

**REPRESENTATION AND DIGITAL MICRO
VISUALISATION ON MOVEMENT OF JOGET
SERAMPANG LAUT THROUGH DIGITAL
MOTION CAPTURE**

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by

MOHD FIRDAUS BIN MOHD HERROW

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**REPRESENTASI DAN VISUALISASI MIKRO PADA PERGERAKAN
JOGET SERAMPANG LAUT MELALUI ALAT RAKAMAN GERAK
DIGITAL**

ABSTRAK

Kajian ini meneliti usaha pemeliharaan dan pendokumentasian digital terhadap tarian tradisional Melayu, dengan memberi tumpuan khusus kepada tarian *Joget Serampang Laut* melalui aplikasi teknologi penangkapan pergerakan (motion capture) yang canggih. Kajian ini bertujuan untuk menangani jurang kritikal dalam pemeliharaan warisan budaya tidak ketara, khususnya dari aspek dokumentasi terperinci dan pemindahan bentuk-bentuk tarian tradisional yang semakin terancam akibat arus pemodenan dan asimilasi budaya. *Joget Serampang Laut*, yang berakar umbi dalam budaya dan falsafah Melayu, mencerminkan nilai, kepercayaan dan identiti masyarakat Melayu, sekali gus menjadikan pemeliharaannya penting dalam memastikan kesinambungan budaya. Objektif utama kajian ini adalah untuk mengenal pasti komponen asas, falsafah serta representasi simbolik yang terkandung dalam pergerakan tarian tersebut, di samping menganalisis bagaimana alatan digital boleh dimanfaatkan secara berkesan bagi mendokumentasi, memvisual dan mencadangkan pola mikro visual corak pergerakan tersendiri yang menyokong intipati falsafah tarian berkenaan. Menggunakan pendekatan kaedah campuran, kajian ini menggabungkan pengumpulan data kualitatif dan kuantitatif, termasuk kajian kes, temu bual separa berstruktur bersama pengamal seni dan ahli akademik, serta rakaman penangkapan pergerakan. Data dianalisis menggunakan pendekatan analisis kandungan, perisian

Cortex Motion Analysis, dan kerangka semiotik. Kerjasama dengan pengamal tarian tradisional serta pakar budaya visual memastikan ketulenan dan ketepatan data yang diperoleh dan dianalisis. Dapatan kajian menunjukkan bahawa teknologi penangkapan pergerakan berjaya merakam secara terperinci pergerakan halus *Joget Serampang Laut*, sekali gus menghasilkan dokumentasi digital yang menyeluruh dan memperlihatkan corak pergerakan yang tersendiri. Di samping itu, penciptaan elemen mikro visual dalam *Joget Serampang Laut* menyokong intipati falsafahnya melalui bentuk dan rupa yang mencerminkan serta memperkukuh makna falsafah tersebut. Pendekatan inovatif ini memberikan dimensi baharu dalam aspek pemeliharaan, analisis dan penghargaan terhadap nilai budaya. Kajian ini membincangkan bahawa integrasi teknologi penangkapan pergerakan dengan bentuk tarian tradisional bukan sahaja meningkatkan ketepatan dan perincian dalam usaha pemeliharaan, malah turut menyediakan platform dinamik untuk pendidikan dan penyebaran budaya. Penyelidikan ini turut menonjolkan makna budaya dan falsafah yang signifikan yang terbenam dalam setiap pergerakan tarian, sekali gus menekankan kepentingan memelihara elemen tidak ketara ini bagi mengekalkan identiti dan kesinambungan budaya masyarakat Melayu. Cadangan kajian merangkumi pembangunan lanjut arkib digital, peningkatan kerjasama antara pengamal budaya dan teknologis, inovasi platform pembelajaran imersif berasaskan penangkapan pergerakan, serta pengintegrasian data pergerakan dalam penyelidikan budaya yang lebih luas seperti rekaan dan penjenamaan, busana dan muzik. Kajian ini menyumbang secara signifikan kepada wacana warisan digital dengan mengetengahkan teknologi penangkapan pergerakan bukan sahaja sebagai kaedah pemeliharaan, tetapi juga sebagai medium pemugaran budaya, sekali gus mempersembahkan *Joget Serampang Laut* sebagai arkib hidup pemikiran falsafah Melayu yang divisualkan melalui pergerakan.

