Tide and Time: Korean Fishermen's Traditional Knowledge of *Multtae* in Gomso Bay

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ABSTRACT

The tide influences the concept of time and life style in fishermen's culture. As the West Sea of Korea has spring tides ranging from 3 to 9 metres high, fishermen in this area are highly attuned to tidal changes. Based on ethnographic research at a fishing village on the West Sea, this paper reviews the traditional knowledge of Korean fishermen about tide and time, categorised by the concept of *multtae* (tide time). I develop the argument in three parts. First, I describe what *multtae* is, and by what time units the tidal changes are measured. Second, I explain the principles and the folk classification of the 15-day tidal cycle by analysing the native terminology of *multtae*. Third, I define the unique life of the fishermen both at sea and on land who rely on the tide as '*multtae* life,' and describe how the knowledge of *multtae* is used in their daily life. The fishermen's cognitive system of *multtae* focuses on the *sari* (spring tides) and the *jogeum* (neap tides), with more emphasis on the *sari*. The fishermen's traditional knowledge of *multtae* provides a good example of intangible cultural heritage by showing how systematically a natural phenomenon can be recognised and become a part of local culture.

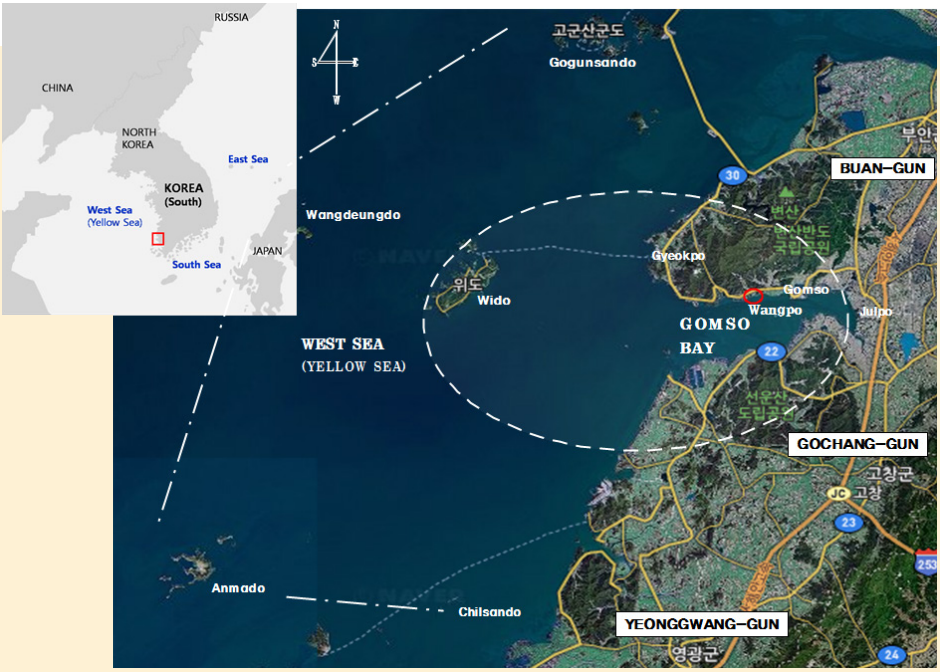
Keywords

marine environment, tide, time, *multtae*, *multtae* life, *sari, jogeum,* ethnoscience, Korean fishermen, Gomso Bay, Wangpo, West Sea, Korea

1. Introduction

Tidal changes make a daily difference to the seascape and to working conditions at sea. They create the unique rhythm of time in the sea space, controlling fishermen's access to the sea. Adapting themselves to the marine environment, fishermen have developed a unique understanding of time which is quite different from that of people on land. *Multtae*, a folk term conceptualising tide and time, is significant to our understanding of the Korean fishermen's traditional knowledge of the marine environment.

The three seas that surround the Korean Peninsula (Figure 1) are called Donghae (East Sea), Namhae (South Sea), and Seohae (West Sea), and have quite different oceanic conditions. For instance, the spring tidal range of the East Sea is only 30 centimeters, but for the West Sea it



Figures 1 and 2
Maps of Korea showing the location of Gomso Bay.
Source: Naver, adapted by author.

is from 3 to 9 metres (Hong: 1998, p.18; Koh: 2009, pp.69-71). For that reason, especially when studying fishing villages located on the West Sea, it is crucial to understand how fishermen in the area perceive tidal changes.

I have conducted ethnographic studies on the relationship between Korean fishermen's culture and their marine environment (Jo: 2012, 2014, 2015). This paper explains the Korean fishermen's cognitive system of tides. The development of an elaborate vocabulary to describe the tides reflects their cultural emphasis. I apply theoretical perspectives from ethnoscience or cognitive anthropology, based on linguistic analysis, to discover how people conceptualise their empirical world.[2]

This paper reviews the traditional knowledge of Korean fishermen about tide and time, characterised by the concept of *multtae*, based on ethnographic research at a fishing village in Gomso Bay on the West Sea. The system of *multtae* is quite complex and has various aspects. The discussion of *multtae* in this paper focuses on the categories of tides observed twice a month.

After briefly introducing the research field, I will examine three aspects of *multtae*. First, I review how Korean fishermen conceptualise *multtae*, and how they categorise tidal changes using different time units. Second, I analyse the native terminology of tides to reveal the principles and the folk classification of the 15-day cycle *multtae*. Third, I define the unique life of fishermen who are affected by the tide both at sea and on land as '*multtae* life,' and present some examples of the practical use of *multtae* in their everyday life.

