An abstract architectural drawing on a light-colored, textured paper. The drawing consists of numerous thin, dark lines that intersect and overlap, creating a complex web of geometric shapes. Some lines are straight, while others are curved. There are several small, rectangular shapes scattered throughout the drawing, some of which are outlined in a slightly different shade of gray. A prominent feature is a thick, solid black line that runs diagonally across the upper right portion of the drawing. The overall impression is one of a conceptual or preliminary sketch, possibly for a building or a landscape design.

Exposition, societal responsivity and the aesthetics of impermanence

Temporal findings from the 1970 world exhibition]

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Abstract

The architecture of the world expositions maintains an historically unique position within the built environment. Raised specifically for the hosting of these temporary events, the architecture and design of the exposition grounds have been viewed in this thesis as a means to present the aspirations of a country.¹ Expositions were also physical manifestations of the development of new tools, materials, techniques, or aesthetics, ushering in notions of change and progress.² However, exhibition architecture can similarly be interpreted as a vehicle responding to the changing pressures within a society.

Both historical and contemporary reports locate the world expositions as highly anticipated for education, communication, enjoyment and even competition. Parallel to this, the international expositions have existed as an area of well resourced critical research. With over 150 years of exposition, the historical, political, social, urban and architectural aspects of these events have been increasingly explored as locations to identify and define avant-garde and progressive explorations in the moderation of space. In contrast to this, the world exposition of 1970 exists as a comparatively unexplored area of study in the West. Expo'70, located in Osaka, Japan, was poorly received and heavily criticised in Western media sources. Academics, architects and critics slated the event as bizarre, ridiculous, and excessive, and one source even noted that Expo'70 had "brought about the end of the world fairs".³ While perhaps some of these comments can be attributed to remoteness, and vastly unknown sensory experiences that many non-Japanese visitors would be exposed too, a difficulty in accessing first hand accounts from the Japanese themselves may also account for a lack of understanding within Western architectural discourse.

However, Expo'70 was, and still is, an important phenomenon in its native land. A search using Japanese language through any Japanese university library will return a vast collection of titles covering areas such as social science, politics, technology, and architecture. In response to these findings, this thesis locates the importance of the event to the Japanese as a whole. I propose that Expo'70 manifested a number of qualities or conditions that the Japanese society could locate within their existing aesthetic vocabularies, which are discussed and displayed in this thesis through both drawing and text. Within this context the drawn material operates an important strategy as both a mechanism of display and a means to explore the shifting and transitory spatial qualities that are discussed within the text. Rather than a turning point, the thesis argues that, Expo'70 existed as a form of vantage for Japanese society to observe the unfolding changes within their society, both material and immaterial.

¹ Jefferson, *Encyclopaedia of World's Fairs and Expositions*. 36.

² Herbert, *The View of the Trocadéro*. 112.

³ Crowley. *Cold War Modern*. 18.

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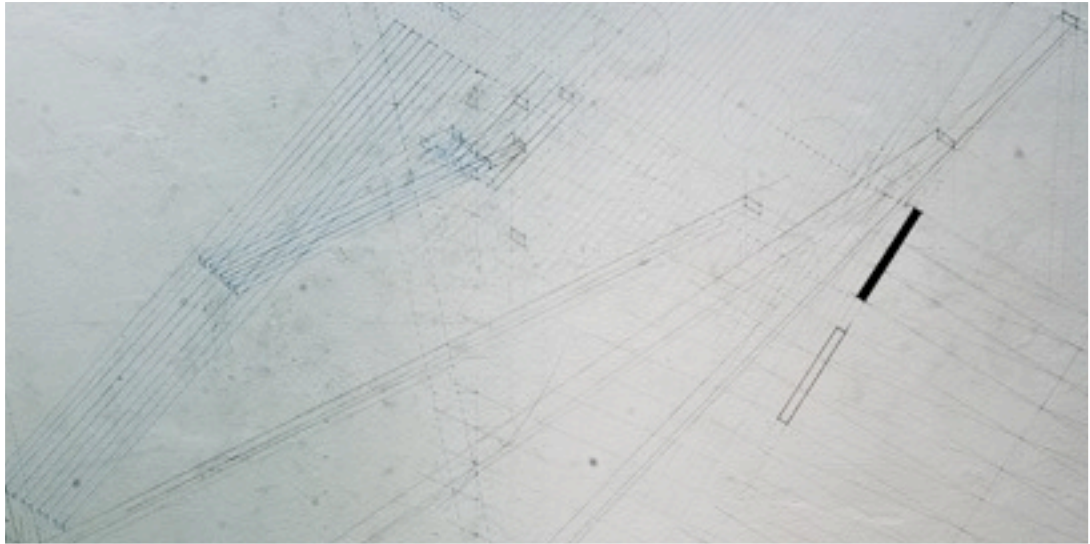
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[Fig .1] Fragment of plate {..x}

Introduction

During the past century and a half, the world expositions existed as one of the most highly publicised modes of architectural expression. The staging of the world expositions had a profound effect on any city or nation that hosted the event, both physically and socially. This thesis proposes that the architecture of the world expositions existed as a societally responsive mode of creative output. Operating as catalysts within society, exhibition architecture was both the author of change, and responsive to the changes that were taking place within society.

The world expositions are frequently remarked as one of the most significant and multifaceted cultural undertakings of the 19th and 20th centuries CE.⁴ The staging of an exposition was an event that touched upon the social, political and academic sectors of each host nation.⁵ Additionally the world expositions brought together the full array of industrial technologies available to the globe at that time. Fuelled by the newly developed engines of an increasingly industrialised world, societies at the time of the earliest instances of world expositions were steering toward mass production and mass consumption. Textile, steel, glass, transport and agricultural industries focussed their sights and ambitions on global markets, seeking heightened productivity and hopefully increased profits that could be found in the development, prioritisation and capitalisation of new technologies.

Taking the position that *Expo'70* has not been recognised or appreciated for its architectural potential by the West, this thesis aims to examine the possibility of a cultural specificity presented within the architecture of *Expo'70*. This event can be located as an important vehicle for representing architecture as responsive to societal needs. Titled *Progress and Harmony for Mankind*, the exposition encouraged the architects of the time to view *Expo'70* as a chance to recreate the architectures and urban fabric of the growing nation of Japan.⁶ The development of the architecture for *Expo'70* was an opportunity to parallel a general societal unease brought about by certain pressures.⁷ Constructed as a means to affect or reform greater society, *Expo'70* was hoped to draw the public's attention away from the internal struggles that Japan faced as a country, and towards a positive event located in the future.

⁴ Wesemael, *Architecture of Instruction and Delight*. 14.

⁵ Budden, *The Relation of Exposition Planning to Civic Design*.153-162.

⁶ Kurokawa, *Kisho Kurokawa: The Architecture of Symbiosis*. 79.

⁷ Uchida, *EXPOs Marched Past?*.181.

Chapter One; The International Exposition 1855-1970

Via an examination of the international expositions that were held from 1855, the first chapter documents evidence demonstrating that the exposition was frequently utilised as a mechanism to exhibit technology and the advancement of industry. In addition, the world expositions during this period often existed as a highly developed and evolved means to reconfigure or restructure the architectural fabric of a given city.⁸ Vast swathes of urban, suburban or rural land were co-opted for use in the world expositions, however because the expositions were temporary entities, they permanently changed and affected their hosting cities. From the redevelopment of urban planning to the invention of subway rail, entire cities have been reconfigured to successfully host the world expositions.

Used as devices to proclaim a nation's might, technological progress, material wealth or even cultural diversity, the world expositions have, since their inception, always operated as a mechanism to communicate ideas, and increasingly ideals, to a public that had already fully subscribed to the inevitable modernisation of their world.⁹ Transforming in parallel the developments of the world expositions, architecture embraced the innovation and availability of new materials and processes of manufacture.¹⁰ The architecture constructed for the expositions was hence required to perform dual roles, initially as a means to house the exhibited content presented within the expositions, and secondly perform as exhibits in their own right. Invention and innovation was a highly anticipated quality of the exhibits and frequently of the architecture.¹¹

Chapter Two; Social responsivity, the Osaka World Exposition 1970

The significance of the world exposition existed as both means to effect or adjust social and physical existence of the hosting city.¹² The second chapter argues that, where each previous exposition and its architecture had given successive society's shifts in form, spatiality, materiality, and even function for architecture, *Expo'70* operated in an entirely different manner. *Expo'70* was the first world exposition to be held in Asia, and it offered a point of departure to all preceding world expositions.¹³ *Expo'70* was promoted as the celebration of an achievable urban utopia, driven forward by technology and invention. This second chapter notes that *Expo'70* could be viewed as a means to divert, or veer attention away from the rising social unease that had been steadily brewing since the cessation of the war and occupation of Japan by American forces. The development of *Expo'70* was an opportunity to ameliorate the general unease brought about by certain societal pressures.¹⁴ The oil shock, the cold war, student activism and the challenging of the Treaty of Peace with Japan were brewing societal pressures the Japanese government was eager to divert attention from.¹⁵ While *Expo'70* can be narrowly viewed as a form of entertainment or festival, this chapter argues that it was presented as a cause for the entire nation to re-bond and reforge its monocultural homogeneity.

Expo'70 was an important vehicle for representing architecture as responsive to a very defined cultural specificity. Titled *Progress and Harmony for Mankind*, the exposition was viewed by a generation of architects and designers as the chance to recreate the architecture and urban fabric of the growing nation of Japan.¹⁶ Engaging with the idea that the exposition

⁸ Batchelor, *The Origin of the Garden City Concept of Urban Form*. 184-200.

⁹ Gandy, *The Paris Sewers and the Rationalization of Urban Space*. 23-44.

¹⁰ Hafter, *The Business of Invention in the Paris Industrial Exposition of 1806*. 317-335.

¹¹ Treib, *Space Calculated in Seconds*. 12.

¹² Lovell, *A City for a Single Summer: Paintings of the World's Columbian Exposition*. 40-55.

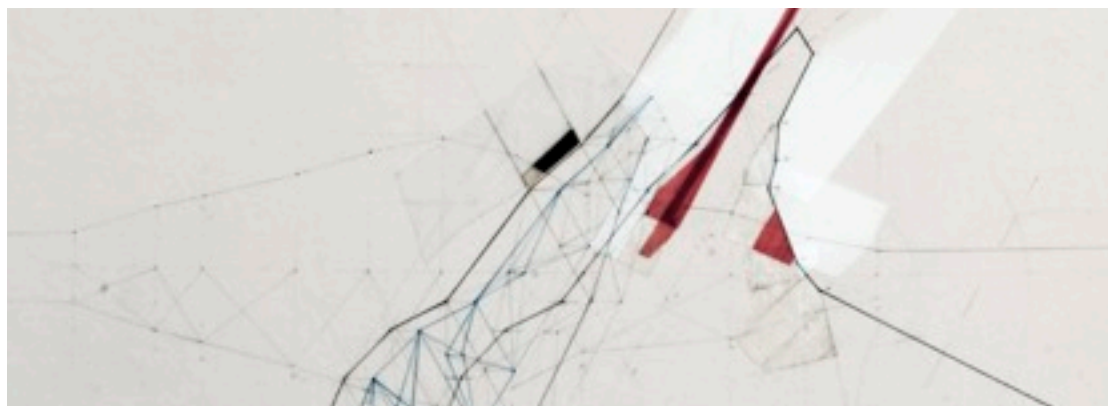
¹³ Wesemael, *Architecture of Instruction and Delight*. 114.

¹⁴ Isozaki, *The Island Nation Aesthetic*. 3.

¹⁵ Drew, *Architecture of Arata Isozaki*. 71-72

¹⁶ Miller, *Arata Isozaki*, 307-309.

existed to effect and change the physical urban environment, this chapter argues that the organisers of the exposition attempted to use the exposition as a mechanism of social engineering.¹⁷ However, this thesis proposes that the architectures of *Expo'70* could not be interpreted as a salve to Japan's struggles, or as a means of communicating ideals for the future.¹⁸ In contrast to previous interpretations,¹⁹ this chapter proposes that the Japanese public were predisposed to an interpretation that the built environment existed as a temporary or temporal condition, and that the reinterpretation or repurposing of the built environment through a series of demountable or reconfigurable fixtures, had diminished societal influence as a means to represent change, future or progress.



[Fig .2] Fragment of plate {..i}

Chapter Three; Progress cyclical patterns: Ise-Jingū and Byōdō-in

In a series of architectural conditions that quite literally withdraw from solidity, the cyclical rebuilding of *Ise-Jingū* shrine was referred to by Kurokawa Kisho, Kikutake Kiyonori and Tange Kenzo as the origin for the development of the Metabolist movement. However, the inherent cycles of change and devastation that occur throughout the year such as typhoon, flooding, earthquake, lightening fires, and tsunami have also embedded within the Japanese society an awe for nature and an understanding of frequent, and at times, violent change. This chapter argues that the architectural response from these conditions can be considered to have fostered a condition or appreciation of temporality. It examines the spatial relationship between the *Shinmei-zukuri* and *Shinden-zukuri* building techniques.²⁰ Architectural precedents from *Ise-Jingū* and *Byōdō-in* are introduced in this chapter to re-investigate spatial and temporal relations that are exhibited within the philosophies of *Shintō* and *Bukkyō*. This chapter re-constructs the historical and cultural trajectories as mechanisms to propose that the explorative structures built at *Expo'70* operated as a new incarnation or re-iteration of existing spatial archetypes.

Chapter Four; Temporal fragmentation and cultural regeneration

The architecture of *Expo'70* was interpreted by the Japanese populace as a temporary condition or series of temporal configurations. This chapter documents the conditions of cultural specificity in Okamoto Taro's *Taiyo no Tou* and Tange Kenzo's *Ōyane*. Through implicit references to Japan's cultural traditions, *Taiyo no Tou* refers to a series of ancient ceramic characters called *Jōmon Doki*, which are introduced to illustrate the link that the structures of *Expo'70* drew to the nation's earliest history. Interspersed within many areas of Japanese culture, these structures operate as far reaching temporal constructions that

¹⁷ Kanabe, Noennig and Rainer. *Shaking the Foundations*. 87-90

¹⁸ Isozaki, *The Island Nation Aesthetic*. 32.

¹⁹ Wesemael, *Architecture of Instruction and Delight*. 14.

²⁰ Itoh and Futagawa, *The Roots of Japanese Architecture*. 272

dualistically reach towards the future while simultaneously operating as reconfigurations of existing conceptions of time and space.



[Fig .3] Fragment of plate { .iv }

Chapter Five; Intermittence and mutability in architecture

This last chapter discusses two corporate pavilions to introduce and explore the spatial relations that existed between the works of the Metabolist group and traditional Japanese architectures, such as *Ise-Jingū*, and *Byōdō-In*. The Metabolist group developed a series of spaces and structures that were tied to a philosophy for growth and regeneration. This worked to provide a metaphor for progress as an affirmative outcome and a positive direction towards the future. However, rather than a turning point or new direction, this chapter argues that *Expo'70* existed as a form of temporal aesthetic regeneration. While designated as physical manifestations of progress, the conceptual positioning of these pavilions recalled images of systems that have operated within Japanese society to shift or transfer the occupants to a location or space outside of this temporal existence.

Conclusion; The mechanisms of impermanence

Through the construction of a single drawing, the research identifies that the architecture of *Expo'70* resonates within a highly developed set of existing conceptions.²¹ I re-examine the spatial conditions presented within the previous chapters through a final drawn investigation. The final drawing manifests a hybrid technique that simultaneously condenses all previously explored conditions within a single work. It represents the notion of impermanence within the built environment via the drawing and re-working of a physical surface. The work include coordinates, nodes and plans combining *Toshiba IHI*, *Ise-Jingū*, *Expo Tower* and *Byōdō-in*. This drawing is presented as a temporal manifestation or re-documentation of seemingly fragile architectural conditions. Offering a position to interrogate the mechanisms of architectural cultural specificity, this thesis uses drawn media as a vehicle for visualising a societally responsive architecture through drawing. This thesis uses drawn media as a vehicle for locating the appreciation of impending termination, this last drawn work allows for the definition of the aesthetics of impermanence.

²¹ Drew, *Architecture of Arata Isozaki*.

Chapter One:

The International Exposition 1855-1970

{..i}Exhibition in the age of industrialisation

a. *Nationale des produits de l'industrie agricole et manufacturière*
The French national exposition of agricultural and industrial products.

b. *Prince Albert*
b.1819 d.1861.
Husband of Queen Victoria of the United Kingdom of Great Britain and Ireland.

c. *Great Exhibition of the Works of Industry of All Nations*
Also known as; Great Exhibition of the Works of Industry of all Continents, or The Great Exhibition, or Crystal Palace Exhibition. Opened by Queen Victoria the Great Exhibition was held in the Crystal Palace in Hyde Park, London.

The international expositions during the period 1851 until 1900 were employed as mechanisms to proclaim a nation's might, technological progress and cultural superiority. Additionally they have been considered as a means to communicate ideas, and increasingly ideals, to a public that had already subscribed to change within the inevitable modernisation of their world.²² The international exhibitions appear to be a significant and unique contribution to European culture during the mid 19th century CE. The concept of the international exhibition can be viewed as an extension of the village or regional *fairs*.²³ Vincente Gonzales Loscertales notes that the gathering of people within the *fair* had occurred in European centres since the medieval ages.²⁴ Located at busy junctions within established towns and villages of the time, the medieval *fairs* were a combination of: commerce, entertainment, theatre and an exhibition of the technologies available at the time. The French *Exposition Nationale des produits de l'industrie agricole et manufacturière*^a originated in 1798 and staged eleven expositions over a period of five decades. The *Exposition Nationale* was held to simultaneously encourage the nation's development of agriculture and technology, evolving to become the largest and most developed in Europe by 1844. The success of *Exposition Nationale* was a European phenomenon and was soon followed by Madrid in 1845, Brussels in 1847, St Petersburg in 1848, and Lisbon in 1849.²⁵ Following suite with movements on the continent, the *Exposition Nationale* became the catalyst for the British staging of the *Great Exhibition*.²⁶ Charged with a sense of national pride, the *Royal Society* aimed to eclipse the much touted and imitated French endeavours, and in response prepared an event that would encompass the works of all western nations, in the first international exhibition.

In the mid 19th century CE Prince Albert^b brought together members from the *Royal Society for the Encouragement of Arts, Manufactures and Commerce* seeking a means to promote and celebrate new ideals for a new age. Industry, innovation and technology stood at the forefront of an evolving society that was caught amidst an age that was increasingly influenced by modernisation and industrialisation. On the first of May 1851, the actions of the *Royal Society* resulted in the opening of the first international exposition, or the *Great Exhibition of the Works of Industry of All Nations*^c.²⁷ This event provided an opportunity for the middle and upper classes to engage with emerging technologies, products and modern conveniences. Furthermore, society was greatly affected and influenced by the occurrence of this exhibition, which presented a physical manifestation of the advancement in production of goods and the benefits to society that could be achieved through the engagement and advancement of technologies. However, more significantly during the age of colonialism, the exhibitions were a rare chance to experience and evaluate the works of other nations.²⁸ The attempt to improve on the previous nation's exposition resulted in a chaotic rebuilding cycle of one to five years between exhibitions.²⁹ At tremendous expense, the hosting of an exposition allowed a series of evolutions to occur within the nation. The frequency of the expositions existed and expired on an almost mechanical timeframe, perhaps a reflection of the increased mechanisation and mass production that existed during the industrial revolution. At expositions, the representation and exhibition of technology through architecture existed functionally (to house the exposition) and, as a means to display the advancement in the technologies of glass, steel, and industrial manufacture. Conversely, the

²² Gandy, *The Paris Sewers and the Rationalization of Urban Space*. 23-44.

²³ Edwards and Fahy. *The British Pavilion at Expo '67*, 249-274.

²⁴ Jefferson, *Encyclopedia of World's Fairs and Expositions*. 87.

²⁵ Jackson, *Expo: International Expositions 1851-2010*. 14.

²⁶ Loscertales, *Encyclopedia of World's Fairs and Expositions*. 14.

²⁷ Duke, *The Great Exhibition of 1851*.

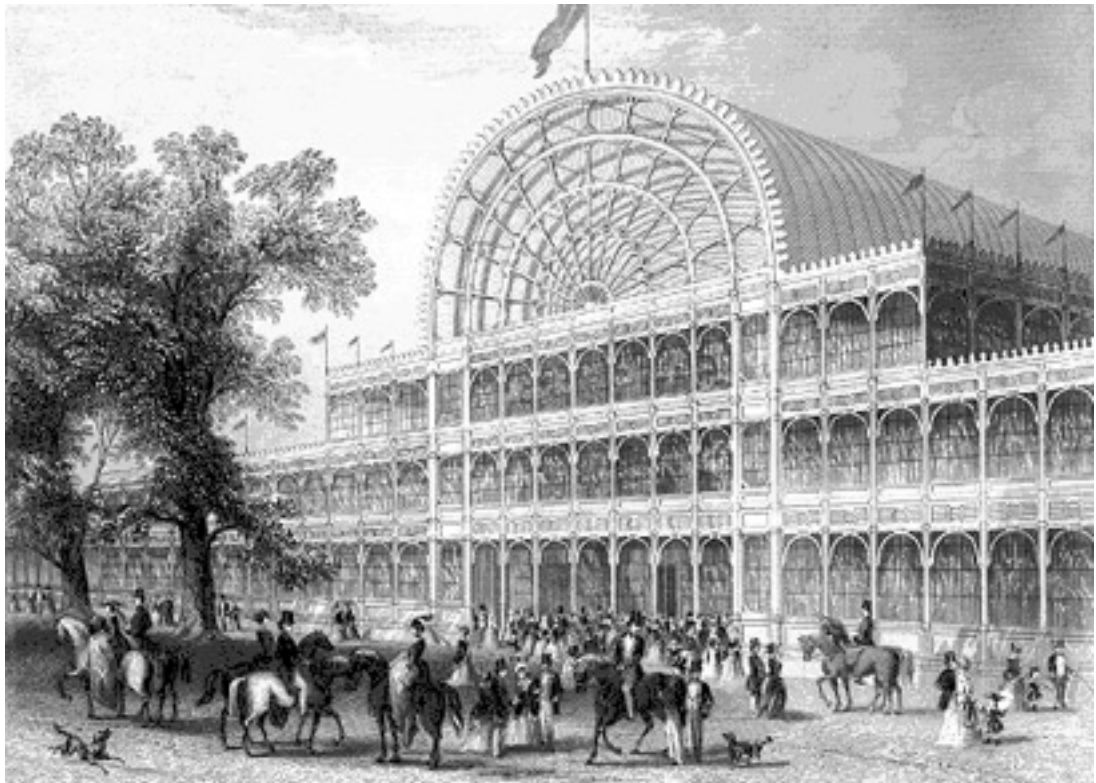
²⁸ Smith, *The Pattern of Imperialism: The United States, Great Britain, and the Late-Industrializing World Since 1815*. iv

²⁹ Minty, *London's New Public Buildings*, 210-218. 210.

a. *The Crystal Palace* (1851) was a cast-iron and glass building constructed in Hyde Park, London, England. Designed by Joseph Paxton b. August 1803 d. 1865

temporality and expendability of each successive exposition referred to the cyclical expiration of such technologies.

Both social and material, these cycles took form as renewed urban design, civic amenities, transport and landscaping.³⁰ These shifts could be viewed by the hosting nation with pride, as a physical manifestation of their own nation's wealth, political influence or industrial vigour.³¹ While the *Great Exhibition* of 1851 was able to set precedence, this would all to soon be surpassed by the *Great London Exposition* of 1862. The magnification of the expositions typically took form in the increased display of products or exhibits. The *Great Exhibition*, which boasted 14,000 exhibits, enclosed both spectator and exhibitor within an unprecedented glistening volume of immense scale. Its *Crystal Palace*^a [Fig. 4] measured 563m x 138m creating a void large enough to house an entire grove of exotic trees. However, eleven years later, the *Great London Exposition* more than doubled its predecessor, preparing a twin domed enclosure to house over 28,000 exhibits.³² This cyclical and expanding process eventually affected the ability for the exhibition buildings to enclose the swelling number of exhibitors beneath a single structure. The construction of multiple buildings became the only possible means for hosting the scale of this diverse event in the future.³³ Additionally, multiple pavilions enabled the identification of the different countries hosted the world expositions via the creation of the national pavilion.



[Fig. 4] *The Crystal Palace*. London, England, 1851

France responded to the *Great Exhibition*'s international outlook with their own *Exposition Universelle des produits de l'Agriculture, de l'Industrie et des Beaux-Arts de Paris* in 1855. These two expositions mark two distinctive points in history, initiating the rhythm that would take place between the European nation's stagings of expositions from this point on. While the French had hosted national exhibitions for 50 years, the departure from the national focus

³⁰ Minty, *London's New Public Buildings*, 210-218. 210.

³¹ Loscertales, *Encyclopaedia of World's Fairs and Expositions*. ix.

³² Sheppard, *Museums Area of South Kensington and Westminster: Survey of London Volume XXXVIII*.

