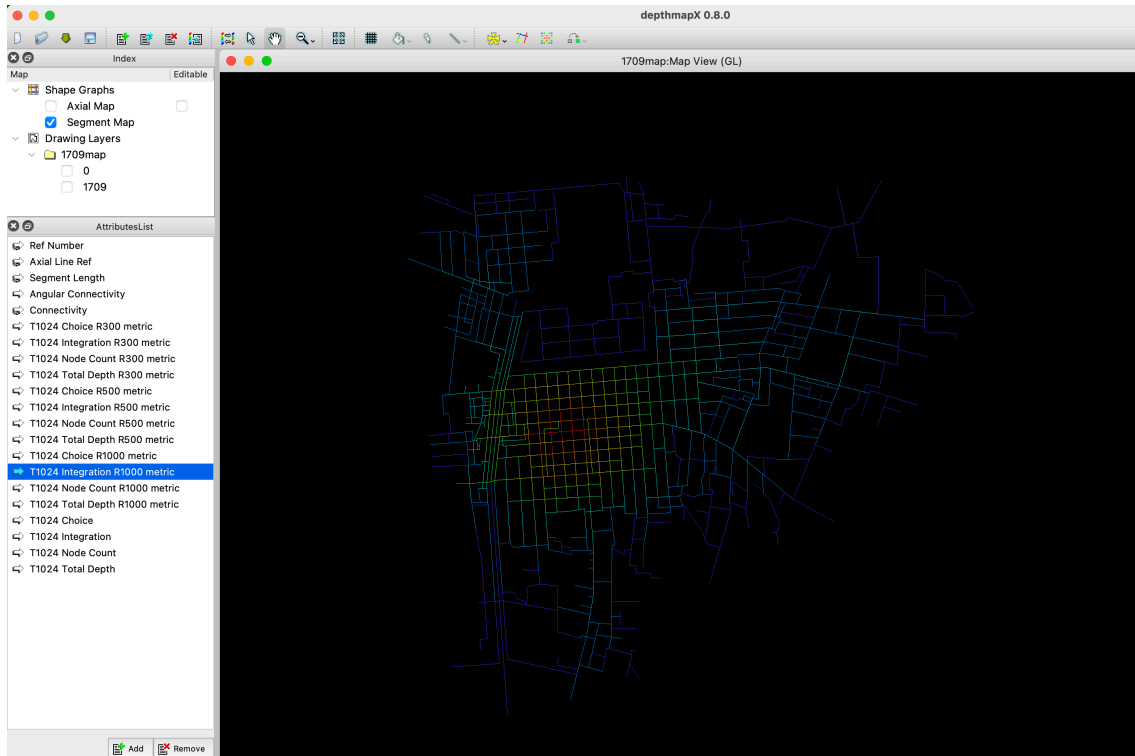


Fig. 4-7 Spatial syntactic analysis using DepthmapX 0.8.0 (by author)

This meticulous analysis illuminated a city where land transport predominantly relied on leisurely horse-drawn carriages and human labor. Within this context, the merchant's grid plan area emerged as the epicenter of the urban landscape. Notably, Shikemichi was closely positioned to this urban nucleus.

From this exploration, it becomes apparent that Shikemichi historically enjoyed proximity to the city's central core and harbored the potential to evolve into a central district in its own right. This historical context underscores the enduring significance of the Shikemichi area within Nagoya's urban fabric, highlighting its capacity for adaptation and transformation over time.

As urbanization progressed and land-based transportation networks expanded, the city of Nagoya experienced growth both to the north and south, ultimately relocating its core to the vicinity of Nagoya Station. This shift in the city's focal point is corroborated

by a reconstituted urban roadmap, primarily focused on the analysis of Nagoya's three major canals and segments of the Nagoya Port, which is deemed adequate for this study.

In a manner similar to the process of mapping the road network in the year of 1709, the analysis of spatial syntax begins with the manual delineation of centerlines for all roads within the designated area, following the present-day map¹⁶⁸ of Nagoya. This study involved drawing a total of 13,231 road lines for the central area, ensuring that all ground roads are interconnected, thus providing accessibility (**Fig. 4-8**). Following this, the locations of overpasses were marked on the map (**Fig. 4-9**), taking into account their current positions, and they were treated as disconnected from other ground roads in the road network (**Fig. 4-10**).

The processed map is transformed into an axial map using depthmapX. This axial map allows for the execution of various analyses by configuring different parameters.

Upon examination of modern Nagoya maps recalibrated for the Total depth of 1000m (Total depth refers to the minimum number of connections from a space to other spaces, a larger value indicates a more complex road network in a region.) (**Fig. 4-11**), the Integration of 2000m¹⁶⁹(**Fig. 4-12**), and the Choice of 1000m (**Fig. 4-13**), a discernible transformation in the significance of the southern regions of Nagoya's urban grid becomes evident. This transformation reflects the city's evolving spatial dynamics. While the southern districts have experienced a relative reduction in importance as the city's core shifted, they remain easily accessible due to their coherent urban structure.

¹⁶⁸ Google Map for 2022

¹⁶⁹ In modern times, with the development of the automobile, a 2000m radius of activity is a more reasonable range for analysis.

Consequently, the Shikemichi district, which has retained its historical street layout, emerges as one of the regions with potential accessibility. This observation underscores the critical precondition for the area's continued vitality, as it maintains an urban structure that facilitates accessibility and connectivity, contributing to its enduring significance within the broader context of Nagoya's urban development.

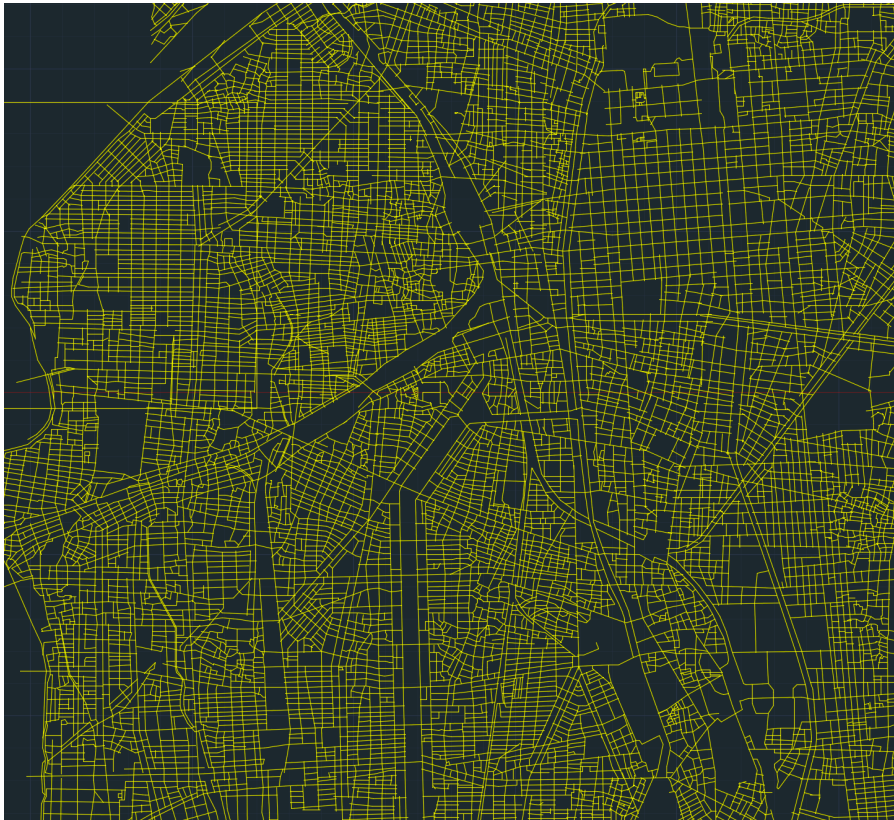


Fig. 4-8 Manually drawn ground road network of Nagoya central part (by author)

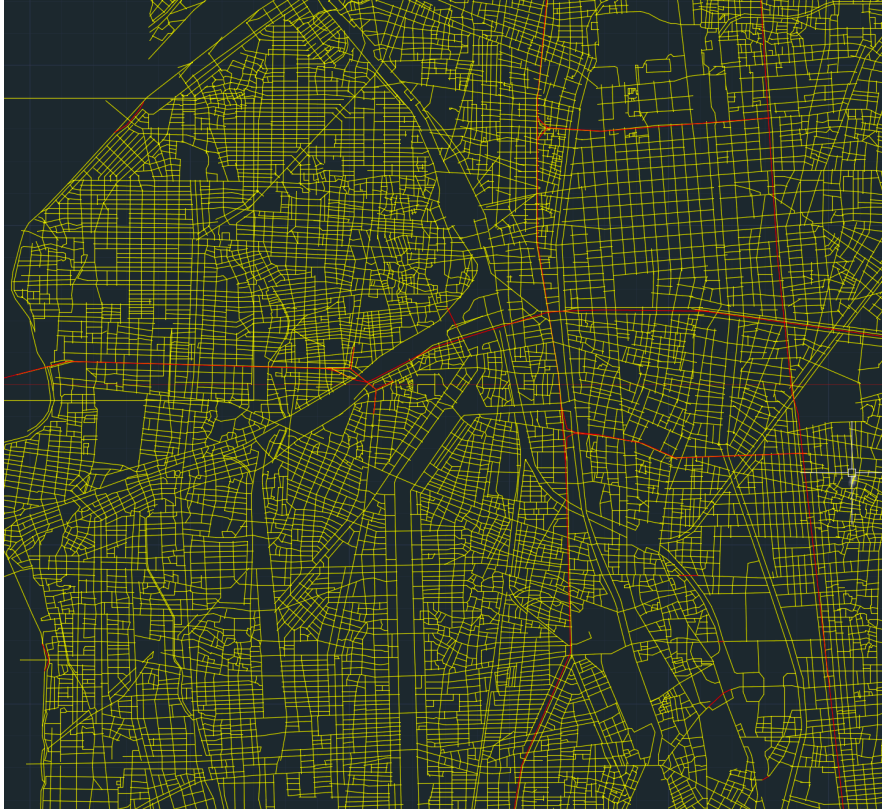


Fig. 4-9 Manually drawn overpass network of Nagoya central part (red line) (by author)

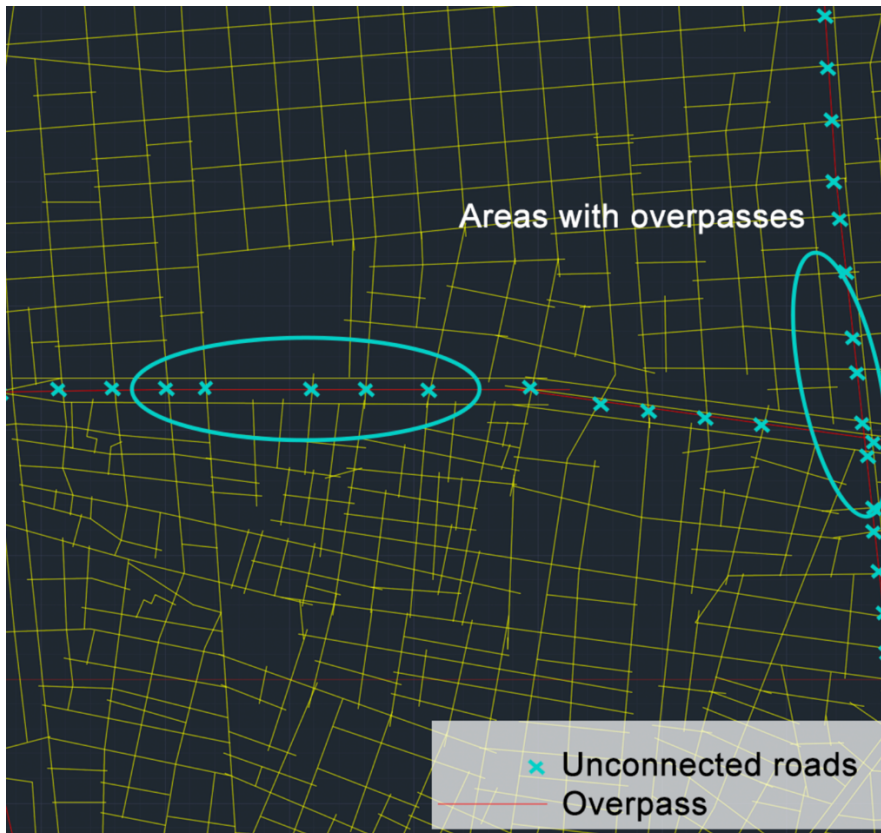
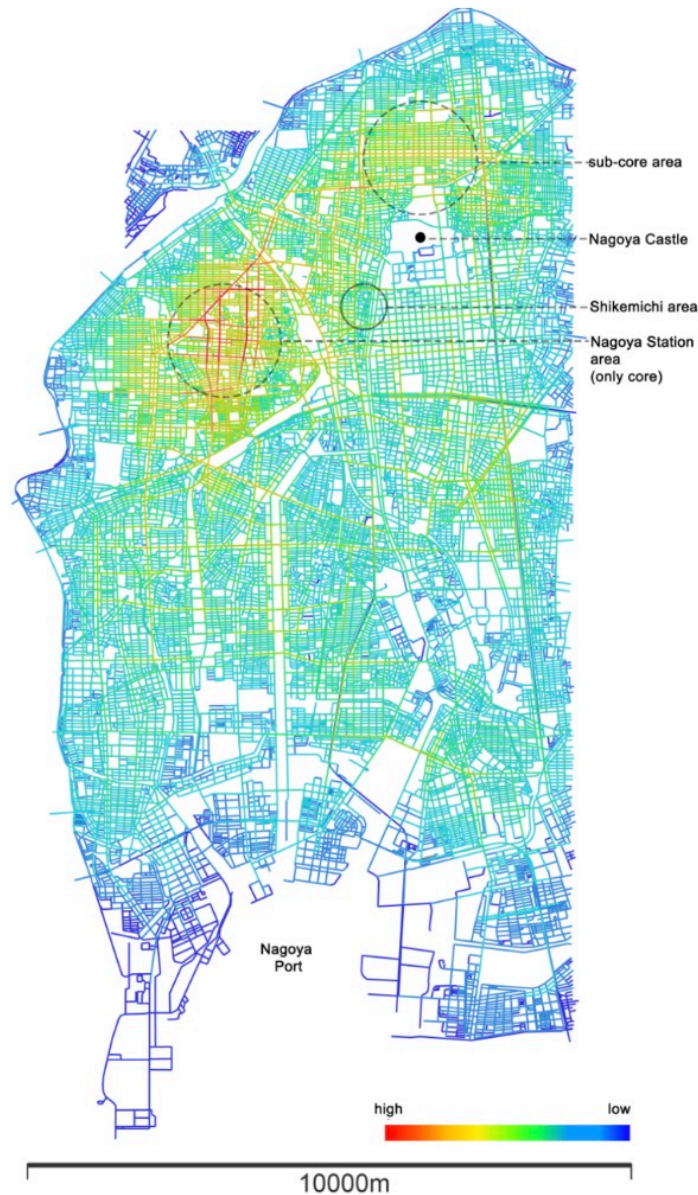


Fig. 4-10 Removal of overpass connections to ground roads (by author)



R1000 TOTAL DEPTH	
Nagoya	In contemporary Nagoya, there are several areas of significantly high localised total depth that represent the local centre of Nagoya, with Nagoya Station representing a complex network of paths and a rich mix of businesses.
Shikemichi	The Shikemichi area is close to Nagoya Station, and a new local urban core has been formed to the north-east of the area, so the Shikemichi area is no longer the core but still has the potential to be revitalised.

Fig. 4-11 Analysis based on space syntax of modern period (2023) (R1000 TOTAL DEPTH) (author)



R2000 INTEGRATION	
Nagoya	The obvious core of the city has shifted from Castle Town to Nagoya Station, and a sub-core area has formed to the north of Nagoya Castle. The transformation of Nagoya's urban core is centred around Nagoya Castle.
Shikemichi	The Shikemichi area is close to Nagoya Castle, and even nowadays, it is still between the core and sub-core. The area around it is well integrated and it still has the potential to become a local core in modern times.

Fig. 4-12 Analysis based on space syntax of modern period (2023) (R2000 INTEGRATION) (author)



R1000 CHOICE	
Nagoya	In modern times the paths that may be passed many times are presented as regions. These regions are generally consistent with the cores presented in “total depth”, suggesting that the local core areas of Nagoya are generally stable.
Shikemichi	Some roads with high choice values in and around the Shikemichi area are evidence that human activity may have a more significant impact on it. The process of past reconstruction may also be influenced by pedestrian flows.

Fig. 4-13 Analysis based on space syntax of modern period (2023) (R1000 CHOICE) (by author)

The scatter plot presented in **Fig. 4-14** provides a clear visual representation of the streets within the Shikemichi area in relation to their connectivity with other streets. In this graphical representation, the horizontal axis corresponds to the streets' overall integration, while the vertical axis denotes their integration within a 1000-meter radius. The streets located within the Shikemichi area are depicted as red data points, positioned above the linear regression line. This positioning suggests that, when evaluated within the broader city context, these streets exhibit an average level of accessibility.

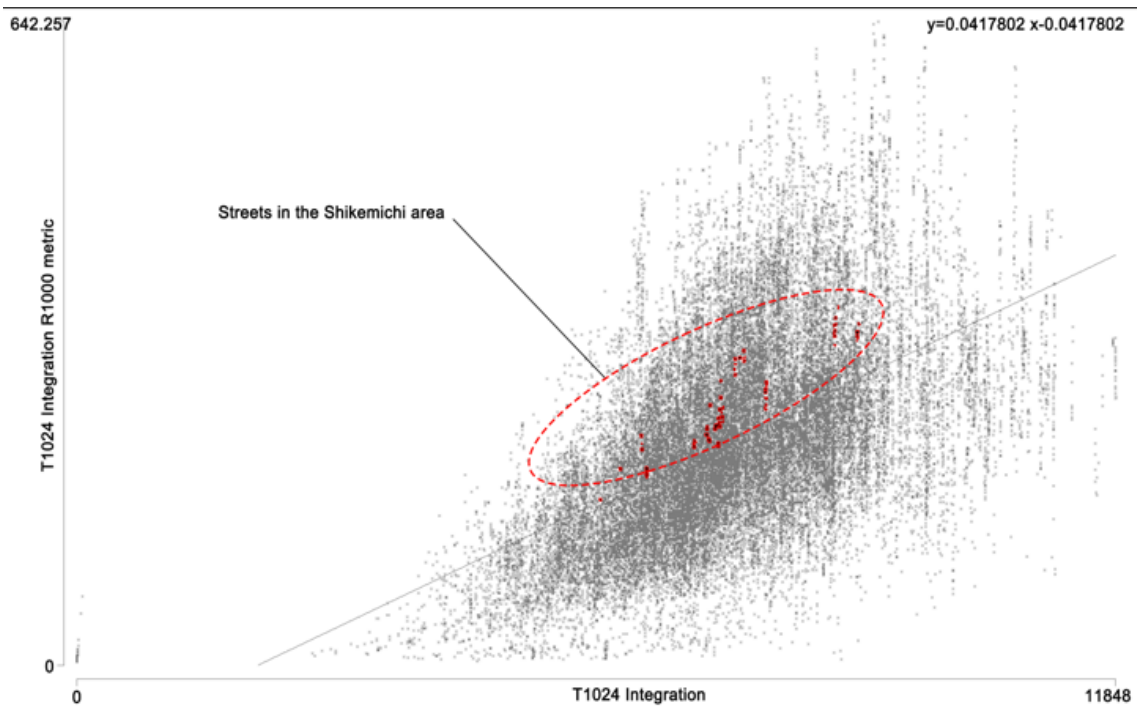


Fig. 4-14 Scattergram: Integration - Integration R1000 (2023) (by author)

According to the mathematical regression results presented in this scatterplot, streets in the Shikemichi area are significantly above the regression line, i.e., they show a higher degree of local integration, compared to streets with similar accessibility within the city. This observation suggests that these streets have an inherent potential to become a

localised urban core, i.e., they have the potential to become an arena for people to engage in a variety of activities in the neighborhood.

In summary, the Shikemichi area was historically adjacent to Nagoya's only transport core. While possessing a well-preserved street layout, it has the potential to re-emerge as a modern core. Therefore, the modern open space generated in the area is a key variable in the historical and modern spatial layout and serves as a lens to explain its impact on human movement behaviour in the current context. At the same time, a detailed categorisation and study of how the process of reconstructing the past in the region in the contemporary context will contribute to a more in-depth understanding of how open space influences the process of reconfiguring people's cognition of the region.

4.2.4 Spatial transformation within the Shikemichi area

Comparative analysis of 1975 and 2023 maps of the Shikemichi area reveals an evolving network of streets in this historic waterfront spaces. Over a period of approximately fifty years, these changes are largely attributable to shifts in land use purposes and the accompanying demolition or remodelling of buildings. Of particular note, the demolition of specific buildings has led to the disruption of previously closed streets, culminating in the emergence of intersecting pathways - a hallmark of the area's contemporary urban form.

Whilst it is true that these modern developments have disrupted the original structural integrity of the streetscape. But at the same time the undeniable result is that the creation of these crossroads has unexpectedly given the area unprecedented accessibility. Longer traffic routes are shortened by the creation of new paths, or two spaces that could not be directly connected are directly linked. All of these naturally occurring traffic situations have the potential to positively impact the vitality of the neighborhood.

Firstly, the positioning signs added to guide the parking spaces, while creating a sense of visual incoherence, functionally serve to navigate pedestrians through the neighborhood, making it easier for pedestrians to more easily identify their way around when they first come to the area.

This conscious intervention helped to streamline the urban experience and improve the overall accessibility and legibility of the Shikemichi area.

Secondly, the inclusion of designated parking space in the redeveloped building is a positive response to the need for modernisation. Providing parking facilities not only complies with contemporary urban planning principles but also alleviates potential traffic constraints. Often times without suitable parking spaces, entire neighborhoods are not chosen by people, i.e. less accessible by car. Proper parking facilities actually further attract vehicular traffic, i.e. potential foot traffic, to the area. This status quo of changing regional traffic patterns through the provision of parking space makes the Shikemichi area a more accessible and modern urban space.

Fig. 4-15 provides an illuminating visual representation of the metamorphosis that has transpired in the street structure of the Shikemichi area¹⁷⁰, effectively encapsulating the transformation before and after the construction of the port¹⁷¹. To facilitate a comprehensive analysis of pedestrian flow within this historically rich district, four strategically chosen starting points were pre-defined for the purpose of simulating pedestrian movement dynamics. These designated nodes hold paramount significance as

¹⁷⁰ Data on the basic dimensions and outline details of the buildings & streets are verified by the Nagoya City Urban Planning Information Service: Basic Urban Planning Information (S48-S52 Basic Map)((名古屋市都市計画情報提供サービス: 都市計画基本情報 (S48-S52 基本図))

¹⁷¹ The analysis length is 5000; Timesteps in system is 1000; Release rate (agent per timestep) is 0.1.

they serve as the primary ingress and egress junctures into and out of the Shikemichi area, a crucial consideration underpinning the research methodology.

The first identified starting point is located at the intersection of Ekawa Street and Sakura Street, which is a key intersection where two important arterial roads meet. This location is a key node into the interior of the Shikemichi area.





