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# Artifacts as ancient archives digitizing the traces of Nusantara women's equality for contemporary democracy

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Received Date: November 20, 2024

Revised Date: January 15, 2025

Accepted Date: February 27, 2025

## ABSTRACT

**Background:** The history of democracy in Indonesia is currently experiencing a sharp paradox where female political participation is formally recognized yet frequently marginalized in public policy and cultural representation. This issue has a significant impact on societal development because the dominant historical narrative implicitly perpetuates the perspective that women naturally occupy a subordinate and domestic role. This research aims to synthesize archaeological evidence from the prehistoric to the Hindu and Buddhist periods in Nusantara to reflect the social status of women and to formulate the urgency of digitizing artifacts as ancient archives. **Methods:** The study utilizes a qualitative systematic literature review mapping archaeological and historical data, with literature systematically sourced from the period 2015–2025 (supplemented by seminal earlier texts). The analytical approach operationalizes gender archaeology and interprets the findings through the theoretical framework of heterarchy and feminist archival critique. **Findings:** The results demonstrate a profound egalitarian legacy. Bioarchaeological analysis of the Gilimanuk site reveals that prehistoric women engaged in heavy labor alongside men. Furthermore material artifacts such as pottery and weaving tools highlight the economic autonomy of women. Textual evidence from the Guntur inscription and foreign chronicles alongside the iconography of the Majapahit era confirms that women held substantial authority in the public and political spheres. **Conclusion:** The research concludes that the rigid patriarchal system is a colonial era introduction rather than an indigenous heritage. Digitizing these archaeological artifacts into virtual archives serves as a critical political intervention to reclaim the egalitarian history of the archipelago. **Novelty of this article:** This study provides an original contribution by integrating archaeological material culture with archive theory and heterarchy to construct a concrete historical precedent advocating for contemporary gender equality policies in Indonesia.

**KEYWORDS:** bioarchaeology; digital humanities; gender equality; heterarchy; Indonesian historiography.

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## 1. Introduction

Democracy in Indonesia operates within a profound paradox. The state formally acknowledges women's political participation through various affirmative action policies. Nevertheless, the actual space for female expression and influence over public policy remains significantly constrained by persistent cultural barriers. This issue has a significant impact on the progression of an egalitarian society. One of the foundational roots of this inequality is the dominant national historical narrative. The historiography taught in educational institutions and perpetuated in public discourse implicitly maintains the

### Cite This Article:

Septiawan, D. V. (2025). Artifacts as ancient archives digitizing the traces of Nusantara women's equality for contemporary democracy. *Archaeology Nexus: Journal of Conservation and Culture*, 2(1), 19-39. <https://doi.org/10.61511/arc-jcc.v2i1.2025.3707>

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perspective that the subordinate role of women is a traditional destiny of the nation. The central thesis of this report asserts that this singular narrative is not only socially problematic but also historically flawed. The mainstream historical account is fundamentally inaccurate because it systematically ignores the oldest and most authentic material archives possessed by the Nusantara archipelago. These archaeological records consistently present robust evidence regarding the agency and central role of women over thousands of years. To challenge the patriarchal hegemony, this report introduces the concept of viewing artifacts as ancient archives. Different from conventional paper archives that predominantly reflect the perspectives of elite men, material artifacts serve as authentic documents recording the lives of past societies without ideological filters. Consequently, the digital archiving of archaeological evidence transcends mere cultural heritage preservation. It becomes a crucial political intervention aimed at combating modern gender inequality by providing a historically grounded alternative narrative.

To comprehend the marginalization of women in contemporary Indonesian politics, it is necessary to systematically map how mainstream Indonesian historiography has excluded women. The tradition of historical writing in Indonesia is heavily characterized by a strong androcentric bias, in which major historical events are portrayed almost exclusively as masculine endeavors, leaving virtually no space for female narratives (Amini, 2018). This phenomenon underscores the conceptual distinction between his story, which prioritizes male actors, and her story, which seeks to reconstruct history from a feminist perspective. Feminist historians have strongly criticized this bias, pointing out that even when the focus of national history shifted from a Eurocentric to an Indocentric perspective, the new frameworks still failed to grant adequate space to women as active historical subjects (Amini, 2018). Historical texts, for instance, extensively detail the military conquests of male kings while entirely omitting the economic and diplomatic contributions of female leaders, and nationalist discourses during the postcolonial period further entrenched this exclusion by emphasizing male heroism and military leadership (Blackburn, 2004). Current Indonesian history textbooks reproduce these biases by positioning women merely as complementary figures, frequently reduced to the roles of wives or aristocratic relatives rather than central historical actors, thereby continuously legitimizing male domination across political and cultural spheres.

The consequences of this long-standing historiographical exclusion remain strikingly visible in contemporary Indonesia. Data from the Inter-Parliamentary Union recorded that as of 2024, women held only 21.9 % of seats in the Indonesian House of Representatives, placing Indonesia below the global average of 26.9 % and significantly behind regional peers such as the Philippines at 29.8 % and Timor-Leste at 38.5 % (IPU, 2024). Indonesia's Gender Inequality Index score of 0.447 further reflects persistent structural barriers limiting female participation in political, economic, and educational spheres (UNDP, 2023). These statistics are not incidental, as they are the measurable outcome of a historical process in which the dominant narrative has systematically denied women a legitimate place in the public sphere. Dismantling the ideological roots of this exclusion therefore requires a direct confrontation with the historical myths that sustain it, making critical research that reveals new historical facts not merely academic but urgently practical (Amini, 2018).

Before the emergence of a more inclusive historical perspective scholars relied primarily on written texts which are inherently biased toward the literate elite and male rulers. This transition in archaeological epistemology reflects a broader intellectual evolution that Trigger (2006) documents in his comprehensive intellectual history of the discipline, tracing the shift from culture-historical approaches toward post-processual frameworks that opened analytical space for social categories including gender, class, and ethnicity. In contrast archaeology offers an alternative and highly objective historical source. The theoretical framework guiding this shift is widely recognized as the material turn in historical and archaeological sciences (Hicks, 2010). The material turn emphasizes that physical objects and human remains carry historical weight equivalent to or even greater than written documents (Oyen, 2018). Material culture provides an unfiltered

window into the daily lives of marginalized groups including women and commoners who were traditionally excluded from royal chronicles.

While texts can be manipulated to serve political agendas the physical characteristics of a ceramic pot or the stress markers on a human skeleton represent empirical realities. By utilizing the material turn archaeologists and historians can bridge the gap between cultural constructs and lived material realities (Hicks, 2010). This perspective positions archaeological data not merely as supplementary illustrations for historical texts but as primary evidence capable of challenging and rewriting established historical paradigms. The material turn consequently validates the use of ancient artifacts as reliable archives for reconstructing the egalitarian societal models of the past. Data derived from material culture allows researchers to bypass the censorship of ancient court scribes and colonial administrators (Oyen, 2018).

