

ARCHITECTURE AGAINST TRADITION

Transformation of Modes of Production of Japanese Construction, From Premodernity to the Debates on Tradition

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This article aims to understand how Japanese modern architects in the context of the so-called Debates on Modern Architecture in 1947-1948 (hereinafter “Kindai Kenchiku Ronsō” 近代建築論争) and Debates on Tradition in 1953-1957^{Note 1} (hereinafter “Dentō Ronsō” 伝統論争) advocated overcoming premodern modes of production in favor of developing forms of construction based on the use of industrial techniques, especially reinforced concrete.

Firstly, we provide a description of these premodern^{Note 2} modes of production from the Edo Period in 1603-1868 targeted by modern architects. Secondly, we draw a general overview on the importation of technical knowledge and materials from Europe and the United States between the modernization reforms of the Meiji Restoration in 1868 and the mid-1940s, revealing already ongoing shifts in modes of production before the flourishing of the postwar modernist avant-gardes. Lastly, based on a discourse analysis of buildings and articles published by modern architects between 1947 and 1957, we present an alternative perspective on how modern architects developed theoretical and architectural languages for the diffusion of new means of production in the postwar period. We will show how modern architects confronted premodern organizations of labor and how they sought to internalize and politically neutralize the construction techniques developed by artisans within a new logic of industrial production.

We therefore intend to: (1) understand how modern architects and critics, led by Kenzō Tange 丹下健三 and Noboru Kawazoe 川添登, sought to incorporate and thus neutralize traces of premodern production on construction sites in the second half of the twentieth century; (2) question the prevailing view that the so-called Dentō Ronsō focused only on the aesthetic opposition between Yayoi 弥生 and Jōmon 縄文, and illuminate the technological or constructional issues that were a fundamental trigger for the discussions as they unfolded between 1953 and 1957.

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As the main referential framework of the present study, we analyzed more than 50 original articles published in Japanese in the magazine *Shinkenchiku* 新建築 between 1953 and 1957^{Note 3}. The only antecedent we found was a study comprising an extensive analysis of primary sources (selected articles written by the architects during the Debate on Tradition in the mid-1950s) was Shuji Funo 布野修司 (Funo 1981, 197-222). We propose to analyze this research from a new critical perspective, forty years later, focusing on shifts in the modes of production.

PREMODERN MODES OF PRODUCTION DURING THE EDO PERIOD (1603-1868): CRAFTSMANSHIP AND THE CONSTRUCTION SITE

Until the mid-nineteenth century, neither a concept nor descriptive term existed in Japan for the Renaissance European notion of “architecture.” The term *kenchiku* 建築 emerged as a translation of the English word “architecture,” proposed amid the creation of the nation-state during the Meiji Period in 1868-1912. In this transitory moment, the architect and historian Chūta Itō 伊東忠太 advocated in 1894 to change the name of the Society of Architects from *Zōka-gakkai* 造家学会 (as it had been known since its founding in 1886) to *Kenchiku-gakkai* 建築学会. This supposedly established the term *kenchiku* as the approved translation of architecture, with these two terms (*zōka*, which literally means “home making,” and *kenchiku*, a neologism that means approximately “building structure”) being used interchangeably in that period. Itō relates *zōka* to “industrial arts” and *kenchiku* to “fine arts,” using these English words to explain their differences and support the use of the latter (Itō 1894, 195-197). The Society officially changed its name to *Kenchiku-gakkai* in 1897^{Note 4}.

The semantic transition reflected a broader shift in modes of production. As we will show, unlike the modern European notion of plan-projection that prevailed since the Renaissance – in which building entails the prior creation of a set of coordinated drawings created by architects or engineers, transmitted through the workflow hierarchy – Japanese construction until the mid-nineteenth century largely depended on the inherited knowhow of artisans (broadly designated by the Japanese term *shokunin* 職人, or earlier variations such as *kōshō* 工匠^{Note 5}).

In the absence of drawings, how were production chains shaped on construction sites prior to the modernizing transformations that unfolded in the context of the Meiji Restoration in 1868? And what were the basic frameworks for labor organization on premodern construction sites, for example, during the Edo Period in 1603-1868? How were intentions and desires transmitted and how were constructive decisions taken? All these questions would guide us to historically re-contextualize shifts, legacies, and reminiscences in architectural practices in the transition from pre-modernity to modernity. From that, we will be able to unfold a critique on the view of modern architects – such as Kenzo Tange – towards “tradition”. In other words, the next few pages will assess what essentially changed in construction in the passage from pre-modernity to modernity in Japan and what did not shift but the modern architects aimed later to change.

Public and large-scale building initiatives (such as temples, shrines, castles and palaces) during the Edo Period (1603–1868) arose from the demands of construction financiers such as the shōgun, feudal lords [daimyō 大名], imperial court, or monastic orders, which commissioned shokunin builders^{Note 6}. These complex projects offered opportunities for shokunin with management abilities to be hired by the authorities to organize labor forces (Ota, 1947, 177–179), introducing a division of labor between management and on-site construction. Especially after 1632, the hierarchical structure of work organization incorporated new positions of trust, now basically of bureaucratic officers, such as the so-called sakuji bugyō 作事奉行 and its subordinates called sakujiyata 作事方, commissioner for management and mediation of the authorities' intentions and activities on the construction site (Ōta 1947, 179; Coaldrake, 1990 & 1996).

The transmission of the authorities' instructions to the construction site could use the initial choice of the commissioned craftsmen, oral and written determinations, and connection of the building function to specific styles to influence the location, scale, and general aspects. However, such guidelines were unable to address the details and technical definitions of the construction. Due to their unfamiliarity with manual practice and lack of specific knowledge, daimyō and their sakuji bugyō commissioners did not have definitive tools for full control of work on construction sites. Authorities' wishes could not be fully satisfied by the building artisans and conflicts frequently emerged in this process (Coaldrake, 1996). Responsible for the organization of production, master artisans have been described as averse to external control^{Note 7}.

The general guidelines coming from higher decision-making spheres of the shogunate regime, passed from sakuji bugyō to agents designated as tōryō 棟梁 (depending on the period and specificity of the position, also called daikugashira 大工頭), who assumed the role of work organizers on construction sites (Meiji-mae Nihon Kagaku-shi Kankoukai, 1961). These agents in turn, unlike their superiors in the hierarchy of work organization, had technical mastery of construction, in addition to extensive training. Each site could have more than one tōryō, responsible for different activities on the construction site, such as carpentry [daiku tōryō 大工棟梁], plaster [sakan tōryō 左官棟梁], and construction of scaffolding [tobi tōryō 鷹棟梁], a worker specialized in activities in high places). In addition, there were masters responsible for roofs, iron, walls, tatami mats, stones, doors, and so forth. The term oyakata 親方 is also used as a generic designation of shokunin masters.

Although the carpenter responsible for the wooden structure, daiku tōryō 大工棟梁, enjoyed greater importance in defining general aspects of the building by controlling the location of the posts and the dimension of the spans, each group of shokunin at the construction site had great autonomy regarding their own element and specialization. Unlike today's hierarchical mode of production where precise indications from outside the construction site are needed to control all building elements and processes, there were no mechanisms for such a precise prescription from higher hierarchical levels of each element, ornament, and technical solution. Since each master specialized in their own constructive component, no one could vertically traverse all phases of the construction and, even when there was one single tōryō [dai tōryō 大棟梁] in charge of the general construction site, he had a background and knowhow of only one element among the various parts of the building.

In this labor system based in workshops and informal craft guilds called nakama 仲間, master tōryō or oyakata passed their knowledge to apprentices, forming lineages of craftsmen (Inagaki 1959, 49–50; Coaldrake 1990). The essence of this work can be defined as a collaborative network of artisanal-manual production on the construction site, in which all the masters maintained a constant dialogue with each other and within their own team, based in daily practice and knowhow. Within each

informal shokunin guild – and in the absence of authoritative drawings – there was not what Ferro (2010, 2018, 2021) describes as “a constant and instituted division of labor,” especially considering the independence of constructional elements (Inagaki 1959, 51–51, 59–60)^{Note 8}.

Based on our literature review (Inagaki 1959; Meiji-mae Nihon Kagaku-shi Kankoukai 1961; Coaldrake 1990 & 1996; Clancey 2005; Nikkenkyo 2001; Sakamoto & Kamta 2017; Ota 1947; Curtis 2011; Bon & Yoshiro 2018, Yamagishi 2017), the hierarchical structure for the construction of new buildings during the Edo Period, notably already with a preliminary division of contractor/management and construction layers, can be broadly summarized in the following basic structure:

Contractor/Management Layer:

- Building Financiers (e.g. Daimyo 大名 or the Shogun 將軍)
- General Manager (e.g. Sakuji Bugyo 作事奉行 or Onhikan Daiku 御被官大工)
- Landworks & Technical Manager (e.g. Fushin Bugyo 普奉請行)

Construction Layer:

- Construction Chief (e.g. Dai Tōryō 大棟梁, Daikugashira 大工頭)
- Structure & Carpenter Construction Chief (e.g. Daiku Tōryō 大工棟梁)
- Master Builders (e.g. Oyakata 親方)
- Skilled Builders (e.g. Shokunin 職人 or Daiku 大工)
- Apprentices (e.g. Minarai 見習 or Totei 徒弟)

Notably, there is a lack of one single professional who had full technical mastery of all phases of the construction, as well as an absence of drawings in the mediation of this process, an aspect that has been constantly neglected in the literature. The lack of exact top-down instructions via technical drawings allowed on-site workers to exercise their skills and collective insights to participate proactively in construction rather than just performing set tasks. Thus, in this bottom-up response from the construction site, there were small deviations between conception and construction, unlike architecture that depends on the separation between design and production, that is to say, between architectural or engineering offices and construction sites. This absence of the authority of technical drawings engenders a different relationship to the organization of work, whether in the mediation between higher hierarchical instances with the production, or in the relationship between the agents involved in the daily life of the construction site, who needed to establish a constant dialogue through practice and knowhow.

Prior to the Meiji Restoration in 1868, drawings generally served as post-documentation of built structures rather than design or construction guidelines. General drawings of the building were used to register existing works and helped in case of reconstruction, and for instructional purposes in the shokunin workshops. In his canonical book, *Architecture and Authority in Japan*, William Coaldrake (1996, 134) cites the existence of a set of technical construction drawings of Edo Castle's tenshu 天守 [tower], supposedly drawn by Kōra Munehiro 甲良宗広, the master builder in charge. However, such representations were made after the construction, by another craftsman from the same family, Kōra Toyomae 甲良豊前, as an “as built” (Tokyo Metropolitan Library 2020). In any case, these drawings show that, in the Edo Period, shokunin wielded advanced representation techniques of descriptive geometry, including accurate graphic projections.

