Conceptualization of TIME in Kavalan and Saisiyat

FUHUI HSIEH

Tatung University
hsiehfh@ttu.edu.tw

Abstract

This study sets out to investigate the conceptualization of TIME in two Formosan languages, Kavalan and Saisiyat. Cognitive linguists propose that most languages maintain TIME-SPACE metaphoric relations; in other words, language users understand abstract concepts of TIME via bodily experiences in the concrete domain of SPACE. Such a cognitive mechanism is believed to be "biologically determined" and thus universal. While TIME-SPACE metaphors can be found in these two languages, they are somehow inadequate to explain the time conceptualization in these two languages. In these two languages, a day is not quantitatively segmented into hours, minutes or seconds, but rather is rather qualitatively segmented into events; time is therefore highly sensitive to events and activities. To better explain the time conceptualization in Kavalan and Saisiyat, I therefore propose a metaphtonymic model where the basic ontological domain in time meaning construction is events and actions, and time meanings emerge not only from time-space metaphorical mapping, but also from bodily experiences metonymically associated with events and actions that constitute our daily lives. The findings of this study may contribute theoretically to a better understanding of TIME-SPACE metaphoric mapping relations in the two Formosan languages and may also contribute to a clearer picture of the emergence of time meanings from a cross-linguistic perspective.
Key words: conceptualization of TIME, metaphoric mapping, event-based, metaphtonymic

1. Introduction

As the time concept, though basic to our experience, is so abstract that it "cannot be pointed to and observed" (Evans 2003: 251), SPACE is widely viewed as the principal source domain for the linguistic and conceptual structuring, through metaphoric mapping, of TIME. Due to the concrete and fundamental experiential concepts of basic spatial relations, SPACE-TIME mapping is claimed to be unidirectional; that is, "we express time in terms of space but not space in terms of time…" (Boroditsky 2000; Radden 2011). Moreover, the use of spatial expressions for notions of time has been attested in many of the world's languages (Radden 2011). Typological studies have shown that lexical SPACE-TIME mapping is indeed widespread (Haspelmath 1997), and SPACE-TIME metaphorical mapping has been analyzed in typologically unrelated languages,

such as English (Clark 1973; Lakoff and Johnson 1999), Aymara (Sourth America: Núñez and Sweetser 2006), Chinese (Yu 1998), and Wolof (West Africa: Moore 2006). Based on these cross-linguistic data, cognitive linguists therefore propose that linguistic SPACE-TIME metaphorical mapping, being based upon universal non-linguistic cognitive processes (Boroditsky 2000; Casasanto and Boroditsky 2008), can be considered as universal (Fauconnier and Turner 2008; Núñez and Cooperrider 2013; Lakoff 1993:218; Radden 2003; Lakoff & Johnson 1980, 1990; Gibbs 1994; among others). Such a universal view can be attested by the following quotes: "Time as Space is a deep metaphor for all human beings" (Fauconnier and Turner (2008: 55) and "it is virtually impossible for us to conceptualize time without metaphor" (Lakoff and Johnson 1999:139).

Nevertheless, in his book-length taxonomy of temporal frames of reference, Evans (2013) provides an overview of the role of space in structuring human representations of TIME. Challenging the assumption that time is straightforwardly structured in terms of SPACE, Evans (2013) shows that time is directly experienced and that its manifestation is often independent of our experience of motion events in space. He therefore maintains that while SPACE is important for temporal representation, TIME is nevertheless separate and distinguishable from SPACE.

Moreover, recent studies, especially those on non-European languages, challenge the universality of SPACE-TIME linguistic mapping (Levinson and Majid 2013; Sinha et al. 2011), and maintain that linguistic SPACE-TIME mapping had better be situated in wider patterns of cultural context (e.g. Hurtado de Mendoza 2002; Núñez and Cornejo 2012; Sinha et al. 2011; Sinha and Bernardez 2015:309; Bernárdez 2013). Sinha et al. (2011) distinguish two important time systems: time-based time interval systems and event-based time interval systems. Time units in time-based time interval systems are chronological and quantative in nature, and the arrangement of the sequentiality of events can be conceptually autonomous from the events involved (Sinha et al. 2011:138). The boundaries of time-based time intervals are therefore constituted by the quantitative segmentation of the conceptual domain of TIME, such as *hours* and *weeks*. On the other hand, time units in event-based time intervals are qualitative in nature; boundaries of event-based time intervals are consequently constituted by the events themselves, such as *sunrise* and *Christmas*.[1]

The main purpose of this study is to investigate the conceptualization of TIME in two Formosan languages, Kavalan and Saisiyat. Following Radden (2003), I will compare topological properties of SPACE and their corresponding properties in TIME, i.e., DIMENSIONALITY, ORIENTATION AND SUCCESSION, DURATION, and MOTION in Kavalan and Saisiyat. I leave out the dimension of SHAPE in this study. As there is no native linguistic expression for TIME in these two languages, it is therefore not surprising to find that the language speakers do not "imagine" time as of an entity conceptualized in terms of shapes. Because as pointed out by Lyons, "the only reason we have for saying that truth, beauty and electricity are 'things' is that the words which refer to them in English are nouns" (Lyons 1968: 318). The only two spatial SHAPE-related term used for

---

[1] Other names for such event-based time intervals are the Nuer 'cattle clock', and 'occupational time' (Evans-Pritchard 1939, 1940; Sinha et al. 2011:312).

temporal descriptions are Kavalan *Raya* 'big' and *kiya* 'a little' , both being used to describe one's age, but not other temporal events. For example:

(1) Kavalan

a. Raya=ti=iku
AF.big=PFV=1SG.NOM
'I have grown up.'

b. kiya=pama   m-ipil=ti=iku   tu   kungku zau.
little=still   AF-hear=PFV=1SG.NOM OBL story   this
"I have heard this story when I was little.'

The usage of both terms is in fact more metonymic to the size of human body than metaphoric in essence.