REPRESENTATION AND DIGITAL MICRO VISUALISATION ON MOVEMENT OF JOGET SERAMPANG LAUT THROUGH DIGITAL MOTION CAPTURE

ABSTRACT

This study the preservation and digital documentation of Malay traditional dance, with a particular focus on *Joget Serampang Laut*, through the application of advanced motion capture technology. The importance of this research lies in addressing the critical gap in the preservation of intangible cultural heritage, specifically the detailed documentation and transmission of traditional dance forms, which are under threat from modernization and cultural assimilation. *Joget Serampang Laut*, a dance deeply embedded in Malay culture and philosophy, reflects the values, beliefs, and identity of the Malay people, making its preservation crucial for maintaining cultural continuity. The primary objectives are to identify the fundamental components, philosophy, and symbolic representations within the dance movements of *Joget Serampang Laut*, while also analyse how digital tools can be effectively utilized to document, visualize, and purpose the micro visual motion signature patterns to support the dance's philosophical essence. Employing a mixed method approach, the study combines qualitative and quantitative data collection, including case studies, semi structured interview with both partitioners and academicians and motion capture recordings. Data analysis is conducted using content analysis, Cortex Motion Analysis software and semiotic analysis. Collaboration with traditional dance partitioner and academician in visual culture ensures the authenticity and accuracy of the data

collected and analysed. The findings demonstrate that motion capture technology effectively captures the intricate details of *Joget Serampang Laut*, providing a comprehensive digital record that reveals distinct motion patterns. Additionally, the creation of micro visual elements in *Joget Serampang Laut* supports its philosophical essence through shapes and forms that uphold and reflect its philosophy. This innovative approach offers new insight into preservation, analysis and enhancement cultural appreciation and values. The study discusses that the integration of motion capture technology with traditional dance forms not only enhances the accuracy and detail of dance preservation but also provides a dynamic platform for educational and cultural dissemination. The research highlights the significant cultural and philosophical meanings embedded within the dance, emphasizing the importance of preserving these intangible elements to maintain the cultural identity and continuity of the Malay community. The recommendations suggest further development of digital archives, increased collaboration between cultural practitioners and technologists innovating immersive learning platforms using motion capture, and integrating motion data in broader cultural research such as design and branding, costume and music. This research contributes significantly to the discourse of digital heritage by proposing motion capture as a method not only for preservation but also for cultural revitalisation, while presenting *Joget Serampang Laut* as a living archive of Malay philosophical thought visualised through movement.

CHAPTER 1

INTRODUCTION

1.1 Overview Cultural and Heritage

Malaysia is highly known as a country that is diverse in cultural and heritage aspects. This happens because of a unique combination of ethnicities, namely, Malays, Chinese, Indians, and numerous indigenous racial groups that own a variety of traditions, customs, and beliefs that strongly reflect their community. Cross-cultural adaption and assimilation among ethnic groups have developed Malaysia into a rich and complex country with a rich history and blended cultures and heritages, and it is marked as one of the unique, culturally identifiable countries in the world. Culture and heritage are a representation of divine and intellectual treasures for all civilisations. The connotation of culture in society has significantly deepened as a result of the human and identity development of every ethnicity around the world. According to Yoshida (2004), Yim (2004), and Amin et al. (2011), the cultural heritage of indigenous people or other cultural communities reflects their history, values, and beliefs, which form their cultural and social identity.

Culture is practised by people in their daily routine activities, such as actions, norms, traditions, and characters. According to Idris et al. (2016), Amin et al. (2011), and Manaf and Ismail (2010), culture encompasses the historical heritage, present existence, and intergenerational transmission that play important roles in shaping a society. In addition, culture can be represented by ethnic activities such as dances,

music, games, and poetry. Luciani et al. (2013) and Rohidi (2015) define culture as a real condition, situation or context of space and time where civilisation grows. They added that culture can act as an element or universal to ethnicity, which includes religion, language, race, art, technology, knowledge, source of income or economy, and a symbol of generation character and identity. Previously, Tylor (1871) described culture as a complex whole and unity, which includes knowledge, belief, art, morals, law, custom and any other capabilities and habits acquired by man as a member of society. In short, culture has been seen as a crucial element that divides every ethnicity in specific directions and beliefs to shape a unique, vibrant, and diverse society.

Heritage is belonging to the ethnicity that has been inherent from generation to generation. It is considered a unique, exclusive, and irreplaceable legacy that forms and shapes the people to become a better society to live in and pass on to future generations to hold on to it with respect and esteem. According to Manaf and Ismail (2010), heritage is the legacy of the past, the current practice, and those that will be passed on to future generations. Md Noor et al. (2013) believe that heritage is defined as the elements from the past that are later carried from one generation to another. Furthermore, Ahmad (2006) states that heritage is shared, learned, and transmitted across generations. Heritage is related to the past, which should be preserved and maintained as a legacy or ethnic treasure and should be appreciated, practised, and proud of by the modern young generation. Additionally, heritage is a root of society's culture that plays a significant role in defining a society's politics, sociology, thought, business, and worldview. Heritages are important to understand the nature or profile of a community's characteristics, traditions, and values. It is a clue to the past and how society has evolved and transmitted from time to time in response to their environment.

Heritage can be a result of the interaction between nature and history to provide a sense of identity and continuity among ethnicities.