All in all, beside the “as built” during early and mid-Edo Period during 1603–1868, there were indeed other “in scale” drawings at the construction site, although they were extremely scarce and basically served to assist specific artisans within their own craft, such as, for example, tatami mat layouts for a tatami producer^{Note 9}. The main purpose of this kind of drawing relied on visualization strategies rather than transmission of demands along productive chains. Each daiku tōryō workshop had also an archive of details named hidensho 秘伝書, hinagata-bon 雛形本 or gijutsusho 技術書, which did not show exactly what to do, but represented the diagrammatic proportions between the elements, described through text processes and measures (Coaldrake 1990, 38). They were kept secret within each

workshop and resemble construction manuals. Drawings at 1:1 scale also enabled precise woodcutting, as templates to draft full-size guidelines for the production of building components. Lastly, wooden boards named itazu 板図 (another of the few cases of “in scale” technical drawings) served to define dimensions and compositions of the wooden parts (Fukai & Tohiguchi 1996). Those wooden boards represented general plan layouts, and helped daiku tōryō to estimate material requirements for columns and beams.

Although records of itazu plan-projection drawings made by shokunin date back as early as the mid-Edo Period^{Note 10}, such strategies became increasingly popular only in the late-Edo Period, in the development of a discipline named kiwari-jutsu 木割術 (Nakagawa 1986). Coming from wood-cutting techniques, it became a scaleless proportional system for wood construction based on relationships between the thickness of posts and the distances between them, similar to the tatami modular system, with the reiteration of certain elements defining a greater whole, but in this case more flexible and related to structural elements. The kiwari-jutsu also relates to the writing of secret manuals within each workshop.

Unlike the European modern projection and planning methods that emerged in the fifteenth century, drawings on Japanese premodern construction sites did not establish an integrated mediation between different construction labor practices and crafts, nor vertically dictate solutions for workers. Final decisions depended on existing shokunin knowhow and experience. External agents such as architects and engineers did not possess the means for remote decision-making and prescriptions that could define the final aspect of the objects. This resulted in a different constellation of power relations compared to modernity, and there was no subordinate work mediated by the modern tools of control. In this sense, the organization of a construction site in Japan during the Edo Period in 1603–1868 resembled premodern modes of production in Europe, that is, prior to the transformations crystallized by Filippo Brunelleschi during the construction of the dome of Santa Maria del Fiori in Florence (Ferro 2010).

However, the institutionalization of construction organizations in Japan, accompanied by monopolies and the specialization of knowledge and skills within each appointed family, resulted in signs of a threat to artisanal creative freedom and a decline in craftsmanship autonomy from late Edo Period onward. According to Ōta (1947, 180-182), the maturation of knowhow in new forms of subordination of labor based on emergent projection strategies, as in the kiwari-jutsu, resulted in efficiency rather than creativity. This was not, in any case, a complete process and remnants of premodern modes of production persisted after the Meiji Restoration in 1868. Between the Meiji Restoration and the Second World War, an ongoing transformation in the modes of production continued, and the industrial processes and new imported materials, such as bricks, concrete, and steel, were introduced to a type of construction previously dominated by artisanal techniques linked to timber structure.

The intermediation of design and the emerging positions of engineers and architects (generally remote from the construction site and devoid of manual handcraft skills for the production of building components) brought a completely new logic to the construction, now ruled by scientific and rationalist approaches that prioritize general expert knowledge outside the construction site over particular skills and decisions by onsite workers regardless of their mastery. Any use of the word architecture to describe buildings prior to the Meiji Restoration in 1868 as well the attribution of the architect title to any worker (including the dai tōryō) is an anachronistic and decontextualized interpretation of the Japanese building realm.

MODES OF PRODUCTION AT THE DAWN OF MODERNITY

(1868–1945):

INTRODUCTION AND ASSIMILATION OF ARCHITECTURE AND NEW TECHNIQUES

"The end of the [19th] century witnessed the emergence of new materials not controlled by monopolizable crafts—in particular, iron and reinforced concrete, as showcased in almost every history of modern architecture. They are the weapons to which capital resorted instead of machines, establishing an ersatz of real subordination in realms such as construction, where it was impossible to replace manufacture by modern industry. The new materials disarmed the workers by taking the place of those materials that had underpinned crafts based on traditional know-how. (...) Little by little, wood and stone left the construction site along with traditionally trained carpenters and masons—hindrances to the new kind of domination—until a tacit prohibition of these materials came to prevail during the first period of modernism." (Ferro 2018, 17)

Following the end of the isolation policies of the Edo Period in 1603–1868, the opening of the ports in 1854, and modernization reforms unleashed by the Meiji Restoration in 1868, the insertion of new production systems based on modern materials and techniques from Europe and the United States provoked a rupture in the notion of construction. During the transitory phase from 1868 until the defeat in the Second World War, the newly imported “Western” modern concepts and technologies of architecture were adapted (assimilated) to local and historical conditions. Japan quickly incorporated disciplines that had been developed in other parts of the world over the previous four centuries. National public initiatives, as well as the emerging presence of international representatives that required new facilities in “Western style” (Stewart 1987, 13-32; Jackson 2013, 109-183), created conditions for the domestication of architecture during the first three decades of the Meiji Period in 1868–1912.

The development of design and styles paralleled the development of production modes. An emerging construction logic based in the production chains of architecture and engineering required new professionals, new materials, and new construction methods. The transition can be described by a cycle in which the modernization and opening of the economy developed or attracted new construction industries which needed new professionals and materials that, in turn, demanded new techniques. Every element of this cycle could be considered both trigger and cause of the transformations.

The modernization process in Japan was heavily dependent on foreign influences from the very onset. Although foreign experts such as Thomas James Waters had been already involved in applications of Western architecture dating back to initiatives such as the Kagoshima Spinning Mill in 1867, the policy of oyatoi gaikokujin 御雇外国人, triggered a more systematic assimilation process for official employment of international professionals. At least thirteen experts in the architecture field from the UK, France, Prussia, and Italy were invited from 1874 to 1880, including British architect Josiah Conder who stayed in the Imperial University in Tokyo and taught Western architecture until 1888 (Inagaki 1959, 36-43). In addition, the new Japanese government sent students to the UK in 1880 to absorb advanced industrial technologies, including Kingo Tatsuno 辰野金吾, an ex-student of Conder. After three years abroad, Tatsuno started teaching Western architecture as a professor at the Imperial University in 1884

(ibid.). His colleague, Tōkuma Katayama 片山東熊 was sent to Germany in 1886 (Stewart 1987, 55-62). Both became prolific producers in the first generation of architects of Japanese nationality.

Moreover, beyond such state-sponsored assimilation of Western architecture based on brick construction, the shokunin themselves showed great interest in developing new skills

(Jackson 2013, 151-158). This situation resulted in the so-called *giyōfū* 擬洋風 [pseudo-Western style] architecture, eclectic both in style and in structure, which applied Japanese skills, such as post-and-beam timber construction and earthen wall plastering, to emulate Western styles. Such a stylistic and structural eclecticism became a field for *tōryō* and *shokunin* to employ their own creativity (Inagaki 1959), especially in decorative elements, as a meeting point between the public initiatives to promote Western-style buildings, vernacular skills, and materials available on construction sites.

The practice of Seiju Tateishi 立石清重, for example, stands out among master craftsmen who became architects (in “Western” style, both in terms of work practice and the form of buildings). Formerly in service to feudal lords in the Nagano region, he participated in the construction of castles, shrines and temples as a master *Daiku Tōryō* (Hoyano, Shigeo et al 2019, 947-952). In 1872, after visiting buildings created with foreign involvement in port areas such as Yokohama, he founded his own practice and made important works such as the Kaichi School in 1876. His work gained prominence and he was admitted to the Society of Architects in 1888, when it was still called *Zōka-gakkai* 造家学会. Other master carpenters, such as Daijiro Ichikawa 市川代治郎 and Teruyasu Matsuki 松木輝殷, followed a similar path as exponents of *giyōfū* architecture. These practices relied on wooden structures and allowed direct assimilation processes of western forms into constructions made by Japanese nationals.

Despite the importation and formation of an army of professionals in architecture and engineering to explore new design styles, from *oyatoi gaikokujin* to Westernized Japanese architects, the modes of production did not instantly switch to Western systems. In the last decades of the nineteenth century, there was a lingering dependence on pre-existing construction techniques by builders at construction sites, as these labor forces had to be mainly local due to cost constraints. However, from the turn of the century, as ongoing modernization process also in a management level, organizations started to incorporate thousands of masters and builders as employees. In 1891, 1300 construction workers went on strike in Tokyo, demanding (and receiving) a daily salary increase (Obata 2018). Master builders’ organizations shifted from feudal structures to capitalist enterprises. In 1899, for example, the fourteenth generation of a line of carpenters, originally specialized in the construction of temples and shrines, established an office in Kobe for the Takenaka Corporation, which would soon become one of the five largest contractors in Japan.

An even broader transformation on the modes of production and strengthening of labor control soon imposed a different logic on construction. The steel industry started to gain momentum with the establishment of the state-owned Yawata Steel Works in 1896. Steel production increased from 49,147 tons in 1901 to 240,363 tons in 1913, while imports jumped from 6,033 to 254,952 tons during the same period (Shimizu 2010, 145). Although only 2.50% (17,134 of 670,541 tons) of production in Yawata in 1911 (which represented 89% of the country’s steel shares in that year) was destined for building construction, the growth in production shows an industry preparing for greater demands for all purposes. Likewise, initially as a government enterprise, Japan started the cement production in 1875 and privatized the sector in 1883 (Otaka 1963, 272-276). Production increased 30 times between 1888 and 1911, rising from 20,000 tons to 600,000, reaching 3 million tons in 1926 (Shimoda 2016, 23).

While brick masonry projects dominated the late-nineteenth century “Westernization” process, such as the Ginza reconstruction after the 1872 fire, a series of earthquakes prompted the gradual introduction of steel and concrete. In 1891, the Nobi earthquake revealed the seismic risk inherent to brick construction, which led to more steel-frame construction. In 1906, the San Francisco earthquake caught the attention of Japanese engineers, including Toshinori Sano 佐野利器. In the same year, they visited the earthquake-hit city to compare

damage to different construction methods and became convinced that steel-frame and concrete construction was most appropriate for Japan, as it would meet anti-seismic and fire prevention requirements (Inagaki 1959, 147-151). The choice of these modern technologies was widely applied after the 1923 Kanto earthquake destroyed many brick buildings, such as Asakura Ryōnkaku. Post-earthquake concrete construction in Tokyo reached 3.3 million square meters in 1927, increasing to 10 million square meters in 1935 (*ibid.*). Although timber frame still played a major role in Japan, these numbers confirm the modern steel and concrete industries in constant growth.

In addition to these political, economic and technological pressures to modernize construction, the 1923 earthquake also accelerated cultural impulse for modernization, as documented by the extensive research of Wajiro Kon at that time done in the name of “Modernology” with his apprentice Kenkichi Yoshida (Kon and Yoshida, 1931). Modern lifestyles during the Taisho Period in 1912–1926, embodied by emerging urban characters such as the Modern Girl (“moga”) and the Modern Boy (“mobo”), extensively presented in the mass media, enhanced the production of new types of space, in special Western-style houses. This growing demand for new (and fast) construction propelled by the modernization of economy and culture developed in the Meiji and Taisho periods started to shift the modes of production in large cities like Tokyo toward industrial and scientific production (mainly of Western-style buildings).

