



From soundscapes to societies: investigating gamelan's cultural impact through the socio-karawitanology paradigm

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ABSTRACT

This article investigates the auditory environment, known as "soundscapes," created by Gamelan music, which comprises a distinctive combination of instruments, melodies, rhythms, and timbres that collectively shape the sonic experience. Recognizing the significance of understanding the auditory dimension of Gamelan music and its influence on Indonesian society's cultural and social fabric, we explore the socio-musical karawitan paradigm as the primary research topic. Our objective is to establish a novel gamelan research paradigm by integrating insights from sociology and karawitanology. The research methodology incorporates data from international journal articles and proceedings while also incorporating additional sources like field observations, expert interviews, and active engagement with the local community to ensure a comprehensive understanding of karawitan and its socio-cultural significance. Our analysis reveals that the socio-karawitanology paradigm provides a valuable framework for exploring the intricate and dynamic social dimensions prevalent in contemporary societal issues. The research contributes significantly by introducing the socio-karawitanology paradigm, opening avenues for fresh perspectives and insights in the field of karawitanology, extending beyond the immediate findings. It fosters a broader understanding of the socio-cultural impact of karawitan and stimulates further investigations into the interplay between music, society, and culture.



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1. Introduction

There has been a lot of research on karawitan, but little has been done to explore it as a subject to comprehend the social reality of modern society. Karawitan, as a musical culture that encompasses the sounds and perspectives of people's lives, plays a significant role in shaping the behavior of the community. This aligns with Humardani's perspective that karawitan serves as a manifestation of Javanese human emotions. These feelings can only emerge and flourish through continuous creative expression [1], the development of karawitan has emerged as a significant issue to date, and the fundamental challenge in its development lies in attitudes [1]. Socio-karawitanology represents an intellectual approach that examines karawitan from a broader and interdisciplinary perspective. The question arises: what exactly is socio-karawitanology? How do individuals and groups utilize karawitan within a social context? This research sheds light on the significant insights provided by socio-karawitanology. These insights delve into the unique qualities of the karawitan tradition and establish a philosophical foundation for Gamelan studies in Indonesia. The research also delves into the challenges faced by karawitan in its relationship with social life, addressing

aspects such as (1) historical perspectives on karawitan and its social connections; (2) the reciprocal interaction between karawitan and the community; and (3) research concepts concerning socio-karawitanology and the future development prospects of karawitan.

These three issues constitute the fundamental concept of socio-karawitanology. This study aims to explore the research direction of socio-karawitanology in the context of Indonesian traditional music and examine other challenges within the field of karawitan from a sociological standpoint. Additionally, this study seeks to contribute to the advancement of this discipline. Conceptually, the study will investigate the historical role of karawitan, focusing on the question of its significance from a socio-karawitanology perspective. Specifically, it aims to explore the intrinsic value of karawitan in shaping community culture, examining its social functions and cultural significance as a dynamic and integral part of society. People's perceptions of Karawitan, which reflects life and conveys social knowledge, are represented in historical records of karawitan, and they have felt the powerful function of karawitan. Socio-karawitanology holds a significant position within the field of karawitanology. The objective of this study is to establish a comprehensive research framework for socio-karawitanology and outline its operational mechanisms as a discipline. While our current research on socio-karawitanology primarily focuses on translating and introducing previous research findings, it recognizes the substantial ideological and theoretical foundation provided by the development of the musical discipline. According to Sri Hastanto, karawitanology is the study of traditional music's knowledge and development, with its sound source derived from gamelan [2].

The utilization of karawitan in people's lives can be observed in the works of karawitan masters, such as Ki Martopengrawit, who transformed many karawitan compositions into accompaniments for dance, drama, religious purposes, and addressing social issues in society. This demonstrates that the musical pieces are not presented randomly but are tailored to specific social situations. Another example is Ki Tjokrowasito, a musician and composer who explores the problems faced by the people in his surroundings through karawitan. As a pioneer of innovation in Javanese karawitan, Ki Tjokrowasito extensively addresses political issues, democracy, nationalism, and government programs [3]. In addition to that, instructions for utilizing karawitan as a social function can be found in the *Serat Sri Karongron* written by R. Ng. Purbadipura. The *Serat Sri Karongron* elaborates on the role of karawitan in various social activities, such as *pasewakan* (facing), karawitan in the *Garebeg Besar* celebration, karawitan in *Garebeg Mulud* celebrations, karawitan in commemorating the *Tingalan Dalem Pawukon*, and karawitan in the dalem drops (*hajat dalem tetesan*) [4]. This function demonstrates that karawitan is not solely a musical concern, but rather a source of information about social life and the values embedded within 'Javanese' social norms. This signifies that, from a socio-karawitanological perspective, karawitan holds a significant connection with social realities and individuals' lives, as it encompasses social motives and attitudes.

Studies in the field of socio-karawitanology have not received extensive discussion, despite karawitan being a mode of interaction that expresses and shapes social relations. While musical theories have been formulated by karawitan researchers, karawitan itself remains the primary focus of study across various scientific disciplines [5], including in the context of socio-karawitanology. This presents challenges in obtaining information regarding the conceptual meaning of socio-karawitanology, as there are limited previous studies that have explored karawitan issues from a socio-karawitanology perspective. Therefore, this study aims to contribute to the knowledge of the socio-karawitanology research paradigm. However, previous research findings on the sociology of karawitan can shed light on this matter. For instance, Waridi's study revealed that karawitan encompasses not only the sonic dimension but also the social dimension. Waridi further explained that political, social, cultural, and economic factors, along with the artist's creativity in responding to various phenomena through karawitan, demonstrate that karawitan is not a singular or homogeneous entity but a phenomenon that varies or evolves over time [3]. It is therefore not justified to view karawitan solely as a musical activity, as this risks isolating karawitan from social life. Through a socio-karawitanology perspective, this study recognizes the dynamic, interactive, and complex social dimension of karawitan. It acknowledges the challenges it poses and targets relevant social

issues. Adopting this viewpoint allows us to perceive karawitan as part of a wider social integration rather than an isolated entity. The contribution of this research is to introduce a new paradigm for socio-musical karawitanology research in Indonesia. It also paves the way for new perspectives and insights to emerge within the field of socio-karawitanology in the future.