Culture and heritage need to be preserved and conserved to guarantee the aesthetic value and uniqueness of national treasures at the highest stake for community purposes. This effort is essential to ensure authenticity and cultural continuity that are entrusted and passed on to all generations. Furthermore, these efforts will help elevate cultural heritage assets, enabling recognition on both national and international levels. Preserving culture and heritage in all aspects, such as tangible and intangible cultural heritage, is crucial for maintaining a sense of connection to past traditions and passing them down to future generations as ethnic development and progression. These efforts can be driven by a desire to promote cultural diversity, social cohesion, and sustainable change of traditions.

1.2 Background Study

According to Manaf and Ismail (2010) and UNESCO (2015), heritage is defined as a valuable and ancient legacy not only of each nation but also of humanity as a whole. Heritage is an irreplaceable legacy brought from the past, shapes the present, and will be carried to future generations. World heritage was initially classified into two main categories: cultural heritage and natural heritage (UNESCO, 2015; Hua, 2010; Wallach, 2005). Then, two other categories, mixed cultural and natural heritage and cultural landscape, are proposed on the same level as the existing two categories. All categories give important and significant information to society.

UNESCO (2019) reveals that outstanding universal value refers to cultural and/or natural significance that transcends national boundaries and is of common importance for present and future generations. As such, the permanent protection of this heritage is of the highest importance to the international community as a whole. According to Hua (2010), cultural heritage is divided into two main categories: tangible heritage and intangible heritage. Cruikshank (1992) believes that both are related to the aspects of representing as well as denoting a strong cultural symbol and identity in their own context through things, actions, and words although tangible and intangible heritage have been treated as separate fields of study.

The component of tangible heritage can be seen through buildings, monuments, and sites. Meanwhile, the component of intangible heritage can be found in dances, music, games, and languages. Both components are essential in building the identities of a social community that are reflected in preservation, protection, documentation, restoration, education, and promotion from generation to generation. According to Matusky (2002), preservation involves the process of preserving, keeping, or protecting something valuable. One of the ways to preserve heritage is through performing arts. According to Coogan (2011), performing arts comprise theatre, dance, opera and the circus, which often refers to express artistic communication. Meanwhile, UNESCO defined performing arts as ranging from vocal and instrumental music, dance, and theatre to pantomime, sung verse and beyond. Pušnik (2010) describes dance as the most frequently described way of human expression through movement. Thus, performing art is best referred to as entertainment and an act that involves multiple human senses such as vocal, body movement and creative choreography to create art that can amuse viewers with a set

of performances that has originality, novelty, and uniqueness. In Malaysia, folk dances are also known as performing arts.

Malay folk dances are performed during festivals such as weddings, festive celebrations, parties, and religious ceremonies. Bannerman (2014) and Koff (2012) believe that folk dance is a conscious way of rhythmic movements of the body in a defined bounded space where it communicates through cultural codes. Malay folk dances consist of multi-cultural codes depending on state region, thoughts, beliefs, and religion. These cultural codes serve as silent communication in delivering messages such as wisdom, appreciation, and perception of the ethnic throughout every generation. *Joget* is very popular among the multiracial community in Malaysia because it is one of the famous, entertaining, and exciting folk dances. *Joget* began in Malacca in the 16th century as an adaption of a Portuguese dance called *Branyo* (Muhammad, 2014; Mollyosc, 2011). In *Branyo*, a pair (male and female) of dancers danced to a classic Portuguese song, *Jingli Nona*. Hamidi (2015) believes that *Joget* was a result of assimilation and merging between the East and West cultures to bring diversity and harmony to the Malay ethnic society.

Joget, which is typically danced in pairs or groups with special and specific dance choreography during special occasions like weddings, festivals, and formal ceremonies, is known by multiple names such as *Ronggeng*, *Joget Lambak*, or *Cak Kun Cak*. Nonetheless, Swastiwi and Hanafi (2007) believe that *Joget* is better known as *Ronggeng*. In *Hikayat Hang Tuah*, *Ronggeng* referred to entertainment performances performed by male and female dancers while reciprocating the poem. According to Sinar (1990), the dancers were professional dancers who performed upon request and reservation for cabaret shows. *Joget* is also divided into several types of dances that are quite famous and well-known in different states of Malaysia, such as

Joget Serampang Laut, Joget Rental 106, Joget Johore Sports Club, and Joget Pucuk Pisang. In Malacca, *Joget* was known as *Ronggeng* or *Joget Lambak*. It was used for specific rituals on the festival of *Mandi Safar*, which was one of the famous festivals in the 50s and 60s in Malacca. The local community believed that this ritual was to prevent misfortune from happening during the month of *Safar*.

