



Nusantara Architecture and Sustainability in Global Discourse

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Abstract. In the current of increasingly homogeneous global architectural discourse, Nusantara architecture emerges as an almost forgotten narrative, even though it carries profound meaning and organic sustainability. This article demonstrates how the philosophy, local wisdom, and local genius of Nusantara Architecture align with proposed theories of integrated sustainability in architecture. This offers a critical alternative to the modern sustainability paradigm, which is often trapped in Western philosophy and knowledge. Using evocative critique, this article seeks to present integrated sustainability theory by uplifting marginalized local voices, uncovering epistemic inequities in the Global South landscape, and calling for a re-examination of architectural knowledge. This writing invites us to view buildings not merely as objects, but also as living traces of civilization that are sustainable, challenging, and capable of healing a fragmented world.

Keywords: Nusantara Architecture, Sustainability, Global

1 Introduction

Today, the world of architecture is increasingly dominated by global shapes and knowledge. In this condition, the existence of Nusantara Architecture feels like a quiet voice amidst the crashing waves of the sea. Nusantara Architecture isn't merely a legacy of form, but also a representation of a way of life that is at one with nature, community, and spirituality. However, in the vortex of the Global South, oftentimes a tug-of-war between modernity and tradition happened. Meanwhile, sustainability as the dominant discourse in global architecture today often reduced to focus on energy efficiency and green technology, dismissing cultural and ecological dimensions that have long existed in local architecture, which in turn ignoring the original goal of sustainability: nature conservation. Starting from the anxiety from the tug-of-war between modernity and tradition, as well as sustainability which is reduced only to energy efficiency, this article tries to look deeper in the existing reality to be studied and reflected in order to gain the meaning of Nusantara Architecture in context of sustainability in the Global South.

Sustainability as a movement that has become a necessity on this century, needs to be criticized, especially sustainable architecture. The term "sustainability" these days

has lost its meaning. These terms are used interchangeably and are perceived as having similar meanings. Every field of science has its own definition, and this is also true in architecture.

Meanwhile, Nusantara Architecture as vernacular architecture holds a wealth of knowledge. It is like a nugget of gold buried deep within the earth, yet to be unearthed and refined into jewelry. In the context of the Global South, Nusantara Architecture's position is very strategic and unique, more than just a cultural heritage, but also as a representation of a contextual, sustainable, and community-based architectural approach.

This paper aims to demonstrate the knowledge of sustainability possessed by Nusantara Architecture and examine its position within the global environment with its dichotomy between the Global South and Global North. Through evocative criticism method, this article tries to analyze the shortcomings of the necessary steps, elevating marginalized local voices, dismantling the epistemic inequalities in the Global South landscape, and to call for a rereading of architecture. Evocative criticism is criticism that relates to emotional factors. Rather than influencing a person's intellectual views and understanding to grasp a meaning, the critic can instead evoke an emotional response from that person (Attoe, 1978).

2 Nusantara Architecture, an abandoned treasure

The study of Nusantara Architecture has long been at the intersection between ethnographic documentation and the romanticization of local culture. Researchers such as Denys Lombard and Bernard Doray have highlighted the richness of Nusantara Architecture as a reflection of cosmology and ecological relations of its people. However, in academic global context, Nusantara Architecture is oftentimes positioned as the "other", exotic, archaic, and not relevant to contemporary challenges. In the sustainability discourse, the Western approaches dominate, focusing on energy efficiency, green technology, and building certifications. Concepts such as LEED and BREEAM have become a universal standard, despite not always being appropriate for the tropical and socio-cultural contexts of the Global South.

Nusantara Architecture is not only just a heritage, but also a field of resistance against cultural and epistemic homogenization. Furthermore, studies regarding the Global South by Boaventura de Sousa Santos highlights the importance of epistemologies of the South, knowledges born from colonial experiences, marginalization and resistance. In this regard, Nusantara Architecture, with its practice rooted in community, spirituality, and local sustainability, becomes part of the narration. Thus, this shows that Nusantara Architecture holds a strategic position in critiquing and enriching global sustainability discourse, which is not simply an object of study, but as an active subject in shaping architectural future that is more than a just, contextual and sustainable.

