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# Lao Tze and Confucius' philosophies influenced the designs of Kisho Kurokawa and Tadao Ando

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## Abstract

Japanese architecture retains the characteristic of appreciating its culture, despite the growing influence of Western architecture. Based on this issue, it is a very interesting area to study to understand the design concepts behind two masterpieces from the world's architects Kisho Kurokawa and Tadao Ando. This study uses a qualitative method by analyzing theories and case studies in the work of the architects Kisho Kurokawa and Tadao Ando. It conducts the following detailed analyses; (a) Western architects who influenced both design concepts; (b) The primary considerations of the two architects in facing the demands of the times. The study concludes that Kisho Kurokawa was influenced by Kenzo Tange, while Tadao Ando has been influenced by Le Corbusier and Louis Khan. The primary consideration of Kisho Kurokawa is Hanasuki, while for Tadao Ando it is Shintai. The findings in this study are that the two architects in the design concept were inspired by Japanese culture, where Japanese culture is influenced by the philosophy of Lao Tze and Confucius.

**Keywords:** Design concept, *Hanasuki*, Kisho Kurokawa, *Shintai*, Tadao Ando

## Introduction

The design of modern architecture in Japan is strongly influenced by local indigenous culture, in line with the development of the level of financial and architectural technology, which itself is increasingly advanced. Japanese architectural design follows the advancements of Western technology, although its architectural character and design still pay attention to Japanese culture (Nose 2000). In general, countries with advanced economic levels tend to follow the development of buildings from Western countries. This can lead to a situation whereby the identity of the country's culture is lost, and the culture that emerges may be that of Western countries. Japanese architecture is different from other forms of architecture as it is usually characterized by simplicity as a symbol of longevity and durability, which has long

been used in Japanese architecture (Chang 1985). As a designer, it is only natural to pay attention to local culture in its genius loci. In some ways, a genius loci exert a powerful desire to be able to maintain culture (Norberg-Schulz 1971).

Based on the above issues, this area of research is quite interesting to study, especially concerning two Japanese architectural masters, namely Kisho Kurokawa and Tadao Ando, who already have a reputation at the national and international level, and in terms of the role of the design concept in dealing with this issue. The research questions explore the following areas; (1) Western architects who influenced both design concepts; (2) The primary considerations of the two architects in dealing with the demands of the times. This research is expected to contribute to the knowledge of architectural theory to increase the scope of architectural theory and

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enhance the ability of architect practitioners to design concerning local culture.

## Materials and methods

### Material

The material in this study comprised buildings designed by architects Kisho Kurokawa and Tadao Ando. However, before tracing the works of the two architects, it is necessary to link them with the title of the research, namely; Lao Tze and Confucius influence the design concepts of Kisho Kurokawa and Tadao Ando. A search of the prior literature enabled us to determine whether other researchers have studied this area; as such, we searched for previous studies using the keywords Kisho Kurokawa and Tadao Ando. From the keyword “Kisho Kurokawa,” we identified that the concepts of Metabolism and Symbiosis are found in the urban and building context. The keyword “Tadao Ando” generated results linked to the geometric shape of buildings, exposed concrete, natural enrichment, and ideas related to natural elements. The details of the search for prior studies are shown in Table 1.

Based on Table 1, the research discussing the architects Kisho Kurokawa and Tadao Ando is associated with the influence of the philosophy of Lao Tze and Confucius, which nobody has discussed. Therefore, this research aims to fill a gap that has never been studied so that the state of the art and the findings obtained by this study have novelty value.

### Theoretical

#### *Western architects who influenced*

The role of the idol architect has influenced the work of Kisho Kurokawa and Tadao Ando so that their work provides an advantage for them in the form of an architect's insight to produce his architectural designs (Johnson 1994). Along with the architect's experience, the design results change based on his experience as an architect practitioner; for example, this can be seen in the work of Villa Savoye by Le Corbusier, where the design of the building was influenced by the architect who designed the Parthenon temple building. The Parthenon is geometric with Doric columns and inspired Villa Savoye in such a way that the latter appears to be floating. This “floating” building is supported by a column structure referred to as *pilotis* by the architect Le Corbusier (Trisno et al. 2019).

The relationship between architectural theory and history is thus very close, with each influencing the other in terms of architecture (Johnson 1994). It can therefore be said that if an architect is idolized earlier in the course of his track record, then this, of course, can affect the design work. This can be seen in Villa Savoye as the work of Le Corbusier, who was influenced by the Parthenon when

designing it. According to Louis Khan, “Monumentality in architecture may be defined as a quality, a spiritual quality inherent in a structure which conveys the feeling of its entirety, that it cannot be added to or changed. We feel that quality in the Parthenon, the recognized architectural symbol of Greek civilization” (Harrison-Moore and Price 2006).