The study of gender within the context of Indonesian archaeology has developed gradually over the past few decades. Early pioneers in the field recognized the necessity of moving beyond functional artifact analysis to understand the social dynamics of ancient populations. Researchers such as Mundardjito laid the groundwork for contextual archaeology which subsequently paved the way for more nuanced social interpretations (Nur, 2007). Building upon this foundation scholars like Titi Surti Nastiti have conducted extensive research into the roles of women during the Old Javanese period. Nastiti utilized both epigraphic and archaeological data to demonstrate that women in the Hindu and Buddhist era actively participated in commerce and village administration (Nastiti, 2016). The broader theoretical tradition underpinning this scholarly shift originates in the foundational volume by Gero & Conkey (1991), which established gender as a legitimate and necessary analytical category in archaeological inquiry, with subsequent contributions by Nelson (2004) and Joyce (2008) expanding methodological frameworks for reading gender from diverse material assemblages.

The global progression of gender archaeology has also influenced Southeast Asian scholarship. Scholars have increasingly examined prehistoric communities noting that biological sex did not dictate a rigid division of labor (Shoocongdej & Ray, 2017). Recent primary journal articles highlight this trend across various subdisciplines. For example studies in bioarchaeology have analyzed skeletal remains to show egalitarian labor practices in early coastal settlements. Ceramic and textile analyses by researchers investigating the prehistoric economy have proven that women controlled major technological innovations and trade networks. Furthermore epigraphic studies have retranslated old inscriptions to reveal female land ownership and legal authority. Similarly iconographic research has decoded temple reliefs showing women in diverse public roles far removed from domestic confinement. Archival and heritage studies have simultaneously begun exploring how digitizing these specific artifacts can alter public perceptions of history. Finally historical sociology studies have mapped how colonial policies systematically dismantled these early egalitarian structures (Carey & Houben, 1992).

Despite the accumulation of this valuable research a significant disconnect remains between academic findings and public discourse. Although archaeological evidence regarding female agency has accumulated no study has systematically synthesized these findings to build an applicable alternative narrative that is applicable for democratic struggles and gender equality policies in contemporary Indonesia. This review study aims to identify and address this critical research gap. The research aims to first synthesize the archaeological evidence from the prehistoric to the Hindu and Buddhist periods in Nusantara that reflects the social status and roles of women. Second the study seeks to interpret these findings through the theoretical framework of heterarchy. Third the report aims to formulate the urgency of digitizing artifacts as ancient archives to support the creation of a truly egalitarian democracy in modern Indonesia.

## 2. Methods

To answer the research objectives, this study employs a qualitative methodology grounded in a systematic literature review approach. This method was selected because it allows for the comprehensive synthesis of diverse archaeological, historical, and archival data scattered across various scientific publications. The research utilizes an interdisciplinary strategy combining gender archaeology, physical anthropology, epigraphy, and digital humanities. The epistemological position of this research is firmly rooted in feminist poststructuralism and interpretivism, acknowledging that history is not a static objective reality but a constructed narrative heavily influenced by power dynamics. This perspective ensures that readers understand the analytical lens used to deconstruct traditional patriarchal interpretations of Indonesian history.

**Methodological Transparency Note:** Readers should be aware that this study's analytical framework is explicitly grounded in feminist poststructuralism and gender archaeology. While this interpretive stance is essential to the research objectives, it carries an inherent risk of over-interpretation, that is, the potential to read feminist significance into material evidence beyond what the empirical data strictly supports. As acknowledged in the Limitations section (see Section 3.12), the researcher has taken deliberate steps to triangulate material evidence with textual sources and comparative regional data to mitigate this risk. All interpretations are presented as scholarly arguments supported by the existing evidence base rather than as definitive historical conclusions, and readers are encouraged to engage critically with the analytical claims made throughout this study.

### 2.1 Research design and data collection

The research design follows a structured narrative literature review procedure to ensure a rigorous and transparent collection of data. The data collection process involved a systematic search strategy targeting prominent academic databases, including Scopus, Web of Science, JSTOR, and Google Scholar. The search utilized specific keyword combinations, including "gender archaeology Indonesia," "bioarchaeology Gilimanuk," "heterarchy Southeast Asia," and "cultural heritage digitization." The temporal scope of the literature search primarily focused on recent publications spanning from 2015 to 2025 to ensure the inclusion of the most current theoretical advancements. However, seminal historical texts and primary epigraphic translations from earlier years were also included when highly relevant. The selected literature predominantly consists of English and Indonesian language peer-reviewed journal articles, dissertations, and institutional reports.

The literature selection process followed a structured narrative procedure. The first phase involved the initial retrieval of 850 records across the designated databases. The second phase resulted in the removal of duplicates and non peer-reviewed materials, leaving 420 records for further evaluation. The third phase required a full-text assessment based on strict inclusion criteria which prioritized empirical archaeological findings, theoretical discussions on heterarchy, and technical studies on artifact digitization. This phase narrowed the pool to 95 articles. The final phase yielded a total of 72 primary scholarly sources that were qualitatively synthesized for this report.

Table 1. Narrative Selection Process of Literature

Phase	Description	Result
Identification	Initial search across Scopus Web of Science JSTOR and Google Scholar	Eight hundred fifty records identified
Screening	Removal of duplicates and non peer reviewed articles	Four hundred twenty records screened
Eligibility	Full text review focusing on archaeology gender and digital archiving	Ninety five articles assessed for eligibility
Included	Final selection of primary journal articles for qualitative synthesis	Seventy two articles included

## 2.2 Data analysis and analytical framework

The analytical framework of this study operationalizes the gender archaeology approach. In the context of Indonesian archaeology, overcoming androcentrism means actively seeking evidence of female agency in spaces traditionally assumed to be exclusively male (Conkey & Spector, 1984). The research achieves this by meticulously analyzing secondary data derived from primary archaeological excavations. The primary data types analyzed include utilitarian artifacts (such as high-fired ceramics and weaving implements), bioarchaeological skeletal remains, and textual epigraphy. The quality of the data is ensured by selecting findings from reputable archaeological institutions and peer-reviewed journals.

The analysis carefully triangulates physical material evidence with textual records to ensure a robust interpretation. For instance, enthesal changes in bioarchaeology are interpreted not merely as biological markers but as reflections of societal labor organization. Enthesal changes represent the physical alterations where muscles attach to bones, indicating the intensity of specific physical activities. Furthermore, textual data from ancient inscriptions is positioned within a specific hierarchy of evidence. While royal inscriptions provide valuable insights into elite legal frameworks, material artifacts provide a broader understanding of the daily lives of all social classes.