Propelled by structural and cultural reasons, the insertion of new materials and techniques in the emerging industrial economy demanded cost-efficient rationalization for structural stability and the proper use of resources. Unlike former timber systems, most of the construction components could no longer be produced and conceived at the construction site and demanded controlled industrial processes. The introduction of new materials and concomitant systems to the existing knowhow of *oyakata* and *shokunin* modes of production narrowed the space for decision making based on practical knowledge and, minimizing decision-makers in the construction site, entailed a leap towards the control of master builders’ labor by centralized and prescriptive design process as represented by technical drawing.

Authors such as Funo (1981), for the Japanese case, and Ferro (2018), for the European case, note that the constructional logic of steel is similar to that of timber, in its assembly and structural performance (especially seismic) based on a logic of semi-rigid joints and specialized labor. However, reinforced concrete demands a very different organization of the construction site, based on prior planning of the formwork, complex calculations of rebars and cement ratios, rigid joints of elements, inferior seismic performance and, above all, intensive use of on-site labor, generally less specialized. The more complex and greater the exploration of concrete’s plasticity, the more fundamental the calculations and work outside the construction site become, demanding new mathematical models to manage decision-making that cannot be relied upon intuitive knowledge of skilled workers.

Thus, the transition from wood to brick to steel to concrete demanded a reorganization of architectural thinking and a new chain of agents involved in construction, especially the role of the master builders who now had to follow projects designed in offices by architects and engineers. However, not so different from what occurred in Europe before the nineteenth century, the industrial means of production did not provide an ultimate design that could fully explore – in a productive and ideological sense (base and superstructure, in Marxist terms) – the potentials of new technologies. Emulations of classical design represented a gap, an anachronism, between the building design and the full capacities of emerging technologies. This process happened in Europe from the fifteenth to the nineteenth centuries (Ferro 2021) and Japan reproduced it, during a shorter period, after the Meiji Period until the end of the Second World

War.

Between the two World Wars, there were early attempts to bridge the gap between architecture design and modern production chains. This is the case, for example, of early radical expressionist movements such as Nihon Bunriha 日本分離派 [Japanese Secession School] in 1920–1928 and Sō-usha 創宇社建築会 in 1923–31. At this period, aspects of the International Style and functionalist movement had also been explored in Japan through the works of Noémi & Antonin Raymond in the 1920s and 30s, Kikuji Ishimoto 石本喜久治, Tetsuro Yoshida 吉田鉄郎, Iwao Yamawaki 山脇巖, Bunzo Yamaguchi 山口文象, Togo Murano 村野東吾, Sutemi Horiguchi 堀口捨己 and Kameki Tsuchiura 土浦亀城 in the 1930s. Kunio Maekawa 前川國男 and Junzo Sakakura 坂倉順三 started working for Le Corbusier in 1928 and 1931, respectively; and Chikatada Kurata 蔵田周忠 went to Gropius's office. Public servants designed schools for the Tokyo municipality and housing blocks for the Dojunkai 同潤会 in the 1930s.

These were all, nonetheless, embryonic and experimental attempts that remained as exceptions suffocated by imperial policies which promoted, especially after the mid-1930s, public facilities using eclecticism such as the Neo-Baroque style and the Imperial Crown Style or Teikan Yōshiki 帝冠様式, a combination of Western structural systems in concrete, European Neoclassicism and symbolic Japanese roofs. That scenario resulted in debates such as the roundtable “Overcoming Modernity” (Kindai no Chōkoku 近代の超克) in 1942 (Nakamori 2011, 2–30). Both

the prevalence of styles such as the Imperial Crown Style and official discussions against modernity in the midst of a highly nationalistic context meant a friction and delay on the inevitable alignment of architectural design to industrial modes of production. The tragic end of the conflict and also the United States Occupation Government allowed a new, belated development of modern architecture in Japan, after clearing the ashes in 1945 and 1946.

Muramatsu (1959, 121–126) characterizes the construction industry between the Meiji Period and the end of the Second World War with four conditions: (1) the dissolution of feudal constraints and associated labor protections, (2) the development and growth of contractor business, (3) the collapse and reorganization of associations among carpenters, and (4) the change of construction technology, in which traditional skills came to be underrated with the word shokunin being a synonym for “irrational, bigoted and outdated.” Despite growing pressures, the simultaneous coexistence of different forms of labor organization, including what will be problematized as “feudalistic” in the postwar period, had persisted, especially in rural areas. While the hierarchical organization of labor had further expanded its scope since the late Edo Period, it was in the postwar reconstruction that technical drawings and the work of architects and engineers could finally pierce through the entire pyramid as an essential prerequisite for centralizing powers and enabling nationwide industrialization progress of the building sector.

THE TECHNICAL-CONSTRUCTIONAL DIMENSION OF THE ARCHITECTURAL DEBATES BETWEEN 1947 AND 1957

Aiming at greater participation in the postwar reconstruction during a phase of rapid industrialization^{Note 11}, Japanese architects – then dispersed among multiple institutions – organized a unified league in June 1947, the New Architects Union of Japan (Shin Nihon Kenchikka Shūdan 新日本建築家集団, hereinafter “NAU”). The group included young architects and theoreticians such as Ryūichi Hamaguchi 浜口隆一, Kenzō Tange, Uzō Nishiyama 西山卯三, Yoshihiko Zushi 図師嘉彦, and Kiyoshi Ikebe 池辺陽. The discussions developed during this period became known as Kindai Kenchiku Ronsō in 1947–48

(Funō 1981, 128–156) – a predecessor of the Dentō Ronsō in 1953–1957 – and triggered controversies regarding the relationship between premodern construction and industrial methods supported by modernist design. These debates became an ideological issue in that period, guided by the exploration of the expression Dentō 伝統 [tradition] in various meanings and forms, using pre-existing local culture as a pivot for further transformations.

Ryūichi Hamaguchi, in his 1947 book *Architecture of Humanism* ヒューマニズムの建築 日本近代建築の反省と展望^{Note 12}, provided the framework for the NAU platform. Equating functionalist modern architecture with humanism, he unreservedly supported functionalist principles derived from European Modernism and critiqued national styles, arguing for a practice linked to the people in opposition to the purported elitism of old styles (Funō 1981, 128–156). In the immediate postwar period, Hamaguchi took the methods of European International Style to praise industrialization based on productive systems with a “precise and uniform performance.” and “high degree of technology” using steel, concrete, and glass, all absent materials in premodern buildings. Strongly representing Marxist positions, Yoshihiko Zushi and Uzō Nishiyama criticized Hamaguchi from a radical standpoint, claiming that the development of industrial productive forces would actually deepen class inequalities and that the insertion of external modernist ideals restrained Japanese architecture (Funō 1981). Their critical views remained minority positions among the group members.

Unpacking Hamaguchi's assertions, the third mission of NAU program named Kōdō Kōryō 行動綱領 [Call for Action] approved in 1948, emphasized the opposition between different forms of construction, precisely inserting the word “tradition” (Kuroishi 2016), though as yet a simplistic synonym for premodernity and the Edo Period:

3- Overcome feudal system of construction and reactionary tendencies that entirely cover the building industry: (i) Modernization of construction and management organization. (ii) Machine industrialization of construction technology. (iii) Establishment of a scientific architectural theory based on the correct criticism and ingestion of tradition (...) (NAU Mission Statement, Call for Action, July 3, 1948)^{Note 13}

This paragraph acknowledges incongruities between “scientific architecture” and “feudal system of construction” (or “feudalism (...) in construction sector,” depending on the translation), that is, between the architecture-engineering workflow and the labor organization prior to the Meiji Period. The maintenance of the “feudal system of construction” would prevent the development of a new architecture. The “tradition” should be, therefore, internalized, appropriated, “ingested” by modern industrial production. Under the banner of overcoming feudalism, the NAU document reveals that modern architecture could not exist without industrial-economic chains, and that it confronted premodern production platforms. The so-called “feudal system of constructions” relates to the modes of production described above, from daimyō patronage to shokunin craftsmanship at the construction site during the Edo Period.

We argue that, from NAU's Kōdō Kōryō, the already belated modern architecture in Japan – delayed by the Great Depression and following wartime confusions (Inagaki, pp.228–230) and also by the conservative imperial aesthetics and nationalism – would finally address the gap between design-plan and modern modes of production, overcoming remnants in the organization of production. Kenzō Tange, an active member of NAU, explored the relationship between “feudal system of construction” and new modern-industrial chains in his text *Problems of Construction* 建設をめぐる諸問題 (Tange 1948). Then an assistant professor at the University of Tokyo, Tange focused his criticism on the links between the so-called “feudal capital” and civil construction in Japan, analyzing how production circles in construction conserved feudalistic features in modernity and

how feudal organizations dominate the construction chain (ibid). Tange challenged architects to fight against any form of production linked to feudal structures.

We, construction engineers, need to find the feudal nature of the industrial organization. This is the cancer that is preventing the democratization of our country. (...) Put in a nutshell, the feudal mechanism of the construction industry can be explained by the fact that the construction industry in Japan has not yet reached the stage of modern industrial capital but still remains subject to the domination of feudal commercial capital. So-called general contractor company is a form of feudal capital that takes advantages of shokunin organizations of carpenters, plasterers, steeplejacks and others builders just as they used to be in old feudalistic oyakata relationships [master-apprentice relationship], which places shokunin without modernized organizations on the very bottom layer, upon which pyramidal forms of control are built upon one after another, with dealers and loan sharks on each top of those [sub-]pyramids, and with feudalistic capital or what we call general contractor controlling the entire pyramid from its pinnacle. (...) The construction materials industry developed as a modern industrial form, such as the cement industry, glass industry, and steel industry, cannot exist in the pyramid series, and if they do, feudal capital will always intervene when they enter the pyramid series. (Tange 1948)^{Note 14}

Tange asserted that carpenter guilds assumed the position of contractors and subcontractors in the end of the Edo Period. Three (Kajima, Shimizu, Takenaka) of the five biggest contractors (Super General Contractor or Super Zenekon) in Japan, have their origins in carpenter associations (Clancey 2005, 183-206) and kept practices from former times as the integration between conception (updated to design) and building. The architect also identifies a system of loan and debt that concealed relationships of feudal dependencies between different classes, especially controlling access to land ownership. Likewise, two construction companies – Sumitomo and Mitsui – out of the country's four large economic conglomerates [Yondai Zaibatsu 四大財閥], also have their origins in the Edo Period, and they operate financial systems that underlay construction. Though Tange recognizes an appropriation of the craftsman in the production chains from premodernity, now updated for the twentieth century, he shows a full faith in modern industry as redemption of problems in construction.

Tange creates an analogy between the modes of production coming from the Edo Period in 1603–1868 and the existing means after the Second World War. Builders replicated and took advantage of earlier systems: Oyakata workshops became builders after the Meiji Restoration and such master carpenters updated their practices within a capitalist system, absorbed by big contractors as waged employees. The notion explored in the second section of the present article, and also observed by Ferro in Concrete as Weapon (2018), that the new materials would impose forms of control on workers via technical drawings as exact orders from outside the construction site, becomes a crucial factor for Tange to positively qualify his proposition on the progress of civil construction towards industrial

modes of production aligned with modern architecture design. Instead of seeing any loss of autonomy, Tange understands this shift in technology as a mechanism for overcoming feudalism. By saying “feudal,” Tange refers to the pyramidal organization (oyakata relationship), in which upper layers exploit lower ones.