#### *Primary considerations in facing the demands of the times*

The primary consideration in the design of Japanese architecture is greatly influenced by the view of life, as found in the philosophy of Lao Tze and Confucius; indeed, this view is a very significant influence. Thus, space in Japanese architecture is a combination of two Lao Tze and Confucius' philosophies, and this is an essential influence on the cultural-religious Japanese society (Chang 1985; Barrie 1996). The inclusion of natural elements following the philosophical views of Lao Tze in the book *Tao Te Ching* teaches the concept of Yin Yang, which is a balance between two different binary opposites such as day and night, light with dark, outside and inside, and other elements that are the opposite of each other (Chang 1988; Handoyo 2007; Ven 1987; Barrie 1996). In the context of a building and garden, “The building and the garden surroundings attempted to recreate this ideal, which reflected the harmony and balance of the universe” (Bring and Wayembergh 1981). From this Lao Tze philosophy combined with Confucius' philosophy, Confucius teaches personal morality to humans, so that the merging of these two philosophies greatly influences the cultural-religious Japanese society to be able to survive, despite the strength exerted by the entry of Western culture into Japan. Since the entry of Western culture on July 8, 1853, by the American Commodore Matthew Perry who first came to Japan. So that Japan has modern commercial relations with America, which at its peak in 1868 Japan carried out a Meiji restoration to modernize Japan (USA 2018).

The geometric shapes and solid structures had a significant influence on Le Corbusier in the thought and design of the building. This indicates that Le Corbusier uses basic and geometric shapes as functional philosophies of buildings. These basic and geometric shapes are also widely used in the contemporary architecture of Japan (Chang 1985; Meyhofer 1994). The use of primary and geometric shapes is a designation of natural form following the view of Lao Tze, such that the concept of architect Le Corbusier can be accepted by Japanese society. The Yin Yang concept of Lao Tze reveals the dark and light used by Yoshinobu Ashihara to express sacred buildings (Ashihara 1970). In a church, natural light on the altar is an expression of a sacred building, yet besides that, the natural light in a church symbolizes holy light

**Table 1** The research examined using the keywords Kisho Kurokawa and Tadao Ando

No	Title	Description	Source
1	Comparison of In-between Concepts by Aldo Van Eyck and Kisho Kurokawa	Discussing building with the concepts of Metabolism, Symbiosis, and In-between	Journal of Asian Architecture and Building Engineering (Farhady and Nam 2009)
2	Un-built Yi Lanzhai Museum interpretation of Kisho Kurokawa's final philosophy in China	Discussing the concept of symbiosis associated with urban planning	International Conference on Electric Technology and Civil Engineering (Le 2011)
3	The architectural legacies of Kisho Kurokawa in China	The global influence of architecture not only in Japan but also the impact in China with the concept of Symbiosis and Gray in two different conditions	The Journal of Architecture (Xue et al. 2011)
4	Agility, Adaptability + Appropriateness: Conceiving, Crafting & Constructing an Architecture of the 21 <sup>st</sup> Century	Discusses Kisho Kurokawa's projects using new technology, function flexibility, and aesthetic flexibility	Enquiry: The ARCC Journal for Architectural Research (Sinclair et al. 2012)
5	Rereading of two projects by Kisho Kurokawa for Tokyo Bay	Reread the Kisho Kurokawa project in Tokyo Bay with the concept of Metabolism and Symbiosis	Territorio (Desogus 2015)
6	The Formation of the Artistic-Communication Environment of the City of Astana in the Context of Kisho Kurokawa Town Planning Project Implementation	This article formulates philosophical ideas about symbiosis and the metabolism of Kisho Kurokawa, which is the basic concept behind the development of Astana	Scientific Journal: Academia, Architecture, and Construction (Tyurin et al. 2018)
7	Whose master plan? Kisho Kurokawa and capital planning in post-Soviet Astana, 1995–2000	Discusses Kisho Kurokawa's concept of the design city in the new town of Astana, Kazakhstan	Planning Perspectives (Sheleikpayev 2019)
8	Realization of Hybrid Concept and Symbiosis in Green Open Space (RTH) at Housing Complex RW (Neighborhood Councils) Pluit, Jakarta, Indonesia	Discusses the concept of Kisho Kurokawa's symbiosis design between office buildings and green open space	IOP Conference Series, Journal of Physics (Trisno and Lianto 2019)
9	Thresholds in the Pluralistic Architecture of Tadao Ando	Discusses the typology threshold of a factor in threshold (joint, density, directionally, opening, and nature) by forming a spatial relationship on the site (form and form & form and context)	Journal of Asian Architecture and Building Engineering (Farhady and Nam 2011)
10	Time in Japanese architecture: tradition and Tadao Ando	The expression of time is pervasive in Japanese culture and architecture. In the Chapel on Mount Rokko, Tadao Ando uses original traditions to articulate various temporal phenomena	Architectural Research Quarterly (Veal 2002)
11	Tadao Ando: Challenges Faithful to the Basics	Attention is paid to the geometric shapes, light–dark compositions, and exposed concrete that characterize Tadao Ando's work	Journal of the Society of Architectural Historians (Treib 2009)
12	The sublime and the Azuma House by Tadao Ando	The characteristic of Ando's architecture is the treatment of residential and religious buildings according to common spatial themes, challenging the conventional dichotomy between the profane and the sacred	Architectural Research Quarterly (Baek 2004)
13	From the "Topos of Nothingness" to the "Space of Transparency": Kitarō Nishida's Notion of <i>Shintai</i> and Its Influence on Art and Architecture (Part 1)	This study discusses <i>Shintai</i> as a body in the design work of Tadao Ando	Philosophy East and West (Baek 2008)
14	Thresholds in the Pluralistic Architecture of Tadao Ando	Discusses typology as a threshold in Ando's pluralistic works	Journal of Asian Architecture and Building Engineering (Farhady and Nam 2011)
15	Theory, method, and application of Tadao Ando architecture works	This research combines theory, design methods, and design applications	Jurnal Teknik Sipil Dan Perencanaan (Setyowati 2016)
16	Tadao Ando's Architectural Geometry Design	Discusses the geometrical concepts in Ando's work	EMARA Indonesian Journal of Architecture (Hassan 2017)