Fig. 4-15 Agent-based analysis of pedestrian movement flow in Shikemichi area (by author)

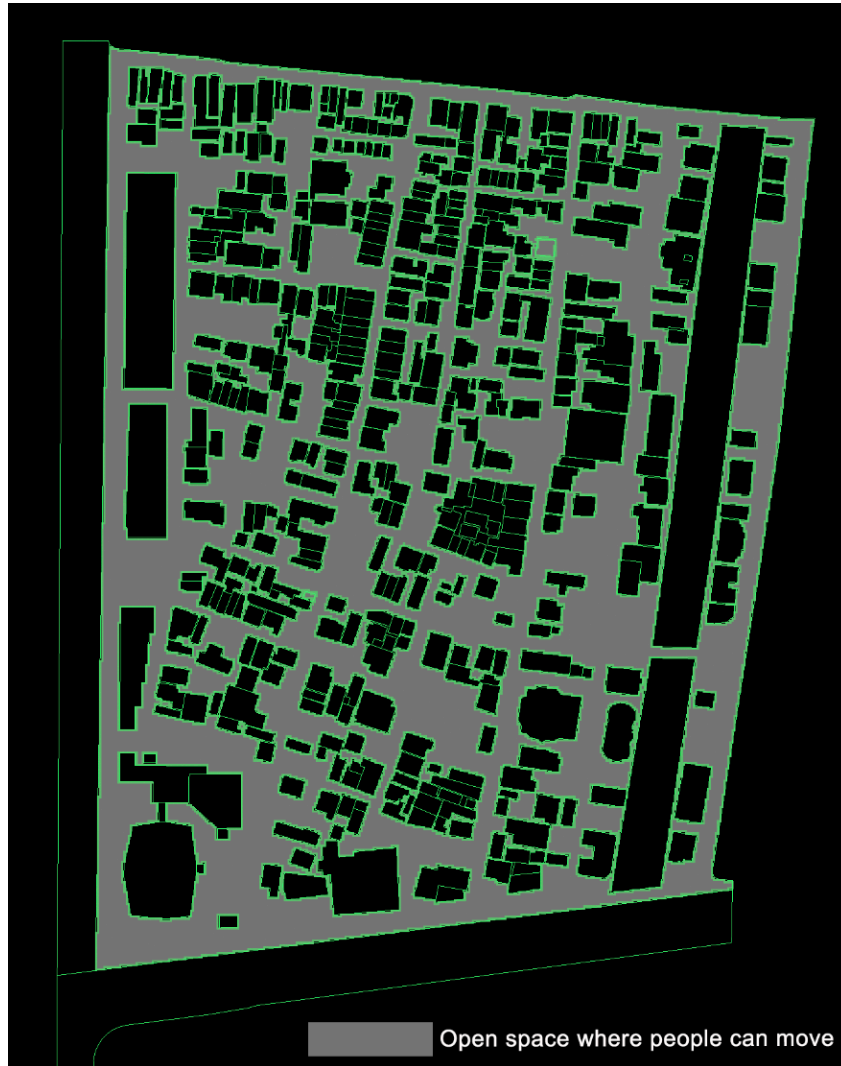


Fig. 4-16 Identify open spaces in which movement can take place according to the map (by author)

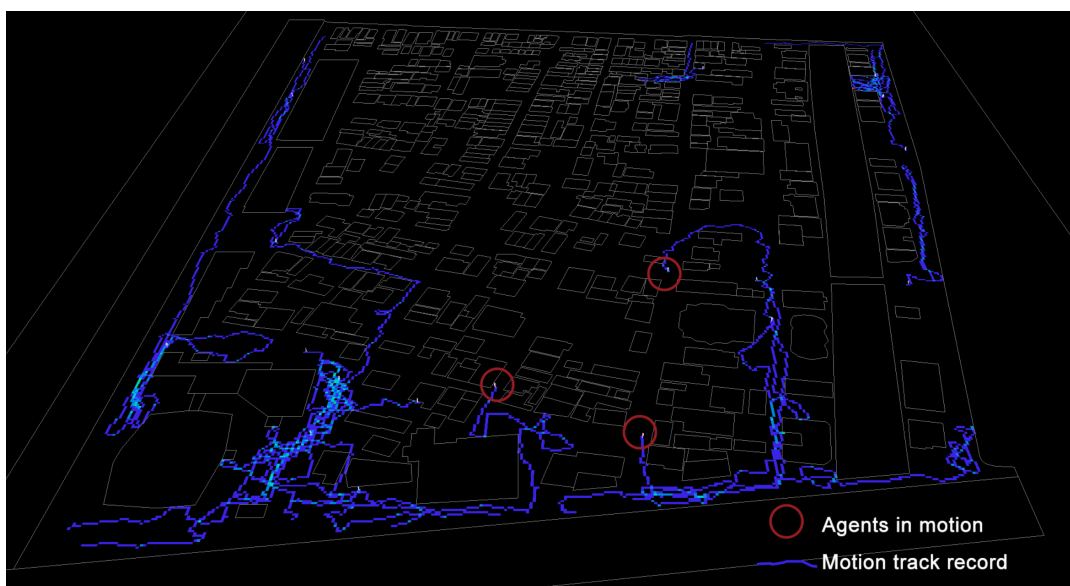


Fig. 4-17 People flow simulation using depthmapX 0.8.0 (by author)

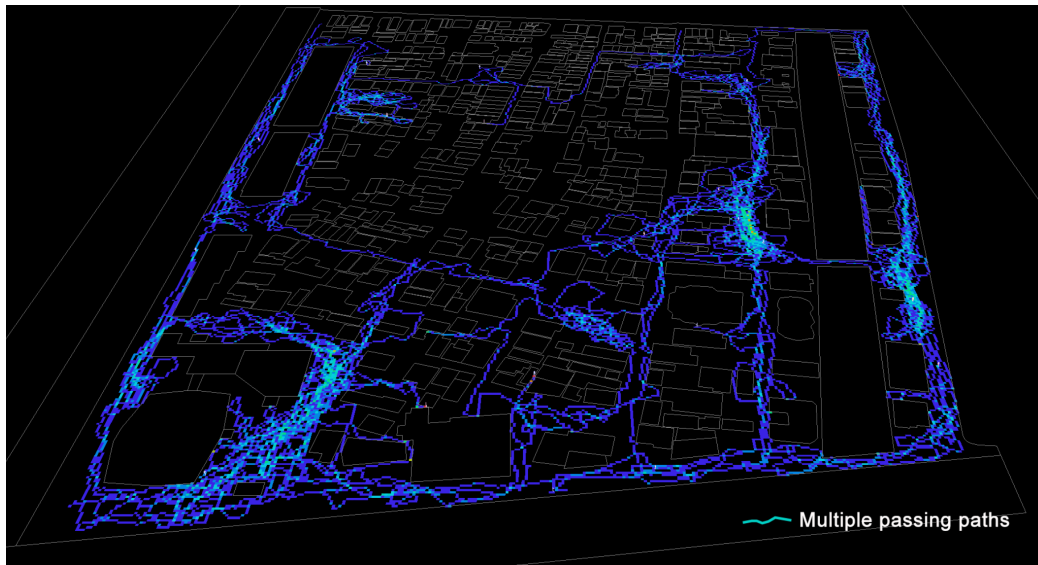


Fig. 4-18 Colour change of paths with multiple passing (by author)

The second designated starting point is located at the intersection of Sakura Street and Horikawa, another important entry point into the Shikemichi area.

The third starting point is located at the intersection of Egawa Street and the Endoji Shopping Street, where commercial development meets urban development.

The last two starting points, including Gojo Bridge and Naka Bridge, are iconic landmarks and important entrances into the Shikemichi area. These bridges symbolise the transition both geographically and temporally, as they connect the Shikemichi area to the wider urban landscape and evoke the rich historical narrative that unfolds along the riverbank. The exact process of simulation is shown in **Fig. 4-16** **Fig. 4-17** and **Fig. 4-18**.

First, the open spaces were identified by delineating the enclosure boundaries of all the buildings on the site (the remaining area, shaded in grey in **Fig. 4-15**). These open spaces are where people's movement can occur. Subsequently, four entry points (entrances for people to access the site) were established based on the on-site observations. In the software, simulation agents were placed at each of these four entry points. In the standard mode, these agents navigate the space in a completely natural manner, following

the spatial layout, and the software records their walking paths simultaneously. Over time, as the recording progresses, some areas of the space are traversed multiple times, and the color of the trajectories in those areas changes. In the figure, the trajectory within the space that has been traversed several times shifts from dark blue to light blue. Once all the agents have traversed all the areas, the recording process is completed.

The comprehensive analysis of pedestrian flow patterns reveals a notable trend: individuals tend to gravitate toward spaces affording prominent vistas. This intriguing finding underscores the pivotal role played by urban design interventions, such as the surface car park, which effectively functions as a versatile communal open space. This space is not solely limited to vehicular use but also accommodates view penetration and movement pathways for pedestrians, fostering a sense of connectivity and engagement within the Shikemichi district.

In the epoch preceding the modernization of the port, the Shikemichi area epitomized a meticulously planned and well-structured street network, characterized by a discernible hierarchy of main thoroughfares and the focal points of pedestrian circulation. This pre-modern urban layout effectively delineated the region into Minoji (Ofunacho) and Shikemichi, two distinct precincts each possessing its own unique character and urban dynamics. The findings from the pedestrian flow analysis illuminate the contrasting intensities of pedestrian activity within these locales, revealing nuanced variations in response to the local urban fabric and connectivity.

Within this urban spatial structure, Minoji (Ofunacho) emerged as a bustling nexus of pedestrian activity. Its prominence was notably attributed to the strategic presence of bridges spanning the Horikawa Canal, effectively interlinking this quarter with the broader urban milieu. The Horikawa bridges served as pivotal conduits, facilitating seamless movement and engendering a heightened sense of connectivity that underpinned

the vitality of Minoji (Ofunacho). Consequently, the pedestrian dynamics within this precinct consistently exhibited higher levels of activity compared to its Shikemichi counterpart, thereby attesting to the pivotal role played by bridge infrastructure in shaping urban mobility patterns.

By observing the results of the analysis on the map, it is possible to see several core areas that show distinctly warm colors, implying that there will be a significant amount of pedestrian, which may affect past reconstruction. Several representative areas were selected based on cores of pedestrian flow and past presence. These areas are labelled A, B, C, D, E and F on the map (Fig.5).

Explanations of the six areas are given below.

①Area A:

Before the modernisation of the port, the street structure of the Shikemichi area was very clear, with the main streets and pedestrian flows spread out between Minoji (Ofunacho) and Shikemichi. due to the connection of the bridges over the Horikawa River, the street vitality of Minoji (Ofunacho) is higher than that of the Shikemichi streets. there is a clear trend of pedestrian flows along the east-west street in the southern part of Area A (the former Endoji Street). One of the few red areas on the map is near the Naka Bridge in Area A, which is also one of the few breaks in the two straight historic streets and is home to the important Sengen Shrine.

②Areas B C D:

The construction of the Port of Nagoya did not significantly change the street composition of the Shikemichi area. However, it has increased the open space and blurred the original grid structure. the core of Area A has been strengthened without being affected, and three sub-core areas (B, C, and D) radiate from it. the vitality of the Minoji

(Ofunacho) Street between Area B and Area A has been reinforced, and the structure of the two cores plus an axis has become the focus of the revitalisation of the historical area.

The emergence of the cores of Areas C and D blurred the original east-west street structure, making the grid structure of the Shikemichi area less visible in the Shikemichi area. At the same time, the walkability of the area was somewhat improved.

The two new open spaces are connected to the original Area A, which not only continues the vitality of Area A but also promotes the development of the area around it.

③Areas E F:

In addition, small, dispersed, localised open spaces allow the north-western areas (Area E and Area F), which have lacked a pedestrian presence in the past, to experience the important past of Aichibetsuin in Area E, and the busy shopping streets of the past in Area F. The new open spaces also allow the north-western areas (Area E and Area F), which have lacked a pedestrian presence in the past, to experience a pedestrian presence in the past.

4.3 Modes of reconstruction of the past in historical areas

The context of past reconstruction was an evolving era marked by changing social norms and dynamics. At the same time, the physical environment has changed, especially the spatial structure of the surroundings. The previous analysis of the spatial transformation of the Shikemichi area in the city of Nagoya confirms its potential to be a local centre, and thus the basis and significance of the reconstruction of the past. While the Shikemichi area has generally maintained its historical street layout in the context of changing times, the apparent emergence of a large number of open spaces introduces a key variable. Therefore, exploring how open space affects the process of past

reconstruction in the historic area by changing its spatial structure is the focus of this section.

Exploring and immersing oneself in modern historic preservation areas stands as a potent means for individuals to establish a tangible connection with and gain profound insights into the preserved past. These urban spaces function as dynamic vehicles for cultural transmission (Mumford, 1961)¹⁷², furnishing people with a direct conduit to the historical narratives seamlessly woven into the city's very fabric. Through these immersive experiences, individuals not only gain access to the physical remnants of days gone by but also partake in an evocative journey that captures the essence of place or *genius loci* inherent to historical spaces (Conzen, 2004)¹⁷³. In essence, these urban locales encapsulate the quintessence of a bygone era, rendering history palpable and visceral.

While the physical remnants of the past remain conspicuously accessible within these preservation areas, conveying their profound symbolic significance to the modern age necessitates a nuanced and multifaceted approach. Within the realm of historic reconstruction, five distinct paradigms have emerged, each distinct in its methodology for addressing both the tangible state and the intrinsic symbolism imbued within history: the monumental past, the empty past, the simulated past(O'brien, 1997)¹⁷⁴, the commodified past, and the destroyed past. The conceptual framework of the initial three modes of past originates from O'Brien Colm's semiotic approach, which illuminates the comprehension and constructing of historical narratives. These three modes—the monumental past, the

¹⁷² Mumford, L. (1961). *The city in history: Its origins, its transformations, and its prospects*, Houghton Mifflin Harcourt.

¹⁷³ Conzen, M. R. (2004). *Thinking about urban form: papers on urban morphology, 1932-1998*, Peter Lang.

¹⁷⁴ O'brien, Colm. "Form, function and sign: signifying the past in urban waterfront regeneration." *Journal of Urban Design* 2.2 (1997): 163-178.

empty past, and the simulated past—find relevance and applicability within Nagoya's waterfront space. Through a focused exploration of the Shikemichi area, the author aligns with these three modes to contextualize the construction of its past. Additionally, the author introduces two new modes—namely, the commodified past and the destroyed past—to complement and expand upon this framework. Each with its own means of addressing the physical state (form) and inner meaning (function). These diverse approaches collectively constitute a rich system of strategies employed to revive and reinterpret history in a manner that transcends the boundaries of time, enabling the past to be both preserved and perpetuated in the contemporary time.

4.3.1 Monumental past

Table 4-2 the process of reconstructing the past: monumental past (by author)

Past reconstruction	Features and examples
<p>Monumental past</p> <p>Form: past</p> <p>Function: past</p>	<p>Historic buildings or spaces have been preserved intact and are the most direct and tangible link to the origins of the Nagoya and Horikawa canal. In the Shikemichi area, it is represented by the Sengen Shrine, the Aichibetsuin and the Endoji Temple.</p>

The preservation of historical narratives through tangible physical manifestations, including architecture, sculpture and enduring monuments, is an essential process for historic waterfront spaces. These monumental structures are important references for understanding history. They are not only physical artefacts, but also vibrant gateways. Through this passage, people have the opportunity to understand and experience the social, cultural, religious and political aspects of a bygone era.

This is because these monumental buildings provide a wealth of visual information about the past while maintaining their original form and function. In the Yokkaichi City area, temples and shrines represent monuments to the past that not only have religious significance but also bear witness to social change.

While the Shikemichi area lacks green vegetation, the temple and the shrine are among the few open spaces with historical forms intact, including the preservation of vegetation. The accessibility of these sites, however, is relatively low, as neither of them is located at a core area through which much pedestrian flow passes. As urban development progresses, open spaces have emerged around these sites, and some of them have been converted into car parks. Functionally, parking spaces alter the movement

paths of some people, for example, coin-operated parking spaces may bring occasional foot traffic to the area, which inadvertently increases the accessibility of the monument past and makes it easier for people who do not live in the surrounding area to learn about it.

Intriguingly, the modern surge of urban development has facilitated the birth of open spaces around these sacred precincts, each bearing witness to its own unique history and transformation. Some of these spaces have undergone a notable metamorphosis, transformed into functional car parks. This transformation is reflected in the diagram presented in **Fig. 4-19**, outlining the distribution of both monthly and coin-operated parking spaces within the vicinity. The advent of coin-operated parking spaces, in particular, ushers in a unique phenomenon – the infusion of sporadic foot traffic into the area. This infusion breathes new life into the accessibility of the monumental past, extending its embrace to individuals who may not necessarily be denizens of the surrounding locality.

Area A contains an important monumental past, the Sengen Shrine (**Fig. 4-20**). Analysis of the spatial structure of the streets surrounding the shrine in 1975 (**Fig. 4-21**) reveals that visitors primarily approached it from the axis of Minoji(Ofunacho), while those on Shikemichi were less likely to do so. The emergence of an open space reorganized pedestrian paths around the shrine, creating a new east-west path that links the streets of Minoji(Ofunacho) and Shikemichi. This new path, located in close proximity to the shrine, enhanced the accessibility of the streets around it. The open space concentrated and expanded the flow of pedestrian, which was originally somewhat dispersed, potentially consolidating the shrine's status as a modern monument.

In detail, the introduction of an open space in proximity to the shrine instigated a transformative ripple effect within the fabric of pedestrian movement. This newfound

open space precipitated a reorientation of pedestrian paths encircling the shrine, catalyzing the creation of an entirely new east-west passage that ingeniously links the thoroughfares of Minoji (Ofunacho) and Shikemichi. Crucially, this emerging pathway nestles in close proximity to the shrine's sacred precincts, conferring enhanced accessibility to the surrounding streets. In effect, this spatial realignment not only streamlined visitor access but also potentially consolidated the Sengen Shrine's position as a modern-day monument of profound historical import.

Similar results were observed in Area E (**Fig. 4-24**), which contains another significant monumental past, the Aichibetsuin (**Fig. 4-22; Fig. 4-23**). The spatial structure of the streets in 1975 was relatively compact, with the area primarily functioning as residential. The location of the Aichibetsuin was not structurally reinforced, and access paths were limited, similar to an ordinary residence. In the process of generating open spaces, there were significant changes to the layout, including the demolition and alteration of buildings. These changes dramatically transformed the street view, resulting in changes to pedestrian access options. The reconstruction of the Aichibetsuin's past can now unite with the wider surrounding area, with the rich cores of pedestrian flow providing further opportunities for redevelopment.

The introduction of open space can improve accessibility and enhance the status of historic buildings, as demonstrated by the examples of Asama Shrine and Aichi Besshojin. At this stage, most of these open spaces are used as full car parking spaces. After defining the main access nodes, the retention of access for part of the day could be considered in future urban planning. Functionality and accessibility of the parking spaces would ensure that visitors have access to the historic monument, thus reinforcing its status as a modern historic monument.



Fig. 4-19 Distribution of businesses on streets in the Shikemichi area (by author)

The exceptional balance struck between preserving the monumental past and accommodating the contemporary needs of visitors is a hallmark of Shikemichi's urban evolution. Parking spaces, despite their modern function, neither erode nor compromise

the authenticity of the area. Rather, they enhance accessibility and convenience while safeguarding the district's heritage. In essence, these parking spaces act as silent guardians of Shikemichi's historical treasures. They stand as a testament to the region's commitment to commemorating its past while embracing the practical necessities of the present. This meticulous urban symbiosis underscores the district's enduring appeal as a living repository of culture and history, inviting both residents and tourists to partake in its rich narrative.



Fig. 4-20 Sengen Shrine with parking space (Photo in 2022.5, author)

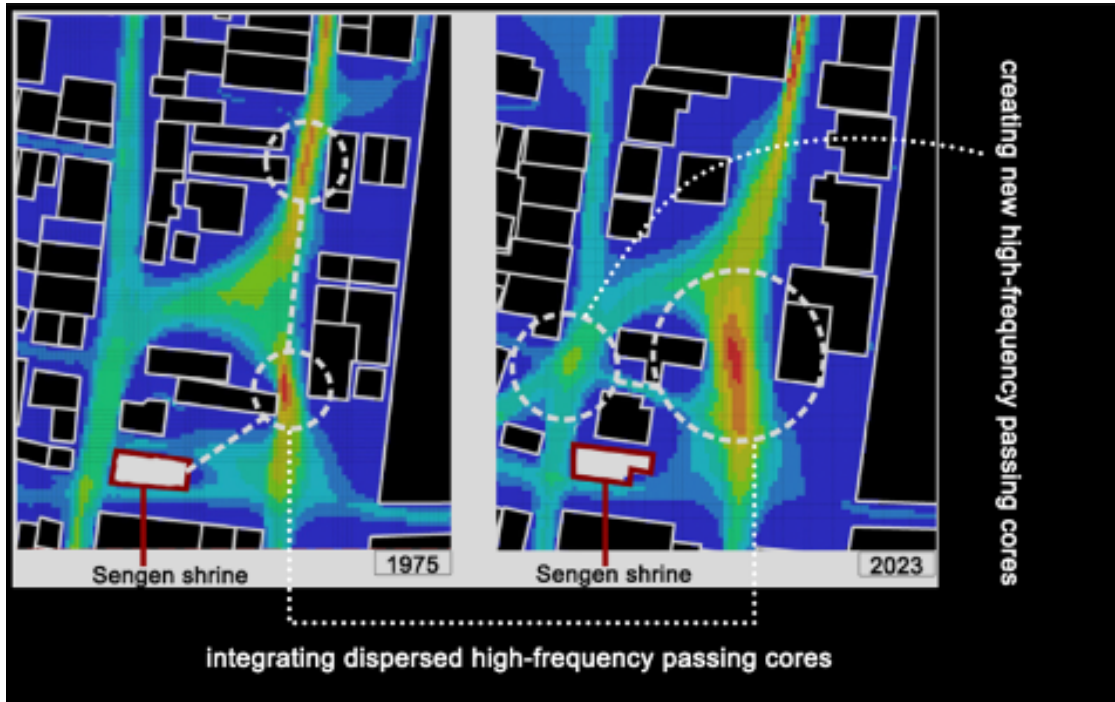


Fig. 4-21 Comparative analysis of flow around Sengen Shrine (in Area A)(by author)



Fig. 4-22 The Takata Honbo in the past (Source: Owari Meisho Zue²⁷ section2-11)



Fig. 4-23 Aichibetsuin with parking space (Photo in 2022.5, author)

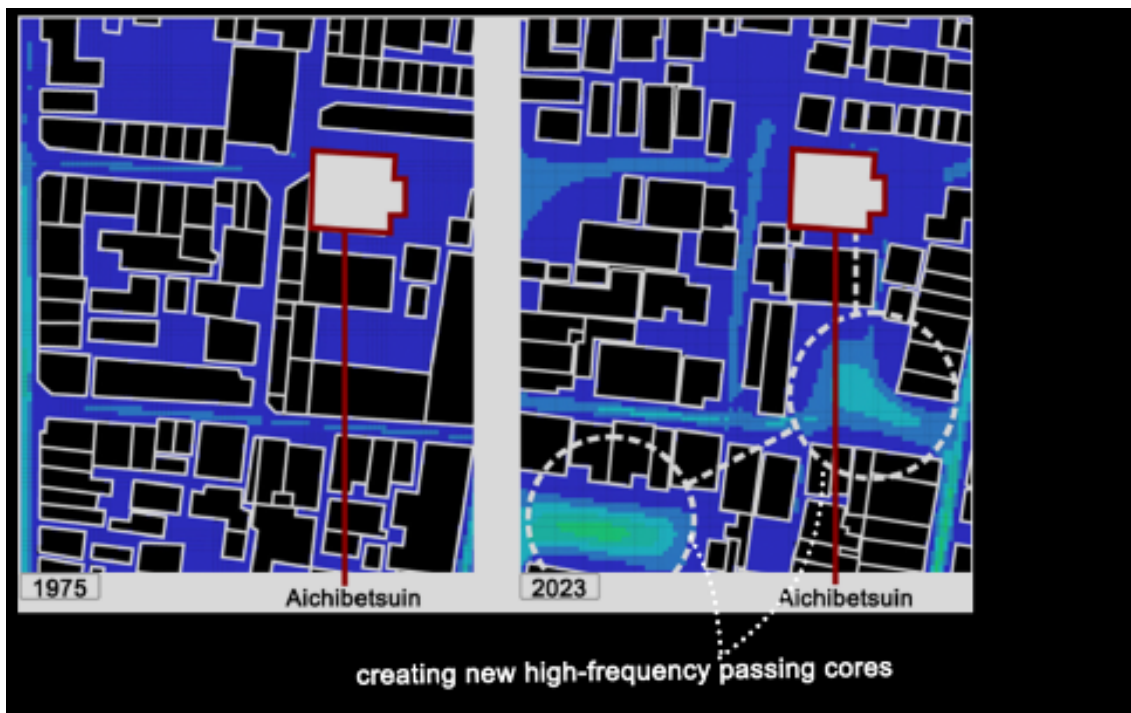


Fig. 4-24 Comparative analysis of flow around Aichibetsuin (in Area E) (by author)

4.3.2 Empty past

Table 4-3 the process of reconstructing the past: empty past (by author)

Past reconstruction	Features and examples
<p>Empty past</p> <p>Form: past</p> <p>Function: No</p>	<p>Loses its original function, but gains a monumental status by being preserved. A mere symbol of a past function, but useless. Within the Shikemichi area are represented the stone foundations of a traditional warehouse.</p>

For the purposes of this study, "hollow past" refers to historic features that retain some form but no longer serve their original function. Examples in this area include the raised stone foundations of warehouses. Although many of these warehouses were no longer needed until they were demolished due to the decline of water transport, the presence of stone foundations at the time of their construction was retained as a symbol of the past.

Through research in the field the authors found that some of the stone foundations mentioned above have been transformed into temporary parking spaces with ramps and steps. This transformation links the past to the present by giving these ruins a new use and significantly improves street accessibility, all of which strongly justifies their preservation. Without this adaptation, the ruins might have been demolished altogether.

This adaptive reuse of historic features has multiple implications. In addition to their intrinsic historical value, these reused ruins have become an important part of the local infrastructure, contributing to a more vibrant and accessible environment.



Fig. 4-25 Parking on Shikemichi(1) (Photo in 2022.5, by author)



Fig. 4-26 Parking on Shikemichi(2)(Photo in 2022.11, auhtor)

In Area A, a unique open space emerges from the street layout. This space once housed warehouses that served the waterways and is a testament to the area's strong connection to the thriving waterways of the past. However, with the decline of water

transport, goods were no longer stored in this area. The original warehouse buildings were demolished in the course of urban development, leaving only functionless stone foundations. The stone foundations were then built up with steps and ramps to become a freely passable open space, the main function of which was to be used by pedestrians as a link between the two streets. In this period, it was a purely functional traffic space with no intrinsic meaning.

In fact, there is a deeper meaning behind this meaninglessness. In a typical urban development scheme, one might be inclined to repurpose such a space with a new building, thus maximising the utility of the land.

However, the space has been designated as a car park, a functional intervention that meets the contemporary needs of the area whilst passing on the area's unique past. Preventing the complete erasure of the remaining past is also the significance of the process of reconstruction of the past itself, the blank past (**Fig. 4-27**)

The decision of this parking area deserve particular commendation. Attention to detail has been a prevailing theme, evident in the careful positioning of entry and exit points that ensure optimal traffic flow. Moreover, the incorporation of steps, thoughtfully integrated to navigate the varying heights of the terrain, not only enhances accessibility but also celebrates the multi-layered history of the site.

