

Celestial Navigation as a Kind of Local Knowledge of the Makassar Ethnic: An Analysis of Arena Wati's Selected Works

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Abstract

Southeast Asia was known for its seafarers. Indeed, long before the Portuguese arrived in Asian waters, the seafarers had been sailing over the oceans for thousands of miles without a proper compass or written charts. Arena Wati or Muhammad Dahlan bin Abdul Biang is well-known author in Malaysia. He is one of the national laureates of Malay literature. Before he ventured into the world of creative writings, he was a seafarer since the age of 17. He originates from Makassar, an island of seafarers in Indonesia. His vast experiences as a seafarer, who learned and practiced the celestial navigational skills of the Makassar people, have become the important ingredient of his creative writings. Celestial navigation is a navigation of a naturalist that is based on natural elements such as wind direction, wave patterns, ocean currents, cloud formation and so on. Nevertheless, not much research has been done on his navigational skills as reflected in his works, especially in the contact of local knowledge. As a result, this paper will venture into the celestial navigation and its relationship with the local knowledge. Selected works of Arena Wati, which consists of a memoir and two novels, will be analyzed using textual analysis. The result of this study reveals that the selected works of Arena Wati shows the importance of celestial navigation as part of the local knowledge. And Arena Wati has succeeded in preserving the Makassar traditional navigation for future readers of his works.

Key words: navigational skills, celestial navigational skills, local knowledge

Introduction

In his memoir entitled *Memoir Arena Wati Enda Gulingku* (1991), Arena Wati discusses at length the background of his life as a seafarer. He was born in 1925 in a district called Kalumpang, Jenepontan, Makassar, South Sulawesi, Indonesia. People of South Sulawesi comprise of several ethnics, such as, the Makassar, Bugis, Toraja, Mandar and Duri. They speak different dialects and the Bugis ethnic is the largest ethnic among them. Geographically, the Makassar ethnic; where Arena Wati belongs to, accumulate in the city of Makassar, known as Ujung Pandang, and it situates in southern Sulawesi. The seas have become the roads of migration, communication and commerce among the people of Sulawesi Island and people from neighboring and far away islands. His family were seafarers. Abdul Fatah, his grandfather, was one of the four persons in Kalumpang, who owned a sailboat called *Padewakang*. These sailboats plied the sea between south Sulawesi and southern parts of Malaysia such as Singapore and other island in the Malay Archipelago (Nusantara). His father was also a seafarer and a trader who used to sail to the whole Malay Archipelago. Since Arena Wati was five years old; he was taken sailing by his father.

Trading

Historically, as early as sixteenth century, Makassar was the trading center of eastern Indonesia. Spices were the main trading commodities. The culture of sailing and exploring among the Sulawesians had erupted long time ago as mentioned in the famous Bugis epic *La Galigo*. Makassar became a thriving trading center between 16th and 17th centuries. According to the Chinese reports, after the declination of Malacca as a trading center due to the Portuguese conquest (1511), Makassar became the focus of Western and Eastern traders (Ahmad Jelani Halimi 2006: 43 and 46). This political development gave an opportunity to Makassar to emerge as a trading center, particularly in the eastern region of the Malay Archipelago. The increasing demand of trading in China and the Western countries turned Makassar into a thriving entry-port. Traders from China, Arab, India and Siam did their trading business with the local traders who came from Java, Sumatera and other nearby islands. Trading of manufactured metal goods, textiles, precious pearls, gold, copper and spices – nutmeg, cloves and mace which were imported from the interior and the neighboring spice island of Maluku became the major economic activities. Since the fall of Malacca in the hands of the Portuguese in 1511, the city of Makassar which was in the south-western of Sulawesi became a busy entry-port. Trading business, such as, spice trade was a very popular economic activity because of its great demands from the traders, especially the foreign traders. Consequently, seafaring activities became increasingly important and this development had further intensified between local and international traders from India, China and Arab countries. Nevertheless, in the early 17th century, when a Dutch occupied the island of Sulawesi under the banner of colonialism, the trading business in Makassar was affected. The Dutch began to control the trading business and this situation deprived the foreign traders from carrying out trading with the local traders freely as before. Subsequently, the decline of Makassar as a trading centre was unavoidable. The situation worsened during the Japanese occupation and the Indonesian revolution in the middle of 20th century. Although the situations were not so conducive for seafaring, Arena Wati managed to work in both situations (during the colonial and Japanese occupation periods) and gained a vast experience of trading business and navigating rough and challenging routes across the oceans. His immense experiences in trading and navigating made him a respected seafarer among his friends and traders.