Both “construction” and “tradition” remained as unfinished subjects in the discussion of the 1940s. Between the Kindai Kenchiku Ronsō in 1947–1948 and Dentō Ronsō in 1953–57, Tange won the competition for Hiroshima (1949), Building Standard Law [kenchikushi-hou 建築士法] had been approved in 1950, and architects continued to engage in heated discussions about their own profession. On the relationship between modern

culture and tradition, Taro Okamoto started publishing his seminal texts on Jōmon and Yayoi with an article on Jōmon pottery in the magazine Mizue みづゑ in February 1952 (Okamoto 1999) and Tange visited Katsura Imperial Villa in 1952 and the periodic reconstruction ceremony of Ise Shrine in 1953 (Cho 2012).

“Tradition” and “construction” (in a multitude of different definitions) – which had already shared the same lines on the NAU's third mission – would increasingly mingle in Japanese modernist debates from May 1953, when Noboru Kawazoe assumed the position of editor at Shinkenchiku magazine. He declared his intention to assess “tradition” as an alternative path from the then stagnant International Functionalism in his July editorial (Kawazoe 1953, 51): “Houses are tied to the life of people, which in turn is based on the long tradition of Japan. (...) Modern functionalism had emerged and developed out of a struggle against old things. But the thought that categorically accuses all old things is now outdated.”. The environment remained quiet until November, when Uzō Nishiyama (1953, 63-71) framed the upcoming debates and raised constructive problems. Nishiyama, who had polarized with the group of modern architects lead by Hamaguchi, Ikebe, and Tange during the late 1940s, presented an overview of historical legacies in order to suggest methods by which architects could universally supply popular housing: “In the past, this would have been left to the carpenters, but now most of them are being sent to unscrupulous housing companies.”

Nishiyama's vision on “tradition” would not emerge from the great buildings of the past, such as temples and imperial villas (Katsura Imperial Villa, for example), but in the ordinary timber construction of urban houses in cities like Kyoto. He argued that, “the majority of wooden buildings, represented by urban rented houses (...) are intimately connected to the lives of the Japanese people, and they retain the various legacies of past building technology.” Thus, the imposition of doctrines arising from modern architecture is disconnected from Japanese demands and, not directly mentioning technologies such as reinforced concrete, Nishiyama criticized the fundamentals of functionalism^{Note 15}. Replacing vague “functions” by “the life” of ordinary people, his intention was to propose a planning method that would constantly analyze the new houses together with their inhabitants through field surveys and take advantage of existing cheap technologies, that could mean wood construction depending on local conditions and construction culture.

Such a claim did not please the hegemonic project of diffusion of modern architecture in Japan led by Tange and Kawazoe, who started to organize a response. In a short commentary named “Plan to Serve People and the Modernization of Tradition” about the project for the National Diet Library, Tange (1954, 25) put in practice the idea of ingesting “tradition” into modern architecture: “Just as the old shokunin used to take pleasure in working with their hands on wood, the formworkers and concrete workers also find pleasure in this kind of concrete work. We are convinced that in Japanese architecture, the hand, along with the machine, is the one thing that cannot be discarded in order to make architecture an art.” The architect praised, therefore, the introduction of master handcraft skills into concrete formwork production – ironically, a building element that later disappears when the building is finished, remaining only as a specter.

All these preceding discussions found a convergence point in January 1955. A more systematic answer to Nishiyama's challenge to the modernist version of functionalism as promoting a shift to new construction technology came in a sequence of articles on “tradition” published in the January 1955 issue of Shinkenchiku. Nishiyama's position had been named Socialist Realism, in regard to his political views, the Soviet movement, and his desire to constantly scrutinize reality^{Note 16}. Either Kawazoe's editorial in 1953, or the Nishiyama 1953 article, or the January 1955 issue, can be considered the trigger of the

Dentō Ronsō, though the controversies at the time never officially received that name. The editorial of August 1955 refers to group writings on “tradition” as Dentō Rongi 伝統論議. However, we could not find any occurrence of the expression “Dentō Ronsō” published in the 1950s in Shinkenchiku. Earlier mentions of Dentō Ronsō were published in Fujioka (1991), as a broader expression, and later Fujimori (1995), on the texts of Shinkenchiku during the 1950s.

As is usually seen as the breaking point of the controversy, How to Understand Modern Architecture by Tange (1955a, 15-18) assumes that some people in postwar Japan were still rooted in old ways of life and resistant to progress. To transcend this issue, he proposes to work on the architectural expressions (that he equates to the beauty of form “that comforts the body, dazzles the eyes, and moves the spirit”), which will be able to “interplay modern and traditional” in order to create new traditions for modern architecture. In other words, blending the “old” with the “new” for example, through the use of artisanal carpentry expertise to build formwork for concrete (as stated in his 1954 note), Tange suggests creating new traditions – cultural and constructional – that overcome existing ones. Though Kunio Maekawa 前川國男, the first Japanese disciple of Le Corbusier, had already reframed the concept of “tradition” into dynamic creation with allusion to Hegelian dialectical historicism as early as 1942^{Note 17}, this was the first time in the context of Japanese architectural debates of the 1950s that the word “tradition” was discussed broadly among architects and historians as something that does not refer to a given fact of the past or a material legacy, but as an interpretation of history.

In the same article (Tange 1955a, 17), the architect reports his astonishment at the dichotomy existing in the construction sites of the Unité d'Habitation in Marseille, visited by him and Maekawa a few years earlier, and the assumptions of the modernist doctrine. Despite the coveted “precision, or neatness of a machine-made building,” they could only see “the roughness of a hand-crafted construction.” Here according to Tange lies the “danger”: “For the past six years, Corbusier must have been struggling with progress and tradition, with the European brain and sensitivity, symbolized by the ‘machine’ and the ‘hand.’ (...) From technological progress by machine towards sensible intuition by hand, there is now a conceptual regression to tradition.” The level of technological development would define the character of the intersection of the machine and the hands. According to him, this issue would have been overcome in cities like New York, where the “power of the machine (...) continues to create modern architecture.” The danger observed by Tange from the visit to Le Corbusier’s construction site reveals his belief in the industrial technical development that would demand the minimization (if not suppression) along the progress of the productive forces of the handcraft. Their own design practices and the construction techniques of his project, as will be shown below in the case of projects developed during the Debates such as Kagawa Prefectural Government Office in 1954–1958, assimilated manual labor into new modern modes of production. In the same January 1955 issue, Kawazoe (under the pen name Tomoo Iwata) uses a 1954 Tange quote about the design process for Hiroshima (Iwata 1955, 62-69):

“Our carpenter of models (sashimono daiku 差物大工) made a 1/50 scale wooden model with us, and we worked on it in parallel by breaking it down. It seems to me that the reason why the exhibition hall [for Hiroshima Peace Museum] has changed since the competition design is that the prototype has gradually become more and more apparent in my mind as a kind of sensation. In other words, I wanted to create something powerful rising out of the ruins, relying on concrete.” (Tange, Asada and Otani 1954, 12-13)

Tange’s testimony reveals the incorporation of wooden models done by a trained carpenter in the design practice of a building a priori defined in concrete, transitioning the handcraft creation “in scale” made in timber to reinforced concrete linked to

industrial processes. Though the production of wooden models is common in architecture, what draws attention here is the appointment of a trained carpenter during the design phase to produce not a mere presentation model but a study model, putting in practice inside the architectural office the ingestion of artisanal techniques (dependent on wooden structures) for concrete. Iwata, in this article, analyzed Tange’s project for Hiroshima and criticized subsequent developments in his work, such as in Shimizu City Hall in 1954, that contradicted the popular power latent in the shapes of Hiroshima projects. Contrary to what is often cited in generalized views on the debates in the literature, the opposition between Jōmon and Yayoi styles was not debated in these earliest discussions in 1955.

If, on the one hand, Tange sought a mediation with “tradition” as a creation, Kiyoshi Ikebe 池辺陽 appears in the debates as a fervent and radical defender of functionalism and modern architecture, polar opposite to Nishiyama and praising industrial methods. Assistant professor at University of Tokyo, Ikebe attacked works that appropriate the “Japanese Style Design” [nihon-teki design 日本のデザイン] by architects such as Junzō Yoshimura 吉村順三 and Kiyoshi Seike 清家清 as regressive imitation of past styles, and promoted the concept of “tradition” as a new creation in a radical departure from the pre-modern non-industrial mode of production (Ikebe 1955a, 41-43). For him, “tradition is not something to be leaned on or dug out, but something which we must fight against” (ibid, 43) and he criticizes searches for a new one in contemporary life. The vehemence of the article caused the editors of Shinkenchiku to request a response from five research laboratories: Tange Lab, MIDO Group, UHON Group, RIA Group and Seike Lab. Among these, Tange Lab and UHON Group directly addressed construction subjects.

Written by Taneo Oki 沖種郎, Tange Lab’s response (Tange 1955b, 44) proposes the incorporation of artisanal production into new modern traditions, in particular, the standardization and interchangeability of constructive components (such as tatami mats). This entailed a process of assimilation of labor: “The craftsmanship [shokunin gjutsu 職人技術] developed in handcraft production must continue to live not only in reinforced concrete, but also in the field of finishing, by acquiring its legitimate position of craftsman in the modern age [gendai ni okeru kurafutoman 現代におけるクラフトマン].” Notably in this article, in the shift from premodernity to the modern era, the shokunin are no longer designated by the traditional spelling “shokunin 職人” using kanji, but “kurafutoman クラフトマン” written in katakana spelling, which is used for foreign words and concepts. This same text presents an enhanced conceptualization of “tradition”, within the academic circles led by Tange, which corresponds to the proposal for the assimilation of constructive techniques: “What does it mean if the legacy of the past has something to do with our present and future? It must be filtered through the ‘eye,’ and at the same time, it must be created and breathed into something new through the process of production. (...) When a legacy is passed on in this way and made use of in the present age, it can be called ‘tradition’ for the first time, and it can be said to be a dynamic thing that is constantly in the process of creation.” (ibid, 44)

Ikebe (1955b, 66-69) returned to the debates four months later. Albeit admitting his admiration for premodern production, the author defends an update to contemporary society of the conditions that allowed the construction of such impressive buildings. Premodern technology, as well as the social demands that created it, would no longer satisfy modern times:

“When we look at classical architecture, we may be struck by its beauty of proportion and detailing, or by its overall composition, but I cannot stop thinking of the individuality of the architect who made full use of all these qualities, as well as the society