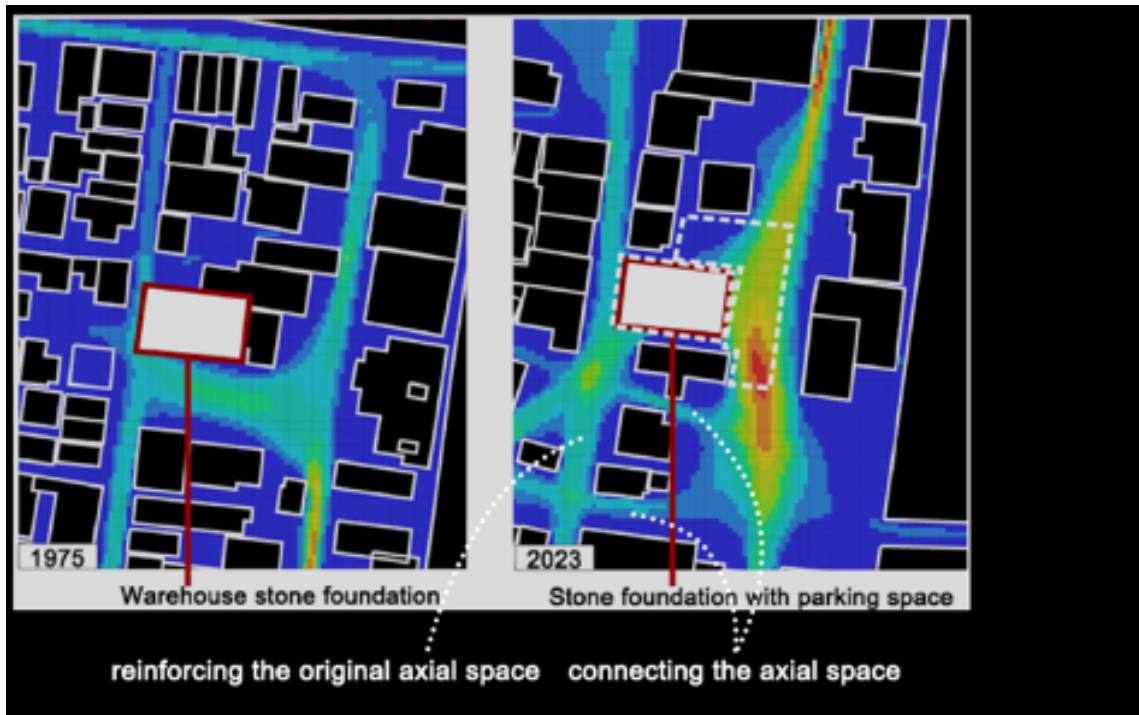


Fig. 4-27 Comparative analysis of flow around the base1(in Area A) (by author)

In essence, the adaptive transformation of the building's stone foundation into a transport space may not represent the best use of the land, but it does mark the continued, as well as further, intensification of the open space's past.

Area A is a testament to the interplay between past and present, where historical context and contemporary needs coexist in harmony. The case study in this area emphasises the potential for adaptive urban development, i.e. the preservation of the historical essence while promoting the vitality of an evolving urban landscape.

Another representative case study of the shikemichi area is the stone foundation of a warehouse located within the boundaries of Zone B. The stone foundation is a typical example of a warehouse in the shikemichi area, which has been preserved in a relatively intact state. Unlike Area A, which has maintained a relatively intact stone foundation, this stone foundation has a precedent of being remodelled prior to 1975, which is evident in the building distribution maps of the time.

Unfortunately, the remodelling during this reconstruction phase resulted in the almost complete replacement of the original building structure. In its place, the building is dominated by wood and reinforced concrete materials.

Only a small amount of the historic structure, a fraction of the size and style of the original warehouse, has survived in the modern building. In effect, the re-modelling or new construction of the buildings, while motivated by contemporary needs, has inadvertently disrupted the architectural coherence of the area and eroded the visual continuity that is indispensable to its historical lineage and to the preservation of its cultural heritage.

Functionally, this repurposed car park has become an open space that subtly connects two important main roads in the Shikemichi area. Views of one street that would otherwise be invisible from the other have been made visible, and the two previously impassable streets have been spatially structured to connect, effectively breathing new life into the neighborhood. Previously disconnected streets are now connected, bringing a sense of access to the city's historic waterfront space.

In addition, the reconstruction of the stone foundations of the past, while preserving them, has played an important role in preserving the sense of history in the Shikemichi area. In the uniform and monotonous visual language of modern architecture, these stone foundations act as a special touch of history, balancing the visual monotony of the contemporary built environment (**Fig. 4-28**).

This adaptive repurposing of a historical relic is a testament to the resilience of history, its capacity to persist in the face of modernization pressures, and its ability to forge new connections within evolving urban landscapes. The dynamic interplay between history and modernity, as exemplified by this transformed parking lot, underscores the

potential of heritage preservation to transcend mere nostalgia and actively contribute to the revitalization and enrichment of urban environments. In the Shikemichi area, the historical past continues to shape the present and chart a course for the future.

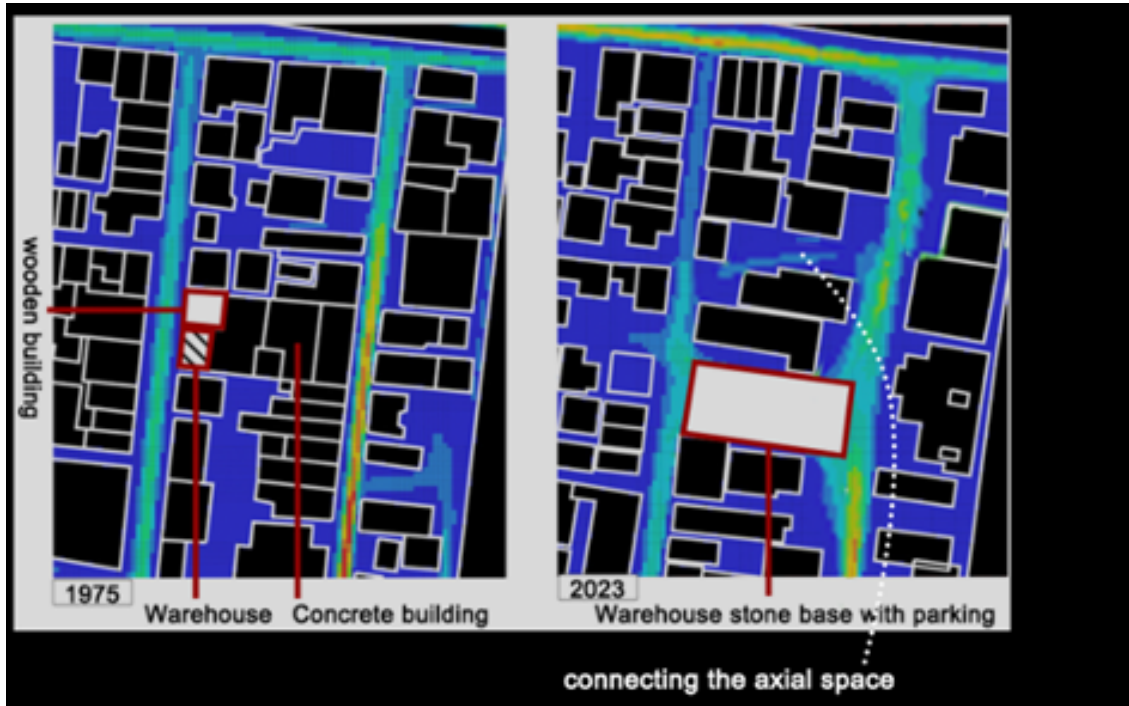


Fig. 4-28 Comparative analysis of flow around the base2 (in Area B) (by author)

4.3.3 Simulated past

Table 4-4 the process of reconstructing the past: simulated past (by author)

Past reconstruction	Features and examples
<p>Simulated past</p> <p>Form: past</p> <p>Function: present</p>	<p>The conservation and continuity of use of the historic structure establishes a link with the past. But the original function has been retained as a mere ornamental one, the real function has been replaced. For example, the original warehouse building is used as a shop or restaurant.</p>

In the field of historic preservation and urban regeneration, the concept of "simulated past" encompasses historic spaces that still correspond to past eras in their physical manifestations. However, the spaces in question have changed dramatically in terms of their function, creating a harmonious blend of the historical and the modern. The term 'simulation' has been used to describe this simulation of the form's or atmosphere of the past while contemporary functions are being realised.

In the cityscape of the Shikemichi area, the most prominent manifestation of the 'simulation of the past' is the newly developed businesses in traditional buildings. This commercial pattern may include a range of establishments centred on food and drink and retail. As the empirical investigations illustrated in **Fig. 4-29** and **Fig. 4-30** reveal, this transformation is a very clear indication of the dynamic evolution of the area.

By analysing the spatial layout of these rejuvenated businesses it can be seen that the over of simulation in the Shikemichi area is both preserving the entity of historical forms and injecting new energy and purpose into these historical spaces, an act that brings a more contemporary complexity to the urban landscape. It is as if history is being rewritten, a dialogue between the past and the present, redefining the boundaries between past and present.



Fig. 4-29 SAKE BAR (Photo in 2022.11, author)



Fig. 4-30 Shiki no Kura Ukon (Photo in 2022.11, author)

In addition, the analogue past of the shikemichi area has played an important role in shaping the overall character of the area. In addition to fulfilling a contemporary commercial function, it adds a depth of resonance with history for those attending commercial or other events in the area. Visitors to the area will not only be able to enjoy the delicacies of the restaurant, but will also be able to experience the cultural echoes of

the era when water transport flourished in the Nagoya area and the architectural aesthetics of the area, which are different from those of contemporary commercial districts.

For example, old warehouses that were once used by merchants to store goods have been reinvented as cafes and bars popular with contemporary young people, and although the materials of the houses are old, the joyful experience they hold is a product of the era.

Similarly, the area's traditional Machiya-style houses have been redeveloped to retain a typical Japanese architectural aesthetic. Traditional facades and modern interiors coexist harmoniously, creating a positive interaction between the past and the present, and the dining experience at such restaurants goes far beyond the food itself.

It is worth noting, however, that while this model of past reconstruction brings many benefits, it is not without its challenges. Chief among these challenges is the need to strike a balance between preserving historical integrity and meeting contemporary needs.

From an economic perspective, the introduction of analogue history has led to a noticeable resurgence in the shikemichi area. This area, once full of historical significance but on the verge of decline, has gradually become a commercial centre familiar to locals and tourists alike. This is because the infusion of modern commerce, particularly in the restaurant and retail sectors, has attracted both locals and tourists, thereby increasing foot traffic and economic activity. At the same time, however, the reuse of historic spaces may result in a de-identified transformation to meet contemporary functional needs, and the indiscriminate simulation and reproduction of history may actually undermine people's memories of the real past and their identities.

The realisation of a simulated past must therefore be cautious about the question of authenticity. If the reinterpretation of historical space falls into superficial imitation, the meaning of history will be obscured by blind nostalgia. To truly face this challenge head

on, it is necessary to understand the historical context of the area in a comprehensive manner and to value the intrinsic value of each historical element.

The interior of the shikemichi area, although a concentration of modern businesses, does not contain a high proportion of utilised historic buildings. In Area E, however, the greater concentration of restaurants and retail businesses have largely retained their original historic appearance. This interesting phenomenon can be re-referenced to the 1975 Building Type Distribution, which shows that there are rows of well-preserved historic wood buildings in this particular area that were primarily used for residential purposes in the past.

However, historic buildings in the E District face unique challenges. The street layout was not originally conducive to commercial activity, as the entrances to the buildings face relatively low-traffic streets. As a result, the commercial use of these buildings is very limited. However, the change in pedestrian flow from open space has had a significant impact on the development of the area. With the formation of open space, foot traffic on these streets increased significantly. The influx of foot traffic effectively created a modest nucleus of congregation and increased the visibility of the traditional wooden buildings on the street. As a result, the commercial suitability of these buildings changed qualitatively. Currently, these historic wooden buildings retain their traditional architectural aesthetics and are used to house modern restaurants and cafes.

Shingyoin Street, although historically less important than Shikemichi Street and Minoji (Ofunacho) Street, has the potential to develop a core of modern activities. This potential stems from the preservation of past architectural styles and the street's strategic interaction with Endoji Street. The transformation of the street structure through the introduction of open space has had a noticeable impact on the area, and the presence of

numerous restaurants is evidence of the positive impact that the presence of open space has had on modelling the past in the area. (Fig. 4-31)

In essence, Area E is able to illustrate how open space and foot traffic can effectively reconfigure an area's past. The simulated past emphasises the adaptive reuse of historic buildings and an evolution that can adapt to modern functional needs. It contributes to the overall economic vitality and cultural richness of the Shikemichi area.

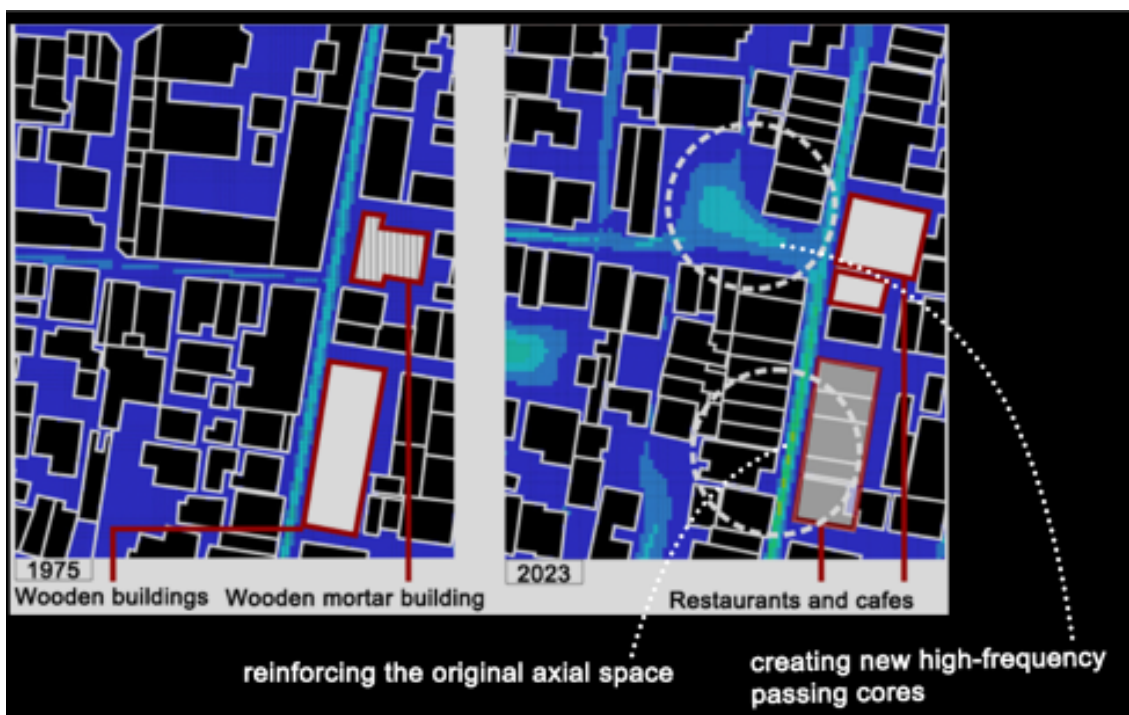


Fig. 4-31 Comparative analysis of flow in Shingyojin street (in area E)(by author)

In contrast to the positive impacts in Area E, the situation is very different in Area A. The creation of open space has not facilitated the modernisation and commercial renovation of the surrounding historic buildings, which in 1975 retained a large number of historic buildings, including timber-framed buildings and traditional warehouses. However, after the urban development, very few historic buildings remain. According to the results of the 2023 field study, only two restaurants and bars operate in the preserved

historic buildings. The significant decline in the utilisation of historic buildings that can be clearly observed in this area can be attributed to several factors.

Firstly, the warehouses in the area do not have openings facing Shikemichi Street, making them unsuitable for conversion to businesses that rely on street-facing displays and pedestrian observation. Arguably, the lack of convenient entrances limits the potential for adaptive reuse of these historic warehouse buildings.

Second, the presence of open space significantly alters the pedestrian flow in the neighborhood. The shift of some of the pedestrian flow towards Minoji (Ofunacho) Street reduces the vitality of Shikemichi Street. This difference in the distribution of pedestrian flows is particularly evident in the east-west streets. In 1975, the pedestrian flows in the "a" and "b" segments of the street were almost the same, but later on, the presence of the open space resulted in a significant reduction of pedestrian activity in "a" street. As a result, it has become increasingly difficult to convert buildings fronting "a" Street into modern businesses that rely on pedestrian traffic.

The existing two restaurants on street "a" cater to a high-end clientele and are less reliant on foot traffic for their business model. Consequently, these establishments do not leverage the historic appearance of the buildings to attract visitors. In this context, the process of simulated past reconstruction on street "a" can be seen as having been adversely affected by the presence of vacant lots. **(Fig. 4-32)**

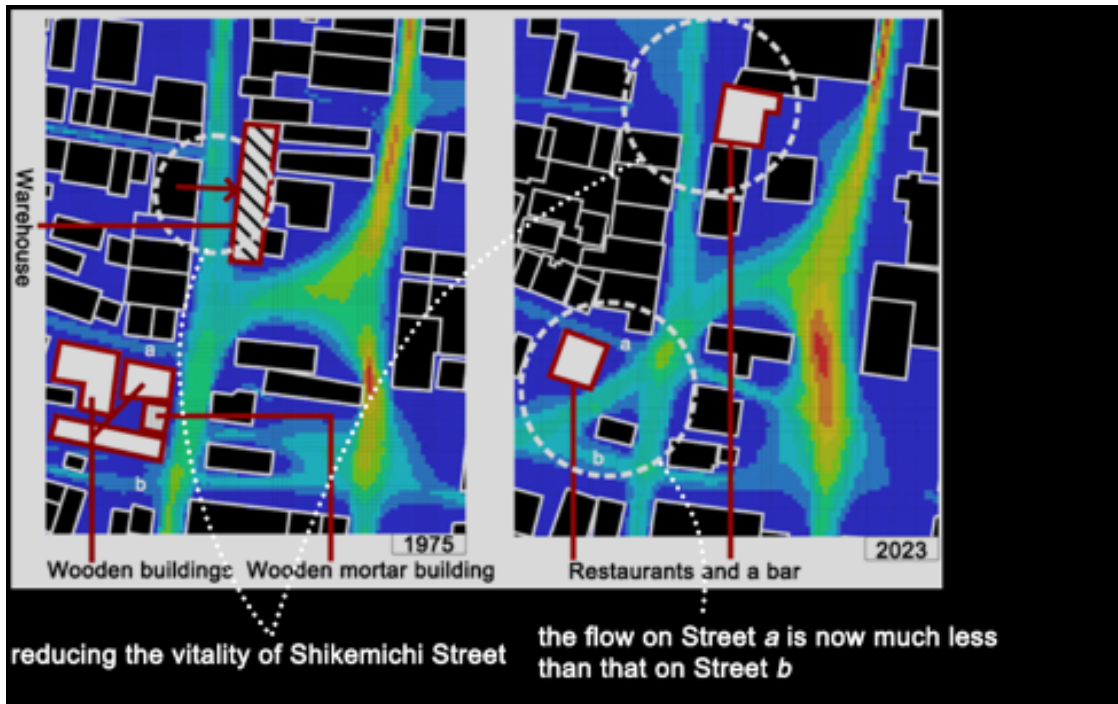


Fig. 4-32 Comparative analysis of flow in Shikemichi Street (in area A)(by author)

The diametrically opposed results of the analyses of the two areas mentioned above show the complexity of the impact of open space generation on past redevelopment processes. It is clear that whether the generation of open space will facilitate or inhibit the process of simulating this past redevelopment depends on the form of the historic buildings and the suitability of the streets on which they are located for reuse, as well as the response of pedestrian flows to changes in spatial structure. A fuller understanding of these complex pathways of impact is important for developing effective strategies for preserving and revitalising waterfront spaces.

4.3.4 Commodified past

Table 4-5 the process of reconstructing the past: commodified past (by author)

Past reconstruction	Features and examples
Commodified past	Promotions about events or trips evoke a historical era,
Form: present	providing people with historical images through modern

Function:	architecture or events, with the aim of consuming history.
Related to past	Examples are the festivals in the Endoji shopping street, the visitor centre in the Shikemichi area, etc.

The concept of a "commodified past" refers to a contemporary space that presents a historical atmosphere, which is modern in terms of its physical infrastructure and function, but where, due to its proximity to or location in an area of historical significance, there is an opportunity to transform the past into a marketable commodity. The phenomenon of commodification of the past stems from the general tendency to consider the past as "living history", which creates a culture of heritage, thus enabling merchants in the Shikemichi area to provide potential buyers with a historical status through the conversion of warehouses or the creation of spaces in the Shikemichi area, or the construction of new houses on land surrounded by historic buildings, thus providing a context in which a business or manager can sell the fruits of preservation (Hewison, 2023)¹⁷⁵.

This approach transcends mere material consumption and delves into the realm of symbolic consumption. It merges commodities and symbols into what can be termed as "commodity-symbols," entities rich in freely circulating meanings.

In this context, consumption goes beyond the utilitarian; it encompasses the consumption of symbols within a milieu where commodities and symbols converge to create these multifaceted "commodity-symbols." Here, preservation outcomes are intricately tied to the art of image-making. The revitalized Endoji shopping street and the establishment of the Shikemichi visitor center serve to reinforce the area's claim to its

¹⁷⁵ Hewison, R. (2023). *The heritage industry: Britain in a climate of decline*. Taylor & Francis.

historical lineage. By embedding the Shikemichi as a neighborhood steeped in the DNA of the Edo period, contemporary activities on Endoji shopping street are perpetually intertwined with the past. They invoke memories of the area's prosperous history, as if offering a portal back to the days when the Horikawa canal teemed with vibrant activity.

The commodified past constitutes a facet of what Bourdieu (1984) terms as cultural capital. This capital exists in both embodied and objectified states, residing within historical forms and structures—such as the spatial composition of the streets and the architectural facades of the buildings(Bourdieu, 2018)¹⁷⁶. As a form of cultural capital, its worth transcends the conventional economic processes. Instead, it can be realized and translated into economic value through consumption.

The Endoji shopping street in the Shikemichi area stands as an emblematic example of a contemporary shopping thoroughfare intimately linked to historically significant landmarks such as the Gojo Bridge and the adjacent Shikemichi Street. In certain instances, routine events and activities have succeeded in converting the region's historical backdrop into a commodity brimming with commercial potential.

¹⁷⁶ Bourdieu, P. (2018). *Distinction a social critique of the judgement of taste*. Inequality, Routledge: 287-318.



Fig. 4-33 Endoji shopping street

(Source: Nagoya Tourism Information Website: Nagoya Concierge)

The 1975 map of Area F clearly shows the connection between Endoji Street and the four north-south streets. The homogeneous grid structure places Endoji Street as the core east-west street, which is located at the edge of the area but still manages to bring people together through a clear spatial logic. However, the open spaces around the nodes make the connection between Endoji Street and the north-south streets less clear, obscuring the original meaning of the axes and leading to a reduction in the flow of people through them. Some clear breaks can be detected, which has led to a lesser integration of Endoji Street with the north-south streets, and more like a separate structure outside the Historic Preservation Area.

This change has had a negative impact on the redevelopment process in the past, especially the evolution of the commercialisation along the commercial street. This is because the weak connections between the streets make it increasingly difficult to

perceive and recognise the potential connection between Endoji Street and the past. Therefore, the challenge to be faced during the reconstruction of the past using commodified past in this area is how to strengthen the intrinsic connection between the commercialised space and the historic structure, so that the commodified past is indeed the result of a reconstruction that is closely linked to the past (Fig. 4-34).



Fig. 4-34 Comparative analysis of flow around Endoji Street (in area F) (by author)

The Shikemichi Visitor Information Centre in Area A is another representative example of the use of an evolving spatial structure to reconstruct a commodified past. The function of the centre is to introduce visitors to the historical evolution of the Shikemichi area, including the landscape of tightly arranged warehouses and long, straight, continuous streets, among others. It serves as an initial point of contact for visitors to the Shikemichi area, giving them a panoramic view of the entire neighborhood

and stimulating their interest in further exploring its historical significance. This intense interest not only increases the likelihood that visitors will be immersed in history, but also contributes to the local economy by spending money in the area.



Fig. 4-35 Visitor information center (Photo in 2023.5, author)

Importantly, this presentation-based approach to publicity does not rely exclusively on an actual historical entity but utilises a prime location on a contemporary street. Disseminating historical knowledge at this particular node has the greatest potential impact. (**Fig. 4-36**).

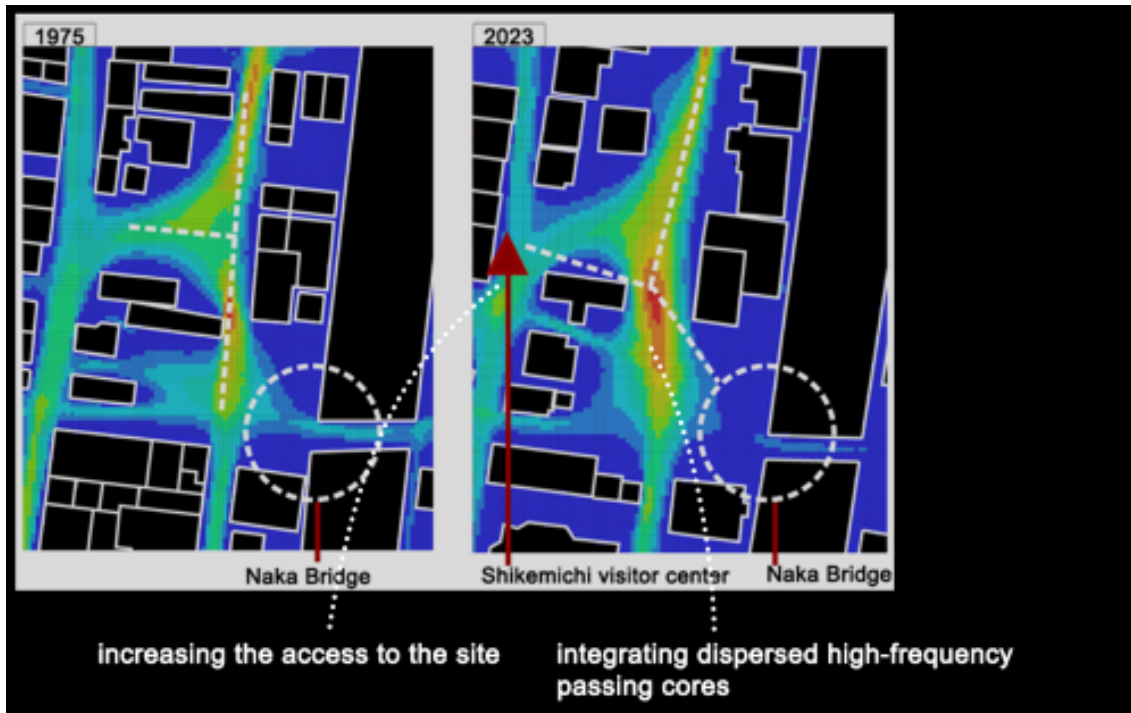


Fig. 4-36 Comparative analysis of flow around visitor center (in area A) (by author)

4.3.5 Destroyed past

Table 4-6 the process of reconstructing the past: destroyed past (by author)

Past reconstruction	Features and examples
Destroyed past Form: present Function: present	It is simply the result of an unplanned urban renewal process and has a great potential to undermine historical continuity and preservation.