Joget Serampang Laut is one of the oldest and finest types of *Joget* that was used as a foundation to create other types of *Joget* throughout Malaysia. *Joget Serampang Laut* was originally created in the 70s by Seid Manaf, an expert, practitioner, and teacher. Seid Manaf was the mentor to the first generation who inherited the knowledge and skill of *Joget Serampang Laut* through theoretical and practical means, namely Noriah Ahmad and Zulkifli Zain. *Joget Serampang Laut* is a practice based on the religion, beliefs, manners, customs, and lifestyle of the Malay ethnicity. These elements are the main principle in every expression, dance movement, dance pattern, and lyric or *pantun* of the performance of *Joget Serampang Laut*. The dance routine of *Joget Serampang Laut* involves lower and upper body movements with significant dynamic movement in certain joints of body parts.

Technology is one of the important elements in human activities. Lately, technology has grown rapidly in producing hardware and software to help solve many issues and problems. This includes preserving national heritage through digital culture preservation. According to Syu et al. (2018), digital technology has now become an important knowledge and tool for the digital preservation of cultural assets. There are many studies involving the usage of technology as a medium for preserving cultural heritage, either tangible cultural heritage or intangible cultural heritage, to accomplish UNESCO's mission. UNESCO aims to utilise modern technology as a digital platform to achieve and preserve various cultural heritages from different ethnic groups that

creates a gateway for easy access and enables the collection of valuable cultural knowledge for the younger generation (Themistocleous, 2018; Santachiara et al., 2018; Demenchuk et al., 2020; Elfizar et al., 2020).

One (1) of the leading digital technologies that is frequently being used as a medium for archiving information about body motion or movement is motion capture. Motion capture is one of the advanced technologies that are used on many occasions, such as in medical, military, sports, entertainment, film, dance, theatre, and gaming. The technology records analogical motion and transforms motion into rich digital data that can be used for multiple purposes. 3D digital information gives a better all-around display of the characteristics and accuracy of the performance and gathers scientific and structured analysis of data. It is more conducive and offers additional benefits to the digitisation of intangible cultural heritage assets such as preservation, learning, animation, and other purposes compared to text, 2D images, and videos.

In addition, motion capture has a huge advantage in that it captures motion and expression of the subject matter with a high tendency to have precise information. It gives users more depth to realistic experiences by having the propensity to provide an ultra-degree of freedom in movement and high accuracy of metadata in capturing, recording and archiving movement and expression. In general, the usage of motion capture technology in cultural preservation leans towards education and entertainment, such as interactive learning, 3D gaming, 3D storytelling videos, and 3D interactive training. Its use in formal as well as informal education is to achieve digital preservation by offering new ways and new experiences of learning and appreciation of the unique culture and heritage (Syu et al., 2018; Stavrakis et al., 2014; Kovavisaruch et al., 2011; Mustaffa & Idris, 2017).

Art biomechanics provides an analytical description and quantification of the components of movement, including forces, velocity, and acceleration of body movement. Biomechanics in dance gathers information on rigid segments linked at the joints of each body part. These joint motions are clay of brick for exploration and analysis in various studies, including sports, medicine, and performing arts. Art biomechanics in dancing offer both artistic and athletic findings as they are able to identify, describe, and quantify elements of physical skills. Art biomechanics also contribute to the understanding of the artistry of dance by being able to visualise the patterns of movement that are not visible to the naked eye. It can illuminate many intricacies of inconspicuous movements and make them visible without reducing any skill, numerical formula, or graphed pattern.

Semiotics is the study of signs and symbols. Semiotics are used to construct and communicate meaning in various forms, such as language, gesture, culture, and society. Semiotics are a powerful tool for analysing how meaning is created and conveyed. This process is able to give a deeper understanding of how meaning can be interpreted in many ways depending on the context and culture in which it is used. According to Bouzida (2014) and Fauzan and Sakinah (2020), Roland Barthes' semiotic theory highlights the connection between written languages, visual imagery, and individual experience, which can help to explain how social and cultural symbols are established within specific community contexts. Based on Roland Barthes' semiotic theory, there are two types of semiotics: denotation and connotation. Denotation refers to the literal or primary meaning of the sign. Meanwhile, connotation refers to the cultural and contextual meanings that a sign carries. Barthes also highlighted that the concept of myth in the signs is reinforced by cultural beliefs, customs, and values.

Research methodology is an essential element that is implemented systematically to investigate research questions and achieve planned research objectives. Other than that, it includes a rigorous and systematic process to ensure the reliability of the research findings and increase the validity of the information. There are several primary methods applied in various stages to ensure the accuracy of the findings, including case studies, preliminary studies, and mixed methodology in data collection, as well as the use of proper instruments in data analysis and validation techniques. This approach helps establish an appropriate research process flow to gather, organise, analyse, and validate data to achieve the study's main objectives and purpose. It also ensures systematic data collection and analysis, leading to accurate and reliable research findings.