The material for this paper is based on data collected during my long-term fieldwork in Wangpo, a fishing village on Gomso Bay in Buan County, North Jeolla Province. I first visited the village in April 2007, and did fieldwork at the village for about 3 years from July 2008 to July 2011. I continued to do supplementary research until February 2013. My informants range in age from their 40s to their 80s. Key informants were born in the 1930s and the 1940s, and started to work in the 1950s and the 1960s. At that time, tidal forecasts were not distributed to fishermen. As they became experienced, fishermen therefore relied heavily on traditional knowledge passed down orally, and learnt about the local marine environment from experience.

2. Wangpo, a fishing village on the North Coast of Gomso Bay

Gomso Bay is located between Buan and Gochang Counties (Figures 1 and 2). The bay is 7 to 9 kilometres wide from the north to the south and 20 kilometres long

from the west to the east, opening to the sea in the west. The bay is relatively shallow, 20 metres at its deepest. As the spring tidal range in this area is on average 4 metres or more (Plates 1, 2 and 3), the bay has developed approximately 75 square kilometres of tidal flats (Koh: 2009, pp.68-69; Chang J.H.:2009, pp.367-368).

The area of Gomso Bay in Buan County has only a narrow coastal plain as the rugged mountains of Byeonsan Peninsula stretch down to its southern coastline (Kim: 1988, p.33). Small villages have developed along the long coastline, and the residents have made their livelihood mainly by dry-field farming and small-scale fishing. In the past, local fishermen mainly caught yellow croakers, the best known fish of the West Sea. Wido, an island near Gomso Bay, used to be famous for a seasonal fish market for yellow croakers. Yellow croaker fishing has dwindled since the1960s because of the problems of overfishing and climate change which have exhausted the fishery resources.[3]

Wangpo is a small fishing village in the bay area. The name of this village implies that it has a good fishing ground with abundant fish. It is said that a family of the Gimhae Kim clan, dating back seven generations in the village, settled here about 300 years ago (Mr Kim B.M., born in 1937; Yang 1985, p.291). Gimhae Kim is still a major family name in the village, and most of the residents are relatives. As of 2009, Wangpo had 38 households and 91 residents (44 males and 47 females). When cultivating purple laver, a kind of edible seaweed, was at its height in the 1980s and the 1990s, there were almost a hundred households.

By the mid-1970s Wangpo fishermen were catching yellow croakers, cutlassfish, and webfoot octopuses using 1-ton sailing boats and longlines with baited hooks. At present, they are mostly fishing for webfoot octopuses and swimming crabs (*Portunus trituberculatus*), using 1 to 2-ton outboard motorboats, nylon gill nets, and fish traps made with large conch shells. They are also catching akiami paste shrimps and purple whelks. Winter is the off-season, but a few fishermen still catch elvers, mullet, and oysters (Jo: 2017, p.112).

Wangpo fishermen usually go out to sea with the ebb tide at around 5 o'clock in the morning. Depending on the types of fish, each fisherman sets up fish traps or nets in multiple lines at sea in advance, and then catches fish by pulling up alternate lines each day. During the flowing tide, at around 11am or 1pm at the latest, they come back to port. After they sell the live catch to wholesalers at their houses or at the dock, they fix their nets or traps or do domestic chores in the afternoon (Jo: 2017, p.112).

The fishermen's working space has expanded slightly from the inner side of Gomso Bay to the open sea. In the mid-1970s, the offshore fishery resources of this area declined, and mechanical boats were introduced to the village. Since then, Wangpo fishermen have moved their main fishing areas out to the waters between Gomso Bay and Wido. (See the zone inside the dotted oval in Figure 2). The fishing zone is the sea near the village where the fishermen can work by day in their small fishing boats.



Plate 1
View of Wangpo and Gomso Bay at the ebb tide.
Photo: Author, November 2008.



Plate 2
Dock at low tide.
Photo: Author, April 2007.

3. The concept of *multtae*

Multtae is a combined word made up from *mul* (water) and *ttae* (time). *Mul* literally means 'water,' but connotes 'tide' in this context. While the folk term *multtae* (tide time) is a conceptual category including all tides, Korean fishermen also use this term to describe individual tides matched with various time units.

To grasp the full meaning of *multtae*, it is necessary to observe how the fishermen of Gomso Bay use this term in daily conversation. For instance, while fixing nets or gathering clams together, a person may ask, *What multtae do we have now?* Then, someone will answer, *Mul is coming in now* or *We have the ebb tide now*, as appropriate. While taking a rest and talking together, if a person asks, *What multtae do we have today?* he expects an answer like *We have the 1st tide (hanma) today* or *It is the neap tide (jogeum) today*. When describing how long their work at sea takes, a fisherman might say, *we use one multtae* (tide time) or *we use two multtaes*. In this case, one *multtae* implies an ebb or a flowing tide, which means 6 hours, and two *multtaes* means 12 hours. On the other hand, in *multtae* with a 15-day cycle, one *multtae* indicates a day, and two *multtaes* indicate two days.