The concept of the "destroyed past" delves into an issue that is very negative for historic districts, namely the fact that some historic spaces within designated historic districts have been completely severed from their rich historical context by modern transformations. This context-destroying evolution results in the creation of completely modernised spaces that dilute or even obliterate the area's historical context, such as office buildings and modern warehouses that have been built with no regard for the built environment (**Fig. 4-37**) The consequences of such developments extend beyond mere physical alterations, as they can have a cascading effect on the district's overall historical integrity.



Fig. 4-37 Office building in Shikemichi area without historical elements (Photo in 2022.11, author)

At the same time the capricious construction of flat blocks and sprawling car parks is a case of a destroyed past (**Fig. 4-38**). This recurring issue has been explored with great interest in many previous academic studies. Not only do they disrupt the visual and cultural continuity of the historic landscape, but they also pose a significant obstacle to the implementation of other forms of historical reconstruction in the area. This destruction of the past is therefore a multifaceted issue that is not confined to the sites on which they are built.



Fig. 4-38 Apartment with parking spaces (Photo in 2022.11, author)



Fig. 4-39 Residential on the stone base (Photo in 2022.11, author)

There are many examples of modern buildings coexisting with historic fabric in the study area. These modern functional vehicles, such as open spaces, modern dwellings and stone foundations (**Fig. 4-39**), inevitably lead to the creation of ancillary car parking spaces, which are often required for the primary residential function of these areas. It could be argued that these parking spaces are important catalysts in the process of reconstructing the "destroyed past", a past reconstruction. As mentioned earlier, what the categories of "destroyed past" and "commodified past" have in common is that their transformative aspects are inherently unrelated to the historical fabric of the entity.

The possibility of transforming the 'destroyed past' into a 'commodified past' lies in making connections with the historical significance of the area. For example, one could consider transforming modern residential buildings into experiential homes that become time machines that take modern people back in time. This process of adaptive reuse has the potential to enhance the cultural experience of the entire historic waterfront neighborhood, giving residents and visitors alike the opportunity to immerse themselves in the unique history of local waterside development.

Similarly, modern parking spaces in historic districts hold the potential to be transformed into historic parks or plazas. If the transformed space can encapsulate the essence of the area's history, it can create attractive gathering places and cultural centres that provide space for activities while passing on the area's culture. This reciprocal transformation of past redevelopment processes has the opportunity to bring the past and present together in a more harmonious way, bringing back the realisation that destroying the past is not desirable and is not the only way to modernise and redevelop.

The process of transformation within the historic district serves a multifaceted purpose that extends beyond mere preservation, encompassing both the safeguarding of historical culture and the amelioration of the damage wrought upon this venerable locale.

In an era where the past and the present are intertwined, the vestiges of an era that has ended have not been completely erased, but have been reinvigorated in a new way in the present day. Through this transformation, even the remnants of the "destroyed past" can experience a revival that resonates and interacts harmoniously with contemporary society and its discerning consumers. Central to this transformational paradigm is the act of creating novel values and imbuing these historic streets with fresh layers of meaning. It transcends the mere physical preservation of structures from yesteryears and extends into the realm of crafting innovative narratives and values. It is a narrative that bespeaks the ability to breathe new life into the historical district, reawakening the senses of all who traverse its streets. This process of reconstruction is not limited to a passive acceptance of history; rather, it is an active re-imagining of the past that reawakens an appreciation of the historic neighborhood in the perceptions of contemporary citizens.

4.3.6 Eventualized Past

The Horikawa Canal occupies a region characterized by tide-sensitive dynamics, responsive to the ebb and flow of Ise Bay's tides. Within this context, the extensive Shirotori wood storage yard forms a substantial reservoir, maintaining a consistent water level for most of its existence. The transportation of timber via rafts between these two entities involves navigating through three sluices, strategically capitalizing on the "difference in water level between high and low tides" to facilitate seamless ingress and egress.

Nonetheless, the rapid current coursing through these relatively narrow sluice gates poses a formidable challenge, rendering it exceptionally arduous to navigate rafts without incurring damage. This environment is inherently perilous, demanding an exclusive cadre of skilled raftmasters(筏師) (**Fig. 4-40**)to oversee portaging operations.

Distinguished from their peers, these raftmasters uniformly don blue hanten¹⁷⁷ attire during their operational endeavors (**Fig. 4-41**). This practice underscores the significance of their role and the commitment they bring to their craft, with an aspiration held by all aspiring raftmasters to one day don the emblematic blue hanten, a symbol of their mastery and expertise.(西別府順治, 2011)⁶

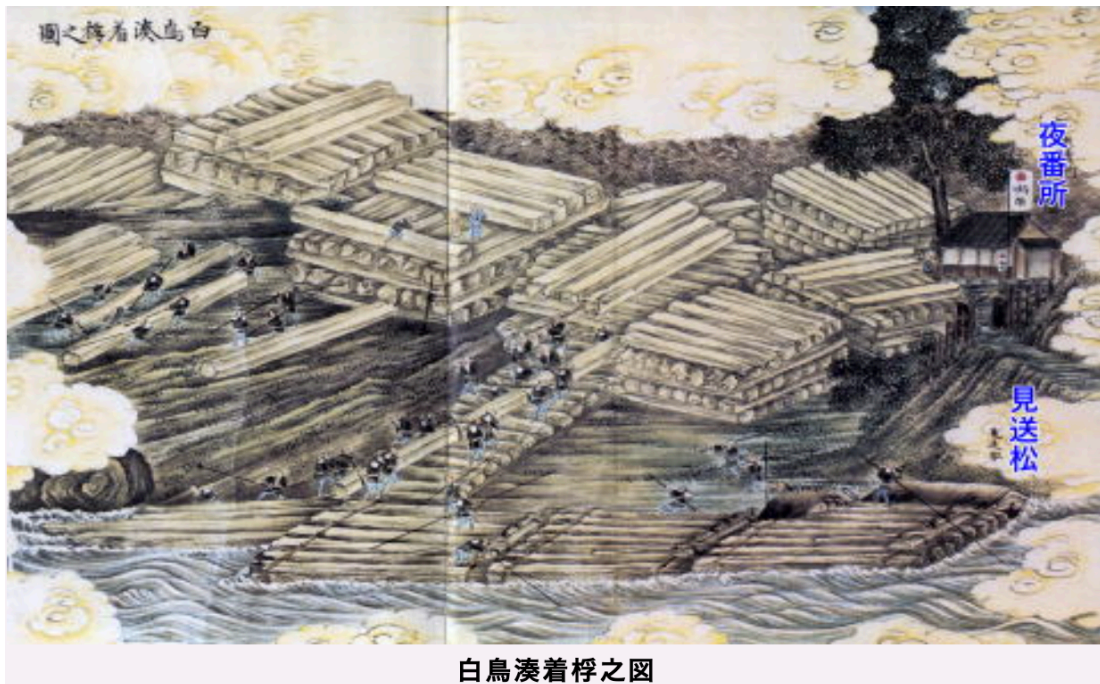


Fig. 4-40 Raftmasters and rafts (Source: 木曾式伐木運材図絵¹⁷⁸)

¹⁷⁷ Hanten: A short winter coat and an item of traditional Japanese clothing. The hanten started to be worn, especially by the common people, in the 18th century, during Japan's Edo period (1603-1867)

¹⁷⁸ 木曾式伐木運材図絵, 長野営林局事業部作業課 編, 長野営林局互助会 1954.



Fig. 4-41 Raftmasters (Source: Nagoya Port Lumber Warehouse Inc.)

The skill of a raftsman was a defining factor in the success of timber merchants in the past. A skilled rafter held a prestigious position within the trade, often distinguished by wearing a hanten (a traditional Japanese short coat) adorned with a shop badge. These skilled rafters would sit on the right side of the master, showcasing their expertise and contributing to the reputation of their merchant.

During the 1960s, efforts were made to maintain and enhance the art of rafting. An annual national single rafter competition was organized, and the rafters from Nagoya displayed remarkable prowess by winning eight out of ten times. In 1965, the Canadian government extended an invitation for a rafting competition held at the Jingu swimming pool in Tokyo. Once again, the Nagoya team exhibited their exceptional skills and emerged as the dominant force in the competition. This success on the international stage continued as the Nagoya team competed in various global competitions, consistently securing top positions and earning recognition as world champions.

Today, the tradition of rafting lives on, and the Nagoya Port Rafting Competition remains an annual event during the Nagoya Port Festival. Rafting masters continue to perform their skills, and the general public is encouraged to participate, celebrating this rich heritage and the enduring legacy of Nagoya's rafting tradition.

Participating in technical competitions within modern society holds a unique significance beyond fulfilling practical needs. In today's world, these activities have evolved to carry symbolic and cultural value due to their historical connections and their role in preserving traditions. Engaging in such activities closely linked to the development of Nagoya's port is more than a personal pursuit; it represents a profound connection between individuals and their community. These pursuits become a vital element in forming and reinforcing a collective identity, symbolizing shared commonalities and values among group members.

Participating in events like the "Raftmaster competition" serves as a reminder of the distinction between "us" and "others." When people come together to engage in activities rooted in historical heritage, it signifies that they once shared common interests and now hold the same historical memories. This shared history binds them emotionally and fosters a sense of belonging to a particular community.

By reviving the historical profession of the raftsman in a modern context and aligning it with the values associated with waterfront spaces, the public can organically develop an appreciation for urban areas and a vision for their future. These experiences inspire a sense of attachment to the city and its history, driving a desire to actively contribute to its ongoing development and preservation. In essence, they create a living connection between past and present, enriching people's relationship with their urban environment.

Kihachiro Sakai has undertaken a commendable initiative aimed at fostering a profound understanding of port culture among young learners. Through programs such

as the one where Higashi-Tsukiji primary school students got to experience the remnants of Nagoya port's raft culture, he has played a pivotal role in instilling a sense of historical awareness regarding the Horikawa area within the city. His efforts have effectively sowed the seeds of appreciation for port spaces in the minds of local children from an early age.

After a year of engaging in these cultural experiences, the children started to develop a newfound interest in their immediate surroundings. They began to exclaim, "Teacher, I had no idea that Higashi Tsukiji had such a rich history!" The impact extended beyond the children themselves, as parents and guardians from diverse areas were drawn into conversations about Higashi-Chikuchi's history. Comments such as, "There are various port buildings near the school. People's harpoons protected the area from disasters," and "Rafts carried timber to Horikawa, contributing to Nagoya's development," became commonplace. The children's enthusiasm also extended to wanting to participate in raft-making, a cherished cultural heritage of their region. They took pride in being part of a community deeply rooted in its history, showing appreciation for the structures erected by their forebears and the heritage of their locality, as well as contemplating the future of their region.(酒井喜八郎, 2005)¹⁷⁹

These young individuals, who are growing up with a strong sense of regional identity, have learned to view the buildings constructed by those who came before them through a historical lens. They have gained an appreciation for the unique advantages of their locale and have embraced traditional culture as a vital part of their heritage. Furthermore, they actively consider the future of their community. Looking ahead, the promotion of further

¹⁷⁹ 酒井喜八郎. (2005). 総合学習「地域に残る筏文化から名古屋のまちの発展を支えてきた堀川の学習へ」. 「住まい・まち学習」実践報告・論文集, (6), 3-8.

studies on rafts and the Horikawa area is envisioned. The goal is to introduce the activities once practiced by specific groups to the broader public connected to modern-day port spaces. By transforming the act of publicizing the region into a bridge that connects people with diverse backgrounds and perspectives, these efforts strive to create a deeper sense of unity among community members who may initially appear quite distinct from one another.

4.3.7 A summary of the relationship between parking spaces and past reconstruction

The investigation underscores that parking lots are more than mere transportation amenities; rather, they constitute intricate spatial components that intricately interlace with other edifices, thoroughfares, and waterways in the Shikemichi area. While diametrically distinct from the attributes characterizing historical districts, parking spaces, in the context of historic district preservation, emerge as conduits for conveying the modern significance enshrined in the tangible remnants of bygone eras. Consequently, even within historic districts, the contemporary open spaces, typified by parking spaces, retain a favorable connotation that can undergo transformative reinterpretation.

This case study provides a dialectical analysis of the potential impact of parking spaces in the Shikemichi area by tracing the structural changes in urban space before and after the decline of water transport in Nagoya. The results show that parking space itself has the property of open space, which may contribute to the process of past reconstruction by (i) integrating dispersed high-frequency passing cores, (ii) creating new high-frequency passing cores, (iii) reinforcing the original axial space, (iv) connecting the axial space, (v) increasing the access to the site (or to the street), and (vi) altering the visual

guidance to change the movement patterns of people in the area, but at the same time it may also lead to a destroyed past due to the improper design.

Past reconstruction is an important aspect of the regeneration of waterfront historic areas in the current context of declining water transport. However, up to the present, policies for the construction of parking spaces have generally revolved around macro-setting schemes, such as “from building car parks in the urban centre to building car parks in the countryside. Even the phrase "to curb the excessive inflow to the city centre" has appeared. Such a planning approach completely ignores the potential positive impacts of parking spaces. This case study provides new insights into the understanding and transformation of existing parking spaces within historic spaces, with the view of revitalizing historic districts through the judicious incorporation of modern spatial structures, while maximizing the preservation of the historic fabric.

4.4 Mesoscale of the model

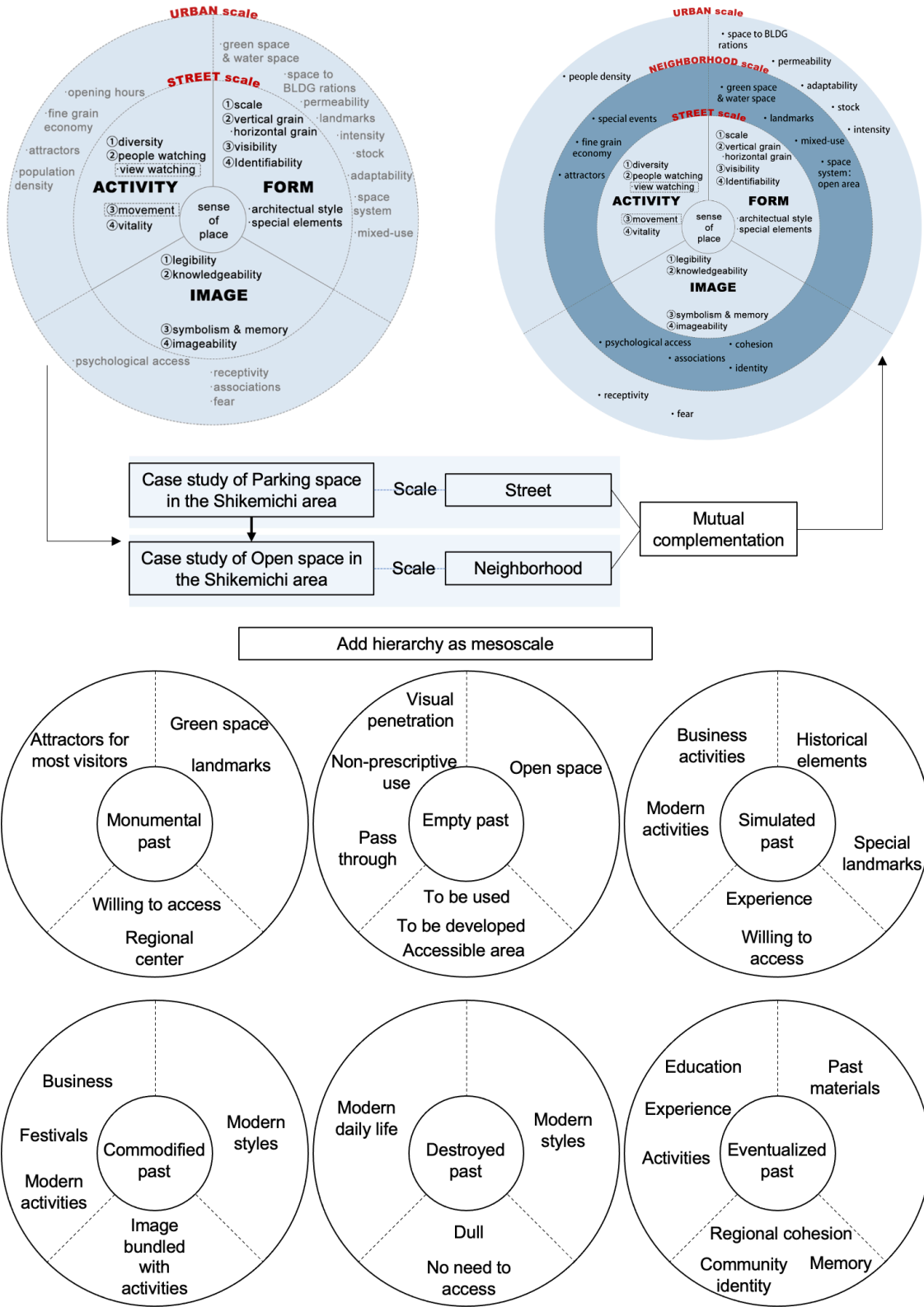


Fig. 4-42 Mechanism for adding a mesoscale (by author)

The case study on reconstructing the past in Section 4.3 illustrates the potential for the contemporary development of the historical waterfront area. This potential is built upon a specific spatial foundation of the area and human activities. The findings analyzed at the neighborhood scale reveal effects on human cognition that were not evident at the street scale. In other words, the conceptual scope of the sense of place is further broadened (**Fig. 4-42**). This outcome implies that the constraints of the initially proposed sense of place model (**Fig. 2-12**) for cognitive reconstruction can be addressed by introducing a mesoscale.

Analyzing the Shikemichi area at the neighborhood scale allows us to gradually identify impacts that may not be apparent at the street scale. For instance, while a parking space as an open space might disrupt the continuity of the street at the street scale, it could simultaneously provide easier access to the entire area. This improved access can lead to increased pedestrian flows, which, due to changes in the local spatial structure, enhance the overall vibrancy of the area. This, in turn, can improve the accessibility of landmarks and facilitate the distribution and development of businesses, essentially contributing to a finer-grained local economy.

Therefore, it is essential to incorporate a meso-level perspective that reflects the neighborhood into the model validated in Chapter 3 (**Fig. 4-43**). The elements corresponding to the three dimensions are summarized based on relevant elements that have surfaced in previous redevelopments (see **Fig. 4-42** bottom part). In the form dimension, four elements are abstracted: green space & water space, landmarks, mixed-use, and space system(open area). In the dimension of activity, three elements are abstracted: special events, fine-grain economy, and attractors. In the dimension of image, four elements—psychological access, associations, cohesion, and identity—are abstracted. It's important to note that since the neighborhood scale inherently

encompasses the street scale, the elements originally abstracted at the street scale will reappear in the cognitive reconstruction of the neighborhood scale. For instance, the element of memory, which pertains to the neighborhood's overall image (in eventualized past), is still categorized at the street space level.

The reconstruction of the monumental history of the historic neighborhood, Shikemichi, emphasized the significance of locations where green spaces and water spaces are concentrated as central nodes of the area, both historically and in contemporary times. Roads and open spaces connected to these nodes, especially if they possess the potential to become areas with high pedestrian traffic, can further enhance the neighborhood's vibrancy by interacting with green spaces (as discussed in section 4.3.1, Monumental Past).

It is important to note that the optimal utilization of the waterfront space, in conjunction with natural conditions, is easier to achieve after identifying densely populated locations through people flow simulations. Landmarks, while having a limited impact on a specific street, have the potential to significantly influence the transformation of the spatial structure of the entire neighborhood, either reinforcing negative or positive impacts. Mixed-use construction at the neighborhood level can stimulate a broader range of activities. What may appear abrupt in a particular street's landscape could harmonize with the overall neighborhood. Thus, viewing waterfront space from the perspective of mixed-use construction can enhance the area's legibility (as discussed in sections 4.3.3 and 4.3.4, Simulated Past and Commodified Past).

One significant distinction at the neighborhood level is the occurrence of special events compared to the primary behavioral activities of watching and movement at the street scale. Activities aimed at creating a spatial image for the entire region are more likely to strengthen local residents' cognitions of identity. This, in turn, enhances cohesion

and psychological access of the region. Concurrently, events and the associated spatial attractors reinforce the region's associations, making it easier to strengthen the place's cultural genes and establish a cultural identity to establish the unique character of different neighborhoods (as discussed in sections 4.3.4 and 4.3.6, Commodified Past and Eventualized Past).

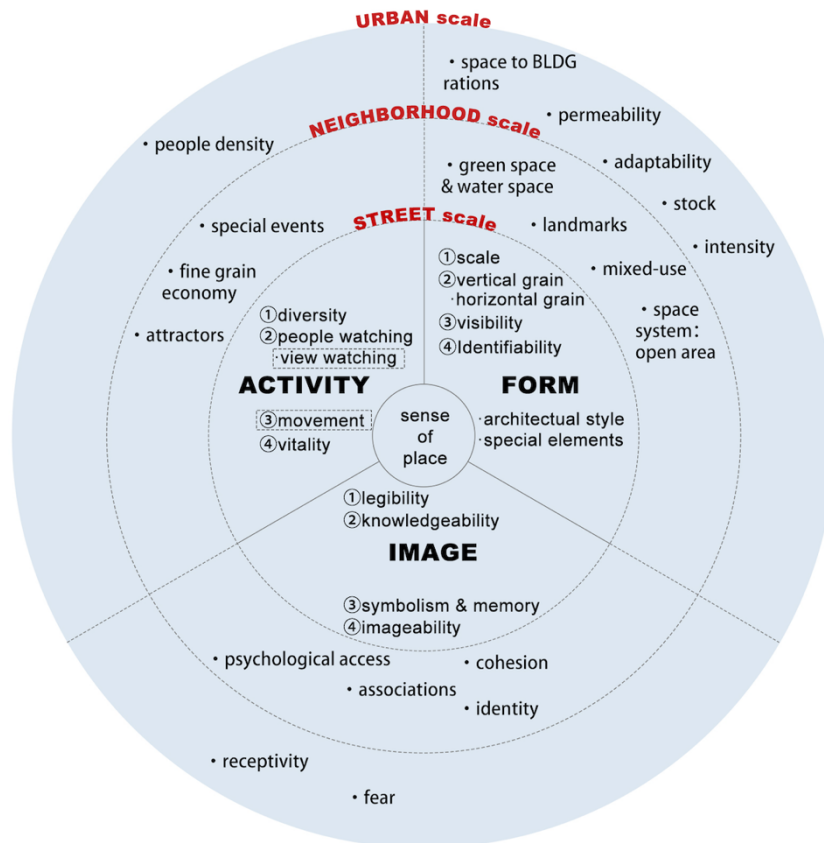


Fig. 4-43 The sense of place model with mesoscale (by author)

4.5 Summary

Summary for Chapter 4

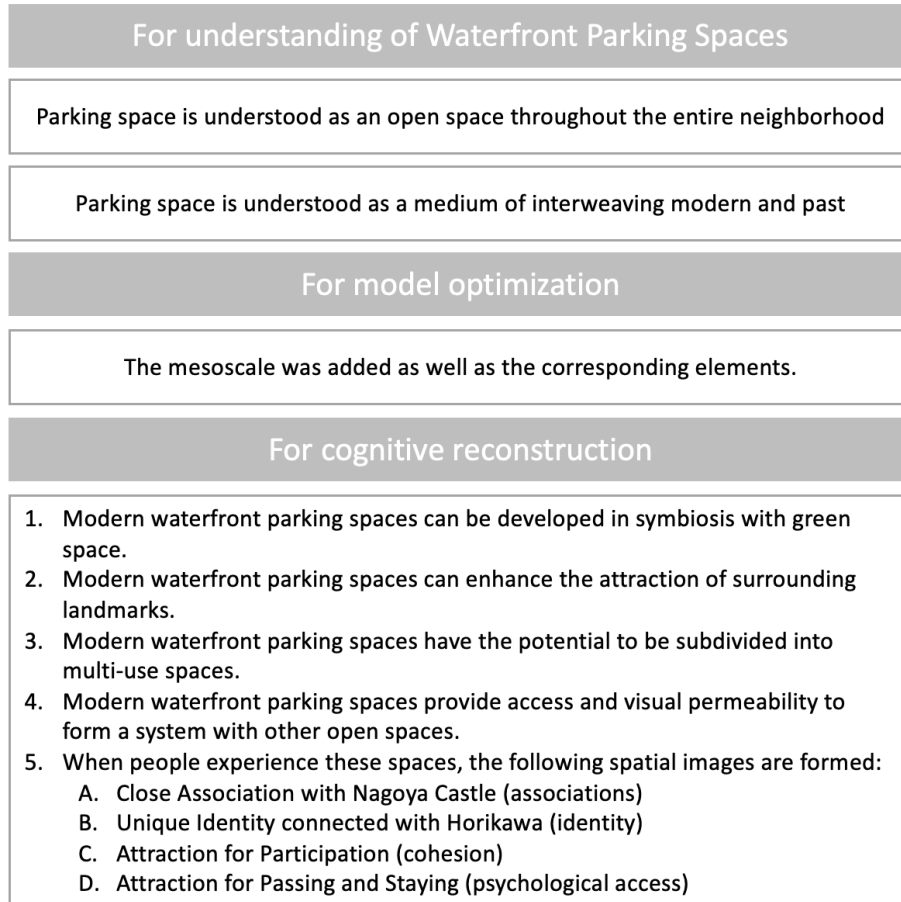


Fig. 4-44 Summary for the case study in Chapter4

This chapter delves into the history of Nagoya's urban evolution, providing an in-depth study of the transformation of Nagoya and, in particular, of the Shikemichi area, which is inextricably linked to Nagoya's historic urban transformation. The Shikemichi area's infancy was characterised by its privileged location adjacent to one of Nagoya's most important arterial routes, making it a veritable connecting point. Over time, however, the city's traffic dynamics shifted, with canal-based traffic diminishing and the Port of Nagoya, located in the southern part of the city, eventually gaining the upper hand. This epochal shift in urban dynamics led to a profound reconfiguration of the cityscape and

ultimately transformed the Shikemichi area into a district filled with open spaces. In the vicinity of these open spaces, commercial and residential functions gradually merged. By delineating the layout and uses of these open spaces and matching them with the corresponding past reconstruction, this chapter not only clearly articulates the nature of the evolution of the spatial structure of the area, but also grasps the impact of the open spaces on the past reconstruction.