According to Shan et al. (2010) and Azraai et al. (2018a), a micro-visualisation study using motion capture technology is considered an alternative approach to provide greater visual meaning that can give a new perspective to Malay traditional dance, particularly its intricate and subtle dance routine movement which each movement convey meaning and story. One of the key elements in motion signature is a set of dance movements that are unique to the particular style and create patterns and rhythms that are not visible to the naked eye. Using micro-visual images as metaphors for human experience can be impactful for communicative content that is connected to physical gestures, which often have implicit meaning that can be understood in either an experiential or cultural context. Hence, a micro-visualisation study allows the construction of a deep understanding of philosophy and the cultural and historical contexts in which the dance originated.

In conclusion, heritage is an invaluable legacy passed down through generations, shaping both the present and future. It encompasses cultural and natural elements, as well as mixed heritage and cultural landscapes, all providing significant insights to society. The universal value of heritage transcends national boundaries, necessitating global protection. Cultural heritage is divided into tangible aspects, such as buildings and monuments, and intangible aspects, including dances, music, and languages. Performing arts, including dance, play a crucial role in heritage preservation. Malay folk dances, like *Joget*, reflect cultural diversity and historical assimilation, serving as a medium for conveying cultural codes and societal values. Modern technology, especially motion capture, is vital for the digital preservation of intangible cultural heritage, offering precise and comprehensive documentation. This technological approach, combined with art biomechanics and semiotics, provides an in-depth analysis and understanding of traditional dance movements, enhancing cultural education and heritage appreciation of Malay traditional dance and its cultural significance towards the community.

1.3 Problem Statement

The world has lost thousands of linguistic communities, including epic stories, tales, and rituals. Smeets (2004) mentions that more than 3000 languages in the world will not survive in the next two centuries. Not only are languages threatened, but music, dance, ritual performances, culinary and occupational traditions, and craftsmanship (Kurin, 2004). Nonetheless, Kico et al. (2018) believe that the technology used to capture and model performing arts, especially folk dances, is limited. According to Kirshenblatt-Gimblett (2014), intangible heritage is a source of identity deeply rooted in history for every ethnic group in the world. Bedjaoui (2004), Yim (2004), and UNESCO (2013) add that intangible cultural heritage is encountered as truly endangered, devalued, or both. As a result, many intangible cultures, such as language, music, literature, food, and performing arts, are facing loss and disappearance because of a lack of preservation activities, appreciation and understanding of the fundamental knowledge that is being practised by the early generation. This can lead to misleading or lost identity that can affect the hierarchy of the ethnic, especially towards the young generation.

Numerous forms of performing arts are under threat today (Idris et al., 2016). Human conflict, greed, and a lack of respect and awareness for cultural heritage are human blunders that weaken an ethnic group's intangible heritage. Thus, humans need to be more responsible and try to maintain and conserve culture and heritage as the knowledge of civilisation. According to Beng (2005), *Ronggeng* or *Joget* led to a new style of dance and music that was promoted by pop stars or the government as an agenda of promotion and cultural diversity. However, the new *Ronggeng* has become national, while the folk form is fast disappearing as valuable knowledge to society. He

adds that *Joget* experiences ‘sanitised’ and ‘modernised’ periods where changes have been made to accommodate contemporary tastes to function as an identity marker. These changes have been largely unsuccessful, as present-day *Ronggeng* is considered to be a diluted form of its original. It is still distressing, and only partial resources are in existence.

Most of the preservation of intangible cultural heritage information is limited to surface knowledge, such as documentation. According to Stavrakis et al. (2012) and Kico et al. (2018), textual, imagery, and video documentation of traditional dances do not provide enough detail for archiving purposes. Accordingly, there is limited, accurate information regarding the dance movement of *Joget* and its meaning. Most of the time, *Joget* is taught by instructors using physical demonstration and human guidance, making students face challenges to understand and familiarise the routine.

Noriah Ahmad, the head cultural officer at Institut Warisan Melaka (INSWA Melaka), has been practising *Joget* for over 50 years. She is the expert on *Joget Serampang Laut* and *Dondang Sayang*, both of which are considered the main cultural identities of Malacca heritage. According to her, *Joget Serampang Laut* was invented by the famous practitioner Seid Manaf (deceased). Then, the dance routine was passed down to her and his friend, Zulkifli Zain (deceased), to continue the legacy. This shows that she is the only reliable person, the only remaining partitioner, and the first generation to preserve the original and authentic beauty of *Joget Serampang Laut* through theoretical and practical means. She acknowledges that limited studies have been done on the history, philosophy, recording, visualising, and interpreting the meaning of the dance movements of *Joget Serampang Laut*. She also added that there is a belief that every dance step pattern in *Joget Serampang Laut* is imbued with a sign or symbol that can give meaning and reflect an extension of the dance’s philosophy

and Malay philosophy. Thus, *Joget Serampang Laut* can effortlessly be revealed as a truly aesthetic and sophisticated representation of Malay manners and customs.

The recent modernisation and revolution in choreography exhibit positive signs in the development of Malay cultural activities. Nonetheless, its choreography is orchestrated to fulfil certain parties. For example, the dance routine is made faster and livelier without following the philosophy of the Malay dance to satisfy the viewer's desire. This can negatively impact Malay cultural appreciation and understanding. Without referencing the original and fundamental knowledge, there will be a change in the course of the authentic and exquisite Malay traditional tradition.