2. Method

The data collection process for this study involved several steps to gather relevant information about karawitan, with a particular focus on its history, musical aspects, and social functions. To collect the data, a comprehensive literature search was conducted. The main sources consisted of international journals and proceedings, which were selected for their potential to provide in-depth scientific and research insights on karawitan. In addition to these academic sources, books, dissertations, and other relevant publications were also considered to complement the literature search and ensure a comprehensive data collection process. The selection of data for inclusion or exclusion is based on specific criteria to ensure relevance and reliability. The criteria considered include the publication date within the specified timeframe, focus on karawitan or related topics (such as gamelan or Javanese music), and availability of information regarding the three main components of the study: the history of karawitan, karawitan as musical facts, and karawitan in its social function. Literature data that met these criteria were included in the analysis, while irrelevant or insufficiently detailed sources were excluded. To minimize bias and limitations, it would be beneficial for future research to consider incorporating additional data sources, such as field observations, interviews with practitioners or experts, and engagement with local communities. This will enable a more comprehensive and diverse understanding of karawitan and its socio-cultural significance. The obtained data is then elaborated by compiling three main components: (1) karawitan history, (2) karawitan as a musical phenomenon, and (3) karawitan in social functions. These three types of data are classified and analyzed using an interdisciplinary approach, specifically incorporating the fields of karawitanology and sociology. The analysis focuses on examining the relationships between these two disciplines, aiming to develop a fundamental understanding of the epistemology of socio-karawitanology, which is the central focus of this study. The results of the analysis serve as the foundation for constructing the conceptual framework for approaching karawitan research within the socio-karawitanology paradigm.

3. Results and Discussion

Karawitan, within the social paradigm, serves multiple functions in society. One of its roles is providing entertainment to individuals, which contributes to the cultural fabric of society [6]. In this capacity, Karawitan acts as a means of expressing social phenomena, serving as a platform for conveying and sharing social experiences, values, and sentiments [7]. By encapsulating the essence of the community's collective identity, Karawitan functions as an effective medium of communication and social connection [8]. Karawitan also offers aesthetic value within the realm of performing arts. Through a combination of instruments, melodies, rhythms, and distinctive timbre, it introduces expression and enriches the artistic landscape by expanding the range of creative possibilities. This infusion of aesthetic values contributes to the evolution and development of the performing arts. Additionally, Karawitan assumes other roles, including functioning as a tool for political propaganda. In certain contexts, it serves as a means to convey messages and political ideologies, leveraging its influence and reach to shape public opinion [9]. Moreover, Karawitan serves as a platform for independent concerts, providing performers with an opportunity to showcase their talents and directly connect with the audience [10]. These concerts offer a space for artistic expression and creativity beyond traditional contexts, enabling artists to explore new dimensions and engage with diverse audiences [11]. Waridi also explains that Karawitan, in its function within rituals or social ceremonies, serves as entertainment and acts as a means of expressing social phenomena. It serves various functions, including providing new aesthetic values in the performing arts.

Therefore, Karawitan not only functions as political propaganda and in independent concerts, but it also plays a vital role in cultural and social contexts, contributing to the enjoyment and understanding of social phenomena through its expressive power [3]. For priyayi circles, karawitan is very useful for raising social status, and this can refer to Javanese priyayi culture [12]. The priyayi, who are the Javanese nobility or aristocracy, utilize karawitan strategically to manage power within a comprehensive framework encompassing ethics, politics, and aesthetics [12]. Within Javanese priyayi culture, karawitan holds significant value as a means of elevating social status [1]. The priyayi, who are the Javanese nobility or aristocracy, utilize karawitan strategically to manage power within a comprehensive framework encompassing ethics, politics, and aesthetics. This practice reflects the deep-rooted connection between karawitan and social hierarchy within Javanese society [13]. By engaging with karawitan, the priyayi demonstrate their refined taste and cultural sophistication, reinforcing their privileged position in society [14].

The mastery and patronage of karawitan enable the priyayi to manifest their authority and enhance their social standing. Through their association with karawitan, the priyayi are able to demonstrate their adherence to ethical codes, political astuteness, and an appreciation for aesthetic refinement. In this context, karawitan serves as a powerful tool for the priyayi to navigate the intricacies of their social environment [15]. It acts as a medium through which they can assert and maintain their influence, consolidating their position within Javanese society [16]. The integration of karawitan into the priyayi's management of power reflects the interplay between cultural practices, social dynamics, and the preservation of status within Javanese priyayi culture. By utilizing karawitan as a means to enhance social status and manage power, the priyayi demonstrate their understanding of the interconnectedness between ethics, politics, and aesthetics. This strategic engagement with karawitan enables them to uphold their privileged position and assert their authority within the complex social structure of Javanese society.

This perspective highlights the social utility of karawitan in terms of upholding status and serving as a medium for expressing sensitivity, as well as affirming one's position and ownership. Hughes viewpoints further illustrate that the Javanese people possess an awareness of incorporating ideological interests into karawitan performances, specifically as an endeavour to shape the image of *alus* (refined and sophisticated) [17]. In a sociological approach to karawitan, it is crucial to consider motivations and ideological reasons during analysis. This allows us to understand how karawitan, from a sociological standpoint, is capable of shaping the image of an *alus* Javanese [18]. It becomes evident that karawitan holds the power to bring about ideological transformations within an individual [19]. The role of karawitan in upholding status is intricately tied to the cultural and social context in which it exists. By engaging with karawitan, individuals can signal their elevated social standing, refinement, and cultural sophistication. The mastery and patronage of karawitan become visible markers of social distinction and demonstrate adherence to the ideals of the priyayi class in Javanese society.

Moreover, the inclusion of ideological interests in karawitan performances allows for the creation of an *alus* image [20]. This image reflects not only refined aesthetics but also the embodiment of certain ethical and political values. Through the integration of ideology within karawitan, the performers and participants actively shape and communicate their cultural identity and aspirations. As such, karawitan becomes a vehicle for ideological expression, contributing to the formation and transformation of an individual's beliefs, perceptions, and societal roles. The sociological analysis of karawitan must delve into the underlying motivations and ideological factors that contribute to its capacity to shape the "*alus* Javanese" image. This analytical perspective sheds light on the broader social dynamics at play and underscores the transformative potential of karawitan as a cultural and ideological force.