³³ Hoffmann, *Clear Span Rivalry: The World's Fairs of 1889-1893*. 48-50.

to the international scale indicated that an epoch of expositions with global aspirations had begun.³⁴ As Trapp notes:

Comparisons between the two great exhibitions were natural and expected. The mammoth size of the 1855 fair was, for example, clearly intended to eclipse the reputation of its predecessor.³⁵

He continued remarking that "even though no one of its several pavilions matched the proportions or architectural significance of the *Crystal Palace* itself, the French took great care to advertise the fact that their ensemble was the largest and most ambitious ever designed".³⁶ This could be read as reinforcing feelings of national pride, nationhood, and international competition. With the increasing scale and complexity of the expositions, it was realised that the exhibitions themselves had the facility to restore a nation's financial position within the global marketplace. This phenomenon, coupled with the power to showcase industrial might, was offset by an ability to restore faith and optimism to the hosting nation. The exhibition was a means to present a bright future constructed by the honest and charitable industrial society. Enticed to participate in the world expositions, spectators were given the opportunity to interact with technological advances, and to engage with the machinery, products, and lifestyles of the proposed future.

Attracting exhibitors from much of western Europe and North America, the expositions from the mid 19th to early the 20th century CE presented the rise of mass production and mechanisation. The display and exhibition of products and technologies attracted visitors, who were eager to experience first hand the presentation of new technologies. At the *Great Exhibition* of 1851 Alfred Charles Hobbs demonstrated the inadequacy of several respected locks of the day, Frederick Bakewell demonstrated a precursor to the fax machine, and William Chamberlin, Jr. presented the world's first mechanical voting machine, a device which counted votes automatically and employed an interlocking system to prevent over voting. George Jennings designed the first public conveniences in the *Retiring Rooms* of the *Crystal Palace* for which he charged one penny and Matthew Brady won a medal for his pioneering use of daguerreotypes. Invention and display was not limited to Great Britain or the European continent, American authorities invested heavily in the staging of expositions as well. At *Philadelphia's Centennial Exposition* of 1876, the world first saw: Alexander Graham Bell's telephone, Remington's Typographic Machine typewriter and the Wallace-Farmer Electric Dynamo, which marked a significant presence as the precursor to electric light. Products and processes were not the only arena for exhibition. Architectural innovations were equally objects of exhibition. The structures designed to enclose the exhibitions themselves were often used as products for technological display.³⁷ The first exposition buildings followed the development of increasing industrial capacity, and were constructed to increasing scales until material limitations were met. As noted by Geraldo Gomes, "iron architecture developed in Europe in the second half of the nineteenth century, responding to the requirements of new building programs, to the rarity of fabrication on a large scale, and the consequent commercialisation of industrial products".³⁸ The use of architecture as a display mechanism for technology began with the enclosure used for the *Great Exhibition* of 1851. The *Great Exhibition* building, designed by architect Joseph Paxton, came to be known as the *Crystal Palace*. Architecturally and technologically progressive, it operated as a solidification or visualisation of the full technological facilities available to society at that time. The *Crystal Palace* appropriately communicated the role of the international exposition. Designed and constructed in only nine months, the *Crystal Palace* was built with unprecedented speed, which was facilitated by Paxton's newly

³⁴ Wesemael, *Architecture of Instruction and Delight*. 2001.

³⁵ Trapp, *The Universal Exhibition of 1855*. 300.

³⁶ Trapp, *The Universal Exhibition of 1855*. 300.

³⁷ Godfrey, *Restructuring and Decentralization in a World City*. 437.

³⁸ Gomes, *Artistic Intentions in Iron Architecture*. 87.

developed modular structural system that allowed for fabrication off site. The structural components for this building could have not been achieved without the aid of the technology that was becoming available during this time. In this instance it could be argued that the building itself was in-fact a model of industrialist society, driving for mass production and higher outputs in a process and application that spoke to the commissioning *Royal Society's* original desire to exhibit and promote the innovation of both industry and technology.³⁹

While the organisers of the expositions strove to ignite anticipation and appreciation for the developing technologies of the age, these aims, however, often fell well short of their intended goal.⁴⁰ In 1855 Emperor Napoleon III wished to prove the superiority of the French nation. The *Exposition Universelle* was intended to surpass the British *Great Exhibition* in every way. As Frank Trapp notes, the event was “clearly intended to eclipse the reputation of its predecessor”.⁴¹ The site was carefully woven within the highly cherished Parisian fabric, located between the picturesque Seine and Champs-Élysées [Fig .6].⁴² However, the main exhibition building, the *Palais de l'Industrie*, failed to leave a positive influence on either the city or the French population in general. The structures made for the exposition, the urban planning, and the *Palais de l'Industrie* effected only very short term embellishments to the city. Following the exposition, the *Palais de l'Industrie* quickly fell into disrepair and was demolished without fanfare a number of years later. This short term investment in architecture was not limited to the French organisers, but also to the exhibition and buildings for the *Great London Exposition* of 1862, which also failed to inspire public approval.

{.ii}Urban reconstruction and nation building

Urban history implies physical history: we define our subject by the existence of a gigantic artefact of the city itself. Yet the questions that occupy the fore of our literature steer away from much of the physical city; they derive either from social and political history or from polite urban design.⁴³

While the expositions operated as a means to communicate the pending changes in society, they were also devices to construct a notion of progress.⁴⁴ They focussed on the building of a better world through invention and development, however, expositions were also regularly recruited as mechanisms to change the built environment.⁴⁵ Reformation would take place through the physical alteration of a city or the development of unused tracts of land. These manipulations operated to refine or renovate the hosting city, constructing a tangible barometer for general society to locate and identify the progress of their city, nation, or continent. As noted in the previous section, the urban dwellers of cities such as Paris and London historically have been highly critical about the form their city should take. The exposition buildings for both the 1855 *Exposition Universelle* [Fig .5] and the 1862 *Great London Exposition* received much criticism, however, in addition to the construction of buildings, the exposition invariably made much larger changes to the built fabric of each city via urban design.

The entrance of Austria to the exposition race in 1873 marked a significant addition to the previously English-French competition. The Viennese *Weltausstellung* [Fig .6] posed two interesting shifts to the format and scope of world expositions. Initially this exposition was

³⁹ Mainardi, *The Unbuilt Picture Gallery at the 1851 Great Exhibition*. 296.

⁴⁰ Gandy, *The Paris Sewers and the Rationalization of Urban Space*. 23.

⁴¹ Trapp, *The Universal Exhibition of 1855*. 300.

⁴² Green, *France Exposed*. 913.

⁴³ Trapp, *The Universal Exhibition of 1855*. 300.

⁴⁴ Kaufman, *The Architectural Museum from World's Fair to Restoration Village*. 21.

⁴⁵ Gandy, *The Paris Sewers and the Rationalization of Urban Space*. 23-44.

a.*Kultur und Erziehung*
Culture and Education.

b.*Wilhelm von Schwarz-Sendborn*
The organiser of Austrian representation in the Exposition Universelle of 1855.

historically significant because it was the first to have a theme, the title being *Kultur und Erziehung*^a. The *Weltausstellung* was also the first example of an exposition that made direct reference to the cultural aspects of society,⁴⁶ and the first instance of the construction of multiple buildings, or pavilions at a world exposition. The *Weltausstellung* thus founded a significant model for exhibition architecture that would be followed for the remaining history of expositions during the 1855 to 1970 period. Intended as an international promotion exercise for Austria, the *Weltausstellung* was hosted five years after a defeat by Prussia.⁴⁷ The exposition, under the guidance of *Wilhelm von Schwarz-Sendborn*^b was set to place Austria back on the global scene and restore prosperity and peace to the nation. While the Austro-Hungarian Empire conspired to create a focus on the earlier fair format of entertainment and leisure, this exposition presented not only an opportunity for Austria to rebuild a reputation and trade connections to all the nations who would attend, but also as a mechanism to restructure a new urban centre.⁴⁸



[Fig .5] *Exposition Universelle*. Paris, France, 1900

Frequently flooded during winter storms, the low lying areas surrounding Vienna, channeled flood waters directly into the city centre. It was decided that the exposition could be an opportunity to also reconstruct a portion of the city to protect itself from nature's annual onslaught. The exposition site [Fig .7] bordered the Imperial forest and the Danube river, which (following the disasters of 1862), had been cleared by the bursting of the Danube river banks. In preparation for the exposition civil authorities effected plans to relocate the riverbed, meadows and tributaries.⁴⁹ The result was a large flat and fertile area which was flanked on either side by the city and the river. While the reforming of the river course

⁴⁶ Wesemael, *Architecture of Instruction and Delight*. 276

⁴⁷ Stamper, *The Industry Palace of the 1873 World's Fair*. 227.

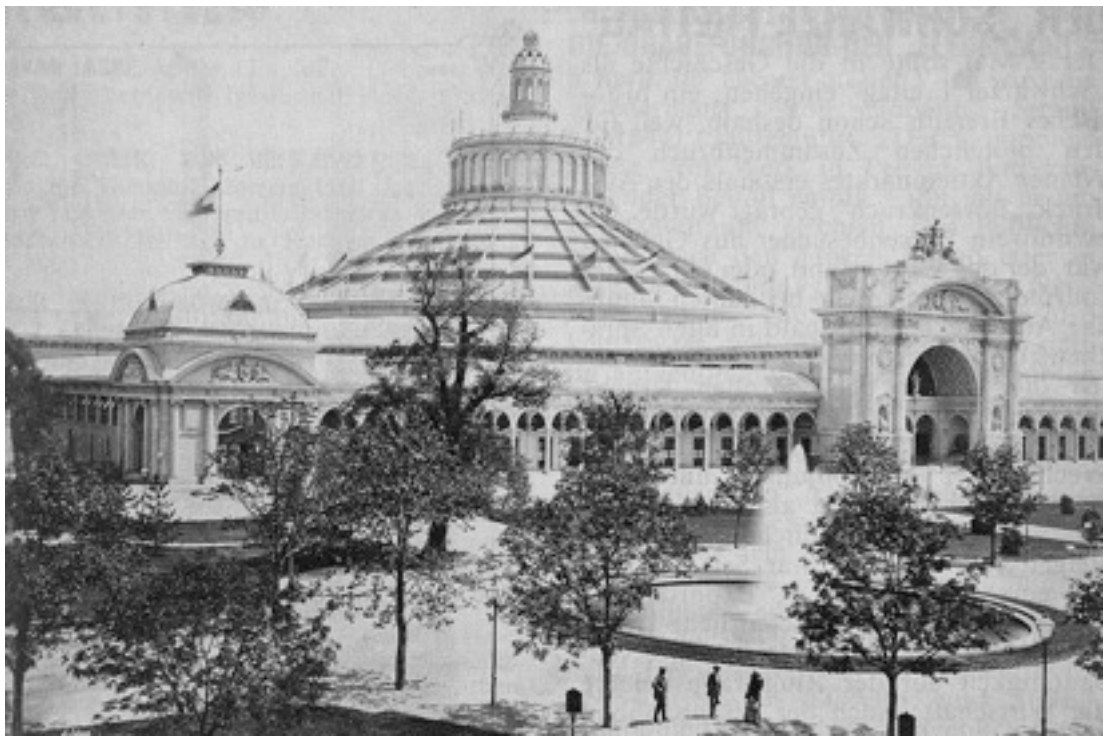
⁴⁸ Moul, *Power Parity, Preponderance, and War between Great Powers, 1816-1989*. 468-489.

⁴⁹ Rottau, *Viena 1873*. 11.

provided the city a form of solace from flooding, the advent of the exposition would prove to provide something of much greater value to the city, as noted by Nadine Rottau:

The world's fair managed to transform the Austrian capital from a rather underdeveloped medieval city into a cosmopolitan national capital. The preparations for the world's fair initiated important modernisation in the infrastructure such as bridges and public transportation.⁵⁰

While this exposition provided a chance to effect a set of tangible benefits or changes to Viennese society, the *Weltausstellung* also initiated the possibility for the construction of exhibition pavilions. This new practice allowed the Austrian authorities to test, on a smaller scale, the effects of urban planning. The *Weltausstellung* developed scaled down boulevards, gardens, piers and a civic centre. These miniature shifts were eventually imported into the Viennese urban fabric, as an identifiable Viennese architectural and urban vocabulary. Through the staging and housing of the world expositions, capital cities such as Vienna developed not only a cultural centre for the city themselves, but manufactured a cultural centre for the entire nation.



[Fig .6] *Weltausstellung*. Vienna, Austria, 1873

Bearing similarity to the Viennese exposition, the Paris expositions also presented tangible changes to the urban environment. The constructions resulting from the staging of the French expositions included: the *Gare d'Orsay*, the *Pont Alexandre III*, the *Grand Palais*, *La Ruche*, and the *Petit Palais*, all of which were constructed for the *Exposition Universelle* of 1900. In addition to this, the opening of the first line of the Paris Metro was also intended to coincide with the opening of the exposition. Although completed in just 18 months, the metro line was nevertheless slightly late, taking its first paying passengers to the *Ancien Palais du Trocadéro* site on the 19th July, while the exposition proper had opened on the 15th April. While the idea of the exposition was to present the latest developments in technology, the architectures in this situation operated in a kind of civic contradiction. In one exposition these architectures were used to present the notion of futuristic technology,

⁵⁰ Rottau, *Viena 1873*. 11.

though the solidification of these technologies through architecture was ultimately expected to be superseded by the following exposition. Such instances demonstrate a widening temporal schism, or dislocation, in the very existence of exposition architecture. The exposition evolved along a course as a mechanism to effect change, however, the buildings, networks, or alterations to the landscape acted as figurations or manifestations of past ideologies. The inverse of this is also true. Even while the physicality of the built environment remained static, public opinion and desire can also be argued to have evolved.



[Fig .7] *Weltausstellung* Topography, Vienna, Austria, 1873

{iii}The Socio-politics and cultural exchange

The expositions and the changes they effected to a site were regular mechanisms of societal reform.⁵¹ While one form of change can be evidenced through the construction of civic works, development of transportation hubs or the clearing of land, the expositions also operated as a means to communicate to the public that society was undergoing evolution, and that societal change was to be an expected constant.⁵² The expositions were a significant cultural phenomenon during the latter half of the 19th century CE, when the cultural identity of European society underwent significant change as the urban centres flourished during the industrial revolution. Colonial ties to distant lands played an important role during these times. Feeding the machines of industry, raw materials were sourced from the far reaches of the globe, and returned to Europe to be processed, manufactured and developed into goods for domestic consumption or export to other industrialised nations. Within the discourse of the exposition, however, these remote regions of the world were presented as subsidiary, or subservient to Europe. While the untamed expanses and natural resources of Africa, South America, Australasia and Asia were increasingly tapped by the industrialists of the era, the expositions began to take an interest in the people of these exotic or distant lands. Invited as guests to make an appearance on the world stage, people of all nations and ethnicities were induced to perform and display their indigenous arts, crafts and customs. They were exhibited as exotic barbarians, or objects of sheer curiosity. Zeynep Çelik notes, that people from non-European backgrounds were presented as "contemporary versions of primitive civilisations"⁵³, as if they "did not exert any influence on the general advance of humanity".⁵⁴ In contrast to this, a number of countries would be able to make the shift from being the

⁵¹ Miller, *Americanism Musically*.140.

⁵² Simons, *Brussels Fair and Science*. 26.

⁵³ Çelik, *Displaying the Orient*.72.

⁵⁴ Çelik, *Displaying the Orient*.72.

a. 徳川幕府

Tokugawa Bakufu

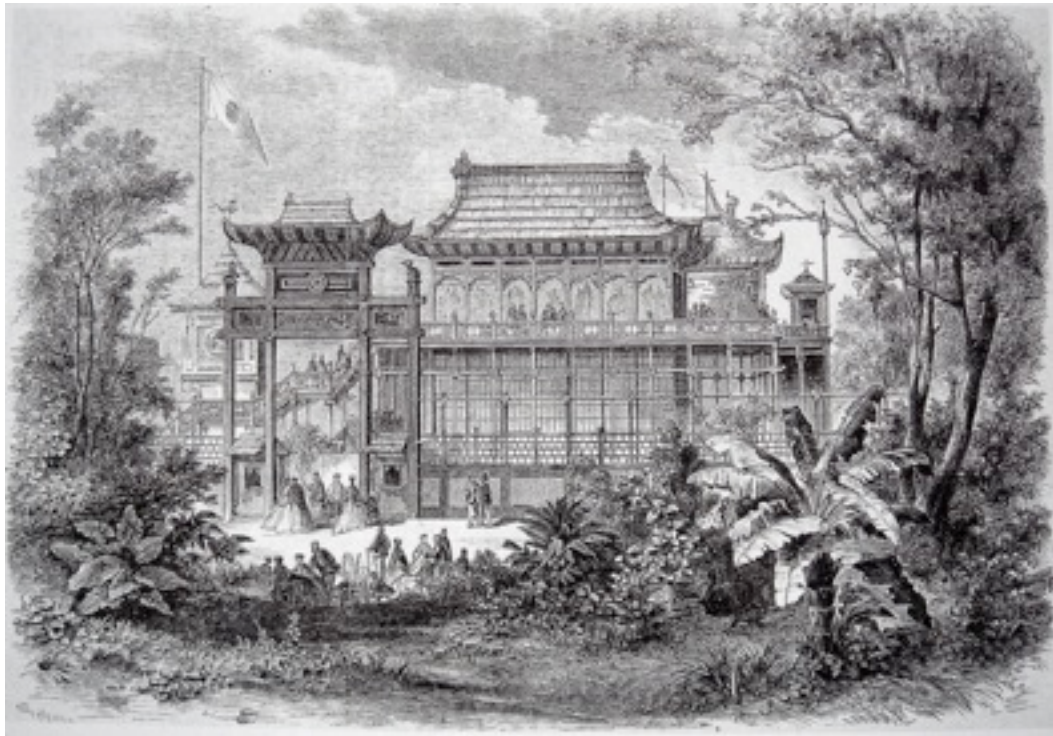
The Tokugawa shogunate ruled from Edo Castle [present day Tokyo] from 1603 until 1868, when it was abolished during the Meiji Restoration.

b. 鎖国

Sakoku

Literally "lock up of country" was the foreign relations policy of Japan under which no foreigner could enter or Japanese could leave the country on penalty of death.

exhibited, to the exhibitors.⁵⁵ This shift was made visible by the building of the Japanese Pavilion in the 1867 *Exposition Universelle*. The Japanese, who had previously been presented as ethnographic curiosities, entered the exposition with an architectural reconstruction of Japanese antiquity, and participated in the world fair on a number of levels. While they were seen as as living artefacts of the *Japonism* genre, (an art movement that was gaining popularity in the Parisian salons at the time), the Japanese Pavilion represented the beginnings of a shift in the exhibiting demographic, and a very significant change in how non-Western people perceived their position in the Western dominated community.⁵⁶



[Fig .8] *Japanese pavilion*, Exposition Universelle, Paris, France, 1867

The Japanese Pavilion [Fig .8] performed as an equal peer with the European pavilions, raising significant interest and allowing many visitors to gain their first contact with the people, customs, arts, materials and manufacturing techniques of Japan. It also provided an opportunity for the Japanese themselves to engage with non-Japanese, as under the rule of the *Tokugawa Bakufu*^a, the Japanese were prohibited to have any contact with outside nations under the *Sakoku*^b policy. The Japanese highly valued their presence at exposition, and as a result of their attendance, the Japanese government sent an official delegation of twenty envoys to purchase modern mechanical looms. This single purchase would have wide reaching effects on the Japanese economy and its position in the global market place, as in a only few short years, Japan would evolve into a global centre for silk production. Prior to the 1867 *Exposition Universelle*, Japan positioned itself as an island state without neighbours, with few connections or commonalities to anywhere else on the globe. However, the world expositions allowed Japanese industry to experience international trade competition as an entity that existed outside of colonial boundaries. Coinciding with the opening up of trade, and of Japanese society to the world in general, participation in the world expositions affected how Japanese society viewed itself as a member within the rapidly expanding global community. For Japan, the world expositions presented a very tangible entry into the Western political and financial stage.

⁵⁵ Shepp and Shepp. *Shepp's World's Fair photographed*.18.

⁵⁶ Laird and Lee. *Glimpses of the World's fair*. 7.

Chapter Two:

Social responsitivity the Osaka World Exposition 1970

a. 日本万国博覧会
*Nihon Bankoku
Hakurankai*
The Japanese world
exposition.

World expositions have been used in the West as devices for physical and social reform; through the changing of the built environment, and by the motivating of people to take up and appreciate the progression of technologies. However, the exposition examined in this chapter performed as an exception, and was presented as a device to break the flow of society, as an effort to divert or restrain a current societal unease and provide stability for the hosting nation. Backed by the government, the 1970 World Exposition or *Expo'70*, both proposed and cleared the way for future cities and regional development. Outlining the historical and political positioning of *Expo'70*, a discussion is presented that explores the idea that *Expo'70* was a means to dissolve rising social pressures that were beginning to surface in Japanese society.

{..i} Political and urban positioning; the mechanics of the Osaka World Exposition

In 1958 a section of unassuming agricultural land and a wild bamboo forest in the district of Suita was chosen as the location for the 1970 world exposition. The *Nihon Bankoku Hakurankai*^a or *Expo'70* was built on a 815 acre site, spanning 183 days, from the 15th March until 13th September. *Expo'70* was a significant deviation from the course of world expositions. Noteworthy as the first of the world expositions to be held in the East, it was also exceptional as an event that attracted an attendance of over 64 million; the largest attendance of an international exposition since their dawning more than a century and a half earlier. This attendance was also significant because more than 90 percent of these visitors were Japanese, who were both inspired and encouraged to make journeys from all quarters of the country to see what the world had to offer. High expectation was ignited within the Japanese public who were hoping to locate Japan's position in comparison to the produce, technology, culture, lifestyle and political systems that the West and the rest of the world had on display.⁵⁷ At the same time *Expo'70* was also an event where non-Japanese nations appealed to the Japanese public, corporations and government for political or economic gain. Despite the intention of the exposition to promote the theme of *Progress and Harmony for Mankind*, the two international superpowers of the time, the United States and the Soviet Union, used the exposition as a stage to showcase their global influence and way of living. Forsberg discusses the American desire for a continued presence in Japan, and more specifically, a presence within the Japanese economy:

The fragility of the U.S.-Japanese alliance throughout the fifties also had important economic consequences. American officials often worried that Japan might try to pursue an independent course in the Cold War. They looked to economic ties to bind the United States and Japan together more tightly in mutual interest.⁵⁸

Competition between American and the Soviet Union had been steadily attracting international attention during the latter half of the 1960s, the *race to the stars* and the subsequent landing on the moon were used as vehicles for political positioning. Both countries emphasised technological, and political superiority over one another through the display of achievements in aerospace technology. The Soviet pavilion boasted the first human occupation in space, while American countered this with the first lunar landing. These historic achievements, were appropriately enclosed within structures of immense scale. Both nations relied on a series of achievements appended to an architectural form as a means to draw in visitors and promote their ideals to the Japanese public.⁵⁹ Architecture existed as a major vehicle for both the organisers and producers of *Expo'70*. The theme for the American pavilion was *Images of America*, to which the Soviet Union paralleled with *Harmonious Development of the Individual under Socialism*. The competition between the two superpowers, fuelled by the ongoing Cold War, was also visualised in the location and

⁵⁷ Burton, *International Exhibitions and National Identity*. 9.

⁵⁸ Pernice, *Metabolist Movement*. 144.

⁵⁹ Forsberg, *America and the Japanese Miracle*. 49.

architectural excesses of the two nations' respective pavilions. Requesting the largest and most prominent locations on the exposition site, both countries' pavilions ventured complexity, scale or ingenuity, with an ultimate aim to demonstrate each of the countries' respective power. Nishiyama notes that:

the very notion of the exposition proposing the betterment, prosperity, and harmony for all was a contradiction of terms. To provide the public a restoration of confidence that Government or Country may indeed be able to supply society with utopian visions of progress.⁶⁰

The tension between these two countries is evidenced in a battle of architecture [Fig .9] [Fig .10]. The Soviet Union (located to the upper left) created a stoic white pinnacle to convey the might and strength of socialism as a significant political power on the world stage. This was subtly countered by the American pavilion, located on the direct opposite side of the exposition grounds. The American pavilion was created by a single inflatable membrane, and took architectural form as a sleek, undulating low profile surface, within which the exposition visitors would experience the largest single internal volume of the event. This pavilion captured the imagination of the visiting public, who eagerly looked forward to the exhibits of the first country to successfully land on the moon. Within this pavilion the moon rock was presented in such a way that it operated as a form political positioning, and appeared as verification of the superiority of capitalism and *The American Way*.⁶¹



[Fig .9] Expo '70. View North. Osaka, Japan, 1970

{.ii} Progress and harmony for mankind

The hosting of the exposition under the title: *Progress and Harmony for Mankind*, appears to provide a solution to a number of issues. However, while the titling of the exposition alludes to a number of positive and penultimate goals, it keeps its socio-political underpinnings concealed.

Japan of the 1960s was not wholly supportive of the changes that were taking place within their wider society. As if releasing a form of compression, *Expo'70* can be interpreted as a redirecting of the Japanese public conscious. A sympathetic view to the international movements of the 1960s saw Japan embroiled within an increasing unease, dividing the focus and homogeneity within society.⁶² The fast paced developing technologies, and

⁶⁰ Pernice, *Metabolist Movement*. 144.