1.4 Research Question

The research questions for this study were:

- i. Why are the fundamental components, philosophy, and representation of the *Joget Serampang Laut* dance movements important to Malay ethics?
- ii. How can advanced technology, such as new media applications, be manipulated to create archive micro-visualisations in the *Joget Serampang Laut* dance movements?
- iii. How are micro-visual motion signature patterns in the *Joget Serampang Laut* dance movements essential in preservation?

1.5 Research Objective

The research objectives for this study were:

- i. To identify the reasons the fundamental components, philosophy, and representation of *Joget Serampang Laut* dance movements are important to Malay ethics.
- ii. To analyse the application of motion capture in micro-visualisation as suitable digital media to record *Joget Serampang Laut* dance movements.
- iii. To purpose the use of micro-visual motion signature patterns, sign and meaning in the *Joget Serampang Laut* dance movements essential in preservation.

1.6 Significant of Study

Existing research has been discussing the importance of preserving and protecting intangible cultural heritage through new media. Currently, new media serves as one of the best platforms for digitalising and transmitting intangible cultural heritage to the young generation by providing them with guidance and direction (Idris et al., 2016; UNECSO, 2013; Hennessy, 2012; Amin et al., 2011; Manaf & Ismail, 2010). As a result, cultural heritage is becoming digital heritage (Hennessy, 2012). UNESCO (2003) highlights the importance of digital preservation and restoration of valuable cultural heritage, as it is crucial and essential for developing the young generation.

‘...unique resources of human knowledge and expression. It embraces cultural, scientific, and administrative resources, as well as technical, legal, medical, and other information created digitally or converted into digital form from existing analogue resources. Where resources are “born digital,” there is no format but the digital object.’

Culture has increasingly come to be seen as crucial to human development (Matarasso, 2001). He argues that culture is not only a mechanism for or an obstacle to growth but is also intrinsic to sustainable human development. Thus, the development of cultural and heritage diversity should be preserved and promoted as an essential aspect of enhancement for human development and growth. UNESCO (2003) emphasises that intangible cultural heritage should be protected at all

costs. Measures are aimed at certifying the viability of intangible cultural heritage, including its identification, documentation, research, preservation, protection, promotion, enhancement, and transmission, particularly through formal and non-formal education, as well as the recovery of various aspects through digital platforms.

Kabanda (2014) highlights that performing arts directly affect social progress, indirectly contributing to nation branding for economic growth, social inclusion, cultural democracy, and cultural behaviours. Idris et al. (2017) expand on the importance of preserving the novelty of the cultural perspective of performing arts to transmit the original factual information and cultural identity inspiration to the community. According to Kico et al. (2018), preservation includes all actions to prevent the total loss of intangible cultural heritage, particularly dance moves. These actions include recordings, digitisation, and reconstruction of folk dances.

According to Noriah Ahmad, *Joget Serampang Laut*, known as the early genre *Joget*, was invented and introduced into Malay culture and heritage. The choreography of this dance movement involves sophisticated, intricate, and structured movements to reflect the Malay and Malay dance philosophies. She adds the need to preserve Malay culture and heritage, such as performance art, art craft, and linguistics, to impart ethnic values and aesthetic knowledge to the young generation. Explicit and implicit learning of *Joget Serampang Laut* will aid the understanding of the core of Malay culture, including lifestyle, behaviours, and customs, and it will also help foster appreciation for the philosophical underpinnings of the ethnic culture and heritage.

Nowadays, technology has become a tool used in daily human life. Advanced technology, as a result of rapid hardware and software development, has been used in many main areas of expertise and aided working routines. According to Cox (2011), digitisation was seen as opposed to preservation. However, digitisation has shifted

dramatically because it enhances access to heritage documentation. In addition, the development of digitisation offers reliable approaches to expanding usage. Accordingly, advanced technology is able to assess, capture, record, and analyse important and valuable data about intangible cultural heritage.

According to Kovavisaruch et al. (2011), motion capture is used in several attempts for documentation and studies on the movement of physical activities, such as martial arts, sports, and medical purposes. This technology has the advantage of recording movements in intangible cultural heritage, such as folk dances and traditional martial arts, to preserve national heritage for the young generation. Motion capture can use specific algorithms or software to record and extract data with effective and accurate numbers. According to Syu et al. (2018), most motion captures are quite similar, with only a few features that make them different, such as the number of markers and the quality of the camera and software. In general, motion capture can accurately and systematically capture movements.

Motion capture can be a preservation tool due to its technicality in capturing and recording movements. The only concern that needs to be focused on is the type of dance being studied because folk dances have different movements and actions, including step patterns and speed. The various types of dance will lead to different outputs and findings, such as patterns and dynamic movement. Visualisation of the dance movements of *Joget Serampang Laut* through motion capture technology will greatly impact many aspects, such as its preservation, appreciation, and learning experiences.