3.1. Karawitan and sociology: the intersection towards socio-karawitanology

Karawitanology is an emerging field of academic interest that focuses on the study of gamelan performances and their role in fostering human creativity. This study aims to provide a comprehensive conceptualization of karawitanology as an interdisciplinary field of

knowledge, encompassing musical theory and its connections with exact sciences, social sciences, and other related disciplines. By exploring the connections with exact sciences, such as acoustics and cognitive sciences, Karawitanology seeks to unravel the scientific principles behind the acoustic properties of gamelan instruments and their impact on human perception and cognition. Additionally, the study draws upon insights from the social sciences to investigate the cultural, social, and anthropological dimensions of karawitan. It examines how gamelan performances are embedded within specific cultural contexts, shaping identities, fostering community cohesion, and transmitting cultural knowledge.

This study seeks to establish karawitanology as a distinct field of study, necessitating a thorough understanding of the term itself. By delineating karawitan culture as one set and sociology as another set, the intersection of these two sets gives rise to the research field of karawitan sociology. This intersection, known as socio-karawitanology, represents a scientific discipline that amalgamates sociology and karawitanology, presenting a novel approach to knowledge production. Through socio-karawitanology, researchers can investigate the social phenomena that emerge within groups of people who employ the values and traditions of karawitan as a means to express their emotions and vitality. Socio-karawitanology serves as a discursive medium that facilitates dynamic contextualization of karawitan practices, styles, and knowledge. It becomes the conduit through which researchers can delve into the social dimensions of karawitan, exploring its impact on individuals and communities [21].

This interdisciplinary approach encourages researchers to examine how karawitan is intertwined with social processes, cultural identity formation, and group dynamics [22]. By integrating sociological perspectives into karawitanology, socio-karawitanology provides a holistic framework for understanding the socio-cultural significance and functions of karawitan within specific contexts. Through the lens of socio-karawitanology, researchers can investigate how karawitan influences social interactions, social cohesion, and collective identity. They can examine the ways in which karawitan shapes community dynamics, fosters a sense of belonging, and transmits cultural values. Moreover, socio-karawitanology allows for a deeper exploration of the emotional and expressive aspects of karawitan, unravelling the ways in which it serves as a medium for individual and collective experiences. Socio-karawitanology emerges as a research field that combines sociology and karawitanology to study the social dimensions of karawitan. By examining the intersection between these two disciplines, researchers can gain insight into the social life of individuals and groups who engage with karawitan as a representation of their emotions and vitality [23]. This interdisciplinary approach offers a rich understanding of the contextualized practices, styles, and knowledge surrounding karawitan, facilitating a comprehensive analysis of its social, cultural, and emotional significance.

Karawitan, as a discursive tradition, engenders a multitude of interpretations and the application of objective laws within the community. This diversity of understandings arises from the inherent meaning embedded in the karawitan tradition itself [24]. Sociologically, the chain of the karawitan tradition reflects the intentions, desires, and overarching vision of community members [25]. Consequently, the socio-karawitanological paradigm provides a framework to frame and comprehend cultural practices and social aspirations. Within this paradigm, the function of the karawitan tradition is contextualized as a means to convey social information and evoke emotional experiences [26]. Moreover, karawitan's social dimension plays a crucial role in regulating and coordinating the volitional behavior of community members. The discursive nature of karawitan allows for an array of interpretations and perspectives among community members. It is through this discursiveness that subjective meanings and individual experiences find expression and resonance.

The karawitan tradition acts as a vessel for cultural transmission, providing a platform for community members to express their beliefs, values, and collective identity [27]. This discursive exchange fosters a dynamic and evolving karawitan tradition that adapts and responds to societal changes. From a sociological standpoint, the karawitan tradition chain reveals the purpose, will, and overarching vision of the community members. It serves as a window into their aspirations and aspirations, offering insights into the socio-cultural

dynamics at play. Through the karawitan tradition, community members can collectively articulate their social vision, seeking to manifest their ideals and aspirations within the cultural and artistic realm. The socio-karawitanological paradigm provides a comprehensive lens to understand the interplay between karawitan, culture, and society. Within this paradigm, karawitan is recognized as a medium through which social information is conveyed, emotional experiences are shared, and social coordination is facilitated. It not only carries cultural significance but also influences and shapes social dynamics. By exploring the socio-karawitanological paradigm, researchers gain a deeper understanding of how karawitan functions as a social force, contributing to the formation of cultural identity, social cohesion, and the coordination of volitional behavior among community members.

From the perspective of music culture, karawitan holds significant influence and plays a crucial role as a factor of social control. The sociology of karawitan provides a valuable lens through which to examine the social dynamics involved in the cultural production process. The combination of karawitan and sociology yields a comprehensive understanding of the structure, distribution patterns, and societal reception of karawitan. This indicates that the sociology of karawitan encompasses a perspective that encapsulates the paradigm constructed through the socio-musical approach [28]. This paradigm is of utmost importance as it not only establishes karawitan sociology as a distinct discipline but also treats karawitan as a cultural object approached from a unique vantage point. Within the domain of music culture, karawitan assumes a central position, influencing social behaviour and shaping societal norms [29]. It serves as a mechanism of social control, regulating individual and collective conduct through its cultural significance and symbolic meanings.

The sociology of karawitan delves into the underlying social processes, power dynamics, and mechanisms that govern the production, dissemination, and reception of karawitan within society. By analyzing the interplay between karawitan and social structures, the sociology of karawitan provides insights into how karawitan contributes to the formation and maintenance of social order and cultural identity. The integration of sociology and karawitan allows for a comprehensive understanding of the socio-cultural dynamics involved in the production and consumption of karawitan [27]. It sheds light on the social factors that influence the creation and transmission of karawitan, including factors such as social class, community dynamics, power relationships, and cultural values. This socio-musical paradigm enables researchers to explore the social dimensions of karawitan beyond its musical aspects, uncovering the intricate connections between karawitan and society [30]. By offering karawitan sociology as a distinct discipline, researchers can delve into the sociological implications of karawitan as a cultural phenomenon. They can study how karawitan is produced, disseminated, and consumed within specific social contexts, examining the social structures, processes, and power dynamics that shape its existence. This interdisciplinary approach provides a unique perspective, enriching our understanding of karawitan as both a cultural artefact and a social force that contributes to the formation and transformation of society.