Arena Wati the Writer

Arena Wati is known as a prolific literary figure, especially in Malaysia after the Malaysian government awarded him with the title of National Laureate in 1988. Indeed, Arena Wati's experiences since his childhood as the seafarer made a very valuable and creative material for his writing and eventually reflected in his works. As a result, many researchers have done research on Arena Wati's works with various approaches such as the formalistic, sociological, psychological and postcolonial approach (e.g., Lam, 1990; Huszaidi, 2001; Mohamad, 2002; and Sohaimi, 2004). Nevertheless, as a seafarer, he has been neglected and not much comprehensive study has been done. This article will venture into this subject and explores the potential of his works in reflecting his capabilities as a seafarer.

Celestial navigation

According to Gene Ammarell (1999), there is a connection between Makassar and Bugis ethnics. Although Arena Wati comes from Makassar in South Sulawesi and his identification is Makassar, but his origin should not be separated from other ethnic groups in southern Sulawesi, such as the Bugis ethnic group. Historically, Arena Wati's grandfather, who is, Abdul Fatah was of Makassar-Bugis descent. The two ethnic groups share the same socio-cultural background because they live in the same geographical area of South Sulawesi. Thus, both ethnics interplay with each other. In the context of navigational skills, the Bugis navigational skills which are hinted in *Bugis Navigation* (1999) are also applied to the Makassar ethnic.

Arena Wati was a successful seafarer based on the experiences and challenges he encountered and the approaches he applied to monitor and control situations across the ocean. The challenge of the rough sea, the threat of the Dutch colonialism, and the Japanese occupation made him more mature and skillful in managing the critical situations. The Second World War forced Arena Wati to abandon his ambition to study in Jakarta and then in Leiden, Netherlands. Nevertheless, this of course has proven his prowess to the world of seafaring. In early 1943, at the age

of 17, he was appointed as a captain (nakhoda) of a skuner (a type of sailing boat) by the name 'Sorga Bone' which was based in Semarang. In Makassar-Bugis maritime tradition, the vehicles were perahu and indigenous sailing boats. In fact, there are different types of sailing boats, which are identified and named according to their rigging, sail, shape, and type of the hull. The indigenous type of rigging is the 'layar (sail) tanjaq'. One of the earliest sailings boat of the south-Sulawesian was *padewakang* which were used for trading and war expeditions. *Padewakang* has two sails, a rectangle sail and a small triangle sail. The loading capacity of this boat was less than 10 tones (Liebner, http://www.forumms.com/traditional_boats.htm and *Pinisi Perahu Khas Sulawesi Selatan (Pinisi the Special Boat of South Sulawesi)*, 2012).



(Photo 1: A padewakang sailing boat- <http://www.google.com.my/imgres?imgurl>)



(Photo 2: A phinisi sailing boat - <http://boatbuildingindonesia.com/>)

The other sailing boats were pajala, salompong, palari and phinisi. Phinisi became the best sailing boat used by the Makassar-Bugis to travel and trade. Phinisi sailing boats – a masterpiece of traditional Bugis-Makassar design – are exceptionally strong, and are famous for their ability to break through high waves and sail vast distances. This wooden sailing boat has been built since early 20th century by Ara people – the Bugis people from the village of Ara in the region of Bulukumba, South of Sulawesi. The popularity of phinisi had resulted from its loading capacity, which had been increased from 30 to 200 tones (*Pinisi Perahu Khas Sulawesi Selatan*, 2012: 39-40). There are several kinds of phinisi and phinisi schooner is one of the kind. Phinisi schooner is a traditional sailing boat which has two or more mast with fore and after sails. It is equipped with front and rear sails that are installed on two or more columns.



(Photo 3: A phinisi schooner sailing boat -<http://www.dicts.info/picture-dictionary.php?w=schooner>)

A phinisi schooner is a sailing boat which uses the power of wind to sail. The captain's ability to understand sea and other natural elements, such as, wind and wave are very important. This is no exception to Arena Wati. Knowledge of the universe and its relationship with specific seafaring navigation was learned by him since childhood. One of the important skills in the areas of navigation is celestial navigation, a kind of navigation that is based on natural elements. This paper focuses on celestial navigation by the Bugis-Makassar seafarers as described by Ammarell. In her observation, Ammarell found the celestial navigation as follows:

They use them along with other key features of the marine environment, including wind directions, swells, wave patterns, and ocean currents for setting and maintaining course; moreover, other minor aides such as cloud formations, lightning, birds, dolphins, and other flora and fauna are utilized in locating land (Ammarell, 1999: 2).