(Trisno and Lianto 2018). The design of architect Louis Khan uses natural light to provide silence in space (Lobell 1979). Khan uses elements of the natural light in the form of light and dark in buildings, thereby indicating the influence of philosophy from Lao Tze so that this concept is favored by Japanese society.

Carlo Scarpa in design often pays attention to lighting, details, and materials. Scarpa is known as "Frank Lloyd Wright of Italy", Scarpa's decorative style has become a model for architects who want to revive simple and beautiful art and materials in a contemporary style (Beltrami and Zannier 2007). Bruno Taut who follows the flow of 'form follows function' Bruno Taut revealed that architectural elements must function, if they don't function it doesn't make sense. From this, it can be ascertained that Bruno Taut has many functional thinking interests so that he succeeded without causing conflict. Bruno Taut used pastel colors and loved the beauty of Japanese designs (Kisby 2021).

Etymologically, the Japanese word '*Kirei*' is beautiful or beautiful, but the meaning of the word beautiful has a clean meaning (Shiang 2019). The meaning of clean in architectural design is simple with only limited ornamentation. It can thus be said that the beauty instilled by architects derives from its simplicity and attention to detail (Castillo 2004; Garcia and Miralles 2017). This can be seen in the simple but beautiful works of Japanese architecture. Architect Mies van der Rohe has the slogan "less is more" (Carver 1987; Gomez and Torras 2003; Mertins 2014; Nose 2000; Smith 2012), which can be interpreted as simplicity makes it beautiful. The slogan "less is more" and the philosophy of Lao Tze share a commonality, which means the Japanese public can accept the style of Mies van der Rohe. Peter Blake wrote that "the only trouble with a simple little word like 'simple' is that so many people think it is synonymous with 'easy.' In real life, of course, simple often means 'difficult' (Blake 1958). As stated by Ardan Forty, "simple' must be one of the most overworked words in the architectural vocabulary" (Forty 2000).

Simple relates to Buddhism and Confucius. Buddhism entered Japan in the twelfth century from India through China, Japanese Buddhism originating from China is known as *Zen* Buddhism. Along with the entry of Buddha into Japan also entered the teachings of Confucius and Lau Tze. Confucius teaches about morality and the highest supremacy of *T'ien* or heaven and *Ti* or earth. The balance of heaven and earth is binary opposition, this binary opposition is the balance of Yin and Yang from Lao Tzu. Balance from heaven and earth produces prosperity to control life (Chang 1985). "The Confucian principle that the family is the basic social unit" (Kimura 1979). Because the family as a basic social unit

must respect heaven and earth to be in harmony with the universe, so simplicity is essential moral teaching to do in everyday life. It can be said that Lau Tzu and Confucius also influenced *Zen* Buddhism because these three schools teach balance, morals, and simplicity. Confucius greatly influenced Japanese thought because humans, as basic social units, must respect and be in harmony with nature (Chong 1996).

From the description above, we want to find out whether the works of architect maestro Kisho Kurokawa and Tadao Ando use the concept of *Zen* Buddhism and whether the philosophy of Lao Tze and Confucius underlies their work.