Every region in the world has unique traditions, values and customs passed down from generations to generations. In Europe, local wisdom is often associated with traditional lifestyles, ecological practice, as well as customs that maintains social and environmental balance. In the Indonesian archipelago, more than 38 traditional houses

can be found which are vernacular buildings with their own characteristics and used as residences by ethnic groups, as illustrated in Figure 1. Behind every life in a home lies culture, habits, wisdom, and values in life. These philosophical and ancient values are ones to be explored to obtain the diamond of sustainability according to the tested theory.



Fig. 1. more than 38 traditional houses can be found in Nusantara

We can imagine, how much local wisdom, philosophy, and local genius is present in all the cultural products derived from Nusantara architecture? Traditional houses from the Nusantara are like hidden treasures that need to be explored more. But many have already gone extinct, and not many are left. It's very unfortunate. Why?

Philosophy is the root, while local wisdom is the fruit. Philosophy is the foundation of thinking, and local wisdom is the form of its application in everyday life. In many cases, local wisdom, embodies the philosophies embraced by the community. Nusantara Architecture has many philosophies, local wisdom, or local genius that is very linear and in line with the goal of sustainability (Rachmawati, 2012 and Hidayatun, 2015). Table 1 presents some philosophies, local wisdom, and local genius that can be found in the land of Nusantara.

Table 1. A few examples of local wisdom in the Nusantara

Location	Philosophy, local wisdom or local genius	Definition
Bali	Tri Hita Karana di	Harmony between human, nature, and God.
Lampung	Piil Pesenggiri	Values of honor and self-respect.
	Gotong Royong:	

Location	Philosophy, local wisdom or local genius	Definition
	The spirit of selfless cooperation, very strong in villages throughout Indonesia. <i>Musyawaharah untuk Mufakat</i>	Democratic collective decision-making that is upheld in local customs and governance.
Sunda	Tepas Salira	Respecting others' feelings, maintaining good manners and empathy.
Bali	Subak	An irrigation system that is born
Maluku	Sasi	Prohibition on taking natural resources to protect the ecosystem.
Lombok and Bali		Customary law that regulates environmental and social governance.
Minangkabau	Adat Basandi Syara', Syara' Basandi Kitabullah):.	Principle that customs must be in harmony with religious teachings.
	Hutan Adat (Dayak, Mentawai, etc.):	Forest management based on inherited traditions, maintaining the ecosystem and resources.

3 Sustainability, a necessity on the global stage

Sustainability in a literal sense can be defined as a process, method, or continuing process. Sustainability is a long-term goal or objective. On the other hand, sustainable development is the path or journey to achieve it. It can be emphasized that the word “sustainability” is a target or objective, while “sustainable” is the path to achieve it. Sustainability as a concept began to be widely discussed in 1987, and this discussion has expanded from 2018 to this day. These discussions are conducted in various contexts and with various interests. So, what exactly is the actual definition of Sustainable Architecture, which is a combination of the word “architecture” and “sustainable”, which intersect with the definition of “sustainability” and the Sustainable Development Goals (SDGs)? Rachmawati, 2024 clarifies the true position between sustainability with sustainable architecture with Relating the definition of sustainability, sustainable, architecture and Sustainable Development Goals (SDGs) with 21st century architectural challenges, as presented in Table 2.

