



Identification of Philosophical Architecture Transformation Form of Passenger Terminal Building of Kertajati Airport: Comparison of Visual Features of Merak Bird (peafowl) and Merak Dance

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ABSTRACT

Kertajati Airport in Majalengka, West Java is known to have an attractive architectural design with a characteristic expression of "Merak" which can be seen in several parts of the passenger terminal building, especially recognized on the roof and facade. Based on the publication of PT. West Java International Airport (BIJB) is a Regional Owned Enterprise (BUMD) responsible for the construction and management of Kertajati Airport, this airport design carries the concept of "Merak" which is referred to as a representation of the local icon of West Java. The purpose of this study is to identify the design ideas that underlie the architectural design concept of the Kertajati Airport terminal building so that the philosophical meaning that is transformed into the architectural form of this airport is the embodiment of the local expression of West Java Province can be confirmed. Through the identification of visual characteristics in several parts of the architecture of the passenger terminal building, it can be concluded that the architectural design of the Kertajati Airport terminal building is more likely to adopt the transformation of the body shape of the Merak bird than the Merak Dance. This can be seen from the results of the identification of the architectural form of the Terminal building on the typology of the building mass, the segmentation of the building, the shape of the roof, the details of the roof, and the part of the facade which are compared with the visual characteristics of the morphological form of the Merak and the visual characteristics of the costumes of the dancers of the Merak Dance

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1. INTRODUCTION

The establishment of the *Kertajati* Airport in *Majalengka*, West Java is quite a public concern, especially the people of West Java who have long been waiting for the presence of a representative airport which is said to be the second largest after *Soekarno Hatta* Airport, *Cengkareng*. Apart from being the forerunner of the *Aeropolis City* mega project (Tjahjono and Yuliawati, 2017) which will have an impact on the economic development of the surrounding area (Jimika, 2019), the *Kertajati* airport terminal building is known to have a unique design by displaying the expression of the shape of the building that adapts the identity of the airport.

Local people by raising the *Merak* as an airport icon (Purnomo et al., 2020). One of the typical endemic bird species of the archipelago, it is also a source of inspiration for traditional *Priangan* arts as seen in the *Merak* Dance and the *Ngibing Merak batik* motif.



Figure 1. Front View of Kertajati Airport Terminal Building

Source: www.bijb.co.id

As published by PT. West Java International Airport (Bandarudara Internasional Jawa Barat/IJB) on its official website, the design concept of *Kertajati* Airport carries the *Merak* as a representation of the icon of West Java. This statement is explained through conceptual visualization in the form of a hand sketch that illustrates the concept of transformation from the shape of a *Merak* into an expression of the architectural form of the *Kertajati* Airport terminal (See Figure 2). In the sketch, there are several clues in the form of keywords written as explanations of conceptual ideas including: "*Merak*", "welcome", "main terminal", "body", "entrance", "head", "concourse, and "wing".



Figure 2. Sketch of Kertajati Airport Design Ideas

Source: Annual Report PT. BIJB Tahun 2018

In the releases on various media that are disseminated to the public (such as those that appear in online media releases in Figures 3 and 4), the philosophy of the shape of Kertajati Airport is often associated with the objects of *Merak* and *Merak* dance. As the name implies, the *Merak* Dance is known as a traditional Sundanese dance that is directly inspired by birds which are known to have the beauty of their tail feathers when they expand and their eye-catching movements (Setiawan et al., 2021) (Mulyani, 2020). This dance is usually performed in various ceremonial events such as wedding ceremonies to welcoming guests. This philosophical concept is in line with the special function of the airport as a "welcoming" building for airplane passengers who land from the air.



Gambar 3. Sketsa Gagasan Desain Bandara Kertajati.