At the heart of this chapter lies the meticulous identification of open spaces, which in the Shikemichi area are primarily represented by the location of car parks, and the modelling of likely pedestrian flows through the open spaces as the primary methodology. These methods allow us to identify the contemporary distribution of open spaces and to elucidate their possible interactions in shaping the past reconstruction of the area. Telling the story of the evolution of the Shikemichi area through open spaces represented by parking spaces reveals that the urban structure of the past is intertwined with the pressing needs of the modern age, and that the historical preservation of a precious area coexists with an evolving identity over time.

In terms of understanding the parking spaces themselves, this case study presents a compelling argument regarding the multifaceted role of parking spaces within the Shikemichi area. It emphasizes that these parking facilities extend beyond their utilitarian function in the transport infrastructure. Instead, they constitute integral components of the waterfront space intricately interwoven with the fabric of this historic area. Although these parking spaces stand distinct from the conventional character of the historic area, they serve as conduits through which contemporary meanings intertwine with the tangible remnants of a bygone era. Even within historic areas, the presence of modern open spaces represented by parking facilities signifies transformative reinterpretation and meaningful integration with their surroundings.

In terms of optimizing the model, the case studies in this chapter introduce a mesoscale—the neighborhood scale. This scale provides a more comprehensive viewpoint compared to the street scale, yet remains more contextually relevant than broader urban planning scales. Crucially, elements at the neighborhood scale wield direct influence over human perception, bridging the gap between individual cognitions and the broader urban planning context. By encompassing models across three distinct scales, the analysis enables a nuanced differentiation of various waterfront spaces or the impact of a particular waterfront area across varying scales. This approach identifies contradictions and potential strengths within a certain space, laying a robust foundation for cognitive reconstruction.

Concerning cognitive reconstruction, the case study focuses on cognitions of parking spaces—a newly formed spatial entity due to the decline of water transport—at the neighborhood scale. This examination reconsiders the significance of changes in spatial forms with an eye on human behaviour, and the formation of identity, associations, local cohesion and psychological access in the dimension of IMAGE when people experience these spatial forms and activities. The results of the concrete refactoring are as follows:

1. Modern waterfront parking spaces can be developed in symbiosis with green space.
2. Modern waterfront parking spaces can enhance the attraction of surrounding landmarks.
3. Modern waterfront parking spaces have the potential to be subdivided into multi-use spaces.
4. Modern waterfront parking spaces provide access and visual permeability to form a system with other open spaces.
5. When people experience these spaces, the following spatial images are formed:

- A. Close Association with Nagoya Castle (associations)
- B. Unique Identity connected with Horikawa (identity)
- C. Attraction for Participation (cohesion)
- D. Attraction for Passing and Staying (psychological access)

4.6 Reference

- 酒井喜八郎 2005. 総合学習 「地域に残る筏文化から名古屋のまちの発展を支えてきた堀川の学習へ」. 「住まい・まち学習」 実践報告・論文集, 3-8.
- 西別府順治 2011. 名古屋港と三大運河: 水運から見た名古屋開府 400 年: 堀川・新堀川・中川運河, 中日出版社.
- BOURDIEU, P. 2018. Distinction a social critique of the judgement of taste. *Inequality*. Routledge.
- CONZEN, M. R. 2004. *Thinking about urban form: papers on urban morphology, 1932-1998*, Peter Lang.
- DETLAFF, W. 2014. Space syntax analysis—methodology of understanding the space. *PhD Interdisciplinary Journal*, 1, 283-291.
- HEWISON, R. 2023. *The heritage industry: Britain in a climate of decline*, Taylor & Francis.
- HILLIER, B., BURDETT, R., PEONIS, J. & PENN, A. 1986. Creating life: or, does architecture determine anything? *Architecture & Comportement/Architecture & Behaviour*, 3, 233-250.
- HILLIER, B. & HANSON, J. 1989. *The social logic of space*, Cambridge university press.
- HOYLE, B. 2000. Global and local change on the port - city waterfront. *Geographical review*, 90, 395-417.
- MUMFORD, L. 1961. *The city in history: Its origins, its transformations, and its prospects*, Houghton Mifflin Harcourt.
- O'BRIEN, C. 1997. Form, function and sign: signifying the past in urban waterfront regeneration. *Journal of Urban Design*, 2, 163-178.
- OBA, T. & ISEKI, H. 2020. Transportation impacts on cityscape preservation: Spatial distribution and attributes of surface parking lots in the historic central districts. *Journal of Urban Planning and Development*, 146, 04020014.

CHAPTER 5

CONCLUSION AND FUTURE PROSPECTS

5.1 Synopsis of each chapter

Chapter 1 provided the research background and objectives of this study. It pointed out that waterfront space crosses the boundary between water and land, has an important function of connecting, facilitating trade, logistics and urban development, and also has a social value as an important space where people's daily life occurs. Chapter 1 also provides an overview of the historical context of Nagoya and its waterfront spaces, clarifying that Nagoya is a city born with a canal called Horikawa. Waterfront space is an important part of the city's economy and culture, and can be divided into two levels - canals and ports - each representing transformation and expansion. The chapter also includes fundamental concepts with reference to previous research, such as cognitive construction and waterfront spaces regeneration. A review of relevant urban design theories is illustrated. However, previous studies had tended to ignore the users, and there was therefore a need to re-conceptualize waterfront space. Then, this chapter clarified the position of this study by sorting out the problem of cognitive reconstruction of waterfront spaces based on previous studies.

Chapter 2 detailed the methodology used to collect the initial information and also revealed the process of generating the sense-of-place model used for the cognitive reconstruction, which originally had three dimensions and two scales, with the three dimensions being interpreted specifically to correspond to the elements. The scope of the case study was also identified.

Chapter 3 provided a case study focusing on the Shikemichi area (adjacent to two historic bridges), which is particularly rich in parking spaces. The chapter not only categorized these parking spaces, but also highlighted the validity of using a sense of place model to understand such modern waterfront spaces, suggesting that targeted improvements should be made to different negative spaces. It also exposed the shortcomings of the model in that it ignores the influence of neighborhood scale, which can lead to a monolithic and one-sided cognition.

Chapter 4 revealed the profound transformation of water transport through the lens of the Nagoya timber industry, which evolved from the canal era to the present-day Nagoya port era. Along with the transformation of the transport pattern, the spatial layout of the waterfront area had also undergone significant changes.

In order to gain a deeper understanding of how these changes in spatial layout have affected contemporary society, Chapter 4 provided an in-depth study of the impact of modern open space in the Shikemichi area. By modelling the flow of people through the open spaces, the potential process of reconstructing the past in contemporary waterfront spaces was revealed. While it is true that industrial transformation can lead to the hollowing out of the urban core, strategically located open spaces have the potential to have a positive impact. Therefore, it is necessary to add a mesoscale between the street and urban scales to the model to help better explore trends in modern waterfront spaces.

Chapter 5 is the last chapter of the main research and provided a synopsis of each chapter and conclusions with future prospects.

5.2 Conclusion

The conclusions of this study begin by answering the three questions posed at the beginning of the study.

1. What are the defining historical features and identities of modern waterfront spaces in Nagoya?

Two layers: Nagoya's waterfront space consists of the Horikawa Canal System, which includes three major canals, and the Port of Nagoya, which developed out of the Atsuta Port. Of these important waterfront spaces, the Horikawa Canal is the most important north-south axis of the city, and has evolved in conjunction with the history of water transport in Nagoya. The northern section of the canal retains a more strongly recognisable historical character of water transport, thanks in large part to its close association with Nagoya's starting point, Nagoya Castle.

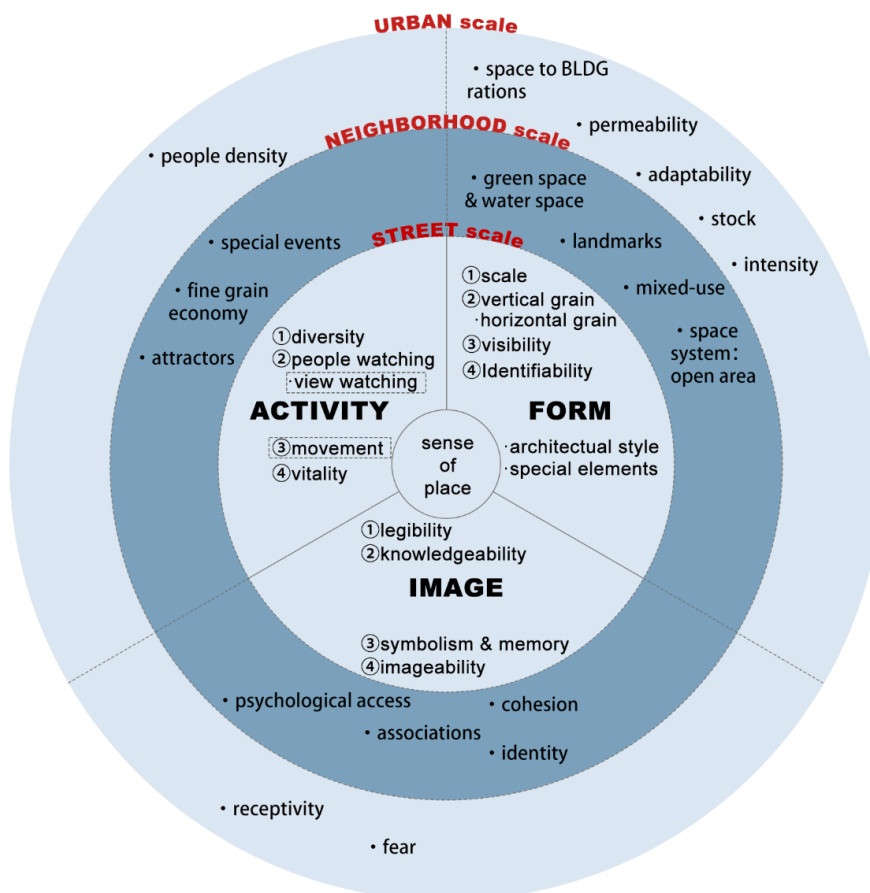
A canal system that has changed dramatically: As the city of Nagoya expanded rapidly, the Horikawa Canal underwent significant changes. In order to accommodate the city's water transport development, the canal was not only widened, but also extended further to the south. Later, in addition to the Horikawa Canal, two other canals, the Nakagawa Canal and the Shinhorikawa Canal, were constructed to meet the growing demand for water transport within the city. Together, they form the current canal system.

Intrinsic connection to urban development: Nagoya's waterfront space is not a static historical monument, but its transformation reflects the city's changing urban structure and traffic patterns. The forces of industrialisation and globalisation dramatically changed the industrial composition of Nagoya, which in turn shaped the functional distribution of land along the waterfront. Perhaps the most significant change during this period was the replacement of the canal by the Port of Nagoya as the modern hub of water transport.

2. How can individuals grasp the attributes of the modern waterfront spaces?

It is possible to reconstruct one's cognition of the attributes of Nagoya's modern waterfront spaces based on the three dimensions of the Sense of Place model. And this Sense of Place model is one of the important conclusions of this study (**Fig. 5-1**). These

three dimensions are FORM, ACTIVITY and IMAGE, where FORM is the physical characteristics of the space itself, including spatial scale, horizontal & vertical grain, visibility, and identifiability (including architectural style and special spatial elements) at the street scale; green space, landmarks, mixed-use, and open space system at the neighborhood scale. ACTIVITY is a characteristic related to human behavior, and at the street scale includes diversity, viewing, movement, and vitality. At the neighborhood scale includes special events, fine grain economy and activity attractor. IMAGE, on the other hand, is the result of abstraction based on the above two dimensions processed through personal experience, and at the street scale includes: legibility, knowledgeability, symbolism & memory, and imaginability. On the neighborhood scale it includes: association, cohesion, identity and psychological access.



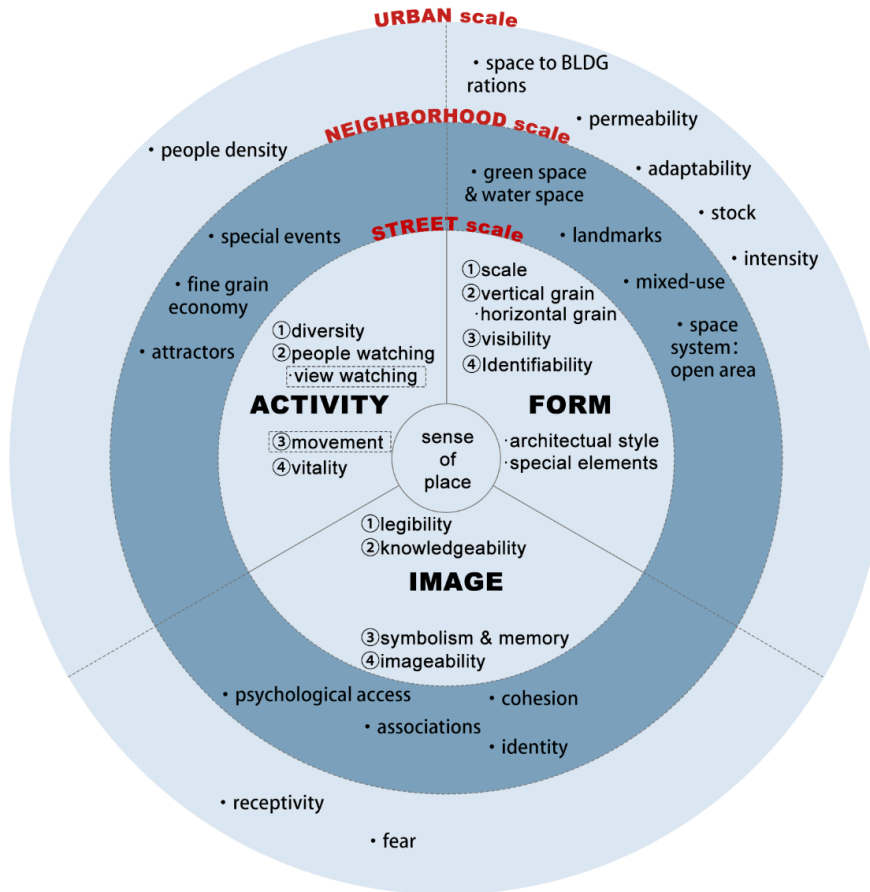


Fig. 5-1 The sense of place model as a conclusion of the study
(an important tool for cognitive reconstruction) (by author)

3. Are there clear expectations regarding the future development of the modern waterfront spaces?

Cognition framed by the Sense of Place model not only helps people to judge whether a modern waterfront space is good or not, but also clearly identifies the reasons why. Thus future expectations for a waterfront spaces can be established by maintaining existing strengths and targeting negative qualities. A clear image of modern waterfront spaces can be created by exploring rational spatial forms and stimulating potential activities.

The contribution of this study to the academic is:

1. Development of a Hierarchical Sense of Place Model: This study built a sense-of-place model featuring hierarchical and correspondence elements. Unlike previous similar place models in urban design that lacked hierarchical scaling, this model emphasizes the sense of place as the core based on cognition. By grading the model based on various spatial scales, it not only retains the capacity to analyze issues at the urban level but also provides nuanced conclusions at different scales. This hierarchical approach enhances the perception of space, enabling a more detailed and structured analysis of localized waterfront spaces.

2. Routes for Reconstructing Cognition in Waterfront Spaces: While rooted in Nagoya's waterfront spaces, the model proposed in this research serves as a navigable framework applicable beyond its original context. It provides a scaffold for individuals to reconstruct cognitions of waterfront spaces in other cities or different types of waterfront settings. This dual function of the study's conclusions includes establishing the model as a cognitive reconstruction tool and acquiring specific cognitive insights within the Nagoya context. Consequently, the model can be flexibly utilized to reconstruct specific cognitions within new urban or regional contexts.

3. Specific Interpretation of Modern Waterfront Spaces in Nagoya: Through the application of the sense-of-place model, the study generates reconstructed cognitions regarding the modern waterfront spaces in Nagoya. These insights contribute valuable foundational knowledge for further studies related to Nagoya's waterfront areas. The specific interpretation obtained from this study serves as a cornerstone for future investigations and discussions centered around Nagoya's evolving waterfront spaces.

Overall, this study's contributions encompass the development of a hierarchical model for understanding place, offering a pathway for cognition construction across

various waterfront settings, and providing specific insights into Nagoya's modern waterfront spaces, which can serve as a springboard for future research.

These findings bring the perspective of human into civil engineering planning for rivers, canals and ports, and furthermore, contribute to the design of valuable waterfront spaces in the future, including the perspective of users as well as planners.

Did this study achieve its original research goal? The goal of this study was to provide a bright future for contemporary waterfront spaces in Nagoya. Through the results presented in the two case studies, the goal was achieved in the following two ways:

1) When certain waterfront spaces were judged to be negative spaces, it was possible to clearly distinguish the reasons for the negative sense of place in different spaces. Therefore, it is possible to try to solve specific problems in a targeted way.

2) To try to understand the same space from different spatial scales, and to try to seek the potential positive impacts of original negative spaces to provide fresh ideas for future planning and design without just removing them.

5.3 Future prospects about more applications of the model

As the study unfolded, the initial challenge was to capture the spatial characteristics of Nagoya's waterfront that are distinct from the rest of the city. Initially, Nagoya's waterfront spaces were viewed through users' evaluations of the current state of these spaces, with highly unsatisfactory results. However, the cognitive perspective adopted in this study provides a relatively unique viewpoint. It aims to help people think about the underlying reasons behind these unsatisfactory evaluations or spatial perceptions. For the authors, there is also the question of whether, as experts in the field, they can attempt to provide viable solutions to these problems.

As the study progressed, the authors became acutely aware that the scale of the study was not static, but rather evolved as the study progressed. As a result, the authors used multiple comparative studies of a representative area in order to more objectively and comprehensively examine how people perceive waterfront space. However, this presented an obvious challenge - it was not possible to cover all of Nagoya's diverse waterfronts. Whilst Nagoya is home to a number of distinctive waterfronts, time and scope constraints prevented the authors from undertaking a comprehensive examination of each one. This is both a limitation of this study and a possible direction for future research to delve deeper into the specific characteristics of these different spaces in order to gain a comprehensive understanding of Nagoya's waterfront spaces.

The authors argue that the reconstruction of perceptions of waterfront spaces is an ongoing, dynamic process. There is therefore a need to update and improve it in different areas at different times.

In addition, the authors would like to explore more uses for the model, including ways to reshape the space and stimulate activities from the perspective of constructing a new IMAGE.

While all three aspects of the model—form, activity, and image—are interconnected and balanced, we choose one perspective to start with when using the model. For example, , we initiated our analysis with the spatial form of the waterfront space around the canal (Chapters 3) (**Fig. 5-2**), then examining the activities of people (Chapters 4) (**Fig. 5-3**), which then shape the cognition of the space. We then explored possibilities for optimizing the spatial form based on these activities.

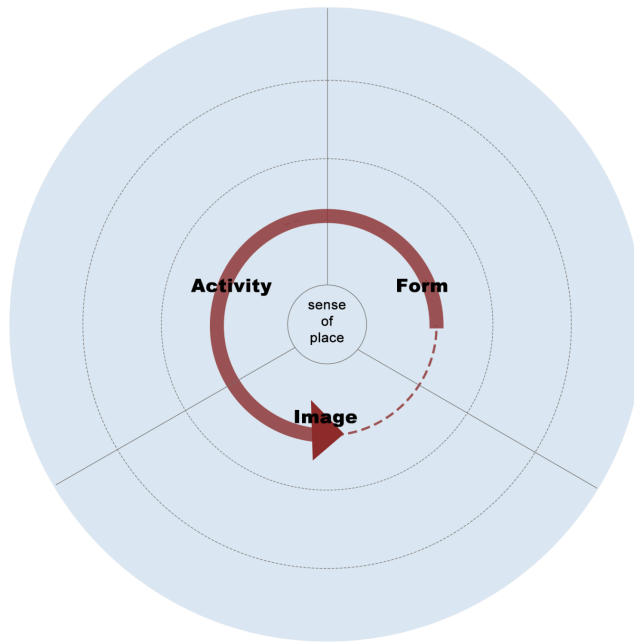


Fig. 5-2 Analysis using FORM as a starting point (by author)

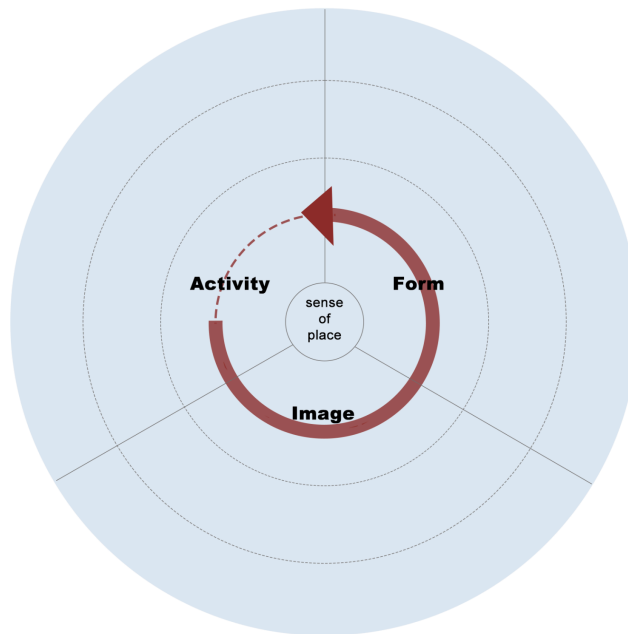


Fig. 5-3 Analysis using ACTIVITY as a starting point (by author)

This is because FORM and ACTIVITY in the model are more concrete and easily grasped dimensions, and are the viewpoints that will be used in general spatial studies. In contrast, IMAGE is a very abstract concept, and it contains a richer range of meanings. If IMAGE is to be used as a starting point for practical modelling, a new concept needs to

be constructed to help people imagine the existing space in a way that has never been done before.

To address this need, the author introduces the concept of urban fantasy in additional chapter. The chapter then explores various methods to construct urban fantasy through the use of events. In this process, the spatial form and the activities area no longer the starting point of the analysis but the IMAGE (**Fig. 5-4**). This shift may demonstrate the versatility of the sense of place model.

Initial findings on this direction are collated as an additional chapter following this one. Because other disciplines and theories are involved, the authors' understanding can only offer one possibility.