⁶¹ Crowley and Pavitt. *Cold War Modern*. 220.

⁶² Forsberg, *America and the Japanese Miracle*. 7.

a.高度経済成長期

Kōdo keizai seichōki
The post-war
economic miracle.
1955-1973

b.四大公害病

Yondai Kōgaibyō
Four Giant pollution
Diseases

1.Minamata disease.
1932 - 1968.Mercury
poisoning

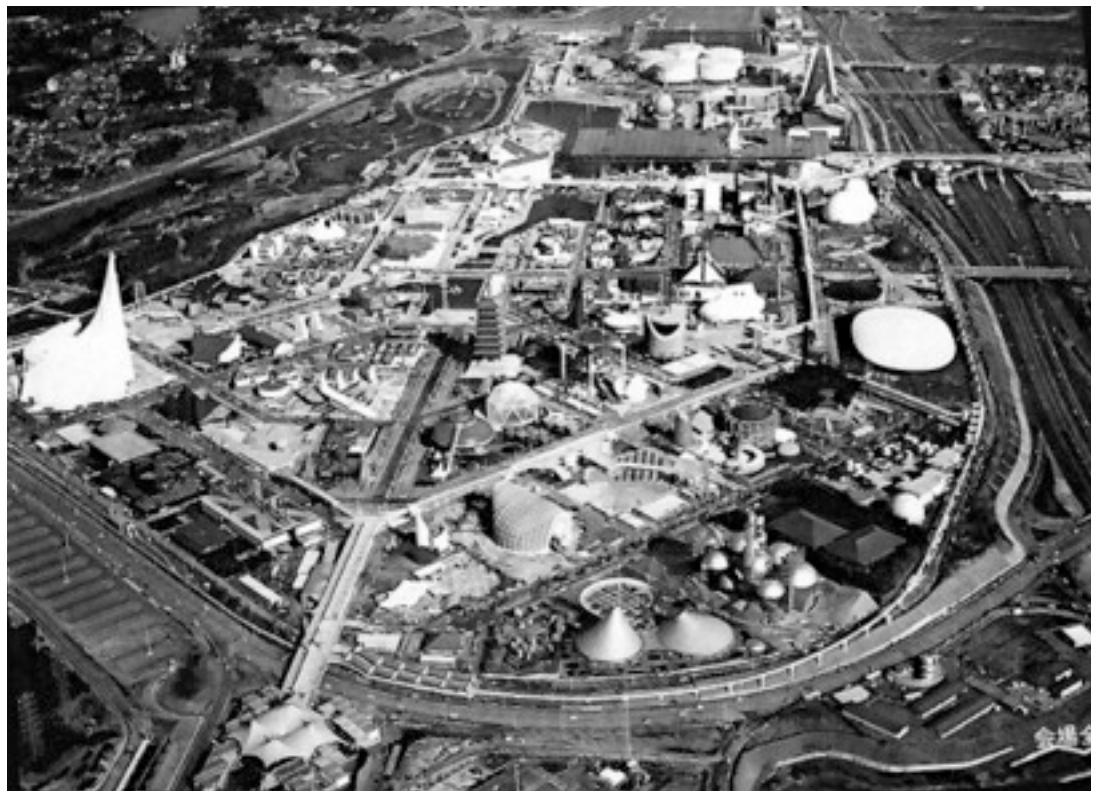
2.Niigata Minamata
disease. 1965.
Mercury poisoning

3.Yokkaichi Asthma
1961. Sulphur
dioxide and
nitrodioxide
poisoning

4.Itai-itai disease.
1910s - 1970s.
Cadmium poisoning.

c.日米安保

Nichibei anpo
Treaty of Mutual
Cooperation and
Security between the
United States and
Japan



[Fig .10] Expo'70. View East. Osaka, Japan, 1970

changes to society brought various social issues to light. Political factions voiced opinions that, while beneficial in some areas, acknowledged that the forward march of technology also brought the capacity for great destruction and disharmony. This was rooted not only in the nuclear attack on Hiroshima and Nagasaki, but also in the degradation of Japan's natural and urban environments. This instability was evidenced in the official *Expo'70* brochure by Ishizaka Taizo, director of The Japan World Exposition Association, and former president of Toshiba Corp:

Even science or technology if applied incorrectly held the possibility for the destruction of humanity itself. However, we are directly gazing at this reality today, but still we believe in the existence of knowledge to navigate society to progress and prosperity. However, if “we”(the diversity of humanity) communicate and stimulate our knowledge effectively we have the ability to usher forth the betterment and prosperity of all humankind.⁶³

During this time Japan was in a period described as *Kōdo keizai seichōki*^a.⁶⁴ Japan's new found economic strength was partially due to a positioning as the world's manufacturing hub. This came at a cost to society. Industrial pollution stemmed from proximity to heavy industry, which resulted in the *Yondai-Kōgaibyō*^b. Japan was also rocked by the student riots, protesting the conditions stipulated in the Treaty of Mutual Cooperation and Security between the United States and Japan: *Nichibei anpo*^c. The most notable for the Japanese public were events that required the use of military control on Japanese citizens, a shocking display, which was widely condemned following the signing of the treaty of peace, and the dissolution of the Japanese self defence force.⁶⁵ The clashes of the 1960s were frequent, violent, and perhaps more significantly, hugely damaging to the social harmony of the nation.⁶⁶ In effect, the nation was both gripped with a desire to change and was equally desperate for a form of solidity, permanence, or consolidation.⁶⁷ The exposition sought to

⁶³ Pernice, *Metabolist Movement*. 144.

⁶⁴ Alden, *Metropolitan Planning in Japan*. 63.

⁶⁵ Bix, *Hirohito and the Making of Modern Japan*. 280.

⁶⁶ Dower, *Embracing Defeat: Japan in the Wake of World War II*. W. W. 547.

⁶⁷ Kurlansky, *1968: The Year That Rocked the World*. 50.

place change in a positive light. The term change can be interpreted as a shift toward either the positive, or the negative. Exposition organisers, borrowing from a tradition of expositions, identified *Expo'70* as a themed event which was planned to provide a brand that would potentially bind, or even accelerate these changes that were taking place, and re-package *change* as a conscientious and forward minded notion of *progress*. The governing bodies used the exposition as an opportunity to establish a fascination with *progress*, and educate the middle classes of Japan to seek this within new products, services and technologies. Under this structure the notion of *progress* was esteemed and promoted as a means to achieve *harmony*.

{iii} Urban restructuring and the Osaka world exposition

The *Kōdo keizai seichōki* affected the inhabitants of Japan, who had seen their nation evolve greatly during the preceding decades. Multi-storey buildings, concrete motorways, and bullet trains created major shifts in the urban fabric that were taking place with increased rapidity. Responding to the social climate of the age, the organising body for *Expo'70* required all exhibiting pavilions to design and construct in response to the theme: *Progress and Harmony for Mankind*. In this framework the exposition committee effectively opened a dialogue where architecture, design and technology presented a positive rendition of progress.

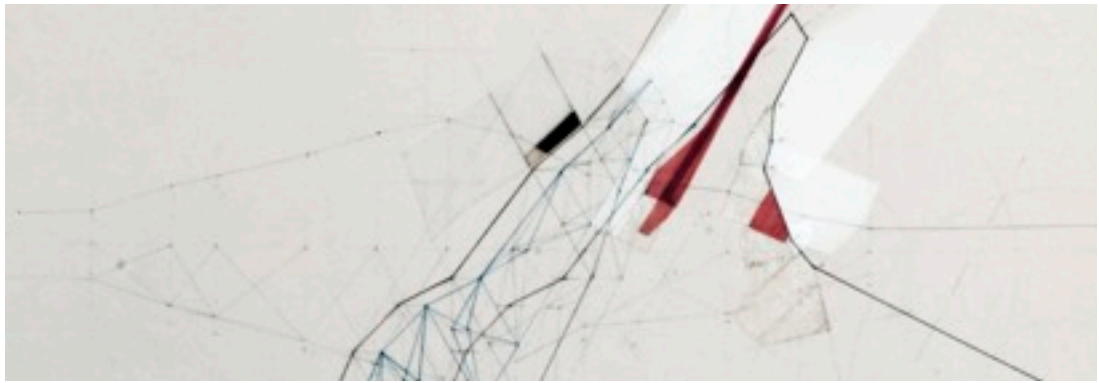
Exhibiting pavilions during *Expo'70* appeared to have spared no expense in order to build visions of powerful, prosperous and innovative corporates. At this point one could query why Japanese companies would outlay such significant capital for participation in the exposition. The answer for this is found in the fact that the exposition served as a platform for the Japanese government to re-engage with international markets. This occurred through the national sponsorship and promotion of Japanese companies to participate in the exposition. Although many Japanese companies were gaining impetus through the miraculous recovery of the 1960s, corporates who participated in *Expo'70* were given a stipend to build a pavilion, and following the exposition, they would receive numerous incentives or governmental contracts. One of the desired outcomes for the exposition, in the view of the Japanese government, was also to reform the existing district and greater Kansai region as a secondary capital for Japan. Listed among the priorities for the hosting of the exposition, was a proposed restructuring of the national population distribution. This was planned by the drawing of people into Osaka city and presenting them with a significantly different world to that of the outlying rural districts.⁶⁸ The new world the visitors to *Expo'70* would experience was awash with colour, projections, digital sound, constructed by inflation, prefabrication, an endless sea of plastics, nylon, vinylon and acetate. The plastic cities of the future proposed a world that mixed convenience, entertainment and leisure with neon lights, video telephone, rapid transport and unimagined domestic products. This proposal stepped towards the creation of a new financial and industrial centre, that was expected to yield a significant harvest for both the region and the nation as a whole. This reorganisation was envisioned as a means to re-invigorate the area, which included large areas of under utilised flat lands, that would feed into established ports. This move was part of a larger scheme, that looked at re-developing the major urban centres of Japan with a view to an overall development on a national scale.

This wide range re-structuring was partially able to take place in the wake of the vast tracks of land cleared and levelled through air bombing in the Pacific War.⁶⁹ While the infamous attacks of Hiroshima and Nagasaki are still remembered to this day, it is less well known that more than 50 centres in Japan were levelled during the battles between America and Japan.⁷⁰ Shigeto Tsuru states that “2.1 Million units were destroyed through bombing, and in addition

⁶⁸ Alden, *Metropolitan Planning in Japan*. 63.

⁶⁹ Pernice, *Metabolist Movement between Tokyo Bay Planning and Urban Utopias*. 144

⁷⁰ Tsuru, *Japan's Capitalism*. 20.



[Fig .11] Fragment of plate {..i}

550,000 units were lost through removal and demolition, creating a shortage to the amount of 4.5 million units at the end of the war”.⁷¹ Although bombing focussed on industry and ports, the real damage was located in the residential districts. The highly combustible pre-war districts formed from paper and timber, were particularly susceptible to incendiary bombing with reports stating that between 40 and 80 percent of all urban centres were effectively levelled. This blank palette would allow Japan to build on almost unhindered during the 1950s and 1960s. This was first initiated by the Americans in the period of occupation, who invested heavily in rebuilding the nation and its industry. This co-operation eventually lead to the development of a range of industrial outputs namely: camera industry, automotive industry, chemical development, a steel industry and personal electrical consumer goods. Beginning in the 1960s a period of mass production, export and trade led Japan towards the outward appearance of a very prosperous and stable nation. The extensive development that occurred during this period did not come without growing pains. Following WWII and its clearing of the urban fabric, individual land parcels were left intact, and were redeveloped according to existing boundary lines.⁷² In most instances, the redevelopment of existing planning or zoning itself was nothing unusual. However during the miracle recovery, the parcels of land the corporates were developing evidenced urban developments from up to 500 years earlier. While restructuring drastically changed the architectural fabric of the city, these shifts existed within the historically established boundaries. As Pernice notes:

In the case of Japan, technical and cultural reasons completely reshaped the cities (with few exceptions such as Kyoto), in spite of many of them kept the layout of the old urban fabric and atmosphere of the ancient districts.⁷³

Naturally such rapid development made no provision for multi-storey buildings, automotive transport, public services or heavy industry. The consequence was that the Japan of the 1950s was in places a very dense concrete jungle, and at the time it was listed as one of the most polluted countries in the developed world. As mentioned previously, this pollution peaked in the 1960s due to the high levels of energy needed for the manufacturing industry, which required coal and petroleum combustion for electricity generation. While central government was focussed on developing the industry and wealth of the nation, the 1971 revision of the Building Standard Act, had not yet occurred. This revision would make provision for the new (and potentially harmful) industries that were forming the midst of a modern Japan.⁷⁴ The divisions of residential quarters and heavy industry were not so strictly policed, leading to horrendous illnesses for residents living in the shadows of major manufacture and their inherent pollution.⁷⁵ A further hindrance came in the form of urban suffocation, where

⁷¹ Tsuru, *Japan's Capitalism*. 8.

⁷² Tsuru, *Japan's Capitalism*. 8.

⁷³ Pernice, *Metabolist Movement*. 144.

⁷⁴ Sorensen and Funck. *Living cities in Japan*. 120.

⁷⁵ Sorensen and Funck. *Living cities in Japan*. 121.

difficult redevelopment on existing land parcels was stifling industry. This was evident where corporates were forced to search for multiple adjacent land parcels over which they could build new facilities across multiple titles. These factors all compounded the need for the redevelopment of urban Japan. In response to this, Osaka and the surrounding prefectures would use *Expo'70* as a catalyst for redevelopment in the west of Japan, just as the capital city required the 1964 Tokyo Olympics to develop its surrounding prefectures and reinvent the nation's capital.⁷⁶ Under the direction of the *Comprehensive National Development Plan* the Japanese government, both central and local, developed schemes to reconstruct Osaka and the entire Kansai area of western Japan.⁷⁷ These developments were to align the industrial output of Osaka with that of Tokyo. Following the financial recovery of the 1960s, Tokyo was expanding at an exponential rate and was at risk of suffocation, or worse stagnation. The Japanese government was attempting to avoid a point where the capital city could no longer accommodate increased workers, or manufacturing. In response to this pressure, the development of Osaka was proposed as the first priority. The urban transformations planned the construction of subway lines, commuter rail, motor-way networking, monorail, and the development of public amenities such as library, schools, and universities.⁷⁸ These were all part of the greater aim of at first attracting, and then maintaining a larger work force in the guise of an increased urban population.⁷⁹

{.iv} Built fabric and social requirement

Historically Japan created its structures exclusively in timber, however, during the period of reconstruction a material shift occurred. Following WWII architectural regeneration was conducted almost exclusively with steel reinforced concrete. This shift in the built fabric occurred because Japan was a nation with few mineral deposits, save gold and silver. During the 1950s steel was an overly precious resource to be utilised within the structural systems of buildings. Additionally the demand for steel in the automotive, and heavy machinery industries raised the price for the high grade structural steel that was needed to create buildings.⁸⁰ A solution for a shortage of steel did exist, and was found within the mountainous country landscape, which is almost entirely formed of lime stone. During the period of reconstruction, limestone, reformed as poured concrete, became the prevalent building material for both public and residential buildings. While Japan's cities were engaged in this solid reconstruction, the nation could be seen as an intricate concrete construction. The ground plane datum was dissolved, and built form towered higher than ever before. Excavated below, multiple networks of underground malls were constructed, and further below still, the nation's subway networks bore even deeper. Reconstruction formed a concrete hierarchy that enclosed a series of voids connected by elevators, escalators and stairs, urban Japan was a series of enclosures weaving its way between civil services, access hatches, and foundations. Within *Expo'70* a generation of architects and designers planned a series of architectural mechanisms to resolve the compounding pressures facing society.⁸¹

Charged with designing pavilions, a group of architects made preparations to describe, through architecture, the direction and shape of a modern Japan. The resulting environment ventured through an entirely new architecture where content, form, structure, lighting, media, materials and strategies were open for reinterpretation or reconfiguration. Architects and theorists such as Tange Kenzo, Kurokawa Kisho, Kikutake Kiyonori, Kawazoe Noboru and Isozaki Arata were specifically concerned with re-building the urban environment of

⁷⁶ Curzon, *Japanese Capitals in Historical Perspective*. 310.

⁷⁷ Alden, *Metropolitan Planning in Japan*. 64.

⁷⁸ Johnson, *MITI and the Japanese Miracle*. 32.

⁷⁹ Waswo, *Farmers and Village Life in 20th Century Japan*. 101.

⁸⁰ Johnson, *MITI and the Japanese Miracle*. 129.

⁸¹ Kanabe, Noennig and Rainer. *Shaking the Foundations*. 20-24.



[Fig .12] Fragment of plate {.ii}

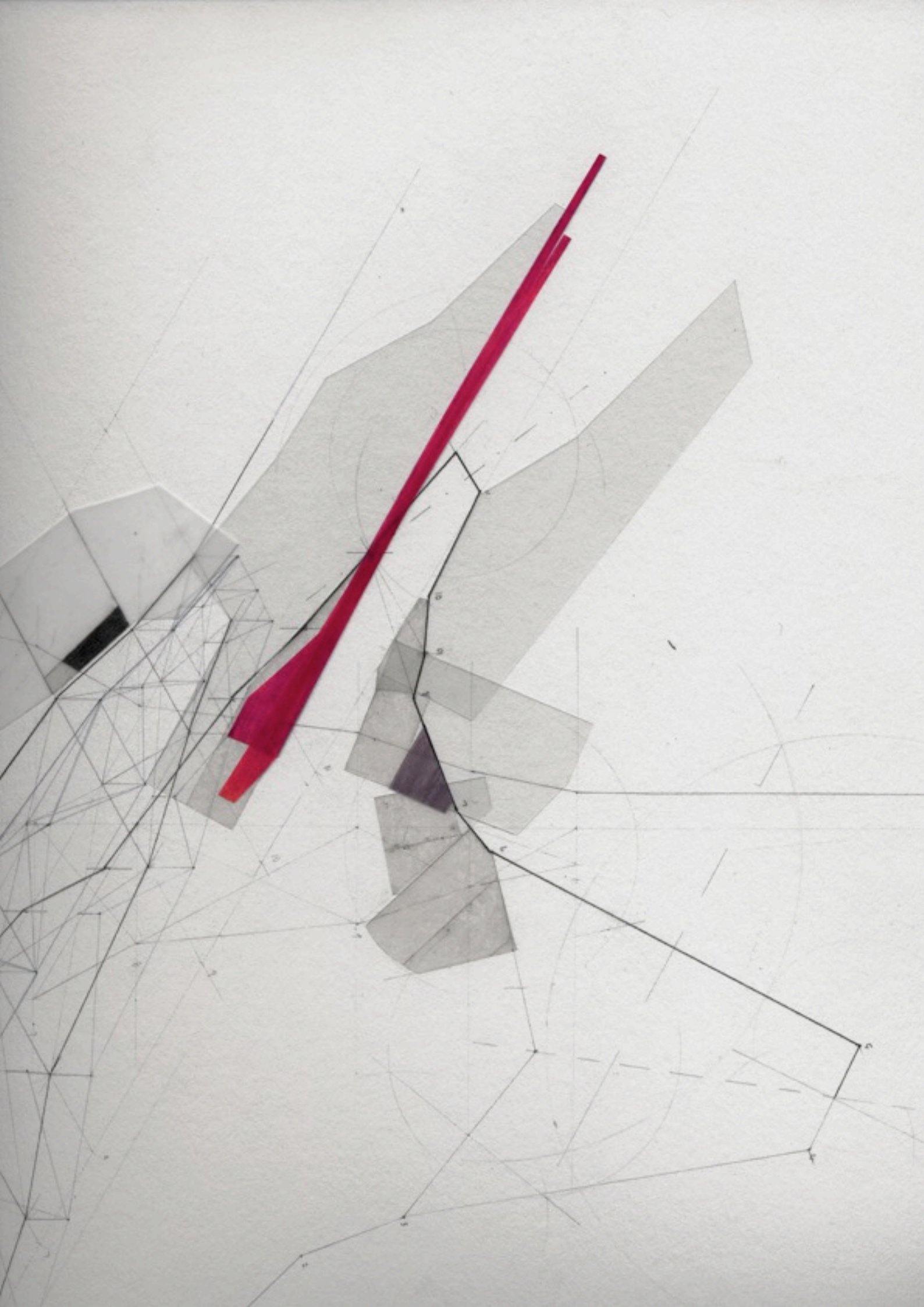
Japan, and proposed a system that could adapt to the changing needs of society.⁸² Naming themselves the Metabolist group, the collective was less concerned with individual works of architecture than with proposals to build entire ecologies of space. Drawing analogies to biological systems and the cyclical patterns of nature, their proposals paralleled processes, and explored systems that allowed for architecture to expand and contract, crossing a range of scales from entire cities through to the development of single dwellings.⁸³ The built form of *Expo'70* recruited a host of materials, mechanisms and techniques not yet explored in expositions or architecture: inflation, hydraulics and plastic were used in volumes and methods not seen before. It was however, the use, scale and conceptual positioning of fragmentable and reconfigurable spaceframes that presented a physical and philosophical viewpoint that would permeate the most significant pavilions of *Expo'70*. The spaceframe allowed for the creation of a physical system from which the group of architects could create many structures for the exposition. The spaceframe was proposed as a new kind of structure, or temporal location, from which to build from. It was a flexible system allowing for either growth or decay, a system that was responsive to societal requirements. However, despite the futuristic architectural, urban and social goals that these architects proposed, these pavilions represented a philosophical positioning that was more deeply rooted within the Japanese psyche. Despite governmental efforts, the exposition would never operate in its intended manner, and the Japanese public would not, or could not interpret the exposition as a celebration of an achievable harmony and progress.

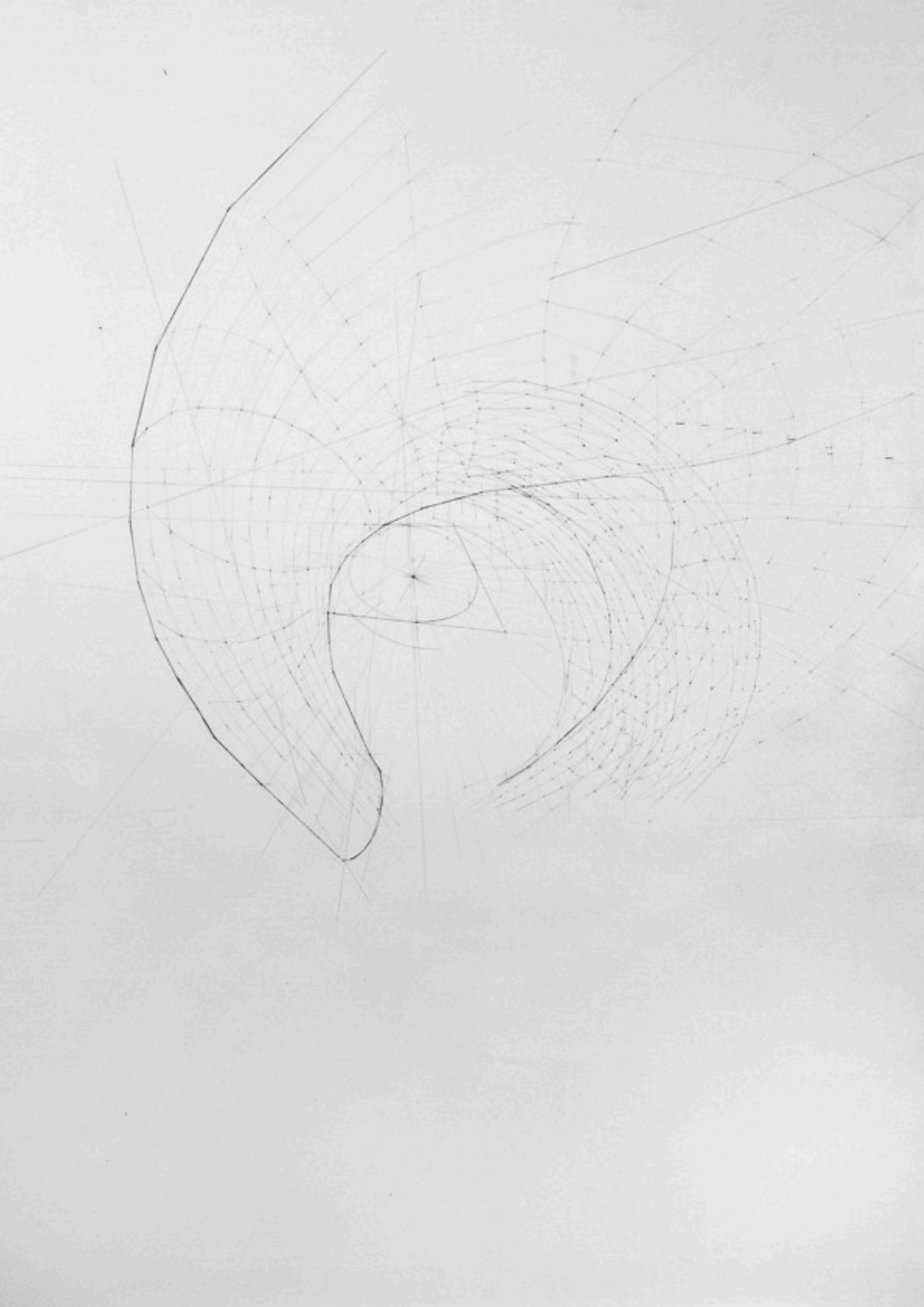
Page 26: [plate .i] Graphite on card 420mmx290mm

Page 27: [plate .ii] Graphite on board 900mmx1200mm

⁸² Kurokawa, *Intercultural Architecture*.177.