Sumber: Annual Report PT.BIJB Tahun 2018

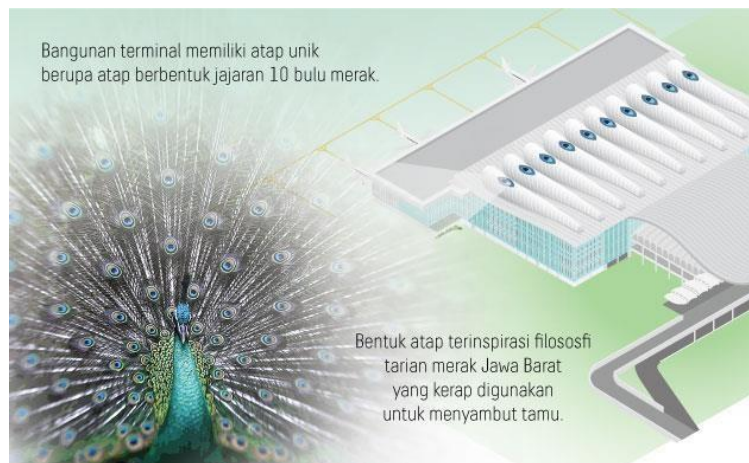


Figure 3. The philosophical explanation of Kertajati Airport terminal building design is based on online media releases.

Source: <https://interaktif.kompas.id/baca/bandara-kertajati/>

1.1. Aesthetic Expression of Kertajati Airport as a Reflection of Local Philosophy

As a special building that has a fairly high complexity, airport design is required to refer to several strict standards and regulations (Wisesa, 2021). Based on international references, airport design guidelines refer to IATA provisions. In particular, airport planning guidelines in Indonesia have been regulated through the Decree of the Minister of Transportation Number 20 of 2005. The study of the shape of the building mass must adjust to several requirements that can support the creation of a representative, safe and comfortable atmosphere in the building. In the context of airport design in Indonesia, according to the direction of the Director-General of Civil Aviation regarding airport design standards regulated through SKEP/347/XII/1999, in addition to functional requirements that must be met, planning must pay attention to aesthetic values that reflect the identity of the locality (Purnomo, 2020). As quoted by their book, Salura and Gunawan (2001), said that in almost every airport in Indonesia, the concept of the building becomes a symbol that expresses the "language" of architecture, which is a form of conceptual meaning in the form of analogous forms, symbols, and concepts, the roots of each local identity.

At Soekarno Hatta International Airport, which is a cultural representation At the national level, architectural concepts (Permana et al., 2020) rooted in traditionality can be found, as seen in several architectural elements such as roofs, expressions of building facades (Wijaya and Permana, 2018), and decorations that reflect the philosophical identity of the rich culture of the archipelago, while at Sepinggan Airport, Balikpapan, for example, the expression of architectural philosophy is shown in a facade that represents "forest" as a natural characteristic of East Kalimantan, decorated with decorative Dayak motifs. At Hassanudin Airport, Makassar, you can see the shape of a *phinisi* boat which has long been an icon of the maritime glory of Bugis culture. At the terminal building of Airport Kualanamu, North Sumatra, there is a distinctive arch on the roof that resembles the shape of a row of palm oil, which is a local commodity



Figure 4. Architectural expressions that reflect the characteristics of regional localities in several airport terminals in Indonesia (1) Terminal 2 of Soekarno Hatta International Airport. 2) Sepinggan Airport. 3) Hasanuddin Airport and 4) Kualanamu Airport)

In the context of the design of the Kertajati Airport terminal building, this building design approach is also intended to reflect the context of its locality by taking a theme that contains traditional symbols typical of Tanah Pasundan (Purnomo et al. 2020). The *Merak* was chosen as an identity concept that has a symbol of beauty as attached to the characteristics of the *Merak* the *Merak* dance.

1.2. Research Purposes

This study aims to identify the philosophy of transforming architectural forms in the terminal building of Kertajati Airport by tracing the symbolization of forms and visual characteristics between "*Merak*" and "*Merak* dance" which are widely mentioned as philosophical inspirations which are considered as representations of local identity in West Java. By referring to various literature that reveals the two visual characteristics of these objects (*Merak* and *Merak* Dance), it is hoped that the form of inspiration that underlies the creative design of the Kertajati Airport passenger terminal building can be found as a reference for future architectural design approaches.