By adopting an interpretivist lens, the researcher critically analyzes material evidence not merely as inert objects but as active participants in the social construction of gender roles. This interpretivist approach finds precedent in the foundational work of Meskell (1999), who demonstrated through Egyptian archaeological evidence that material assemblages can be systematically interrogated to reveal the social construction of age, sex, and social status in ancient societies, a methodology directly applicable to the Nusantara context.

## 3. Results and Discussion

### 3.1 Traces in bones bioarchaeology of the Gilimanuk Site

The most dramatic evidence dismantling the myth of prehistoric patriarchy is preserved not on fragile paper but within the resilient skeletal remains of ancient populations. Bioarchaeology is a discipline that analyzes human skeletal remains to reconstruct physical activity health and lifestyle (Larsen, 2002). Sofaer (2006) has argued from a theoretical standpoint that the human skeleton itself constitutes a form of material culture actively shaped by social practices and labor organization, which renders enthesal analysis a particularly powerful instrument for reconstructing the gendered division of work. Walker (2001) similarly demonstrated that bioarchaeological analysis of activity-related skeletal modifications provides direct empirical access to the lived experiences of past populations that written sources are structurally incapable of capturing. The Gilimanuk site located in Bali represents a prehistoric coastal community dating back approximately two thousand years. The skeletal assemblage recovered from this site completely contradicts the modern stereotype of a rigid gender based division of labor. Bioarchaeological analysis of the Gilimanuk remains specifically focused on enthesal changes. The presence and severity of these markers directly correlate with habitual and strenuous physical activities performed during an individual lifetime (Santana, 2015).

The data indicate that female individuals in the Gilimanuk community were actively engaged in heavy physical labor that modern societies traditionally label as exclusively masculine. Traces of intense muscle usage associated with activities such as spearing arrowing and net fishing were found significantly on the skeletal remains of both men and women (Asih et al, 2018). Furthermore activities typically associated with the domestic or feminine sphere such as grinding food materials left distinct markers on male skeletons as well. Interestingly the specific physical stress markers associated with agricultural hoeing were found to be more dominant in the female population (Asih et al, 2018). The lack of a

strict dimorphic separation in the robusticity of the upper limbs suggests a shared physical burden and a highly collaborative survival strategy. When compared to other prehistoric sites these findings prove that the early coastal societies operated on an egalitarian foundation where survival necessitated the equal physical contribution of all community members regardless of biological sex.

### *3.2 Prehistoric women economic autonomy pottery weaving and beads*

Beyond the physical labor recorded in bones the material artifacts related to daily production serve as a silent archive recording the economic autonomy and technological mastery of prehistoric women. Artifacts such as pottery and weaving tools have often been marginalized in traditional archaeological discourse as mere domestic objects. Nevertheless a critical gender perspective reveals that these items were central to the prehistoric economy. In the Bengawan Solo river basin archaeological excavations have uncovered ancient pottery that demonstrates advanced manufacturing techniques (Intan, 2015). The ceramic analysis reveals that the creators of these vessels utilized high temperature firing methods indicating a sophisticated understanding of thermodynamics and material science. The technological sophistication of these ceramic traditions is consistent with Bellwood's (2007) comprehensive archaeological synthesis of the Indo-Malaysian Archipelago, which documents the advanced technological capacities achieved by Austronesian-speaking communities across island Southeast Asia during the Neolithic and Early Metal periods, including mastery of high-temperature firing, interregional exchange, and the cultivation of complex craft specialization. Ethnoarchaeological comparisons suggest that this technological knowledge was primarily held and transmitted by women who acted as the primary technologists of their communities (Intan, 2015).

Similarly the discovery of ancient spinning tools in the Yogyakarta region dating back more than three thousand years alongside the later visual depictions of women weaving on the reliefs of Trowulan highlights a massive industry controlled by women. Textiles in ancient Nusantara were not merely for personal consumption. They functioned as high value commodities markers of social status and even as a primary medium of economic exchange. The women who controlled the production of these textiles possessed significant economic power. This economic standing is further corroborated by mortuary practices. At the Pangkung Paruk site in Bali archaeological evidence shows that imported glass and stone beads were placed as grave goods in both male and female burials (Ardika, 2017). The equal distribution of these luxury imported goods signifies that women held an equal social status and possessed the same level of access to international trade networks and wealth as their male counterparts. Studies of prehistoric trade continuously support the finding that female artisans were vital economic drivers.

The significance of the bead evidence from Pangkung Paruk merits a dedicated expansion because it directly links Nusantara women to a global commercial network that spanned from the Indian subcontinent to the South China Sea. Isotopic and compositional analyses conducted on glass beads recovered from various burial sites across Bali and eastern Java have confirmed their origin in South Asian production centers, primarily in Gujarat and the Deccan region of India (Ardika, 2017). The presence of these imported luxury goods in female burials with the same frequency as in male burials demonstrates that women were not passive recipients of trade wealth managed by male intermediaries. Rather they were active agents within the exchange economy who possessed the individual wealth and social standing necessary to accumulate high-value imported goods. This interpretation aligns with Reid's (1988) landmark historical documentation of Southeast Asian market systems, in which women routinely dominated retail commerce, managed household wealth, and served as primary commercial intermediaries, a pattern Reid traces as a deep-rooted cultural continuity extending from prehistoric social organization into the early modern period. This interpretation is strongly supported by ethnographic parallels drawn from historical maritime trading communities across Southeast Asia where women routinely managed household finances and conducted market transactions. The bead

assemblage therefore constitutes compelling material testimony that the economic sphere of prehistoric Nusantara was not gendered in the exclusionary manner that modern patriarchal frameworks would assume. Women navigated and participated in interregional commerce as social and economic equals, a reality that fundamentally repositions the domestic sphere from a place of confinement to a recognized center of international economic engagement.

### 3.3 Women in the public sphere during the hindu and buddhist era inscriptions and foreign sources

The continuity of female agency did not vanish with the advent of state level societies in the Hindu and Buddhist period. Instead it became explicitly documented in textual archives namely stone and copper plate inscriptions. Extensive research by epigraphers has demonstrated that Old Javanese women occupied a vast array of public and political roles (Nastiti, 2016). They were not confined to the palace interior but were active participants in the sociopolitical hierarchy serving as village heads tax collectors and supreme rulers. Foreign historical sources corroborate this local evidence. The historical chronicles of the Tang Dynasty in China document the reign of Queen Sima who ruled the Kalingga Kingdom on the northern coast of Java in the seventh century. The Chinese records describe her as a ruler of absolute justice and formidable authority commanding deep respect from both her subjects and neighboring kingdoms (Almira, 2022). Arab merchant accounts from similar eras also note the presence of female leaders in the archipelago validating the indigenous texts.