⁸³ Kikutake, *Kiyonori Kikutake: From Tradition to Utopia*. 17.





Chapter Three:

**Progress cyclical patterns; *Ise-Jingū* and
Byōdō-in.**

a.
Toshiba IHI Kan:
Kurokawa Kisho

Expo tower:
Kiyonori Kikutake

Ōyane:
Tange Kenzo

b.伊勢神宮

Ise-Jingū
Ise Shrine, Mie
Prefecture, Japan.

c. 天照大御神

*Amaterasu-
ōmikami*
The Japanese Shintō
goddess of sun.

This chapter introduces the appreciation of impermanence as an aesthetic ideal. Supplanting progress as a linear condition, the concept of impermanence proposes cyclic and concentric systems to refute the notion of progress as projected by the *Expo'70* organisation and the Japanese government. Embedded within Japanese society, these concerns are discussed within the appreciation of the passing of temporal conditions as manifested in the cyclical rebuilding of *Ise-Jingū* and spatial dissolving of *Byōdō-in*. Alex writes that:

Japanese ways of seeing, or representing what one sees as a matter of how one feels about things, are very different from the West. The quality of depth in the East is perceived by concentric rather than linear means, by patterns, vistas, or groups of vistas horizontally or vertically extended or behind each other. Infinity is not a focussed collection of distant points but exists somewhere outside of a series of concentric spheres, varying in atmosphere and content, their boundaries never very defined, their range to be taken in at one's own speed, according to one's inclination.⁸⁴

{..i} Spatial ritual and the terms of impermanence

The world expositions were hosted as a means to promote the progressive and positive advance of technology. This typically took form in the exhibition of products, machinery, and the construction of buildings, that may or may not remain as permanent fixtures to the urban fabric. This chapter proposes that the architectures of *Expo'70* would not, or could not, be interpreted as a form of progress, stemming from a series of well established cultural traits.⁸⁵ Contrasting the interpretations of Western expositions, the Japanese public were predisposed to an expectation that the built environment existed as a temporal condition. The constructions created by the Japanese architects^a of *Expo'70* contrasted the foreign national pavilions. They can be understood through certain architectural conditions that were not present within the constructions of their foreign counterparts. This chapter examines a case for a cultural specificity within Japanese architecture that operates as a vehicle of understanding change. A culturally specific appreciation for architectural regeneration or re-fabrication can be argued to exist within series of long standing traditions. Within the rebuilding of *Ise-Jingū*^b [Fig.12], the Japanese could find an appropriate metaphor for the ritualistic dismantling and rebuilding of architectural form.⁸⁶

References to an appreciation of regeneration and ritual are abundant in Japanese culture, the aesthetisation of daily cycles draws its origins from the two predominant religions of the land: *Shintō* and *Bukkyō*. Combined, these religions comprise 95% of the population, and form a unique, overlapping and interchangeable belief system. On one hand, *Shintō* presents scriptures that state that all objects, living or inanimate, possess a spirit and are revered as *Kami* or gods, as such, rain, wind, trees, and rocks are all equally venerated within this belief structure. Traditionally the Japanese were an agrarian culture, within which the *Shintō* belief placed *Amaterasu-ōmikami*^c at the top of the religious pantheon. *Amaterasu-ōmikami* could be argued to protect a number of concentric cycles, those of the daily travel of the sun across the sky, and the eternal repetition of the seasons. These two systems are inherently embedded within society as core conditions for the production of the staple diet of white rice. Reliant on the four distinct seasons of Japan: harsh snow covered winters, devastating seasonal rains in spring, a hot humid summer and an arid autumn that follows with the harvest. Additionally the seasonal cycles of change throughout the year and the consequences of typhoon, flooding, earthquake, lightening fires, and tsunami, instilled within the general populace an awe for nature and an understanding of frequent, and at times violent change. The architectural response to these conditions can be seen as *impermanent*, *weak* or *yielding*. *Shintō* responds to the flux and cause of the natural environment and venerates the use of architectural mechanisms that echoed the patterns of circulation, growth and decay. Within

⁸⁴ Alex, *Japanese Architecture*.13.

⁸⁵ Isozaki, *The Island Nation Aesthetic*.12.

⁸⁶ Sano, *Traditional Japanese Architecture and Design* 2. 78.

a. 内宮

Naikū

Inner sanctuary. The location for the housing of *Amaterasu-ōmikami*.

b. 外宮

Gekū

Outer sanctuary. The location for the housing of *Toyoyuke-ōmikami*

c. 神

Kami

Divinity, God

d. 豊受大御神

Toyoyuke-ōmikami.
Kami of agriculture and industry

e. 古事記

Kojiki

The oldest surviving record of Japan: Completed in the 7th century CE.

f. 日本書紀

Nihon Shoki

Chronicles of Japan: Dating from the 7th century CE, This volume comprises the second oldest collection of classical Japanese history.

g. 神明造

Shinmei-zukuri

Japanese architectural style for main building of shrines.

h. 式年遷宮

Shikinen-Sengū

A 20 year annual ceremony where *Ise-Jingū* will be completely recreated.

i. 持統天皇

Jitō-tennō

Empress Jitō. 645-702CE The 41st emperor of Japan



[Fig .13] *Ise-Jingū (Naiku)*. Mie, Japan

this system architectural materials could be argued to withdraw from solidity, terms such as: translucence, perforation and disintegration could be used to describe the conditions of spatiality and materiality in Japanese architecture. *Shintō* locates the shifting and transitory conditions of nature as a dynamic whole that is to be admired and appreciated, which is reiterated through architecture in the structures of *Ise-Jingū* [Fig .13].⁸⁷

Located in Ise city, Mie prefecture, *Ise-Jingū* was founded approximately 2000 years ago, and is widely regarded as one of the most significant examples in Japanese architectural history. *Ise-Jingū* is composed of 125 *Shintō* sanctuaries, the most sacred of which are, the *Naikū*^a and the *Gekū*^b. The *Naikū* is the location where *Amaterasu-ōmikami* the ancestral *Kami*^c of the Imperial House

of Japan is worshiped, and *Gekū*, where *Toyoyuke-ōmikami*^d the *Kami* of agriculture and industry is worshiped. *Ise-Jingū* exists as an architectural representation of Japanese identity, the founding of which is recalled in the nation's earliest records: the *Kojiki*^e and the *Nihon Shoki*^f.⁸⁸

The architectural style for the construction of *Ise-Jingū* is known as *Shinmei-zukuri*^g, and denotes an architectural system of building that dates to the 5th century CE. The buildings were constructed with steeply pitched gabled roofs, and high raised floors, specifying the use of simple materials: unfinished timber, reeds and bark. Incorporating both whole logs and sawn timber elements, they were constructed without nails, fixings or foundations. The permanence of this architectural presence is eroded in the performance of *Shikinen-Sengū*^h, a ceremonial process that enacts a ritual of dismantling and reconstruction of the building.⁸⁹ Composed in a manner that all materials can be reused, or absorbed in another location, the buildings of *Shinmei-zukuri* would be dismantled at a period of 20 years. This process of spatial disintegration and regeneration has proceeded without change for more than 1300 years, established by *Jitō-tennō*ⁱ the ritual aims to extract the shrine from the current temporal existence, and reinstate the enclosure as a cyclical manifestation of eternity. *Ise-Jingū* exhibits a yielding physical existence, created to permit structural and temporal dismantling, it is recreated and re-instated across the temporal timespan.

Bukkyō arrived in Japan via continental China in 6th century CE. An association with scholarly research, medicine, and mathematics placed it in favour with the aristocracy. However, the general public, who lived their lives within strict social hierarchies, sought release from the endless metaphysical cycle of suffering that was related in the writings of *Bukkyō*. Imparting a significant impact on the culture of Japan, *Bukkyō* defined a series of philosophies which presented an understanding that all things are considered to be either evolving from or dissolving into nothingness. Architecturally, this nothingness is not empty space, it is, rather, a space of potentiality.

⁸⁷ Young and Yew. *The Art of Japanese Architecture*.15.

⁸⁸ Fukagawa, and Rothman. *Sacred Mathematics: Japanese Temple Geometry*. 325.

⁸⁹ Keown and Charles. *Encyclopedia of Buddhism*. 57.

a. 間

Ma

The gap, space or pause between two elements.

b. 無

Mu

Null, void, negative or without.

c. 寝殿造

Shinden-zukuri

a style of architecture that flourished in the Heian period^d. Additionally *Shinden-zukuri* was named by Watari Sawada in the Edo Period [1603-1868].

d. 平等院

Byōdō-In

Buddhist temple in Kyoto.
Byōdō-In
Built in 998.

e. 平安時代

Heian Jidai

This period centred in Heian-kyō.
Modern day Kyoto. 794 - 1185

f. 藤原道長

Fujiwara no Michinaga

(996-1028)
The most influential member of the Japanese Heian period aristocracy.

g. 藤原頼通

Fujiwara no Yorimichi

(992-1074)
Son of Fujiwara no Michinaga.

h. 阿弥陀如来

Amida Nyorai.
The principal buddha as practiced in Eastern Asia.

The architecture of Japan exists as a concentric condition, a wavering between the solid and void, at increasing frequencies. Concentricity in spatial terms invokes the dual conditions of both *Ma*^a and of *Mu*^b. The traditions of indeterminacy or impermanence could be argued to have stemmed from this understanding as described within *Bukkyō*, its teachings, as Kurokawa states, are the key to transcending dualism, which allows for a reading of architecture that proffers a simultaneous inhabitation of both solid and void.⁹⁰ This conception informed by dualistic pressures, both natural and the manufactured, informed the Japanese populace to seek beauty in fleeting moments.

While *Shinmei-zukuri* was used in the construction of *Shintō* temples and sacred structures, *Shinden-zukuri*^c presents an alternate example of a highly ritualised means of constructing buildings. The permanence of interiority and enclosed space is both challenged and reconfigured within the building practice of *Shinden-zukuri*. A system on constructing space that has the ability of providing, simultaneously, the experience of enclosure and exposure. Outlining a series of conditions for the division and construction of space, *Shinden-zukuri* locates a shifting, and more specifically mutable means to the experience of inhabiting and traversing of space.



[Fig .14] *Byōdō-in*, Uji, Kyoto Japan.

Byōdō-in^d [Fig .14] is one of the representative structures created using *Shinden-zukuri*, first completed in the Heian Jidai^e in Uji city, Kyoto prefecture. It was first developed as a mansion for the wealthy and powerful military leader, *Fujiwara no Michinaga*^f. The structure underwent multiple iterations due to damages that occurred through wars, flooding, and fires and was eventually repurposed as a place of devotion in the 10th century CE by *Fujiwara no Yorimichi*^g to house an image of the *Amida Nyorai*^h. *Amida Bukkyō* developed out of an apocalyptic belief that the world was entering the last stage of existence. Occurring 2000 years after Buddha's death, this world and all its occupant would cease to exist, save calling upon the *Amida Nyorai*. This religious faith influenced the architecture of *Byōdō-in*, situated to a western aspect, recalling the belief in a rebirth to the Western Pure Land. When

⁹⁰ Kurokawa, *Intercultural Architecture: The Philosophy of Symbiosis*. 32.

a. 対屋

Tai no ya

Attached dwelling.

b. 透渡殿

Sukiwataridono

Outside corridor
between buildings in
Shinden Zukuri.

c. 空

Kū

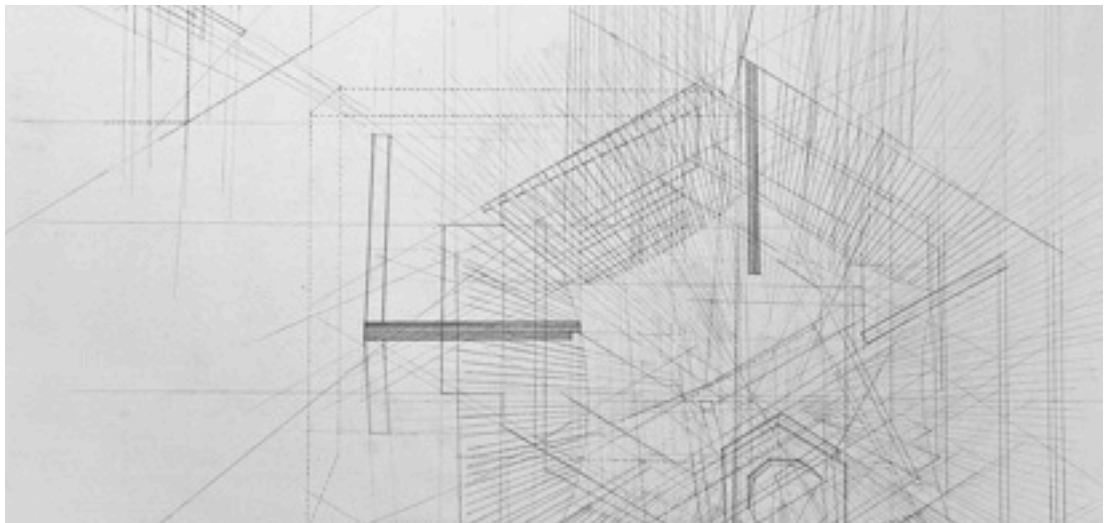
Nothingness,
emptiness, or
impermanence.

d. 無常

Mujō

The term used to
expresses the
Buddhist notion
that beings matter
and ephemera are
impermanent, and
exist within in a
constant state of
flux.

the building was fully completed all surfaces were furnished in vivid images depicting the promised land of paradise. Following the cessation of envoys to China in 7th century CE, Japan reinitiated its creation of indigenous architectural forms. During this period, a refinement of the architectural system, and development of ornamental arts flourished. The architecture of *Shinden-zukuri* as exemplified by *Byōdō-in* features a light and flowing spatiality, the gently extended eaves of the temple roof, curved, detailed and ornamental created a kinetic space that was neither constant or still. It provided occupants variation in the vertical plane, which was experienced through differentiation in floor heights, raised walk ways and lowered paths. The spatial experience is also embellished via mechanisms of perforation or the dissolving of solid elements. This condition was presented through a varied set of elements that offer both structural value to the roofs, eaves and balustrades that they support, but also an aesthetic value that is produced through an effect most comparable to a three dimensional moiré.

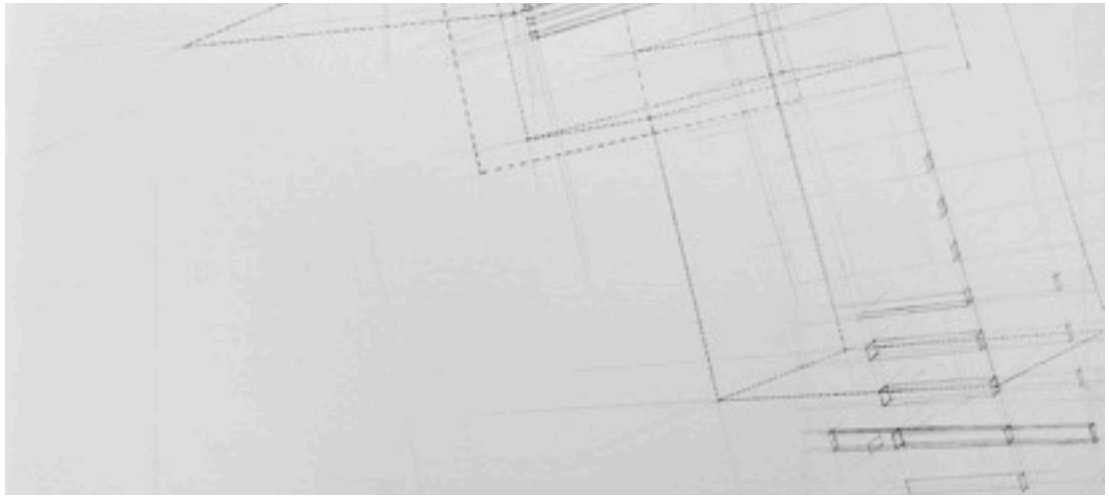


[Fig .15] Fragment of {plate iii}

Forms of shifting or perforation occur in a series of visual and spatial barriers, allowing, then denying a view as one enters and passes through the enclosed spaces of *Byōdō-in*. A ritual of drawing of the occupant about, across and around the main building is achieved through the use of *Tai no ya*^a or attached buildings [Fig .14]. The *Tai no ya* are adjoined via enclosed bridges called *Sukiwatadono*^b to connect both the main structure to the *Tai no ya*. This offers the occupant the experience of a vertical shift via the raised traverse that occurs from the connecting of the adjoining building by an arched bridge. Spatially this structure draws the occupants through and round a series of enclosed walkways, providing a series of filtered and mediated enclosures that slide, with differing volumes past one another. Upon completion of the journey an internal space is opened up, that operates to the compressing of occupancy and provides a filtered view toward both the interior and the exterior. Providing a dissolved condition of enclosure *Byōdō-in* manifests architectural concentricity, that is either evolving from or dissolving into nothingness.

{.ii} The structures of change

The fleeting nature of beauty described by *Mono no aware* derives from the three states of existence within *Bukkyō* philosophy: unsatisfactoriness, impersonality, and most significant in this context, and the case of the architects of *Expo'70*: impermanence. The appreciation of impermanence can be found deeply ingrained within the Japanese national psyche. The term *Kū*^c describes the notion that nothing found in the physical world or even the psychological realm can bring lasting satisfaction. *Kū* is used to describe the condition that all phenomena are without a permanent self and that any and all conditions will pass. Conversely *Mujō*^d



[Fig .16] Fragment of {plate .iv}

a. 桜

Sakura

Cherry blossoms.

b. 物の哀れ

Mono no aware

Lit: An awareness to ephemera. With particular reference to the fleeting, delicate or short lived.

c. 江戸

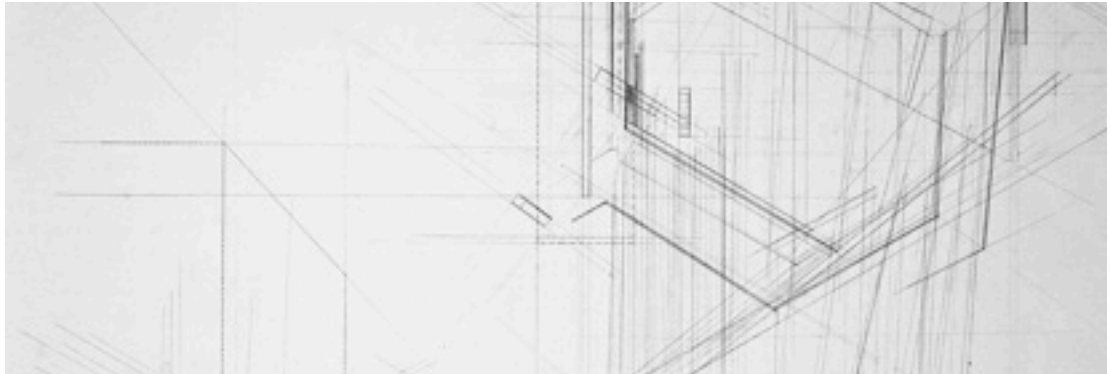
Edo

Modern day Tokyo.

depicts an interpretation that all matter is in a constant state of flux, and can be transcribed as change or impermanence. *Mujō* is based upon the philosophical interpretation that within the physical world, there is nothing that ultimately ceases to exist. These concerns are readily found in the national appreciation of the *Sakura*^a. This is a flower which is neither white, nor pink, but rather an indefinite blending of the two, which evolves tonally as the petal matures. Furthermore, the delicacy of these blooms, from which the petals (easily blown from the stem) result in the creation of a spiralling squall of colour. These philosophies state that it is only the appearance of an element that ceases as it changes from one form to another. This relates to *Bukkyō* interpretation that describes the physical cycle of when the petal falls to the ground and decomposes. This verse notes that while the appearance and relative existence of the petal ceases, the matter that formed the petal becomes a material that may be reabsorbed and take a new form. This idea is best described as an appreciation of the transience of objects or materials. The very moment of change is rendered within *Mujō*, as the very pinnacle of aesthetic appeal. *Mono no aware*^b describes an aesthetic system that identifies the impermanence of all things, within which *Mujō* is a system that appreciates the aesthetic condition of change or transformation. The combination of these systems would render the works of nature as both culturally significant, and symbiotic to the works of society. With the exception of Kyoto and Kanazawa, most Japanese cities were destroyed during WWII. Unlike Western cities, which, when destroyed, their bricks and stones remained as proof of their past existence. Japan's cities were mostly built of wood and natural elements, and so, they burnt to ashes and disappeared completely. Additionally, both *Edo*^c and Kyoto were almost entirely destroyed during several battles of the Warring States period in the 15th and 16th centuries CE. On the same note, Japan's cities have almost yearly been hit with natural disasters such as earthquakes, typhoons, floods and volcanic eruptions. Over the past millennium this continuous destruction of buildings and cities has given, in Kurokawa's opinion, the Japanese population, "an uncertainty about existence, a lack of faith in the visible, and a suspicion of the eternal."⁹¹ Both architectural space and the language used to describe it, developed along the course to the pursuit of impermanence, influenced and propelled by the ebb and flow of society's aesthetic appreciations. The cultural investment in impermanence was readily reinforced in Japan's architectural past, this required the creation of distinct architectural vocabularies to ascribe to, and permit certain conditions that would hold significance within the greater cultural framework. Evidenced by *Ise-Jingū*, Japanese society had arrived at the composition of an architectural system that acted as a metaphysical representation of national beliefs. The ritualised creation, demolition and re-creation of *Ise-Jingū* referred to cycles of birth and decay, mirroring the natural and environmental conditions that were celebrated by *Shintō*. In this reading, buildings avoid typical interpretations of existence. Reserved specifically for use in temples or sacred buildings, *Shinmei-zukuri* proves the existence of an architectural system that refers to the intangible. *Ise-Jingū* represents a physical reordering that occurs at predetermined intervals, allowing

⁹¹ Kurokawa, *Intercultural Architecture: The Philosophy of Symbiosis*. 32.

for an interpretation of a *weak* or *yielding* building type that retreats from the permanence and stability of Western architecture. Within which the operations of *Ise-Jingū* yields, and succumbs to a dissolving of its physicality, continually new, continually ancient, evolving across a cyclical process.



[Fig .17] Fragment of {plate iii}

The temporality and impermanence of Japan's urban history has instilled within its public a fondness for the passing, and changing of their physical surrounds. Structure or built form undertakes many guises in the history of Japanese architecture, which can almost always be viewed as the operation of a temporal entity. The nation's two religious systems support this interpretation, where *Shintō* celebrates the passing of all existence within a larger circulatory system, *Bukkyō* renders all existences as impermanent. This bears a significant link to the organisers of *Expo'70*, who sought to promote progress as a linear goal that was simply not possible in a land that viewed change through a an appreciation of cyclical ephemera. The relation and exchange of these two predominant religious systems would continually inform society, culture, and the production of arts from the 6th centuries CE onward. While *Shintō* formed the foundation of ancient Japan, its emphasis on the wholeness of nature, partially set the tone for Japanese aesthetics. Nevertheless, Japanese aesthetic ideals are also heavily influenced by *Bukkyō* which architecturally sets out a temporal path of kaleidoscopic space that enfolds a shifting a sequence of void, solid structure and space.



