

Revealing the Spatial Continuum: Definition, Typologies, Elements, Possible Interpretations, and Contexts From the Kuroshio

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Abstract

The spatial continuum is an intangible architectural element that can observe human-environment connections achieved by exploring the role of environments, particularly the ocean. The ocean's influence on social health is recognised through the contexts brought by the sea-to-land evolution of the Japanese and Philippine vernacular, which established the Kuroshio as the shared oceanic force between the two societies. The comparison between the vernacular evolution of these two Asian architectural identities was pre-established through their vernacular townhouse types, the *machiya* and the *bahay na bato*. Three stages were formed through an iterative process of the grounded theory methodology. First, transferability was applied to varying definitions from established literature, extracting the general meaning and elements. Second, Wright's process of studying prints is utilised by detecting the elements and the direction and movement of subjects in 230 pieces of prints from Japan, or *ukiyo-e*, and the Philippines made between 1600 and 1959, identifying eight types. Third, the frequencies of the eight types in the spaces of assembly of the typical design of the vernacular townhouses, nine of Wright's building designs, and five public aquariums were observed and interpreted based on these frequencies, direction from the point of refuge, and elements inside and outside the spaces. Manifestations of the spatial continuum between architecture and environments are examined and introduced as a design tool for guiding spatial arrangement and human-environmental connectivity and as a methodological tool with architecture as the processor. This study investigates the interplay between architectural design and human-environment interactions.

Keywords: Spatial Continuum, Human-Environment Interactions, Prints, Ukiyo-E, Japanese Architecture, Philippine Architecture

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Introduction

Experiences in nature and connecting with nature are two entirely different things. Experiences in nature pertain to activities done in nature while connecting with nature involves a sense of being connected to a place, a memory, or a particular species in nature. It was suggested that connection emerges in adults and children when nature is interactive through exploration, care and responsibility, observation, learning, and familiarity with a particular landscape. People enjoy nature through multiple dimensions such as affection and attraction, intellectual development, spirituality, and symbolism (Kellert, et al., 2024). Thus, the impact of the natural environment on social well-being and health is increasingly recognised (Li, 2018; Kuo, 2015; Kaplan & Kaplan, 1989; Ulrich, 1991; 1981) including an unlikely natural environment to consider, the ocean (Beute, et al., 2021). Alas, the continuous disconnect from nature has been growing since the 1950s, with a cultural shift away from nature evident in decreasing references in popular media while references to man-made environments have remained stable. Aside from the loss of physical and psychological benefits from engagement with nature, the increasing lack of reference to nature in cultural products, being agents of socialisation, also indicates a shift of curiosity, respect, and concern from the natural world to the otherwise natural (Kesebir & Kesebir, 2017). Yet, there remains a strong interest in connecting with nature, with experiences in natural settings fostering a sense of responsibility and commitment to environmental conservation (Kellert, et al., 2024). This leads to a strong agreement from empirical evidence that contact with nature is associated with environmentally protective attitudes and behaviours (Kesebir & Kesebir, 2017; Kellert, et al., 2024).

Spaces with natural elements encourage interaction with the natural environment through social interaction, passive recreation, or physical activity (Li, 2018; Kuo, 2015; Kaplan & Kaplan, 1989; Ulrich, 1991; 1981) as such environments reduce stress by providing a sense of calm and relaxation (Ulrich, 1991). The effectivity of such spaces may come from an innate human tendency to seek connections with nature and other living things coming so far as becoming reflected in our cultural practices, aesthetic preferences, and psychological wellbeing (Wilson, 2003; 1984). On the contrary, spaces that resemble environments characterised by high levels of visual complexity, noise, intensity, and movement can create stress and fatigue (Ulrich, 1991). Opportunities for experiencing and connecting with nature have been in decline, especially in areas undergoing rapid suburbanisation (Pyle, 2002).