Our linguistic data show that SPACE-TIME mapping in these two Formosan languages is limited in many aspects. Firstly, except for a handful of lexical temporal terms, time expressions in Kavalan and Saisiyat are highly sensitive to activities; they are nominals derived from verbs; for example, the Saisiyat expression *kaba:i'an* 'time to pay tax; tax season' derived from the verb *ba:i'* 'to give'. In addition, in arranging inter-event relations, i.e., succession of events, the two languages prefer to utilize morphosyntactic devices that enable their speakers to talk about time independent of space. Based on the data presented in this study, I propose a metaphtonymic account that would better explain the time conceptualization in the two languages.

The linguistic data used in this paper came from three major sources: (a) data drawn from the On-line Kavalan Dictionary and the On-line Saisiyat Dictionary of the Council of Indigenous Peoples[2]; (b) narrative data from the Investigation Reports of Saisiyat Rituals and Documentary of the interviews with Saisiyat seniors (Zhao et al. 2014); and (c) my own fieldwork on the two languages.

Section 2 provides a sketch of the Kavalan and Saisiyat people and the languages. To provide some background knowledge, Section 3 presents a list of lexical terms related to TIME concept in the two languages. Section 4   discusses DIMENSIONALITY (Section 4.1), ORIENTATION AND SUCCESSION (Section 4.2), DURATION (Section 4.3), and MOTION (Section 4.4). The findings will be discussed and a metaphtonymic model will be proposed in Section 5. Section 6 concludes this study.

2. **Brief Sketches of Kavalan and Saisiyat**

This section presents some basic ethno-geographic data and the linguistic characteristics of Kavalan and Saisiyat; both belong to different branches of the Austronesian family.

Kavalan is a highly endangered Formosan language spoken in the eastern part of Taiwan. The total Kavalan population, according to the official census of the Council of Indigenous Peoples, was 1,431 as of January 2017[3]; however, the number of fluent speakers is less than a hundred, who mainly inhabit Hsinshe

---

[2] http://e-dictionary.apc.gov.tw/Index.htm

[3] http://www.apc.gov.tw/portal/docDetail.html?CID=940F9579765AC6A0&DID=0C3331F0E BD318C2CA1B8F8C6F132658

Village, thus called Hsinshe dialect, in Hualien Prefecture, and Changyuan Village, called Changyuan dialect, in Taitung Prefecture. The main difference between Changyuan Dialect and Hsinshe Dialect lies in phonology (cf. Chang 1997, 2000; Li 1996, 1997; Hsieh 2016). Our informants speak Hsinshe Dialect.

Saisiyat is spoken by the aboriginal people inhabiting the mountain areas in Miaoli and Hsinchu, north-western part of Taiwan. The population, according to the official census of the Council of Indigenous Peoples, was 6,533 as of January 2017. There are two main dialects: the north Saisiyat, the so-called Taai Dialect, is mainly inhabited in Taai Village, Hsinchu Prefecture, and the south Saisiyat, Tonghe Dialect, is mainly spoken in Tonghe Village, Miaoli Prefecture. The main difference between the two dialects lies in phonology and lexicon (Li 1978; Yeh 1991, 2000, 2003). The dialect reported here is Tonghe Dialect.

Generally speaking, there are four main characteristics of Formosan languages. First, most are verb/predicate initial languages.[4] Second, most are ergative languages. In other words, while the accusative languages, e.g. English, mark intransitive Subject and transitive Agent in the same form, ergative languages, e.g. Tagalog and many Austronesian languages, mark intransitive Subject and transitive Object in the same form. Third, most make do with a fairly limited repertoire of grammatical categories, making no syntactic distinction among such categories as verb, adjective, adverb, and preposition. And the last is the focus system.[5] The focus markers can be categorized into four types: agent focus (AF), patient focus (PF), locative focus (LF), and referential focus (RF), which can be further divided into instrumental focus (IF) and benefactive focus (BF). Saisiyat still keeps a four-way morphological distinction in the focus system; yet, its LF has lost verbal function and occurs in equational sentences only. By contrast, Kavalan makes only a two-way distinction, i.e. AF and LF, in its focus system.

3. Lexical terms related to time concept in the two

---

[4] Saisiyat is one of the few exceptions that many of its clauses are Subject (Nominative argument) initial.

[5] Some Austronesian linguists (Starosta 1986; Himmelmann 2002; Ross 2002; Chang 1997: Chapter 3, and many references reviewed and cited there) suggest that these are not focus system, but rather voice system, verbal morphology indicating different voices; e.g., the actor voice (agent focus) is equivalent to actor voice and the non-actor (Patient Focus, Locative Focus & Referential Focus) is indeed non-actor voice. Some linguists (e.g., Lisa Travis, Illeana Paul 2000) studying Philippines languages name such a system as a Topic System. Ross & Teng (2005) reformulate the focus system as a transitivity system (see Huang (2005) for a similar view). Since it is not the goal of this paper, we do not go into the debate here. Interested readers may refer to the above-mentioned literature. In this paper, we still use the traditional terminology for convenience sake; however, it does not mean that we totally agree on the focus analysis.

This very complicated issue of the focus system can be easily seen in the translations of the sentences in different focuses. It is not uncommon to see a two-argument sentence in either AF or NAF having identical English translations; for example, the Saisiyat AF sentence *yao boe'oe: hi 'obay*, and the PF sentence *'obay boe'oe:-en ma'an* both are translated as 'I am angry with Obay.', although their functions in discourse are completely different, a topic not pursued in the present study.

languages

Lexical time expressions in Kavalan and Saisiyat are summarized as in Table 1.