These examples show that the folk term *multtae* describes both the status of the water, and at the same time implies the time or date associated with it. They also reveal that for fishermen, *multtae* is actually a more inclusive concept and is used in a more varied manner than is generally known in relation to a 15-day cycle *multtae*. In brief, the division of *mul* or tide is linked to the division of time. Thus, to the fishermen, *multtae* has to be understood as an overarching concept involving tide and time.



Plate 3
Dock in high tide.
Photo: Author, August 2008.

Tides are natural phenomena caused by the periodic rise and fall of sea levels by the combined effects of the gravitational force exerted by the moon and the sun on the earth. Wangpo fishermen describe these regular movements, saying *Mul comes in and goes out twice a day*. This idiomatic expression implies that the fishermen perceive tidal changes every 6 hours in a day. The classification of tides comes from their understanding of tides with a 6-hour cycle.The tidal changes are divided into three groups by day, month, and year, and each category is sub-divided by smaller time units (Table 1). In this paper I will focus on the category of a 15-day tide cycle observed twice a month.

Table 1
Time categories classifying tidal changes

1 day			1 month		1 year
6 hours	12 hours	24 hours	15 days	30 days	4 seasons

In fact, it takes 24 hours and 50 minutes until two sets of ebb and flow are complete. Therefore, the tidal changes do not repeat at exactly the same time every day. The fishermen also know the flexibility of tidal changes, saying *The changes are delayed about an hour every day*. They therefore have to adjust the time they go out to sea.

4. Principles and folk classification of *multtae* with a 15-day cycle

The states of the tides are not the same every day, but tidal changes are recognised as being regular in terms of a 15-day cycle. This category of *mul* is known as *multtae* with a 15-day cycle, and constitutes the core of the Korean fishermen's cognitive system of tide and time. When fishermen refer to *multtae* in daily converstions, it is mostly tide and time related to the 15-day cycle.

4-1. Daily terms for 15-day *multtae*

Different terms are used for each day in a 15-day *multtae* cycle, describing the status of daily tides. Table 2 shows a set of 15 terms for *multtae* from *hanma* (or *hanmul*) to *musim*.[4] This set repeats twice a month. The *multtae* cycle is based on the lunar calendar. For instance, the *multtae* of the 1st and 16th in the lunar calendar are always *ilgobma* (7th tide), and the *multtae* of the 10th and 25th are *hanma* (1st tide). As a specific *multtae* is fixed to a certain date, fishermen recognise a pair of *multtae* terms and a lunar date. A tide of a day is counted as one *multtae*,



Plate 4
Gathering clams in the morning ebb tide.
Photo: Author, July 2007.



Plate 5
Fixing crab nets after fishing in the morning.
Photo: Author, October 2008.

and for example, *hanma* (on the 10th) and *duma* (on the 11th) are called two *multtaes* collectively, meaning two days.

Table 2 shows the three types of *multtae* terms collected in the village. First of all, the difference in the types of the terminology can be seen from morphemes combined with the numerals of *multtae* names. Type I is combined with *ma*, while Types II and III are used with *mul*. *Ma* is a dialect word for *mul*, but its etymology is not known. These days, Wangpo fishermen use both morphemes. Structurally, three types of *multtae* terms have two parts of numeral terms and noun terms, and the number of each part in each type is different.

The fishermen of Gomso Bay have traditionally used the *multtae* terms of Type I. Type II and Type III seem to have been used for tide tables printed on lunar calendars (Plate 6). It was at the end of the 1970s and early 1980s that tidal forecasts became generally available for Korean

Table 2
Folk terms for daily *multtae*

No	Lunar Date		Terms of *Multtae*			Meaning in English
			Type I	Type II	Type III	
1	25th	10th	***Hanma***	*Hanmul*	*Hanmul*	1st tide
2	26th	11th	***Duma***	*Dumul*	*Dumul*	2nd tide
3	27th	12th	***Sema***	*Semul*	*Semul*	3rd tide
4	28th	13th	***Nema***	*Nemul*	*Nemul*	4th tide
5	29th	14th	***Daseotma***	*Daseotmul*	*Daseotmul*	5th tide
6	30th	15th	***Yeoseotma***	*Yeoseotmul*	*Yeoseotmul*	6th tide
7	**1st**	**16th**	***Ilgobma***	*Ilgobmul*	*Ilgobmul*	7th tide
8	2nd	17th	***Yeodeolma***	*Yeodeolmul*	*Yeodeolmul*	8th tide
9	3rd	18th	***Ahobma***	*Ahobmul*	*Ahobmul*	9th tide
10	4th	19th	***Yeolma***	*Yeolmul*	*Yeolmul*	10th tide
11	5th	20th	***Hangekki***	*Yeolhanmul*	*Yeolhanmul*	1st downturn/11th tide
12	6th	21st	***Daegekki***	*Hangekki*	*Yeoldumul*	Big downturn/12th tide
13	7th	22nd	***Achimjogeum***	*Daegekki*	*Yeolsemul*	Small neap/13th tide
14	8th	23rd	***Hanjogeum***	*Jogeum*	*Jogeum*	Big neap/neap tide
15	9th	24th	***Musim***	*Musim*	*Musim*	Unchanged tide

fishermen (Lee: 2002, p.20). In interviews, the fishermen usually described *multtae* using Type I terms, but it was also observed that they use mainly Type III terms in everyday speech. That is, the Type I *multtae* are the old form, but the Type III terms are the ones still in use today.