Table 2. 21st Century Challenges

Year	Challenges faced (order of writing shows the order of percentage size)
2008	1.Natural conservation issues: Nature conservation (including environmental responsiveness, sustainable architecture, green architecture) 2.Technological development including IT and digitalization 3. Humanity issues: Humanity and Society 4. Globalization and economic issues
2012	Nature, Technology, Humanity, importance of education
2018	Nature, Technology, Humanity, importance of education, the need for architectural intelligence
2023	Artificial intelligence, urban issues and global development, health issues, humanity, energy, future of internet, media, and democracy

If observed, there are three major challenges that are always present, along with various new challenges. These three major issues are related to environmental conservation, technology, and humanity. The three biggest 21 century issues explained above, when linked to definitions of sustainability, sustainable developments, and sustainable architecture, obtained the results as illustrated in Figure 2:

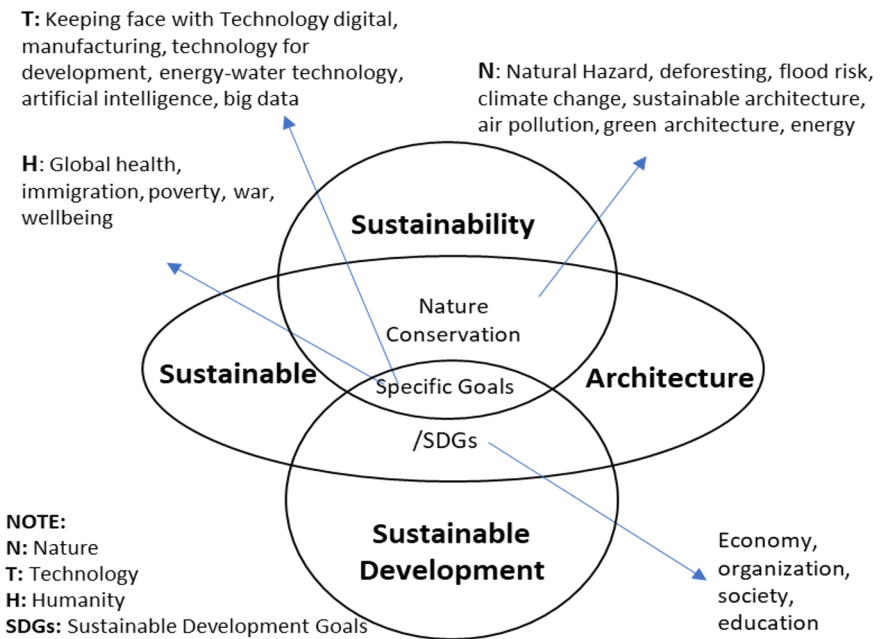


Fig. 2. Sustainability, Sustainable Development, Sustainable Architecture and 21st Century Challenges (Rachmawati & Nuffida, 2024)

Understanding sustainability as “long-term sustainability”, where a system is considered more sustainable the longer it can be maintained, can also be seen as alternative perspective to approach this concept (S. Roostaie, 2019). In the world of architecture,

sustainable architecture has its own definition. There are terms with similar definitions such as green architecture, ecological architecture, and the latest is regenerative architecture. The definition of sustainable architecture seems to discuss more about energy saving and efficiency. Several overlapping issues were identified based on the definitions of the Sustainability and SDGs, and their comparison with definitions of Sustainable Architecture proposed by several experts. These two aspects sometimes stand alone and at other times are mixed with other definitions. The two main aspects include nature conservation in a broad sense and specific sustainability goals, including the Sustainable Development Goals (SDGs). While Sustainable Architecture encompasses both definitions, it applies specifically within the architectural context, particularly in relation to buildings and the built environment. Nature conservation is one of the issues addressed in Sustainable Architecture, along with other interrelated concerns such as quality of life, organizational sustainability, economic considerations, and other related interests. Sustainability in a literal sense can be defined as a process, method, a continuing event. Sustainability is a long-term goal or objective. While sustainable development is a path, or journey, to achieve it. It can be emphasized that sustainability as a word is a target or objective, and “sustainable” is a path to achieve it.