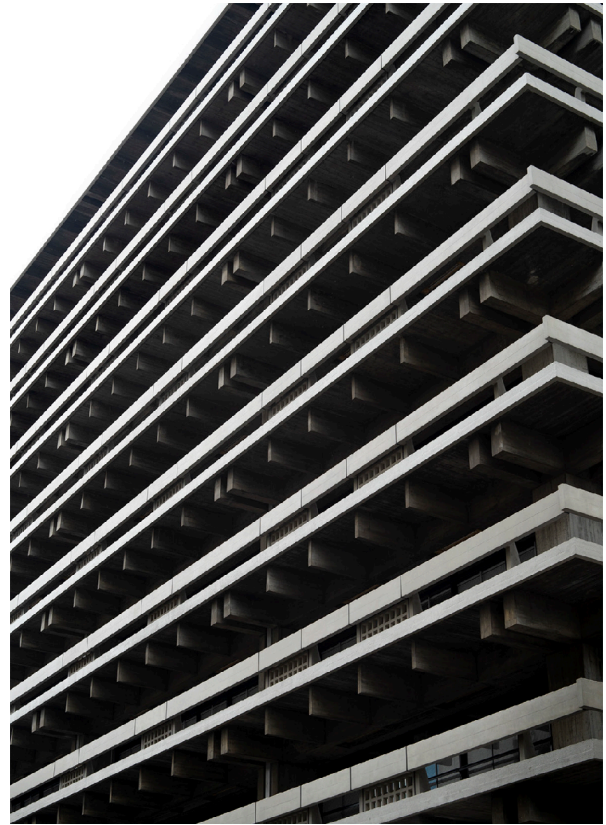
and technology that produced them. Classical architecture strikes us when an architect is able to bring out the best of the technological and social forces of his time (...). When considered from the standpoint of society and technology, it is clear that Japanese-style architecture, as it is, is not compatible with modern life, and that the life supported by Japanese-style architecture is only for a special class and lifestyle, as evidenced by the fact that many of these buildings are now being built only for ryokans, inns, and some wealthy classes.” (Ikebe, 1955b, 66-69)

In a debate attended by Noboru Kawazoe, Kenzō Tange, Masato Otaka 大高正人, Junzo Yoshimura and Konrad Wachsmann, Ikebe made his position even more explicit and linked to production modes:

“The history of Japan from the Edo period to the Meiji period, and the influence it had on architecture, has not yet been completely wiped out, and I think it still has a special shadow on our way of thinking. (...) I am trying to find a way to wipe out the Edo Period, and at the same time, I feel that there is not much difference between the Edo period and the Meiji period, nor is there any difference between the present day and the past (...). I believe that the Edo style of hand-craftsmanship, or rather, the broader human hand-craftsmanship, has destroyed something indispensable to the creation of the Japanese people today.” (Tange et al 1956, 73)

Ikebe shows an antihistorical position and asserts that the restraints of modern architecture were linked to those residues of the Edo Period which survive in Japanese culture and production. In comparison with Tange, Ikebe seemed to adopt an even more radical position against premodern modes of production. Whereas Ikebe wanted to completely erase traces of premodern means associated with Japanese stylistic elements, Tange wanted to assimilate them into new modern forms.

Along with the Debates on Tradition, Kenzō Tange developed projects such as the Kagawa Prefectural Government Office (1954–1958). In these works, Tange puts into practice his operation of ingesting “tradition” in technological and productive terms. The architect emulates a wooden structure, this time in concrete, and despite enjoying larger spans than those conventionally made in timber, he uses an assembly rationale that comes from independent components such as those practiced in temples and shrines prior to the Meiji Restoration in 1868. Here, however, these elements are in-situ concrete with advanced reinforcement technologies. The project minimizes exploration into the plasticity of concrete and organic forms, reiterating rectilinear compositions.



Detail of the Kagawa Prefectural Government Office (1954–1958) by Kenzo Tange. Photo: Gabriel Kogan



Detail of the Kagawa Prefectural Government Office (1954–1958) by Kenzo Tange. Photo: Gabriel Kogan

In an operation similar to Italian Mannerism practiced more than

four centuries earlier, Tange inserts details that show the transposition of styles and the disjunction between design and technique. The concrete pillars have, for example, negative baseboards that in wood would reduce maintenance due to water effects; duplicated beams externally tangent to the columns, emulating the joining of separate elements; beams designed as concrete railings cross the corners, pretending independence. All in all, Kagawa can be considered a manifesto constructed from his theoretical ideas about “tradition” during the Dentō Ronsō. This formal appropriation of timber technology into concrete, however, had already been criticized by Hamaguchi (1955, 13-14) in his analysis of the International House of Japan designed by Kunio Maekawa, Junzo Sakakura, and Junzo Yoshimura, dubbed as the “greatest post-war Japonica work.” – an assertion that might be considered ironical as soon Hamaguchi himself was reluctant to accept the literal and direct incorporation of pre-modern forms in modern building, what was broadly described by modern architects by the critical term Japonica ジャポニカ^{Note 18}.

The kind of assimilation of wood into concrete construction as seen in Kagawa triggered a possibility of self-criticism by Tange (1956a, 73-84), when he recognizes that the technological development aspired in his works would end up disrupting labor relations, eliminating, for example, less skilled labor and increasing unemployment: “Our theory must not deny the accumulative nature of technology, but must carry a practical outlook on how to overcome the current contradictions of technology.” His conclusion, however, is vacillating in asserting that “rationalization of construction and unemployment of workers are always two sides of the same coin, and as long as we consider this in a formal logical manner, we cannot conclude which direction we should take.”

His prevailing and strongest point of view was presented, however, a little earlier in the article *In Creation in Present-day Architecture and the Japanese Architectural Tradition* (1956b, 29-37), published in June. Tange, in this text, bonds building technology with historical debates and unfolds his instrumentalized view of “tradition”, supporting the task of “creatively bridging the past and the future.” Here lies one of his rhetorical maneuvers to reconcile the incompatibilities between Modernism and “tradition” on the construction site. As already shown in his statement on formwork craftsmanship, Tange was interested in traditions that, even if they were not formally present in the works, were present “in spirit” (Tange 1955a) or from the “internal world” (Tange 1956b), including the resignification and ingestion of premodern knowhow. With the growing expansion of Tange’s architectural portfolio throughout the 1950s, the object of his economic criticism shifted from construction companies and loansharks to building practices at construction sites. According to him, the millennial Japanese construction methods would have been conservative in terms of technical development, and modern industry or culture would inevitably overcome this situation.

“Under the influence of Buddhism from the Asian continent, historical heritage sites such as Hōryū-ji 法隆寺 and Tōdai-ji 東大寺 Temples were built, but the technological achievements from the continent did not spread horizontally and were applied only to the construction of Buddhist temples. This technological stagnation may be due to the absolute low productivity and poor accumulation of wealth, but it is also due to the weak attitude of the Japanese people in terms of their sentimentality in recognizing reality and their passivity in recognizing nature. The technological attitude of relying only on wood was repeated for a long period of time until the modern era, and during that time, there was not a single attempt to explore the soil or stone. The history of architectural technology is a history of struggle against the span that is the basis for overcoming space, but in Japan, the simple form of post and beam acquired at Ise was never developed into the arch, vault, and truss. This technological stagnation meant that the buildings could not keep pace in the increasing diversification of Japanese life.” (Tange

1956b, 31)

Problematising the lack of technical ingenuity, Tange targeted the very action of craftsmanship knowhow, in an unusual attack by a designer-architect against master craftsmen. His discourse aimed to empty traditional labor organizations based on Oyakata relationships (master workshops) in order to promote the scientific precision of industrialization in construction (financed by national and international capital). The reinforced concrete itself becomes a fundamental element for promoting this shift, as his practical work would demonstrate: the change of material capable of changing the logic of work through the development of new economic industries.

The undercurrents of Tange’s discourse emerged to the surface in ‘The Japanese Architect: Its Internal Reality and External Reality’ 日本建築家—その内部の現実と外部の現実 (Tange 1956c, 7-13). In an analysis of the role of the architect and contemporary productive forces, he proposes to investigate the memories of feudalism in civil construction as a way of overcoming obstacles in the sector: “In the case of Japan, we may conclude that, in the confrontation with reality, the architect encounters the residue [zansa 残渣] of strong feudal power, authority, and prestige.” Based on this and using the European case as a reference, Tange develops an analysis of the historical constitution of the architect’s role in Japan and its obstacles, which in contemporary times would be embodied both by the permanence of the master builders’ role (tōryō or daiku), and by the debt system and large construction companies imposed by the Yondai Zaibatsu [Big-Four corporations]. Here lies a more precise description of what he earlier called the “feudal nature of the industrial organization” or “the cancer that is preventing the democratization of our country”:

“In Europe, a class of architects has already appeared in ancient societies. However, I cannot mention the same here in Japan. Rather, I would like to focus on the fact that architects were Kenchiku Shokumin 建築職人 [architecture artisans] or Tōryō [master builders] in the feudal middle ages, and that from this reduced position, architects in the modern sense reemerged. (...) The differentiation of clients, architects, and builders [in Japan] seems to have been less mature than in the European world. (...) In Japanese feudal society, tōryō or daiku designed and built their own buildings and many buildings are today still designed and constructed by tōryō or daiku. Even after construction became a commercial enterprise in the form of contracting, the separation of design and construction did not develop. It is a peculiarity of Japan, and may be explained by the historical process of Japan, that most of the contracting companies today have a subordinate design department, and especially large companies have a large-scale design sector that cannot be compared to a general architectural firm. (...) In the history of Japan, architects in the Western sense of the word, so-called “free architects,” can be traced back to Kingo Tatsuno. This was about 70 years ago. However, Japanese society was moving forward from a feudal society to a capitalist society without having passed through a civil society (...). Kingo Tatsuno position as an architect and his consciousness were firm against the authorities of the time and against the builders. However, the civic consciousness that formed the background of this attitude had not yet matured in Japan. At that time, (...) buildings that required architects’ designs were built by the state capital or Yondai Zaibatsu, while those of the general public were mostly left to tōryō or daiku, which also prevented the maturation of a civil society in Japan.” (Tange, 1956c, p.9-10)

Tange had observed a double problem. On the one hand, the development of a productive system in civil construction aligned to monopolist capitalism. On the other hand, the residues of a productive system based on craftsmanship and the control of construction by masters. The full development of architecture in the 1950s depended, according to him, on overcoming this binary. It may also be noted that, fighting against the conceptual

change imposed by the discipline of architecture in his historical analyses, Tange created a neologism, *Kenchiku Shokunin* [architecture artisans], a function that did not exist in premodernity.

In parallel to the discussions on modes of production, Tange (1956b) had also reinserted the duality previously formulated by Taro Okamoto (1952) about the aesthetic-political opposition between the ceramics of the Jōmon and Yayoi Periods, which became dominant in later studies on the *Dentō Ronsō*^{Note 19}. Starting in 1952, Taro Okamoto analyzed in the art magazine *Mizue* みづゑ prehistoric ceramics from the Jōmon period in c.14,000BC–300BC. Consisting of a non-uniform materiality of the surface and shapes that resembled flames, these pieces contained a powerful visceral expressiveness linked to the harsh living conditions of human beings at that time, subject to food shortages and uncontrollable forces of nature. Okamoto builds an opposition between the aesthetics of Jōmon ceramics and the pieces produced in the subsequent Yayoi period in c.300AC–300DC, when an aristocratic agricultural society was constituted. In contrast to the rugged, indomitable strength of the Jōmon, Yayoi ceramics seemed restrained, simple, and refined. Okamoto then inserts a political value to this opposition: while the Jōmon represented the power of the people, the Yayoi was the result of a stratified and unequal society based on the refinement of the ruling classes.