Kavalan	Saisiyat	English	Kavalan	Saisiyat	English
--	--	time	*tiRi ti*	*tiSikas*	dawn; twilight
tasaw	*tinal'oema eh*	year	*batad*	*tomotata: a'*	dawn (when the rooster begins to crow)
bulan 'moon'	*ilaS* 'moon'	month	*suRap (semuRap)*	*ririm'aena n iyaSamSe m*	early morning
tesawi	*kamonhael*	last year		*tilka:an*	day time (from the sun-rising to the sunset)
kezuma i	*koe'hael*	next year	*qemadanan*	*hila:an*	the time period from noon to afternoon
deddan 'sky'	*hahila:* 'sun'	day	*qutuan*	*karim'aen an*	morning (the time period from 7 or 8 o'clock till noon)
tangi	*kaysa:an*	today	*tutu*	*kaksi'aela n*	noon
siRab	*kahiya*	yesterday	*Rabi ti*	*rohanan iyaSamSe m*	evening
temawa R	*rima:an*	tomorrow	*tedem ti taRbabi suRabi*	*hae:wan*	night
--	--	week	*tuRantuRabi*	*'iyawazwa z (ka 'ilas)*	midnight

Table 1 Lexical time expressions in Kavalan and Saisiyat

As shown in Table 1, we can see that neither Kavalan nor Saisiyat has a lexical term denoting 'time', nor does either language have a term equivalent to the English *week*. A day in the two languages is not quantitatively segmented into hours, minutes, or seconds. The major linguistic strategy that the languages adopt to name different time intervals is by metonymy: terms for time periods are metonymic either to naturally phenomena associated with time concept or to events associated with time. For example, the terms denoting 'moon' are used to refer to 'month' in both languages, and the Saisiyat term *hahila:* denoting 'sun' and the Kavalan term *deddan* denoting 'sky' are used to refer to 'day'. These are some examples showing lexical terms derived metonymically from natural phenomena.

In addition, some lexical terms are closely related to events. For example, the Saisiyat expression *tomotata:a'* referring to the time period of 'the dawn;

early morning' is in fact an AF verb meaning 'to crow'. Likewise, many Kavalan time period expressions are in fact verbs; examples are illustrated below:

(2) Kavalan

a. suRabi=pa=iku   t<em>anan   sa   kalingku.
night.time=FUT=1SG.NOM   <AF>go.back   LOC   Hualien
'I availed myself of the night time going back to Hualien.'

b. s<em>uRap   aizipna   mawtu   sa   leppaw=ku.
<AF>early.in.the.morning   3SG.NOM   af.come   LOC   house=1SG.GEN
'He came to my house in the early morning.'

c. suRap-ka!
early.in.the.morning-IMP.AF
'(Be here/Do something) in the early morning!'

Another intriguing example is the Saisiyat term *'iyaSemSem* (*'iyaSamSem*), which refers to the color of the sky (that is 'dim'), is used to refer to the time intervals both 'in the early morning when the sky is still dark', and 'in the evening when the sky is getting dark'. For example:

(3) Saisiyat

a. 'iyaSamSem ila,   'am~'amoeh lobih.
about.to.darkINCEPT   RED~quick   go.home
'It's getting dark in the evening, go home quickly.'

b. haysiya 'iyaSamSem,   ya:o   manra:an   ila
still   about.to.dark1SG.NOM   AF.walk   INCEPT
rima'   ray   kapatawawan.
go   LOC   work.place
'(When) it is still dark in the early morning, I walk to work.'

To sum up, as revealed by the lexical terms referring to time intervals in Kavalan and Saisiyat, it is clear that both languages do not utilize any time reckoning devices (e.g., calendar or watch), but rather use events, activities or natural phenomena to denote time intervals.

4. Topological properties of TIME in the two languages

To investigate the linguistic manifestation of TIME-SPACE mapping in Kavalan and Saisiyat, this section examines topological properties of SPACE and their corresponding properties of TIME in the languages. In the following subsections, I will tackle with DIMENSIONALITY, ORIENTATION and SUCCESSION, DURATION, and MOTION respectively.

4.1 DIMENSIONALITY

Though the time concept is abstract, we may experience time and thus measure time units by events. Events and units of time are "located" on a time-line but may internally be conceived of as zero-, one-, two-, or three-dimensional (Radden 2011:3). English is a language that makes systematic use of these dimensional possibilities, especially in its use of prepositions. Points in time are, like points in space, described by using the zero-dimensional preposition *at*, as in *at this moment*; the one- and two-dimensional preposition *on* is mainly used with days, as in *on my birthday*.

To denote various spatial relations, the Saisiyat locative marker *ray* is

employed, as in the following examples:

(4) Saisiyat

a. ya:o   **ray**   taew'an kiSka:at.
1SG.NOM LOC home   study
'I was at home studying.'

b. moto: rowaSek   **ray**   'amiS   no walo'.
hakka AF.live   LOC north   GEN PN
'The Hakka people live in the north of Walo'.'

c. 'isaso: **ray**   lolongan 'akoey ay ka ka:ang?
there   LOC brook   many   Q   ACC crab
'Are there many crabs in that brook?'

d. korkoring   maywawak **ray**   ra:i'.
child   roll.about   LOC ground
'That child was rolling about on the ground.'

e. ma'an kayba:en   risaza **ray**   kaSa:engan
1SG.GEN clothes   there   LOC chair
'<in>aSkan 'ampowa'   hawka'   ila?
<PFV>put   why   AF.disappear   PFV
'Why did the clothes that I had laid over the chair disappear?'

As shown by the examples in (4), it is clear that the Saisiyat locative marker *ray* can be used to denote a wide range of spatial relations; for example, it can be equivalent to the English preposition *at* (4f), *in* (4c), *on* (4d), and *over* (4e). The same locative marker *ray* is also found to be used to denote temporal relations, for example:

(5) Saisiyat

a. hiza   **ray**   **hahila:**   s<em>nge ila ka Si'Si'.
that   LOC day   <AF>soak   PFV ACC glutinous.rice
'On the day before (the ritual), leave glutinous rice soaked in water.'

b. hini **ray 'aehae'**   **roehaenan**,   paspaSo   'aehae'
this LOC one   tonight   each   one
taew'an   t<om>awbon   ila saeboeh.
home   <AF>husk.rice   PFV all
'This night, each family is husking glutinous rice (making glutinous cake).'

c. **ray**   **kapit'azae'an** hayza   mato:ol hahila: na'.
LOC sowing.ritual   have   thirty   day   PART
'Thirty days before the sowing ritual. (lit.: There are thirty days till the sowing ritual.)'