In a lunar calendar, months vary between 29 and 30 days in length. Months with 30 days are called a big month, while the other months with 29 days are called a small month. In a big month, the 30th is always the 6th tide. However, on the 29th of a small month, two *multtaes* including the 5th tide and the 6th tide are counted as one *multtae* because this month is short of a day and the first day of the next month should be the 7th tide.[5]

4-2. Principles of *multtae* and the implications of change: the basis of Type 1

The three types of *multtae* terminology commonly consist of two classes in the structure of the words (Table 3). One is composed of numeral-type terms (combined with a lexeme, *ma* or *mul*), the other is differentiated by noun-type terms. Type I has 10 numeral and 5 noun-type terms. Type II has II numeral and 4 noun-type terms. Type III has 13 numeral and 2 noun-type terms. In the change from Type I to Type III, the use of numeral-type terms is expanded, while the use of nouns decreases.



Plate 6
Calendar with tide information provided by NACF.
Photo: Author, April 2007.

Multtae represents the status of a tide perceived as the amount and strength of the water. The 15 *multtae* terms are linguistic markers which show how the water changes over 15 days. In principle, the numeral-type terms get bigger as the height and flow of the tide increases, while the noun-type terms indicate that the tides are gradually weakening. The fishermen of Gomso Bay say *The tide is alive* or *The tide comes alive* as the height and flow of the tide increases, and *The tide is dying* as the amount and strength of the water decreases. Roughly speaking, the numeral-type terms are related to when the tides 'come alive', while the noun-type ones are related to when the tides are 'dying'.

The following describes in detail the tidal changes based on Type I. The 1st tide is theoretically the first day of the *multtae* when its tidal height and flow start to increase, but the change is not noticeable until the 2nd tide. At the 3rd tide, it is finally good enough for the fishermen to go out fishing, and thus it is one of the more significant tides. After that, the tide's height and flow keep getting higher and stronger. When the 6th tide (*yeoseotma*) comes, the water level is very high and the water flows very fast. The 6th tide is also called *sari*, which means the *multtae* when the tidal height and flow are the greatest. The tide reaches its highest level by the 9th tide, and at the 10th tide, the water is not 'alive' anymore. For that reason, the *multtae* terms following the 10th tide change into the noun-type terms, which indicate the tide's height and flow are weakening. Entering the 1st downturn tide (*hangekki*), the tide's height and flow begin to dwindle, and they drop down greatly at the big downturn tide (*daegekki*).[6]

The downturn tides (*gekki*) are followed by the neap tides (*jogeum*) when the tidal height and flow are at their weakest. *Jogeum* consists of two stages. The first *jogeum* is called the small neap tide (*achimjogeum*). It is not suitable for fishing due to its weak flow. The second one is the big neap tide (*hanjogeum*) when the tide's height and flow drop the most.[7] The big neap tide is also simply called *jogeum*. In the past, fishermen used to stop working at the small neap tide. The day after the big neap tide is the 'unchanged' tide (*musim*), which is the last day of a 15-day cycle. At *musim*, the tide's height and flow remain

unchanged. When the 1st tide returns, the water begins to 'come alive' again.

Out of the 15 terms for the *multtae*, the 6th tide (*yeoseotma* or *sari*) and the big neap tide (*hanjogeum* or *jogeum*) each have two distinct subordinate terms. They are as follows:

① *Boreum yeoseotma* or *boreum sari*: the 6th tide on the 15th day of the lunar calendar
② *Geumeum yeoseotma* or *geumeum sari*: the 6th tide on the 30th day of the lunar calendar
① *Choyeodeure jogeum*: the neap tide on the 8th day of the lunar calendar
② *Seumusaheul jogeum*: the neap tide on the 23rd day of the lunar calendar

The subordinate terms are combined with the lunar dates when each tide occurs. That is, these terms let us know exactly where in the two monthly cycles each tide occurs.

The other terms do not have markers to show the relationship between the tide and the lunar date. Hence, over a month, the 6th tide and the big neap tide are reference points for the *multtae* with a 15-day cycle. In other words, subdivided terms of the 6th tide and the big neap tide reflect how significant they are in the *multtae* system. This importance is also clearly observed in the folk taxonomy of *multtae*. The subordinate terms of the 6th tide (*sari*) and the big neap tide (*jogeum*) also show that a 15-day cycle *multtae* is closely related to the moon which changes its shape. Looking at the shape of the moon, the 6th tide occurs with a full moon and a dark moon, and the big neap tide occurs with a waxing moon and a waning moon.

However, the *multtae* terminology used by the fishermen of Gomso Bay has been changing over time from Type I into Type III. We need to pay attention to that change because it means more than just a change of words.

Wangpo fishermen use both the calendars distributed by Buan National Federation of Fisheries Co-operatives (NFFC) and by South Buan National Agricultural Co-operative Federation (NACF). These calendars have solar and lunar dates, a tide table, and the *multtae* terms (Plate 6). Comparing the three types of *multtae* terminology and the *multtae* terms on two calendars, it is obvious that the *multtae* terms on the NFFC calendars follow Type II, while those on the NACF calendars follow Type III.