## Method

The method used is a qualitative analysis of theory and case studies in the work of the architects Kisho Kurokawa and Tadao Ando. The details are as follows:

- a. Western architects who influenced the architects Kisho Kurokawa and Tadao Ando;
- b. The primary consideration of the architects Kisho Kurokawa and Tadao Ando in dealing with the demands of the times.

## Results and discussion

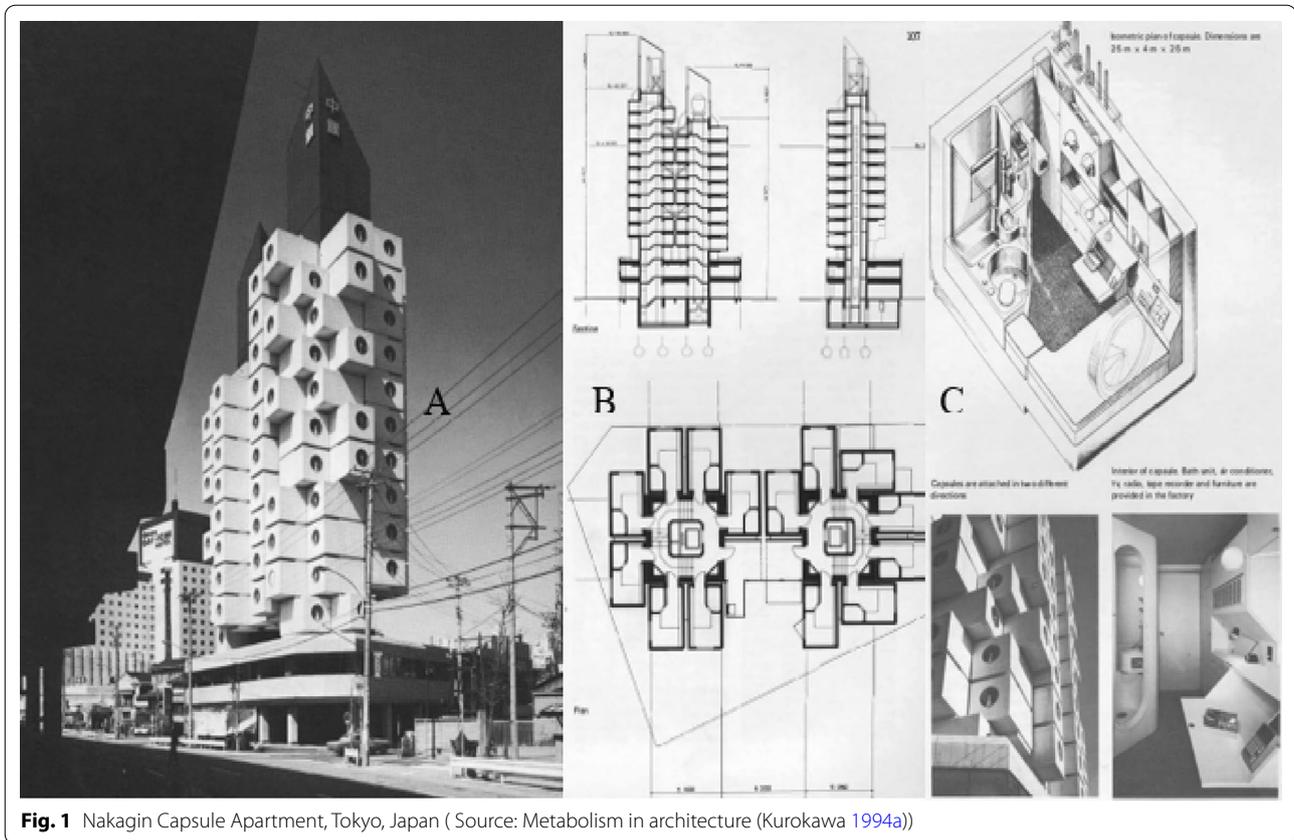
### Western architects who influenced

#### Architect Kisho Kurokawa

Kenzo Tange influenced Kisho Kurokawa with the concept of metabolism (Yoshie 2005), which can be seen in the work of the Nakagin Capsule Tower (1972) in Tokyo, Japan. The Nakagin Capsule Tower was envisaged to change according to the changing times but due to its status as a protected building it cannot be changed; however, in terms of the metabolism concept, it should be changed according to the needs of the times (Kurokawa 1994a). The building was constructed with prefabricated apartments that were expected to be replaced over time—that is, every 25 or 35 years—in response to the times (Lin 2010), which is following the concept of growing metabolism (Fig. 1). Figure 1A shows the exterior, Fig. 1B is a floor plan and section, while Fig. 1C shows a residential capsule unit that would be replaced by the times. The concept of metabolism is an organic concept of architecture that pays attention to Japanese culture (Chang 1985).