Table 2. Comparative Epigraphic Evidence of Female Public Authority in Ancient Nusantara

Inscription	Date	Kingdom/ Region	Female Role Documented
Chinese Tang Dynasty Chronicles	7th century CE	Kalingga, North Java	Queen Sima as supreme ruler and judicial authority
Guntur Inscription	907 CE	Central Java	Sang Lumah ing Tawang as legal witness and dispute settler
Karang Tengah & Tri Tepusan Inscriptions	824 CE	Mataram, Central Java	Pramodawardhani as royal commissioner of religious structures and land grantor
Rukam Inscription	907 CE	Central Java	Pramodawardhani directing community restoration after volcanic disaster
Wantil Inscription	9th century CE	Mataram, Central Java	Female royal authority in interfaith political negotiation
Wurudu Kidul Inscription	Early 10 <sup>th</sup> century CE	East Java	Women as active participants in civil judicial proceedings
Kancana and related texts	Classic period	Java	Female land ownership and independent property inheritance

(Nastiti, 2009; Nastiti, 2016)

Furthermore indigenous epigraphy provides detailed legal precedents. The Guntur inscription dated to the year 907 AD is a legal document recording the proceedings of a civil suit (Nastiti, 2016). This inscription explicitly mentions a woman named Sang Lumah ing Tawang who served as a legal authority and dispute settler. Her participation in the judicial process highlights a formalized public role for women that is frequently overlooked in modern historical summaries. Another significant document is the Wurudu Kidul inscription also from the early tenth century which outlines a civil suit concerning class standing and features women actively participating in the judicial sphere. In addition the Kancana inscription and related historical texts provide evidence regarding female land ownership. Women in ancient Java and other parts of the archipelago held the legal right to independently own manage and inherit land.

Another prominent figure is Pramodawardhani the crown princess of the Sailendra Dynasty and queen consort of the Mataram Kingdom in the ninth century (Nastiti, 2009). Inscriptions such as the Karang Tengah and Tri Tepusan records demonstrate her immense religious and economic power noting her role in inaugurating major religious structures generally identified as the Borobudur temple complex and her authority to grant tax free lands. The Wantil inscription also notes her influence in navigating complex interfaith political marriages. Furthermore the Rukam inscription records her direct involvement in community welfare where she led the restoration of a village devastated by a volcanic eruption.

### *3.4 Symbols and power iconography of female statues and reliefs*

The visual culture of the Hindu and Buddhist period further reinforces the central position of women. The iconography found on temple reliefs and free standing statues provides a visual text that complements the epigraphic data. The famous statue of Prajnaparamita often associated with Queen Ken Dedes of the Singhasari Kingdom is a prime example (Indradjaja, 2017). This exquisite sculpture does not merely depict a royal consort. In the context of Mahayana Buddhism Prajnaparamita represents the ultimate personification of transcendental wisdom the mother of all Buddhas. The elevation of a female figure to represent the highest intellectual and spiritual achievement in the religious pantheon reflects the deep societal respect for female wisdom and authority. When comparing Prajnaparamita with other deities such as Durga and Sri the spectrum of female representation is incredibly broad covering destruction fertility and supreme intellect.



Fig. 2. The Prajnaparamita Statue (c. 13th century CE, East Java)  
(museumvolunteersjmm.com)

Moreover the narrative reliefs carved into the walls of the Borobudur and Prambanan temple complexes offer a panoramic view of ancient Javanese society. A careful iconographic analysis of these reliefs reveals that women are depicted in diverse and dynamic roles across all social strata. They appear as merchants musicians spiritual ascetics and royal advisors. During the later Majapahit period the artistic style shifted from rigid Indian influenced forms to a more localized aesthetic. Terracotta artifacts and temple reliefs

from this era vividly portray women engaged in everyday public life heroic narratives and romantic epics. These depictions confirm that the presence of women in the public sphere was a normalized and celebrated aspect of Nusantara culture.



Fig. 3. Selected relief panels from the Borobudur temple (c. 9th century CE, Central Java) (Source: Doc. Balai Konservasi Borobudur, 2020)

Table 3. Summary of Key Archaeological Evidence

Site or Artifact Focus	Chronological Era	Type of Evidence	Societal Implication
Gilimanuk Site Bali	Prehistoric	Bioarchaeology enthesal changes	Egalitarian labor division in heavy physical activities
Bengawan Solo and Yogyakarta	Prehistoric to Classic	Material culture pottery and spinning tools	Female economic autonomy and control over trade commodities
Guntur and Tri Tepusan	Hindu and Buddhist	Textual epigraphy inscriptions	Female participation in the judicial system and land authority
Prambanan and Majapahit	Hindu and Buddhist	Visual iconography and temple reliefs	Active representation of women in dynamic public life

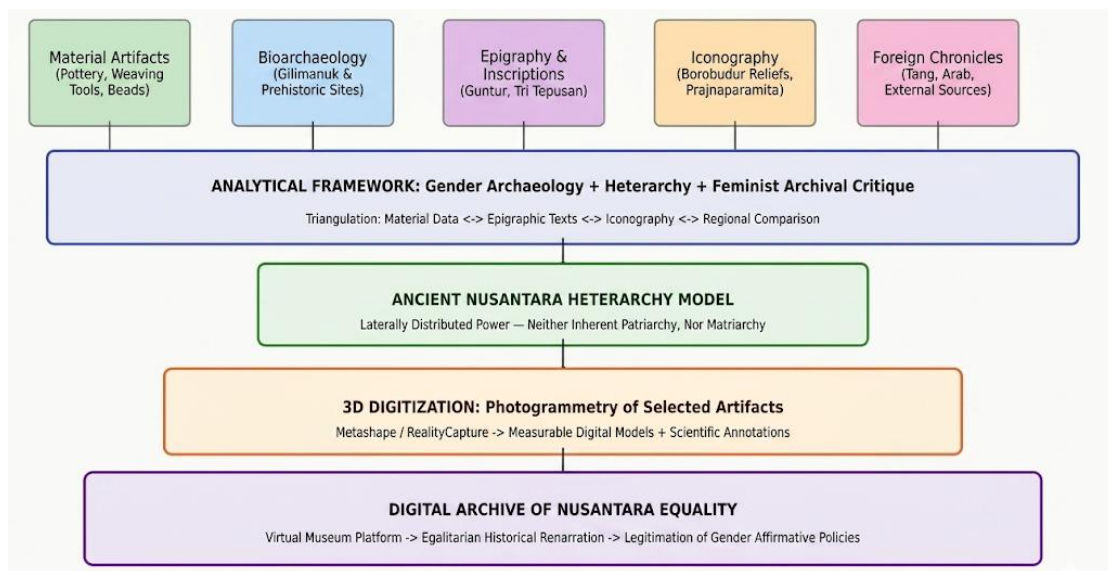


Fig. 4. Conceptual workflow of the arsip digital kesetaraan Nusantara

### 3.5 Towards a heterarchy model a synthesis

The synthesis of the bioarchaeological material and epigraphic data strongly indicates that the societal structure of the ancient Nusantara archipelago cannot be accurately described by the rigid concepts of either patriarchy or matriarchy. Instead the data aligns

perfectly with the theoretical model of heterarchy proposed by Carole Crumley (Crumley, 1995). In a heterarchical system power and status are not monopolized by a single gender or a singular centralized authority. Power is distributed laterally and shifts based on situational needs economic production or ritual expertise (White, 1995).