Regardless of the chosen terminology and the methodological procedures employed to examine this intersection, the underlying assumption revolves around the concept of the intersection problem. This study aims to offer significant benefits to both sociologists who may lack expertise in karawitan and musicians who may lack sufficient sociological knowledge. For sociologists, delving into the field of karawitan sociology provides an opportunity to expand their understanding of the social dynamics embedded within karawitan and its cultural context. Conversely, musicians can enhance their knowledge by delving into the discipline of karawitan sociology, gaining a more comprehensive understanding of the sociological dimensions that influence karawitan. This interdisciplinary approach provides a new paradigm that bridges sociology and karawitanology. By uniting these two disciplines, a broader and more holistic understanding of karawitan emerges. Sociologists gain insights into the cultural significance, social functions, and the intricate social structures that shape karawitan practices and its reception within society. On the other hand, musicians are exposed to sociological perspectives, enabling them to recognize the broader societal influences on karawitan, such as social norms, power dynamics, and cultural values. The integration of

sociology and karawitanology offers mutual benefits to both fields, fostering a deeper appreciation and understanding of the complex interplay between music, culture, and society.

Sociologists gain a more nuanced understanding of the cultural nuances and socio-cultural implications of karawitan, while musicians gain a broader perspective that expands their understanding beyond the technical aspects of karawitan. This interdisciplinary synergy encourages a more holistic approach to studying and appreciating karawitan, as it combines sociological insights with musical expertise. By embracing this new paradigm, researchers in both sociology and karawitanology can collaborate, exchange knowledge, and contribute to a more comprehensive body of scholarship. This interdisciplinary approach broadens the scope of inquiry, allowing for deeper analyses of the social and cultural dimensions of karawitan, ultimately enriching our understanding of this vibrant art form and its significance within society. Fig. 1 is the intersection of the fields of sociology and karawitanology in forming the sub-discipline of socio-karawitanology.



Fig. 1.The intersection of the fields of sociology and karawitanology in forming the sub-discipline of socio-karawitanology

3.2. Epistemology of socio-karawitanology research

Positioning Before delving into the study of socio-karawitanology, it is crucial to understand the nature of this discipline and the scope of its research. Sociokarawitanology can be regarded as an interdisciplinary field that merges sociology and karawitanology, focusing on the social dimensions of karawitan and its broader cultural and societal implications. By examining the intersections between karawitan and social structures, socio-karawitanology aims to unravel the intricate relationship between music, society, and culture. To grasp the object range of socio-karawitanology research, it is necessary to consider the various aspects and dimensions of karawitan that fall within its purview. Socio-karawitanology investigates the social functions, cultural practices, and socio-cultural significance of karawitan. It explores how karawitan influence social interactions, community dynamics, identity formation, and collective experiences. The object of socio-karawitanology research encompasses a wide range of phenomena, including the social aspects of karawitan performances, the role of karawitan in shaping cultural identity, its impact on social cohesion, and its reflection of societal values and norms. Sociokarawitanology examines the social processes underlying the production, dissemination, and reception of karawitan. It analyzes the social structures, power dynamics, and cultural contexts that shape the existence and meaning of karawitan within society. Additionally, socio-karawitanology investigates the social agency of individuals and communities in relation to karawitan, exploring how they actively engage with and contribute to its creation and transmission.

Socio-karawitanology research entails a dynamic process of interpretation and reflection, exploring the intricate phenomenon of human interaction with the musical facets of karawitantraditional art. Context plays a vital role in this research, as it involves the exploration of existing knowledge, rigorous evaluations, and in-depth studies aimed at

uncovering new findings within the realm of karawitan sociology. The inherent relationship between karawitan and society is deeply meaningful and imbued with social significance, as the involvement of the karawitan tradition within a community holds the potential to convey rich social meaning and value. The research process in socio-karawitanology involves a continuous cycle of interpretation and reflection. By delving into the interpretations of karawitan performances, the social interactions it fosters, and the impact it has on community members, socio-karawitanology seeks to shed light on the intricate interplay between the musical art form and society. Crucially, the relationship between karawitan and society goes beyond mere musical appreciation. It holds symbolic connotations and represents a complex interconnection between the cultural and social fabric of a community. The involvement of karawitan within a community provides avenues for social meaning and value to be expressed, reinforcing social bonds, cultural identity, and collective experiences. Socio-karawitanology explores this dynamic relationship, analyzing how karawitan serves as a medium for social expression, communication, and the negotiation of social values within society.

In today's karawitan landscape, numerous phenomena merit thoughtful consideration. For instance, why do millennials exhibit a preference for popular music over the more traditional and serious forms of karawitan? Why have certain types of karawitan performances and traditional functions undergone transformations, and what factors have contributed to these changes? Furthermore, why is there a decline in the interest of the millennial generation towards karawitan? These questions embody the core concerns addressed by socio-karawitanology—a field of study that delves into the intricate relationship between karawitan and society. Socio-karawitanology can be defined as a branch of science that examines the underlying laws governing the development of karawitan and their influence on social systems and functions within society. As a relatively young scientific field, ongoing debates arise concerning its tasks, goals, and methodologies. This study strives to unravel the complexities of karawitan's evolution and its impact on the broader social fabric, seeking to understand the dynamics, trends, and social factors that shape the contemporary practice and perception of karawitan. Certainly, the phenomenon of millennials' shifting preferences towards popular music and the waning interest in karawitan among this generation provide fertile ground for socio-karawitanological inquiry. Through empirical investigation, researchers can explore the multifaceted factors contributing to this trend, examining social, cultural, and technological influences that shape musical tastes and consumption patterns.

The study of socio-karawitanology provides insights into the social mechanisms that underpin these transformations, shedding light on the interplay between generational shifts, societal changes, and the evolving landscape of musical preferences. By examining the intricate relationship between karawitan and society, socio-karawitanology offers a comprehensive understanding of how karawitan functions within social systems and the wider society. It considers the social, cultural, and historical contexts that shape karawitan practices, analyzing how karawitan serves as a form of artistic expression, a conduit for cultural transmission, and a means of social interaction and identity formation. The interdisciplinary nature of socio-karawitanology allows for a holistic examination of the complex dynamics between karawitan and society, fostering a deeper appreciation of the socio-cultural significance and functions of karawitan.

In the context of today's contemporary society, the sociology of karawitan can be understood as an interpretive endeavor undertaken by various actors within the musical domain, including composers, maestros, musicians, musical theorists, spectators, listeners, and musical groups. These individuals engage in the interpretation and examination of karawitan, connecting it with social realities. This highlights that karawitan sociology exists at the intersection of sociology and karawitanology, encompassing multiple attributes and perspectives. It acknowledges the intricate relationship between karawitan and society, acknowledging that this relationship manifests itself at various levels and structures within the social dimension. [Fig. 2](#) presents the epistemological construction of socio-karawitanology research, representing the foundation and framework of knowledge production within this field. It visualizes the interconnectedness of sociological concepts, karawitanological principles, and their fusion in socio-karawitanological analysis. The figure illustrates the

dynamic and multidimensional nature of socio-karawitanology, highlighting the ongoing exchange between sociological perspectives and karawitanological insights. It signifies the continuous dialogue between these disciplines, where sociological frameworks inform the study of karawitan's social dimensions and karawitanological principles provide valuable context for sociological analysis.