With schooner *Sorga Bone*, Arena Wati began to sail across the ocean to various destinations in the Malay Archipelago. Due to the Japanese occupation, *Sorga Bone* and others were forced to move to Singapore. Before being forced to move from Semarang to Singapore by the Japanese military, *Sorga Bone* made several trade trips to Pontianak, Pemangkat (West Kalimantan), Jakarta, Tanjung Karang (South Sumatra) and Singapore. After moving to Singapore, Arena Wati also sailed to Rangoon and Bangkok:

... menjelang bulan Mei 1943, *Sorga Bone* salah satu daripada empat puluh buah skuner diarahkan secara paksa berpindah dari pengkalan tetap di Jawa ke Singapura atau Syonan-to, dengan destinasi

pelayaran dari Singapura ke Bangkok, Rangoon, Sumatera, Jawa dan Kalimantan Barat (Arena Wati, 1991: 73).

... By May 1943, Soroga Bone one of forty skuners was directed to move from the fixed base in Java to Singapore or Syonan-to, with destinations from Singapore to Bangkok, Rangoon, Sumatra, Java and West Kalimantan (translation).

Method of using celestial navigation by Bugis seafarers had no difference to that used by Makassar seafarers such as Arena Wati. For the Bugis and Makassar seafarers, sea and everything connected with it must be understood well, and it is the key for a safe voyage. As a comparison, celestial navigation that involves the natural elements in the sky such as the sun, moon and stars are very important but the archipelago is often cloudy or overcast, and this situation makes the use of these natural elements less effective compared to anywhere else in the Arab-African waters which are warmer and the sky is always sunny. Nevertheless, this does not mean that sun, stars and moon are impossible for the Makassar and Bugis seafarers. Indeed, natural phenomena still serve as an important sign for the safe voyage by the Makassar and Bugis seafarers.

Arena Wati was taught about the significance of the nature in sailing since his early age. In his memoir, Arena Wati mentioned that since childhood, he had been taught about the sea when he was taken sailing by his father:

Dalam usia menjelang lima tahun, sebelum saya bersunat, saya selalu dibawa belayar untuk jarak dekat oleh ayah saya. Ketika itu, saya diajar mengenal bintang dan namanya, musimnya berada di langit dan juga di mana letaknya di langit. Saya diajar mengenal arus laut, mengenal pengaruh arus dan angin pada ombak di samudera, mengenal seluruh jenis angin di samudera, mengenal awan di langit yang membawa angin ribut dan awan yang membawa hujan. Saya diajar tentang segala peralatan perahu, jenisnya dan bagaimana membuatnya (Arena Wati, 1991: 25).

At the age of five, before I was circumcised, my father took me to sail with him at short distances. At that time, I was taught to know stars and their names to identify a season where the stars can be found. I was taught to know the ocean currents and its influence, impact of winds on waves across the ocean, identifying clouds in the sky that bring storms and clouds that bring rain. I was taught about the boat equipments, and how to make it (Translation).

The importance of nature in celestial navigation is well informed in *Sukma Angin*. In this novel, Nakhoda Suppuk believes the importance of mastering on celestial navigational skills in order to be a great nakhoda (captain) of a sailing boat. Realizing the importance of these skills, Suppuk takes the initiative to teach his son at the early age the elements of nature, which form the fundamental ingredients of celestial navigation. According to Suppuk:

Dia sudah mengajar Darusi dalam hal-ehwal penampilan bintang-bintang dan letaknya di langit; dan juga pengedaran bintang, dan pengaruh masing-masing yang tiba ke bumi, dengan ciri-ciri tersendiri menurut musim. Nakhoda Suppuk sudah mengajarkan tabii dan perubahan arah arus laut pada suatu tempat di samudera dalam suatu musim. Darusi sudah diajar berasa, fahami, dan hayati segala rinci angin dari setiap arah, dan semua peringkat kekuatan tiupannya; pada tiap musim di suatu tempat.