#### Architect Tadao Ando

Le Corbusier, whose work is characterized by square geometric shapes and basic shapes, influenced the work of Tadao Ando, while Louis Khan heavily influenced his inner space by paying attention to natural lighting. Natural lighting is in the form of silence and light which unites



the measurable and the unmeasurable called to order, Lau Tzu is called *Tao*, and Heidegger is called Being, for Heidegger; Being is the ground through which all things are (Greene 1967). The influences on Tadao Ando can be seen in his first project when he designed the Sumiyoshi House building in 1975 in the shape of a geometric box and using primary forms (Jodidio 2012).

In this first building, Sumiyoshi House, natural elements such as rain, wind, and natural light are visible (Futagawa 1991; Kliczkowski 2003). It is located within a dense series of houses with open-air holes in the middle of the building (Irving 2016), indicating that Ando, besides being influenced by the architect's Le Corbusier and Louis Khan, also incorporated natural elements into the building (Fig. 2). The Tadao Ando concept, although influenced by western architects, still considers natural elements such as light, rain, and wind. The natural element is one of the characteristics of Japanese culture and Confucius. Figure 2A displays an open-air space in the middle of the building, Fig. 2B shows the inside of the building, from where it is possible to see the outer space as if it had been inserted into the inner space, while Fig. 2C is the outside view of the series of buildings.

### Primary of consideration in facing the demands of the times

#### Architect Kisho Kurokawa

Kisho Kurokawa's initial designs using the concept of design combined with the concept of metabolism reflected the demand for development in the post-World War-2 era. Metabolism means there is a movement both vertically and horizontally; indeed, Nakagin Capsule Tower reflects the concept of metabolism and is famous as the peak of Kisho Kurokawa's work. The concept of metabolism was used by Kenzo Tange for the urban concept during the post-World War-2 era as a stage of political and cultural transformation to catch up with the architectural works of the Western world (Yoshie 2005). Metabolism also developed prefabricated technology for use in buildings, starting with young architects in the 1960s at the World Design conferences in Tokyo and peaking in 1970 at the Osaka World Exposition. At that time, apart from Kenzo Tange (1913–2005), the architects who played an active role were Kiyonori Kikutake (1928–), Kisho Kurokawa (1934–2007), Fumiko Maki (1928–), Masato Otaka (1923–), Noboru Kawazoe (1926–), and Arata Isozaki (1931–) (Lin 2010).

Kurokawa had a mindset from Buddhism and traditional Japanese culture (Meyhofer 1994), Kurokawa was