Whereas the aesthetic-ideological axis in Jōmon-Yayoi traditions has often represented later interpretations of *Dentō Ronsō* (Fujimori 1995), the opposition had only been mentioned once until mid-1956 within the architectural context of *Dentō Ronsō*, in Yasutada Watanabe's 渡辺保忠 article (Watanabe 1955, 11-12), and remained since then as a secondary issue in the discussions. Tange (1956b) takes up Okamoto's theory by associating the Jōmon pit house with peasant dwellings and the Yayoi gabled dwellings with the raised floors with the aristocracy. For Tange, Jōmon displays a will to struggle against the forces of nature, but its subsequent developments, including Yayoi, could not overcome the inherent weakness that gradually developed a passive acceptance of surrounding natural conditions as aesthetic values such as *mono-no-aware* in the Heian period in 794–1185 and *wabi sabi* in the Edo period in 1603–1868.

While acknowledging creative spirits in traditional forms such as eaves and paper screens, Tange criticized them as “methods that have been formalized in stagnation in the history of technology” (Tange 1956b, 37) and translated the aesthetic question in terms of new creation with modern technology, against Japanese “emotional naturalism” (ibid, 34) as opposed to Western attitude for techno-scientific mastery of nature. Tange thus declared “[t]he creative attitude intrinsic through Japanese tradition and expressions entangled with it have many things we must overcome and deny away. Only by overcoming and denying such passive attitude, can we creatively inherit the methods or methodological achievements acquired through the tradition.” (ibid, 36) However, two months later, his explicitly technological statement was drawn back to aesthetic and ideological language by Seiichi Shirai's 白井晟一 *What Is Jomon 縄文的なるもの* (Shirai 1956, 4), which championed Jōmon as the authentic source of historically relevant creative imagination of people against aristocratic Yayoi. The resulting Jōmon-Yayoi axis as a sort of stylistic, aesthetic, and ideological choice blurred Tange's technological arguments, while the apparent choice was to practically affirm the same base structure emerging in that period, namely modern construction method of steel and concrete with associated productive forces.

Unlike what is usually highlighted by scholars (for example, Shiobaha 2022; Fujimori 1995; Lin 2010), *Dentō Ronsō* was not initially the aesthetic-political opposition between Jōmon and Yayoi, but primarily began as attempt to culturally contextualize steel and concrete, which had been still relatively new and foreign for Japanese people, inserting these construction materials and its related technologies in the historical continuity

of Japanese “tradition”. Jōmon and Yayoi appeared as a later topic in mid-1956 and a kind of conclusion-dissolution to the debates. We identified that 27 of the nearly 50 articles assessed by us on the subject of tradition published in *Shinkenchiku* between 1953 and 1957 take the topics of technology and construction as essential argumentation threads. The same survey showed that only six of these articles directly addressed Jōmon and Yayoi styles^{Note 20}. Among articles which discussed technology, materials, and construction not quoted here we can mention Kawazoe (1955), Wachsmann (1956), Yamamoto (1956), Hayama (1956a), and Hamaguchi (1956).

Beneath the dematerialization of *Dentō Ronsō* after mid-1956, in an idealist choice between Jōmon and Yayoi just as styles and associated ideological messages, there were also obscured realist and materialist voices about construction issues in the controversies since February 1956. Centered around the Public Hall in Fukushima (Fukushima Kyoiku Kaikan 福島教育会館) project, MIDO Group members including Masato Otaka, Mitsuaki Adachi 足立光章, Azusa Kitō 鬼頭梓 and Toshihiko Kimura 木村俊彦 (Otaka 1956, 20-21; Adachi 1956, 21-22; Kitō & Kimura 1956, 23-24) attempted to involve local communities in concrete construction and localize modern buildings methods as open technology, which was later theoretically discussed by Kazuo Hayama 葉山一夫 (1956b, 30-33)^{Note 21} as a “realist method for architectural creation” embedded in material conditions of the then unfolding encounter between new technology and pre-existing socioeconomic structures. However, the democratic approach to concrete construction did not find followers, giving way to the mainstream of steel concrete construction both theoretically and practically in the following high-growth period. Despite their effort to reconcile modern production materials with the life of people, not only from the stylistic orientation of end-products (like Jōmon or Yayoi,) but also from the very way people (can) engage with its construction, it remained as a dissonant voice in *Dentō Ronsō*.

The dominant contemporary after readings of *Dentō Ronsō* (for example, Lin, 2010, p.40) claims that the Jōmon-Yayoi controversy would have impacted Tange's aesthetic in his post-*Dentō Ronsō* projects, shifting from elegant Miesian-Yayoi-esque structures to heavy Jōmonesque forms. We argue here that an improvement in the design-construction relationship, as well as a development of production methods and his assessment of the relationship between technology and “tradition”, would have allowed Tange shortly afterward to fully enjoy the plastic potentials of reinforced concrete^{Note 22}. After a transactional moment of ingesting “tradition”, in which concrete literally imitated wood and its artisanal techniques (Kagawa Prefectural Government Office in 1954–1958), the architect found himself free to produce his own “expressions” in the new material (such as Totsuka Country Club House in 1960–61), no longer ingesting “tradition” as forms but in the means of production (for example, the labor forces or *shokunin* turned into formwork carpenters). Interestingly, the strategy of emulating designs in new modes of production used by Tange during the 1950's approached the methods used in 1930s styles (such as *Teikan Yōshiki*, Imperial Crown Style). In any case, the forms, discourses, and technical developments carried by Tange in his work during the debates allowed, in the subsequent period, the adaptation of design itself to the new means of production.

The conclusion of the debates on tradition and the confluence of the Jōmon-Yayoi duality with the discussions about modes of production would come in the form of a letter signed with the penname Zu Ashikari 芦刈 図^{Note 23} (1957, 73-75), published in the readers' opinions column. Based on available information, we could not identify the real author. According to the letter, Jōmon's weight would be embodied by the concrete industry; while Yayoi's sophistication and lightness would satisfy the glass industry: “The glass companies are happy with the ‘glass wall’ trend, and the cement companies, panicked by the economic boom, have begun a desperate offensive. The ‘robust’ walls and

pillars mean more cement, and the nearly automated large cement plants are being built one after another" (ibid, 73). The opinion post urges that "sufficient procedures must be taken to ensure that [the debate] does not end up as an alternation of 'the conflict between the Yayoi and the Jōmon.' (...) Otherwise, it will end up as a conflict between glassmakers and cement makers" (ibid, 73). As the letter was titled "We need to avoid idealization of debates on Jōmon," Ashikari, in a few lines, bridges the rapidly developed gap between the super and base-structures of architectural tradition in the stylistic duality of Jōmon and Yayoi. Bringing back the material reality of construction again, the minor resistance reminds us that Dentō Ronsō had primarily emerged as an entangled techno-cultural, material-semiotic question on how to better reconcile modern productive forces and the life of people. The consequence of the absence of further debates on tradition as such was, however, "the merger of Machine and Nation without People" as Kawazoe judged lamentedly as early as 1958 (Kawazoe 1958, 135)



Detail of the Kagawa Prefectural Government Office (1954–1958) by Kenzo Tange. Photo: Gabriel Kogan

CONCLUSION

Based on a characterization of the premodern means of production in Japan, especially in the Edo Period in 1603–1868, we aimed to show how the introduction of architecture and associated engineering technology since the Meiji Restoration in 1868 gradually reshaped the organization of construction labor

into increasingly hierarchical and mechanized systems with less freedom in the construction site. In the late 19th century, Japan started importing knowhow and technology, in addition to starting the development of a national industry for the production of new construction materials such as cement and steel. Despite the transformations in the modes of production during this period, the process of replacing artisanal work on the construction site (previously based on wood production by carpenters and masters) with a mechanized system remained incomplete. New production chains established in Japan after the modernization process of the Meiji Restoration in 1868 retained aspects of their feudal structure. The designed forms in this transitory period contained incompatibilities with the new means of production, reproducing in modern techniques earlier styles created centuries earlier (mainly conceived for different materials like bricks and stones or even wood), such in the Teikan Yōshiki [Imperial Crown Style].

In the postwar period, modern architects led by Kenzō Tange began the construction of an ideological apparatus to overcome reminiscences of premodern means of production still in force and, at the same time, update architectural design to aligning with new materials and techniques. As a rhetorical strategy, they used the concept of "tradition" as a pivot to generate such a transformation, imploding handcraft production and promoting industrial means. Dentō Ronsō debates, especially the position of Tange and Ikebe, targeted exactly these leftovers of premodernity in the organization of construction process and passive attitude to technology, using the improved tools of modern architecture and its bonds with modern industry and planning. The only place left for handcraft is subjugated to new modes of production, in the service of a modern labor organization. Because of its broad scope, debates on tradition cannot be defined by a single aspect. However, we assert that the technical and constructive issues stand out as a common thread among more than half of the published articles between 1953 and 1957.

During the same period in which Noboru Kawazoe was in charge of the edition of *Shinkenchiku* in 1953–57 and as the debates on tradition unfolded, cement production in Japan practically doubled (Otaka 1963, 272-276), from 8,768,000 tons in 1953 to 15,176,000 tons in 1957. Obviously, this cannot be exclusively attributed to the role of architecture. However, as an image for the general public, architecture held now appealing forms that could bridge the gaps between modes of production and design, and between modern lifestyles and tradition.

In the midst of ideological disputes around modern architecture, Le Corbusier was accused of being a "Trojan Horse," inserting communism through architecture (Fishman & Walden, 2021). However, it seems that the analysis of modern Japanese architectural discourse in the 1940s and 1950s offers an opposite perspective: modern architects necessarily stimulated capital accumulation and centralization through architecture. Fundamentally a set of new industrial technologies with necessary relations of production, modern architecture in the immediate postwar period in Japan ended up dismantling residues of horizontal communication and collaboration among skilled workers and instead introduced a vertical hierarchy of centralized power to control productive forces via standardized processes such as technical drawings and planning.