When applied to the Southeast Asian archaeological context the heterarchical model provides a highly accurate lens for interpreting the data. In the ancient archipelago a woman might hold supreme authority within the domain of textile production and economic trade while a man might hold authority in a different sphere. Importantly these spheres were not hierarchically stacked with the male sphere dominating the female sphere. They operated in parallel. The heterarchical model gains further analytical strength when situated within a comparative regional context. Archaeological research across mainland and island Southeast Asia reveals that the pattern identified in the Nusantara archipelago was not an isolated local phenomenon but part of a broader regional cultural orientation toward gender fluidity and distributed power. Studies of prehistoric communities in the Mekong Delta of Vietnam and the Cordillera highland communities of Luzon in the Philippines have identified comparable evidence of women occupying both productive and ritual leadership roles within their respective communities (Shoocongdej & Ray, 2017). The persistence of matrilineal kinship systems in several contemporary societies of the archipelago, most prominently the Minangkabau of West Sumatra who constitute the largest matrilineal society in the world, represents a living anthropological continuity of these ancient patterns (Taylor, 2003). Among the Minangkabau the inheritance of property, clan identity, and village authority passes through the female line, a social architecture that scholars widely interpret as a cultural survival from a pre-colonial era characterized by female-centered social organization. This pattern is part of what Peletz (2009) has comprehensively theorized as 'gender pluralism', a distinctive and historically documented feature of Southeast Asian societies wherein multiple gender categories, flexible gender roles, and recognized female authority in key social and economic domains coexisted within a single cultural system, representing a fundamental departure from the rigid binary gender hierarchies that characterized many contemporaneous Eurasian civilizations. Similarly the Minahasa of North Sulawesi and several communities in Maluku have preserved historically documented traditions of female leadership in both domestic and political spheres. The existence of these living cultural systems directly corroborates the archaeological evidence and strengthens the argument that heterarchy was not merely a prehistoric anomaly but a deep and durable cultural value of the archipelago that was subsequently disrupted by external colonial forces rather than naturally superseded by a more advanced social order. The egalitarian physical labor at Gilimanuk the independent land ownership recorded in inscriptions and the exalted spiritual status seen in iconography all point to a society where gender roles were fluid complementary and contextually ranked. Consequently the domestic sphere was not a place of confinement but rather a recognized center of economic production and familial power.

### *3.6 Colonialism the turning point for patriarchal strengthening*

If the ancient society of the archipelago was characterized by a fluid heterarchy a critical historical question arises regarding the origin of the rigid patriarchy that plagues modern Indonesia. The historical discourse points directly to the impact of European colonialism as the primary catalyst for this systemic shift. Scholars such as Peter Carey and Jean Gelman Taylor have extensively documented how the arrival of the Dutch East India Company and the subsequent Dutch colonial administration fundamentally restructured the social fabric of the archipelago (Carey & Houben, 1992).

Prior to intense colonial penetration Southeast Asian societies exhibited significant female autonomy (Taylor, 2003). However the colonial administration sought to control the local population by co-opting indigenous male elites and enforcing European administrative structures. Stoler (2002) has theorized this colonial restructuring of gender and intimacy as a fundamental instrument of imperial power, demonstrating that the regulation of

domesticity, sexuality, and female behavior was central to the reproduction of colonial authority across multiple imperial contexts. In the specific history of the Dutch East Indies, Locher-Scholten and Niehof (1987) document how colonial gender ideology systematically transformed the social position of Indonesian women through legal, educational, and administrative mechanisms that imposed European norms of femininity and domesticity as the new standard. Wieringa (1992) further demonstrates that even the earliest Indonesian women's organizations that emerged under colonialism were constrained by this imposed gender framework, which subordinated feminist aspirations to nationalist and domesticity-centered agendas aligned with colonial social order. The Dutch introduced strict Victorian moral codes and legal systems that recognized only men as the legitimate heads of households and primary political actors (Taylor, 2003).

Furthermore the colonial economy marginalized the traditional female controlled trading networks by establishing male dominated monopolies and bureaucratic offices. The mechanisms of this colonial dismantling were both legal and ideological. The Dutch colonial government institutionalized male primacy through the application of Napoleonic Civil Law to indigenous populations which recognized the husband as the sole legal guardian of the family unit and effectively stripped married women of their independent legal personhood. Under this legal framework women lost the autonomous rights to own property, enter contracts, and conduct trade in their own names, the very rights that epigraphic evidence shows they had exercised freely in the pre-colonial era. Simultaneously the colonial educational system, which prioritized access for the sons of indigenous aristocrats and collaborating elites, systematically excluded women from the formal acquisition of literacy and administrative skills.

This educational exclusion ensured that women would be unable to participate in the new colonial bureaucratic economy while simultaneously erasing their historical memory of having done so in prior centuries. The convergence of these legal, economic, and educational mechanisms of exclusion was not coincidental but represented a deliberate colonial strategy to stabilize control by restructuring indigenous society around a hierarchical gender order that mirrored European norms. The deployment of legal and administrative instruments to enforce gender hierarchies as a tool of colonial social engineering has been documented across multiple colonial contexts by Voss (2008), who demonstrates that the archaeology of colonial sites consistently reveals the material correlates of this gendered restructuring of indigenous social organization. In the Indonesian case, this colonial framework was not dismantled at independence but was actively perpetuated by the postcolonial state.

Suryakusuma (2011) demonstrates through the concept of 'State Ibuism' that the Suharto-era New Order institutionalized a domesticated and explicitly apolitical femininity as the official ideology of Indonesian womanhood, systematically extending and deepening the colonial erasure of the heterarchical female agency that the archaeological record documents for the pre-colonial era. The lasting consequence of this engineered transformation is that contemporary Indonesian society often mistakes this colonial imposition for an ancient and indigenous tradition, a fundamental historical misidentification that this study's archaeological evidence directly corrects. This process systematically eroded the heterarchical balance. The introduction of specific patriarchal interpretations of religious law in certain regions during the same broad historical epoch also converged with colonial policies to further restrict female movement in the public sphere. This analysis represents a critical argument. The current patriarchal system is not an unbroken continuum of indigenous culture. It is a historical discontinuity an imposed structure that severed the people from their egalitarian roots.