Contexts

Societies throughout history have excluded the ocean as an influencing force (Rüegg, 2021; Bolster, 2006). However, the ocean, like other natural environments, plays a crucial role in maintaining the social fabric of its peripheral societies. Spaces developed in archipelagic societies along the Kuroshio Current are uniquely connective with nature. As pre-colonial and indigenous Philippine architecture was identified as being part of the stilt house system, the predominant architectural system in the Austronesian region with the concept and structure of an oceanic architectural origin, the primeval boathouse called *balangay* (Lico, 2021), similarities to these Austronesian architectural styles were also noticed in the pre-Buddhist architectural styles (Lico, 2021; Arbi, Rao, & Omar, 2015), namely the *taisha-zukuri* style attributed to the Izumo-Taisha shrine in Izumo, the *sumiyoshi-zukuri* style attributed to the Sumiyoshi-Taisha shrine in Osaka, and the *shinmei-zukuri* style attributed to the Ise Jingu shrine in Ise, which served as the foundations of succeeding design evolutions within Japan proper (Young & Young, 2007). Thus, Lico (2021) argued that an element of

spatial continuity can be confirmed and observed in the architecture of these societies despite Blench's (2010) dismissal of any possible Austronesian linguistic or archaeological influence on Japan proper. Regardless of Blench's (2010) dismissal, detections of the presence of architectural elements that may be identified in Japanese architecture, influenced by it or otherwise, in other architecture of Asia-Pacific is still possible as a major factor remains to be overlooked in their respective evolutions which is the climate brought by the Kuroshio Current. The Kuroshio, as a shared oceanic force, instigates climatic social change imprinted in the region's architectural evolution and elements.

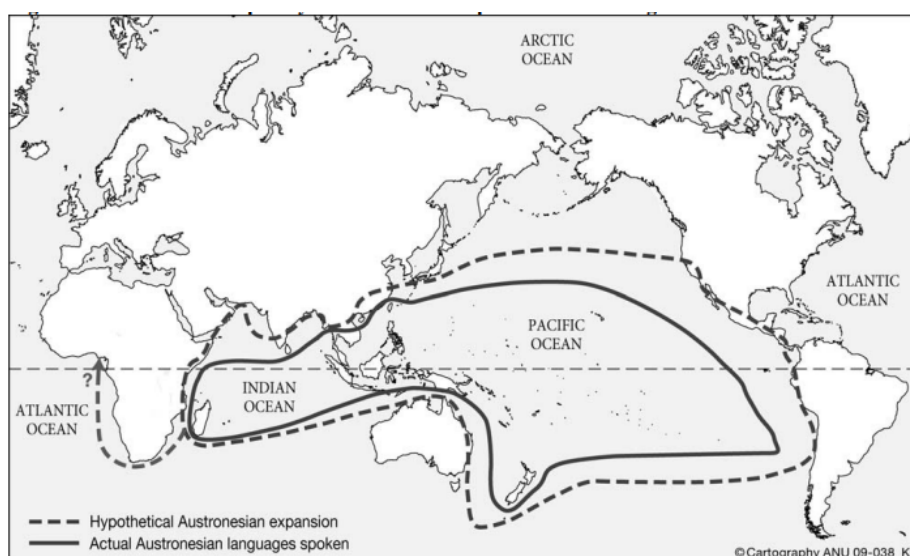


Figure 1: Extent of Contemporary Austronesian and Possible Migrations by Blench (2010)