Based on the results above, a solution is sought to handle by using an approach that looks at the three major problems faced by humans in the 21st century, which shows the relationship as illustrated in Figure 3:

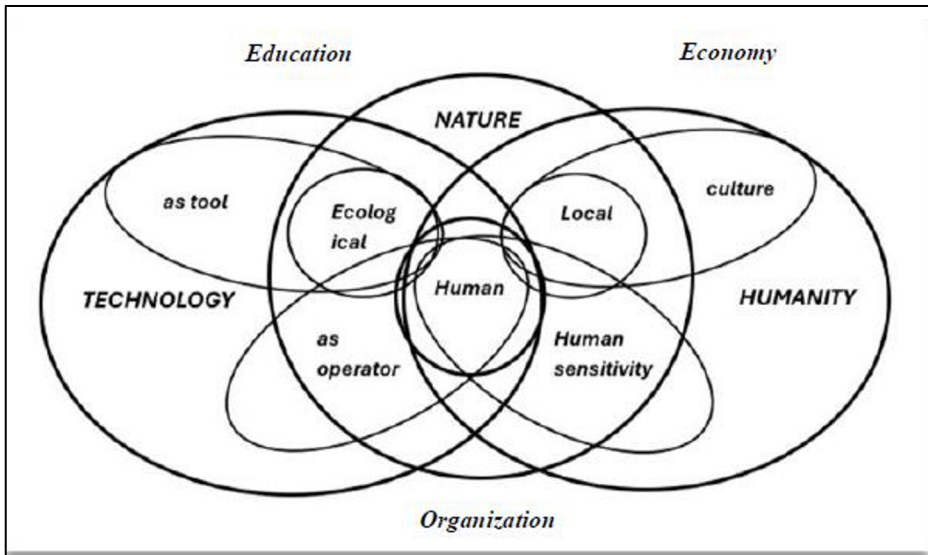


Fig. 3. Integrated Sustainability in Architecture

From the results above, humans are in these three goals, namely nature conservation, humanity, and technology. In the outermost circle of the problems directly related to architecture, there are three issues that are outside of architecture or ones influence it, namely economics, organization, and education. Humans are the controllers of the three

sustainability goals with various aspects that influence them originating from the circle of nature, humanitarian, and technological problems. The humans needed to be able to overcome problems according to the 21st century are humans who can act as ecological technology operators with good human sensitivity and involve in local cultures. Several studies, such as those conducted by Rachmawati, 2012 and Hidayatun, 2015, show that traditional Nusantara architecture has many wisdoms that are very linear and in line with the goals of sustainability. Therefore, we must dig deeper into the local wisdom that is already owned by traditional architecture Nusantara Architecture. These local wisdoms include the requirements set in natural material selection, community involvement in development, technology and building construction system and building sizes, etc. Then, how can it play a role in global scope and not becoming something that is marginalized?

4 Is the sustainability of integrated Nusantara Architecture possible?

Nusantara architecture can play a role on the global stage by demonstrating its capabilities in addressing the major issue the world is facing today, which is sustainability. How would Nusantara Architecture with its richness and local wisdom be examined using the integrated sustainable architecture theory proposed above? Is it possible? Is it compatible? This section will be discussed based on two references, namely the local wisdom present in Nusantara Architecture and other activities closely related to the current existence of Nusantara architecture.

4.1 From Local Wisdom of Nusantara Architecture

On the global stage, epistemic inequality, the dominance of Western architecture, and the challenges of sustainability are felt. Geographically and by definition, Indonesia is included in the region of Global South that is marginalized, considered as inferior not just economically. This assumption will permeate in all aspects of life. The effect of inferiority will affect the psychological capabilities of the Southern groups. The inequality of knowledge in architecture field currently also occurs when: local and traditional knowledge is not recognized or considered inferior to academic or Western knowledge; indigenous people and local communities often have deep insights regarding the environment and sustainable development, but their voices rarely gets included in design process or policies.