Similarly, Kavalan employs its locative marker *ta...-an* to denote various spatial relations, for example:

(6) Kavalan

a. s<em>alaw   **ta** naung-**an**   tama=ku
<AF>hunt   LOC mountain-LOC   father=1SG.GEN
'My father hunts in the mountains.'

b. ala-ka   tu ulima   Rasibu   kelisiw
take-IMP OBL five   hundred money
ta tina-an=su,   saRasa-an=su   tu beRas

LOC mother-LOC=2SG.GEN buy-PF=2SG.GEN OBL rice
ta tiyam-an.
LOC shop-LOC
'Go get five hundred dollars from your mother's to buy rice at the shop.'

c. t<em>ibuq **ta** zanum-an kelisiw na qaqa=ku.
<AF>fall LOC water-LOC money GEN elder.sister=1SG.GEN
'My elder sister's money fell into the water.'

d. muwaza adam **ta** dedanan t<em>anbaseR
many.NHUM bird LOC sky-LOC <AF>fly
'Many birds are flying in the sky.'

e. yau=iku **ta** amutu-an pa-waRi tu sabaq.
ASP=1SG.NOM LOC ground-LOC CAU-dry OBL unhusked.rice
'I put unhusked rice on the ground to let them dry in the sun.'

The Kavalan locative marker *ta...-an* can be used likewise to denote temporal relations, for example:

(7) Kavalan

a. **ta** sekawaluan me-lizaq=iku ta libeng
LOC summer-LOC AF-like=1SG.NOM LOC below
na paRin RaysaRu.
GEN tree enjoy.the.cool
'In summer, I like to enjoy the cool under the tree.'

b. qenizi **ta** tasaw unay nani, mai=ti=ma
kelawkaway.
from LOC year that DM NEG=PFV=only
work
'From that year on, she worked very little.'

Judging by the examples in (4) to (7), we can see a clear SPACE-TIME metaphoric mapping in these two languages by using one single locative marker *ray* and *ta...-an* to spell out a wide range of spatial and temporal relations.

4.2 ORIENTATION and SUCCESSION

A large number of crosslinguistic studies suggest that the passage of TIME is often conceptualized as linear, i.e., a time line. A line has an orientation in space; it can be horizontal, i.e., front-back, or vertical, i.e., up-down (see Haspelmath 1997: 22). The front-back orientation of time appears in expressions such as *the weeks ahead of us* and *the worst is behind us*. As pointed out by Radden (2011), the front-back orientation is probably universally applied in expressing notions of TIME and is the predominant pattern of oriented TIME in Western cultures; by contrast, Eastern cultures tend to make much more use of vertically oriented time (Radden 2011). For example, in Chinese there are such temporal expression as *shang4-yi4-nian2* 'up-one-year; last year', *shang4-xing1qi2* 'up-week; last week', *xia4-zhou1* 'down-week; next week', and *xia4-ban4-nian2* 'down-half-year; the second half of the year' (see Radden 2011 for more examples).

Both Kavalan and Saisiyat have linguistic terms denoting front-back and

up-down orientations in space; however, none of the spatial orientation terms in Saisiyat can be used in temporal discourse, while a limited set of time-line metaphors can be found in Kavalan, as shown in Table 2.

spatial terms	Saisiyat	TEMPORAL	Kavalan	TEMPORAL
FRONT	*kapti'ala'*	X	*ngayaw*	V
BACK	*hikor*	X	*tuRuz*	V
UP	*babaw*	X	*babaw*	X
DOWN	*hahoer*	X	*libeng*	X

Table 2 Spatial Orientation terms in Kavalan and Saisiyat

The temporal usage of the Kavalan orientation terms are illustrated below:
(8) Kavalan
a. ta   ngayaw na iRuR   yau   ussiq   leppaw.
    LOC   front   GEN river   EXIST   one   house
    'There is a house before the river.'
b. ta   ngayaw na seppawan   munna
    LOC front   GEN festival   AF.first
    seppaw tu tazusa   na baqibai.
    worship OBL spirit   GEN ancestor
    'Before the festival, one has to worship their ancestors first.'
(9) Kavalan
a. ta   tuRuz na leppaw yau   ussiq   qabaw.
    LOC   back   GEN house EXIST   one   cow
    'There is a cow after the house.'
b. ta   tuRuz   na paskuwa, pasaya=pa=imi=ti   tu
    paluman.
    LOC back   GEN new.yearprepare=FUT=1EPL.NOM=PFV   OBL
    sowing
    'We will prepare for sowing after the New Year.'

Nevertheless, the Kavalan orientation terms, *ngayaw* 'front' and *tuRuz* 'back', function more as prepositions than as clausal conjunctors. They can be followed only by nouns (lexical time expressions), but cannot be used to connect causal events. In arranging clausal events in different time frames (Bohnemeyer, 2009; Le Guen and Pool Balam, 2012), the two languages may utilize affixes, as in (10), aspectual markers, as in (11), or/and morphological reduplications, as in (12).
(10) Kavalan
a. u-mawtu=ti   aizipna, qawka=iku   wi.
    EXP-AF.come=PFV 3SG.NOM then=1SG.NOM   leave
    'I did not leave until he came.'
b. qu-qawtu=iku   wiya=ti   aizipna.
    before-come=1SG.NOM leave=PFV   3SG.NOM
    'He had left before I came.'