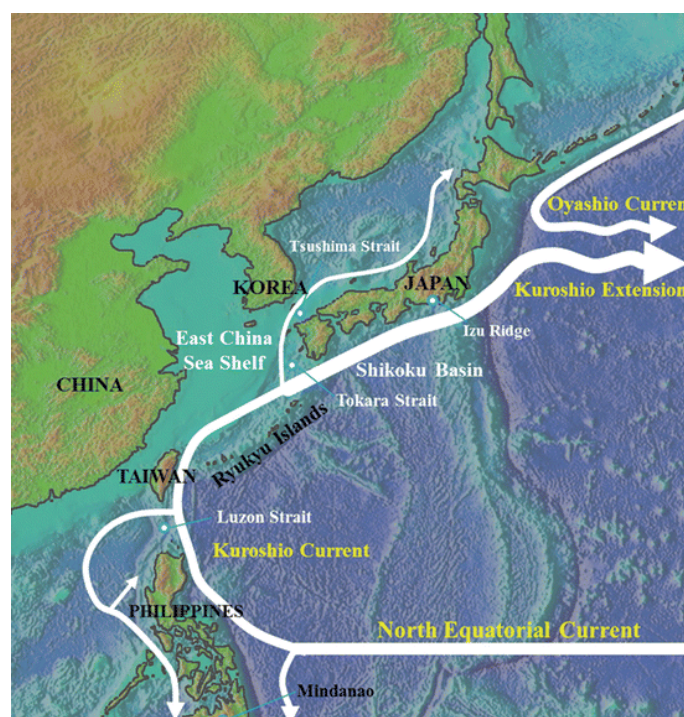


Figure 2: Path of the Kuroshio Current¹

¹ Image Source: https://media.springernature.com/lw785/springer-static/image/chp%3A10.1007%2F978-3-319-00822-6_1/MediaObjects/314596_1_En_1_Fig1_HTML.gif

People establish different relationships between themselves in a space relative to their location horizontally or vertically (Kim, 2002; Wright, 1955). These relationships and their corresponding behaviours are then reflected in architecture. Architectural concepts, like Frank Lloyd Wright's notion of prospect (Kim, 2002), reflect individuals' relationships with the space and the environment. Changes in architecture over time mirror shifts in societal values and behaviours, as seen in Wright's evolution of the shingle-style house. Studies on the architectural evolution in archipelagic societies along the Kuroshio provide insights on how social change has influenced architecture (Young & Young, 2007; Zialcita & Tinio, 1996). By connecting these findings with Wright's works, there is a recognition of spatial continuity as a common element in architectural design across different cultural contexts (Kim, 2002; Nute, 1994; Wright, 1955). The evolution of the typical shingle-style house reflected social change in America inevitably affecting contemporary American architecture. Similarities between the evolution and social use of the spaces of the *machiya*, the Japanese townhouse, and the *bahay na bato*, the Philippine townhouse, were observed noting the centrality of the guest reception room and the veranda to the social activities of the household (Lico, 2021; Nihon Minkaen, 2014; Young & Young, 2007; Zialcita & Tinio, 1996) which was then reinforced in Kim's (2002) study of Wright's buildings wherein the main spaces of assembly and social activity are highlighted for the presence of the spatial sequence either in the interior or towards the exterior.

Appleton (1975) suggests that prospect and refuge influence our aesthetic judgments. Kim (2002) characterised Wright's concept of prospect as relationships between object and subject, land and building, nature and self, and people and self as a single unit. He described Wright's concept of prospect into three perspectives: 1) as a composition of the basic form for the prospect, 2) as an exterior prospect, and 3) as an interior prospect. In the concept of exterior prospect, he described Wright's works as having a space for refuge with a view of the prospect at close range. Meanwhile, in the concept of interior prospect, he described Wright's works as having an emotional impact on the public space. Prospect and refuge on the spatial scale is now the extended space and the compressed space appearing in a sequence enabling the experience of dynamic movement in the spaces (Kim, 2002) becoming a singular entity of spatial continuity. As an element, spatial continuity was seen in Wright's works and is heavily attributed to his fascination for Japanese art and architecture being derived from the concept of *Ma*. Nute (1994) chronicled several similarities between traditional-style Japanese buildings and Wright's works indicating the presence of the element in Japanese architecture. The now accepted yet vague connection between Wright's works and Japan was developed rather than just a support for his organicism (Nute, 1994). Thus, this study aims to give meaning to the "spatial continuum" beyond a short reference by Garda et al. (2017) while describing *ma*.

Methodology

The study outlines strategies for theoretical sampling, emphasising the importance of selecting cases that show relevance, variation, or deviance to address the research problem. Transferability, or the generalisation of contexts between cases, is highlighted as a crucial concept (Spradley, 2016; 1979) with funnelling, a form of observational focus, and constant enquiry (DeWalt & DeWalt, 2002) forming the methodological structure of this study. The constructivist grounded theory design is guided by Charmaz's (2006) framework that emphasises qualitative research methods for theory development. This approach involves constantly comparing data, concepts, and cases aiming to develop theories through iterative analysis and interpretation. Through this structure, the study looks to construct a theory that

comprehensively captures the complexity and contextuality of the spatial continuum phenomenon.