1.7 Limitation of Study

Motion capture is considered one of the finest tools for capturing dance movements because it is applicable and precise in digitalising, visualising, and analysing movements. According to Mustaffa and Idris (2017) and Azraai et al. (2018), motion capture is one of the advanced digital technologies that can capture and record as well as assess movements by extracting data, labelling, and reconstructing movement in the form of numbers that are accurate and systematic.

The current research emphasised digitising and visualising the dance movements of *Joget Serampang Laut* because they are fundamental to *Joget* and need to be mastered by every performer before progressing to other advanced and complex types of *Joget* dance movements. The current research is exclusive to the dance movement of *Joget Serampang Laut*, specifically 14 *Ragam*. Concentrating only on one (1) fundamental component of Malay folk dance provides detailed data on its dance movement and comprehensive information on representation and micro-visual analysis. This focused approach ensures an in-depth understanding of the intricacies of the dance movement of *Joget Serampang Laut*.

Joget Serampang Laut is usually performed in an odd number of groups, mostly in pairs with three (3) groups of dancers. This is the common arrangement in *Joget Serampang Laut* and projects the beauty of the dance floor pattern, such as harmony, unity, and unique representation. However, this research focused on single pair group of dancers. This decision was influenced by the constraints of the laboratory environment, including limited space, equipment and resources such as motion capture markers and suits necessary for the recording. These limitations necessitated a more focused approach to studying and documenting the traditional dance.

The recording of *Joget Serampang Laut* took place at the state-of-the-art motion capture laboratory in the School of Art, Universiti Sains Malaysia. This choice of location is primarily attributed to the laboratory's exclusive provision of specialised equipment, namely high-performance cameras and cutting-edge software, that are specifically designed for capturing and translating intricate movement patterns into visually immersive trajectory lines. These trajectory lines, with their precision and details, are able to play a pivotal role in the creation of tangible forms and shapes, rendering the dance performance not only captivating but also artistically expressive. The motion capture laboratory's innovative technology promises to elevate the visual and artistic dimensions of *Joget Serampang Laut*, making it an unforgettable and visually stunning experience.

1.8 Scope of Study

The study on a suitable digital platform for preserving intangible cultural heritage has positive potential to be explored because of the lack of preserving intangible cultural heritage. For example, Azraai et al. (2018) conducted a study on other performing arts to cultivate society's development and progress in digitalising culture and heritage.

The research focused on preserving and visualising *Joget Serampang Laut* in Institut Warisan Melaka (INSWA Melaka). The institution housed one sole practitioner, Noriah Ahmad, who has extensive experience and knowledge regarding *Joget Serampang Laut*. She is considered to be the only person who has inherited direct knowledge from *Joget's* creator, Seid Manaf, and thus could provide genuine, authentic, and valuable data for the current research. According to Noriah Ahmad, *Joget Serampang Laut* is considered the oldest and pioneer of dance forms in *Joget* that needs to be learned, understood, practised, and preserved as a Malay identity and national belonging towards intangible culture and heritage.

This research also emphasised using motion capture for the entire routine of *Joget Serampang Laut*. It consists of 14 *Ragam* performed by one group of dancers within three minutes and 40 seconds. This provided a whole set of dance step visuals of *Joget Serampang Laut* that could be used for analysis purposes. Furthermore, the research focused on analysing the 14 main micro-visual components of *Joget Serampang Laut*, with a specific target on 12 primary areas of biomechanics that indicate dynamic movements. This targeted approach is necessary due to the extensive volume of micro-visual data, which would require considerable time for a comprehensive analysis. By narrowing the focus to the key elements and

understanding the connotation and denotation of *Joget Serampang Laut* experientially and culturally, the research offers valuable insight into discovering a potential area of new knowledge.

In addition, analysing and interpreting the visual focuses on the aerial view or bird's eye view, which is a view that is difficult for humans to see compared to other angular views. Nonetheless, an aerial view or bird's eye view can capture a unique pattern that can give a new viewpoint to the visual by emphasising the pattern's shape, space, and symmetry. According to Burns and Cook (2013), aerial views can enhance creativity, realism, and spatial coherence in an artwork, and they can be used to create a sense of vastness and depth by overlapping shape and space. It can also be used to convey different moods and emotions depending on the subject matter and intended message. With this view, it's also able to capture the whole movement in a greater perspective capable of perceiving a form of repeating and overlapping lines and other elements and principles of design that are not usually seen by the naked human eye.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction to Culture and Heritage

Culture is not merely a static concept but manifests through the daily activities of individuals, shaping the characteristics of civilisations. According to Ahmad (2006), Amin et al. (2011), and Rohidi (2015), culture encompasses a broad spectrum of ethnic expressions, including spiritual, intellectual, emotional, and factual aspects, which collectively define the unique way of life within a particular society. This includes various forms of artistic and literary expression, embodying values, creativity, knowledge, traditions, and beliefs. Furthermore, culture serves as a bridge connecting the past, present, and future through the transmission of cultural information, fostering a sense of unity within practising societies (Liew, 2005). Rohidi (2015) further elaborates that culture has dual roles. First, it is an agent of knowledge and tradition that is essential for the stability of life, and second, it is a preserver to maintain dynamism, progressiveness, adaptability, and creativity.