**Fig. 2** Row House Sumiyoshi, Osaka, Japan ( Source: Tadao Ando: Complete Works 1975–2012 (Jodidio 2012))

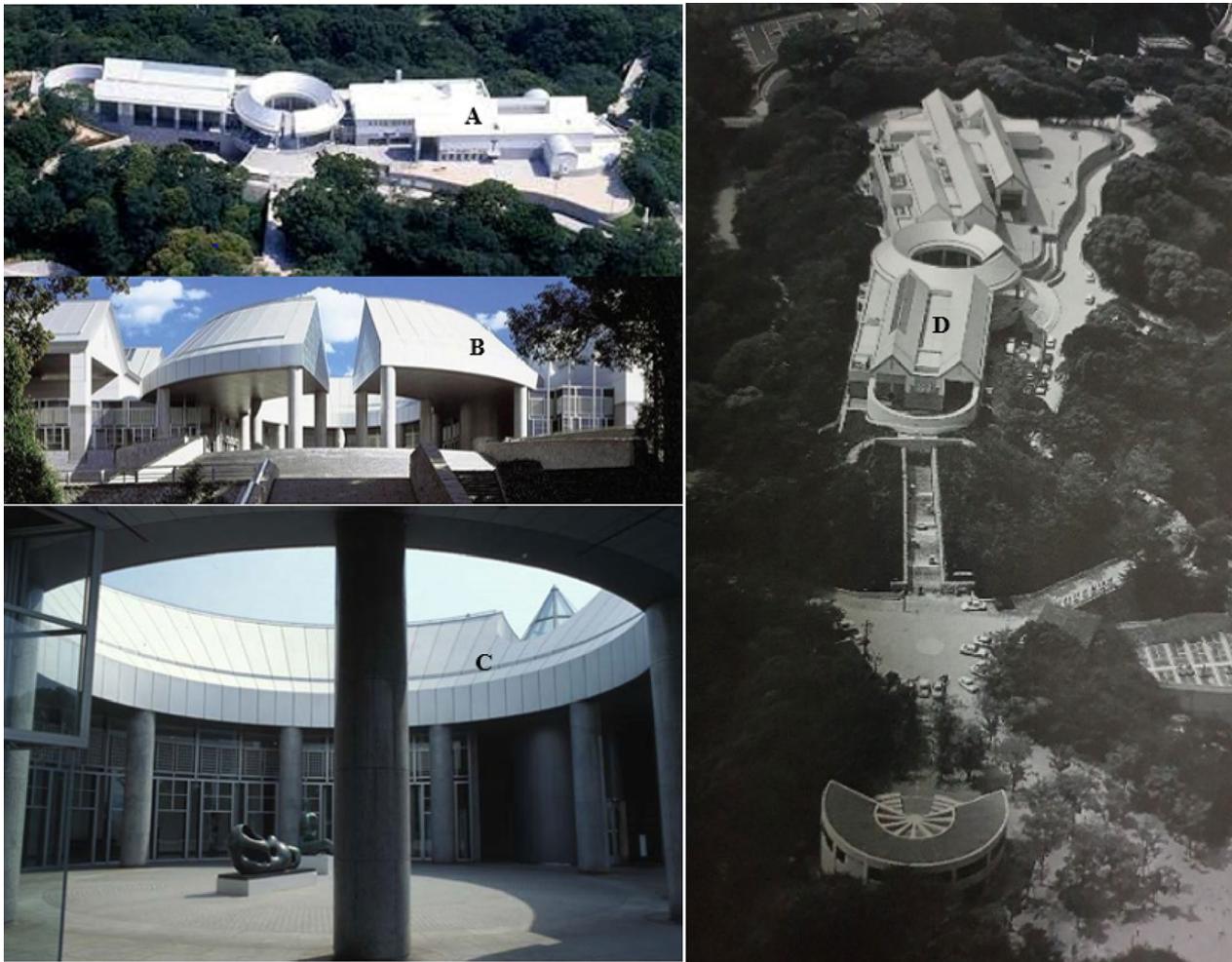
influenced by philosophers Lau Tzu and Confucius, so his work produced a contradiction between Western cultural philosophy. These two philosophers very much change Kurokawa's mindset. Kisho Kurokawa's philosophy differed from the Western ideas of determinism and inevitability. His concept of Metabolism is nothing but a manifestation of a sense of timeliness. In the Nakagin Capsule apartment building, Kisho Kurokawa considers that the capsule apartment is not one part, but rather a component that is similar to a living cell, meaning that it has its life cycle as a unit of space. So, the advantages of the Nakagin Capsule apartment in Kisho Kurokawa's work are known among contemporary Japanese architects (Kurokawa 1994b). Along with the development of time with Kisho Kurokawa, he also developed and refined, we are developing and refining the concept of metabolism with the concept of symbiosis. The philosophy of this symbiosis is also rooted in Buddhist philosophical thinking and traditional Japanese culture, influenced by the philosophy of Lau Tzu and Confucius. This symbiosis philosophy is concerned with human and nature, past and present, parts and whole, art and science, cultural differences, economics, and present culture (Kurokawa 1994b).

Kenzo Tange, with the flow of metabolism that is recognized as Asian culture but there is little influenced by Western culture, so this encourages Kisho Kurokawa to develop the concept of symbiosis, as Kenzo Tange knows,

tends to learn from famous Western architect maestros (Kurokawa 1994b). There is a close relationship between symbiosis and the Japanese *sukiya* style of architecture, which is a method that follows history. *Sukiya*, to obtain new techniques and materials, needed a new change, and Kisho Kurokawa referred to this *sukiya* architecture as *Hanasuki*, also known as a symbiosis of past and present. The beauty of this symbiosis is called *Hanasuki*. Symbiosis is obtained by showing respect for the sacred zone between different cultures, oppositional factors, elemental differences, and extreme dualistic opposition (Kurokawa 1994b).

An example of a building from Kisho Kurokawa that uses the concept of the symbiosis between history and nature is the Hiroshima City Museum of Contemporary Art, Hiroshima, Japan, 1984, completed in 1988, located on the ridge of a hill and not far from the Aozora library's shaft (Fig. 3).