2. LITERATURE REVIEW

2.1 Architecture and architectural forms

Architecture, as stated by the classical architectural master, Vitruvius, in his book known as the oldest reference, *De Architectura*, is an inseparable manifestation of beauty, strength, and usefulness. According to his book, *Pengantar Arsitektur*, Bahar said that architecture is a form of systematic integration of various branches of science such as mathematics, humanities, science and technology, philosophy, history, and others. However, architecture is not only about form, but also a form of human expression, which must also be assessed from the context of the human side (Tutuko, 2005). How to assess architectural works will depend on the critical level that a person has. Interpretations on each side contained in architectural works are not absolute. In producing an architectural work, many approaches are used as strategies in the design process.

In his book, *Design strategies in architecture: an approach to the analysis of form*, Geoffrey H. Baker describes several aspects of the principles that are used as guidelines in designing. Analytical aspects that influence the strategy of designing architecture according to Baker include the role of architecture, aspects of form, and architectural analysis (the analysis of architecture).

According to Baker (2003) Architectural elements that play a role in the analysis process include natural factors, culture, site and space programs, structures, and geometry. Through the approach chosen by the designer, which is directly or indirectly influenced by internal and external conditions, architecture is ultimately a work of art that has specific forms and characteristics that can be recognized by observers as a reflection of the creativity of the designer (Muchlis and Ishomuddin, 2016).

2.2 Transformation as an Architectural Design Approach

Antoniades in his book *Poetics of Architecture* defines transformation as a process of changing shape gradually until it reaches the ultimate stage. According to Antoniades (1990) These changes are created by providing external and internal influences that will direct changes from previously known forms. Laseau divides the nature of transformation as geometric transformation, ornamental transformation, reverse transformation. Antoniades at least mentions three architectural transformation strategies, namely traditional strategies, borrowing strategies, and deconstruction or decomposition strategies. The traditional strategy is the most pragmatic approach by seeking changes in form that are limited by physical elements such as site conditions, the function of space programs, and the ability of the architect himself. This strategy is the initial approach for a designer in transforming his ideas into the concept of architectural design.

2.3 Nature and Culture as Inspiration for Architectural Forms

The architect as the main creator in the design of architectural work has an intense role and responsibility in initiating the basic concept of designing an architectural object that is contextual to the surrounding environment (Susanti et al., 2020). As a human being, an architect will be greatly influenced by the environment in which he lives and is recognized in the process of finding concepts in designing (Ettehad et al, 2014). The architectural transformation that is inspired by the physical form of living things into architectural forms is known as biomorphic architecture (Supriatna and Handayani, 2021) (Supardjo, 2014).

The form of living (Kencanasari et al., 2020) things adapted into the concept of architectural forms can be in the form of plants, animals, or other natural phenomena such as cobwebs, bird nests, bones, and so on. Some examples of architectural works that have the characteristics of transformation (Permana & Wijaya, 2017) from animal forms are the works of architect Antoni Gaudi who are known to have concepts that are close to nature (Supardjo, 2014), including *Cassa Battlo* and *Cassa Milla*. Both aesthetically adapt the characteristics of bird nests, human bones, and iguanas as the basic inspiration in creating these architectural masterpieces.

2.4 Visual Characteristics of *Merak* and *Merak* Dance

Merak is endemic birds typical of East Asia and South Asia whose populations in Indonesia are spread across Java Island, namely in *Ujung Kulon* National Park, Banten; *Meru Betiri* National Park, Alas *Purwo* National Park, and *Baluran* National Park, East Java. One of the *Merak* species that are often found in the archipelago, especially in Java, is the Javan Green *Merak* (*Pavo muticus*) which is currently a rare bird species and is protected by law. The habitat of this bird is forest and scrub. The green *Merak* is known as a type of bird that has beautiful feathers, a melodious voice, and uniqueness in shape and behavior. Anatomically, the adult green *Merak* has golden-green-blue feathers with a shiny texture, with a green crest, on the beak, spurs, and legs are grayish black and the face is navy blue with yellow on the upper edge and yellowish on the bottom. While on the wings there are brown feathers and bluish-green color on the tail.