### *3.7 State archives versus people archives the politics of archiving*

In the effort to reclaim this severed history the concept of the archive becomes a paramount political battleground. Traditional historical writing relies heavily on state archives consisting of official paper documents treaties and colonial reports. Feminist

archival theorists notably Jacques Derrida in his foundational text *Archive Fever* have profoundly critiqued the nature of these traditional archives (Derrida, 1995). Derrida posits that the archive is not merely a neutral repository of the past but a mechanism of power that dictates what can be remembered and what must be forgotten. He identifies a continuous conflict between the conservation drive and the archive destroying death drive (Derrida, 1995). Harris (2002) extends this critique by demonstrating from the South African archival experience that state archives function as active instruments through which ruling regimes construct legitimating historical narratives while systematically suppressing evidence of resistance and subaltern agency. In the specific context of colonial records, Bastian (2006) has argued that the very provenance and arrangement of colonial archival materials is shaped by the spatial and power dynamics of colonial administration, rendering those archives structurally incapable of preserving the voices and histories of colonized and marginalized populations without deliberate and critical archival intervention. In the context of Indonesian history the state archives have effectively functioned alongside this destructive drive erasing the voices and agency of women.

Furthermore theorists like Ketelaar emphasize the existence of tacit narratives highlighting how archival structures inherently marginalize non dominant groups (Ketelaar, 2001). When traditional paper archives fail to record female history physical artifacts emerge as the ultimate alternative archive. Artifacts represent the archive of the people. A prehistoric spinning tool or a human skeleton does not possess an inherent political agenda to suppress female identity. Recognizing artifacts as archives is a radical epistemological shift. It challenges the monopoly of the written word and elevates material culture to the status of primary historical truth thereby enabling a comprehensive reconstruction of alternative narratives.

### *3.8 Photogrammetry and virtual museums methodology and impact*

To ensure that these silent material archives can speak to the modern public, they must be made accessible. Digital technology, specifically three-dimensional photogrammetry, offers the methodology required to achieve this democratization of knowledge. Photogrammetry involves capturing hundreds of high-resolution, overlapping photographs of an artifact from multiple angles and processing them with advanced software to create an accurate, photorealistic three-dimensional model (Winaya et al., 2023). The foundational methodology for applying photogrammetry to cultural heritage documentation at archival quality has been comprehensively validated by Remondino (2011), whose large-scale studies confirm the scientific reliability, metric accuracy, and archival durability of photogrammetric 3D models across diverse heritage typologies. The theoretical framework for deploying these digital models within cultural institutions has been elaborated by Cameron and Kenderdine (2007), who argue that digital heritage platforms must be understood not merely as technical repositories but as active sites of cultural meaning-making carrying significant epistemological and political implications that demand critical curatorial attention. Technologies utilizing advanced processing algorithms can document subtle textural details and precise geometric measurements.

The application of this technology allows for the creation of a massive virtual platform serving as a Digital Archive of Nusantara Equality. Through such virtual museum platforms the public can interactively explore the artifacts that prove ancient gender equality. Instead of viewing a flat image in a textbook a student can virtually rotate and inspect a Majapahit terracotta figure or a prehistoric bead. The impact of this methodological innovation is immense because it liberates historical data from the physical confines of museum vaults and makes it globally accessible.

The technical process of photogrammetry, while conceptually straightforward, requires rigorous methodology to ensure scholarly accuracy. The process begins with a structured capture session where a high-resolution Digital Single-Lens Reflex (DSLR) camera is used to photograph an object from every conceivable angle, ensuring a 60-80% overlap between each image to allow the software to accurately stitch them together.

Lighting must be carefully controlled to eliminate shadows and glare, which can distort the digital surface. These images are then processed in specialized software such as Agisoft Metashape or RealityCapture. The software uses complex algorithms to identify common points in multiple photographs (a process known as feature matching), calculate their position in 3D space to create a sparse point cloud, and then generate a dense point cloud and a high-resolution polygonal mesh. Finally, the original color textures are mapped onto this 3D model, resulting in a photorealistic, measurable digital twin of the artifact.

The potential of this technology is not merely theoretical; its application is already yielding results in Indonesia. The pioneering work by Winaya et al. (2023) in digitalizing ancient Mataram statues in Central Java serves as a powerful proof of concept. Their project successfully demonstrated that complex, culturally sensitive artifacts could be accurately rendered into 3D models, creating a valuable archive for both conservation and study. Imagine applying this same methodology to the collection of prehistoric pottery housed in the Museum Nasional or the intricate reliefs of Candi Borobudur. A comprehensive project could create a "Digital Twin of Borobudur," allowing researchers to study the narrative reliefs in minute detail, monitor degradation over time, and provide virtual access to sections of the temple that are off-limits to the public (Prasetyo, 2021). For the specific purpose of this study, focusing on artifacts related to women, such as the spinning tools from Yogyakarta, the Prajnaparamita statue, or the terracotta figures from Trowulan, would create a powerful, curated collection. These digital models can be annotated with archaeological data, linked to the original excavation reports, and contextualized with scholarly interpretations, transforming a simple 3D object into a rich, interactive learning resource.

### *3.9 Implications for democracy and education*

The digitization of these ancient archives carries profound implications for contemporary democratic policies and cultural education. In the realm of public policy affirmative action measures such as the mandate for a thirty % female quota in parliamentary representation are frequently criticized by conservative factions as foreign imports that conflict with traditional Indonesian values. This tension reflects a defining paradox of the post-Reformasi democratic landscape that Robinson (2009) has analyzed: the simultaneous expansion of formal electoral democracy and the rise of conservative gender and religious politics that effectively constrain women's access to the public sphere. The historical depth of this paradox is illuminated by Blackburn and Bessell (1997), who demonstrate that contested negotiations over women's political roles and rights in Indonesia began as early as the colonial period, forming a persistent structural feature of Indonesian public discourse that continues to shape the reception of gender equality policies in the contemporary democratic era. The historical evidence synthesized in this report provides a powerful alternative argument. By demonstrating that female leadership and public authority were normalized in the prehistoric and classic eras advocates can frame gender equality not as a foreign imposition but as a restoration of authentic Nusantara heritage. The archaeological record supplies civil society organizations with the necessary historical legitimacy to defend and expand policies supporting women. Comparative research across the region shows that nations utilizing their historical precedents achieve stronger public consensus for affirmative gender policies. A comparative examination of how historical precedents have been effectively mobilized in democratic struggles elsewhere provides a concrete model for Indonesia. In New Zealand the government's recognition of the pre-colonial Māori tradition of female leadership through the *wāhine toa* concept has been formally integrated into national policy discussions on gender equity, lending cultural legitimacy to affirmative representation measures. Similarly in Rwanda the post-genocide reconstruction discourse explicitly referenced pre-colonial Rwandan traditions of female participation in community governance as a justification for the constitutional mandating of female parliamentary representation, which today stands at over 60 %, the highest in the world (IPU, 2024). These

international examples demonstrate a clear and replicable pattern: when affirmative gender policies are grounded in an authentic historical narrative rather than presented as external imports, they achieve significantly broader public acceptance and political durability. Indonesia possesses an archaeological and historical record that is arguably richer and more extensively documented than many of these comparative cases. The Gilimanuk bioarchaeological data, the Nusantara epigraphic evidence, and the iconographic record of the Hindu-Buddhist period collectively form a far more material and scientifically verifiable foundation for this type of historically-grounded policy advocacy than oral traditions or mythology alone could provide. The strategic deployment of digitized archaeological evidence in public campaigns therefore represents an untapped resource of considerable potential for Indonesian civil society and democratic policymakers.