Darusi sudah diajar mengenal dan memahami, seluruh kriteria penampilan awan segala jenis, pada segala musim, daripada semua sudut cakrawala (Arena Wati, 1999: 41).

He has taught Darusi affairs of the appearance of stars and their location on the sky, distribution of the stars, and their influence that arrived on earth with its own characteristics according to the season. Captain Suppuk also has taught him nature and change of the sea currents and their directions at particular points and seasons in the ocean. Additionally, Darusi has been taught to feel, understand, and appreciate all the details about wind from every direction, and all its strength; in every season at a particular place.

Darusi is taught to recognize and understand the entire criteria of all kinds of cloud appearance, in all seasons, from every aspect of the universe (Translation)

Darusi is not only taught by Captain Suppuk to master the seas, clouds, currents and winds but he is also been taught to handle the sailboat when facing challenges of the nature:

Darusi sudah diajar melalui amali menghadapi cabaran angin, ombak dan arus; dengan penyesuaian jenis dan bilangan layar, serong lurusnya kemudi; tahap miring, dan kadar oleng bahtera; tahapnya lenggang, dan angguk serta dongak bahtera mengharung ombak (Arena Wati, 1999: 41).

During the internships, Darusi has been taught to face a challenge of the wind, waves and currents; adapting types and numbers of sails, slant or straight rudder; the level of slant wise, and the shaky rate of the ship; its level of swinging, nod and whacking upwards of the ship while sailing through the waves (Translation).

The navigating skills acquired by Darusi are related to a kind of knowledge known as local knowledge.

Local Knowledge

One fundamental aspect which can be extracted from the vast experiences of a seafarer such as Arena Wati is the local or indigenous knowledge of navigating a sailboat or a ship. Local knowledge is a kind of almost forgotten knowledge due to the modernization that took place in the development of modern knowledge. Modern knowledge which consists of science and technology is believed to be more reliable and practical. Nevertheless, the importance of indigenous knowledge should not be taken lightly. Blending of modern and indigenous knowledge is not a threat to the development of knowledge because it creates a form of a holistic kind of knowledge that can reflect the philosophical aspect of the man in driving his life. This statement will be concretized with the study of Arena Wati's works. Therefore, this paper attempts to unearth Arena Wati's indigenous knowledge within the context of navigation where modern and local knowledge merges to form a new navigational knowledge. This paper will discuss the selected works of Arena Wati that are, a memoir entitled *Memoir Arena Wati, Enda Gulingku* (1991) and two novels by titles of *Sukma Angin* (1999) and *Warna Sukma Usia Muda* (2005). A book by Gene Ammarell entitled *Bugis Navigation* (1999) has been also studied to form the conceptual framework in investigating the celestial navigational skills of Arena Wati as a seafarer that is reflected in his selected works.

Knowledge which is related to natural navigation is a purely local knowledge or indigenous knowledge. It is also mentioned by Ammarell, and she identifies it as 'indigenous navigation' (Ammarell, 1999: 1). Christoph Antweiler discusses the terms and purposes of local knowledge in a chapter of his book entitled *Investigating Local Knowledge. New Directions, New Approaches* (2004). This book discusses a lot about the local knowledge in the context of Indonesia, Papua New Guinea, Nepal, Canada and India. Antweiler in a chapter entitled 'Local Knowledge Theory and Methods: An Urban Model from Indonesia', argues that local knowledge can be understood by understanding the two terms, 'knowledge' and 'local'. 'Knowledge' refers to:

Knowledge pertaining to facts as skills and capabilities are local to the extent that's for hire are acquired and applied by people with RESPECT to local Objectives, situations and problems (Antweiler, 2004: 3).

For Antweiler 'knowledge' refers to the facts, skills and abilities that are acquired and used by local people with the aim of solving local problems that are appropriate to local circumstances. In other words, such 'knowledge' is produced by the local nature of local people and for local circumstances.

'Local', means:

'Local' here is not to be understood in a strict sense as referring to a location, but rather as knowledge being culturally and ecologically situated (Antweiler, 2004: 3).