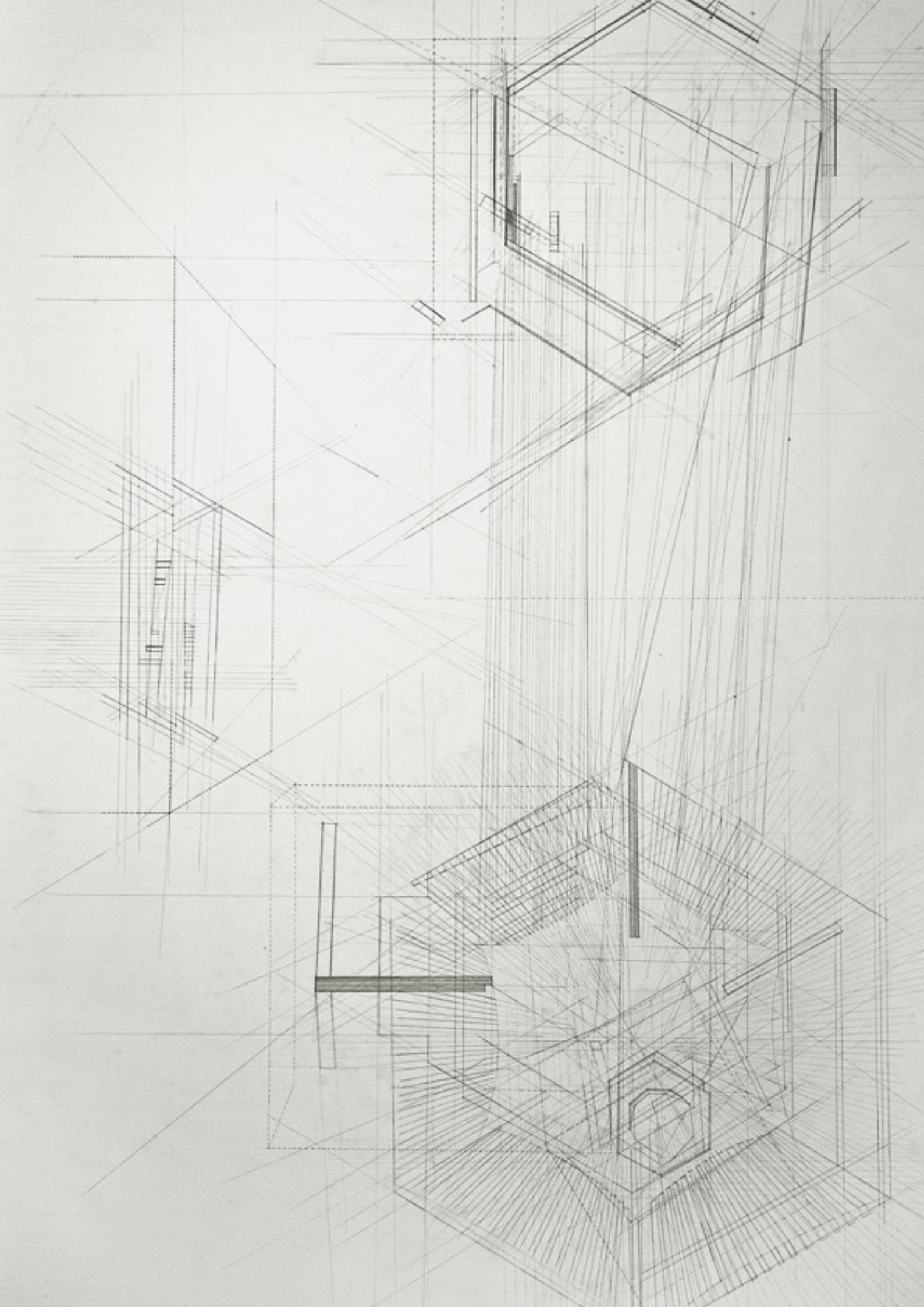
[Fig .18] Fragment of {plate ..v}

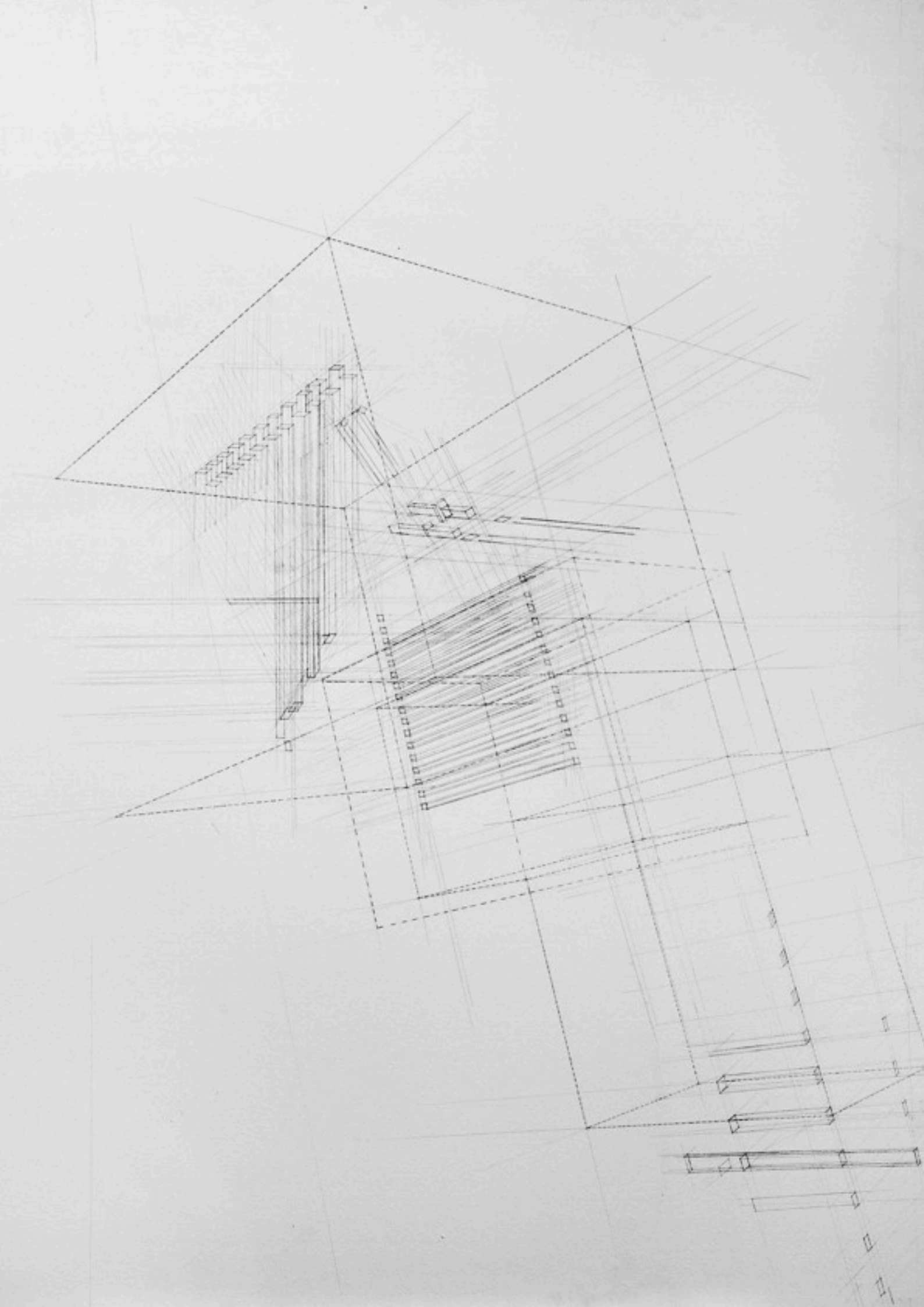
This symbiosis would play an important role in the development of the architecture at *Expo'70*. While historically expositions have promoted technological advance and linear notions of progress, the Metabolist group extended a set of national cultural traits, looking into the nation's past and used them to develop a series of architectural conditions that explored an architecture that would succumb to the aesthetic concerns of decay, temporality, and impermanence.

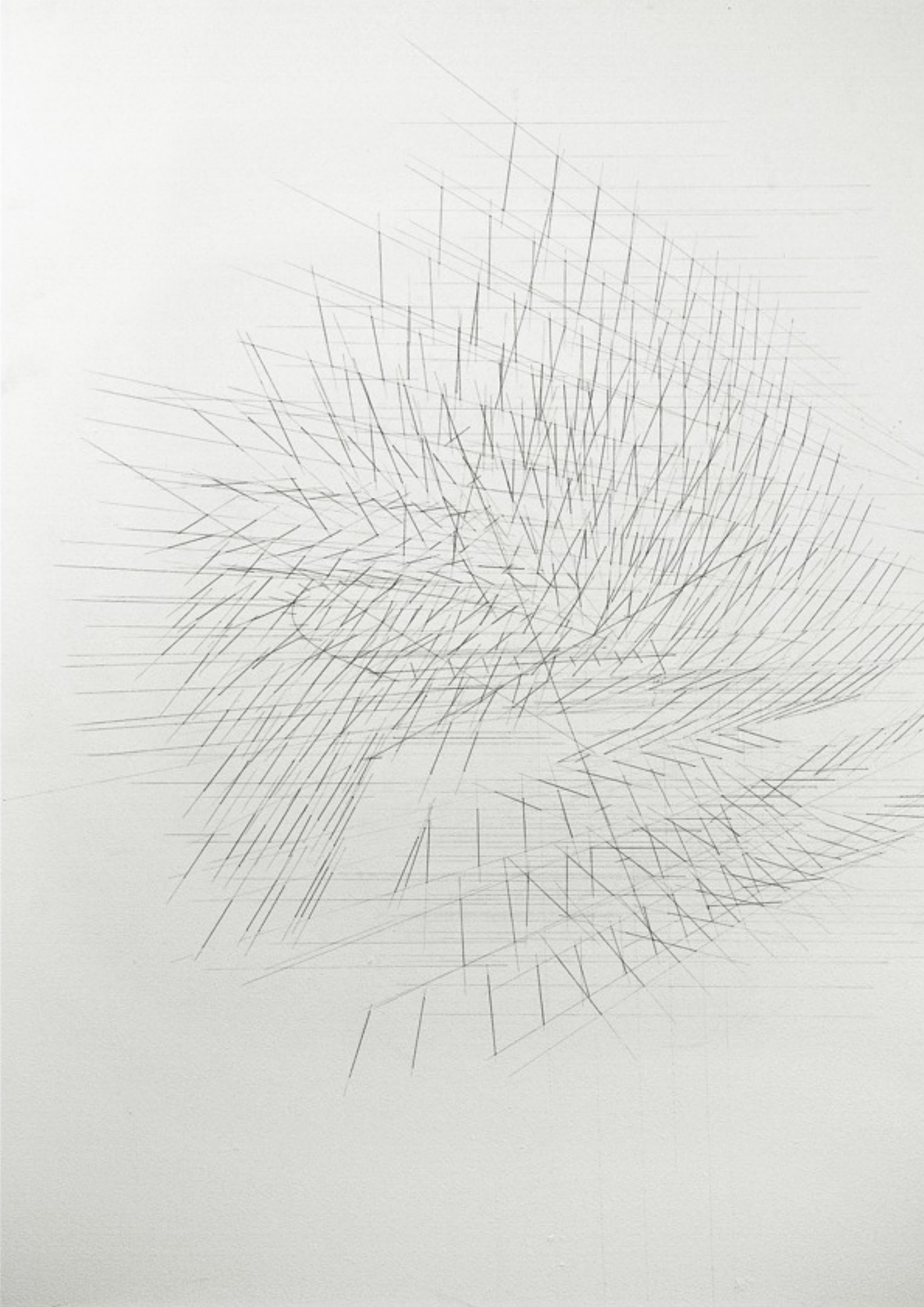
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Page 36 : [plate .iv] Graphite on board 900mmx1200mm

Page 37 : [plate ..v] Graphite on board 900mmx1200mm







Chapter Four:
**Temporal fragmentation, and cultural
regeneration.**

During the period following the Pacific War, Japan exhibited the signs of social unrest. The government, wary of the potential for escalation, attempted to resolve the situation through a realignment of society through the promotion of a new social ideal: *Progress*. An attempt at supplying a form of release, *Expo'70* set to promote the idea of progress to the Japanese public as a means to calm the nation and achieve a form of *Harmony*. Heralded as a positive shift for the nation, the exposition, under the direction of the government, attempted to force and promote a linear form of progress on society. This was to be enacted under the cloak of a celebration that positioned *Expo'70* as the means by which to deploy these ideals to the nation. However, as argued in the previous chapter, the appreciation of temporary or cyclical qualities would generate an interpretation not for advancement or progress but for regeneration and renegotiation of existent cultural structures.



[Fig .19] Okamoto, Taro. *Taiyō no Tō*, Osaka, Japan, 1970

{..i} Expo'70 and the fabric of transition

Removed from the production of the public spectacle *Expo'70* was intended as a response to the contemporary social pressures faced by Japan, and hosted as a means to equate change within society as positive and harmonious progress for the nation. The constructions within the 1970 world exposition were inclusions to an event that aimed to ignite within society a desire for evolution. Marking a response to this condition of evolution, *Expo'70* was a venue that not only provided a forum for experimentation in architecture, but also an experimentation engaging for how society would accept imposed change. As discussed earlier, the exposition organisers made use of the term *progress* to ensure the interpretations or assumptions of change was a positive or attractive addition to society and the wider urban fabric.⁹² Additionally the physicality of the event also adhered to the same set of desires, the desire to effect a positive rendering on transformations that were unfolding within the nation. Tange attempted to visualise and pacify the nation by using the metaphor of growth. By the mid 1960s the Japanese were already well accustomed to change or transformation of their physical surrounds as evidenced by the shift seen within the lifetime of the expositions visitors.⁹³ The shifts that occurred in the 70 years since 1900 were nothing short of a complete reconstruction of the Japanese social psyche.⁹⁴ The organisers of the exposition focussed on the creation of the future in a bid to resolve and reform the nation through a

⁹² Francks, *Rural Economic Development in Japan*. 3.

⁹³ Hein, *Fires, Earthquakes, Modernization and Air Strikes*. 63.

⁹⁴ Winther-Tamaki, *Oil Painting in Postsurrender Japan*. 348.

a. 縄文時代

Jōmon Jidai

14,000-300 BCE.

The naming of which refers to the clay vessels and figures created during this period.

b. 縄文土器

Jōmon

cord-patterned.

Doki

refers to pottery or ceramic.

promotion of advancing technology. Changes to the urban fabric were hoped to operate and redirect the present focus of society through a construction and hosting of an event that would appeal to the nations citizens.⁹⁵ However, *Expo'70* incubated a conceptual ideology that prioritised a vastly different set of values to that of the overall organisation. This included an appreciation of the cyclical, transitory and shifting qualities that would be communicated through architecture.



[Fig .20] Okamoto, Taro. *Taiyō no Tō*. [Rear face]. Osaka, Japan, 2009

Presenting a piercing gaze deep within the Japanese psyche, artist Okamoto Taro held a key position in the creation of *Expo'70*, charged with the creation of the exposition's core he designed an object that would sit located in the very centre of the exposition [Fig .19]. Peering across the major axis, and spreading a pointed pair of arms out towards the major thoroughfares, *Taiyō no Tō* [Fig .19] [Fig .20] appeared to almost grasp at every single visitor. Okamoto's creation was to exhibit both significant physical and conceptual existence on the site. In this work he aimed to reconnect the Japanese populace to their historical origins. These ideas were communicated through a structure that Okamoto described as being in a permanent flux of change. *Jōmon Jidai*^a ceramic constructions, or *Jōmon Doki*^b from the nation's earliest origins, presented a highly developed sense of space, and further, the creative works from the *Jōmon Jidai* attempted to present a fourth dimensional dialogue, through the construction of physical artefacts. Miki stated that "Okamoto presents this structure as a point within the greater matrix of time".⁹⁶ Okamoto was commissioned to create a piece for the *Omatsuri Hiroba* located on the prime axis of entry which centred within Tange Kenzo's Big Roof. The result of Okamoto's creation was the *Taiyō no Tō* or Tower of the Sun. Okamoto created a structure which became, for many visitors, the symbol of the exposition. A colossus figure that dwarfed all surrounding structures, it was 70 metres in height and had arms that reached out 45 metres. Okamoto's tower was set to physically enclose the entire exposition. In addition to its unconventional form, *Taiyō no Tō* ventured a complex temporal and spatial figure. Norman Carver has identified the relationship between Japanese space and inhabitation as linked to the perpetual change that occurs across a given timescale. He notes that "space was the universal medium through which life moved in

⁹⁵ Pernice, *Metabolist Movement between Tokyo Bay Planning and Urban Utopias*. 120.

⁹⁶ Miki, *10+1 EXPO in Perspective*. 84.

a. 大屋根

Ōyane
Big Roof.

b. お祭り広場

Omatsuri Hiroba
Space for
celebration.

constant transformation, in which place and time were relative states”.⁹⁷ These relative states are alluded to in *Taiyō no Tō*. The tower presents to the exposition three individual faces, two faces on the front, and a single face to the back. The face located at the top of the figure, presents a searching view across the entire exposition. Representing the future, Xenon Arc lamps in the eyes presented an unrelenting and unblinking focus towards mechanisation and modernisation. A face between two arms represented the present, and a grimacing ashen face to the rear of the tower effects the sun of the past. *Taiyō no Tō* maintained (and still does as the only structure remaining on the *Expo’70* grounds) a key position as the symbol of *Expo’70*. It operated as a bridging mechanism binding the past, present and future. In contrast to the exposition’s presentation of a linear path toward the future, Okamoto’s tower explored a cyclical or temporal structural view combined with a reference to Japan’s ancient past. Okamoto’s creation acted on the site as a means to conceptually ground and bind the unknown and uncertain future to an ancient past. Both familiar and deeply ingrained in the Japanese public, Okamoto’s tower presented a structure that included a reference to the past in the *Jōmon doki*, but combined it with a reference to the future. Internally Okamoto created an inhabitable space and filled it with references to Japanese folklore. Embedding the latest advances in the form of lights and projections he prepared a condensed inhabitable model of the nation’s temporal existence. This continual referencing to past, present and future was not limited to Okamoto’s tower, the architecture of the Japanese pavilions operated in a similar manner.⁹⁸

Stemming from the two major religious factions of *Bukkyō* and *Shintō*, Japanese society had a deep set and ancient respect for nature and the natural cycles of the year.⁹⁹ Japan was a largely agrarian culture which an ingrained observance to both the sun, rain and the seasonal cycles allowed for the wetland cultivation of rice. Rice is both the national staple food source and an object of religious reverence. Many of the occupants of *Expo’70* had seen their nation evolve from a mono-cultural, and a politically isolated island, to a nation embroiled in an international war resulting in near total devastation. Following this was the increasingly rapid re-urbanisation of an American occupied Japan. Rural areas were replaced with cities, and heavy industry quickly replaced agriculture as the major domestic product.¹⁰⁰ This overlap between progress and industrialisation (as a modern societal goal), contrasting a traditional appreciation of the natural, is reflected the master planning of the *Expo’70* grounds [Fig. 21].¹⁰¹ Authored by Kenzo Tange, the master-plan was conceptualised around a main trunk and extending branches by which visitors, the lifeblood of the exposition, could traverse the event. On the opposing vertical axis Tange added to this conceptualisation of growth, appending the pavilions that were supposed to represent promising buds of new growth, or, as the exposition organisers aimed for, locations to celebrate the increasing industrial ability of Japan.

Hovering above the hub of the entire exposition, Tange authored the construction of transparent ceiling to the event. The construction of *Ōyane*^a [Fig. 23] existed as a significant entity within the exposition. The immense scale and paring back of the physical mass of the structure created an openness and focus to the kinetic events that would unfold below. Forming the upper spatial perimeter to the exposition, *Ōyane* enclosed the *Omatsuri Hiroba* which was a location for the performances of light and sound. In contrast to the celebration of increasing industrial ability and modernisation, *Omatsuri Hiroba* bore a link back to a system of events that would resonate within many of the citizens of the hosting nation. It could be argued that *Omatsuri Hiroba*^b supports a set of traditions that were long established within the *Shintō* belief. Historically, Japan was known to its neighbours as *Ya o yorozu no*

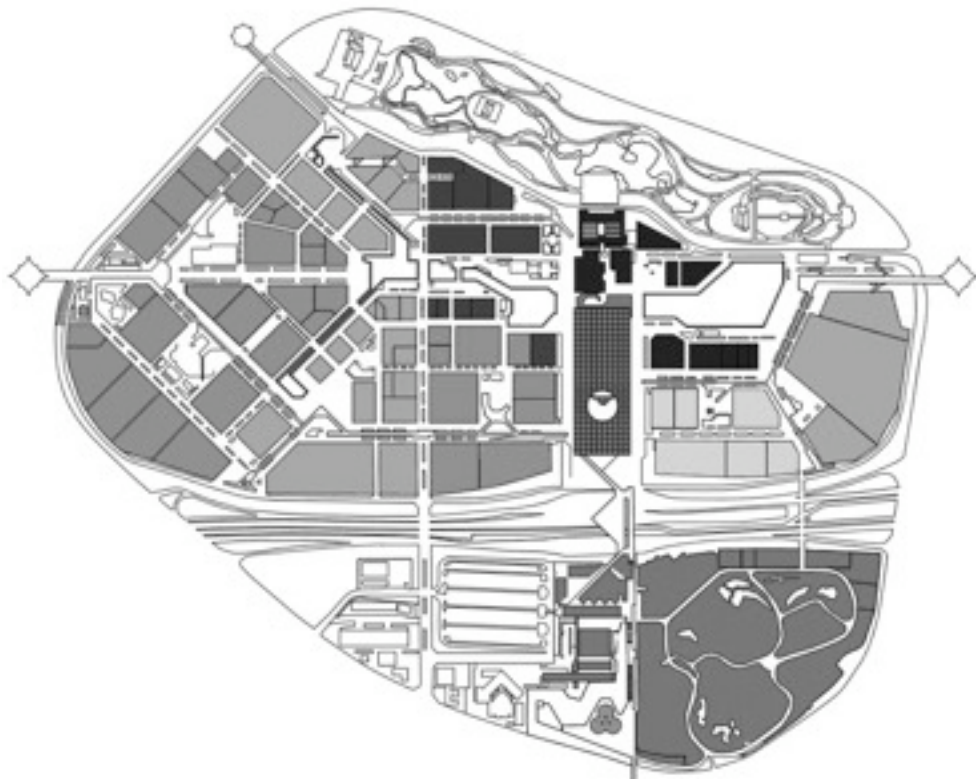
⁹⁷ Carver, *Form and Space of Japanese Architecture*. 130.

⁹⁸ Pernice, *Metabolist Movement between Tokyo Bay Planning and Urban Utopias*. 49.

⁹⁹ Reynolds, *Ise Shrine and a Modernist Construction of Japanese Tradition*. 316.

¹⁰⁰ Hein, *Urban Reconstruction in Britain and Japan, 1945-1955*. 348.

¹⁰¹ Hein, *Cities, Autonomy, and Decentralization in Japan*. 4.



[Fig. 21] Expo '70, Site plan. Osaka, Japan, 1970

a. 八百万神

Ya o yorozu no Kami

The land of eight million Deity, gods or sacred beings.

b. 祭り

Matsuri.

Festival.

c. 神輿

Mikoshi.

Portable shrine.

Kami^a. This implied that the nation was the 'land of infinite divinities'.¹⁰² These abounding divinities, while forming the spiritual core of the nation, also evolved into a code of societal actions that would be undertaken, or at least understood, by every member of society. These were enacted through the performance of a series of rites, which may take modest form in the offering of rice, or a glass of spring water. However, in many cases these rites could be both initiated, and concluded with a sacred festival or *Matsuri*^b.¹⁰³ *Matsuri* occur almost perpetually across the breadth of Japan, and each locale has a range of deities to appreciate or placate. Each and every region will, without fail, have at least one *Matsuri* in late summer or early autumn dedicated to the growth, production and harvest of rice.¹⁰⁴ The most notable *Matsuri* feature city-engulfing processions which typically include thousands of participants carrying *Mikoshi*^c, a form of portable shrine, within which a local deity or *Kami* may be ritually carried to traverse the district to either purify or bring good fortune.¹⁰⁵ Centred over the two major axes of the exposition, the translucent shell of Tange's *Ōyane* floated, lightly embracing the events below in a structure that did not specifically set to enclose. Placed to emphasise all activities that occurred on the *Omatsuri Hiroba*, Tange's high tech cloud of lights, smoke machines, and audio devices was an invitation to the Japanese populace to celebrate and pay observance under the guise of a festival format. This was a format that could arguably be seen to have been established and ingrained within the Japanese public for millennia before the advent of *Expo '70*.¹⁰⁶

The Japanese government and the organisation charged with the execution of the exposition, focused on the initiation of change within the social fabric as a way to bring about the desired projection of a restructured and harmonious modern Japan. Politicians attempted to use *Expo '70* as a mechanism to effect change and progress under the guise that a united Japan was heading toward the future, in an age of as yet unfound freedom, prosperity and stability. Conversely, as discussed earlier, a positive outlook to change was already intertwined within Japanese society. The celebration and appreciation of the transitory or

¹⁰² Morris-Suzuki, *The Invention and Reinvention of "Japanese Culture"*. 770.

¹⁰³ Itoh and Futagwa, *The Roots of Japanese Architecture*. 137.

¹⁰⁴ Dresser, *Japan - It's Architecture, Art And Art Manufactures*. 116.

¹⁰⁵ Alex, *Japanese Architecture*. 103.

¹⁰⁶ Metevelis, *The Deity and Wind of Ise*. 24.

a. メタボリスト

The Metabolist group

A group of architects, designers, critics and academics:

Kurokawa Kisho
Kiyonori Kikutake
Tange Kenzo
Kawazoe Noboru
Fumihiko Maki
Masato Otaka
Isozaki Arata

b. 浮世絵

Ukiyoe

Style of wood block prints produce between 17th-20th century CE.

c. 戦国時代

Sengoku Jidai

(1467 - 1568)

A period of Japanese history punctuated by great political and social unrest.

d. 武士

Bushi

Warrior or soldier.

shifting conditions was an established trait in Japan's cultural makeup.¹⁰⁷ Seeking aesthetic affirmation in the conditions of impermanence, or change, which can be seen in the manufacture and interpretation of the built environment. Traditionally Japanese buildings were constructed to view and experience seasonal changes in light, temperature, or foliage. Buildings were often constructed of unfinished natural materials. Earth, stone, wood and iron were left to age, and eventually decay in the weather. The built environment in this rendering is much closer to the weakness or impermanence of existence and draws closer connections to the seasonal cycles of the nation's mountainsides and valleys, than the increased sophistication of technology and manufacturing. The creative divisions of *Expo'70*, such as the Metabolist group^a, tied into these cultural traits, and used them to develop a series of architectural conditions at the exposition.