(11) Saisiyat (taken from Yeh 2000:94, #9)

a. siya   kin   t<om>okaw.
    3SG.NOM CON   <AF>jump
    'He kept jumping. He has been jumping (for a period of time).'
b. ngyaw   kin   s<om>i'ael   ka   'alaw.
    cat   CON   <AF>eat   ACC   fish
    'The cat has been eating fish.'
(12) Saisiyat (taken from Yeh 2003:24)
a. siya   kahi:a'   m-wa:i' yako   to~t<om>alek.
    3SG.NOM yesterday   AF-come 1SG.NOM CV~<AF>cook
    'When s/he came yesterday, I was cooking.'

b. hiza'   ngyaw so~s<om>i'ael   ka 'alaw.
    that   cat   CV~<AF>eat   ACC fish
    'That cat is eating fish.'

4.3 TEMPORAL DURATION AS LOCATION FRAME

Both languages employ the locative nominalizers, *ka(Ca-)….-an* in Saisiyat, and *sa-…-an* in Kavalan, to denote not only location where one does an activity, as in (13) and (14), but also temporal duration when one activity takes place, as in (15) and (16). For example:
(13) Saisiyat
a. ka-kuwas-an
    KA-cut.hair-NMZ
    'the place where one has his hair cut; barber shop'
b. ka-sa:eng-an
    KA-sit-NMZ
    'the place where one sits; seat'
(14) Kavalan
a. sa-uzis-an
    SA-bathe-NMZ
    'the place where one bathes; bathroom'
b. sa-bais-an
    SA-turn.around-NMZ
    'the place where one can turn around'
(15) Saisiyat
a. ka-'oeral-an
    KA-rain-NMZ
    'rainy day; rain season'
b. ka-ba:i-an
    KA-give-NMZ
    'tax season; time to pay tax'
(16) Kavalan
a. sa-mulay-an
        SA-flower-NMZ
    'spring (the time when flowers bloom)'
b. taqsam-an
     to.seed-NMZ
    'seeding time; seeding period (the time to seed)'

One particularly interesting example showing perfect SPACE-TIME metaphorical mapping is the Saisiyat example in (17), which can be used to denote both the location and the duration to do an action.

(17) Saisiyat
ka-sangay-an
KA-rest-NMZ
a. 'the place to take a rest; rest area'
b. 'rest day; rest time'

Despite the examples shown in (13) to (17), the claim that the locative markers in the two languages are evidence showing metaphoric extension of TEMPORAL DURATION AS SPATIAL FRAME is an oversimplified statement. SPACE in the two languages is in fact metonymic to events, too; most of the location and place names in the two languages (in fact, in many other Formosan languages as well) are nominals derived from verbs. More examples are given below:

(18) Saisiyat
a.   ka-kiSka:at-an
     KA-study-NMZ
     'a place where one studies; school'
b.   ka-talek-an
     KA-cook-NMZ
     'a place where one cooks; kitchen'
c.   ka-si'ael-an
     KA-eat-NMZ
     'a place where one eats; dining room'
(19) Kavalan
a.   taqsi-an
     study-NMZ
     'the place where one studies; school'
b.   sammay-an
     cook.rice-NMZ
     'the place where one cooks; kitchen'

Note that the locations in (18) and (19) are not institutionalized place names, but rather derived nominals denoting places where one does some activities or where some certain events happen. A place where one studies does not necessarily, though it may, refer to the institution 'school'; similarly, *kasi'aelan* 'a place where one eats' does not necessarily refer to such a space as 'dining room'. For example:

(20) Saisiyat
a.   ka-se'ael-an hini   ray   ka-talek-an.
     KA-eat-NMZ   here   LOC   KA-cook-NMZ
     'The place where we eat will be (here) this cooking place. (We will eat at this cooking place.)'
b.   hini   'inmana'a   ka-pae'rem-an   halapaw.
     here   1SG.POSS   KA-sleep-NMZ   room
     'This room is the place where I sleep.'

Based on the data revealed, we may see that the meaning extensions from

location to temporal duration are not merely driven by metaphorical mapping; metonymic mechanism also plays an important role in the process of meaning emergence, a point to be elaborated in Section 5.

4.4 TIME PASSING as MOTION

Well-known conceptual metaphors such as 'life is a journey' (Lakoff and Johnson 1980) could be considered as generalized schemas derived from similarly structured passage metaphors. Generally speaking, there are two major types of TIME PASSING AS MOTION metaphors. The first one is the so-called moving-time (MT) metaphor: the motion of an event in relation to the current state of a speaker, e.g., *Christmas is around the corner*, and *Chinese New Year has passed* (Talmy 1999). The second one is called the 'moving-ego' metaphor: the motion of a speaker in relation to a temporal landmark, e.g., *He faces an ethical dilemma in his career*, and *Mary is coming up to her exams* (Clark 1973; Talmy 1999).

In Saisiyat, we can also find some limited MT metaphors, but not ME metaphors in terms of motion. For examples:

(21) TIME PASSING AS MOTION in Saisiyat: moving time

a. **potngor**   ila ka haehila:.
   AF.arrive   PFV NOM day
   'The day has arrived.'

b. hiza   kaSepewan 'i'ini' i: **potngor**
   this   time   NEG LNK AF.arrive
   ray 'iaywazwaz.
   LOC mid.night
   'It is not yet mid-night.' (lit.: "The time has not yet arrived at mid-night.)

Nevertheless, both ME and MT metaphors can be found in Kavalan. For example:

(22) TIME PASSING AS MOTION in Kavalan: moving ego

a. mezaki=ti   tu leppaw=su.
   AF.near.by=PFV   OBL house=2SG.GEN
   'We are close to your house.'

b. mezaki=ti   tu sekawalu.
   AF.near.by=PFV   OBL summer
   'We are close to summer.'

(23) TIME PASSING AS MOTION in Kavalan: moving time

a. t<em>uzus=ti   lezun.
   <AF>to.reach=PFV   winter
   'Winter has arrived.'

b. qa-ngid=ti qataban.
   IRR-will=PFV harvest.festival
   'The harvest festival is almost here.'

5. Discussion

Based on the data presented in the previous section, we may summarize our findings below, as shown in Table 3.