However, cultures are exposed to changes in response to evolving societal demands and changing eras, emphasising the need to ensure their relevance and alignment with fundamental guidelines such as religious and civil principles (Idris et al., 2016). Thus, the continuous evolution and preservation of culture are imperative for its enduring significance and applicability to the evolving needs of society.

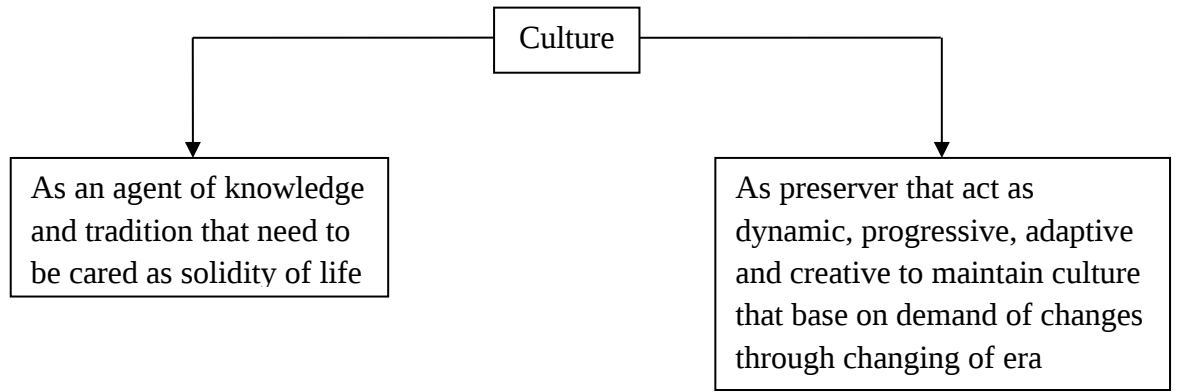


Figure 2.1: Interconnection between cultures

Culture and heritage, while distinct in meaning and function, are closely intertwined and crucial in shaping the identity and character of societies worldwide. Ahmad (2006) and Manaf and Ismail (2010) define heritage as knowledge that is rooted in practices and beliefs and transmitted across generations. Md Noor et al. (2013) highlights that heritage encompasses elements from the past that are transmitted across generations. It is a revered link to the past and a legacy that deserves preservation as a cultural treasure. UNESCO (2015) defines heritage as a precious legacy of humanity, encompassing the essence of what people lived with in the past, what they live with today, and what they will pass on to future generations. This inheritance, cherished by modern youth, stands as a testament to cultural identity and collective pride.

Prior studies, including those by UNESCO (2015), Hua (2010), and Wallach (2005), offer insights into the categorisation of world heritage, which is initially divided into cultural and natural realms. Later, a mixed cultural and natural heritage, along with a cultural landscape, is integrated to enrich the framework. The international community acknowledges the imperative of preserving such heritage for posterity and future human development because the concept of outstanding universal

value that transcends national borders holds significance for present and future humanity (UNESCO, 2019). Recent classifications delineate world heritage, national heritage, and local heritage (Mohamad, 2012; Hennessy, 2012; Hua, 2010). These classifications refine the understanding and categorisation of heritage and provide a hierarchical structure to determine the value of each artefact. The prioritisation of world heritage is followed by national and local designations, providing a more distinct framework for understanding and protecting the various forms of heritage and their inherent value to society.

The elements of heritage, tangible and intangible, have significant cultural values and are intertwined in their representation of cultural symbols and identities. Despite often being studied separately, tangible and intangible heritage are inherently linked in their ability to convey cultural significance through physical objects and verbal expressions (Cruikshank, 1992). Researchers such as Boamah et al. (2012), Hennessy (2012), Hua (2010), and UNESCO (2003) further elaborate by defining tangible heritage as comprising artefacts and natural environments, which can be categorised into movable and immovable forms, while intangible heritage as encompassing myths, folklore, language, traditional practices, and rituals that need preservation and protection. The Operational Guidelines of 2015, outlined in the World Heritage List, delineate the categories of cultural heritage as each exhibits pronounced differences. Scholars like Hennessy (2012) and Hua (2010) emphasise the significance of recognising these distinctions. Accordingly, the classification of heritage into tangible and intangible forms is crucial in understanding its various dimensions within broader categories such as cultural heritage, natural heritage, and mixed cultural and natural landscapes (refer to Figure 2.2).