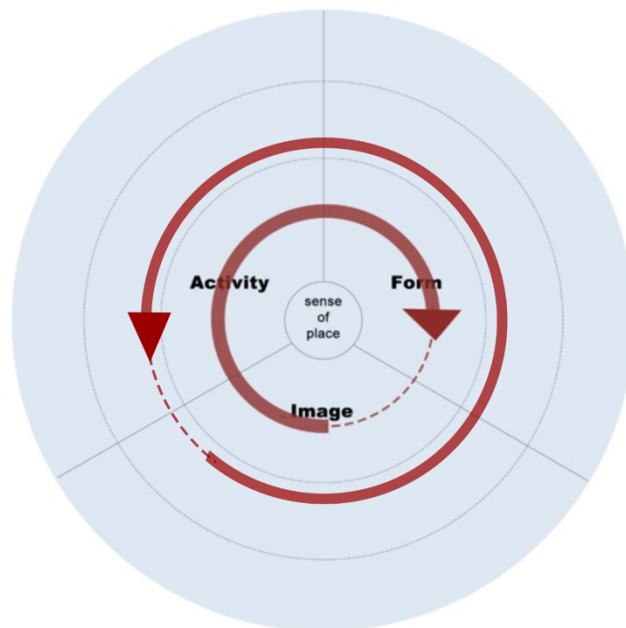


Fig. 5-4 Analysis using IMAGE as a starting point (by author)

CHAPTER 6 ADDITIONAL PART: WATERFRONT AND URBAN FANTASY

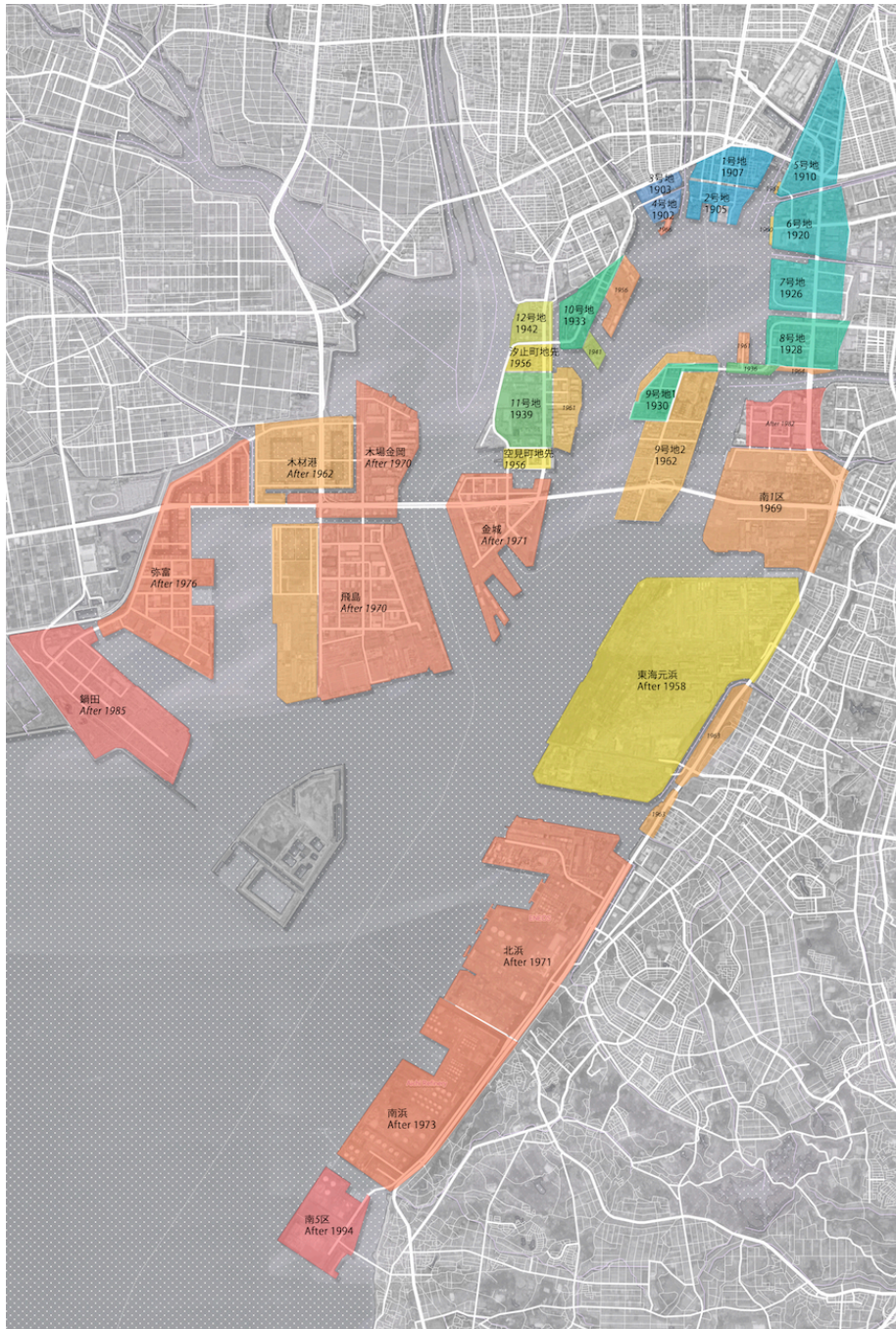


Fig. 6-1 Wharf areas in Nagoya port (Based on Note¹⁸³, author)

In this chapter, our focus shifts from the riverbank to the modern port and wharfs, revealing how the development of contemporary port spaces has significantly altered the dynamic between the port and the city. Historically, port areas underwent expansion to accommodate the rising cargo volumes, leading to a gradual shift in the morphological center of many ports away from the city's core. Bird's renowned "Anyport model"¹⁸⁰ provides a valuable analysis of the morphological changes in ports over time, but it doesn't delve deeply into the relationship between the port and the original city. In 1989, Hoyle introduced a model that emphasized this relationship, yet initially concluded that the port had evolved independently from the city (Hoyle, 1989)¹⁸¹.

Subsequent researchers have also suggested a shift from production to consumption as the main behaviour in the wharflands, highlighting the importance of the wharflands as a cultural driver for the city (Brownill, 2013)¹⁸².

Indeed, in recent years, many ports in Japan have undergone the transformation process outlined earlier, with ports like Yokohama and Kobe evolving into pivotal spaces for urban culture. Despite the spatial separation mentioned earlier, the cultural and social ties have fostered a cognition that the port and the city are inextricably linked and can thrive together. In contrast, the Port of Nagoya still exhibits weak connections to the city's cultural life. Given that the wharf configuration of the Port of Nagoya has largely stabilized (**Fig. 6-1**)(林上, 2018)¹⁸³, there is an urgent need to transition into a new phase

¹⁸⁰ See Chapter 1 for details

¹⁸¹ Hoyle, B. S. (1989). The port—City interface: Trends, problems and examples. *Geoforum*, 20(4), 429-435.

¹⁸² Brownill, S. (2013). Waterfront regeneration as a global phenomenon. *The Routledge companion to urban regeneration*, 45-55.

¹⁸³ 林上. 都市港湾における埠頭の建設と利用の歴史的推移に関する考察: 名古屋港を事例として. *日本都市学会年報/日本都市学会年報事務局 編*, 2018, 52: 55-64.

of port development. This phase should aim to seamlessly connect the wharf space of the port with the inner city and the people in the city in a fresh and integrated manner.

This goal presupposes that people form a new association with the port, a process that is itself closely related to cognitive reconstruction. Unlike the previous chapters, however, the dimension of FORM in the sense of place model is no longer the basis for the reconstruction; instead, the possibilities and potential FORM of the ACTIVITY are thought about in terms of the formation of an entirely new IMAGE.

In order to find an appropriate entry point for the IMAGE of a port, the chapter begins by exploring what makes the best cities. Outstanding cities are fascinating because they allow people to experience the pleasure of non-everyday life in addition to the convenience of daily-life.

In order to express this pleasure more concretely, this chapter proposes a new concept of “urban fantasy”, which is converted from the literary category of fantasy to the concept of urban space. By translating the core of the construction of fantasy in literature, urban fantasy is constructed in real space to find a reasonable carrier and a stable imaginative space for the connection between the port of Nagoya and people. This chapter delves into how these urban events create contradictions that ultimately help people construct their cognition of urban fantasy.

6.1 The concept of fantasy and its relationship with space

6.1.1 The position of the port in the urban “scapes”¹⁸⁴

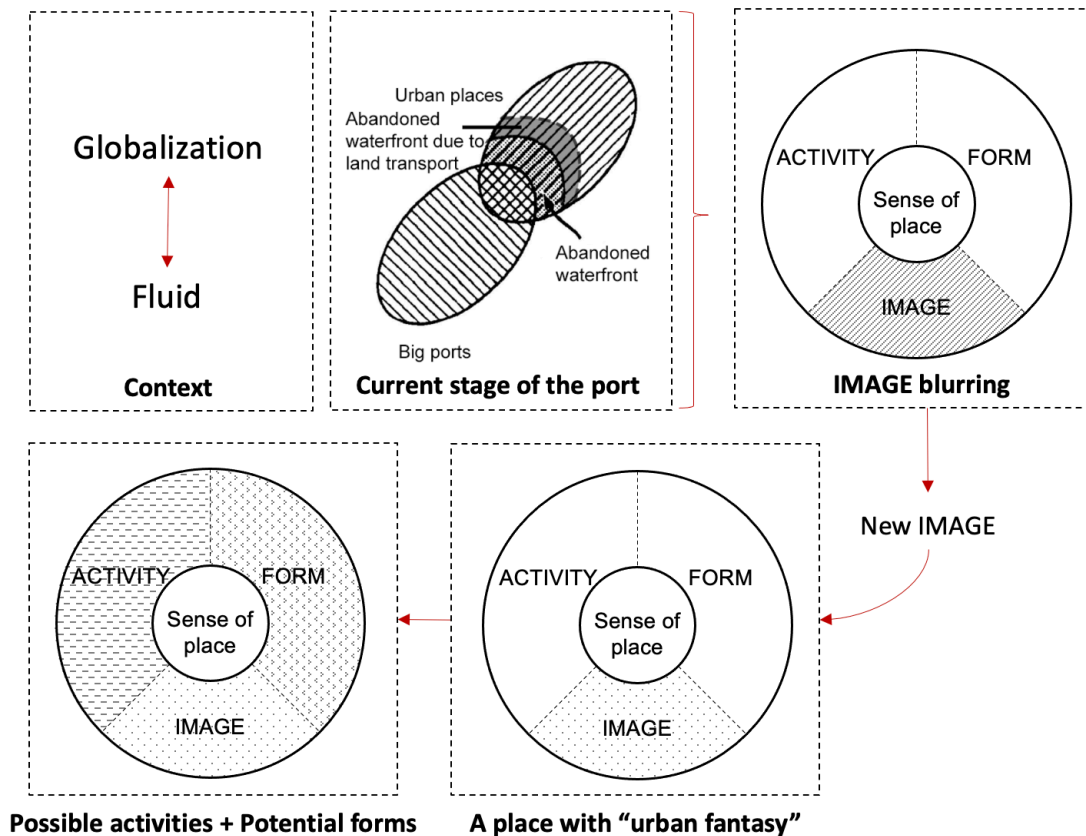


Fig. 6-2 Port Image generation in the context of globalization (by author)

Cities are often seen as places of settlement, where form and identity have been stabilised. This study also presents “identifiability” as an important element in the FORM dimension of the sense of place model, and there is no doubt that the local identity of the

¹⁸⁴ Refer to: Appadurai, A. (1996). *Modernity at large: Cultural dimensions of globalization* (Vol. 1). U of Minnesota Press. According to Appadurai, “Scapes”, by analogy to landscapes, are given material shape and meaning by human action. They are the results of global processes at any given time but are not the processes themselves. He uses the term to refer to globally mobile ideas and inspirations such as *ethnoscapes*, *mediascapes*, *technoscapes* and *ideoscapes*. The term is used here to express the position of the port in the complex context of globalization.

city should be respected. But transformation is an unavoidable topic when considering the context of globalization. In the title of this section, the author explores the unique position of the port within the scapes of the city, rather than the traditional landscape, because scapes express the constantly-fluid character of the city. The port, as an important gateway to the city, implies more fluidity. Previously deterministic development paths are dissolving, and in Nagoya, for example, the inertia of the traditional timber and manufacturing industries is giving way to the flexibility of other forms of economy. This fluidity is allowing the experience of place in the city to be increasingly generated by global capital flows, which not only makes forms with less identifiability, but also triggers a blurring, a convergence and even a dull image of urban places.

In the context of globalisation, therefore, the generation of the image of the port as an important waterfront space in the urban scapes is far more important than the change of form or becoming a place where more activities take place. This is an important reason for this chapter to start with the image generation of the port as a starting point for cognitive reconstruction.

The most remarkable cities throughout history have consistently exhibited a captivating duality – they serve as thriving economic powerhouses while simultaneously enthralling with their aesthetic allure. These urban centers are more than just functional hubs; they are dynamic ecosystems where work and leisure harmoniously coexist, giving rise to both prosperity and desire in equal measure. In these exceptional cities, economic activity pulsates through their veins, fostering innovation, trade, and wealth generation. They are the engines of commerce, attracting ambitious individuals, entrepreneurs, and businesses from across the globe. The bustling markets, financial districts, and industrial zones are testaments to their economic prowess, where fortunes are made, industries are born, and dreams are realized. These cities are the lifeblood of their respective regions,

propelling not only themselves but also the surrounding areas into a state of affluence and opportunity. (Dovey, 2005)¹⁸⁵

As mentioned earlier, the modernization of ports, exemplified by the advancement of container technology, has initiated a process where the relationship between ports and cities is becoming increasingly unstable and rapidly transforming. Such a period of rapid transition is something that can be seen with anticipation, as these disruptions provide opportunities for urban innovation and make it easier to reconstruct the cognitive map of urban space. In this new era, images are not merely discovered but actively constructed, both on the physical landscape and as a form of discourse.

As the first site of global colonization, the port space is a highly visible part of every port city, with the potential for transformation and redefinition, it is considered to be a key area for the creation of a new image. Deleuze and Guattari distinguish between what they call 'striped space' and 'smooth space'. Striped space is considered to be sedentary with territorial roots, while smooth space is considered to be in motion, a field of vectors or lines of flight. Port and wharf spaces are good examples of 'smooth spaces' where the constraints of urban life are somehow escaped. In the case of Nagoya, the port is located in the southernmost part of the city, the wharflands have been established relatively recently, and with the modernization and globalization of the port, it is undoubtedly an ideal place to escape from the identity control and strict limitation of the space and to create a new image and a higher spatial quality.

¹⁸⁵ Dovey, K. (2005). *Fluid city: transforming Melbourne's urban waterfront*, UNSW Press.

In order to describe the new image of the port more concretely, the author proposes a new concept of “urban fantasy”, which is converted from the fantasy in literary category to the concept in urban space. (Fig. 6-2)

6.1.2 The complexity of the definition of fantasy and a case of typical literary work

Fantasy is frequently mentioned in literature, film, and psychoanalysis. Within either field, fantasy is a huge and tantalizing subject. Its association with imagination and desire makes it a difficult field to articulate or define, and indeed the 'value' of fantasy seems to lie precisely in this resistance to definition, in its 'free-floating' and escapist qualities. But precisely because the different fields all have different emphases, there is no unifying concept.(Jackson, 2008)¹⁸⁶ Indeed, multiple definitions of fantasy abound, often mutually contradictory and occasionally pointlessly pedantic.(Armitt, 2020)¹⁸⁷. Modern fantasy is rooted in ancient myths, mysticism, folklore, fairy tales, and romance, with many influential and important works of literature(**Table 6-1**).

Table 6-1 Fantasy in literature (by author)

Literary fields	Intrinsic connection with fantasy
Ancient Myths and Literature <i>e.g. Greek mythology</i>	The concept of fantasy has its roots in mythology, folklore and epic literature. Many ancient cultures, such as Greece, Norway and

¹⁸⁶ Jackson wrote, “...Literary fantasies have appeared to be ‘free’ from many of the conventions and restraints of more realistic texts...Given this resistance of fantasy to narrow categorization and definition, it might seem self-defeating to attempt to produce a critical study which proposes to ‘schematize’ or ‘theorize’ about fantasy in literature and thereby to militate against escapism or a simple pleasure principle.”

¹⁸⁷ Armitt, Lucie. *Fantasy*. Routledge, 2020: p4.

	Mesopotamia, had fantasy elements in their stories and beliefs. Gods, monsters, and transcendent realms were central to these narratives.(Jackson, 2008) ¹⁸⁸
Medieval and Renaissance Literature e.g. <i>Divine Comedy</i>	Works like Dante's "Divine Comedy" and the Arthurian legends blended reality and fantasy. These texts often described journeys through supernatural realms, reflecting the interplay between the known and the unknown.
Romanticism e.g. <i>Frankenstein</i>	The Romantic movement of the late 18th and early 19th centuries viewed fantasy as a means of exploring the emotions, the imagination, and the sublime. Writers such as William Blake, Mary Shelley, and Edgar Allan Poe delved into the mystery and fantasy of their works.(Williams, 2007) ¹⁸⁹
Science Fiction and Fantasy e.g. <i>The Lord of the Rings</i> <i>Tom's midnight garden</i>	During the 19th and 20th centuries, genres such as science fiction and fantasy appeared in different literary forms. Writers such as Jules Verne, Philippa Pearce and J.R.R. Tolkien pioneered these genres, using them to imagine more about the future or otherworldly landscapes.
Surrealism e.g. <i>Manifestoes of Surrealism</i>	In the early 20th century, the Surrealist movement, led by figures such as Salvador Dali and André Breton, explored the irrational and fantastic aspects of reality. Surrealists

¹⁸⁸ P4: "...Modern fantasy is rooted in ancient myth, mysticism, folklore, fairy tale and romance." & P95: "As a perennial literary mode, fantasy can be traced back to ancient myths, legends, folklore, and carnival art..."

¹⁸⁹ Williams, P. B. (2007). Re-envisioning Romanticism as Postmodern Fantasy: A Case Study of William Blake and Robert Jordan (Doctoral dissertation, University of North Carolina Wilmington).

	sought to reveal the hidden fantasies of the subconscious through art and literature.(Fu, 2022) ¹⁹⁰
Fantasy in Popular Culture e.g. <i>Harry Potter</i>	The 20th century saw the proliferation of fantasy in popular culture through books, films, comics, and video games. Works like J.K. Rowling's "Harry Potter" series and the films of Studio Ghibli have captivated audiences with their fantasy worlds.(Stableford, 2009) ¹⁹¹

In this study, a more representative and accessible piece of children's literature, *Tom's Midnight Garden*, was chosen as an example to interpret the connotations of fantasy and its relationship with space. It was chosen because the story itself is based on realistic space and events (rather than a completely empty worldview), and the fantasy part is relatively clear, switching between reality and fantasy through specific actions at specific times.

The story revolves around Tom, who visited his mentally challenged Uncle Alan and Aunt Gwen. The family resides in a single-family house that has been converted into a flat, with their landlady, Mrs. Bartholomew, living upstairs in her abode. This visit is necessary because Tom's brother Peter has contracted contagious measles.

One certain night, as the clock strikes an unusual thirteen chimes, Tom stumbles upon a large and enchanting garden belonging to the house. However, this garden appears to belong to a bygone era. From this moment forward, Tom is drawn into a mysterious world. Every day at midnight he would go to the garden, where he met a girl named Hattie.

¹⁹⁰ Fu, Z. (2022). Art in the Dream World-Surrealism. *Highlights in Art and Design*, 1(1), 14-16.

¹⁹¹ Stableford, B. (2009). *The A to Z of fantasy literature* (Vol. 46). Scarecrow Press.

In this otherworldly place, time behaves oddly. Tom finds himself wandering out of the flat when the old clock strikes thirteen, only to return after what feels like a lengthy playtime, only to find the clock's hands frozen in the same position. Hattie's age seems to fluctuate, sometimes matching Tom's, other times appearing younger or older. Tom even climbs trees with branches that neither bend nor break. The garden itself transforms from a summer paradise to a winter wonderland with snow and a frozen creek, complete with opportunities for ice skating. It's a garden that shapeshifts like a fleeting mirage.

Tom's nightly visits to this garden revolve around his playtime with Hattie, but in this timeless world of the past, time moves at a different pace than in the present. Consequently, Hattie grows up under Tom's watchful gaze, and Tom eventually realizes that she has become a young woman. On the eve of Tom's departure from his aunt's house, he encounters Mrs. Bartholomew, the upstairs tenant. In a surprising twist, he learns that Mrs. Bartholomew is, in fact, Hattie, and her dreams transport her into the past. Tom's visits to the garden are, in essence, journeys into Mrs. Bartholomew's dreams, where the events unfolding in the garden are scenes from her own dreams.(Pearce, 1998)¹⁹²

6.1.3 The mode of fantasy and the concept of urban fantasy

From the structure of the Tom story we know that FANTASY itself must depend on a place to present itself, and Midnight's Garden is a place that carries fantasy. That's to say, it is the real space that triggers the act of fantasy, while the fantasy world is the product of fantasy. In literature, fantasy worlds are unique and beautiful realms crafted by the author through cognition. However, what makes literary works resonate with people is that all fantasies are rooted in real sensory experiences, allowing people to truly feel the true meaning of fantasy. Coleridge's famous distinction between imagination and

¹⁹² Pearce, P. (1998). Tom's midnight garden. Oxford University Press.

fantasy in his *Biographia Literaria* emphasises the re-creation of reality. "Fancy has no other counters to play with but fixities and definites... It is a mode of memory emancipated from the order of time and place, blended with and modified by that empirical phenomenon of the will, which we express by the word choice"(Coleridge, 1927)¹⁹³. Fantasy re-combines and inverts the real, but it does not escape it: it exists in a parasitical or symbiotic relation to the real. The fantastic cannot exist independently of that 'real' world which it seems to find so frustratingly finite (Jackson, 2008)¹⁹⁴. In real life, the pursuit and construction of fantasy is everyone's right, and the results of the construction are not limited.

In *The Midnight Garden*, Tom longs to stay in this fantasy world because of the sense of freedom and unrestrictedness it brings. The garden itself is fascinating in that it boasts an array of uncommon plants and extraordinary landscapes that contrast with everyday life. Despite being in a controlled environment, this departure from ordinary life inspires curiosity and a sense of adventure. It is an adventure that is both exciting and safe.

Sigmund Freud believed that it was impossible for people to give up the pleasures they had experienced. He believed that when children grew up and had to stop playing, they would replace that pleasure with daydreaming (Freud et al., 1985)¹⁹⁵. Bachelard also shared a common understanding of the human need for pleasure and imagination, even in the face of social or practical constraints. In his view, we may not be able to "play" in the

¹⁹³ Coleridge, Samuel Taylor. *Biographia literaria*. London: Dent, 1927: p167.

¹⁹⁴ Jackson wrote: ...J.A. Symonds writes similarly, linking it to the grotesque: 'The fantastic . . . invariably implies a certain exaggeration or distortion of nature. What we call fantastic in art results from an exercise of the capricious fancy, playing with things which it combines into arbitrary, non-existent forms.'...

¹⁹⁵ Freud, S., A. Dickson and J. Strachey (1985). *Art and literature : Jensen's Gradiva, Leonardo da Vinci, and other works*, Penguin: 133.

alchemy workshop, but we can still daydream (Bachelard, 2016)¹⁹⁶, and our early imaginings should find a place in our adult lives as a means of preserving the pleasures that come from imagination.

A "double anthropology" of rational "day people" and daydreaming "night people" was envisaged by Bachelard. (Bachelard, 1953)¹⁹⁷(Bachelard, 1971)¹⁹⁸ According to his interpretation, each of our lives should follow two rhythms of time, the rational and social time on the one hand, and the imaginative and solitary time on the other hand (Bachelard, 2016). And more importantly, these times correspond to different spaces. For Bachelard, there are places to dream in that are very different from the places where science works, and that include the places in our memories.

The fantasy world mentioned above is essentially the same as Tolkien's notion of a "secondary world".

In the year of 1938, J.R.R. Tolkien introduced the concept of the "secondary world". He explained that the "primary world" is the world of our everyday existence. This primary world is real, tangible, and accessible to our senses. People experience it through their daily lives, touching, feeling, and interacting with it.

However, humans often find themselves unsatisfied with the limitations of this primary world and seek to escape into their imagination filled with fantasy, where they create an alternate realm. This imaginary realm is what Tolkien referred to as the

¹⁹⁶ Bachelard, G. (2016). *The dialectic of duration*. Rowman & Littlefield.

¹⁹⁷ Bachelard, G. (1953). *Le matérialisme rationnel*. Paris: Presses universitaires de France:13.

¹⁹⁸ Bachelard, G. (1971). *The poetics of reverie: Childhood, language, and the cosmos* (Vol. 375). Beacon Press:53-4,212.

"secondary world." It exists beyond our reach, existing solely within the realm of human imagination.(McIlwaine et al., 2018)¹⁹⁹

Within the secondary world, all the impossible events and phenomena of the primary world can become tangible realities. In this alternate world, everything is constructed with vivid, tangible imagery, representing the author's profound contemplation of the current state of humanity and their aspirations for the future.

Similarly, Bachelard also mentions the idea of a dream space as a break from and distance from real life, except that his description of this dream space is more purely focused on the dream sense of a house (or a former home). He argues that our imagination can work freely in a space that protects our subjectivity, i.e. a space where we can be freed from the demands of "daily life", including social interaction, the production of knowledge and the production of objects. When our memories take us back to the home of our birth, our former home, the "daily life" or the "real world" disappears (**Fig. 6-3**).(Gaston, 1948)²⁰⁰

Although too limited to study, Bachelard's hermeneutics of place offers us an opportunity to explore our relationship with spaces that are meaningful to us. These spaces can be referred to as fantasy spaces, which originate from actual places in our lives but are recreated using the imagination; represented by the house in which we are born, the imagination allows us to re-live in a fantasy house, and the imagination in turn re-shapes and gives meaning to this place from person to person.(Chimisso, 2017)²⁰¹ If this

¹⁹⁹ McIlwaine, C., Garth, J., Flieger, V., Hostetter, C. F., Shippey, T. A., Hammond, W. G., & Scull, C. (2018). Tolkien. Bodleian Library, University of Oxford.

²⁰⁰ Gaston, B. (1948). *La Terre et les rêveries du repos. Essai sur les images de l'intimité*, Paris, José Corti.

²⁰¹ See for the conclusion of the reference: Chimisso, C. (2017). Gaston Bachelard's Places of the Imagination and Images of Space. *Place, Space and Hermeneutics*, 183-195.

place is not limited to the house or room of the place of birth, but extends to any space in life, such as the wharf areas of the urban port space that are the focus of attention in this chapter, fantasy's relationship to one's daily life, and to space, also remains valid (Fig. 6-4).