Topological Properties	KAVALAN	SAISIYAT
DIMENSIONALITY	✓	✓
ORIENTATION and SUCCESSION: SEQUENTIALITY OF EVENTS	✓ (limited)	X
SHAPE	✓ (limited)	X
DURATION: TEMPORAL DURATION AS LOCATION FRAME	✓	✓
MOTION: TIME PASSING AS MOTION	✓ (ME & MT)	✓ (ME, limited)

Table 3 SPACE-TIME corresponding in six dimensions

Nevertheless, saying that we have found linguistic evidence showing space-time mapping in these two languages does not help us get a better understanding of time conceptualization in these two Formosan languages.

To begin with, as mentioned previously, in these two languages, a day is not quantitatively segmented into metric units, but rather qualitatively segmented into events and/or activities. Time expressions are highly metonymic to natural phenomena and daily activities the speakers go through each day.

In addition, as pointed out by Kövecses (2005: 231), "...education and scientific advancement might invite humans to more sharply distinguish between concepts.' Nowadays, as the contact with other cultures and languages is getting frequent, educational and communicational needs urge these two languages to "create" a linguistic term to enable their speakers to talk about "time". These two languages adopt different strategies to cope with such a need: Kavalan borrows a loanword *tuki* from Japanese, while Saisiyat coins two new terms, *ka-kita-an* 'KA-see-NMZ' and *ka-sepe-an* 'KA-count-NMZ',[6] both of which are nominals derived from verbs, and both of which are still used actively as verbs. Moreover, these two terms are used to refer to not only time, but also any time-measuring devices, including watches and calendars, for example:

(24) Saisiyat
a. So'o   hayza' ay ka **ka-kita'-an**   ka hahila:?
   2SG.NOM have   Q   ACC KA-see-NMZ   LNK day
   'Do you have a watch? (Do you have the time?)
b. 'am   k<om>i:im ka 'ima   kayzaeh   ka hahila:
   FUT   <AF>look.for ACC REL   good   LNK day
   kita'   ka **ka-kita'-an**.
   see   ACC KA-see-NMZ
   'Look into the calendar to look for a lucky day.'

Similarly, the Kavalan loanword *duki* is also used to denote both TIME and time-measuring devices, for example:
(25) Kavalan

---

[6] Some Saisiyat people may use *hahi:la* 'day' to denote TIME, when asked to give some elicited data. The meaning extension of *hahi:la* 'day' to time is clearly motivated by metonymy.

  a. me-laziw=ti   duki.
    AF-go.past=PFV time
    'The time (scheduled to do something) has passed.'
  b. me-laziw=ti   duki=ku.
    AF-go.past=PFV time=1SG.GEN
    'My time (scheduled for me to do something) has passed.'

As the introduction of the loanword *duki* into the language, such expressions as 'The time has passed' and 'My time has passed', as in (25), can be found to exist in Kavalan people's daily conversations. However, time denoted in these expressions is never as abstract as it is in Western languages; time is always event-based. To understand the expressions in (25) correctly, one needs to know the context wherein some certain events are involved; therefore, the correct translation of (25a) is 'some event/activity was scheduled to be done at a particular period of time, and now, the time scheduled to do that event/activity has passed'. (25a) is therefore very often to be heard in the context where one is late for the bus. Similarly, (25b) can be heard in the context where someone's talk goes over-time.

  Metaphor is an important mechanism in conceptualizing time, but it is not the sole mechanism in these two languages. It may have become clear that TIME in these two languages is not abstract; it is closely related to activities and events. To understand time conceptualization in the languages, we need to know how the language speakers construe time via bodily experiences of events and actions in the domain of SPACE; in other words, metonymy plays a role in time conceptualization, too. I therefore propose a metaphtonymic account (Goossens 1990; Geeraerts 2002) to better explain time conceptualization in these two languages. I use the locative markers in these two languages to illustrate how the time meaning emerges from the interaction of metaphorical extension of spatial frame to temporal duration via *ka-...-an* or (*sa-*)...-*an* morphological device and from metonymic mechanism as well, diagrammed as in Figure 1 below.
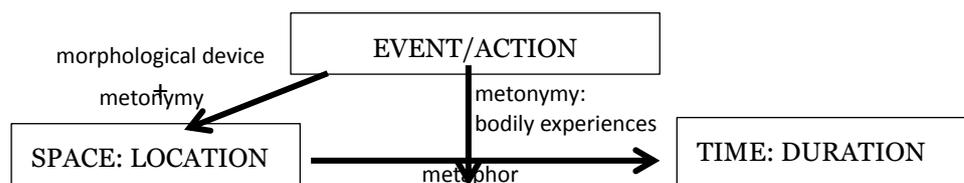

Figure 1 Metaphtonymic relations of EVENT/ACTION, SPACE and TIME in Kavalan and Saisiyat

This model says that in these two Formosan languages, the basic domain for the emergence of time meaning is EVENT/ACTION, instead of SPACE. SPACE is derived from the domain of EVENT/ACTION via the linguistic strategy of morphological affixation and the force of metonymy; and then time meaning emerges from the interaction of metaphor and metonymy. On the one hand, we do find evidence in these two Formosan languages supporting cognitive linguists' claim that TIME is conceptualized as SPACE (Lakoff 1993; Radden 2003, 2011). Nonetheless, I have also shown that TIME in these two languages is event-based; TIME is metonymically associated with daily events and actions. I therefore propose the conceptual metaphor TIME IS SPACE in these two languages is not well-motivated

without the work of metonymic mechanism in associating language speakers' bodily experiences of events and actions with their sense of TIME.

5. Conclusion

It may have become clear that TIME in these two languages is highly sensitive to events and activities, and that time meanings in these two Formosan languages not only emerge through metaphorical extension from SPACE to TIME, but are motivated metonymically to events and activities that speakers go through in their daily lives. The findings of this study may contribute theoretically to a better understanding of TIME-SPACE metaphoric mapping relations in these two Formosan languages and may also contribute to a clearer picture of the emergence of semantic meanings of TIME from a cross-linguistic perspective.