The fishermen prefer the NACF calendars to the NFFC calendars. The NFFC calendars provide tide tables for Gunsan, a port city in the north of Buan, while the NACF calendars do so for Wido, an island near Gomso Bay. Fishermen who refer to the tide tables for Gunsan have to remember that the *multtae* in their region will come one hour earlier than it says in the tables. Probably in the light of this complaint from the local fishermen, since 2011 Buan NFFC has provided tide tables for Wido on its calendar as well. According to the Korea Hydrographic and Oceanographic Agency, tide tables began to be provided officially in 1953, and the height of the tides has been observed in Gunsan and Wido since 1980 and 1984 respectively.

These days, tide tables are commonly used. While fishermen still observe the status of the tides for themselves, fishermen in the past had to rely exclusively on their traditional knowledge. This change suggests that fishermen's cognitive

Table 3
Formal structure of *multtae* terms by type

Structure \ Types	Type I	Type II	Type III
① numeral-type terms	From 1st tide to 10th tide	From 1st tide to 11th tide	From 1st tide to 13th tide
② noun-type terms	1st downturn tide Big downturn tide Small neap tide Big neap tide Unchanged tide	1st downturn tide Big downturn tide Neap tide Unchanged tide	Neap tide Unchanged tide
①+② terms	10+5 term type	11+4 term type	13+2 term type

system for *multtae* tends to be influenced by what external information they are exposed to.

What then does the change of *multtae* terms from Type I into Type III mean? The biggest difference is found in the semantic structure.

The change of *multtae* terminology can be summarised as the expansion of numeral-type terms and the reduction of noun-type terms (Table 3). The *multtae* terms for two downturn tides have disappeared, and one of terms for two neap tides has disappeared. The big neap tide (*hanjogeum*) remains as simply *jogeum*. It may be because the big neap tide is an ideal category of *jogeum*, and it is also the category which contrasts with the 6th tide or *sari*, a very important tide in the system of 15-day cycle *multtae*.

We should also note that the combined structure of numeral-type terms and noun-type terms implies the changing patterns of tides during a 15-day cycle. As mentioned earlier, the numeral-type terms relate to tides which are getting higher and stronger, while the noun-type ones relate to tides which are getting lower and weaker. Type 1 shows the principle of the *multtae* system that the tide's height and flow increase from the 1st tide until the 10th tide, and then tides decrease from the 1st downturn tide to the unchanged tide. However, Type III implies that tides increase up to the 13th tide, and only two *multtae* go down. We already know that, in reality, the tide's height and flow do not increase by the 13th tide or *achimjogeum*. Type III simplifies the *multtae* terminology by using numbers from the 1st to the 13th tide. This simplification does not show the exact tidal changes in the local sea. In brief, while the expansion of numeral-type terms is convenient, even for non-fishermen, making it easier to count *multtae*, the more complex meanings embedded in the traditional terms are lost in the new terminology.

4-3. Folk classification of *multtae* with a 15-day cycle

The fishermen of Gomso Bay do not just distinguish 15 water names. As shown in Table 4, they recognise that the 15 *multtaes* are semantically organised by a folk taxonomy built upon a four-level hierarchy. The cultural model of tides shows how systematic the knowledge is which the fishermen have on tidal changes. In Table 4, Level IV is the primary category in the semantic organisation, including 15 tide times. The upper levels are divided into a few super-ordinate categories on the basis of similar conditions among the 15 daily tides. Level III consists of four categories that are more inclusive than in Level IV, and the four categories are included in the two categories of Level II. The super-ordinate terms show the similarity of the waters that characterise each category.

The status of waters defined in Level III is closely related to the changes in the height of the tide. The reviving tide (*sanjim*) and the downturn tide (*gekki*) distinguish when the tidal height starts to rise or fall, while the spring tide (*sari*) and the neap tide (*jogeum*) identify when the tidal height increases or decreases. Considering the primary categories of *multtae*, the reviving tide is usually perceived from the 3rd tide, including three *multtaes* from the 3rd to the 5th tide. The spring tide includes four *multtaes* from the 6th to the 9th tide. The downturn tide includes three *multtaes* from the 10th tide to the big downturn tide. The neap tide includes five *multtaes* from the small neap tide to the 2nd tide.

According to the principles of *multtae* terminology, the 1st tide could be considered as the beginning of the reviving tide. However, fishermen recognise the reviving tide from the 3rd tide because that is when the change really becomes apparent, and they can go out to sea to fish. The 6th tide is also called the spring tide (*sari*), but according to fishermen, water comes in more and its flow is stronger during the 7th tide and the 9th tide. Too strong a tide is not good for traditional longline fishing, so the best time is said to be from the 3rd to the 6th tide.

The category terms in Level II are the spring tide (*sari*) and the neap tide (*jogeum*). These names are the same as in Level III, but have more comprehensive meanings in Level II. The spring tide includes all the *multtaes* when the tidal height is increasing and the tidal flow is getting stronger. In contrast, the neap tide is a category including all the *multtaes* when the tidal height is decreasing and the tidal flow is weakening. These tides are the same things that the fishermen express idiomatically when saying that the *Tide is alive* and the *Tide is dying*. In other words, the fishermen's statement that the *Tide is alive* means the tides are rising (*sanjim*) until they reach their highest level (*sari*), while the *Tide is dying* means the waters are decreasing (*gekki*) until they reach the lowest level (*jogeum*).