[Fig .22] Fragment of {plate .vi}

{.ii} Ukiyo in the construction of social structure

Early Japanese society was affected by the aesthetic systems put in place through the development of *Mono no Aware* and *Mujō*. Creative practice during these ages looked toward nature and the changes it effected through the seasons. The arts and crafts during this period sought to replicate nature as a means to imply the impermanence that was then the aesthetic ideal. Ceramics shifted toward unglazed finishes, such as *Bizen-yaki*, recalling natural materials such as clay, stone or timber. *Sumie* or ink drawing enjoyed an increasing popularity; its ability to communicate delicacy through the layering of smoky hues was praised for its depiction of dream like scenes. However, while these art forms looked towards nature, in either replication or inspiration, a singular aesthetic ideal evolved a focus on depicting a temporal and shifting *urban* environment.

Appreciation of impermanence wavered through many aspects of early Japanese society. This condition was most visibly represented within the pictorial art of the *Ukiyoe*^b. The *Ukiyoe*, or scenes from the floating world, presented works from within the melee of everyday life. Scenes were composed of relatively shallow depth of field and rendered lightly in soft colours. The *Ukiyoe* compressed both time and space and made visible an imagined location somewhere between the reality of everyday life, historical Japan, and a space of gods, demons, and divine beings.¹⁰⁸ The warring ages period *Sengokujidai*^c, directed societal behaviour through a strict hierarchical class system.¹⁰⁹ However, within the *Ukiyoe*, the division and structure of Japanese society wavered for a moment. Located at the apex of this system were the *Bushi*^d, or the military class, within which the rigid code of *Bushido* operated as the guiding rule, promoting the glory of battle, and celebrating the

¹⁰⁷ Pernice, *Metabolist Movement between Tokyo Bay Planning and Urban Utopias*. 101.

¹⁰⁸ Baird, *Symbols of Japan*.322.

¹⁰⁹ Juniper, *Wabi Sabi*.64.

a. 天皇

Tennō

Heavenly emperor.
The head of the
Japanese Imperial
Family.

b. 農人

Nōmin

Farms person.

c. 工人

Kyonin

Craft person.

d. 商人

Shomin

Merchant person.

e. 士農工商

Shinōkōshō

Aristocracy,
Farmers, artisans,
and finally
merchants. This was
the ruling class
system of ancient
China. Confucian
thinking influenced
early Japanese
politics and the
structure of society
in general.



[Fig. 23] Tange, Kenzo; Et al. *Ōyane (Big Roof)*. Osaka, Japan, 1970

impermanence of all things.¹¹⁰ *Bushido* was the aesthetic system for the wealthy, educated or for those who held political power.¹¹¹ According to the vertical class structure of Japan, *Tennō*^a, or the Imperial family, was located at the top, closely followed by the military or *Bushi*.¹¹² Following this, land owners, in particular *Nōmin*^b or farmers, occupied the next tier of society. This could be partially attributed to the limited area of arable land within Japan's mountainous shores, but also aligned to a respect for the producers of the nation's food stocks. The *Nōmin* were followed by *Kōnin*^c, or artisans, who were equally viewed as producers of goods, such as fabric, ceramic, and tools. Occupying the lowest tier of society were the *Shōnin*^d, or merchants, who were defined by the Confucian philosophy *Shinōkōshō*^e as simply a group who distributed the goods of either the *Nōmin* or *Kōmin*. Within these tiers it is notable that the military class occupied only ten percent, and that the last tier of society, the merchants was the largest.¹¹³

Being of low position within the feudal class structure did have its benefits however. The merchants, who were generally urban dwellers, were comparatively unregulated by the government. This large portion of society eventually evolved to form a new identity and came to call themselves: *Chōnin*^a. The merchant class was also highly affluent compared to the upper tiers. As major stake holder's in the nation's chain of business, the *Chōnin* often amassed wealth the *Bushi*, or military aristocracy, could only ever dream of. During this period, these wealthy *Chōnin* afforded themselves time to develop, enjoy, and consume arts and crafts. Borne from the large dispensable income of this class, appreciation and demand increased for the arts and creative disciplines blossomed during this period, ranging from *Haiku* poetry, *Kabuki* theatre and *Hanga* printing. Due to the flourishing of the arts, and a constituency large enough to consume, or adhere to these aesthetic ideals, this time was now an age that would actively celebrate the transitory, seeking fragmented, or spatially dissolved conditions, in the age that would become etched within Japanese history as the production of *Ukiyo*: the floating world.

¹¹⁰ Juniper, *Wabi Sabi*.65-67

¹¹¹ Wada, *Katsura*. 54.

¹¹² Kageyama, *The Arts of Shintō*. 76.

¹¹³ Francks, *Rural Economic Development in Japan*.2.

Chapter Five:

Intermittence, and mutability in architecture

a. 伊勢神宮

Ise-Jingū
Shintō shrine

b. 平等院

Byōdō-In
Buddhist temple in
Kyoto.
Byōdō-In
Built in 998.

c. 明治時代

Meiji period
23rd October, 1868 -
30th July, 1912).

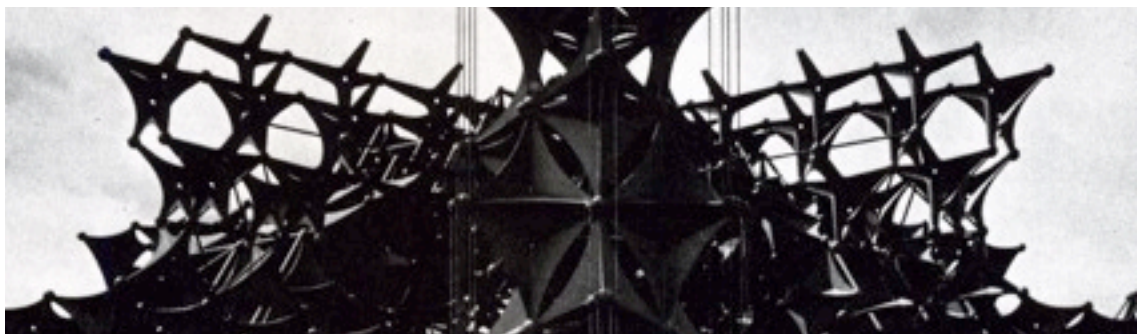
d. 東京芝浦電機

Tokyo Shibaura
Denki : Tōshiba

e. 石川島播磨重工
業株式会社

Ishikawajima -
Harima Jūkōgyō :
IHI

Responding to the rising societal pressures faced by the nation in the 1960s, the Japanese government had hoped that the spectacle of *Expo'70* would exist as an opportunity to guide and redirect the course of society. However, as discussed previously, Japanese society was predisposed to an appreciation of the temporality and impermanence of ephemera. This instilled within the public a fondness for a changeable mutability of both form and space. This chapter discusses two corporate pavilions designed by members of the Metabolist group as a means to introduce and explore the spatial relations that existed between the works of the Metabolist group and traditional Japanese architectures such as *Ise-Jingū*^a, and *Byōdō-In*^b. The Metabolist Group developed a series of spaces and structures that were tied to a philosophy for growth and regeneration. This worked to provide a metaphor for progress as an affirmative outcome, and a positive direction towards and into the future. However, rather than a turning point or new direction, this thesis argues that *Expo'70* existed as a form of temporal aesthetic regeneration for the Japanese population, an event to etch a mark on the unfolding changes that occur perpetually across society. A binding and decomposition of the construction techniques used in traditional architectures proposes a means to explore the shifting and temporal existence that these pavilions exhibit. Reinterpretation or repurposing of the built environment through a series of demountable or reconfigurable fixtures had diminished societal influence when effected in Japan.



[Fig .24] Kurokawa, Kisho. *Toshiba IHI Kan*

{..i} Intermittence

While the rhythm of competition, innovation, and the race to develop industrial capability indelibly marked the history of the world expositions. The pavilions of *Expo'70* responded to this tradition, but they were also constructed within what could be arguably be viewed as an appreciation for concentricity or impermanence. The introduction of the following corporate structures aims to identify a notion of an intermittent expansion, absorption and decomposition that occurs not only at the aesthetic level, but also within the very organisation of the nation itself. The *Toshiba IHI Kan* [Fig .24] [Fig .25] was a joint undertaking by the two Japanese conglomerates, Toshiba Corporation and IHI Corporation. The former originated in 1875 as Japan's first manufacturer of telegraph equipment. Following a period of successes the business expanded, and in 1904 undertook a name change to *Shibaura Seisakusho*. As Japan modernised during the *Meiji Jidai*^c, *Shibaura Seisakusho* also expanded and became the nation's major manufacturer of heavy electrical machinery. In 1890, a second company *Hakunetsusha*, who was Japan's first producer of incandescent lamps, diversified into the manufacture of consumer products, and in 1899 was renamed *Tokyo Denki*. The 1939 merger of these two companies inaugurated the creation of a new company called *Tokyo Shibaura Denki*^d. A company which would eventually become known as *Toshiba* (Toshiba Corporation). The second element in the building of this pavilion was also a long established corporate identity. Founded in 1853, *Ishikawajima-Harima Jūkōgyō*^e was a significant participant in the rise of Japanese manufacturing ability. Expanding incrementally over a century, *Ishikawajima-Harima Jūkōgyō* developed a reputation for ship building, aviation and chemical manufacture, effecting great impact on the Japanese urban fabric where it eventually established large scale facilities in over a dozen cities by 1936. 1960 marked a change for the conglomerate where a name change was

a.増殖

Zoushoku

Trans: Increase,
multiplication or
propagation.

b.交換

Kōkan

Exchange.

c.分裂

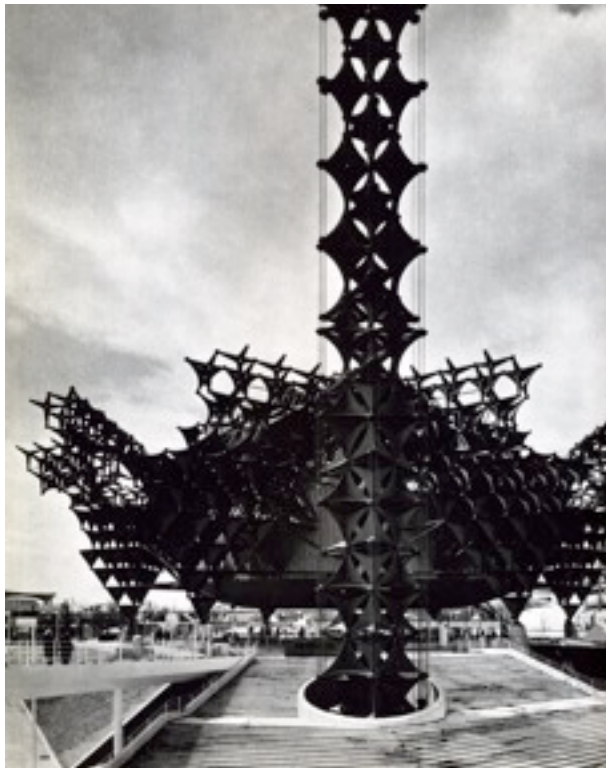
Bunretsu

A division or schism.

d.破壊

Hakai

Demolish, destroy or
destruction.



[Fig .25] Kurokawa, Kisho. *Toshiba IHI Kan*

initiated to IHI, *Ishikawajima Heavy Industries*. The corporate history of these two companies stand as an instance where individual concerns evolve into overlapping and dissolving entities.

Dissolving or decomposition were evidenced spatially in the architecture of the *Toshiba IHI Kan* designed by Kurokawa Kisho. Kurokawa states that these conditions stem from *Zen Bukkyō*, which allowed for a reading of an architecture that simultaneously presented both solid and void.¹¹⁴ These dualistic conditions are explored within the *Toshiba IHI Kan*, which were manifested through a series of structural mechanisms, where the pavilion presented an architecture with a means to modulate and control the effects of enclosure. The pavilion was composed of four structurally independent components.

A myriad of welded steel plates

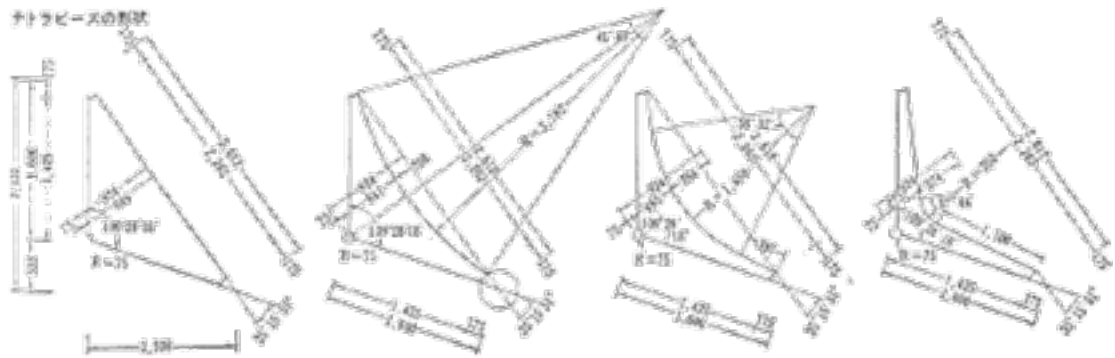
formed the external *tetra-frame* shell, offering structural value as a means to suspend the enclosed inner portion. There were four kinds of *tetra-frames*: one with straight edges and three with arched edges [Fig .26]. Using a singular apex of the tetra-piece as a contact point, they were then interconnected by a number of spheres formed from cast steel. They were described by Kurokawa, as a series of welded triangular plates that formed three dimensional apexes and gravity points.¹¹⁵ These *tetra-frames* formed an incomplete and perforated enclosure through the use of these three dimensional trusses. Nested within an internal mass was housed a nine screen theatre, which could accommodate an audience of over 500 people. This enclosure offered a culturally specific aesthetic value through the partial three dimensional shrouding of the main internal volume, and a resultant blurring or softening of the boundary that existed between the skin of the building, and the surrounding space in which the pavilion stood. This arrangement presented the visitors to the exposition with an architectural creation that ventured an intermittent dissolving of the border between solid and void. This architectural mechanism traversed a course set out in an architectural relic of great antiquity. Through the degree of visual separation, a pulsating and fragile structural existence, *Toshiba IHI Kan* traveled through periods of change, creating a shifting spatial envelope, that alluded to a collection of disintegrated forms. This pavilion presented a new advent in architecture, stemmed from the modularity of the fragile external structure with ability to be constructed and dismantled.¹¹⁶ Kurokawa notes the works of the Metabolist Group responded to their concerns for contemporary society. Evolved from a four part programme, the group noted the conditions of *Zoushoku*^a, *Kōkan*^b, *Bunretsu*^c and *Hakai*^d.¹¹⁷ These conditions bore a remarkable comparability to the ritualistic reformability of *Ise-Jingū*. As argued within the discussion of *Ise-Jingū*, the permanent interiority of enclosed space was challenged and reconfigured within the building practice of *Shinmei zukuri*.

¹¹⁴ Kurokawa, *Metabolism in Architecture*. 60-64

¹¹⁵ Kurokawa, *Metabolism in Architecture*. 64.

¹¹⁶ Oda, *Urban, EXPO, Metabolism*. 68.

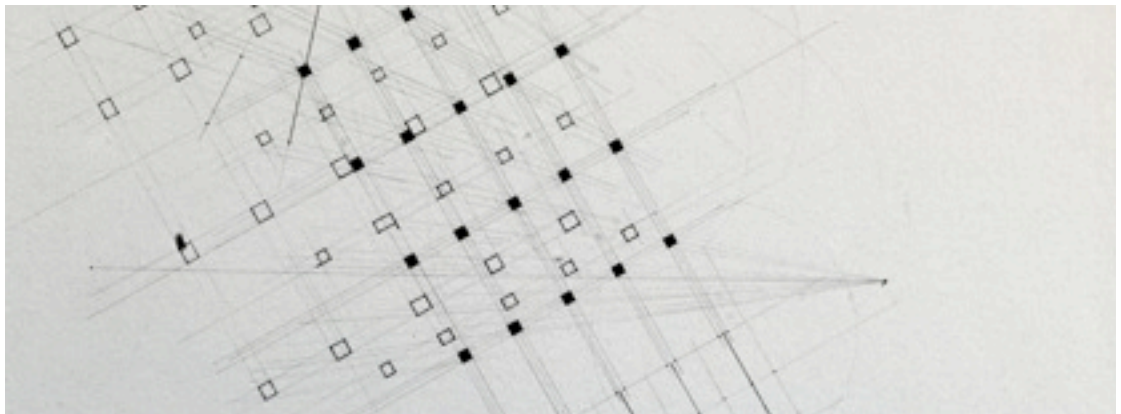
¹¹⁷ Oda, *Urban, EXPO, Metabolism*. 69.



[Fig .26] Kurokawa, Kisho. Tetra-frames: Toshiba IHI Kan. Osaka, Japan, 1970

Simultaneously providing the experience of enclosure and exposure, the division of space locates a shifting and mutable means to the habitation and traversing of space.

The spatial conceptualisation for both of these buildings operated on the premise of restructuring and decay. *Ise-Jingū* evolves within concentric cycle of twenty years, presenting a building which was both ancient and new. *Toshiba IHI Kan* was proposed to respond to these cyclical systems, however, this pavilion operated on a different time scale. Kurokawa intended for *Toshiba IHI Kan* to grow and expand as society required. This created a temporal gap from *Ise-Jingū*, which was further aggregated by their individual reconstructive rhythms. The architecture created by the Metabolist group for *Expo'70* responded to the physical manifestations of long established aesthetic value systems. The Metabolist group, led by Tange, sought to accommodate Japan within urban and architectural situations that took full advantage of the material advances that the 1960s allowed. However, while aiming for modernity and solutions to national pressures, this group of architects created a series of structures that paralleled the aesthetic and spatial conditions that had existed within the island nation for centuries.



[Fig .27] Fragment of {plate .ix}

{.ii} Mutability

Located in the southern section of the world exposition site stood a single tower, severed both temporally and physically from the 1970 world exposition. This pavilion featured rarely in periodicals of the time, and was situated in an out of the way place across a series of motorways and monorail tracks. Although Kikutake Kiyonori's *Expo Tower* upheld, and presented many of the founding principles of the Metabolist group's then unfolding ideals, *Expo Tower* [Fig .28] [Fig .30] inhabited an entirely separate *Expo'70* to that of its pavilion counterparts. Stripped of its sponsor and constructed two years late, *Expo Tower* existed as

the Metabolist group's first chance to solidify ideas that they had for resolving the urbanisation of Japan.

Sponsored by the electronic giant Mitsubishi, *Expo Tower* was due to be finished a full two years ahead of the exposition as a device to promote the event. *Expo Tower* was proposed by Kikutake as an opportunity to build an example of the redefinition of Japan's urban fabric. It however, occupied a position closer to that of an appendage or architectural detritus, and formed a mutable spatial construct. Within *Expo Tower* the Metabolist group proposed symbiotic and cyclical relations as a catalyst to resolve Japan's urban pressures.

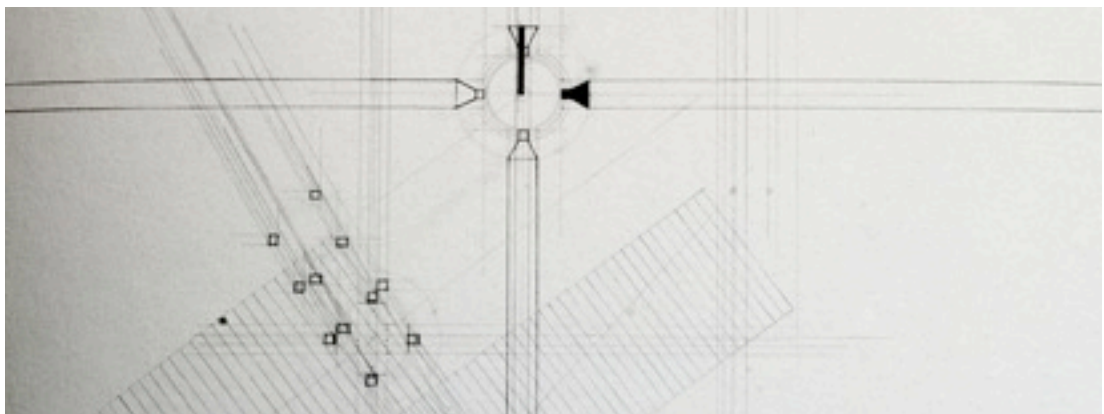


[Fig .28] Kikutake, Kiyonori. *Expo Tower*. Osaka, Japan, 1970

Between inhabitable structures, services, the ebb and flow of redefined urbanisation was planted as a seed, yet failed to grow. This was partially attributable to the negotiation for the site, where at some point during discussions Kikutake and Mitsubishi fell out with on another, resulting in Mitsubishi cancelling the contract. Additionally Mitsubishi was against the design, for reasons of both complexity and budget. However, the final blow may have come from a statement by Akiyo Maeda that Mitsubishi did not want to be associated with *Expo Tower* after the exposition, with a view that a continued association to the building might have had a negative impact on the conglomerate. The outcome of these negotiations resulted in catastrophe - just two years out from the exposition, the plans for *Expo Tower* (or Mitsubishi pavilion) were to be scrapped. Although Kikutake had envisioned the building to effect the presentation of the Metabolist group's ideas to the public, the building was quite removed from the pavilions of the exposition, stripped of its intended title *Mitsubishi Kan* the building existed in a unique manner. Any research of exposition catalogues or databases will not yield many, if any images of the *Expo Tower* as an integral part or even as connected to the exposition at all. Many of the images taken have cropped off the southern area, obscuring any view of the building in relation to other pavilions. While Kikutake wrote extensively on the role of construction for the health and benefit of society at large, the Metabolist group, while designing the master plan for the exposition, effectively banished the greatest opportunity to present their newly forming ideas to the public. Locating the building that should have been the central icon for the entire exposition outside of the colossal northern grounds, somewhat obscured the collective motive for the Metabolist group; that of housing the swelling national population. In seeking the capacity of architecture to effect change, a proto-archetype to the Metabolist group's manifesto can be found in Kikutake's methodology. Kikutake speaks of demountable solutions as a proto-metabolism, which Kikutake states can be found in the construction technologies in *Shintō* temples:

The main pillar for this thought is the movement towards renewing, recycling, transferring, adding and removing of architecture to make it adapt to changing needs. This tradition has existed for thousands of years in the wooden structures of Japan.¹¹⁸

Kikutake's *Expo Tower* was theoretically constructed in parallel to the Metabolist group's manifesto. Kikutake proposed *Expo Tower* as a means to present a wide reaching solution to the nation's increasing urban congestion. A need to which the Metabolist group forecasted at 1.3 million units per year in the nation's major cities. Kikutake's *Expo Tower* was a structure that would exist as a macro unit to an entire system of urban renewal that was presented in *Shinkenchiku*^a September 1959 as the *Tokyo Bay Project*. Kikutake stated that "Metabolic Architecture proposed the concept of change in modern architecture, and that change is good and necessary for renewal and growth".¹¹⁹ Kikutake's reconceptualisation of the city questioned the forms of inhabitation, and proposed the idea of a vertical urban development. Within this conceptualisation, walls were to be considered as vertical lands, onto which inhabitable units were to be secured.

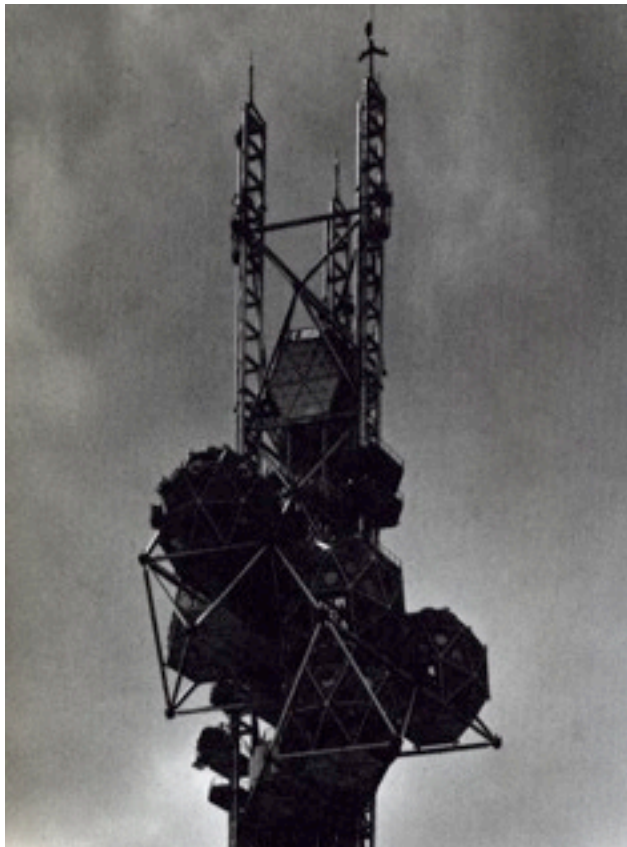


[Fig .29] Fragment of {plate iix}

Expo Tower stood at 127m, and was the tallest structure of *Expo'70*. The tower itself was comprised of three main elements. Initially foundation and central spine clusters were constructed on site, to which the vertical space frame was to be mounted. Formed from cylindrical columns to which flanges were welded to, steel interstitial supports of a smaller dimension were again welded to form a triangulated structural system. Recalling the fragmented and dissolving of space that occurred within the *Shinden-zukuri* of *Byōdō-in*, the entire cluster of triangulated circular columns could be bolted one atop another until completion in a vertical reiteration of *Shinmen-zukuri*. The third structural systems presented what Kikutake believed to be the ideal mechanism to relieve Japan's urban pressure and lack of space for housing. Attached in a number of locations upon the main tower, a secondary structure emerged to create a series of habitable units, created through the enclosure of a series of triangulated walls, and cantilevered floors to create enclosure through the inter-connection of acute angles. This appended structure has an architectural significance for the Metabolist group's philosophy, who proposed that the structures could be dismantled and reassembled when required, providing a mutable and adaptable form of architecture. Kiyonori aligned these qualities to *Expo Tower's* through a conceptual alignment to the reconstructive and demountable forms found in *Shinmei-zukuri* of *Ise-Jingū*. While designated as the architectural symbol and physical manifestation of progress, the conceptual positioning of *Expo Tower* recalled images of *Shinmei-zukuri* and *Shinden-zukuri*. The two systems have operated within Japanese society as a support to shift the occupants to a

¹¹⁸ Nishiyama, *Machizukuri no koso*. 67.