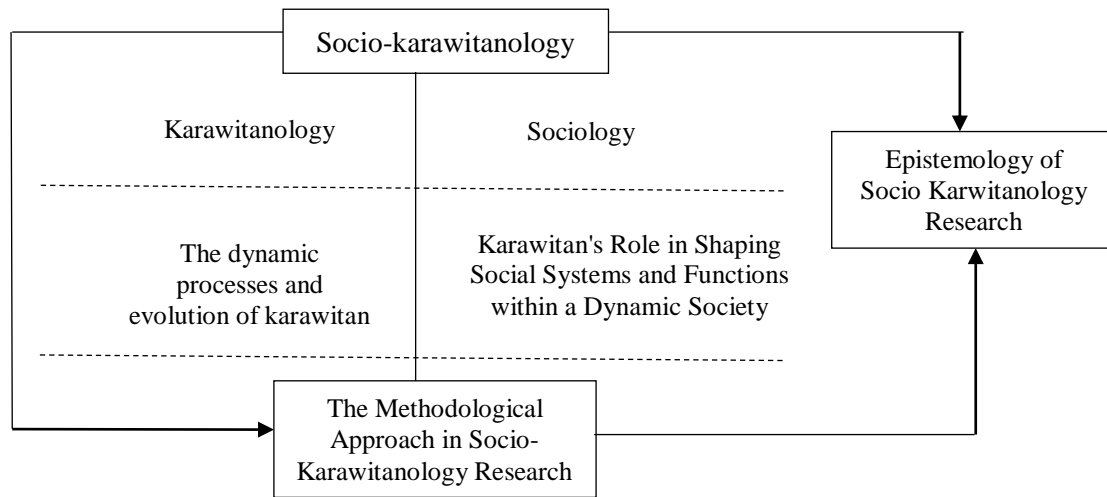


Fig. 2. Epistemological structure of socio-karawitanology research

Sosio-karawitanology, drawing inspiration from the field of music sociology, serves as a distinct academic discipline that not only examines karawitan within its musical context but also delves into its broader social significance. It is a discipline that encapsulates the recording of historical narratives, the expression of lived experiences, and the transformative power of giving back to society in a refreshing and flexible manner. This study explores various research methods that adopt a sociological perspective, using karawitan as the focal point and places emphasis on the intricate and dynamic relationship between karawitan and society as the core subjects of investigation. By deriving ideas from music sociology, sosio karawitanology transcends the mere analysis of musical aspects and ventures into the realm of social dynamics, cultural expressions, and historical narratives surrounding karawitan. It recognizes that karawitan, as a cultural practice, carries profound meanings and plays a role beyond its musical dimensions. Sosio-karawitanology strives to understand how karawitan reflects and shapes societal values, beliefs, and practices, shedding light on the interplay between traditional music and the broader social fabric.

The participation of social groups that appreciate the traditional art of karawitan creates a sociological response, representing the most concentrated and essential manifestation of the significance of socio-karawitanology. Socio-karawitanology establishes connections with the social and cultural context in which karawitan thrives, as karawitan activities are fundamentally social in nature. This aspect forms a crucial area of exploration within socio-karawitanology. Socio-karawitanology not only explores the social factors that shape karawitan practices and behaviors but also investigates the broader impact of karawitan on social dynamics. By analyzing how karawitan engages with social groups, cultural norms, and societal values, socio-karawitanology uncovers the intricate interplay between karawitan and its social environment. This understanding has practical implications, as it offers insights into how karawitan can contribute to social integration, community bonding, and cultural preservation.

Gaining a comprehensive understanding of this research approach holds immense significance as it allows for a meaningful contribution to knowledge. Karawitan, as a cultural phenomenon, is intricately intertwined with the perceptual community. Through socio-karawitanological studies, we can delve into the exploration of how the environment, society, and culture collectively influence the production, dissemination, and consumption of karawitan. This research approach sheds light on the intricate web of relationships that shape

karawitan, providing valuable insights into its cultural significance. By scientifically mastering this research approach, we can unravel the multifaceted connections between karawitan and its broader context. The socio-karawitanological lens enables us to examine the intricate interplay between karawitan and its surrounding environment, encompassing social dynamics, cultural practices, and more.

This holistic understanding empowers us to comprehend the complex web of influences that shape karawitan's creation, transmission, and reception within the cultural landscape. Moreover, socio-karawitanological studies offer a nuanced perspective on the cultural production of karawitan. They illuminate how societal factors, such as norms, values, and traditions, interplay with karawitan, shaping its meaning and significance within academic discourse. By exploring the multifaceted relationships between karawitan and its socio-cultural milieu, these studies contribute to the academic vision of karawitanology, enhancing our understanding of this artistic tradition and its broader cultural implications.

3.3. Socio-karawitanology as an approach

The intersection of sociology and karawitanology gives rise to a reciprocal relationship between karawitan and social life. The sociology of karawitan, in its essence, endeavors to examine and elucidate the social and karawitan phenomena through a sociological lens. It stands as an independent discipline that explores the intricate interactions between musicians and society, shedding light on the multifaceted dynamics at play. The sociology of karawitan delves into the social dimensions of karawitan, seeking to understand and analyze the various social phenomena that surround it. This includes investigating the social contexts in which karawitan emerges, the social roles played by musicians, and the broader social dynamics that influence karawitan's creation, dissemination, and reception. By employing sociological perspectives and methods, the sociology of karawitan offers insights into the complex interplay between karawitan and the social fabric. Furthermore, the sociology of karawitan explores how karawitan intersects with society, examining the reciprocal influences and interactions between musicians and their social environment. It investigates how karawitan both shapes and is shaped by societal factors, such as cultural norms, economic structures, political dynamics, and social institutions.

Through this lens, the sociology of karawitan provides a deeper understanding of the social significance of karawitan, highlighting its role as a cultural expression, a medium for social interaction, and a reflection of societal values. In essence, the sociology of karawitan serves as a bridge between karawitan and social life, unraveling the intricate connections and dynamics between the two realms. It offers a comprehensive examination of the social phenomena surrounding karawitan, exploring the sociocultural context within which karawitan exists and thrives. Through its interdisciplinary approach, the sociology of karawitan enriches our understanding of karawitan as a cultural and social phenomenon, fostering a deeper appreciation for its societal significance and paving the way for further research and exploration in the field.