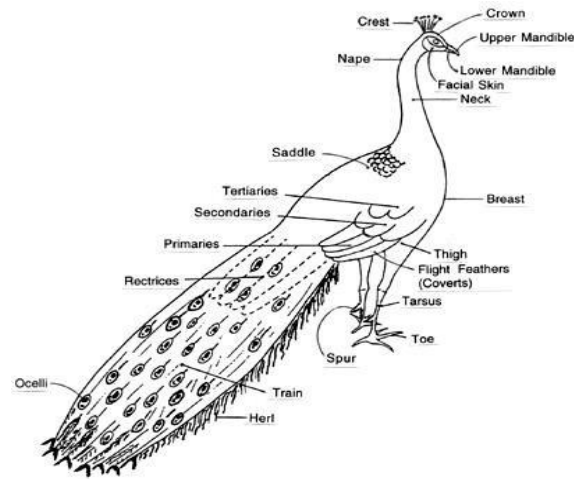


Figure 5. Anatomy of the Green Merak
(www.peafowl.org)Source: Septiana, 2009

The body shape of the *Merak*, which is known for its charm in the beauty of its feathers and the peculiarities of its behavior, has inspired the creators here in creating the art of *Merak* Dance. This dance is known as an attractive West Javanese art with its movements supported by the nuances of sparkling costumes that depict the physical beauty of the *Merak*. This dance, as the fruit of Sundanese culture, has been widely known as a trademark for the typical Priangan dance art (Kartiyani, 2018). As the name implies, the *Merak* Dance depicts the charm of a *Merak* showing the beauty of its feathers dancing in the wild. At the *Merak* Dance performances, dancers usually wear costumes that display makeup and accessories that symbolize the beauty of the *Merak*, especially on the feathers on its tail. The *Merak* Dance has movement characteristics that symbolize the contortion of an agile *Merak* such as the motif of *kokoer*, *gegebreg*, *Ulin Merak*, and *hiber Merak*. The *Merak* Dance was first created by R. Tjetje Somantri in 1955 and was performed at the Asian-African Conference which was held at Gedung Merdeka, Bandung (Hidayat, 2020). Then in 1965, the *Merak* Dance was further developed by Irawati Durban Ardjo. Currently, the *Merak* Dance is often performed in various ceremonial events such as weddings to welcoming processions. The *Merak* Dance is an art that is staged by combining visual beauty through movement and the beauty of the costumes accompanied by *gamelan* (Mulyani, 2020). The *Merak* Dance has a unique characteristic that is easily recognizable from its appearance, both in the form of costume visuals and movement characteristics.



Figure 6. The performance of the Merak Dance dancers with costumes inspired by Meraks.
Source: Kartiyani, 2018


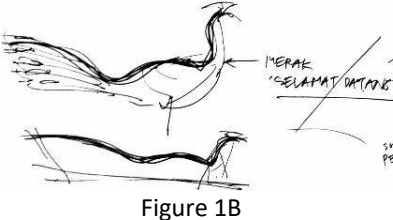



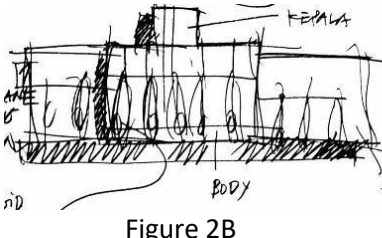

Some parts of the *Merak* dance costume which are known as forming the hallmark of the *Merak* dance costume are *siger* (crown), *Susumping*, *giwang* (earrings), shoulder clasps, *garuda mungkur*, wristbands, *kemben*, tail, belt, *kacih*, shawl, and *sinjang* (Hidayat: 2020).

3. METHODOLOGY

This study uses a qualitative descriptive method by identifying, comparing, and tracing the characteristics through conceptual documents of Kertajati Airport, especially in the form of idea sketches, planning documents, and observations on the physical terminal building, so that it can be concluded whether the philosophical form of Kertajati Airport has shown a form that represents identity. local West Java as often published in various media.

In reviewing and exploring the transformative expression of the Kertajati Airport terminal building, identification was carried out on the architectural parts of the airport terminal building, namely: 1) Typology of building mass, 2) Roof shape, 3) Detail of roof covering, 4) Landside roof slab, 5) landside facades and 6) interior elements. The architectural parts of the terminal building were chosen as the physical elements of the building being studied because they have specific characteristics that start from the sketch of the idea in the sketch. then compared with the concept of architectural transformation based on sketches of ideas and visual characteristics that come from the source of inspiration for ideas, namely the *Merak* and the *Merak Dance*.