In the cultural and educational realms this data has the power to transform identity. Integrating the findings of gender archaeology into the national curriculum can dismantle the psychological barriers erected by androcentric history. When young women learn that their ancestors were technologists economic leaders and supreme rulers they gain a profound sense of historical confidence. The digital archive serves as an educational tool that directly confronts modern patriarchal stereotypes empowering the next generation to engage actively in the democratic process.

### *3.10 Challenges and limitations of archaeological digitization*

While the prospect of a digital archive is promising the discourse must acknowledge the substantial challenges and limitations of applied three dimensional digitization in cultural heritage. This endeavor encounters significant hurdles including the high cost of specialized equipment software licenses and powerful computing hardware. Furthermore there is an acute shortage of technical personnel trained in both archaeology and digital modeling. The inadequate digital infrastructure in remote regions where many museums are located further complicates the process.

Beyond logistical issues there are profound legal and intellectual challenges. Determining the copyright and digital ownership of cultural heritage remains a complex legal debate. Additionally there is the intellectual risk of decontextualization where a digitized artifact loses its physical connection to the archaeological landscape. When viewed in a virtual vacuum an artifact might lose the subtle environmental context that gives it historical meaning. Overcoming these challenges requires strategic partnerships between universities government agencies and the technology sector to ensure responsible and equitable digitization practices.

### *3.11 Policy and public engagement recommendations*

Based on the synthesis of archaeological evidence and archival theory this report proposes several actionable recommendations directed at policymakers cultural institutions and educational bodies. These recommendations aim to translate historical data into tangible social impact. The recommendations are designed not only to preserve archaeological knowledge but also to ensure that historical evidence serves as a foundation for inclusive public policy, educational reform, and broader societal transformation.

First the Ministry of Education and Culture must initiate a comprehensive revision of the national history curriculum. The curriculum should incorporate the findings of gender archaeology and explicitly teach the concept of heterarchy as a foundational aspect of ancient Nusantara society. Educational materials must move beyond the superficial mention of figures like Queen Sima to provide an in depth analysis of female economic autonomy and political agency across the prehistoric and Hindu and Buddhist periods. The curriculum must explicitly link these historical facts to modern civic education.

Second the government in collaboration with academic institutions must allocate targeted funding for the establishment of a centralized Digital Archive of Nusantara Equality. This initiative should prioritize the three-dimensional photogrammetric scanning

of artifacts that specifically demonstrate female agency. To mitigate the challenges of cost and infrastructure, the government should establish regional digitization hubs equipped with the necessary hardware and technical training programs for local museum staff.

Third, museums and heritage sites must revamp their curatorial strategies. Exhibits should move away from androcentric interpretations that label female-associated artifacts as mere domestic items. Curators must provide updated contextual information that emphasizes the economic and social power inherent in textile production, pottery manufacturing, and agricultural leadership.

Finally, civil society organizations and political advocates should actively integrate this historical data into their campaigns for gender equality. Using digital artifact models as visual aids in public campaigns can effectively dismantle the argument that female political participation contradicts traditional cultural norms. By linking the deep past to contemporary policy debates, advocates can foster a more inclusive and historically grounded democratic culture.

### *3.12 Limitations and future research*

While this qualitative review provides a comprehensive synthesis of existing data several limitations must be acknowledged. First the inherent nature of the archaeological record is fragmentary. Many artifacts made of organic materials that might provide further insight into female roles have degraded over time leaving gaps in the physical archive. Second the interpretation of archaeological data is always susceptible to the contemporary biases of the researcher. Although this study explicitly adopts a feminist poststructuralist perspective to counter historical androcentrism the risk of over interpreting material culture to fit modern political agendas remains a constant methodological challenge. Third the currently available bioarchaeological data in Indonesia while groundbreaking is still relatively limited in geographic and temporal scope. The findings from the Gilimanuk site provide exceptional insights but similar detailed enthesal analyses are required from other prehistoric and classic period sites across the diverse islands of the archipelago to confirm widespread heterarchical patterns.

Future research must prioritize advanced scientific methodologies to expand the dataset. Isotopic analysis of human remains should be conducted extensively to reconstruct ancient diets and migration patterns which can provide crucial information regarding gender based resource allocation and marriage mobility. Furthermore collaborative interdisciplinary projects combining genomic analysis with traditional archaeology are needed. Finally future studies should focus on optimizing low cost mobile photogrammetry workflows to accelerate the digitization of cultural heritage in underfunded regional museums ensuring that the digital archiving process becomes genuinely democratic and decentralized. International best practices in the digitization of gender-focused cultural heritage offer concrete models that Indonesian institutions can adapt and implement. The Europeana platform, a collaborative digital library aggregating the cultural heritage of over 3,000 European institutions, has developed a dedicated thematic initiative on women's history that curates digitized artifacts, manuscripts, and photographs documenting female historical agency across multiple centuries. The Digital Himalayas project led by a consortium of Cambridge and Cornell universities similarly pioneered the community-engaged digitization of ethnographic materials that explicitly centered the voices and material cultures of historically marginalized communities. In the Southeast Asian context the SEAMEO SPAFA Regional Centre for Archaeology and Fine Arts has begun developing protocols for the digitization of regional archaeological heritage with a growing attention to gender-inclusive interpretation (Winaya et al., 2023). A critical lesson derived from all of these precedents is that technically proficient digitization alone is insufficient. Watterson (2015) has theorized this limitation through the concept of 'interpretive visualization,' arguing that digital archaeological reconstructions are never neutral technical representations but are always shaped by the interpretive choices of their creators — choices that carry the same epistemic and political weight as those embedded in

conventional academic writing. A digitized artifact labeled merely as a 'domestic vessel' reproduces the same androcentric bias as a conventional museum exhibit, unless the interpretive layer that contextualizes it is constructed with deliberate critical feminist awareness. The interpretive metadata, the curatorial framing, and the educational narratives attached to digitized artifacts are equally determinative of their democratic impact. A scanned ceramic pot labeled merely as a "domestic vessel" reproduces the same androcentrism as a physical museum exhibit. Transforming that artifact into a powerful historical argument for gender equality requires the active collaboration of gender archaeologists, digital humanists, and community educators in the construction of the interpretive layer that accompanies the digital object. This collaborative and interdisciplinary approach to curatorial design must therefore be embedded as a structural requirement within any future Indonesian digital archiving initiative.