Despite the multifaceted roles traditionally attributed to karawitan, such as its functions in rituals, entertainment, communication, and cultural expression, research conducted from a socio-karawitanology perspective remains relatively scarce. However, it is crucial to recognize that karawitan holds significant sociological implications. By delving into the development of the sociology of karawitan, we can gain a deeper understanding of research findings, track the progress made in this discipline, identify existing challenges, and provide a roadmap for the future direction of karawitanology, particularly within the realm of socio-karawitanology. Karawitan, as a rich cultural tradition, encompasses social dimensions that warrant comprehensive investigation. It serves as a powerful medium through which social functions are enacted and cultural values are transmitted. By applying a socio-karawitanology lens, researchers can explore the intricate interplay between karawitan and sociological dynamics, examining how it shapes social interactions, identities, and cultural practices.

This approach enables us to analyze karawitan beyond its surface-level artistic qualities and recognize its profound sociological significance. Therefore, the development of the sociology of karawitan offers valuable insights into the interdisciplinary nature of karawitanology. By

examining the sociological aspects of karawitan, we expand our understanding of its broader societal implications and contributions. Furthermore, this exploration serves as a foundation for socio-karawitanology, where the intersection of sociology and karawitanology becomes a fertile ground for comprehensive research and analysis. Through the advancement of socio-karawitanology, we can address the current gaps in knowledge, navigate the challenges inherent in this field, and unlock new perspectives and methodologies that deepen our understanding of the sociocultural significance of karawitan.

Despite the limited research conducted from a socio-karawitanology perspective, recognizing the sociological dimensions of karawitan is crucial. The development of the sociology of karawitan allows us not only to enhance our comprehension of this cultural phenomenon but also to provide guidance for the future direction of karawitanology, particularly in areas that intersect with socio-karawitanology. By delving into the intricate relationship between karawitan and sociological dynamics, researchers can uncover the social functions, implications, and transformative potential of karawitan, thereby shaping the future of karawitanology as an interdisciplinary field.

The sociology of karawitan is a field rooted in the exploration of the interaction between karawitan and society, encompassing the phenomenon of music within the boundaries of social science. It delves into the intricate dynamics that exist between karawitan and society, aiming to understand the multifaceted relationship that unfolds between these two interconnected realms. The term "sociology of karawitan" itself signifies the inseparable connection between karawitan, as a cultural and artistic expression, and the social contexts within which it exists and thrives. In essence, the sociology of karawitan delves into the meaning and significance of karawitan in relation to social dynamics. It acknowledges that karawitan and society are intertwined in a multi hierarchical and multi structural manner, forming a complex web of interconnections.

The relationship between karawitan and society is not static but rather constantly in motion, shaped by various factors such as cultural norms, social structures, historical contexts, and individual experiences. By employing sociological perspectives and methodologies, the sociology of karawitan strives to unravel the intricate interplay between karawitan and society. It explores how karawitan both influence and is influenced by social phenomena, such as cultural practices, power dynamics, social identities, and community interactions. This multidimensional approach allows researchers to delve into the social implications of karawitan, examining its role in social cohesion, identity formation, cultural transmission, and the negotiation of power within communities.

The emergence of socio-karawitanology as an independent scientific discipline may not have a well-defined historical origin. However, the relationship between karawitan and society has been extensively documented and discussed in the literature, as well as recorded in Javanese historiography, spanning several centuries. Scholars and researchers have explored this intricate relationship, shedding light on its socio-cultural significance and the profound impact of karawitan on society. Notable contributions to this field of study can be found in the research of scholars such as KomangSudirga, Santosa, and Kustiyanti [31], as well as JaapKunst [32].

The exploration of karawitan's connection with society has been an ongoing endeavor throughout history. References to this relationship can be found in literary works, historical accounts, and cultural records, offering insights into the deep-rooted interplay between karawitan and social dynamics. Scholars like KomangSudirga, Santosa, and Kustiyanti have contributed to this body of knowledge by conducting research that investigates the socio-cultural dimensions of karawitan, providing valuable insights into its role, meaning, and impact within society. Similarly, the works of JaapKunst have also made significant contributions to the understanding of karawitan's relationship with society. Kunst's research delves into the socio-musical aspects of karawitan, exploring its functions, practices, and social implications. His studies have paved the way for further exploration of the interconnections between karawitan and society, shaping the trajectory of socio-karawitanology as a distinct field of study.

This study of socio-karawitanology can involve an empirical approach, which entails systematic scientific investigations into people's attitudes, relationships, and the diverse social phenomena that emerge within the karawitan community. This field of study aims to shed light on the intricate dynamics and social processes that shape karawitan's existence in society. As socio-karawitanology evolves, it identifies specific research objects and delimits its scope, resulting in the emergence of various sub-disciplines within the field. To explore the social dimensions of karawitan, sociologists employ a range of theoretical frameworks and research methods. They can draw upon sociological theories and concepts to analyze and interpret the social structures, interactions, and cultural practices surrounding karawitan.

Through rigorous empirical research, sociologists gather data, conduct observations, and engage with the karawitan community to gain comprehensive insights into its social dynamics. The integration of empirical experiences into the study of karawitan sociology enhances the depth and breadth of research outcomes. By combining theoretical frameworks with real-world observations and lived experiences, researchers can generate a holistic understanding of the social implications and functions of karawitan. This multidimensional approach allows for the exploration of karawitan's role in identity formation, social cohesion, cultural transmission, and the negotiation of power within the supporting community.

The integration of disciplines stemming from the research perspective of karawitan sociology into socio-karawitanology has been a significant area of interest in recent decades. Researchers have recognized the importance of integrating various disciplines to gain a deeper understanding of the social dimensions of karawitan. This study embraces an experimental approach, aiming to adopt research methods from diverse fields. One notable outcome of this integration is the emergence of the sociology of music, a sub-discipline that explores the social aspects of music, including karawitan. Additionally, this interdisciplinary approach has paved the way for the development of other related fields such as musical aesthetics, musical psychology, and karawitan anthropology. Socio-karawitanology offers a fresh perspective on research methods by combining historical interpretations and the evolving nature of karawitan. By analyzing the historical context and examining the development of karawitan over time, researchers gain valuable insights into its socio-cultural significance.