'Local' is not only referred to the place but also refers to the culture and ecology. Strictly speaking, the meaning of the term local is wider in the context of local wisdom. Because, it involves culture that accounts for a system which involves three elements; values, beliefs and behaviors. Local also refers to matters relating to the environment or ecology background such as place, time, and culture. In other words, in the context of particular seamanship, celestial navigation as a local knowledge should be understood in the larger context involving the cultural background. In the context of Arena Wati as a Makassarese, he embraces a local philosophy which is known as "I Lolo Bayo" and this philosophy is part of the local knowledge that can be seen in terms of etiquette, mystical and practical seamanship. Celestial navigational practices of the local context should also be comprehended in its relationship with the geographical space of the islands throughout the archipelago and the ethnicity of the population living in the geographical area.

Ammarell in *Bugis Navigation* (1999) has provided some important aspects of the celestial navigation such as, wind, stars, ocean currents, waves, the determination of the distance (speed and time) and the determination of the land. The problem is to what extent these aspects are reviewed in his works? Selections of Arena Wati's works are analyzed in this paper, which is actually a prelude to a larger study of Arena Wati's works in the context of the seafaring.

Sulawesi Island is surrounded by seas such as Celebes Sea, Java Sea, Flores Sea and Banda Sea and these seas provide spaces for the seafarers' challenges. Traditionally, the local community perceives the existence of the sea as an element that connects and unites them with other communities. They perceive that the seas do not have political borders like on the ground. However, this vast ocean does not restrict them to only those areas. In between these seas existed thousands of large and small islands, and they became a liaison between the seas with the others. Some of the islands become a transit point for trade; get supplies and shelter from the stormy sea attack. In the commercial context, seafarers such as Arena Wati must have high knowledge and skills in various aspects as stated by Andrian:

Namun dalam hal perdagangan antara pulau, pelaksanaan perhubungan memerlukan kemampuan belayar, baik kemahiran membuat perahu atau kapal sebagai alat pengangkutan, mahupun pengetahuan navigasi untuk mencapai tujuannya (Andrian, 2009: 57).

But in the case of inter-island trade, implementation of communication requires an ability to sail, either boat or ship making skills as a means of transportation, as well as knowledge of navigation to achieve its purpose (Translation).

One of the important aspects of celestial navigation is breeze. Wind and sea are inseparable. Blowing wind across the ocean will affect a skuner because the blowing wind will turn into an energy that drives it. Wind will also produce big or small waves, and this will influence the movement of the skuner as well. The existence of wind and sea power in an area depends on many factors such as the terrain in which the sea is situated, the area of the sea, the presence of hot and cold wind and so on. As the wind plays an important role for a safe voyage, seafarers either as fishermen or traders have to understand the nature and direction of the wind before and during the sail.

The island of South Sulawesi and its surrounding areas, in particular, are closed to the equator. It gives specific features, such as high temperature, humidity, large cloud formation and movements of moderate wind. In the context of the geographical space, there are two monsoon seasons between the two continents, those are, the South season (May to September) and the North season (December to April). If winter is in the northern Asian, summer will be in Australia and vice versa. This change resulted in a change of the wind motion that moved from these two continents (Andrian, 2009: 33). For example, wind flow occurs as a result of land and ocean warming. The heated lands in the southern continent between September and February have resulted in lower pressure on land, and this causes the flow of heat in the ocean breeze that brings moisture to the mainland and then when they hit the high area it will produce rain. Monsoon winds bring rain, wind, weather change, and it affects seafarers such as Arena Wati. The influence of the monsoon winds to the Coast of Sulawesi Island is explained in the following passage:

... di dekat pantai Pulau Sulawesi angin monsun ini sangat dipengaruhi oleh pola angin darat dan angin laut yang silih berganti pada siang dan malam hari. Terkait dengan hal ini maka pada musim selatan anginnya sangat kuat dan kontinu pada malam hari kerana diperkuat oleh gerak angin darat. Sebaliknya angin laut membantu angin musim utara pada siang hari (Andrian, 2009: 33).

... near the coast of Sulawesi Island the monsoon wind is strongly influenced by the pattern of wind from the land and the sea at alternate day and night. Associated with this case the seasonal southern wind which is very strong continues through the night, because, it is reinforced by the movement of the wind from the land. Instead, sea breeze helps the north wind during the day (Translation).