¹¹⁹ Kikutake, *Kiyonori Kikutake: From Tradition to Utopia*. l'Arca Edizioni, 13.



[Fig .30] Kikutake, Kiyonori. *Expo Tower*. Osaka, Japan, 1970

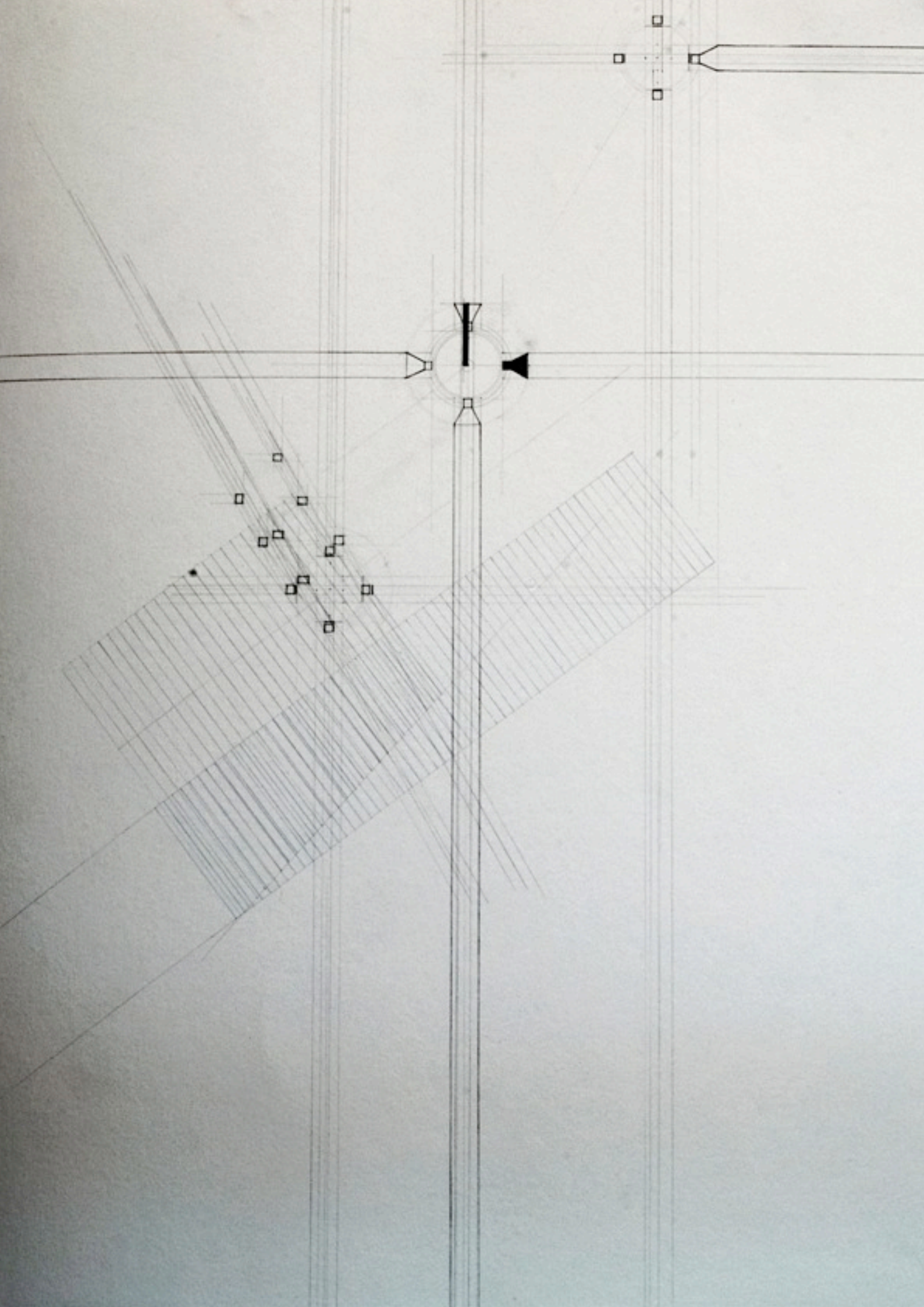
location or space outside of this existence.¹²⁰ By re-creating these architectural conditions, *Expo Tower* provided the visitors of *Expo'70* the experience of a temporal fragmentation between an industrious future, and ancient spatial hierarchies that supported cyclical interpretations of a spatial impermanence.

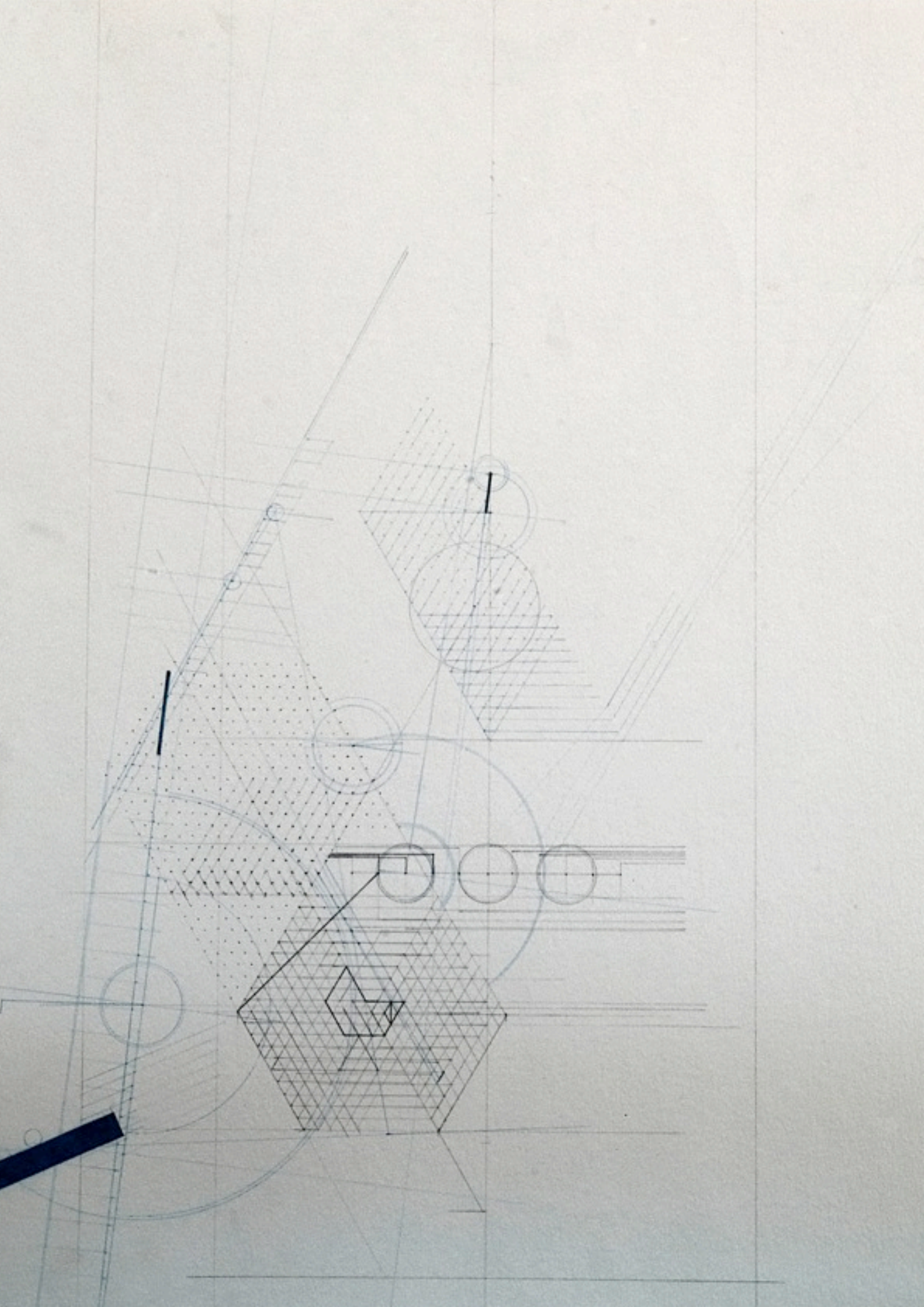
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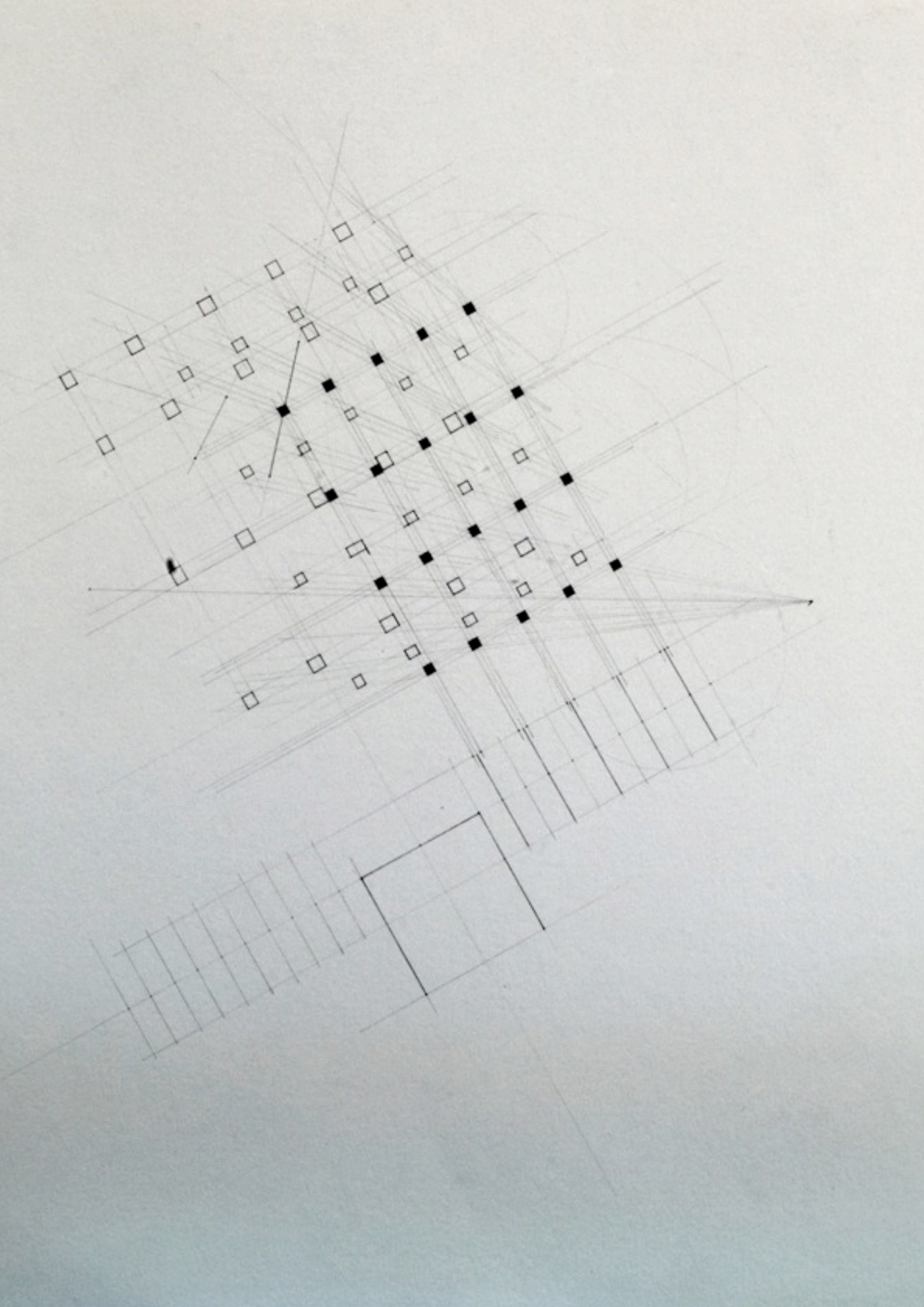
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Page 54: [plate ..x] Graphite on card 420mmx290mm

¹²⁰ Lee and Lee. *Japan: Between Myth and Reality*. 35-42.







Conclusion:

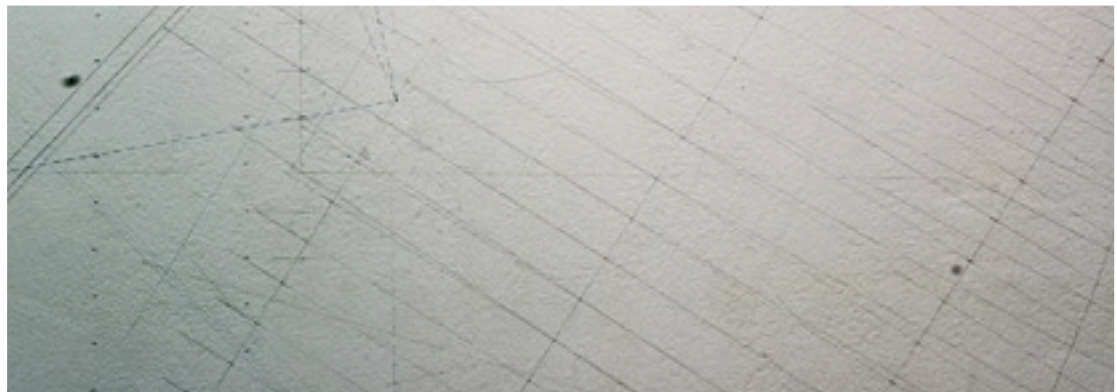
The mechanisms of impermanence



[Fig .31] Fragment from Fragment of plate {..x}

{..i} Concentricity, erasure, and the mechanisms of impermanence

Historically unique as the first Eastern exposition in history, *Expo'70* existed as a bid for acceptance between Western society and Japanese culture. *Expo'70* was a finely crafted construction that allowed Japan to re-present itself to the international community, reborn as a developed and utterly modern member of the global economy. Responding to the refinement of over a century of international expositions, the Japanese government had hoped the exposition could perform a dual operation for the island nation. Following the practices of many European centres, *Expo'70* was taken as a chance to evolve and reform the Kansai region of Japan. Urban restructuring, transport, public and civic facilities were incorporated into the greater structure of developing the exposition, just as they had in other urban centres. Stemming from an unprecedented period of financial growth during the 1960s, the urban fabric and manufacturing capability of the nation was beginning to experience the pressures of life within modern industrial cities. Pollution, crowding, and a lack of land to develop new business ventures motivated the Japanese government to prepare a scheme for the growth of the nation's industrial capacity. A secondary, and perhaps more significant clause for the hosting of the exposition resulted from the increasing social unrest that the nation was facing. Riots, protests and a use of the national self defence force rocked the homogeneity of the nation. The exposition was proposed as a chance for Japan to celebrate both the nation's history and culture as well as an unreached future. Spanning these two themes, the exposition was proposed under the title *Progress and Harmony for all Mankind* in a bid to promote *change as progress* and regain social stability for the nation.



[Fig .32] Fragment from Fragment of plate {..x}

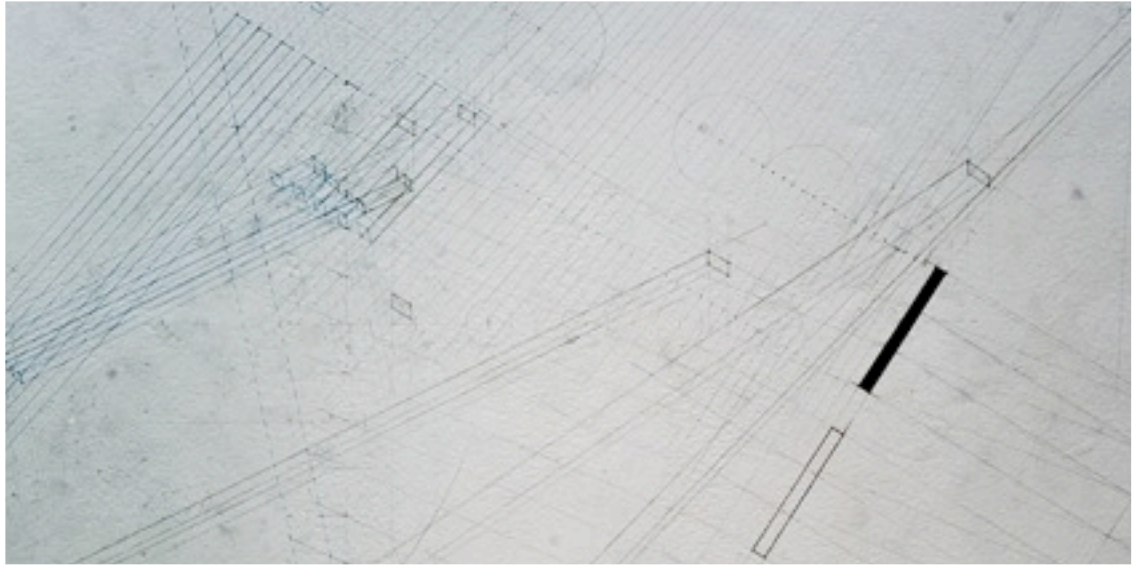
The group charged with the production of the exposition operated within a philosophy for architecture that the Japanese public would interpret as a regeneration of historically venerated architectures and ritual. The Metabolist group composed an architecture that questioned the terms of material existence. Authoring a series of methodologies to create forms of enclosure, the pavilions of *Expo'70* simultaneously hinted at eroding these very conditions of containment. The construction of the pavilions alluded to progress, under an organic conceptualisation of growth and decay, generating a series of intermittent and

mutable forms. The Metabolist group pavilions referred to an overall impermanence of the built environment, a temporal fragility that was evidenced within Kurokawa's *Toshiba IHI Kan*. The pavilion offered a partial three dimensional shrouding or softening of the boundary that existed between the skin of the building, and surrounding space in which the pavilion stood. This compiled with a pulsating and fragile structural existence, the *Toshiba IHI Kan* implied a shifting multidimensional spatial envelope. Kurokawa's building alluded to a collection of disintegrated forms. Through the fragile external structure, and the pavilion's facility for dismantling, typical conceptions of the experience of space shifted interpretations of progress to an alignment with architectural typologies that were previously established within the Japanese psyche, as is evident in *Ise-Jingū*.¹²¹ Kiyonori's *Expo Tower* exhibited the terms of impermanence through adopting a construction technique that was parallel the natural processes of destruction and regeneration. On a temporal level, *Expo Tower* proposed a process of disuse and decay, which performed identically to the conceptions of impermanence. Exposed through a temporal aesthetic regeneration of existing spatial archetypes, the Metabolist group's pavilions performed a temporary solidification of the unfolding changes that are manifest within both society and the interpretations of urban fabric. This occurred through a delicate moderation of spatial conditions that could be readily accepted by the visiting public, which referred that the urban fabric was fragile and inclined to change. This was alluded to through a theoretical alignment to the ritualistic re-fabrication that occurred within *Ise-Jingū*, that instilled closer links to the natural ephemera of *Zōshoku* and *Bunretsu*. Within the linking notions of progress to the nationally appreciated conceptions of *Kōkan* and *Hakai*, the Metabolist group's methodology created a structure from which the group could author a series of spatial trajectories that expressed decomposition of the construction techniques found in traditional architectures.

The world expositions have been used to motivate society, and to take up and appreciate the progression and advancement of technology. A device to initiate reform, both physically and socially, *Expo'70* existed as a catalyst for development and for change. *Expo'70*, however, performed as an exception. It was constructed as a device to disrupt or divert the course of society. The political positioning of this exposition explored ways to dissolve the rising social pressures that were beginning to surface within the Japanese population. The architectural figures presented within *Expo'70* were proposed as a group of constructions to engage with society in a bid to restore social harmony through diversion and celebration as a means to effect change. However, the architectures and spatial conditions presented within the pavilions responded to aesthetic concerns from two major religious systems and aesthetic development stemmed from the nation's historic past. By examining the pavilions from historical and cultural aesthetic perspectives, the work re-constructed the temporal trajectories as mechanisms to propose that the explorative structures built for *Expo'70* operated as a re-iteration of existing architectural and spatial archetypes.

The final body of work was created as a wall drawing measuring 2400mm x 3600mm and proposes that the *Expo'70* pavilions responded collectively to create a cultural specificity in architecture. Within this final drawing I have combined portions from the vignettes to create a single work that explores these conditions in a single reconstruction. This single drawing challenged a means to expose the fleeting fragility and multiplicity of these pavilions, and argues the temporal connections that exist in this Japanese architecture. The exposition architecture of *Expo'70* resonated within a set of existing aesthetic conceptions held by the Japanese public. The conditions of the intermittence, mutability and impermanence are communicated through the final drawing, which manifests a hybrid technique, that simultaneously condenses all previously explored conditions within a single work. Representing the notion of impermanence within the built environment, via the drawing and re-working of a physical drawing surface, the work include coordinates, nodes and plans, combining *Toshiba IHI Kan* and *Ise-Jingū*, *Ōyane* and *Byōdō-in* and *Expo Tower*. Using

¹²¹ Oda, *Urban, Metabolism*. 68.



[Fig .33] Fragment from Fragment of plate {..x}

measured drawing, compass, protractor, sliding rule and graphite drawing instruments, this final drawn architecture exists as a temporal manifestation or re-documentation of these seemingly fragile architectural conditions. Following the attempt to define or locate the reasoning for a disparity of opinion in *Expo'70*, this final drawing was created as a means to examine the polarisation of interpretations. This drawing was executed within a finite timeframe, over a period of three weeks, three days and three hours, and destined for erasure. Located within the celebration or appreciation of an impending termination, the drawn work allows for the definition of the aesthetics of impermanence.

Image references

Fig .5 *The Crystal Palace. London, England, 1851*

File:Crystal Palace.PNG - Wikimedia Commons. (n.d.). *wikimedia commons. Retrieved January 27, 2010, from http://commons.wikimedia.org/wiki/File:Crystal_Palace.PNG*

Fig .6 *Exposition Universelle. Paris, France, 1900*

File:Exposition universelle 1900.jpg - Wikimedia Commons. (n.d.). . Retrieved January 27, 2010, from http://commons.wikimedia.org/wiki/File:Exposition_universelle_1900.jpg

Fig .7 *Weltausstellung. Vienna, Austria, 1873*

File:Weltausstellungsgelände-Wien-1873.jpg - Wikimedia Commons. (n.d.). . Retrieved January 27, 2010, from <http://commons.wikimedia.org/wiki/File:Weltausstellungsgel%C3%A4nde-Wien-1873.jpg>

Fig .8 *Weltausstellung Topography, Vienna, Austria, 1873*

File:Weltausstellungsgelände-Wien-1873.jpg - Wikimedia Commons. (n.d.). . Retrieved January 27, 2010, from <http://commons.wikimedia.org/wiki/File:Weltausstellungsgel%C3%A4nde-Wien-1873.jpg>

Fig .9 *Japanese pavilion, Exposition Universelle. Paris, France, 1867*

File:JapaneseExhibitsAtThe1867WorldFair.JPG - Wikimedia Commons. (n.d.). . Retrieved June 7, 2010, from <http://commons.wikimedia.org/wiki/File:ChineseAndJapaneseExhibitsAtTheThe1867WorldFair.JPG>

Fig .10 *Expo '70. View North. Osaka, Japan, 1970*

osa81.gif (GIF Image, 1024x687 pixels). (n.d.). www.columbia.edu. Retrieved January 31, 2010, from <http://www.columbia.edu/cu/gsap/BT/DMES/OSAKA/osa81.gif>

Fig .11 *Expo '70. View East. Osaka, Japan, 1970*

osa81.gif (GIF Image, 1024x687 pixels). (n.d.). www.columbia.edu. Retrieved January 31, 2010, from <http://www.columbia.edu/cu/gsap/BT/DMES/OSAKA/osa81.gif>

Fig .13 *Ise-Jingū (Naiku). Mie, Japan*

35.jpg (JPEG Image, 1024x1136 pixels). (n.d.). . Retrieved February 15, 2010, from <http://library.osu.edu/sites/rarebooks/japan/images/full/06/35.jpg>

Fig .15 *Byōdō-in, Uji, Kyoto Japan.*

File:UjiByodoin2.jpg - Wikimedia Commons. (n.d.). . Retrieved June 4, 2010, from <http://commons.wikimedia.org/wiki/File:UjiByodoin2.jpg>

Fig .19 *Okamoto, Taro. Taiyō Tō, Osaka, Japan, 1970*

File:Back of the tower of the sun.jpg - Wikimedia Commons. (n.d.). . Retrieved June 7, 2010, from http://commons.wikimedia.org/wiki/File:Back_of_the_tower_of_the_sun.jpg

Fig .20 *Okamoto, Taro. Taiyō Tō. [Rear face]. Osaka, Japan, 2009*

太陽の塔 - 関西の鉄道車両図鑑. (n.d.). Livedoor Wiki. Retrieved February 14, 2010, from http://wiki.livedoor.jp/ras2_3k/d/%C2%C0%CD%DB%A4%CE%C5%E3#XXX

Fig .21 *Expo'70, Site plan. Osaka, Japan, 1970*

SHINKENCHIKU. (1970). (Vol. 56). Tokyo, Japan: Yosioka Yasugora.