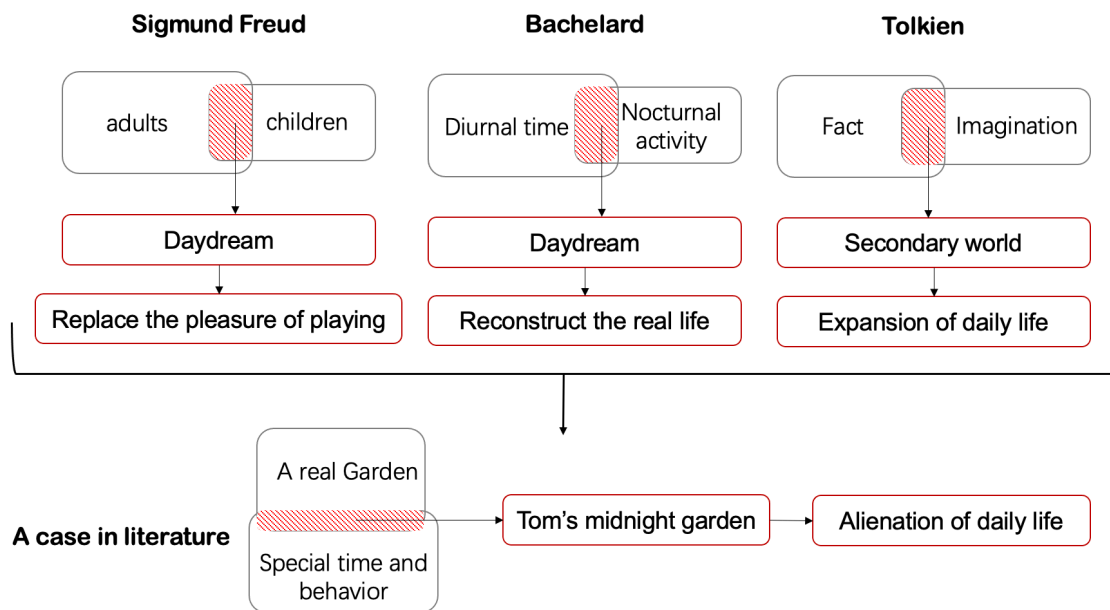


Fig. 6-3 Fantasy-related conceptual development (Based on Note¹⁹⁵⁻²⁰¹, author)

It is true that the “creative” imagination cannot “invent” anything, it can only combine components that are strange to one another (Freud, 2016)²⁰². Fantasy has to do with inverting the elements of the world, recombining its constitutive features in new relations in order to produce something strange, unfamiliar, apparently "new", absolutely "other" and "different". (Jackson, 2008)²⁰³.

Therefore, "fantasy" is intricately connected to reality and relies on a foundation of truth and authenticity. ‘The fantastic’, writes Dostoevsky, ‘must be so close to the real

²⁰² Freud, Sigmund. "Introductory lectures on psycho-analysis." Myths and Mythologies. Routledge, 2016. 158-166.

²⁰³ Refer to: Jackson, Rosemary. Fantasy: The literature of subversion. Routledge, 2008: p8.

that you almost have to believe in it'(Jackson, 2008)²⁰⁴. Human creativity involves the transformation of reality and familiar experiences into new forms and perspectives through the lens of fantasy, which aligns with Shakespeare's notion that "reality is the stuff of dreams." When everyday life serves as the starting point for this transformation, it is the elements of non-everyday experiences that are most likely to spark the creation of fantastical worlds in the minds of individuals. This suggests that locations, where non-daily behaviors are more likely to occur, are prime settings for the development of contemporary urban fantasy.

Lewis Carroll also pointed towards this situation of the fantastic as existing between the realistic and the marvelous in his *Preface to Sylvie and Bruno* (1893). The fantastic exists in the hinterland between 'real' and 'imaginary', shifting the relations between them through its indeterminacy.

Bessière argues that the fantasy is closely related to real and rational: the fantastic cannot be equated with the irrational. It is anti-rational, the antithesis of rational orthodoxy. It reveals reason and reality to be arbitrary and fickle constructs, thus interrogating the category of the 'real'. In the fantastic text, **contradictions** surface and are retained anti-traditionally as reason confronts all that it has traditionally refused to encounter. The central idea is that: The structure of fantastic narrative is one founded upon contradictions.(Bessière, 1973)²⁰⁵

²⁰⁴ Jackson wrote, "True fantasy, according to Dostoevsky, must not break the hesitation experienced by the reader in interpreting events. Tales which are too incredible to be introduced as 'real' break this convention; he dismisses the story of a man with (literally) no heart as mere nonsense, for it breaks the limits of possibility and the agreement between reader and author that the text sets up..."

²⁰⁵ Bessière, Irène. "Le récit fantastique: la poétique de l'incertain." Larousse (1974).

It can be said that the necessary conditions for constituting fantasy in literature are reality and contradiction. For urban space, reality is the actual physical space and established elements, so creating contradiction makes it possible to create a fantastic experience in the city similar to that brought by fantasy in literature, and the author refers to this kind of fantasy that is eventually transformed in the city as “urban fantasy”. Urban fantasy achieves spatial alienation by introducing contradictions with real space. It should be re-emphasised that fantasy cannot be created directly; in essence, we can only create the means or media to perceive and experience it.

In the subsequent sections, we first select urban events (that is, the dimension of ACTIVITY in the sense-of-place model) that occur at specific times and places as the medium for constructing contradictions (**Fig. 6-4**). Then, we will delve into how these urban events create contradictions that ultimately help people construct cognitions of urban fantasy.

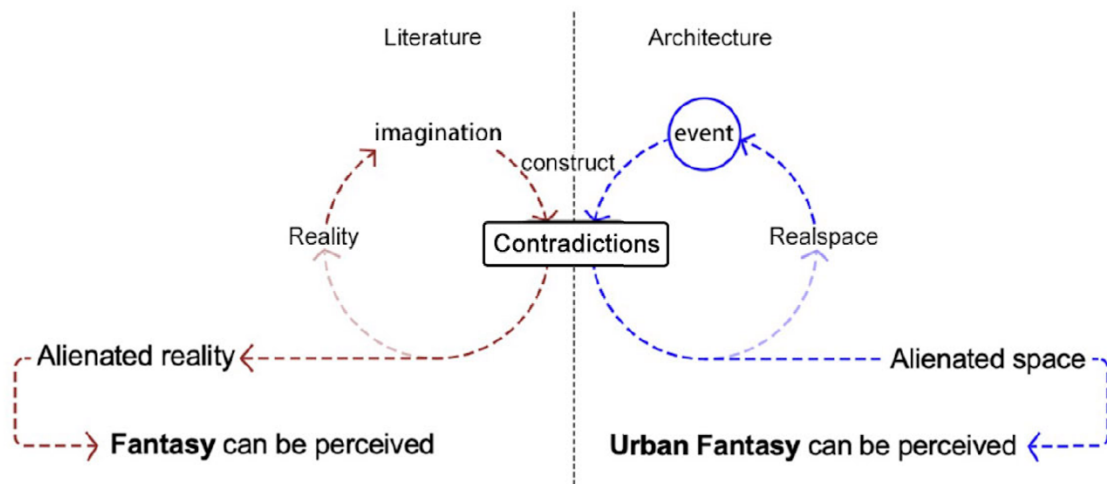


Fig. 6-4 Translation of fantasy concept in architecture (by author)

6.2 Fantasy construction by great events

6.2.1 Two perspectives for discussing events in the port space

The scarcity of waterfront areas within Nagoya city makes the preservation of the historical waterfront atmosphere a precious asset. However, as discussed earlier, the transformation of spaces previously used for efficient logistics, such as canals and partially developed ports, poses challenges. Consequently, optimizing the built environment of ports has garnered significant attention in recent years, with a particular focus on the transformation of human behavior within these spaces.

In discussing the events surrounding port space planning, the following two perspectives have been established. Firstly, globally, port spaces in a large number of more developed cities have passed the stage of rapid construction, and therefore the optimisation of port spaces has become a topic of concern in recent years for the development of urban waterfront spaces. A port space that can accommodate people's daily and other behaviours is the vision of most people.

Human behavioural activities are always closely linked to the design and development of port spaces. Referring to the model of sense of place constructed in the previous section, human behavioural activities no longer exist only as an anthropological or sociological issue, or only as a reference for urban space design, but nowadays have become a component of the sense of place in urban space. As a result, events are becoming more important than the construction of material entities; spaces themselves can become events, and events can give rise to new invisible urban spaces (Richards, 2015)²⁰⁶. Since

²⁰⁶ Richards, G. (2015). "Developing the eventful city: Time, space and urban identity." *Planning for event cities*: 37-46.

the era of massively inflated construction of Nagoya port is over, and the cost of transforming the existing physical space is huge, the event has rightly become a major opportunity to enhance the quality of the existing space, or even to change the image of the inherent port space. It represents not only a concentrated outburst of port activities, but also the release of residents' collective memories, and these processes are closely linked to the wharf space that carries them. Thus, the event has a great role to play in the continued construction of the existing port space entity, spatial cognition and cultural symbols. An "event" is characterized as a "conscious organization of powerful emotional and aesthetic experiences within a specific time and space" (Jakob, 2013)²⁰⁷, representing a concentrated expression of public behavior and social emotions.

Secondly, in the context of globalized capital and market oriented port development, the creation of events is an important 'business tool'. With the changing ways of doing business in cities around the world and the structural changes in economic development models, culture has become an important tool for creating wealth and employment. "...Festivals and events are being interpreted as a kind of "business" display, an important element for cities to gain the capital they need to regenerate and reorganise themselves."(Quinn, 2020)²⁰⁸

This process can be applied to Nagoya port spaces, as exemplified by the World Design Expo held in 1989. This event not only attracted a large number of tourists from home and abroad but also strengthened Nagoya's infrastructure and reinforced the identity of the citizens by stimulating national participation. Similar events not only attract a great

²⁰⁷ Jakob, D. (2013). "The eventification of place: Urban development and experience consumption in Berlin and New York City." *European urban and regional studies* 20(4): 447-459.

²⁰⁸ Quinn, B. (2020). "Arts festivals and the city." *Culture-led urban regeneration*: 85-101.

deal of attention, but also contribute to the preservation of the historical heritage of Nagoya's waterfront. The Event thus had a significant impact on the sustainability of the existing wharf space, as well as having an impact on spatial perception, culture and society. More importantly, in the context of globalized, capital-driven and market-oriented urban development, the integration of 'events' into modern ports is an important 'management tool' for sustaining spatial development. Within the framework outlined above, events in port spaces have undergone a process of "commodification and spectacularization." This approach aims to attract a more affluent consumer base and create a competitive spatial image. For instance, the "Summer Night Aquarium" event builds upon Nagoya's rich history of aquarium culture, extending its hours of operation into the night and offering a contemporary interpretation of public behavior.

This commercialized logic aligns with Lefebvre's theory of "spatial production," which posits that space is not only "constructed" but also engages in the economic production process. This concept is particularly relevant to urban space, which is inherently tied to economic production driven by the idea that it represents a city's identity. Urban space, in particular, cannot be divorced from the economic logic of construction based on human "experience" (Johansson and Kociatkiewicz, 2011)²⁰⁹. Festivals and events, as forms of "operational" display, are viewed as critical elements through which a city can obtain the capital needed for its revitalization and reorganization.

In some respects, commerce has become a means through which people engage in the public life of the city. Consumer culture permeates various aspects of contemporary life as mainstream culture. As a result, port spaces are inevitably influenced by this

²⁰⁹ Johansson, M. and J. Kociatkiewicz (2011). "City festivals: creativity and control in staged urban experiences." *European Urban and Regional Studies* 18(4): 392-405.

cultural environment. Consumerism has both its critics and proponents. Under the dominance of commercial capital, some argue that port spaces lose their historical charm, becoming overly commercialized, uniform, and convenience-driven. However, others contend that popular commercial culture resonates with a broader audience and, through consumer behavior, accumulates popularity, thus reflecting the value of the port space.

It is challenging to definitively assess whether modern port spaces, dominated by consumer culture, are more vibrant or less appealing than their historical counterparts. Nonetheless, a promising strategy for the future development of port spaces involves reinforcing public awareness of their historical and cultural significance. This can be achieved by integrating these elements with symbols of consumption, striking a balance that leverages the rich history of port spaces while embracing the dynamics of consumer culture.

6.2.2 Development of the concept of “Eventalisation”

In the 1980s, the renowned scholar Michel Foucault introduced a discussion on the "eventalisation" of cities. Scholar Ploger further elaborated on Foucault's concept of eventalisation, particularly from the perspective of urban space. In this interpretation, Foucault regarded events as a means of shaping suddenness, playing presence and specific instantaneous value in particular urban spaces. This concept stressed a "disturbance from traditional, fixed uses and feelings associated with space" and proposed that events could generate temporary, ambiguous, and liminal zones within urban environments. Events

often resulted from the collision, mixing, or separation of different subjects (Pløger, 2010)²¹⁰.

While Foucault's original concept of eventalisation emphasized the unpredictability of temporal occurrences, it is worth noting that events that are carefully organized and orchestrated by humans do not entirely deviate from the logic described above. Although Foucault's idea of eventalisation may not perfectly capture the various cultural events occurring in the port spaces discussed in this study, particularly due to its strong emphasis on unpredictability, his description of eventalisation as a process involving the transformation or cognitive remodelling of space provides valuable reference and inspiration for the development and rejuvenation of modern port spaces.

Bernard Tschumi's perspectives on the event, which he extensively articulated in his longstanding practice, originated from his critique of modernist architecture during the 1960s and 1970s (Tschumi, 1996)²¹¹. He contended that modernist architecture was being reduced to a technological, social, and political appendage, leaving only its form intact. Tschumi aimed to liberate architecture from this reductionism and elevate it to a form of knowledge comparable to mathematics or other sciences, a tool for contemplating the

²¹⁰ "... I start by introducing the common preferred perspective within humangeography and urban studies on 'alternative spaces' as places of other-experiences. The space captured in order to disturb conventional sense and use of space and to create a temporary liminal zone by activating the space multiple meanings and uses is often called a heterotopian space. To capture spaces and reverse or reveal their symbolic meaning becomes an important strategy for subcultures and subpolitical groups in opposition to cities' organised commercial events. ..."

From the reference: Pløger, J. (2010). Presence-experiences—the eventalisation of urban space. *Environment and Planning D: Society and Space*, 28(5), 848-866.

²¹¹ Tschumi, B. (1996). *Architecture and disjunction*. MIT press.

world. The title of his book, "Event Cities" aptly conveys the significance he attributes to the events unfolding within urban spaces (Tschumi and Art, 2010).²¹²

Tschumi argued that architecture and its social, as well as formal, dimensions cannot be divorced from the events transpiring within them. He critiqued the preoccupation with architectural representations and underscored the importance of events. He posited that "there is no architecture without process, no architecture without event, no architecture without movement." Simultaneously, he noted that events and architectural spaces are not causally related but rather exist in a symbiotic relationship.

By addressing the inherent contradiction in architecture—the division between the concept of space and the experience of space—Tschumi sought a fresh correspondence, replacing the "concept of space" and the "experience of space" with "space" and "event." This paradigm shift highlights the centrality of the event. Tschumi believed that the essence of various functions or activities in architecture or space lay in the organization of events. In his theory, urban space constitutes a complex network of time, where the city's reality is reshaped by multiple overlapping factors. Architecture's significance in this context lies in its ability to expedite social transformation through the meticulous organization of space and events.

Although Tschumi's theories originally emerged from a reflection on and critique of architecture, his understanding of the event, framed around the core concepts of space and event, is equally applicable to the examination of events within port spaces in this study. The event in this context encompasses both its traditional connotations and a distinct emphasis on human behavior.

²¹² Tschumi, B., & NY) Museum of Modern Art (New York. (2010). Event-cities. Cambridge, MA, London: MIT Press.

Similar to Tschumi's refinement of the relationship between event and space is the concept of "Event-Place", which has been used to describe activities in urban space and their significance for place-making(Frenchman et al., 2004)²¹³. In this concept, the word architecture, which Tschumi replaces with space, is again modified to place, placing more emphasis on spatial determinants other than immaterial space, the sense of place referred to in this study. Some scholars have argued that events that take place in good places emphasise "shared experiences in urban space" and contribute in varying degrees to the identity and economic development of cities. Various scholars have summarised the characteristics of "Event-Place" in various ways, including "strong sensuality²¹⁴" and "stimulation of historical memory and continuity"(Frenchman, 2004)²¹⁵. In fact, the construction of these abstract concepts is the logic behind the urban fantasy that events can be used to realise.

Smith defined the term "event" in 2015 and limited it more to formal activities. Events that take place in cities with an economic purpose are neutrally referred to as 'Eventisation'. In the process, if the city has positive effects as a result of the event, such as regeneration and redevelopment, this can be described by Foucault's term "Eventalisation". Conversely, if the city experiences negative effects as a result of the

²¹³ Frenchman, D., J. Sabaté and J. Schuster (2004). "Event Places." Barcelona: Universidad Politécnic de Cataluña, & Massachusetts Institute of Technology.

²¹⁴ "... Good event-places are fundamentally sensual. They artfully engage all of the senses: the feel of movement through space, warmth, or cold; the sound of music reverberating off a wall; the smell of burning wood; the taste of food; the sight of costumes and color, blended by the imagination into an unusual experience. Such sensations appeal to us as individuals. But, more importantly, they are magnified by groups into a shared sense of community. The strength of these merged sensations can transform a place and change the emotional resonance of participants with the site..."

²¹⁵ Frenchman, D. (2004). Event-places in North America: City meaning and making [Research and Debate]. *Places*, 16(3).

event, such as the tightening of public space or gentrification, then the term 'Eventification' is used (Smith, 2015)²¹⁶. Although in Smith's study the process of eventing was divided into positive and negative directions, the fact is that few events can be entirely positive or negative. Therefore, later scholars re-unified the process of event occurrence as "Eventification"(Jakob, 2013)²¹⁷. At this time, events were explicitly described as being able to promote the economic development of the local city and improve the consumer experience as well as the image of the city, as they enabled "the urban space itself to be presented as a spectacle"(Klingmann, 2010)²¹⁸.

The evolution of the proprietary vocabulary described above can be summarised in the diagram below (Fig. 6-5).

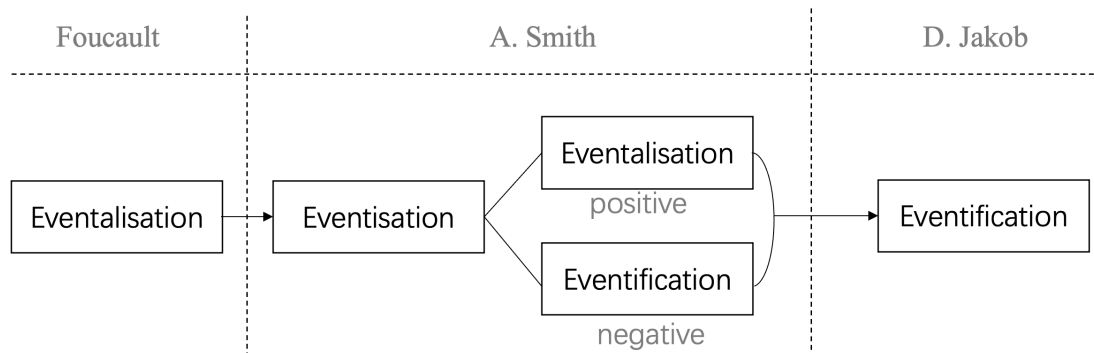


Fig. 6-5 The evolution of the proprietary vocabulary about event (by author)

²¹⁶ Smith, A. (2015). *Events in the city: Using public spaces as event venues*, Routledge.

²¹⁷ Jakob, D. (2013). The eventification of place: Urban development and experience consumption in Berlin and New York City. *European urban and regional studies*, 20(4), 447-459.

²¹⁸ Klingmann, A. (2010). *Brandscapes: Architecture in the experience economy*, Mit Press.

6.3 Case study in Nagoya port: World Design Expo

6.3.1 Background of World Design Expo



Fig. 6-6 The world design expo attracts many people (Source: 世界デザイン博覧会:公式記録²³¹)

The World Design Expo held in Nagoya in 1989 was an important turning point in shaping the city's image. The event also marked the centenary of Nagoya's founding. Over the course of a century, Nagoya has developed into a powerful industrial city, and water transport has played an integral role in its industrial development. In particular, the construction of the modern Port of Nagoya has strengthened Nagoya's identity as an industrial and export-oriented metropolis.

However, as Nagoya approaches the next century, there is a desire to change the city's image. While there is no denying that industrial development is inextricably linked to Nagoya's identity, there is a growing desire to move away from the image of an industrial city, which is often associated with a staid, utilitarian landscape. In its place, there is a desire to make Nagoya a more pleasant and liveable urban environment.

Therefore, the event was themed "Dream-design-humanity: the urban symphony" and featured three primary venues: Nagoya Castle, Shirotori, and Nagoya Port. The choice of these venues highlights the important role that waterfront areas along the Horikawa axis play in urban vitality. And the re-imagining of waterfront spaces is a priority plan for the city's next 100-year plan.

Each of the three venues has its own distinctive character and provides a spatial vehicle for the rich thematic realisation of the event. Nagoya Castle symbolises Nagoya's rich historical heritage, while the Shiratori venue represents the city's future, envisioning Nagoya in the 21st century. The Port of Nagoya venue embodies the energy and fantasy of the city. The strategic positioning of these venues and their thematic focuses create a multifaceted experience of visiting the World Design Expo, as illustrated in **Fig. 6-7**, which shows the locations of the three venues and indicates their respective themes in different colours (**Table 6-2**).

Table 6-2 3 venues and 3 themes²¹⁹

Venues	Themes	Colors
Nagoya castle	History	Green
Shirotori	To meet 21 st century	Red
Nagoya port	Journey to pleasure	Blue

²¹⁹ Refer to: 世界デザイン博覧会:公式記録²³¹

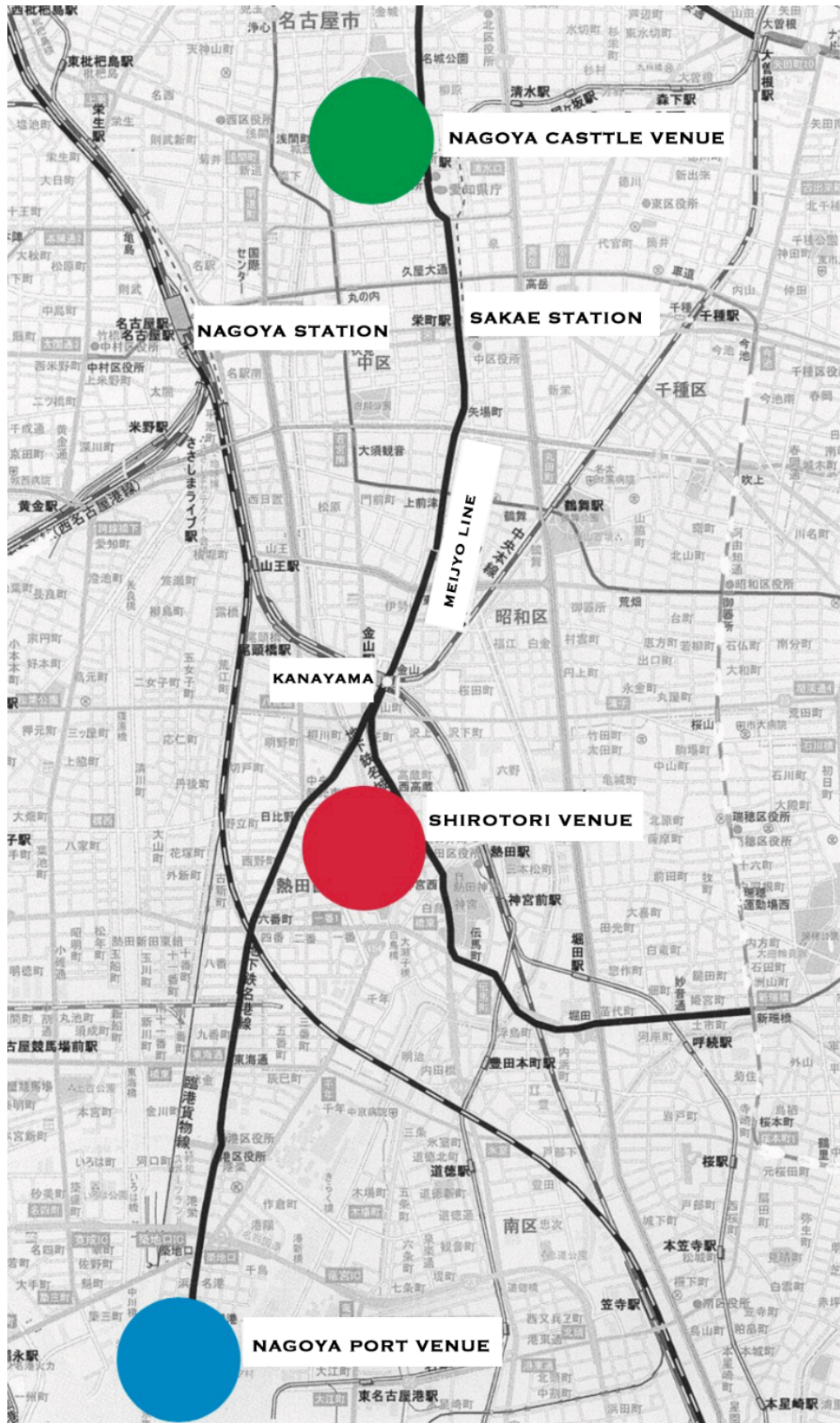


Fig. 6-7 World Design Exposition in 1989 (Based on 世界デザイン博覧会：公式記録²³¹, author)

6.3.2 The contradiction of man-made and nature

During the World Design Expo, numerous unique man-made landscapes were able to evoke a deep sense of the port's identity. A prime illustration of this practice was witnessed at the Garden Wharf, where iconic statues, the Moai and the Little Mermaid, were prominently displayed. While neither of these iconic figures has their origins in Japan, they are globally recognized symbols.