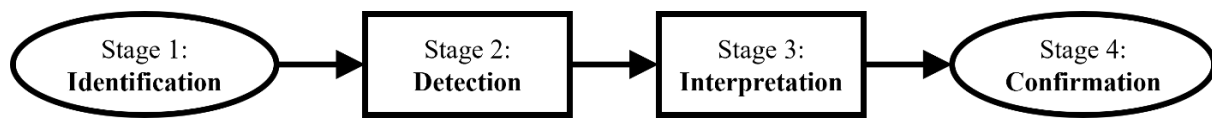


Figure 3: Methodological Framework

There are four stages to the methodological framework of this study. These are 1) identification, 2) detection, 3) interpretation, and 4) confirmation. In each stage, a set of analyses is conducted following the simultaneous implementation of the data-gathering procedures. At every level, there is a matrix or matrices wherein a full round of the methodological structure is conducted. The procedures for funnelling, constant enquiry, and transferability are combined and simplified into tabular forms to better ease data collection. Lastly, the control groups are the established literature and the spatial organisations while the subject group is the prints wherein the established literature and the spatial organisations serve as the independent variables, the prints serve as the mediating variable, and the spatial continuum serves as the dependent variable. Approaching the data with Wright's process of analysing Japanese prints, as narrated in his book "*The Japanese Print: An Interpretation*", would provide a more accurate data interpretation and representation. This analytical procedure translates into Stage 1 corresponding to observation and structure, Stage 2 corresponding to recollection and geometry of form, and Stage 3 corresponding to recognition and idea.

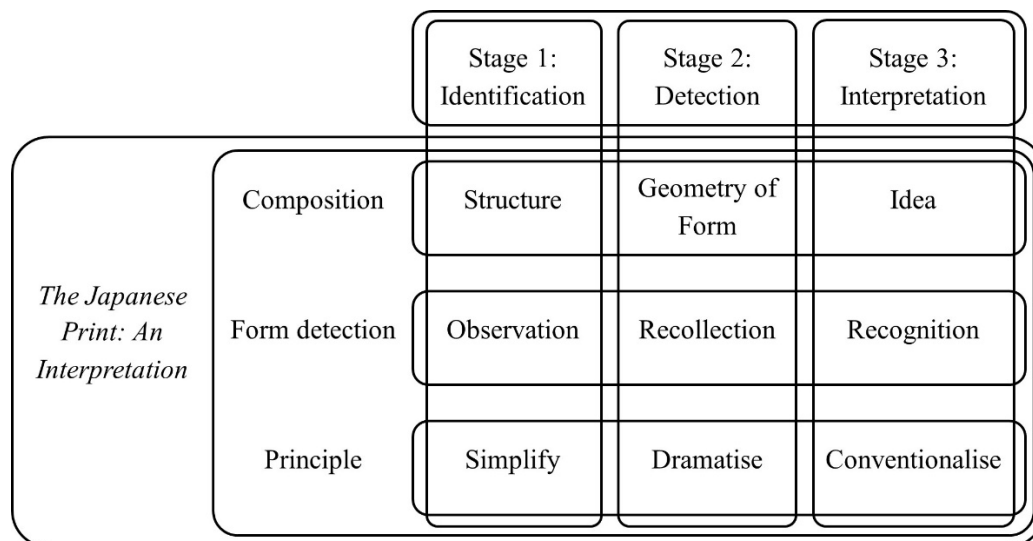


Figure 4: The Methodological Framework Contextualised in Wright's Analytical Process