This monsoon is similar to the occurrence of the sea and land breeze which can be understood in terms of the incidence, type, strength, and speed. Ammarell discovers that Bugis and Makassar ethnics have specific systems, which comprise of four types of sub-systems to identify, understand and master the wind. Each type of the system can be used separately or all the four can be used at the same time. First, the wind compass system which comprises of eight primary directions (north, west, east, south, northeast, southeast, northwest, west-north) and eight secondary directions (such as north-north-east, north-north-west). Out of the eight primary directions, there are four crucial directions, those are, north, east, south and west. The west and east are connected with southwest monsoon and northeast monsoon. Second, the four-point system includes north (wara'), south (timboro'), east (raya) and west (lau'). This system is used to name the wind on land more than at sea. Third, the wind is identified and named from the position of the ship, such as, wind from the front and wind from the back of the ship. Fourth, the wind is named by heated land and water, heated sea winds (sea breeze) and heated onshore wind (land breeze). The fourth system is specifically used when entering and leaving the port and island. Besides the Bugis ethnic, these four systems are also used by the seafarer of Makassar ethnic.

In his novel entitled *Warna Sukma Usia Muda* (further referred as WSUM), Arena Wati uses the system used by the Bugis ethnic such as the fourth system that refers to the land and sea breeze. Nevertheless, in this novel Arena Wati does not use the term 'land breeze' but 'mountain wind' which also refers to the 'land breeze':

Layar kami kenyang tiupan angin gunung, yang terasa dingin! Langit cerah, tanpa awan. Sebagai kelaziman pelaut, terutama yang masih muda, termasuklah diri aku, dalam suasana begitu, apabila menoleh ke darat, hati sayu terkenang kekasih yang ditinggalkan! (Arena Wati, 2005: 42).

Our sail traps the mountain breeze, which felt cold! Bright sky, with no clouds. As the prevalence of seafarers, especially the young, including myself, in a way, when turned to the ground, muffled heart remember the lover left behind! (Translation).

The term 'mountain breeze' refers to a wind direction which comes from the land, and it is mentioned by Arena Wati in this novel as Sukma Bayu to big boat leaving Kali Baru. In the above passage, the term "mountain breeze" refers to 'land breeze' as commonly used by the Bugis seafarers. In the literary context, the influence of literary style of writing has made Arena Wati to create a phrase which is poetic in nature. So the term 'land breeze' is substituted with 'mountain breeze'.

Arena Wati also uses the third point system to name a wind as the ship preparing to leave the port. In this situation, he created a term 'angin buritan' or 'tail wind' which refers to a wind coming from the back of the ship; that is, the direction of travel of the ship:

"Singapura perlukan cili kering," kataku. "Sudah hampir satu tahun tidak terima bekalan dari India. Liur orang Melayu meleleh di bibir, harapkan cili kering kiriman dari Jawa." Aku menarik nafas. "Tak mengapa. Kita belayar ditolak angin buritan" (Arena Wati, 2005: 44).

"Singapore needs dried chilies," I said. "It has been almost a year it does not receive any supplies from India. The Malay saliva drip lip, shipment of dried chilies expected from Java." I breathed. "It's all right. We sail as the tail wind pushed" (Arena Wati, 2005: 44).

For Arena Wati the tailwind is very much waited by seafarers because it will move the ship, for example, from the port to the open sea. The presumption is stated in the following passage:

Puncak ombak barat laut menggoda kami. Dia menayangkan mahkota putih - busur mekar, lebat silih berganti sirna dan wujud di puncak ombak setinggi dua meter. Itulah yang mengiurkan Sukma Bayu, bagai lambaian dan senyum dara kepada teruna. Oleh sebab angin sekencang 18 batu nautika itu, mencabar layar Sukma Bayu, menolaknya ke tenggara. Itu sejajar dengan laluan yang kami tuju. Angin buritan, syurga bagi pelaut! (Arena Wati, 2005: 159).

The crests of the northwest waves are tempting us. It shows a white crown - foams bloom, alternately heavy and wear off, and it waves up to two meters peak. That really lures the Sukma Bayu, as a lady to wave and simile to a man. Because the wind is blowing at 18 nautical miles, it hits the sailcloth of the Sukma Bayu, pushed to the southeast. It is in line with the direction we are heading. The back wind, a heaven for seafarers! (Arena Wati, 2005: 159).

Arena Wati also uses the point system as reflected in one of the occasion where Abdul Rahim Daeng Massare's ship stopped and anchored at Pulau Kundur due to no wind;

Di situ kami menunggu belas kasihan sedekah daripada alam, semoga bertiup – betapa pun lemahnya, angin barat daya, atau selatan daya (Arena Wati, 2005: 47).