REFERENCES:

- 1) Ashihara, Yoshinobu 芦原義信. 1954. "Impression of Japanese Exhibition House ビルの谷間に咲きいでた花[A Flower blooming among buildings]." *Shinkenchiku* 新建築, December: 32.
- 2) Ashikari, Zu 芦刈図. 1957. "We must prevent the idealization of "Jomon" debates "縄文"論議の観念化を防ごう—1956年の動きをかえりみて—." *Shinkenchiku* 新建築, February: 73-75.
- 3) Bon, Ranko, and Yashiro, Tomonari. 2018. "Some New Evidence of Old Trends: Japanese Construction, 1960–1990." In *Economic Structure and Maturity*, edited by Ranko Bon, 329–38. London: Routledge.
- 4) Cho, Hyunjung. 2012. "Hiroshima Peace Memorial Park and the Making of Japanese Postwar Architecture." *Journal of Architectural Education*, vol. 66, no. 1: 72–83.
- 5) Clancey, Gregory. 2005. "Modernity and Carpenters: Daiku Technique and Meiji Technocracy." In *Building a Modern Japan*, 183-206. New York: Palgrave Macmillan
- 6) Curtis, Paula. 2011. *Purveyors of Power: Artisans and Political Relations in Japan's Late Medieval Age*. Columbus: Ohio State University.
- 7) Ferro, Sérgio. 2010. *A história da arquitetura vista do canteiro*. São Paulo: GFAU-USP.
- 8) Ferro, Sérgio. 2018. "Concrete as weapon." *Harvard Design Magazine*, n.46.
- 9) Ferro, Sérgio. 2021. *Construção do Desenho Clássico*. Belo Horizonte: MOM Edições.
- 10) Figueiredo, Clara de Freitas. 2018. *Fotografia: Entre Fato e Farsa (URSS — Itália, 1928–1934)*. São Paulo : University of São Paulo (USP).
- 11) Fishman, Robert, and Russell Walden. 2021. "From the Radiant City to Vichy: Le Corbusier's Plans and Politics, 1928–1942." In *The Open Hand*, edited by Russell Walden. Cambridge: MIT Press.
- 12) Fujimori, Terunobu 藤森照信. 1995. "Debate on Tradition 伝統論争." *Shinkenchiku* 新建築, December (special issue "Trajectories of Contemporary Architecture: Architecture and Modernity in Japan Seen through Shinkenchiku 1925-1995 現代建築の軌跡:1925-1995「新建築」に見る建築と日本の近代"): 214–215.
- 13) Fujioka, Hiroyasu 藤岡洋保. 1991. "History of the Debate on Tradition 伝統論争の歴史." *Shinkenchiku* 新建築 June (special issue "20th Century Architecture Part 2 建築20世紀 PART2"): 78–79.
- 14) Fukai, Kazuhiro 深井和宏, and Mamoru Tohiguchi 東樋口譲. 1996. "Function of Itazu: Design System of Vernacular Timber Houses by Japanese Master-Builders (1) 板図の機能: 木造建築の伝統的設計システムに関する研究 (1)." *Journal of Architecture and Planning (Transactions of AIJ)*, vol. 61, no. 488: 177–85.
- 15) Funo, Shuji 布野修司. 1981. *Postwar Architectural Notes 戦後建築論ノート*. Kanagawa: Sagami Shobo相模書房.
- 16) Hamaguchi, Ryuichi 浜口隆一. 1955. "The Most Representative Japonica and Positive and Negative Aspects of Collaborative Design 戦後最大の日本調と共同設計の功罪." *Shinkenchiku* 新建築, July: 13-14.
- 17) Hamaguchi, Ryuichi 浜口隆一. 1956. "The Sukiya as a Problem of the Interior 内部の問題としての数寄屋." *Shinkenchiku* 新建築, August: 57-59.
- 18) Hayama, Kazuo 葉山一夫. 1956a. "Recognition and Expression Should Not Be Confused in a Theory 認識論と表現論を混同すべきではない." *Shinkenchiku* 新建築, July: 73.
- 19) Hayama, Kazuo 葉山一夫. 1956b. "Realist Method for Architectural Creation – The Goal of the Public Hall in Fukushima 建築創造におけるリアリズムの方法—福島教育会館がめざすもの." *Shinkenchiku* 新建築, October: 30-33.
- 20) Ikebe, Kiyoshi 池辺陽. 1955a. "How to Deal with Japanese Design? 日本的デザインといかに取り組むか?." *Shinkenchiku* 新建築, February: 41-43.
- 21) Ikebe, Kiyoshi 池辺陽. 1955b. "Learning from the Classics of Japanese Style 和風の古典に学ぶ(掲載題:和風建築と現在のデザイン)." *Shinkenchiku* 新建築, June: 66-69.
- 22) Inagaki, Eizo 稲垣栄三. 1959. *Modern Japanese Architecture: The Process of Its Formation (1/2) 日本の近代建築—その成立過程 (上)*. Tokyo: Kajima Institute Publishing 鹿島出版会.
- 23) Ishida, Rie 石田理恵, and Ryuji Kuroda 黒田龍二. 2004. "On the Drawing of Todaiji Daibutsuden 東大寺大仏殿内建地割板図について." *Summaries of Technical Papers of Annual Meeting Architectural Institute of Japan*. F-2, History and Theory of Architecture, no. 2004, Architectural Institute of Japan: 113–14.
- 24) Isozaki, Arata. et al. 2011. *Katsura Imperial Villa*. Londo: Phaidon Press.
- 25) Isozaki, Arata.; Stewart, D. B.; Kohso, S. 2011 *Japan-ness in Architecture*. Cambridge: MIT Press.
- 26) Ito, Chuta 伊東忠太. 1984. "Discussing the True Meaning of Architecture and Deciding Its Character: I Hope That the Name Will Be Changed「アーキテクチュラル」の本義を論じて其譯字を撰定し我が造家學會の改名を望む." *Kenchiku Zasshi* 建築雑誌, February: 195-197.
- 27) Iwata, Tomoo 岩田和夫. 1955. "Toward the Discovery of Tradition and the People 丹下健三の日本的性格—とくにラーメン構造の発展をとうして—." *Shinkenchiku* 新建築, January: 62-69.
- 28) Iwata, Tomoo 岩田和夫. 1956. "Toward the Discovery of Tradition and the People 伝統と民衆の発見をめざして." *Shinkenchiku* 新建築, July: 13-14.
- 29) Kuroishi, Izumi 2016. "Rethinking the Social Role of Architecture in the Ideas and Work of the Japanese Architectural Group NAU." *Review of Japanese Culture and Society*, vol. 28, University of Hawai'i Press: 99–117.
- 30) Jacquet, B., et al. 2019. *Le Charpentier et l'architecte: Une Histoire de La Construction En Bois Au Japon*. Lausanne: Presses Polytechniques et Universitaires Romandes.
- 31) Meiji-mae Nihon Kagaku-shi Kankoukai [Publishing Association for Pre-Meiji Scientific History] 明治前日本科学史刊行会編纂. 1961. *History of Japanese Architectural Technology before the Meiji Era 明治前日本建築技術史*. Tokyo: Japan Society for the Promotion of Science 日本学術振興会.

- 32) Kōjiro, Yuichirō 神代雄一郎. 1956 “Meaning of Theories on Tradition by Architects 作家の伝統論の意義” Shinkenichiku 新建築, November: 68-69.
- 33) Kawazoe, Noboru 川添登. 1953. “Editorial Note 編集後記.” Shinkenichiku 新建築, July: 51.
- 34) Kawazoe, Noboru 川添登. 1958 Gendai Kenchiku Wo Tsukuru Mono [What Creates Contemporary Architecture] 現代建築を創るもの. Tokyo: Shokokusha 彰国社.
- 35) Kon, Wajiro; Yoshida, Kenkichi 今和次郎, 吉田謙吉. 1931. Modernology 考現学採集: モデルノロヂオ. Tokyo: Kensetsusha 建設社.
- 36) Kuma, Kengo; Obuchi, Yusuke. “現代日本建築の四相 Four Facets of Contemporary Japanese Architecture: Theory.” UTokyo edX (online lecture) <https://www.edx.org/course/four-facets-of-contemporary-japanese-architecture>
- 37) Lin, Zhongjie. 2010. Kenzo Tange and the Metabolist Movement: Urban Utopias of Modern Japan. Oxfordshire: Taylor & Francis.
- 38) Maekawa, Kunio 前川國男. 1942. “Memorandum: On Tradition and Creation of Architecture 覚え書—建築の傳統と創造について” Kenchiku Zasshi 建築雑誌, December: 920-924.
- 39) Muramatsu, Teijiro 村松貞次郎. 1959. Nihon Kenchiku Gijyutsushi [History of Architectural History in Japan] 日本建築技術史. Tokyo: Chijin Shokan 地人書館.
- 40) Nakagawa, T. 中川武. (1986). On “Kiwari”, the traditional Japanese architectural design method for the variation of the architectural structural scale 建築規模の変化と木割の方法. 日本建築学会計画系論文報告集, 362, 133–120.
- 41) Nakamori, Yasufumi. 2011. Imagining A City: Visions Of Avant-Garde Architects And Artists From 1953 To 1970 Japan. New York: Cornell University.
- 42) Nikkenkyo 日建協 (Japan Construction Industry Workers Union Council). 2001. “Construction History 建設 歴史あれこれ.” <http://nikkenkyo.jp/before/4joho/rekisiarekore/rekisiarekor.e.htm>.
- 43) Nishiyama, Uzō 西山卯三. 1953. “Ethnic Tradition and National Issues in Housing Planning 住宅計画に於ける民族的伝統と国民的課題.” Shinkenichiku 新建築, November: 63-71.
- 44) Obata, S. 小畑精武. (n.d.). The roots of the downtown labor movement dating back to the Edo period Explore the history of the labor movement in downtown (1) 江戸時代に遡る下町労働運動のルーツ 下町の労働運動史を探访する(1). 2018. <http://gendainoriron.jp/vol.16/column/col05.php>
- 45) Okamoto, Taro 岡本太郎. 1999. Nihon No Dentō [The Japanese Tradition] 日本の伝統. Tokyo: Misuzu Shobo みすず書房.
- 46) Ōta, Hirotarō 太田博太郎. 1947. Nihon Kenchikushi Josetsu [Introduction to the History of Japanese Architecture] 日本建築史序説. Tokyo: Shokokusha 彰国社.
- 47) Otaka, Hideo. 1963. “The Cement Construction.” In Japan’s Construction: A General Review of Industries Related to Construction Activities, 272–76. Tokyo: The Overseas Construction Association.
- 48) Hoyano, Shigeo 梅干野成央, et al. 2019. “Architectural Works of the Master Carpenter Seiji Tateishi 大工棟梁・立石清重の作品.” Architectural Institute of Japan Technical Report 日本建築学会技術報告集, vol. 25, no. 60: 947–952.
- 49) Otaka, Masato 大高正人. 1956 “Public Hall in Fukushima: On the Design, Diversity of Functions – Grasping of the Complexity of Rural Life” 福島協会会館: 福島教育会館の設計について 機能の多様性—地方生活の複雑さの把握.” Shinkenichiku 新建築, February: 20-21.
- 50) Adachi, Mitsuki 足立光章. 1956. “Public Hall in Fukushima: Representation of People’s Tough Energy 福島協会会館: 表現について 民衆の逞しい生活力を反映するもの.” Shinkenichiku 新建築, February: 21-22.
- 51) Kito, Azusa, and Toshihiko Kimura 鬼頭梓 & 木村俊彦. 1956. “Public Hall in Fukushima: Establishment of Skill – As Recovery of Skill in Huan Life 福島協会会館: 技術の定着—それは技術の人間生活への復帰を意味する.” Shinkenichiku 新建築, February: 23-24.
- 52) Révai, József ヨーゼフ・レーヴァイ. 1953. “Architectural Tradition and Modernism 建築の伝統と近代主義.” Bijutsu Hihyō 美術批評, October: 32-39.
- 53) Sakamoto, Tadanori 坂本忠規, and Kamata, Masahiko 鎌田正彦. 2017. Report of the “Fushin Shitae-Zu Tatami-Ita”: A Study of the Drawing Instruments in Pre-Modern Period in Japan 「普請下絵図畳板」について ~近世の製図道具に関する考察~. Takenaka Daiku Dougu Kan Kenkyu Kiyō 竹中大工道具館研究紀要, vol.28: 21-39. https://doi.org/10.50862/dougukan.28.0_21
- 54) Shirai, Seiichi 白井晟一. 1956. “The Jōmon: On Old Nirayama Residence of Egawa 縄文的なるもの 江川氏旧菰山館について.” Shinkenichiku 新建築, August: 4.
- 55) Shimizu, Norikazu. 2010. “The Establishment of the State-Owned Yawata Steel Works (1): The Integrated Steel Works That Promoted Japan’s Industrialisation When the Country Entered the Modern Industrial World as a Latecomer.” 九州国際大学経営経済論集, vol. 16, no. 01: 109-145. <http://id.nii.ac.jp/1265/00000160/>
- 56) Shimoda, Takashi. 2016. “History of Cement Manufacturing Technology.” Center of the History of Japanese Industrial Technology, Ed., Survey Reports on the Systemization of Technologies, vol. 23: 1–114.
- 57) Shiobara, Hiroki 塩原裕樹. “Dentō Ronsō (Controversies on Tradition) 伝統論争.” Arscape, Retrieved 25 March, 2022, <https://artscape.jp/artword/index.php/伝統論争>.
- 58) Stewart, D. B. 1987. The Making of a Modern Japanese Architecture: 1868 to the Present. Tokyo: Kodansha International.
- 59) Tange, Kenzō 丹下健三. 1948. “Problems on Construction 建設をめぐる諸問題.” Journal of Architecture and Building Science Architectural Institute of Japan 建築雑誌, January: 2-10.
- 60) Tange, Kenzō 丹下健三. 1951. “Discussion on Architecture with Matisse 丹下健三: 現代建築の課題「機械」と「手」との葛藤 マチスと建築を語る” Yomiuri Shimbun 読売新聞, September 3, 1951.