This museum building is a symbiosis of past-future, natural-architecture, and interior-exterior. Many intermediary zones can be seen in the building, between architecture and nature in the exterior buildings, the central plaza, patio, corridor, stone garden, and the stairs carved from stone. The materials used in the building's exteriors underwent a gradual evolution. From the natural base stones to the finishing stones, polished stones, ceramics, and aluminum, this marks the change from land to the universe and from the past to the present, all of which are



**Fig. 3** Hiroshima City Museum of Contemporary Art, Hiroshima, Japan (Source: **A** <https://www.hiroshima-moca.jp/en/outline/>, downloaded on October 21, 2019; **B** <https://www.architravel.com/architravel/building/hiroshima-city-museum-of-contemporary-art/>, downloaded on October 21, 2019; **C** <http://jepang.panduanwisata.id/2013/08/29/hiroshima-city-museum-of-contemporary-art/>, downloaded on October 21, 2019; **D** The Master Architect Series: Kisho Kurokawa, Selected, and Current Works (Dobney 1995))

symbiosis (Fig. 3A). In Fig. 3B, we can see the shape of the building's roof in the form of a plana roof, which was the shape of a roof in the *Edo* era. The cut-roof shape, as shown in Fig. 3B, conveys the meaning of past and present symbiosis. The cutting of the circular roof symbolizes the atom that was split during the nuclear bombing in the city of Hiroshima. Figure 3C reflects the symbiosis of Eastern and Western culture; in Western culture, courtyards tend to be empty, whereas in Eastern culture they may contain a statue and water. Thus, it can be concluded that the whole museum building uses the concept of symbiosis so that the beauty achieved from the design of the museum building can be said to be *Hanasuki* (Fig. 3D). The *Hanasuki* concept is an embodiment of the philosophy of Lau Tzu and Confucius.

#### **Architect Tadao Ando**

Tadao Ando is an autodidactic architect who obtained his architectural knowledge from Japanese traditional culture and undertook rational observations by studying the works of famous architects from Europe and America. He studied the works of world architects such as Le Corbusier, Alvar Alto, and Mies van der Rohe. Ando's architectural work pays attention to details and the accuracy of the details, until when he finishes his work, which ensures the high quality of his creation. The greatness of Tadao Ando in managing space through involving the object and observer optimally, as well as the disclosure of complex culture, is simple and can also convey the impression of emotional intimacy in his work (Asensio 2003). Tadao Ando's impression in designing buildings so



**Fig. 4** Church of the Light, Irabaki, Osaka, Japan ( Source: Tadao Ando: Complete Works 1975–2012 (Jodidio 2012))

that his work is high quality is seen in the following; 1) The impression of exposed concrete material handling as a limit. Through this material he creates an expression of his creation; 2) The impression of a hard wall can feel soft to the touch. Tadao Ando lets in light and the wind and seeks to remove chaos from the lives of visitors to enable them to take refuge in a quiet world; 3) The impression of Tadao Ando's work is emptiness. Visitors only exist in the light and space that surrounds them. These three impressions of Ando are influenced by Zen Buddhism and traditional Japanese forms of architecture, which are geometric but not always symmetrical, while circular shapes and geometric shapes are influenced by Western culture. As such, there is a similar relationship between Western culture and Eastern culture (Jodidio 2012).

Western culture such as Architect Bruno Zevi is organic architecture with an architectural design approach that is applied partially or as a whole to building design with the concept being based on natural forms or principles (Zevi 1993). Kengo Kuma in his design includes organic architecture, this is the same as Bruno Zevi and Frank Lloyd Wright. Kuma said the ideas embodied in these various projects have a lot in common with Japanese traditions. The building design is characterized by the use of natural light and natural materials (Kuma 2013). Kuma expressed his frustration with the concrete in Japanese buildings. Tadao Ando is aware of such criticism. Because Kuma's organic architecture creates a connection and encounter between humans and nature which is a point of warmth (*nukumori*), it is a combination of two qualities that are not in harmony so that a comfortable warmth is unique to Japanese aesthetics (Pulvers 2013). The harmony between humans and nature is a sublimation of Yin and Yang that comes from the philosophy of Lao Tze and Confucius.

Concerning the mastery of the material, Tadao Ando said: "The essential building materials of the twentieth century are glass, concrete, and metal in my architecture. I seek to transpose Japanese ideas into forms, which can be built with these materials" (Jodidio 2012). In addition to European architects, Louis Khan from America also influenced Tadao Ando; Ando learned the element of light intake from Khan. There is a similarity between the concepts used by Ando and Khan, wherein Khan uses the concept of silence and light and Tadao Ando allows light to enter so that space becomes empty. *Shintai* revealed by Tadao Ando means the unity of spirit with the body to concretize architecture. Architecture is the art of articulating from the world through abstract geometry, whereas concrete is a place, which is meant here as a space full of sensationalism; this is what I call *Shintai* (Johnson 1994). Therefore, *Shintai* embodies the achievement of Tadao Ando's work.

Included in the case study analysis of Ando's work is the Church of the Light, Ibaraki, Osaka, Japan, which was built in 1988. When asked about the religious building, Ando said: "I feel that the goal of most religions is similar, to make men happier and more at ease with themselves. I see no contradiction in my designing a Christian Church" (Jodidio 2012). Tadao Ando, in his design, attempts to combine the past with the present, natural atmosphere with an urban environment, even combining the Western and Eastern mindset. Many of Tadao Ando's works utilize natural elements such as wind, light, air, and the urban environment.