Educational institutions and scientific publications tend to prioritize theories from the Global North, thus reinforcing the epistemic dominance. One example is indigenous people's knowledge on natural resources management often gets ignored in modern development, even though they possess systems that are more in harmony with nature. The same is true for architecture. Local architectural heritage remains forgotten, despite its proven sustainability, but due to lack of attention, most of it are not implemented. This can also apply to Nusantara Architecture. A visible trend is that Nusantara Archi-

tecture has become merely a tourist attraction, enjoyed only if humans need entertainment or to reminisce about an ancient world that no longer exist today. As an effort to demonstrate how local philosophy, local wisdom, and local genius within a region can address issues of integrated sustainability, we will examine the architecture of Solo. A related study of the architecture of Solo houses and Solo palaces (Rachmawati, 2012) yielded results as presented in Table 3:

Table 3. The Results of Analysis

No	The number of statements / story/ legend	Responses In Issues		
		Nature	Technology	Humanity
1	The original nature is the horrible so that nature is the region that can exploited to give the blessing for mankind	-	-	+
2	sangkan paraning dumadi	+ ♦	-	+ ♦
3	Trisila	-	-	+
4	Pancasila	-	-	+
5	Ojo dumeh, Ojo aji mumpung, Rereh, ririh, dan ngati-ati; prayoga, watara dan reinga	-	-	+
6	The story of Ajisaka	+ ♦	-	+ ♦
7	saiyeg saiko praya	-	-	+
8	Mangan ora mangan kumpul	-	-	+
9	Sapa gawe nganggo, sapa nandur ngundhuh	-	-	+
10	Kawruh Kalang & kawruh Griya	-	+ ♦	-

Notes:

- + : indicates have responses in handle nature problem, technology & humanity
- : indicates not have responses in handle nature problem, technology & humanity
- ♦ : indicates have integrated between one and other

From these results, local wisdom is related to several issues related to the relationship between humans and nature and the supernatural. Judging from the way nature issues are handled, ideas, and concepts, the existing local wisdom is highly related to sustainability of human well-being. In this situation, nature and humans should do no harm to each other. In this regard, the function of nature conservation must be truly realized. However, in the case of the supernatural, nature is often perceived as something sacred or haunted. While nature itself is considered haunted, the resources it produces are perceived to be utilized for human benefit. This perspective gives rise to a form of dualism conflict within nature conservation. In this context, nature is managed in a way that is considered more reasonable when viewed from the standpoint of human interests.

Technology is mentioned only in *Kawruh Kalang & Kawruh Griya*. However, technology is not involved in environmental conservation. The connection to humans is primarily reflected in a measurement system known as “*Petungan*”, which relates to human blessings, but not humanity. From a humanitarian perspective, most Javanese wise sayings emphasize very close human relationships characterized by kindness and high tolerance. However, in the context of 21st-century challenges, this humanitarian function emphasizes caring for and providing direct sympathy to human groups in need of assistance. Within Javanese wisdom, this function is reflected in the expression “*Saiyeg Saiko Praya*”, which indicates the spirit of *gotong royong* (mutual cooperation), to

realize shared desires. While the statement “*mangan ora mangan kumpul*” also indicates tolerance and harmony between humans. Basically, everything depends on the humans themselves. This aligns with the Javanese philosophy of life, which states that humans are the center of everything. To achieve safety and well-being in living human life, people must be able to control themselves. Thus, the results show that Javanese wisdom pays attention to humanity issues.

All statements from Javanese wisdom address 21st century issues: nature management, ecological technology, and humanity. Unfortunately, these statements are not integrated yet. Therefore, the integration of nature conservation, ecological technology, and humanity is inconsistent with Javanese wisdom from the literature.

Field data differs from the literature analysis. The data was collected from an original house in Solo, Java, inhabited by several people from different generations. Several people who still live in their father’s home have been interviewed. The building remains pristine. Their lifestyle remains very natural. In everyday life, rice is harvested from crops grown locally, and so are the vegetables. Food packaging still uses banana leaves. Traditional dishes are made from native ingredients gathered from surrounding villages. They live close to nature.