- 61) Tange, Kenzō 丹下健三. 1954. "Plan to Serve the Modernization of Tradition and People 伝統の近代化と民衆に奉仕するプラン." Shinkenchiku 新建築, September: 25.
- 62) Tange, Kenzō 丹下健三. 1955a. "How to Understand Modern Architecture 近代建築をいかに理解するか." Shinkenchiku 新建築, January: 15-18.
- 63) Tange, Kenzō 丹下健三 et al. 1955b. "Tange Laboratory: The Question Is Whether It Is Modern Architecture or Not - Views on Ikebe's Paper 1 丹下研究室:近代建築かどうかが問題なのだ - 池辺論文に対する見解1." Shinkenchiku 新建築, February: 44.
- 64) Tange, Kenzō 丹下健三. 1956a. "An Attempt to Establish a Creative Methodology Tange Laboratory創作方法論定着への試み 丹下研究室." Shinkenchiku 新建築, June: 73-84.
- 65) Tange, Kenzō 丹下健三. 1956b. "The Creation of Modern Architecture and the Tradition of Japanese Architecture 現代建築の創造と日本建築の伝統." Shinkenchiku 新建築, June: 29-37.
- 66) Tange, Kenzō 丹下健三. 1956c. "The Japanese Architect - Its Internal Reality and External Reality. 日本の建築家—その内部の現実と外部の現実." Shinkenchiku 新建築, October: 7-13.
- 67) Tange, Kenzō 丹下健三, et al. "How Can We Overcome Tradition? 伝統をどう克服するか? シンポジウム: 日本建築の進路." Shinkenchiku 新建築, Mar. 1956d.
- 68) Tange, Kenzō; Asada, Takashi; Sachio Otani 丹下健三, 浅田孝, 大谷幸夫. 1954. "Hiroshima Plan 1946-1953. 広島計画 1946-1953." Shinkenchiku 新建築, January: 1-17.
- 69) Thompson, John B. 2013. *Ideology and Modern Culture: Critical Social Theory in the Era of Mass Communication*. New Jersey: John Wiley & Sons.
- 70) Tokyo Metropolitan Library. 2020. "3. Site Allocation of the Edo Castle Honmaru Main Tower 3.江戸城御本丸御天守百十分之一建地割." https://www.library.metro.tokyo.lg.jp/collection/features/digital_showcase/001/03/.
- 71) Uchida, Yoshichika 内田祥哉, et al. 1955. "UHON Group: There Is No Need to Be Conscious of Japanese Design - Views on Ikebe's Paper 3 UHON Group 日本的デザインを意識する必要はない - 池辺論文に対する見解3." Shinkenchiku 新建築, February 45-46.
- 72) Wachsmann, Konrad コンラッド・ワックスマン. 1956. "Enthusiastic Words by Wachsmann ワックスマン大いに語る." Shinkenchiku 新建築, February: 53-56.
- 73) Watanabe, Yasutada 渡辺保忠. 1955. "Technology and Styles in Ancient Architecture 古代の建築生産における技術と様式." Shinkenchiku 新建築, March: 11-12.
- 74) Watanabe, Makoto Shin, et al. 2013. "KENCHIKU / Architecture from Japan." Wochi Kochi Web Magazine. <https://www.wochikochi.jp/english/special/2013/09/japan-of-modern-architecture.php>
- 75) Yamagishi, Yoshihiro 山岸吉弘. 2017. "建築生産史 (近世)." Kenchiku Shigaku 建築史学, vol. 68: 70-84.
- 76) Yamamoto, Gakuji 山本学治. 1956. "The Development of Modern Architecture and the Consciousness of Tradition 現代建築の発展と伝統の意識." Shinkenchiku 新建築, July:

2-5.

NOTE:

Note 1) Though this controversy is usually dated between 1955 and 1957 by later historians as in Fujimori (1995, 214-215), or between 1955 and 1956 as in a widely accessible online article (Shiobara, 2022), this article regards its beginning in 1953 based on the authors' analysis on primary sources.

Note 2) The word "pre-modern" in this essay refers to the age prior to the Meiji Restoration in 1868.

Note 3) The authors are preparing further papers that provide a complete list of all these articles.

Note 4) It is also important to note that before Itō's advocacy, the word *kenchiku* was formally used in the title of the organization's journal *Kenchiku Zasshi* 建築雑誌 as well as in rules of the Society of Architects (when still called *zōka-gakkai*). Itō himself cited these predecessors to show the confusion of the two translations ("第五條: (...) 正員は建築学を", "第十條: (...) 建築専門の學校に在て", "第廿八條: (...) 建築雑誌と名け"). See also Watanabe, M. S. et al. (2013). Additionally, according to Jacquet et al (2019, 10), the first doctoral thesis presented in Japan, in 1898 by Chūta Itō, already discussed tradition through analysis of temple details

Note 5) Ōta (1947) uses these terms interchangeably in his book on Japanese architecture, for example, in the first two paragraphs in p.179. We will use in this article *shokunin*.

Note 6) Construction practices in Japan then comprised a complex network of agents in an hierarchical economic system and *shokunin* assumed roles not only in production, but also in trades and politics.⁷ Aristocracy used officers and supervisors to establish relationships with craftsmen and, over the centuries, developed internal mechanisms to assimilate the work of *shokunin* power structures. A complex relationship between patronage and production created bounds between artisans and imperial court or *daimyō* through titles and charges. Curtis (2011) show how craftsmanship became central to power disputes between regions in the late-medieval period, as soon as substantial internal trade markets were created.

Note 7) Nikkenkyo (2001) for example <http://nikkenkyo.jp/before/4joho/rekisiarekore/rek>.

Note 8) According to Inagaki (1959, 49-53), formal guilds were under government control but had some independent agency. Furthermore, especially since the mid-Edo period, the increase of urban construction and low-skilled carpenters (escaping from villages to cities) became a basis for civic associations of *shokunin* under the guidance of *machi tōryō* 町棟梁 (a civic *tōryō*, as opposed to formally appointed *tōryō*), which official guilds could not fully control.

Note 9) Sakamoto & Kamata (2017) show that the existence of old drawing tools for that purpose might date back to the seventeenth century. However, these tools became more common in the nineteenth century, as expensive and not-widely accessible brass copies of foreign products.

Note 10) Ishida & Kuroda (2004) analyze an *itazu* from 1688 found in works at the the Great Buddha Hall of Tōdai-ji in Nara. However, such archeological finds from this period (seventeenth century) are extremely uncommon, suggesting that, although the *shokunin* wielded this technique, it was uncommonly used. Drawing tools and *itazu* seem to have become more popular in the following two centuries.

Note 11) The industrialization pressure of Japan that took the country from the ashes of 1945 to the second-largest economy in the world in the mid-1960s was based on the development of the civil construction industry, which represented 17.6% of the GDP

in 1960 (Bon & Yashiro, 2018, 329–38).

Note 12) Although the title coincides with Geoffrey Scott's famous *The Architecture of Humanism: A study in the history of taste* (1914), Hamaguchi's "humanism" is a synonym for functionalism and should better be understood in the lineage of H. P. Berlage's struggle against eclecticism and appraisal of non-ornamental modern architecture as an ethical path to labor emancipation as in *The foundations and development of architecture* (1908).

Note 13) The citation is translated by the authors based on the original text recollected in Funo (1981).

Note 14) Hereinafter, citations are translated by the authors from the original Japanese text, unless otherwise indicated.

Note 15) Nishiyama supposed the word "function" is unclear and arbitrary despite its incommensurable complexity as he states "the functions of architecture are diverse and in conflict" and "[i]f we want to utilize positive aspects of functionalism, we must discuss 'what functions are at stake' instead of how to 'design architecture following [a set of uncritically accepted, often capitalistic] functions'" (Nishiyama 1953, 65).

Note 16) Nishiyama's point of view was also aligned with the article published one month earlier (October, 1953) in Japan written by the Hungarian cultural minister, József Révai (1953).

Note 17) Despite the similarity between Maekawa's conception of modern architecture as an emerging new tradition and that of Sigfried Giedion's *Space, Time and Architecture: The growth of a new tradition* in 1941, Maekawa did not mention the book so that the influence between them could not be identified in the present study. Likewise, the name of Giedion was not mentioned in the context of Dento Ronso either. Though the first edition of Giedion's book was translated by Minoru Ōta and published in March 1955, and Kawazoe (1958, 124) acknowledged that his space-time concept had already diffused among Japanese architects even before the translation, Giedion's seminal thesis that modern architecture is the growth of a new "tradition" was not explicitly employed throughout the debate in Japan.

Note 18) Japonica is the term then used as a criticism to eclectic attachment of Japanese elements in modern architecture in a similar manner to Ikebe's attack on *Japanese Style Design* (Ikebe 1955a). This term had been explored in several articles during the debates, such as Iwata (1955).

Note 19) It is notable that Okamoto himself was not directly engaged in the controversy as a promoter of Jōmon. His only appearance in *Shinkenchiku* during this period was an article on Japanese gardens with no reference to Jōmon. Okamoto's book on tradition was published in 1956, and architecture critic Kōjiro Yuichirō critically assessed the plausibility of the book and the sudden Jōmon turn in the controversy in a book review in *Shinkenchiku* in November of the same year.

Note 20) The authors are preparing further papers that provide additional organization for all these article

Note 21) Hayama is a penname of architecture critic Keiichi Taira.

Note 22) This is fact earlier also noted by architects such as Oscar Niemeyer (from his projects in Pampulha from 1940) and the last phase of Le Corbusier (like in Ronchamp)

Note 23) The pronunciation of the first name 栞 in the penname could not be identified. We tentatively followed the most common pronunciation for the character.