Figure 4A shows the exposed concrete geometric shapes in Tadao Ando's work. Geometric composition with unbalanced shapes is strongly influenced by the mindset of Eastern culture, which is a characteristic feature of Japanese culture. This geometric shape is also in harmony with urban environments that are geometric in shape (Kok 2000). Figure 4B shows the inside of the church, where, in the space near the altar, light in the shape of a cross conveys a sacred spiritual atmosphere within the room (Glancey 2003). The intensity of the light within the shelter of this room gives a sacred impression, while in terms of sound, the use of exposed concrete material serves as a soundproof barrier capable of excluding outside noise. Figure 4C is the room in the church as seen from the altar; this inner space has natural lighting on the ceiling that expresses a sense of separation between the wall and the ceiling. Likewise, there are window openings large enough to reflect shadows onto the back wall so that the spiritual atmosphere of sacredness can be expressed. In Fig. 4D we see the shadow of a cross on the floor, which acts as a sacred symbol for Christians. This illustrates the greatness of Tadao Ando's work, where attention is paid to the detail of the expression of the shadow's shape so that it can be felt by the user. This is what Tadao Ando wishes to express in saying: "Quest for the relationship between light and shadow, and also for the need for a shelter of the spirit" (Jodidio 2012).

Therefore, Tadao Ando's works pay attention to elements of Japanese culture by focusing on natural elements, geometric shapes, and exposed concrete as his hallmark, all of which, as stated by Tadao Ando himself, are an embodiment of the *Shintai* concept. The *Shintai* concept is an embodiment of the philosophy of Lau Tzu and Confucius.

## Conclusions

The conclusions of the analysis from the architectural studies of Kisho Kurokawa and Tadao Ando are as follows:

a. The Western architects who influenced Kisho Kurokawa and Tadao Ando are as follows:

- 1) Zen Buddhism and Japanese culture influenced Kisho Kurokawa and Tadao Ando. Japanese culture shares similarities with the architect Mies van der Rohe, with the slogan “less is more,” which means that Kisho Kurokawa and Tadao Ando’s architectural works are simple and beautiful, in keeping with Japanese culture.
- 2) Kenzo Tange influenced Kisho Kurokawa with the concept of metabolism, along with Kisho Kurokawa’s experience and time of updating the concept of symbiosis that was more suited to Eastern culture. Whereas Le Corbusier influenced Tadao Ando’s work with geometric concepts, modified by Japanese culture with asymmetrical geometric shapes. Louis Khan also influenced Tadao Ando in his design, as shown by him paying attention to the element of light in the designs. So Tadao Ando uses the concept of exposed concrete in his design and pays attention to natural elements such as light, air, and natural beauty.

b. The primary consideration of the architects Kisho Kurokawa and Tadao Ando in dealing with the demands of the times.

- 1) Kisho Kurokawa uses symbiosis in his design; that is, combining the different factors of two different binary groups, which are nevertheless interconnected and respectful so that they have a harmonious value and produce a new architectural design. Kisho Kurokawa termed the results of this design *Hanasuki*. In his designs, Tadao Ando holds tightly to Japanese culture by adding asymmetrical geometric shapes to exposed concrete and harmonizes the design with natural elements such as water, air, sun, and natural beauty such as vegetation, mountains, sky, and other natural elements. Tadao Ando named the results of this type of design *Shintai*.
- 2) The designs of Kisho Kurokawa’s work thus aim to achieve *Hanasuki*, while those of Tadao Ando seek to achieve *Shintai*. The *Hanasuki* and the *Shintai* concept is an embodiment of the philosophy of Lau Tzu and Confucius. Of the two keywords (*Shintai* and *Hanasuki*). It is a finding of design that is often expressed by architectural design works of Ando and Kurokawa which are sublimated into a series of words that have symbolic meanings from the essence of design.

The findings in this study cannot be generalized as the analysis examined the works of only two of the world’s master architects. However, in its design, Japanese architecture has a simple but still beautiful form (*kirei*), which reflects that beauty in Japanese etymology has the meaning beautiful and clean (simple). Therefore, architectural design works are inspired by Japanese culture, which is itself influenced by the philosophy of Lau Tzu and Confucius. Kisho Kurokawa and Tadao Ando clearly stated that their design work was inspired by Buddhist philosophy and Japanese culture. Future research is expected to conduct further studies on the reciprocity between Eastern and Western architectural cultures.

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#### Declarations

#### Competing interests

The authors confirm that there is no conflict of interest to declare for this publication.

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