4. RESULT AND DISCUSSION

Identification of Kertajati Airport Terminal Architecture	Concept of transformation based on Idea Sketch	Identified visual characteristics based on inspiration from Meraks and/or Merak dance
1. Typology of Building Mass		
 <p data-bbox="333 1438 437 1464">Figure 1A</p>	 <p data-bbox="746 1413 850 1440">Figure 1B</p>	 <p data-bbox="1177 1263 1249 1323">Figure 1C</p>  <p data-bbox="1177 1538 1249 1599">Figure 1D</p>
2. Building Segmentation Division		
 <p data-bbox="338 1977 432 2004">Figur2A</p>	 <p data-bbox="743 1933 852 1960">Figure 2B</p>	 <p data-bbox="1153 1946 1262 1973">Figure 2C</p>

3. Roof Shape



Figure 3A

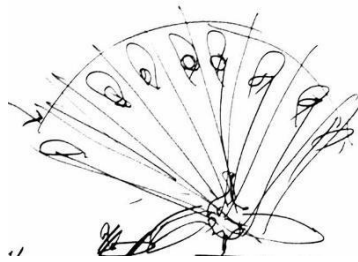


Figure 3B



Figure 3C

4. Roof Details



Figure 4A

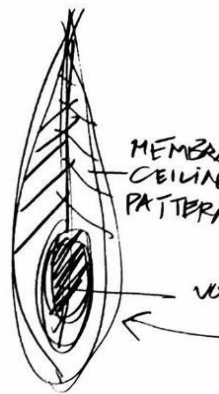


Figure 4B

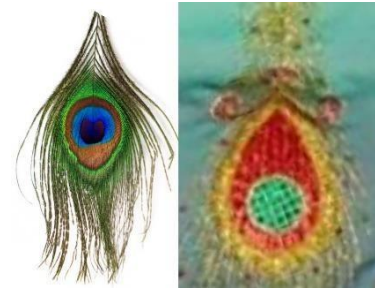


Figure 4C

5. Landside Facade



Figure 5A



Figure 5B



Figure 5C

4.1 Typology of Building Mass

The typology of the mass of the Kertajati Airport terminal building (Figure 1A) consists of the main building equipped with a concourse on the second floor which is equipped with a departure curb where passengers drop off from the arrival direction in the form of a flyover to carry out the departure procession (check-in, security checkpoint). and waiting for the plane). In the sketch (Figure 1B), a sequence of sketches depicts the transformation process from the form (Gunardi et al., 2021) of a *Merak* standing sideways to the front view (Figure 1B). The image of a *Merak* can be identified from the depiction of a complete body shape legs, body and wings, tail and head) as seen in the existing form of the building.

The orientation of the face/facade of the building mass indicated by the "head" appears to be facing the land side which "captures" the flyover from the direction of arrival. Referring to the text of the sketch that reads "welcome", the philosophical message of "welcome" that appears in the concept of "welcome" seems to be aimed at passengers coming from the direction of departure. This can be seen from the position of the "tail" which is "expanding" on the airside towards the land side (departure area). Meanwhile, the position of the terminal building actually "backs up" to the airside where the plane is coming.

This is reinforced by the elliptical elevation position of the tail feathers which seems to "show" the beauty of the feathers towards the land side which is the direction of arrival of departing passengers. In general, the typology of the basic mass of the terminal building can be easily recognized as transformatively formed from the construction of a *Merak's* body consisting of "head", "body/wings" and "tail", as well as having the same principle of an embodiment of shape transformation as the *siger* (crown). the dancer of the *Merak* Dance which also takes the form of the head, body, and wings as well as the tail of a *Merak* (Figure 1C).

4.2 Building Segmentation Division

The roof design of the Kertajati airport can be seen clearly through aerial imaging (as captured in Figure 2A). Passengers from the plane that will land also have the opportunity to observe the shape of the undulating roof of the terminal building for a few seconds from a higher elevation angle. The undulating shape of the roof of the terminal building (Figure 2B) follows the flexibility of the *Merak's* body shape as shown in the sketch (Although in the sketch (Figure 2B) the basic shape of the *Merak's* tail is depicted as resembling a fan-like its original anatomical shape (Figure 2C), in adaptation to the shape of the building mass in the design still follows the basic shape of the building plan, which tends to have a square base. This shows that the concept of transformative form can be adapted to follow the shape of the airport plan which has a more functional purpose. The distinctive "eye" (Figure 2C) is also adapted to the roof in the form of a row of ten "waves" of roofing membrane material.