In Stage 1, the identification of terms is conducted by the transferability of current definitions. Since current definitions are scattered throughout the established literature related to this study, transferability removes overlaps and simplifies long definitions into shorter definitions. Definitions from established literature are categorised into their respective terms and keywords are extracted from such definitions. Similar, synonymous, or overlapping keywords are provided with a code. Keywords that do not belong to any code are considered extraneous variables. A series of comparative ethnographic narrative analyses on the prints, as mediating variable sets, will be conducted following sets of detection criteria. The detection criteria are designed to detect codes in the prints that would show indicators for definition, typology, elements, or interpretation of the spatial continuum phenomenon. Through the detection

criteria, these codes can be categorised and compared easily with other codes possibly detecting more extraneous codes or “noise” in the prints. Stage 2 is comprised of different sets of comparative analytical matrices focusing on detecting 1) settings, 2) elements, 3) typologies, and 4) definitions in the subjects. These detection criteria coincide with the procedures of funnelling wherein 1) the detection of settings corresponding to the “grand tour”, 2) the detection of elements corresponding to the “mini tour”, 3) the detection of typologies corresponding to the focused observation, and 4) the detection of definitions corresponding to selective observation. Moreover, the detection of elements corresponds to a case-controlled study while the detection of typologies corresponds to a cohort study. In Stage 3, the interpretation of the core category is done first through the spatial organisation around the main space of assembly of each building sample. The sequence analysis comes from Kim’s (2002) study of prospect and refuge in Wright’s works. The sequence to be applied in this interpretation matrix is the same sequence by him which is 1) simultaneous and 2) successive. A simultaneous sequence means that the presence of refuge and prospect is in a singular space or separate spaces without barriers. A successive sequence means that the presence of refuge and prospect is in separate spaces with barriers (Kim, 2002). The core category is then interpreted through these sequences. Then, the detection of architectural elements in the subject buildings is conducted. These specific elements are detected in the building case studies for this study.

Conclusion

The study involves analysing a diverse collection of 230 prints, primarily Japanese woodblock prints along with European prints depicting Philippine scenes, categorised into indoor, outdoor, and both settings. Emphasis is placed on detecting key elements like human figures, architectural forms, architecture-like forms, spaces for assembly, and intermediary spaces based on the study's proposed definition of spatial continuity. Literature by Zialcita and Tinio (1996), and Nihon Minkaen (2014) are identified as crucial for interpreting the data effectively. After eliminating redundant prints and applying selection criteria, 62 samples are chosen for deeper analysis, focusing on artists specified in Frank Lloyd Wright's *The Japanese Print: An Interpretation*, namely Hokusai, Hiroshige, and Toyokuni among others mentioned, revealing 8 prevalent spatial continuum types.