Setelah solat jemaah zohor, kasar asar kami membongkar sauh, dikurniai tiupan sepoi basah, lalu naik jadi fresh breeze, dari selatan daya (Arena Wati, 2005: 48).

There we waited for the compassionate kindness of nature, hopefully blowing - no matter how weak the southwest wind, or southern wind (Translation).

After the congregational zohor and shorten asar prayers, we raised the anchor, blessed with the blowing wet wind, then it rose and became a fresh breeze, from the south (Translation).

In other words, based on some of the quotations extracted from the novel, they clearly show that the wind direction indicator system used by Arena Wati is taken from the Bugis's system. This system of identifying the direction of the winds is put on use to overcome the navigational problems arise. Indeed, these techniques are considered appropriate to local circumstances and as a result these celestial navigational skills are considered a kind of local knowledge as defined by Antweiler.

There are several other phenomena connected to the wind such as waves, clouds, tide and weather and this is evident when the monsoon changes. Large waves are generated by strong winds, and the changes of wind intensity can give some information regarding the climate change.

When Abdul Rahim Daeng Kendal Massare goes to the beach and while waiting for the Sukma Bayu which is loaded with sugar to arrive, he observed the condition of the beach, and this is what he has to say:

Sejak tiba ke mari aku teliti kesan pencapaian lidah gelombang pada tebing pantai! Aku tahu itu, berdasarkan daun-daun rumput laut yang tersadai atas pasir yang rata bekas disapu lidah ombak surut...

Itu bekas malam tadi, pasang 14 Muharam. Tengah malam nanti purnama penuh! Puncak tertingginya laut pasang dan itu selari dengan pertambahan derasnya tiupan angin badai. Dengan sendirinya, gemulung gelombang bertambah besar, dan angin dan tekanan ombak akan lebih kuat (Arena Wati, 2005: 121).

Since arriving here I thoroughly observe the impact of the wave peak on coastal cliffs! I know that, based on the sea grass leaves lying on the flat ground of sand, which was swept by the wave's peak as it recedes...

That was the last night impact, tide of 14 Muharram. At midnight there will be a full moon! The highest peak will be during the tide and it is parallel with the increasing of the wind storm. By itself, the wave grows larger, and the winds and the waves will produce more intense pressure (Translation).

Here, the character receives a signal from the situation in which he finds that the wind is so strong that it creates a wave that could bring sea grass leaves to the beach. Furthermore, the full moon also carries a message about upcoming tide, and he could feel how the strong the wind from the sea. This important information will determine the next reaction by Abdul Rahim Daeng Massare. And he believes that the front wind will disrupt the smooth cruising comfort. This is another form of local knowledge that can be extracted from this novel and reflects the portion of the celestial navigational skills acquired by Arena Wati the seafarer.

In another novel, *Sukma Angin*, Majido, the captain of the sailboat Sukma Angin knows how to read the types of foams at the crest of the big wave and the form and the direction of the wind. He uses the information to sail the sailboat:

Berdasarkan halatujunya bentuk ombak dan sifat buih pada puncak gelombang, Majido tahu bahawa mereka disorong samping dari buritan dengan angin tenggara strong breeze. Paras ombak sudah mencapai tiga meter (Arena Wati, 1999: 126).

Based on the direction of the form of the waves and the foam on the crest of a big wave, Majido knows that they have been wheeled from behind by the strong southeast wind breeze. The level of the waves has already achieved three meters (Translation).

Majido and the other captains of the sailboat Sukma Angin used the celestial navigational skills to sail the sailboat. The nature of the vehicle (sailboat) and the geographical nature of the Southeast Asian have created a landscape which requires appropriate technique and skills for these people to move and communicate from one place to another. Cultural and ecological perspectives are the important factors that contribute to the development of the local knowledge.

Celestial Navigation and Local Knowledge in the Context of Culture and Ecology

Celestial navigation cannot be separated from the context of cultural and ecological of the author who belongs to the community of Makasar. This coincides with the concept of local knowledge as discussed in the beginning of this paper. One of the aspects of culture that can be analyzed in this novel is a philosophy practiced by the Makassar ethnic. The philosophy which embraces by Arena Wati is known as "I Lolo Bayo." In WSUM, this philosophy plays an important role in shaping the local knowledge shown by Abdul Rahim Daeng Massare. For Arena Wati, indeed "I Lolo Bayo" is not a written document, but it is an oral heritage from the ages practiced by Makassar seafarers and through this novel, the author applied the principles of the philosophy. In his memoir, Arena Wati explains in brief and concise about the philosophy, of "I Lolobayo." He says:

I Lolobayo, suatu mitos dan mistik yang membawakan pengajaran bagi pelaut tentang unsur alam semesta dan diri manusia (Arena Wati, 1992: 243).