- Fig .23** Tange, Kenzo; Et al. oyane (Big Roof). Osaka, Japan, 1970
Big Roof. (n.d.). KTA : KENZO TANGE ASSOCIATES. Retrieved February 14, 2010, from http://www.ktaweb.com/works/en_expo.html
- Fig .24** Kurokawa, Kisho. Toshiba IHI Kan. Osaka, Japan, 1970
toshiba-ihj.jpg (JPEG Image, 500x500 pixels). (n.d.). . Retrieved February 1, 2010, from <http://pleiades.la.coocan.jp/dry/expo70/toshiba-ihj.jpg>
- Fig .25** Kurokawa, Kisho. Toshiba IHI Kan. Osaka, Japan, 1970
Expo70Toshiba2.jpg (JPEG Image, 220x218 pixels). (n.d.). . Retrieved June 7, 2010, from <http://www.kisho.co.jp/img/111/Expo70%20Toshiba%20IHI/Expo70/Toshiba2.jpg>
- Fig .26** Kurokawa, Kisho. Tetra-frames: Toshiba IHI Kan. Osaka, Japan, 1970
Expo70Toshiba2.jpg (JPEG Image, 220x218 pixels). (n.d.). . Retrieved June 7, 2010, from <http://www.kisho.co.jp/img/111/Expo70%20Toshiba%20IHI/Expo70Toshiba3.jpg>
- Fig .28** Kikutake, Kiyonori. Expo Tower. Osaka, Japan, 1970
EXPO_TOWER.JPG (JPEG Image, 3000x4000 pixels) - Scaled (12%). (n.d.). . Retrieved June 7, 2010, from http://upload.wikimedia.org/wikipedia/commons/0/03/EXPO_TOWER.JPG
- Fig .30** Kikutake, Kiyonori. Expo Tower. Osaka, Japan, 1970
File:Tower of the Sun in Osaka.jpg - Wikimedia Commons. (n.d.). . Retrieved June 7, 2010, from http://commons.wikimedia.org/wiki/File:Tower_of_the_Sun_in_Osaka.jpg

References

- Alden, Jeremy D. "Metropolitan Planning in Japan." *The Town Planning Review* 55.1 (1984): 55-74. Print.
- Alex, William. *Japanese architecture*. Studio Vista, 1968.
- Antonelli, Paola, and Udo Kultermann. *Exit to Tomorrow: History of the Future, World's Fair Architecture, Design, Fashion 1933-2005*. Universe, 2007.
- Baird, Merrily C. *Symbols of Japan: Thematic Motifs in Art and Design*. illustrated edition. Rizzoli International Publications, 2001.
- Batchelor, Peter. "The Origin of the Garden City Concept of Urban Form." *The Journal of the Society of Architectural Historians* 28.3 (1969): 184-200.
- Benton, Charlotte. "From Tubular Steel to Bamboo: Charlotte Perriand, the Migrating "Chaise-longue" and Japan." *Journal of Design History* 11.1 (1998): 31-58.
- Bix, Herbert P. *Hirohito and the Making of Modern Japan*. Harper Perennial, 2001.
- Bognar, Botond. *Togo Murano: Master Architect of Japan*. illustrated edition. Rizzoli, 1996.
- Boyd, Robin. *Kenzo Tange*. George Braziller, 1980.
- British History Online, and F. H. W. Sheppard (General Editor). "The Exhibition Building of 1862." 22 June 2003. Web. 24 Apr. 2010.
- Buck-Morss, Susan. *Ground Control: Technology and Utopia*. London?: Black Dog Pub, 1997.
- Budden, Lionel B. "The Relation of Exposition Planning to Civic Design." *The Town Planning Review* 6.3 (1916): 153-162.
- Burke, Anthony, and Therese Tierney. *Network Practices*. 1st ed. Princeton Architectural Press, 2007.
- Burton, Benedict. "International Exhibitions and National Identity." *Anthropology Today* 7.3 (1991): 5-9.
- "International Exhibitions and National Identity." *Anthropology Today* 7.3 (1991): 5-9.
- Carver, Jr., Norman F. *Form and Space of Japanese Architecture*. Tokyo: Shokokusha, 1955. Print.
- Charney, Melvin. "Experimental Strategies: Notes for Environmental Design." *Perspecta* 12 (1969): 21-32.
- Coaldrake, William H. "The Gatehouse of the Shogun's Senior Councillor: Building Design and Status Symbolism in Japanese Architecture of the Late Edo Period." *Journal of the Society of Architectural Historians* 47.4 (1988): 397-410. Print.
- Contemplations for better tomorrow : lectures by prominent international personages in commemoration of Expo '70. Tokyo, Japan: Japan Association for the 1970 World Exposition, 1970.
- Crimp, Douglas. "The Art of Exhibition." *October* 30 (1984): 49-81. Print.
- Crowley, David, and Jane Pavitt. *Cold War Modern: Design 1945-1970*. Victoria & Albert Museum, 2008.
- Çelik, Zeynep. *Displaying the Orient: Architecture of Islam at Nineteenth-Century World's Fairs*. Berkeley: University of California Press, 1992. Web. 20 Jan. 2010.

- Davidson, Cynthia C, ed. *Anyhow / edited by Cynthia C. Davidson.* -. MIT Press, 1998. Print. 8 July 2008.
- DeLanda, Manuel, and Anthony Vidler. *Lebbeus Woods: System Wien.* Bilingual. Hatje Cantz Publishers, 2006.
- "Direction in Today's Architecture: A Discussion Between Kenzo Tange and Arata Isozaki." *JA* (1970): 23 - 28. Print.
- "Displaying the Orient "d0e1234"." Web. 25 Jan. 2010.
- Dower, John W. *Embracing Defeat: Japan in the Wake of World War II.* W. W. Norton & Company, 2000.
- Dresser, Christopher. *Japan - Its Architecture, Art And Art Manufactures.* London, England: Keagan Paul Ltd, 2001.
- Drew, Philip. *Architecture of Arata Isozaki.* Granada Pub Ltd, 1982. Print.
- Duke. "Duke Magazine-The Great Exhibition of 1851-Selections from Duke Library-November/December 2006." Web. 23 Sept. 2008.
- Eames, Charles, and Ray Eames. *Power of Ten: A Flipbook.* W.H. Freeman & Company, 1998.
- Edwards, Anthony D. *The Role of International Exhibitions in Britain, 1850-1910: Perceptions of Economic Decline and the Technical Education Issue.* Cambria Press, 2008.
- Edwards, Brian, and Susan Fahy. "The British Pavilion at Expo '67: Art, Architecture and National Identity." *British Journal of Canadian Studies* 20.2 (2007): 249-274.
- Eizo, Okada. "Transformation." *Second Nature.* Minato-Ku, Tokyo, Japan: Agency for cultural affairs, 2008. 81-83. Print.
- Evans, Almus Pratt. "Exposition Architecture: 1893 versus 1933." *Parnassus* 5.4 (1933): 17-22.
- Evans, Robin. *Translations from drawing to building and other essays.* London: Architectural Association, 1997. Web. 11 July 2009.
- Feireiss, Kristin, ed. *Hand-drawn worlds = Handgezeichnete Welten.* Berlin: Jovis, 2003. Print. 11 July 2009.
- Findling, John E., and Kimberly D. Pelle. *Encyclopedia of World's Fairs and Expositions.* 2nd ed. McFarland, 2008.
- Forsberg, Aaron. *America and the Japanese Miracle: The Cold War Context of Japan's Postwar Economic Revival, 1950-1960.* The University of North Carolina Press, 2000.
- Francks, Penelope. *Rural Economic Development in Japan: From the Nineteenth Century to the Pacific War.* 1st ed. Routledge, 2006.
- Gandy, Matthew. "The Paris Sewers and the Rationalization of Urban Space." *Transactions of the Institute of British Geographers* 24.1 (1999): 23-44.
- Ghirardo, Diane. *Architecture After Modernism.* Thames & Hudson, 1996.
- Gibney, Frank B. "Reinventing Japan... Again." *Foreign Policy* 119 (2000): 74-88.
- Godfrey, Brian J. "Restructuring and Decentralization in a World City." *Geographical Review* 85.4 (1995): 436-457.
- Gold, John Robert, and Margaret M. Gold. *Cities of Culture: Staging International Festivals and the Urban Agenda, 1851-2000.* Ashgate Publishing, 2004.

- Gomes, Geraldo. "Artistic Intentions in Iron Architecture." *The Journal of Decorative and Propaganda Arts* 21 (1995): 87-107.
- Green, Anne. "France Exposed: "Madame Bovary" and the Exposition Universelle." *The Modern Language Review* 99.4 (2004): 915-923.
- Gropius, Walter. "Architecture in Japan." *Perspecta* 3 (1955): 9-80.
- Groth, Paul. "Generic Buildings and Cultural Landscapes as Sources of Urban History." *Journal of Architectural Education* (1984-) 41.3 (1988): 41-44.
- Haft, Daryl M. "The Business of Invention in the Paris Industrial Exposition of 1806." *The Business History Review* 58.3 (1984): 317-335.
- Harada, Yuma. 10+1 EXPO in Perspective. INAX, 2004.
- Harrison, Helen A. *Dawn of a New Day: The New York World's Fair, 1939-1940*. First Edition. New York University Press, 1980.
- Harvey, Bruce. "Architecture for the Future at the Charleston Exposition, 1901-1902." *Perspectives in Vernacular Architecture* 7 (1997): 115-130.
- Hauser, Arnold. *Mannerism: The Crisis of the Renaissance and the Origin of Modern Art*. Belknap Press, 1986.
- Hays, K. Michael, and Lauren Kogod. "Twenty Projects at the Boundaries of the Architectural Discipline Examined in Relation to the Historical and Contemporary Debates over Autonomy." *Perspecta* 33 (2002): 54-71.
- Hein, Carola. "Fires, Earthquakes, Modernization and Air Strikes: The Destruction and Revival of Japan's Cities." *MIT World*. Web. 17 Apr. 2010.
- Hein, Carola. "Review: [untitled]." *Journal of Japanese Studies* 30.2 (2004): 481-486.
- Hein, Carola. "Urban Reconstruction in Britain and Japan, 1945-1955: Dreams, Plans and Realities, and: Housing in Postwar Japan: A Social History (review)." *The Journal of Japanese Studies* 30.2 (2004): 481-486.
- Hein, Carola, and Philippe Pelletier. *Cities, Autonomy, and Decentralization in Japan*. 1st ed. Routledge, 2009.
- Herbert, James D. "The View of the Trocadéro: The Real Subject of the Exposition Internationale, Paris, 1937." *Assemblage* 26 (1995): 95-112.
- Herrmann, Rolf-Dieter. "Art, Technology, and Nietzsche." *The Journal of Aesthetics and Art Criticism* 32.1 (1973): 95-102.
- Hidetoshi, Fukagawa, and Tony Rothman. *Sacred Mathematics: Japanese Temple Geometry*. illustrated edition. Princeton University Press, 2008.
- Hoffmann, Donald. "Clear Span Rivalry: The World's Fairs of 1889-1893." *The Journal of the Society of Architectural Historians* 29.1 (1970): 48-50.
- Igarashi, Taro. 10+1 EXPO in Perspective. INAX, 2004.
- Igarashi, Taro et al. 10+1 EXPO in Perspective. INAX, 2004.
- Isozaki, Arata. *Japan-ness in Architecture*. The MIT Press, 2006.
- Itoh, Teiji, with Photographs By Futagawa, Yukio. *The Roots of Japanese Architecture*. Harper & Row, 1963.

- Iwamiya, Takeji. *Katachi: Classical Japanese Design*. Chronicle Books, 1999.
- Jackson, Anna. *Expo: International Expositions 1851-2010*. V & A Publishing, 2008.
- Jackson, Simon. "Creature of Circumstance : Australia's Pavilion at Expo '70 and Changing International Relations.." *Society of Architectural Historians Australia and New Zealand* (2007): n. pag. Print. 8 Feb. 2010.
- Japanese Capitals in Historical Perspective: Place, Power and Memory in Kyoto, Edo and Tokyo. Richmond: Curzon, 2000.
- "Japanese city and architecture : Kurashiki : S. Urabe & Associate Architects works in Kurashiki." *Tokyo : Process Architecture Publishing Co.* 1982: n. pag.
- Johnson, Chalmers A. *MITI and the Japanese Miracle: The Growth of Industrial Policy, 1925-1975*. Stanford University Press, 1982.
- Juniper, Andrew. *Wabi Sabi: The Japanese Art of Impermanence*. Tuttle Publishing, 2003.
- Kageyama, Haruki. *The Arts of Shinto*. 1st ed. Art Media Resources, 1973.
- Kasahara, Kazuto. *10+1 EXPO in Perspective*. INAX, 2004.
- Kaufman, Edward N. "The Architectural Museum from World's Fair to Restoration Village." *Assemblage* 9 (1989): 21-39.
- Keown, Damien, and Charles S. Prebish. *Encyclopedia of Buddhism*. 1st ed. Routledge, 2009.
- Kikutake, Kiyonori. Kiyonori Kikutake: From Tradition to Utopia. l'Arca Edizioni, 1997.
- Kubler, George. *The Shape of Time: Remarks on the History of Things*. Revised. Yale University Press, 2008.
- Kultermann, Udo, and Kenzo Tange. *Kenzo Tange*. St. Martin's Press, 1958. Print.
- Kurlansky, Mark. *1968: The Year That Rocked the World*. Random House Trade Paperbacks, 2005.
- Kurokawa, Kisho. *Intercultural Architecture: The Philosophy of Symbiosis*. 1st ed. Aia Pr, 1991.
- Kurokawa, Kisho. *Kisho Kurokawa from Metabolism to Symbiosis: From Metabolism to Symbiosis*. John Wiley & Sons, 1992.
- Kurokawa, Kisho. *Kisho Kurokawa: The Architecture of Symbiosis*. New York: Rizzoli, 1988.
- Kurokawa, Kisho. *Metabolism in Architecture*. Littlehampton Book Services Ltd, 1977.
- Lancaster, Clay. "Japanese Buildings in the United States before 1900: Their Influence upon American Domestic Architecture." *The Art Bulletin* 35.3 (1953): 217-224.
- Lee, and Laird. *Glimpses of the World's fair*. Laird & Lee, 1893.
- Lee, Khoon Choy, and Lee Khoon Choy. *Japan: Between Myth and Reality*. illustrated edition. World Scientific Publishing Company, 1995.
- Legendre, George Liaropoulos-. *ijp: The Book of Surfaces*. AA Publications, 2004.
- Lin, Zhongjie. *Kenzo Tange and the Metabolist Movement: Urban Utopias of Modern Japan*. Routledge, 2010.
- Loscertales, Vicente Gonzalez. *Encyclopedia of World's Fairs and*

- Expositions*. 2nd ed. McFarland & Company, 2008.
- “Lost in translation | Architectural Review, The | Find Articles at BNET.” Web. 14 Jan. 2010.
- Loubet, Emmanuelle. “The Beginnings of Electronic Music in Japan, with a Focus on the NHK Studio: The 1970s.” *Computer Music Journal* 22.1 (1998): 49-55.
- Lovell, Margaretta M. “Picturing 'A City for a Single Summer': Paintings of the World's Columbian Exposition.” *The Art Bulletin* 78.1 (1996): 40-55.
- Mainardi, Patricia. “The Unbuilt Picture Gallery at the 1851 Great Exhibition.” *Journal of the Society of Architectural Historians* 45.3 (1986): 294-299.
- Maki, Fumihiko. “Heirs to a Coming Age.” *JA* July (1970): 31.
- Marglin, Stephen A., and Juliet B. Schor. *The Golden Age of Capitalism: Reinterpreting the Postwar Experience*. Oxford University Press, USA, 1992.
- Marling, Karal Ann. “Writing History with Artifacts: Columbus at the 1893 Chicago Fair.” *The Public Historian* 14.4 (1992): 13-30.
- Martin, Reinhold. “Organicism's Other.” *Grey Room* 4 (2001): 35-51.
- Masanori, Oda. 10+1 EXPO in Perspective. INAX, 2004.
- Matsushita Denki Sangyo. *The Official Record of Time Capsule Expo '70: A Gift to the People of the Future from the People of the Present Day*. Kodama, Japan: Matsushita Electric Industrial Co, 1980.
- McCorquodale, Duncan, and Julian Stallabrass. *Ground Control: Technology and Utopia*. Black Dog Publishing Ltd, 2001.
- McCoy, Esther. “Beyond Metabolism: The New Japanese Architecture.” *JAE* 32.3 (1979): 32.
- . “Reviewed Work: Beyond Metabolism: The New Japanese Architecture by Ross, Michael Franklin.” *JAE* 32.3 (1979): 32.
- Metevelis, Peter. “The Deity and Wind of Ise.” *Asian Folklore Studies* 61.1 (2002): 1-34.
- Miki, Manabu. 10+1 EXPO in Perspective. INAX, 2004.
- Miller, Kiri. “Americanism Musically: Nation, Evolution, and Public Education at the Columbian Exposition, 1893.” *19th-Century Music* 27.2 (2003): 137-155.
- Miller, Naomi. “Arata Isozaki.” *Journal of the Society of Architectural Historians* 48.3 (1989): 307-309.
- Minty, E. Arden. “London's New Public Buildings.” *The Burlington Magazine for Connoisseurs* 10.46 (1907): 210-218.
- Miwa, Ooba. 10+1 EXPO in Perspective. INAX, 2004.
- Morris-Suzuki, Tessa. “The Invention and Reinvention of 'Japanese Culture'.” *The Journal of Asian Studies* 54.3 (1995): 759-780.
- Morton, Patricia A. “National and Colonial: The Musée des Colonies at the Colonial Exposition, Paris, 1931.” *The Art Bulletin* 80.2 (1998): 357-377.
- Moul, William. “Power Parity, Preponderance, and War between Great Powers, 1816-1989.” *The Journal of Conflict Resolution* 47.4 (2003): 468-489.

- Murata, Masayuki. *Bakumatsu, Meiji no kōgei : sekai o miryōshita Nihon no waza to bi*. Japan: Tankōsha, 2006.
- Naitoh, Akira. "Series of Study Related to House Room Layout." *Architectural Institute of Japan* (1976): n. pag.
- Nishiyama, Uzo. *Machizukuri no koso*. Toshi Bunkasha, 1990.
- Oshima, Ken, Tadashi. "Japan-ness in Architecture." *Journal of Japanese Studies* 34.1 (2008): 234-235.
- Packer, Randall. "Composing with media: Zero in time and space.." *Contemporary Music Review* 24.6 (2005): 509-525.
- Perkins, P. D. "The Rise and Decline of Bukezukuri." *Monumenta Nipponica* 2.2 (1939): 596-608.
- Pernice, Raffele. "Metabolist Movement between Tokyo Bay Planning and Urban Utopias in the Years of Rapid Economic Growth 1958-1964." 2007: n. pag.
- Ponsonby-Fane, Richard Arthur Brabazon. *The Imperial House of Japan*. Ponsonby Memorial Society, 1959.
- Reeve, John. *Japanese Art in Detail*. British Museum Press, 2005.
- Reynolds, Jonathan M. "Ise Shrine and a Modernist Construction of Japanese Tradition." *The Art Bulletin* 83.2 (2001): 316-341.
- Rottau, Nadine. "Viena 1873." *Encyclopedia of World's Fairs and Expositions*. 2nd ed. McFarland, 2008.
- Rydell, Robert W. *All the World's a Fair: Visions of Empire at American International Expositions, 1876-1916*. University Of Chicago Press, 1987.
- Ryuzo, Uchida. *10+1 EXPO in Perspective*. INAX, 2004.
- Sala, Nicoletta. *Chaos and Complexity in the Arts and Architecture*. Nova Science Publishers, 2007.
- Sandrisser, Barbara. "Cultivating Commonplaces: Sophisticated Vernacularism in Japan." *The Journal of Aesthetics and Art Criticism* 56.2 (1998): 201-210.
- Sankovitch, Anne-Marie. "Structure/Ornament and the Modern Figuration of Architecture." *The Art Bulletin* 80.4 (1998): 687-717.
- Sano, Yuka. "Traditional Japanese Architecture and Design 2." *CasaBRUTUS* (2008): n. pag.
- Saunders, Kenneth. "Glimpses of the Religious Life of New Japan." *The Journal of Religion* 2.1 (1922): 70-80.
- Schmal, Peter Cachola et al. *Kisho Kurokawa: Metabolism And Symbiosis*. Bilingual. Jovis, 2005.
- Scott, Felicity D. "Architecture or Techno-Utopia." *Grey Room* 3 (2001): 113-126.
- Shaking the Foundations: Japanese Architects in Dialogue. Munich: Prestel, 1999.
- Shepp, James W., and Daniel B Shepp. *Shepp's World's Fair photographed*. Globe Bible Pub. Co., 1893.
- Sheppard, Francis H. *Museums Area of South Kensington and Westminster: Survey of London Volume XXXVIII (Survey of London,)*. Athlone Press, 2000.
- SHINKENCHIKU*. Tokyo, Japan: Yosioka Yasugora, 1958.
- Simons, Howard. "Brussels Fair and Science." *The Science News-Letter* 73.2 (1958): 26-27.

- Siza, Alvaro. "Three Projects." *Assemblage 2* (1987): 63-95.
- Smith, Tony. *The Pattern of Imperialism: The United States, Great Britain, and the Late-Industrializing World Since 1815*. Cambridge, [Eng.]: Cambridge University Press, 1981.
- Sorensen, André, and Carolin Funck. *Living cities in Japan: citizens' movements, machizukuri and local environments*. Routledge, 2007.
- Stamper, John W. "The Industry Palace of the 1873 World's Fair: Karl von Hasenauer, John Scott Russell, and New Technology in Nineteenth-Century Vienna." *Architectural History* 47 (2004): 227-250.
- Trapp, Frank Anderson. "The Universal Exhibition of 1855." *The Burlington Magazine* 107.747 (1965): 300-305.
- Treib, Marc. *Space Calculated in Seconds*. Princeton University Press, 1996. Print.
- Troyen, Carol. "Innocents Abroad: American Painters at the 1867 Exposition Universelle, Paris." *American Art Journal* 16.4 (1984): 3-29.
- Tschumi, Bernard, and Max Protetch Gallery. *The Manhattan Transcripts*. London: Academy Editions, 1981.
- Tsuru, Shigeto. *Japan's Capitalism: Creative Defeat and Beyond*. New Ed. Cambridge University Press, 1996.
- Tunnard, Christopher. "A City Called Beautiful." *The Journal of the Society of Architectural Historians* 9.1/2 (1950): 31-36.
- Wada, Kunihei. *Katsura: Imperial Villa*. Reissue. Hoikusha Publishing Co., Ltd., 1973.
- Waswo, Ann. *Farmers and Village Life in 20th Century Japan*. RoutledgeCurzon, 2003.
- Housing in Postwar Japan - A Social History. Routledge, 2002.
- Webb, Michael. "The Robots Are Here! The Robots Are Here!." *Design Quarterly* 121 (1983): 4-21.
- Weil, Benjamin. "Art in Digital Times: From Technology to Instrument." *Leonardo* 35.5 (2002): 523-537.
- Wesemael, Pieter van. *Architecture of Instruction and Delight*. 2001.
- Wilkins, David, Bernie Schultz, and Kathryn M. Linduff. *Art Past, Art Present* (with MyArtKit Student Access Code Card). 6th ed. Prentice Hall, 2005.
- Winther-Tamaki, Bert. "Oil Painting in Post Surrender Japan: Reconstructing Subjectivity through Deformation of the Body." *Monumenta Nipponica* 58.3 (2003): 347-396.
- Young, David, Michiko Young, and Tan Hong Yew. *The Art of Japanese Architecture*. Tuttle Publishing, 2007.