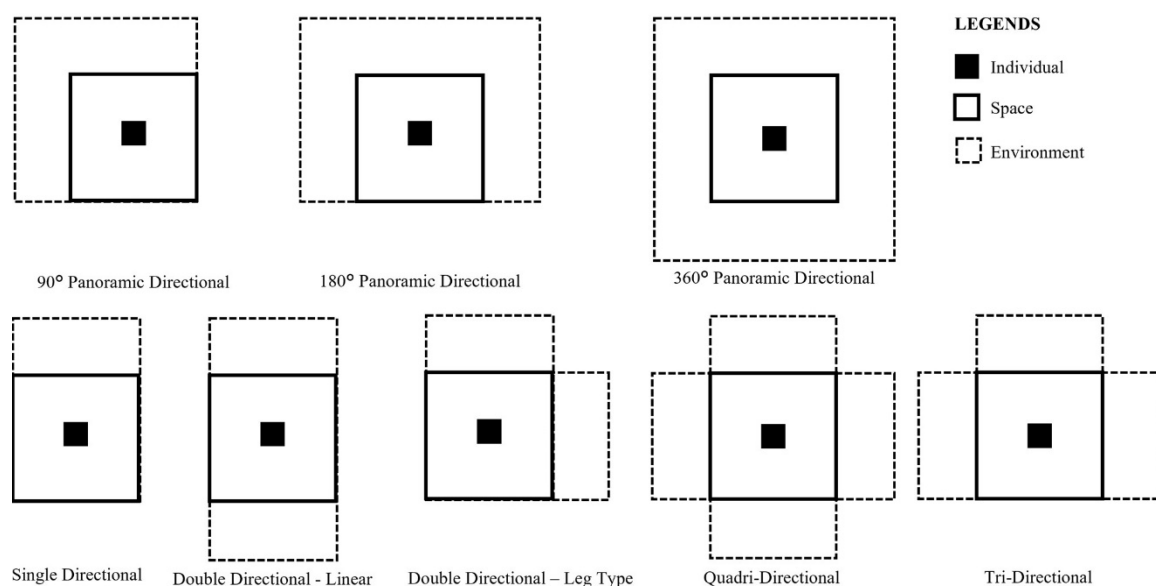


Figure 5: Spatial Continuum Types

8 spatial continuum types are detected with varying levels of frequency. These are 1) the single directional type, 2) the double directional – linear type, 3) the double directional – leg type, 4) the 90° panoramic directional, 5) the quadri-directional type, 6) the radial or 360° panoramic directional type, 7) the tri-directional type, and 8) the 180° panoramic directional type. The single-directional, double-directional, and the radial directional spatial continuum types have the highest frequencies. Four types of environmental direction sequences were observed namely 1) natural – inward, 2) natural – outward, 3) urban – outward, and 4) interior. The most common of these environmental direction sequences is the natural – outward sequence. These elements, types, and direction sequences can be retraced on the prints for further confirmation of the existence of spatial continuity in the artwork. There are two potential uses for the spatial continuity as a tool: 1) as a design tool in arranging primary, secondary, and tertiary elements and establishing spaces of assembly and intermediary spaces, and 2) as a methodological tool for providing interpretations based on contextual and architectural principles.

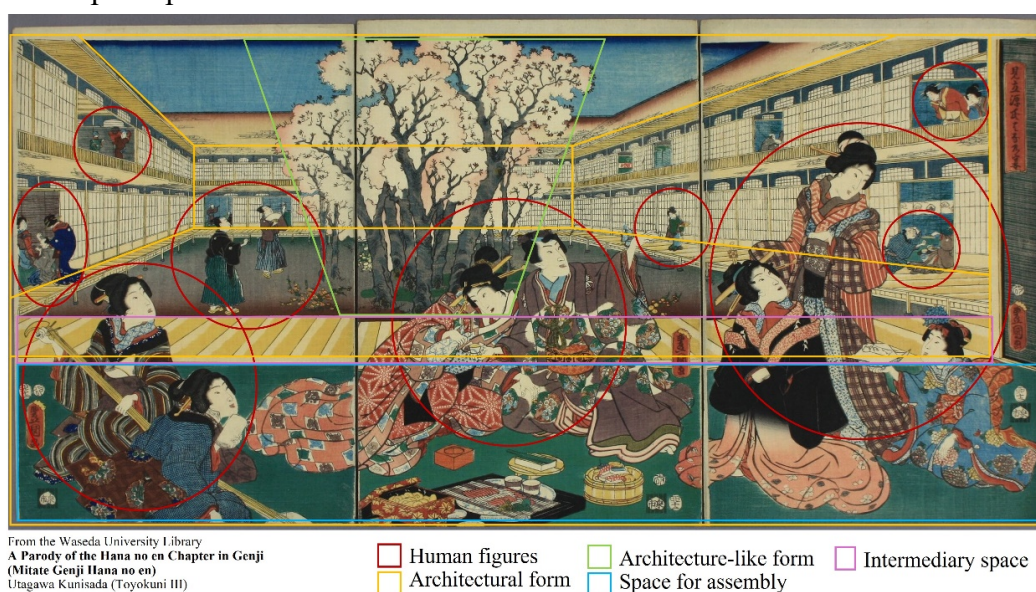


Figure 6: Elements of Concern Plotted on a Sample Print



Figure 7: Typology, Environmental Direction Sequence, and Environmental Element Equivalency Percentage of a Sample Print