Fig. 6-8 Moai at Garden wharf (Photo in 2022.11, author)



Fig. 6-9 The Little Mermaid at Garden wharf (Photo in 2022.11, author)

The Moai statue (**Fig. 6-8**), standing at an impressive height of 3.5 meters, is a meticulously crafted Shigarakiyaki (信楽焼) replica of the renowned Moai statue, a cherished cultural artifact from Easter Island. This particular replica was specially created for Nagoya. Despite being a scaled-down version, it faithfully captures the essence of the original statue. Adding to its significance, the rocks adorning the base of the statue were thoughtfully sourced from the foothills of Mount Fuji. This ingenious combination serves not only to underscore Garden Wharf's international standing as Nagoya's gateway to the world but also seamlessly integrates elements of Japanese culture.

Deliberately making the Moai statue much smaller than it would be in reality, coupled with obvious traces of artefacts, is a great way to create urban fantasy. This deliberate artefact reminds us that the statue does not naturally belong in the space in front of us. It creates a contradiction that leads to associations that are different from the norm. These associations may bring to mind Easter Island, which is an incredible place, or why the statue has been reproduced here and now? Because this marina is at this very moment the site of the World Design Expo. While these associations may be fleeting, the ephemeral generation of this fantasy is enough to link it to the space of the pier. In this moment, the space of the marina becomes a vehicle for the creation of urban fantasies. By establishing a connection between the space and the urban fantasy, this perception fully serves the purpose of cognitive construction.

The Little Mermaid statue (**Fig. 6-9**), a one-half scale replica originally from Denmark, was shipped to the Port of Nagoya for the World Design Expo. This enchanting statue is not only a symbol of international renown, but also a profound representation of the ocean itself. By incorporating this imagery into the marina space, the exhibition aims to reinforce the intrinsic connection between the marina and the sea it faces. Through this visual metaphor, the concept of the waterfront is quite naturally conveyed to the public.

It is worth noting that although the nature of the pier is intrinsically linked to water, the inclusion of this iconic figure creates a more direct link between the pier and the fantastical realm of the waterfront.

The image of the Little Mermaid is well known for its origins in the famous fairy tale. However, beyond the moving story it represents, its connection to the sea is crucial. The fairy tale itself is divided into two main scenes: the ocean space and the coastal space. The presence of the statue therefore evokes these two spaces, making people more aware that they are at the intersection of water and land, which is the essence of the Docklands as a waterfront space.

Earth art often introduces contradiction into natural settings through the deliberate creation of unmistakably human-made forms or actions such as blasting. Michael Heizer's works take this concept to an exaggerated level. In his piece "Adjacent, Against, Upon"²²⁰, he employs a stark juxtaposition of artificially cut cubic stones and untouched natural stones (**Fig. 6-10**). This stark contrast creates a potent sense of contradiction. When an observer experiences this space and feels a marked difference from their usual spatial perception of the real world, it lays the foundation for the creation of a local space's fantasy. That's to say, the formation of this fantasy within the local space essentially hinges on the observer having a significantly altered spatial perception compared to the space where these stones are situated.

²²⁰ Adjacent, Against, Upon is a 1976 sculpture by Michael Heizer, installed in Seattle's Myrtle Edwards Park, in the U.S. state of Washington. The work was the first commissioned by the Seattle Arts Commission. It has been described as "exquisite "and "iconic".



Fig. 6-10 *Adjacent, Against, Upon* by Michael Heizer

(Source: the city of Seattle/Spile Mafford)

In the two cases mentioned above where the statues are situated, the "nature" element pertains to the original marina and the marine landscape, which can be considered the pre-existing environment. On the other hand, the "man-made" elements refer to the two statues that were intentionally created for the World Design Expo. The confrontation of these two distinct forms serves to emphasize and highlight the pre-existing natural environment(北口直人 and 岡田昌彰, 2007)²²¹.

6.3.3 The contradiction of temporary and permanent

Events, regardless of whether they are unpredictable and unscheduled like the World Design Expo or fixed periodic events like a music festival, are inherently temporary compared to the stability and permanence of the urban environment. As a result, the impact and impression of the event tend to fade once it ends. However, this fading effect

²²¹ 北口直人, & 岡田昌彰. (2007). 空間価値の啓発装置としてのアートの可能性に関する研究. 景観デザイン研究講演集, 2007, 3, 108-112.

highlights the reemergence of everyday landscapes after the event, leading to a renewed recognition of the familiar surroundings.

Research into the temporary nature of events in urban spaces has often been classified within the broader scope of temporary urban practices, which include various DIY urbanisms (Iveson, 2013)²²², tactical urbanisms (Mould, 2014)²²³, and insurgent placemaking (Merker, 2010)²²⁴. These studies are conducted in the context of exploring temporary spatial use (Andres, 2013)²²⁵, and some researchers have also proposed that temporary utilization of space can render it unfamiliar (Iveson, 2013)²²⁶, unveiling concealed layers of meaning (Lashua, 2013)²²⁷ and inspiring contemplation of alternative futures (Pratt, 2014)²²⁸.

With regard to the distinction and connection between the above mentioned temporary urban practices and the temporary nature of the events that are the focus of this section, it is necessary to make further clarifications here. The former are techniques used to make use of and revitalize marginal or underutilized spaces, often considered “wasted spaces”. These practices are typically employed to address specific spatial issues in the

²²² Iveson, K. (2013). Cities within the city: Do - it - yourself urbanism and the right to the city. *International journal of urban and regional research*, 37(3), 941-956.

²²³ Mould, O. (2014). Tactical urbanism: The new vernacular of the creative city. *Geography compass*, 8(8), 529-539.

²²⁴ Merker, B. (2010). Taking place: Rebar’s absurd tactics in generous urbanism. In *Insurgent public space: Guerilla urbanism and the remaking of contemporary cities*, ed. Jeffrey Hou, 44–58.

²²⁵ Andres, L. (2013). Differential spaces, power hierarchy and collaborative planning: A critique of the role of temporary uses in shaping and making places. *Urban studies*, 50(4), 759-775.

²²⁶ “...Defamiliarization (in the sense of identifying new possibilities in taken-for-granted spaces of the city)...”

²²⁷ Lashua, B. D. (2013). Pop-up cinema and place-shaping: urban cultural heritage at Marshall's Mill. *Journal of Policy Research in Tourism, Leisure and Events*, 5(2), 123-138.

²²⁸ Pratt, G. (2014). *Film and urban space: critical possibilities*. Edinburgh University Press.

city. In contrast, the temporary nature of the events examined in this study doesn't arise from pre-existing spatial problems. Instead, the temporary nature is an inherent aspect of event curation. The focus in this section is on understanding the consequences of the contradiction between this inherent temporary and the original stability and permanence of urban space.

These two dimensions of temporariness, despite their distinctions, also exhibit common characteristics. For instance, both temporary urban practices in fragmented spaces and events with temporary natures often create heterogeneous spaces. In temporary urban practices, this is achieved through the use of makeshift installations that disrupt the original rhythms and aesthetics of the space. In the case of events, their temporary nature allows them to "place one world in another", as described by Rancière (Rancière, 2011)²²⁹. This subverts the way we perceive the space around us and provides new understandings. In both cases, there is potential for triggering the alienation of existing spaces.

The World Design Expo provides a clear example of the impact of temporary events on space. The event venue itself is not an entirely new space but rather the result of alienating the original space when the event occurs. For instance, the design exhibition held in a warehouse at the wharf transformed what was originally a mundane storage space into a cultural venue (**Fig. 6-11**). While the specific content of the exhibition might not be remembered or discussed extensively in the long run, the spatial imagination of the design exhibition within the warehouse space remains vivid after the event.

²²⁹ Rancière, J. (2011). *The thinking of dissensus: politics and aesthetics* (Vol. 2011, pp. 1-17). London: Continuum.

Once the event concludes and the exhibition content is removed from the space, people begin to focus on the vacant warehouse area. They draw upon the spatial cognition formed during the event to envision diverse futures for these spaces. Before the event, it might have been challenging for individuals to realize that the warehouse space could be creatively altered or transformed, due to cognitive inertia stemming from the perceived permanence of the space. However, the temporary nature of the event disrupts this cognitive inertia, creating a vision for these formerly permanent spaces.



Fig. 6-11 Galleries during the Expo (Source: 世界デザイン博覧会協会事務局²³⁰)

6.3.4 The contradiction of context and interactivity

The event's unique use of decentralized venues made transportation a critical component of its success. Connecting the Nagoya Castle venue to the Shirotori venue was a distinctive mode of transportation: special London buses. Additionally, water buses, a less common mode of transportation in everyday life, were used to link the Shirotori venue to the Nagoya Port venue (電通 and 世界デザイン博覧会協会, 1990)²³¹. These

²³⁰ 加藤正嗣, デザイン博が変えたもの、残したもの, 世界デザイン博覧会協会事務局, 2014.10.

²³¹ 世界デザイン博覧会: 公式記録. 電通編集, 世界デザイン博覧会協会, 1990.3.

transportation choices not only provided practical solutions for moving event attendees between venues but also added to the overall experience and ambiance of the event.

Indeed, accessibility plays a crucial role in determining how frequently and easily people can reach a particular area in their daily lives. In the case of Nagoya's wharf area, accessibility from Nagoya Station, the city's core transportation hub, is relatively limited. It takes approximately 20 minutes to reach the wharf area by tram, and even longer if one opts for a bus, making it less accessible compared to other bustling areas within the city.

In contrast, cities like Yokohama and Kobe have established better connectivity to their respective ports. For example, a train ride from Yokohama Station to Yokohama Port takes only about 9 minutes, and visitors can easily reach the port square near Kobe Tower on foot from Kobe Station. The level of accessibility to these areas has a direct impact on the likelihood of people incorporating them into their daily routines and exploring them as part of their urban experience. Of course, the time required and the degree of accessibility mentioned above are also very much related to the location and shape of the port, but it is undeniable that the accessibility of a space has a direct impact on the chances of people reaching it in their daily lives.

When an area is located relatively far from the urban core, creating strong points of attraction can be a powerful way to draw people to that location actively. These attractions serve as magnets, motivating individuals to make the effort to visit the area. Through active spatial participation, people engage with the environment and contribute to the reconstruction of their cognition of that space.

In the case of the World Design Expo in Nagoya, it acted as a significant attraction that compelled people to overcome the inconvenience of traveling to the port area. By offering a unique and compelling experience that was distinct from the everyday urban environment, the event satisfied people's desire for fantasy and novelty. This strategy

effectively increased people's acceptance of the wharf's relative distance from the city core.

The waterfront space in Nagoya's port often lacks active engagement when no events are taking place. This space is a vital part of the water's edge, but its distant location and limited accessibility make it challenging for activities to naturally occur. In such cases, the act of arriving at the wharf and experiencing it becomes an appealing activity. It shifts the space from the background into the foreground, making it an active element of the interactive process.

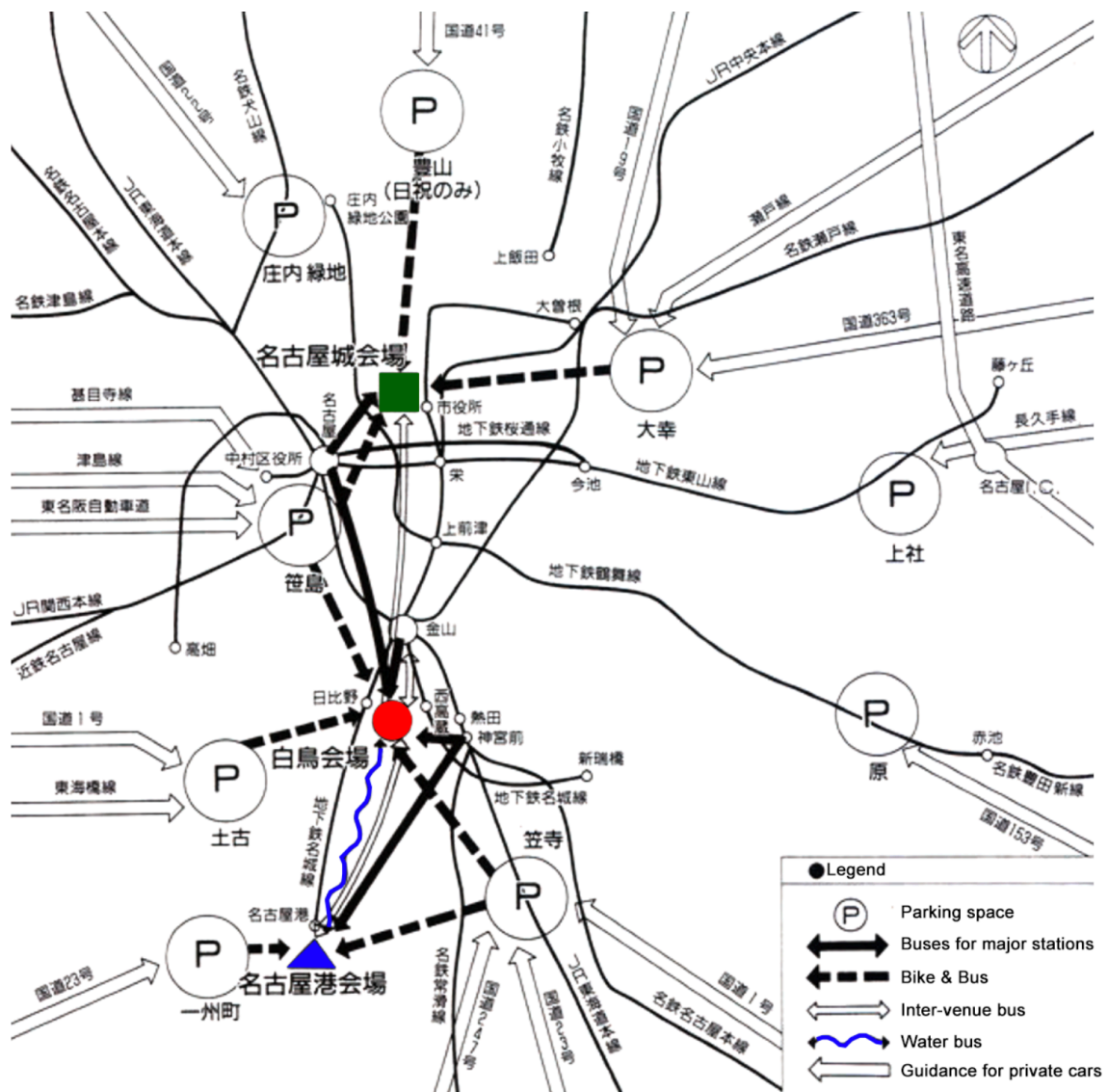


Fig. 6-12 Mode of transport among the 3 venues (Source: 世界デザイン博覧会 : 公式記録²³¹)

During the World Design Expo, a water bus, connected the Shirotori site and the Nagoya Port site, traveling to and from the Horikawa Canal for a limited period of time (**Fig. 6-12**). This water bus was named after "depo", the face of the Expo, and it attracted long lines of passengers for several days. The popularity of this water bus can be attributed to the immersive experience it offered. It was as if the passengers rode in a small sightseeing boat, allowing them to view the slow-moving Horikawa from the same level as the water. This immersive experience created a sense of entering a distinct space that separated itself from the ordinary world, a sensation akin to "the sensation of entering a space that immediately identifies itself as separate from the world" (Griffiths, 2008)²³². This immersion generated a feeling of excitement and novelty. Riding the water bus transformed the marina spaces into a 'non-everyday' world, setting them apart from conventional urban spaces. This approach exemplifies the underlying logic of creating urban fantasy through experiences of the non-everyday. (**Fig. 6-13**)

Compared to some theme parks that directly modelled their experiences on popular fictional worlds; the interactivity created through events deepens people's cognition of the real space.

Indeed, the essence of these immersive experiences lies in the imaginative journey they offer. Whether it transports individuals to distant corners of everyday life or immerses them in fictionalized worlds, the event's power lies in its ability to ignite the imagination. Importantly, this imaginative journey is not achieved by physically

²³² Griffiths, A. (2008). *Shivers down your spine: Cinema, museums, and the immersive view*. Columbia University Press.

departing the current location but by introducing spatial contradiction right within the existing place. This characteristic is a pivotal element of urban fantasy.

The immersive atmosphere created by the water bus has played a significant role in reshaping the marina space, rekindling the site's importance in Nagoya's urban life. Simultaneously, it infuses a contemporary significance associated with the sense of identity and place.

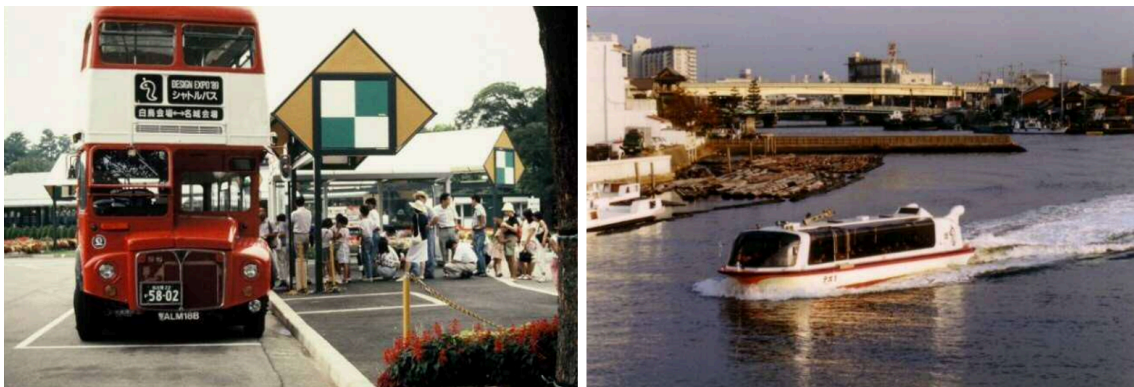


Fig. 6-13 London bus and water bus (Source: 池田誠一, 熱田ブランド推進プロジェクト²³³)

6.4 Summary

In this chapter, we shift our focus to the port space, which has a more modern character than the canal. Unlike the previous two chapters, we approach the analysis using the sense of place model by beginning with human activity rather than spatial form.

According to Jacobs, urban spaces can be energised through the provision of diverse activities in public spaces. In contemporary times, it seems that the development of

²³³ The pictures are from the reference: 池田誠一, 熱田ブランド推進プロジェクト “あつた人(びと)” になろう! 「白鳥公園今昔物語 ~デザイン博が変えたもの、残したもの~」, 2013.9

themed public spaces is more often than not a familiar representation. It's important to note that the term "theme," particularly in the context of "fantasy," may conjure images of theme parks, but this doesn't imply that cities are undergoing a process of "Disneyfication." Instead, it signifies a growing tendency to utilize urban public spaces for leisure and recreational purposes.

This chapter delves into the port space of urban fantasy, examining how it can be thoughtfully developed in Nagoya. The chapter places a strong emphasis on the pivotal role of events in the fantastical narrative of the wharf area. By taking the World Design Expo as a case study, it vividly illustrates the potential of crafting an urban fantasy. It also showcases how the balance of the three dimensions of the sense-of-place model opens up numerous possibilities for cognitive reconstruction, offering various methods to achieve it. Also this chapter demonstrates the many possibilities of the sense of place model when used through the study of urban fantasy.

And the 20th Asian Games will be held in Nagoya in 2026, which will be another chance to construct a new image of the waterfront spaces. There must be many more possibilities waiting to be explored.

6.5 Reference

- 北口直人 & 岡田昌彰 2007. 空間価値の啓発装置としてのアートの可能性に関する研究. *景観デザイン研究講演集*, 2007, 3, 108-112.
- 電通 & 世界デザイン博覧会協会 1990. *世界デザイン博覧会：公式記録*, 世界デザイン博覧会協会.
- 林上 2018. 都市港湾における埠頭の建設と利用の歴史的推移に関する考察: 名古屋港を事例として. *日本都市学会年報/日本都市学会年報事務局 編*, 52, 55-64.
- ANDRES, L. 2013. Differential spaces, power hierarchy and collaborative planning: A critique of the role of temporary uses in shaping and making places. *Urban studies*, 50, 759-775.
- ARMITT, L. 2020. *Fantasy*, Routledge.
- BACHELARD, G. 1953. *Le matérialisme rationnel*, Presses universitaires de France Paris.
- BACHELARD, G. 1971. *The poetics of reverie: Childhood, language, and the cosmos*, Beacon Press.
- BACHELARD, G. 2016. *The dialectic of duration*, Rowman & Littlefield.
- BESSIÈRE, I. 1973. *Le récit fantastique : la poétique de l'incertain*, Larousse.
- BROWNILL, S. 2013. Waterfront regeneration as a global phenomenon. *The Routledge companion to urban regeneration*, 45-55.
- CHIMISSO, C. 2017. Gaston Bachelard's Places of the Imagination and Images of Space. *Place, Space and Hermeneutics*, 183-195.
- COLERIDGE, S. T. 1927. *Biographia literaria*, Dent London.
- DOVEY, K. 2005. *Fluid city: transforming Melbourne's urban waterfront*, UNSW Press.
- FRENCHMAN, D. 2004. Event-places in North America: City meaning and making [Research and Debate]. *Places*, 16.
- FRENCHMAN, D., SABATÉ, J. & SCHUSTER, J. 2004. Event Places. *Barcelona: Universidad Politècnica de Catalunya, & Massachusetts Institute of Technology*.
- FREUD, S. 2016. Introductory lectures on psycho-analysis. *Myths and Mythologies*. Routledge.
- FREUD, S., DICKSON, A. & STRACHEY, J. 1985. *Art and literature : Jensen's Gradiva, Leonardo da Vinci, and other works*, Penguin.

- FU, Z. 2022. Art in the Dream World-Surrealism. *Highlights in Art and Design*, 1, 14-16.
- GASTON, B. 1948. La Terre et les rêveries du repos. *Essai sur les images de l'intimité*, Paris, José Corti.
- GRIFFITHS, A. 2008. *Shivers down your spine: Cinema, museums, and the immersive view*, Columbia University Press.
- HOYLE, B. S. 1989. The port—City interface: Trends, problems and examples. *Geoforum*, 20, 429-435.
- IVESON, K. 2013. Cities within the city: Do - it - yourself urbanism and the right to the city. *International journal of urban and regional research*, 37, 941-956.
- JACKSON, R. 2008. *Fantasy: The literature of subversion*, Routledge.
- JAKOB, D. 2013. The eventification of place: Urban development and experience consumption in Berlin and New York City. *European urban and regional studies*, 20, 447-459.
- JOHANSSON, M. & KOCIATKIEWICZ, J. 2011. City festivals: creativity and control in staged urban experiences. *European Urban and Regional Studies*, 18, 392-405.
- KLINGMANN, A. 2010. *Brandscapes: Architecture in the experience economy*, Mit Press.
- LASHUA, B. D. 2013. Pop-up cinema and place-shaping: urban cultural heritage at Marshall's Mill. *Journal of Policy Research in Tourism, Leisure and Events*, 5, 123-138.
- MCILWAINE, C., GARTH, J., FLIEGER, V., HOSTETTER, C. F., SHIPPEY, T., HAMMOND, W. G. & SCULL, C. 2018. *Tolkien*, Bodleian Library, University of Oxford.
- MERKER, B. 2010. Taking place: Rebar's absurd tactics in generous urbanism. In *Insurgent public space: Guerilla urbanism and the remaking of contemporary cities*, ed. Jeffrey Hou, 44-58. New York: Routledge.
- MOULD, O. 2014. Tactical urbanism: The new vernacular of the creative city. *Geography compass*, 8, 529-539.
- PEARCE, P. 1998. *Tom's midnight garden*, Oxford University Press.
- PLØGER, J. 2010. Presence-experiences—the eventalisation of urban space. *Environment and Planning D: Society and Space*, 28, 848-866.
- PRATT, G. 2014. *Film and urban space: critical possibilities*, Edinburgh University Press.
- QUINN, B. 2020. Arts festivals and the city. *Culture-led urban regeneration*, 85-101.

- RANCIÈRE, J. 2011. *The thinking of dissensus: politics and aesthetics*, Continuum London.
- RICHARDS, G. 2015. Developing the eventful city: Time, space and urban identity. *Planning for event cities*, 37-46.
- SMITH, A. 2015. *Events in the city: Using public spaces as event venues*, Routledge.
- STABLEFORD, B. 2009. *The A to Z of fantasy literature*, Scarecrow Press.
- TSCHUMI, B. 1996. *Architecture and disjunction*, MIT press.
- TSCHUMI, B. & ART, N. M. O. M. 2010. *Event-cities*, MIT Press Cambridge, MA, London.
- WILLIAMS, P. B. 2007. *Re-envisioning Romanticism as Postmodern Fantasy: A Case Study of William Blake and Robert Jordan*. University of North Carolina Wilmington.

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AUTHOR'S PUBLICATIONS

[1] WANG B.: Study on the Influence of Parking Space on Historical Street from the Sense of Place: A Case Study of the Shikemichi Area in Nagoya, Journal of Architecture and Planning, Vol.88 No.813,2023

オウハクケイ: 場所感覚から見た歴史的街並みにおける駐車空間の影響に関する研究: 名古屋市四間道地区を事例として, 日本建築学会計画系論文集, 2023, 88(813): 2899-2910.

[2] WANG B., WATANABE T.: Study on the Influence of Parking Spaces along the Canal on Past Reconstruction: A Case Study of the Shikemichi Area in Nagoya, Journal of Architecture and Planning, Vol.89 No.819,2024.

オウハクケイ, 渡邊大志: 運河沿いにおける駐車空間が過去の再構築に及ぼす影響の研究: 名古屋市四間道地区を事例として, 日本建築学会計画系論文集, 2024, 89(819).

[3] WANG B., LIU D.: Research on the development of Japanese mountain-villa Taking centrifugal-cluster behaviour as a point of view, 日本建築学会大会学術講演梗概集, 建築歴史・意匠, pp.1-2, 2022

[4] LIU D., WANG B.: 儼劇と日常空間の関係性研究: パターンと特徴, 日本建築学会大会学術講演梗概集, 農村計画, pp.193-194, 2023

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