Fishermen do not usually go out to sea at the neap tide because they cannot fish well when the tide is low. The downturn tide (*gekki*) is included in the neap tide in Level II, but compared to the neap tide in Level III, the tide still

Table 4
Folk taxonomy of *multtae* with a 15-day cycle

Level I	(one) Spring tide *(Sari)*												
Level II	Neap tide *(Jogeum)*		Spring tide *(Sari)*							Neap tide *(Jogeum)*			
Level III	Neap tide *(Jogeum)*		Reviving tide *(Sanjim)*			Spring tide *(Sari)*				Downturn tide *(Gekki)*			Neap tide *(Jogeum)*
Level IV	1st tide	2nd tide	3rd tide	4th tide	5th tide	6th tide *(Sari)*	7th tide	8th tide	9th tide	10th tide	1st downturn tide	Big downturn tide	Small neap tide	Big neap tide *(Jogeum)*	*Unchanged tide*

has a strong enough flow of water with the influence of the spring tide. Thus, fishermen can usually work during the downturn tide. In short, fishing periods include the reviving tide and the spring tide (all *sari* in Level II) plus the downturn tide (a part of *jogeum* in Level II).

Level I is the highest super-ordinate category in the semantic organisation of terms for the *multtae* with a 15-day cycle. *Sari*, the term for Level I has the broadest concept, expanded from its basic definition which means the 6th tide. A set of 15 days for the *multtae* is counted as one *sari*, and a month has two *saris*. For the fishermen of Gomso Bay, the duration of a fishing period is usually four or five *saris* (that is, two months or two months and a half) regardless of the type of fish.

The terms and categories for *multtae* reflect the importance of the spring tide (*sari*) and the neap tide (*jogeum*) in the fishermen's cognitive system of tide and time. However, the prototype category in the folk taxonomy of *multtae* is *sari*.

The fishermen's focus on *sari* can be understood from the relationship between *multtae* and fishing activities. The use of *multtae* was more crucial in the past when the fishermen of Gomso Bay used sailing boats and longlines. Fishermen usually went out to sea during the spring tide because of the relationship between the strength of the tide and the catch. Also, the fishermen preferred the spring tide because of the way their sailing boats needed to use the wind and tidal currents to navigate.[8] They usually went out to sea using the ebb tides early in the morning and returned to shore using currents flowing towards the land. The fishermen explain that the tidal current is ebbing during the spring tide (*sari*) in the morning time when they go fishing, while it is flowing during the neap tide (*jogeum*). The spring tide was therefore an exceptionally good *multtae* for fishing activities.

At present, the fishermen of Gomso Bay still work at sea in the morning. Using motor boats, they can go out to sea and come back to the land during both ebbing and flowing tides. In addition, by pre-setting nets and fish traps at sea, they can catch fish almost every day during both the spring tide and the neap tide if the weather is good. Nevertheless, the catch is still better during the spring tide than it is during the neap tide, and the *sari* and the *jogeum* still dictate how and what they fish for.

5. The fishermen's *multtae* life

Multtae still has a strong influence on the work of fishermen at sea. The fishermen of Gomso Bay stress that their fishing activities are *Multtae il* (work) depending on *multtae*. *Multtae* influences their daily life on land as well. For that reason, I define the unique lifestyle of the

fishermen who rely on the tide both at sea and on land as '*multtae* life,' which extends their idiomatic expression '*multtae* work.' Finally, by providing some typical examples of *multtae* life, I will describe how the fishermen's knowledge of *multtae* is used both at sea and on land.

5-1. Use of *multtae* at sea

As mentioned above, the fishermen usually use the spring tide for their fishing. But fishermen may also work during the neap tide depending on the species they are fishing for. For instance, small shrimps or purple whelks are mainly caught near the coast during the neap tide. The neap tide is preferred for species living in shallow water or on the sea bottom.

Akiami paste shrimps, 2 to 3 centimeters long, are the main ingredients for salted shrimps which Korean people use for the seasoning of Kimchi. The fishermen usually catch the small shrimps in summer. From July to August, it is mainly fisherwomen who catch the shrimps in skimming nets near the coast, particularly during the neap tide (Plates 7 and 8).

The fishermen also catch small shrimps from August to September with swing nets on stakes within the bay. The nets are placed with their openings facing west during the spring tide (Plate 9).

The water temperature is still high during the fishing season, so the nets that stay under the sea during the neap tides easily get dirty. If the nets are not cleaned, they may be torn by the strong spring tides. To avoid this, fishermen haul in the nets and dry them in the sun during the neap tides. When the neap tide passes, they set up the cleaned nets under the sea again. Usually, they work at sea from the 5th to the 13th tide, and fix and dry the nets on land from the neap tide to the 4th tide.

Fishermen change the way they haul in the crab nets or webfoot octopus traps depending on the direction of the morning tide (Plate 10). In Gomso Bay, the ebb moves from the east to the west, while the flow moves from the west to the east. However, fishermen usually haul in their nets or fish traps against the direction of the tidal currents. When the tide is ebbing in the morning (namely, during the spring tides), fishermen work moving from the west to the east. When the morning tide is flowing (namely, during the neap tides), they work moving from the east to the west. But fishermen work regardless of ebbs and flows during the neap tides because the tide is weak. Before the introduction of motor boats and auto fishing gear, the fishermen caught fish by following the direction of the tidal currents. According to the old fishermen, if they worked against the direction of the tide with traditional fishing tools, their sailboats could overturn. Even today, fishing takes account of tidal currents.