This interdisciplinary approach allows for a comprehensive exploration of karawitan's social functions, meanings, and impacts on individuals and communities. The integration of disciplines within socio-karawitanology enhances the depth and breadth of research, enabling researchers to delve into different aspects of karawitan's social significance. Musical aesthetics, for example, explores the artistic qualities and aesthetic experiences associated with karawitan, while musical psychology investigates the psychological processes and effects of engaging with karawitan music. Karawitan anthropology focuses on the cultural and social contexts in which karawitan is performed, shedding light on its role in identity formation, cultural practices, and community dynamics. Socio-karawitanology is a scientific discipline that systematically examines the phenomena and behaviors of society. It builds upon the advancements made in social sciences, which have developed robust theoretical frameworks and research methods. Socio-karawitanology provides researchers with the theoretical foundation and methodological tools to explore the principles underlying the development of karawitan from various perspectives. In doing so, it contributes to the advancement of karawitan science by introducing new theoretical perspectives and research methods.

Karawitan theory, within the context of socio-karawitanology, offers fresh insights into the relationship between karawitan and people's lives. It considers how karawitan influences and is influenced by social dynamics, including aspects such as social control, feedback mechanisms, and social systems. By incorporating these concepts, socio-karawitanology proposes new theoretical models to describe and explain phenomena and human behavior related to karawitan. This enables the field of karawitan science to evolve and establish a new ecosystem within the paradigm of karawitanology knowledge. As a sub-discipline of karawitanology, socio-karawitanology closely aligns with research methods employed in karawitanology. Its primary objective is to uncover and understand the intricate interactions

between "karawitan and society." By engaging in socio-karawitanology research, scholars delve deeper into the social dimensions of karawitan, examining how it shapes and is shaped by various social factors. Through empirical investigations, socio-karawitanology seeks to unravel the complexities of this interaction and shed light on the multifaceted relationships between karawitan and society. By examining the interplay between karawitan and society, socio-karawitanology enhances our understanding of the social significance and dynamics of karawitan, ultimately enriching the field of karawitanology as a whole.

4. Conclusion

This study's findings contribute to a deeper understanding of the relationship between karawitan and society in the social dimension, revealing its presence in multiple levels and structures. It highlights the dynamic nature of socio-karawitanology as a discipline that lies at the intersection of two complementary scientific fields, namely karawitanology and sociology. Karawitanology focuses on the laws of musical development and life, while sociology examines aspects of social systems and functions. The integration of these two disciplines in socio-karawitanology opens up new avenues for research methods and approaches. By combining insights from karawitanology and sociology, researchers can gain a more comprehensive understanding of the socio-cultural dynamics surrounding karawitan. This interdisciplinary perspective allows for a deeper exploration of the epistemological dimension of socio-karawitanology research, providing a solid foundation for further studies. While this study contributes to the development of socio-karawitanology, it is essential to acknowledge its limitations. The research has focused on theoretical and conceptual aspects, providing a framework for understanding the relationship between karawitan and society. Further empirical research is needed to validate and expand upon these findings, exploring specific case studies and conducting in-depth analysis of the socio-cultural impact of karawitans in different contexts.

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References

- [1] S. D. Humardani and A. R. Roth, "The problem of development in Javanese karawitan today," *Indones. Circle. Sch. Orient. African Stud. Newsl.*, vol. 13, no. 37, pp. 7-13, Jun. 1985, doi: [10.1080/03062848508729610](https://doi.org/10.1080/03062848508729610).
- [2] S. Hastanto, *Kajian musik nusantara: Semester 1, kajian seni minat musik*. Institut Seni Indonesia (ISI) Surakarta, 2012.
- [3] Waridi, "Tracing the Existence of Javanese Gamelan Music Through the Role of Karawitan Masters: The Pillars of the Existence of Surakarta Style Javanese Gamelan Music (1950s-1970s) Waridi, Institut Seni Indonesia Surakarta (ISI), Surakarta I." Bandung, 2008.
- [4] J. Daryanto, R. Rustopo, and B. Sunarto, "The Aesthetics of Surakarta Palace's Karawitan According to Serat Sri Karongron," *Dewa Ruci J. Pengkaj. dan Pencipta. Seni*, vol. 15, no. 1, pp. 1-5, 2020, doi: [10.33153/dewaruci.v15i1.2766](https://doi.org/10.33153/dewaruci.v15i1.2766).