### *3.13 Comparative perspectives: Gender roles in ancient Southeast Asia*

The evidence for female agency in the Nusantara archipelago, while compelling, is not an isolated anomaly. When viewed through a comparative regional lens, it becomes clear that the heterarchical model was a widespread characteristic of ancient Southeast Asian societies. The region has long been noted by anthropologists and historians for the relatively high status of women compared to other parts of Asia, particularly in the context of bilateral kinship systems and female economic roles in market trade (Andaya, 2006). Examining the archaeological and historical records of neighboring regions reinforces this understanding and strengthens the argument against patriarchy as an indigenous default.

In mainland Southeast Asia, the bioarchaeological evidence echoes the findings from Gilimanuk. At the site of Khok Phanom Di in Thailand, dating from 2000 to 1500 BCE, excavations of a coastal community revealed a remarkable pattern. Isotopic analysis of strontium in teeth, which can indicate place of origin, suggested that it was the males who moved to join the female community upon marriage (a matrilineal residence pattern). Furthermore, the richest burials, containing exquisite pottery-making tools and exotic shell jewelry, were those of women, indicating that prestige and economic power were inherited through the female line and that women were the master potters, controlling a key technological and economic resource (Higham & Thosarat, 2012). This directly parallels the interpretation of women in the Bengawan Solo region as the primary technologists and transmitters of pottery knowledge.

Moving into the historical period, the inscriptions of the Khmer Empire in Cambodia provide a striking comparison to the Old Javanese prasasti. While the Khmer state was undoubtedly a powerful patriarchal polity at its apex, women are prominently featured in the epigraphic record in ways that defy simple subordination. As documented by Jacobsen (2008), women in Angkorian Cambodia could act as witnesses in legal disputes, own and inherit land, and initiate divorce. Queens and royal women were major patrons of temple construction, commissioning inscriptions that recorded their piety and power. The role of the *khñum si* (female temple slaves/servants) is also meticulously recorded, demonstrating that the economy of the great temple complexes was dependent on female labor. This public, legal, and economic agency mirrors the roles of women like Sang Lumah ing Tawang and the landowning women of Java.

Even in the Philippines, pre-colonial societies such as the Tagalog and Visayan were structured around bilateral kinship, where descent was traced through both the mother and the father. Women held positions of spiritual authority as *babaylan* (shamans), who were often the most powerful figures in the community, mediating with the spirit world and advising *datus* (chiefs) (Scott, 1994). Spanish colonial accounts express shock at the freedom and authority of native women, who could own property, engage in trade, and even lead warriors into battle in some documented cases. This consistent pattern across the region suggests a shared cultural logic, one that was fundamentally disrupted by the arrival of colonial patriarchies from Europe. This comparative perspective powerfully refutes any notion that the subordination of women is an inherent part of "Asian values." Instead, it

reveals that the pre-colonial heritage of Southeast Asia, including Nusantara, was one of dynamic female agency, a heritage that can and should be reclaimed.

#### **4. Conclusions**

The journey through the ancient material archives of the Nusantara archipelago leads to an undeniable conclusion. The dominant historical narrative that confines women to a subordinate domestic sphere is a cultural myth constructed during the colonial era and perpetuated by modern androcentric historiography. The authentic archaeological record consistently demonstrates a profound legacy of female equality and agency. From the egalitarian division of heavy physical labor recorded in the bioarchaeology of the Gilimanuk site to the economic autonomy evidenced by advanced pottery and weaving tools, women were foundational to the survival and prosperity of prehistoric societies. Furthermore, the epigraphic texts and visual iconography of the Hindu and Buddhist period confirm that this agency extended seamlessly into the highest levels of political, religious, and judicial authority. The societal structure of the ancient archipelago is best understood through the framework of heterarchy, where power was fluid, contextual, and shared across genders rather than monopolized by a patriarchal hierarchy. The imposition of rigid gender roles was a subsequent consequence of colonial administrative control and imported moral frameworks. By recognizing artifacts as the true archives of the people this report challenges the monopoly of biased written histories.

Digitizing these artifacts through advanced three-dimensional photogrammetry is not merely an act of technological preservation. It is a vital democratic intervention. Creating a virtual archive of equality provides tangible historical legitimacy to contemporary struggles for female political participation. It reframes policies such as parliamentary quotas not as foreign innovations but as the reclamation of indigenous heritage. The implications of this reclamation are profound. By establishing a robust historical precedent, this synthesis provides civil society, educators, and policymakers with the intellectual ammunition to reframe the debate on gender equality. Affirmative action policies like the 30% parliamentary quota should no longer be defensively positioned as foreign imports, but confidently advocated for as a return to the indigenous values of gotong royong and social balance that once included women as equal partners in governance and economic life. The proposed Digital Archive of Nusantara Equality is therefore not just a scholarly tool, but a mechanism for social justice, providing accessible, visual proof that an egalitarian society is not a utopian dream, but a historical reality waiting to be rebuilt. Ultimately achieving a truly egalitarian democracy in Indonesia requires the courage to rewrite the past with honesty. By transforming silent artifacts into a vocal digital narrative society can draw upon the strength of its ancestors to forge a more equitable future.

#### **Acknowledgement**

The researcher expresses deep gratitude to the various academic institutions and open access repositories that provided the crucial primary data necessary for this comprehensive analysis. Special recognition is extended to the pioneering scholars in Indonesian gender archaeology whose foundational fieldwork made this theoretical synthesis possible.

#### **Author Contribution**

The sole author conducted the entire process of this research including the conceptualization methodology execution formal analysis data curation original draft preparation and the final review and editing of the manuscript. The author assumes full responsibility for the synthesis and interpretation of the data presented.

#### **Funding**

This research received no external funding.

## Ethical Review Board Statement

Not available.

## Informed Consent Statement

Not available.

## Data Availability Statement

All data analyzed in this study were derived from previously published literature and publicly accessible academic repositories. The specific findings and interpretations are based entirely on the qualitative synthesis of these existing scholarly materials.

## Conflicts of Interest

The author declares no conflict of interest.

## Declaration of Generative AI Use

During the preparation of this work, the author used Gemini (Google) to assist in checking grammar and conducting initial brainstorming of ideas during the early drafting stage of the manuscript. After using this tool, the author(s) reviewed and edited the content as needed and took full responsibility for the publication's content.

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