4.3 Roof Shape

Transformatively, the body shape of the *Merak* in the side view was adapted to the shape of the building (Figure 5A). Furthermore, isometrically the cut concept is transformed into a perspective concept of a terminal building consisting of the "body" as the main terminal building, the "wing" as the concourse or extension platform of the terminal building, and the "head" as the facade of the land side of the terminal building. The shape of the roof in the middle looks "expanded" with the transition of the volume of the corrugated membrane roof getting bigger towards the airside. The concept of "expanding" on the roof is also an expression inspired by the expanding state of the *Merak's* tail as well as the opening of the wings (which symbolizes the tail) performed in the *Merak* Dance.

4.4 Roof Details

The roof covering of the terminal building (Figure 2A) is a combination of metal material and membrane skin which is supported by a steel pipe structure with a wide span that is attractively curved. The flexible roof design forms an image of a bird's tail growing (Figure 2C) which functions as a "skylight" to maximize the potential of natural light from outside into the interior of the terminal building. On the part of the membrane material that forms ten longitudinal rows, a printing bruise is visible with the eye pattern of a *Merak's* tail feathers (Figure 3A). The "eye" effect reflected by this membrane effect is seen as a characteristic that emphasizes the transformative theme of the *Merak* in the airport terminal building. When examined more closely, the shape of the eyes printed on the membrane material appears to take on a "whole"

shape as a feature of the *Merak's* tail feathers rather than the more stylized style of the "tail" costume of the *Merak* Dance (Figure 3C).

4.5 LANDSIDE FACADE

Facade elements that look striking on the land side of the terminal are the *listplank* and secondary skin in the form of games. The design of the roof *listplank* of the terminal building has a characteristic in the form of a firm repetition of waves with the suffix being a steel pipe extension that sticks out like the crest of a *Merak*. This aesthetic accent further strengthens the characteristics of the terminal building on the side of the building facade which is recognized as adapted from the physiological part of the *Merak* on the head (Figure 4C). The repetition of the *listplank* of this aluminum composite panel material resembles the pattern on the crown that is usually worn by *Merak* Dance dancers (Figure 4C). Meanwhile, on the secondary skin membrane, a triangular geometric repetition can be seen which can be analogized as "scales" or identical feathers as "clothing" or covering the body of a *Merak*. These "scales" also appear as a feature on the sequins that adorn the costumes of the *Merak* Dance dancers. Secondary skin uses three main colors, namely white, gray and green. These colors, apart from being identical to the colors on the West Java Provincial Government logo, are also close to the dominant color characteristics of the *Merak* Dance costume (Figure 4C).

5. CONCLUSIONS

The *Merak* as a philosophical identity that was appointed as the basis for the architectural form of the Kertajati Airport terminal building cannot be separated from the existence of the *Merak* Dance which is widely known as a traditional dance creation that is inherent as an art that is rooted and developed in West Java. The *Merak* Dance is also considered to have a contextual philosophy with the main function of the airport as "welcoming" the arrival of passengers, as is the case with the *Merak* Dance which is usually performed in ceremonial events welcoming guests. Even so, based on population distribution and local animal identity, *Merak's* is not identified as a type of animal that becomes the official identity of fauna typical of West Java Province. However, as shown in the architectural expression that appears in the typology of building form, the segmentation of the building mass, the shape of the roof, the details of the roof covering, and the facade of the land side of the main terminal building, it seems that it refers to the physical form of the *Merak* itself rather than the shape that is more representative of the *Merak* Dance both in terms of movement and costume as a traditional art of West Java. This can be seen from the transformative form of the terminal building's architecture which is more anatomically typical of *Merak's* in the form of "head", "body" and "wings" as well as special physical characteristics of *Merak's* such as the "eye" motif on its tail feathers and "crested crest" on the head.

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