-
- [5] M. Tenzer, "The Life in Gendhing: Current Approaches to Javanese Gamelan." JSTOR, 1997. doi: [10.2307/3351515](https://doi.org/10.2307/3351515)
- [6] P. Yampolsky, "Forces for change in the regional performing arts of Indonesia," *Bijdr. tot taal-, land- en Volkenkd. / J. Humanit. Soc. Sci. Southeast Asia*, vol. 151, no. 4, pp. 700–725, 1995, doi: [10.1163/22134379-90003035](https://doi.org/10.1163/22134379-90003035).
- [7] J. Daryanto, "Nengsemaken in Surakarta Karaton Karawitan Performance," *Int. J. Vis. Perform. Arts*, vol. 1, no. 1, pp. 1–6, Jun. 2019, doi: [10.31763/viperarts.v1i1.7](https://doi.org/10.31763/viperarts.v1i1.7).
- [8] P. Lestari and S. Sularso, "The COVID-19 impact crisis communication model using gending jawa local wisdom," *Int. J. Commun. Soc.*, vol. 2, no. 1, pp. 47–57, Jun. 2020, doi: [10.31763/ijcs.v2i1.150](https://doi.org/10.31763/ijcs.v2i1.150).
- [9] D. R. Puguh, M. P. Utama, and R. Mufidah, "Acceptance of Javanese Karawitan in Japan: Appreciation of traditional culture and community activities," *Cogent Arts Humanit.*, vol. 10, no. 1, p. 2217586, Dec. 2023, doi: [10.1080/23311983.2023.2217586](https://doi.org/10.1080/23311983.2023.2217586).
- [10] C. B. Handoyo, "The 'Pakeliran Padat' wayang show as an alternative to evoke interest in wayang and gamelan music," *Imaji*, vol. 20, no. 2, pp. 104–113, Oct. 2022, doi: [10.21831/imaji.v20i2.48955](https://doi.org/10.21831/imaji.v20i2.48955).
- [11] D. L. Harwood, "Unplayed melodies: Javanese Gamelan and the Genesis of music theories," *Music Percept.*, vol. 24, no. 4, pp. 405–408, Apr. 2007, doi: [10.1525/mp.2007.24.4.405](https://doi.org/10.1525/mp.2007.24.4.405).
- [12] F. Hughes-Freeland, "Art and Politics: From Javanese Court Dance to Indonesian Art," *J. R. Anthropol. Inst.*, vol. 3, no. 3, pp. 473–495, Sep. 1997, doi: [10.2307/3034763](https://doi.org/10.2307/3034763).
- [13] S. Weiss, "Review Essay: Getting beyond Java: New Studies in Indonesian Music," *Ethnomusicology*, vol. 51, no. 1, pp. 131–142, Jan. 2007, doi: [10.2307/20174505](https://doi.org/10.2307/20174505).
- [14] S. T. Widodo and A. Purwantoro, "The Changes of the Symbolic World in Gamelan," in *3rd International Conference on Creative Media, Design and Technology (REKA 2018)*, 2018, pp. 383–387.
- [15] M. Hatch, "Towards a More Open Approach to the History of Javanese Music," *Indonesia*, vol. 27, pp. 129–154, Apr. 1979, doi: [10.2307/3350819](https://doi.org/10.2307/3350819).
- [16] S. P. Walton, "Aesthetic and Spiritual Correlations in Javanese Gamelan Music," *J. Aesthet. Art Crit.*, vol. 65, no. 1, pp. 31–41, Jan. 2007, doi: [10.1111/j.1540-594X.2007.00235.x](https://doi.org/10.1111/j.1540-594X.2007.00235.x).
- [17] F. Hughes-Freeland, "Consciousness in performance: A Javanese theory," *Soc. Anthropol.*, vol. 5, no. 1, pp. 55–68, Jan. 2007, doi: [10.1111/j.1469-8676.1997.tb00340.x](https://doi.org/10.1111/j.1469-8676.1997.tb00340.x).
- [18] J. Daryanto, R. Rustopo, and B. Sunarto, "The Aesthetics of Surakarta Palace's Karawitan According to Serat Sri Karongron," *Dewa Ruci J. Pengkaj. dan Pencipta. Seni*, vol. 15, no. 1, pp. 1–5, Sep. 2020, doi: [10.33153/dewaruci.v15i1.2766](https://doi.org/10.33153/dewaruci.v15i1.2766).
- [19] N. I. Cooper, "Singing and Silences: Transformations of Power through Javanese Seduction Scenarios," *Am. Ethnol.*, vol. 27, no. 3, pp. 609–644, Aug. 2000, doi: [10.1525/ae.2000.27.3.609](https://doi.org/10.1525/ae.2000.27.3.609).
- [20] Christina Sunardi, "Making Sense and Senses of Locale through Perceptions of Music and Dance in Malang, East Java," *Asian Music*, vol. 41, no. 1, pp. 89–126, 2010, doi: [10.1353/amu.0.0051](https://doi.org/10.1353/amu.0.0051).
- [21] B. Brinner, "Cultural Matrices and the Shaping of Innovation in Central Javanese Performing Arts," *Ethnomusicology*, vol. 39, no. 3, pp. 433–456, Jan. 1995, doi: [10.2307/924630](https://doi.org/10.2307/924630).
- [22] I. Meloni, "Foreign Sindhen in Practice: New Teaching Strategies and the Impact of Practice-Led Research on Javanese Female Singing," *Malaysian J. Music*, vol. 10, no. 1, pp. 25–52, 2021, doi: <https://doi.org/10.37134/mjm.vol10.1.3.2021>.
- [23] S. Ediyono, S. Budi, and S. T. Widodo, "The Potentials of Gamelan as Education Tourism Media in Surakarta," in *Proceedings of the Third International Conference of Arts, Language and Culture (ICALC 2018)*, 2019, pp. 95–102, doi: [10.2991/icalc-18.2019.15](https://doi.org/10.2991/icalc-18.2019.15).
- [24] M. J. Kartomi, J. Becker, A. H. Feinstein, H. Susilo, Sumarsam, and A. L. Becker, "Karawitan. Source Readings in Javanese Gamelan and Vocal Music. Volume 1.," *Pac. Aff.*, vol. 59, no. 3, p. 542, Jan. 1986, doi: [10.2307/2758373](https://doi.org/10.2307/2758373).
-

-
- [25] R. T. A. Lysloff, "Worlding Music in Jogjakarta: Tales of the Global Postmodern," *Ethnomusicology*, vol. 60, no. 3, pp. 484–507, Oct. 2016, doi: [10.5406/ethnomusicology.60.3.0484](https://doi.org/10.5406/ethnomusicology.60.3.0484).
- [26] S. Weiss, "Javanese rasa: Gendering emotion and restraint," in *Listening to an Earlier Java*, BRILL, 2006, pp. 103–130. doi: [10.1163/9789004253698_006](https://doi.org/10.1163/9789004253698_006)
- [27] R. Rizzo, "Knowledge Transmission in Javanese Karawitan: Is It Time for an Ontological Turn?," *Asian Music*, vol. 51, no. 1, pp. 94–117, 2020, doi: [10.1353/amu.2020.0004](https://doi.org/10.1353/amu.2020.0004).
- [28] C. J. Miller, "Orchids (and other difficult flowers) revisited: A reflection on composing for Gamelan in North America," *World Music*, vol. 47, no. 3, pp. 81–111, 2005.
- [29] M. Hatch, "Towards a More Open Approach to the History of Javanese Music," *JSTOR*, vol. 27, pp. 129–154, Apr. 1979, doi: [10.2307/3350819](https://doi.org/10.2307/3350819).
- [30] H. S. Powers, "Classical Music, Cultural Roots, and Colonial Rule: An Indic Musicologist Looks at the Muslim World," *Asian Music*, vol. 12, no. 1, pp. 5–39, 1980, doi: [10.2307/833796](https://doi.org/10.2307/833796).
- [31] K. Sudirga, H. Santosa, and D. Kustiyanti, "Jejak Karawitan dalam Kakawin Arjuna Wiwaha: Kajian Bentuk, Fungsi, dan Makna," *J. Hasil-Hasil Penelit. Inst. Seni Indones. Denpasar*, vol. 3, no. 1, pp. 471–481, 2015. doi: [10.31091/sw.v3i0.218](https://doi.org/10.31091/sw.v3i0.218)
- [32] J. Kunst, *Hindu-Javanese musical instruments*. Springer Science & Business Media, 2013.