Plate 7
Fisherwoman catching akiami paste shrimps near the coast at the low tide.
Photo: Author, July 2009.



Plate 8
Fisherwoman carrying a skimming net with shrimps in her hand.
Photo: Author, July 2007.



Plate 9
Fishermen hauling in shrimp nets to dry during neap tides.
Photo: Author, September 2008.



Plate 10
Fishermen catching webfoot octopuses in the morning ebb tide.
Photo: Author, October 2008.

5-2. Use of *multtae* on land

Wangpo people often purchase seafood by visiting fish markets in Gomso or Buan-eup, the county seat, or the wholesale Fresh Fish Market in Gyeokpo (Figure 2), especially when they need to buy a lot of fresh seasonal seafood. Again, the fishing villagers pick the time to visit fish markets based on *multtae*.

One day in May 2011, a Wangpo woman went shopping at the fish market in Gyeokpo with her mother and one of the villagers because she wanted to buy a lot of swimming crabs to make soy sauce marinated crabs.The fish market was crowded, and it was selling a lot of seasonal seafood wholesale. She bought a number of crabs and her mother bought lots of cuttlefish. It was May 16. By the lunar calendar, it was April 14, and its *multtae* was the 5th tide, one of the spring tides. They say that it is better to go to fish markets during the spring tides rather than during the neap tides when the catch is relatively better and there are various kinds of seafood.

The fishermen also take the *multtae* into consideration even for events on land. Even though they now work regardless of *sari* and *jogeum*, the spring tides still provide a bigger catch than the neap tides. For that reason, fishermen tend to schedule events to avoid the dates of the spring tides.

On a day in January in 2009, the women's association of the village gathered at the village hall to discuss the schedule for the villagers' group outing that spring.[9] As webfoot octopus catching would start around late February, the members agreed to schedule the group's outing during late February or early March. Because one or two people hesitated about staying away from work, the leader tried to encourage the members, saying *Let's go together finding even a day of the neap tides.* Then, someone took a calendar off the wall and brought it to the members. They focused on *multtae* rather than days or dates. The options were narrowed down to March 5 or 6 (February 9 or 10 in the lunar calendar). The *multtaes* of both dates were the unchanged tide (*musim*) and the 1st tide (*hanma*) respectively, one of the neap tides. Finally, the date for the outing was set for Friday, March 6.

The fishing village society that Wangpo fishermen joined planned a group outing in 2010. The date for the trip was fixed for Monday, April 19 for a number of members catching webfoot octopuses. It was March 6 in the lunar calendar, and the *multtae* of the day was the 12th tide, one of the neap tides. Unlike webfoot octopuses, the catch of purple whelks is good during the neap tide. Because the use of *multtae* is different according to the species fished for, it sometimes happens that some fishermen cannot join in group activities.

In addition to village events, some provincial or national events are also scheduled based on *multtae*. On Wednesday, November 15, 2008, the 3rd Fishery Conference in North Joella Province was held in Buan County. It was October 8 in the lunar calendar, and its *multtae* was the neap tide. In 2011, the National Fishery Conference, a biennial event, was held in Gunsan City from Wednesday, May 11 to Friday, May 13. In the lunar

calendar it was April 9 to 11, and the range of *multtae* was from the unchanged tide to the 2nd tide. Both conferences took place during the neap tides.

Compared to farmers' conferences which show relatively higher participation than events for fishermen, some fishermen said, *Our participation is not that good because we have to work following multtae*. This statement confirms the importance of *multtae* in understanding the fishing communities.

Finally, there are some religious activities related to food. *Jang* (Korean traditional fermented food made from soybeans) is a basic sauce that is widely used in Korean food. Today, people often buy and eat this fermented food, but it is still considered to be important to Koreans. As soy sauce is only made once for the whole year, making *jang* is a very important household task. For that reason, myths related to making soy sauce have developed in Korean culture. One of them is a belief about certain days being propitious for making soy sauce. In general, it is said to be good to make soy sauce on *Mallal* (the Horse Day), one of the 12 Chinese Zodiac Days, which is believed to be an auspicious day. This folk tradition is generally believed by people in both rural and fishing villages.

However, in Wangpo, a fishing village, the belief about making *jang* is related to *multtae*, as well as to choosing an auspicious day without ghosts bringing bad luck. According to the old ladies, it is a good *multtae* to pour *jangmul* (salt water) on blocks of fermented soybeans during the ebb tide. When *jang* is made during a rising tide, the *jang* could bubble, and that is a bad thing. In summer, there is often foam on the sea when the tide is coming in (Plate 11). Perhaps the foaming tide reminded people of the bubbles in soy sauce. Today, women do not all follow this superstitious practice, but some still do. An old lady said, *I knew it is Mallal to make soy sauce when I lived in a rural village before marriage. But when I got married to this village, I learnt that jang should be made at low tide*. This belief is considered a unique cultural taboo of fishing villages relying on *multtae*.