References

Bernárdez, Enrique. 2013. On the cultural character of metaphor: Some reflections on Universality and Culture-specificity in the language and cognition of time, especially in Amerindian languages. *Review of Cognitive linguistics* 11(1): 1-35.

Bohnemeyer, J. 2009. Temporal anaphora in a tenseless language. In *Expression of Time*, ed. by W. Klein and L. Ping, 83-128. Berlin: Mouton de Gruyter.

Boroditsky, Lera. 2000. Metaphoric structuring: understanding time through spatial metaphors. *Cognition* 75:1-28.

Casasanto, Daniel, and Lera Boroditsky. 2008. Time in the mind: Using space to think about time. *Cognition* 106:579-593.

Chang, Yung-li. 1997. Voice, case and agreement in Seediq and Kavalan. Ph.D. Dissertation, National Tsing-hua University.

Chang, Yung-li. 2000. *A Reference Grammar of Kavalan*. Taipei: Yuan-liu. (In Chinese)

Clark, Herb. 1973. Space, time, semantics, and child. In *Cognitive Development and the Acquisition of Language*, ed. by Timothy E. Moore, 47-46. New York: Academic Press.

Evans,Vyvyan. 2003. *The Structure of Time: Language, Meaning, and Temporal Cognition*. Amsterdam: John Benjamins.

Evans, Vyvyan. 2013. *Language and Time: A Cognitive Linguistics Approach*. Cambridge: Cambridge University Press.

Evans-Pritchard, E. E. 1939. Nuer time-reckoning. *Africa: Journal of the International African Institute* 12 (2):189–216.

Evans-Pritchard, E. E. 1940. *Nuer*. Oxford: Oxford University Press.

Fauconnier, Gilles, and Mark B. Turner. 2008. Rethinking metaphor. In *The Cambridge Handbook of Metaphor and Thought*, ed. by R. W. Gibbs, 57-66. Cambridge, MA: Cambridge University Press.

Geeraerts, Dirk. 2002. The interaction of metaphor and metonymy in composite expressions. In *Metaphor and Metonymy in Comparison and Contrast*, ed. by René Dirven & Ralf Pörings, 435-465. Berlin: Mouton de

Gruyter.

Gibbs, Raymond W. 1994. *The Poetics of Mind: Figurative Thought, Language, and Understanding*. New York: Cambridge University Press.

Goossens, Louis. 1990. Metaphtonymy: The interaction of metaphor and metonymy in expressions for linguistic action. *Cognitive Linguistics* 1: 323-340.

Haspelmath, Martin. 1997. *From Space to Time: temporal adverbials in the world's languages*. LINCOM EUROPA, München, Newcastle.

Hsieh, Fuhui. 2016. *An Introduction to Kavalan* Grammar. Taipei: Council of Indigenous Peoples. (In Chinese)

Lakoff, George. 1993. The contemporary theory of metaphor. In *Metaphor and Thought* (2nd ed.), ed. by A. Ortony, 202-251. Cambridge: Cambridge University Press.

Lakoff, George, and Mark Johnson. 1980. *Metaphors We Live By*. Chicago and London: University of Chicago Press.

Lakoff, George, and Mark Johnson. 1999. *Philosophy in the Flesh: The Embodied Mind and Its Challenge to Western Thought*. New York: Basic Books.

Levinson, S. and Majid, A. 2013. The island of time: Yélî Dnye, the language of Rossell Island. *Frontiers in Psychology* 4 doi: 10.3389/fpsyg.2013.00061.

Le Guen, O. and Pool Balam, L.I. 2012. No metaphorical timeline in gesture and cognition among Yucatec Mayas. *Frontiers in Psychology* 3 doi: 10.3389/fpsyg.2012.00271.

Li, Paul Jen-kuei. 1978. A comparative vocabulary Saisiyat dialects. *Bulletin of the Institute of History and Philology* 49(2):133-99.

Li, Paul Jen-kuei. 1996. The Formosan Tribes and Languages in I-Lan. I-Lan: I-Lan Prefecture Government. (in Chinese)

Li, Paul Jen-kuei. 1997. The History and Interaction of Formosan Pepo-hoan Tribes. Taipei: Formosa Folkways. (in Chinese)

Lyons, John. 1977. *Semantics*. Vol. 1 & 2. Cambridge: Cambridge University Press.

Moore, K. E. 2006. Space-to-time mappings and temporal concepts. *Cognitive Linguistics* 17: 199–244.

Núñez, R. and Cooperrider, K. 2013. The tangle of space and time in human cognition. *Trends in Cognitive Sciences* 17: 220–9.

Núñez, R., and Cornejo, C. 2012. Facing the sunrise: cultural worldview underlying intrinsic-based encoding of absolute frames of reference in Aymara. *Cognitive Science* 36(6): 965–91.

Núñez, R. and Sweetser, E. 2006. With the future behind them: convergent evidence from Aymara language and gesture in the crosslinguistic comparison of spatial construals of time. *Cognitive Science* 30: 1–49.

Radden, Günter. 2003. The Metaphor TIME AS SPACE across Languages. Baumgarten, Nicole/Böttger, Claudia/Motz, Markus/Probst, Julia (eds.), Übersetzen, Interkulturelle Kommunikation, Spracherwerb und Sprach-vermittlung - das Leben mit mehreren Sprachen. Festschrift für Juliane House zum 60. Geburtstag. *Zeitschrift für Interkulturellen Fremdsprachenunterricht* [Online], 8(2/3):1-14.

Radden, Günter. 2011. Spatial time in the West and the East. In *Space and Time in Language*, ed. by, Mario Brdar, Marija Omazic, Visnja Pavicic Takac,

Tanja Gradecak-Erdeljic, and Gabrijela Buljan, 1-40. Frankfurt et al.: Peter Lang.