I Lolobayo, a myth and mystic which bring lesson to seafarers about the elements of the universe and man (Translation).

According to Arena Wati "I Lolobayo" has two related principles, nature and men. The two are connected, and this is reflected in the WSUM novel. According to "I Lolobayo," men are abstained from doing seven deadly sins; to involve in rebel, telling lies, deceiving, drinking alcohol, gambling, adultery and 'syirik' (substituting God with other things)(Arena Wati, 2005: 283). The philosophy of "I Lolobayo" is influenced by Islamic teachings. In WSUM novel, Abdul Rahim Daeng Massare identity is based on the philosophy, of "I Lolobayo" where he has been tested for several times on those principles, and he can defend it. For example, Abdul Rahim Daeng Massare does not like immoral activities, such as, loitering with women either at the port or on the ship. This character is equipped and guided with Islamic faith, and his belief is translated into praying as he always does. This identity is also linked with the elements of the universe or nature, nevertheless, this relationship is not stated outright in WSUM. In other novel, *Sukma Angin*, the philosophy of 'I Lolobayo' is also mentioned. Darusi the son of Nahoda Supuk is being advised frequently by his father the importance of practicing the teaching, of 'I Lolobayo' in sailing. A piece of advice Nakhoda Supuk to his son:

Jauhi maksiat untuk murni dalam Lolobayo. Tanpa murni di sisi Lolobayo, engkau tidak akan menjadi pelaut sejati (Arena Wati, 1999: 39)

Stay away from the evil in order to be pure with Lolobayo. Without purity with Lolobayo, you will not be a true seafarer (Translation)

Once a seafarer has a pure state of mind with the 'I Lolo Bayo', he can be with the elements of nature. In this situation, the philosophy is also considered as the environmental philosophy. The elements of environmental philosophy as mentioned in "I Lolobayo," emphasise the needs of one's knowledge of the sea, and all things related to. Sea is closer to Makasarians and sea life is a very intimate component and part of their lives. When they have a generous personality then their relationship with nature will be a good relationship. Consequently, there will be no intention to destroy the natural environment despite serving as creatures of God. They know the secrets about the universe, and this causes them to be able to read nature, including wind as reflected in Abdul Rahim Daeng Massare. The knowledge is so special that nature revealed itself to the seafarers. Arena Wati as reflected in Abdul Rahim Daeng Massare, knows the geographical area of the Archipelago and be able to read the changes. He knows where the coral reefs are, how and when they can pass through, when and where to avoid them, the islands to take shelter from the stormy tempest attack, type, direction and wind speed, precipitation type and so on. He is also able to read the rainbow to get information about the voyage. He, moreover, knows various forms of clouds that convey messages, which will guide them through the rough ocean. 'I Lolo Bayo' can also be classified as the environmental philosophy which stresses the importance of men to contact nature or universe. In other words, the celestial navigational skills are part of the local knowledge which is fundamental to understand how the people from Makassar ethnic became respectable seafarers.

Conclusion

To conclude, this paper shows how Arena Wati, who originated from Makassar, south Sulewesi, has successfully preserved the celestial navigation for his readers. He was a former seafarer before venturing into creative writing. Arena Wati exploits his vast experience in seafaring as his inspired energy and this can be identified and felt in his works. Arena Wati explains how celestial navigation relates to the philosophy of 'I Lolobayo'. This can be clearly understood by looking at the celestial navigation which is anchored to the culture and ecological elements in the 'I Lolobayo'. Eventually, the seafarers would be able to recognize and read instant changes of the nature across the oceans and guide him to a safe and fruitful sailing. In the context of the local knowledge, construction of the celestial navigation was based on the local maritime needs which were based on nature of the sailboat and the geographical background of the Southeast Asia. It was known as Nusantara and consists of huge trading areas and thousands of islands. The sea becomes not only a place where the seafarer such as Arena Wati has to master nature to assist him to sail safely, but it also becomes a place where he can recognize and understand himself. Thus, celestial navigation becomes part of the local knowledge.

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