References

- Appleton, J. (1975). *The Experience of Landscape*. London: John Wiley & Sons.
- Arbi, E., Rao, S. P., & Omar, S. (2015). Austronesian Architectural Heritage and the Grand Shrines at Ise, Japan. *Journal of Asian and African Studies*, 50(1), 7-24.
- Beute, F., Davies, Z., de Vries, S., Glanville, J., Keune, H., Lammel, A., . . . Andreucci, M. B. (2021). Blue space in urban and peri-urban areas and mental health: which blue space types and characteristics are most beneficial? In *Green and Blue Spaces and Mental Health: New Evidence and Perspectives for Action* (pp. 24-27). Copenhagen: WHO Regional Office for Europe.
- Blench, R. (2010). Remapping the Austronesian expansion. In B. Evans, *Festschrift for Malcolm Ross* (pp. 1-25). Canberra: Pacific Linguistics.
- Bolster, W. J. (2006). Opportunities in Marine Environmental History. *Environmental History*, 11, 567-597.
- Charmaz, K. (2006). *Constructing Grounded Theory: A Practical Guide through Qualitative Analysis*. Sage Publications.
- DeWalt, K. M., & DeWalt, B. R. (2002). *Participant observation: a guide for fieldworkers*. Walnut Creek, CA: AltaMira Press.
- Garda, E., Mangosio, M., & Pastore, L. (2017). Learning from the Past: The Lesson of the Japanese House. *Structural Studies, Repairs and Maintenance of Heritage Architecture XV*. 171, pp. 275-284. WIT Press.
- Kaplan, R., & Kaplan, S. (1989). *The Experience of Nature: A Psychological Perspective* (1st ed.). New York: Cambridge University Press.
- Kellert, S. R., Case, D. J., Escher, D., Mikels-Carrasco, J., Seng, P. T., & Witter, D. J. (2024). *Major findings*. Retrieved from The Nature of Americans: <https://natureofamericans.org>
- Kesebir, S., & Kesebir, P. (2017). A Growing Disconnection From Nature Is Evident in Cultural Products. *Perspectives on Psychological Science*, 12(2), 258-269.
- Kim, K.-h. (2002). A Study on the Concept of Prospect in Frank Lloyd Wright's Works. *Journal of Asian Architecture and Building Engineering*, 1(1), 297-301.
- Kuo, M. (2015). How might contact with nature promote human health? Promising mechanisms and a possible central pathway. *Frontiers in Psychology*, 6(1093).
- Li, Q. (2018). *Shinrin-Yoku: The Art and Science of Forest-Bathing*. Penguin Random House.
- Lico, G. (2021). *Arkitekturang Pilipino: A History of Architecture and the Built Environment in the Philippines*. Quezon City: Arc Lico International Services.

- Nihon Minkaen. (2014). *Japan Open-Air Folk House Museum* (English Version Second Edition ed., Vol. 4). (A. Toyama, T. Yasuda, H. Yamazaki, M. Morris, Eds., S. Matsushita, A. Tanino, A. Yoshida, S. Enomoto, Y. Abe, A. Kataoka, . . . M. Morris, Trans.) Kawasaki: Daiwa Co. Ltd.
- Nute, K. (1994). Frank Lloyd Wright and Japanese Architecture: A Study in Inspiration. *Journal of Design History*, 7(3), 169-185.
- Pyle, R. M. (2002). Eden in a vacant lot: Special places, species, and kids in the neighborhood of life. In P. H. Kahn JR, & S. R. Kellert, *Children and nature: Psychological, sociocultural, and evolutionary investigations* (pp. 307-327). MIT Press.
- Rüegg, J. M. (2021). Currents and Oceanic Geographies of Japan's Unending Frontier. *The Journal of Pacific History*, 56(3), 296-319.
- Spradley, J. P. (2016; 1979). *The Ethnographic Interview*. Long Grove: Waveland Press.
- Ulrich, R. (1981). Natural Versus Urban Scapes: Some Psychological Effects. *Environment and Behavior*, 13(5), 523-556.
- Ulrich, R. (1991). Stress Recovery During Exposure to Natural and Urban Environments. *Journal of Environmental Psychology*, 11, 201-230.
- Wilson, E. (2003; 1984). *Biophilia* (12th ed.). Harvard University Press.
- Wright, F. L. (1955). *An American Architecture*. (E. Kaufmann, Ed.) New York: Horizon Press.
- Young, D., & Young, M. (2007). *The Art of Japanese Architecture*. Singapore: Tuttle Publishing.
- Zialcita, F. N., & Tinio, M. I. (1996). *Philippine Ancestral Houses*. Quezon City: GCF Books.

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