Sinha, Chris and Bernárdez, Enrique. 2015. Space, time and space-time: Metaphors, maps and fusions. In *The Routledge Handbook of Language and Culture*, ed. by F. Sharifian, 309-324. New York: Routledge.

Sinha, C, and Jensen de López, K. 2000. Language, culture and the embodiment of spatial cognition. *Cognitive Linguistics* 11(1/2):17-41.

Sinha, C, Sinha, V., Zinken, J., and Sampaio, W. 2011. When time is not space: The social and linguistic construction of time intervals and temporal event relations in an Amazonian culture. *Language and Cognition* 3(1): 137-169.

Sinha, V, Sinha, C, Sampaio, W, and Zinken, J. 2012. Event-based time intervals in an Amazonian culture. In *Space and time across languages and cultures: Language, culture and cognition*, ed. by L. Filipovic & K. M. Jaszczolt, 15-35. Amsterdam: John Benjamins.

Talmy, L. 1999. Fictive motion in language and 'ception'. In *Language and Space*, ed. by P. Bloom, M. Peterson, L. Nadel, and M. Garrett, 211–76. Cambridge, MA: MIT Press.

Yeh, Marie M. 1991. Saisiyat structure. M.A. Thesis, Tsing-hua University.

Yeh, Marie M. 2000. *A Saisiyat reference grammar*. Taipei: Yuan-liu Publishing Co. (In Chinese)

Yeh, Marie M. 2003. A Syntactic and Semantic Study of Saisiyat Verbs. Ph.D. Dissertation, National Taiwan Normal University.

Yu, Ning. 1998. *The Contemporary Theory of Metaphor: A Perspective from Chinese*. Amsterdam/Philadelphia: Benjamins.

Zhao, Jin-shan, Zhao, Shan-ho, and Zhao, Yu-han. 2014. Investigation Reports of Saisiyat Rituals and Documentary of the Interviews with the Saisiyat seniors. Taiwan: Shui-Pa National Park. (in Chinese)

Appendix 1 Abbreviations and Symbols used in this study

1. Italic words denote the meta-language, referring to the word in a language
2. The glossing used in this paper is based on *Leipzig Glossing Rule*s (2004), http://www.eva.mpg.de/lingua/files/morpheme.html.

1SG	1st person singular	**INCEPT**	Inceptive
2SG	2nd person singular	**IRR**	irrealis
3SG	3rd person singular	**LF**	Locative Focus
1IPL	1st person plural, Inclusive	**LNK**	Linker
1EPL	1st person plural, Exclusive	**LOC**	Locative
2PL	2nd person plural	**NEG**	Negative; negator
3PL	3rd person plural	**NHUM**	non-human
ACC	Accusative	**NMZ**	Nominalizer/Nominalization

AF	Agent Focus	**NOM**	Nominative
ASP	Aspect marker	**OBL**	Oblique
CAU	Causative	**PART**	Particle
CON	Continuous aspect marker	**PF**	Patient Focus
DM	Discourse marker	**PFV**	Perfective
EXIST	Existential	**PN**	proper name/place name
EXP	Experiential marker	**PROG**	Progressive
FUT	Future	**Q**	Question marker
GEN	Genitive	**RED**	Reduplication
IMP	Imperative	**RF**	Referential focus

Appendix 2 Pronominal System and the Case Marking Systems

Table A Personal Pronominal System in Kavalan

			Free				Bound	
		person	Nom	Acc	Loc	Poss	Nom	Gen
Singular	1st		aiku	timaiku	timaikuan	zaku	=iku	=ku
	2nd		aisu	timaisu	timaisuan	zasu	=isu	=su
	3rd		aizipna	timaizipana	tamaizipana	zana	---	=na
Plural	1st	incl	aita	timaita	timaitan	zata	=ita	=ta
		excl	aimi	timaimi	timaimian	zaniaq	=imi	=niaq
	2nd		aimu	timaimu	timaimuan	zanumi	=imu	=numi
	3rd		qaniyau	qaniyau	qaniyauan	zana	---	=na

Table B Case Marking System in Kavalan

	Nominative	Oblique	Genitive	Locative
Personal name		…-an	ni	…-an
Common nouns	ya/a	tu	na	ta …-an 'in; at' sa 'to' pasa 'toward'

Table C Personal Pronominal System in Saisiyat (adapted from Yeh 2003)

		Nominative	Accusative	Genitive	Dative	Possessive	Locative
Sg	1st	yako/ya:o	yakin/iyakin	ma'an	'iniman	'amana'a	kanman
	2nd	So'o	'iso'on	niSo	'iniSo	'anso'o'a	kanSo
	3rd	siya	hisiya	nisiya	'inisiya	'ansiya'a	kansiya
PL	1st Inc.	'ita	'inimita	mita'	'inimita'	'anmita'a	kan'ita
	1st.Exc.	yami	'iniya'om	niya'om	'iniya'om	'anya'oma	kanyami
	2nd	moyo	'inimon	nimon	'inimon	'anmoyoa	kanmoyo
	3rd	lasiya	hilasiya	nasiya	'inilasiya	'anlasiya'a	kanlasiya

Table D Case Marking System in Saisiyat (adapted from Yeh 2003)

Noun	Nominative	Accusative	Genitive	Possessive	Dative	Locative
Personal name	Ø hi	hi	ni	'an-a	'ini'	kan kala
Common noun	Ø ka	ka	noka	'an noka-a	no	ray

Table E Focus System in Saisiyat (adapted from Yeh 2003)

Focus	**I***	**II**
Agent Focus	m-, -om-, ma-, Ø	Ø
Patient Focus	-en	-i
Locative Focus	-an	--
Referential Focus	Si- / Sik-	-ani

*Set I is used in present declarative sentences or in negative sentences containing the negators *kayni'* and *'okik*, while Set II is used in the imperative or in negative sentences containing the negators *'okay*, *'izi'*, and *'i'ini'*.