4.2 From Others

There are many other ways we can do to increase awareness of culture heritage, particularly vernacular architecture. An educative, participative, and collaborative approach, involving the community, academicians, and the government, is needed. Have we done this? Strategic tips that can be taken include:

1. Education and Socialization: by integrating it into the educational curriculum: Include a material on vernacular architecture in schools and universities, especially in the departments of architecture, history, and culture. Workshops and seminars: Hold training or public discussions about the importance of local architecture preservation. Media and digital campaign: Utilize social media, documentary videos, and blog to spread information and stories about vernacular architecture. Efforts on this area have been widely carried out by education and culture circles. Specifically for architecture, even the seminars or workshops held can be said to be related to one aspect that is in accordance with the image.
2. Community Involvement: Revitalizing local communities. Involving residents in conservation projects, such as restoring traditional houses or organizing cultural festivals. Empowering a culture-based economy by encouraging heritage-based tourism so that the communities can benefit economically from preservation.
3. Sustainable Architecture Practices: Use of local materials: Encouraging architects and developers to use traditional, environmentally friendly and climate-appropriate building materials. Adapting vernacular design in modern projects: Incorporating local architectural elements into contemporary buildings as a tribute to tradition.
4. Documentation & Digitalization of Digital Mapping & cataloguing, by creating a digital archive of vernacular buildings, complete with photos, plans, and history.

Collaborations with academics and researchers include developing studies and publications on local architecture to be better known globally. There are several initiatives for documentation and digitalization of Nusantara vernacular architecture, including digital catalogues and mapping of traditional architectural elements in various regions that involves academics, communities, and cultural institutions such as UNESCO and Architecture Documentation Centre. Not only that, there's also community service in the Borobudur Temple area, academic research, and digitalization by communities and local governments.

5. Policy and Legal Protection including the determination of cultural heritage by identifying and designating vernacular buildings as protected cultural heritage sites. Government incentives can be in the form of subsidies or tax breaks for owners of vernacular buildings who maintain the authenticity of the structure; Regulations for architectural preservation in Indonesia are regulated by both the central and regional governments, especially through regulations regarding cultural heritage and spatial planning. Regulations from the central government and most of regional governments have already existed, as do regulations from Indonesian Architects Association.

5 Let every algorithm carry the seed of sustainability to grow, yet integration cannot wait

Two major things have been shown by the previous two discussions, but they do not show integration with each other. Everything seems to be working in isolation. So, the word integration needs emphasis in all architectural and non-architectural aspects, everything is interconnected. They must be integrated so the ideals of sustainability, namely sustainable nature, can be realized and can make the world a natural world and its contents function well. Sustainable architecture can be addressed through an integrated approach that considers all aspects, including nature, humans, technology, and other specific objectives, while maintaining a focus on humans and prioritizing human intelligence. Innovations across all fields must be integrated to avoid negative implications. Education can serve as a means of accelerating human knowledge to address current and future challenges. Producing good people. People who are willing to understand all the problems of the world with its environmental damage. The necessary way to make these people care about the goal of sustainability requires people that not only are intelligent but also have good morals.

All problems in this world are inseparable from human existence, and the same is true with sustainable architecture in the 21st century. What remains to be fought for is how humans are willing and able to protect the nature, how all human needs are met, and hope that humans pay attention to nature conservations as well as their roles with all their capabilities, can act as a technological controller and with the goal of organizational, economical, and other sustainability. The challenges in 21st century cannot be solved with indifference and apathy. They can only be solved with innovation and integrity from our leaders and every individual in this earth.

Based on the results above, it is clear that to ensure architectural sustainability, all aspects must be integrated. With the capabilities of Nusantara Architecture to address sustainability issues and the integration efforts between elements, it is hoped that the ideals of nature conservation can be achieved. With the results above, there should be no gap between Nusantara Architecture and Western Architecture; there is no inequality between the Global South and the Global North, neither is superior, but all are equal. In addressing the main goal of sustainability, namely nature conservation. One touch of nature makes the world kin. So, for nature, there is no distinction between the north and the south. We are equal.

Integration between elements, actors, and activities is also needed so that aspirations can be achieved more promptly. The preservation of cultural heritage begins with concern for the existence of the cultural heritage itself. The concern referred to is recognizing things that reflect the identity, values, and collective experiences of a nation and society, manifested in various forms. The care we provide can take any form, but with the same purpose, which is so that the cultural heritage that exists today can be enjoyed and discovered by future generations.

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