6. Conclusion

Based on the fishing village in Gomso Bay in Korea, this paper has reviewed the local fishermen's traditional knowledge about tide and time, characterised by the concept of *multtae*. I have explained the structural principles and folk classification of the *multtae* system with a 15-day cycle. The *multtae* is organised based on *sari* and *jogeum*, and in particular, the spring tides tend to be important to the fishermen whose fishing activities depend on *multtae*. This study also explored how fishermen's life both at sea and on land is closely related to *multtae*. The fishermen who rely on the marine environment embody the rhythm of the waters in their life. Thus, I have defined their routines in fishing villages following *multtae* both at sea and on land as '*multtae* life,' extending their idiomatic expression '*multtae* work.' The traditional knowledge of *multtae* provides a cultural insight into how the tide, a natural pheonemenon, could be recognised and utilised by human beings.

I have also demonstrated that the folk term *multtae* used by the fishermen is polysemous and more inclusive than is generally known. This paper has shown that fishermen use *multtae* to indicate a diversity of categories of tide and time. In future studies, the *multtae*, which embodies multi-layered and comprehensive concepts, needs to be re-examined from the viewpoint of Korean fishermen's culture in general, to understand how fishermen conceptualise tidal phenomena.

This paper has introduced only a part of the Korean fishermen's cognitive system about tides, focusing on the structures and principles of the *multtae* with a 15-day cycle. While the *multtae* system introduced in this paper is mostly about the general status of the waters, Korean fishermen also recognise the variability of the tides, and classify certain tides as special. In addition, as fishing environments have changed, the folk taxonomy of *multtae* also shows some generational differences. These issues will be discussed in future studies.

Fishermen in different regions have developed their own understanding of different marine environments. Coastal and deep-sea fisheries may create different knowledge about tides. However, marine cultures related to tides have rarely been studied, and traditional knowledge of tides has not been acknowledged as intangible cultural heritage. Carbonell (2012) has noted the Catalonian fishermen's traditional knowledge of weather as intangible cultural heritage which showed the close relationship between human beings and their environment. Like the weather, tidal phenomena also form an important part of the fishermen's knowledge of their local marine environment. Korean fishermen's traditional



Plate 11
Sea foam on the rising tide early in the morning in summer.
Photo: Author, July 2008.

knowledge of *multtae* is worth paying attention to as intangible cultural heritage. These days, an increasing interest in the sustainable lifestyles of human beings has emphasised the importance of marine environments and resources. Recognising traditional knowledge about tides as an aspect of human beings' cultural heritage means *to preserve and defend one of the ways in which people relate to the world around them* (Carbonell: 2012, p.74).

Finally, I have highlighted the fact that Korean fishermen's *multtae* classification belongs to *folk scientific knowledge* (Casson: 1981) in terms of cultural diversity. While going through a rapid period of modernisation since the 1960s in Korean society, a hierarchy of knowledge rooted in western and modern scientifically-oriented thought has underestimated traditional and local knowledge, and its sustainability has been threatened. It is crucial to acknowledge that the Korean fisherman's knowledge of marine environments is also a valuable intellectual property, enriching our understanding of how our experiences are organised.

ENDNOTES

1 This paper reconstitutes a part of Chapter 5 (entitled 'The Folk Classification of Sea Waters: Knowledge of Time') from my doctoral dissertation (Jo: 2014, pp.182-256). It is also the result of editing and updating the script presented at The International Symposium on the Culture of *Haenyeo* (Women Divers) in October 2015, and the Symposium of the Intangible Heritage Association in April 2017.

2 For the theoretical approaches of ethnoscience or cognitive anthropology, see, for example, Goodenough (1957), Conklin (1955, 1962), Frake (1961, 1962), Sturtevant (1964), Tyler (1969), Spradley (1972), Casson (1981), D'Andarde (1995), Wang (1996).

3 The fishing of yellow croakers has had a great influence on the fishing culture of the West Sea. Despite the decline in fishing, yellow croakers are still symbolic for fishermen in the West Sea as they are favoured by Korean people, and are also an essential ritual food for ancestral rites (Jo: 2012, pp.265-268).

4 In English translation, 15 folk terms for *multtae* by day follow a standard pronunciation in Korean. For instance, *seoma, neoma, yadalma, achimjogom,* and *hanjogom* in local pronunciation were marked as *sema, nema, yeodeolma, achimjogeum*, and *hanjogeum* respectively.

5 Previous studies show that the West Sea area and the South Sea area of Korea have different *multtae* systems in terms of how they count the first day of the lunar month (Chang, T.J.: 1969; Lee: 2002, pp.34-35; Wang: 2010, p.58, 2012, p.77). Generally, in the West Sea, *multtae* on the first day of a lunar month starts with the 7th tide, but in the South Sea, it starts with the 8th tide.

6 *Han* in *hangekki* means 'one', and *dae* in *daegekki* stands for 'big' or 'great'. *Gekki* means to subside.

7 *Achim* in *achimjogeum* means 'small' as *han* in *hanjogeum* means 'big.' (Chang, T.J.: 1969, pp.113-114).

8 In traditional fishing with sailboats, the use of winds was also very important in addition to the use of *multtae*. See Jo (2015) for the traditional knowledge of Korean fishermen about winds and the relationship between wind and tide.

9 In the process of modernisation in Korea, while young people had been leaving for urban areas to look for jobs, most villages in rural areas were struggling with a shortage of labour. The wives of ship-owners therefore began to work on the boats with their husbands in the 1980s, breaking a traditional taboo about not allowing women to board fishing boats. At present, fishing activities usually rely on couples' labour. These changes have made women important decision makers.

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