# Frames of Spatial Reference in Paiwan* 

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## 1. Introduction

A great deal of effort has been made on the spatial reference in Austronesian and Papuan languages. However, only few attempts have so far been made at the spatial language in Formosan languages. Thus, the aim of this paper is to fill the gap of the few research works in Formosan languages. Here we are not concerned with the physical dynamic spatial concept, namely, the spatial Motion events. In this paper we will focus on the frames of spatial reference in Paiwan based on the following question: How does Paiwan use various spatial frames of reference to describe their surrounding environment?

In this paper we will show that in Paiwan speakers use the static locative predicate $i$ 'be located' to express the spatial relationship between the primary object (i.e. Figure) and the secondary object (i.e. Ground). Second, we find that the Paiwan speakers use the Projector-based Reference Frame to describe their micro-oriented environment. For example, the spatial term viri stands for the left while naval stands for the right. Third, there exist two deictic locative terms maza 'here' and zua 'there' to express the guidepost-based spatial frame. Fourth, the Paiwan speakers also make use of two field-based spatial terms (i.e. the East and the West) to describe to their macro-oriented environment. However, Paiwan has no corresponding spatial terms to the notion of North and of South like some Indo-European languages. The Paiwan speakers employ the projector-based spatial frame 'left \& right' to substitute for the so-called field-based spatial terms ‘North \& South’.

Moreover, it is observed that the 'seeming' dynamic motion event pasa is

[^0]employed in the frames of spatial reference in Paiwan: a static predicate can be morphologically decomposed into a locative verbal root (i.e. i 'be located') plus a motion affix (i.e. -pasa- 'go toward'). Thus, a question may arise: why is the motion event pasa employed to express such a static concept in Paiwan? We argue that this syntactic pattern is cognition-motivated. Following the spirit of Talmy (1996, 2000), we propose that the motion affix -pasa- 'go toward' provides a fictive path between the primary Reference object (i.e. the Primary Ground) and the secondary Reference object (i.e. the Secondary Ground). The fictivity in human's cognition accounts for why such a motion prefix -pasa- 'go toward' can express a static situation.

The rest of this paper proceeds in the following order. Section 2 introduces a theoretical framework to account for the spatial reference frames in Paiwan. In Section 3 we will show the spatial frame of reference in Paiwan. In Section 4 we will show that Paiwan employs the fictive motion events to express a static geometric situation. Finally Section 5 is the conclusion.

## 2. Theoretical framework

### 2.1 Figure and Ground

Talmy (1983) argues that one’s conceptualization of space exhibits two subsystems. One is the matrix subsystem of space and the other is the material subsystem of space. The former comprises static concepts (e.g. region and location) and dynamic concepts (e.g. path and placement) while the latter consists of an object or a mass. Within a spatial scene, language marks out a focal portion bearing certain spatial relations to the second (even third) portion. The focal portion of the spatial scene is called the primary object (i.e. Figure) while the second portion is called the secondary object (Ground). The spatial relations in which the primary object bears to the secondary object are geometric and asymmetric. Their asymmetric spatial relations are given in (1) and illustrated in (2).
(1) The general conceptualization of Figure and Ground in language
a. The Figure is a moving or conceptually movable entity whose site, path, or orientation is conceived as a variable the particular value of which is the relevant issue.
b. The Ground is a reference entity, one that has a stationary setting relative to a reference frame, with respect to which the Figure's site, path, or orientation is characterized.
(2) a. The bike is near the house.
b. The house is near the bike.

One may expect that the sentences in (2a) and (2b) represent an inverse and symmetric spatial relation. However, we could notice that sentence (2a) reads like an acceptable one while (2b) sounds quite odd. Talmy (1983) argues that this contrast comes from the asymmetric spatial relation between the primary object and the secondary object. In (2a) the house is recognized as a fixed and larger reference object by which the movable and smaller object, i.e. the bike is characterized. On the contrary, in (2b), the bike (i.e. a movable, simpler, and smaller object) is used to be a reference object by which the house is described. The roles of the primary object and the secondary object correspond to the notions of "Figure" and "Ground", which are introduced by the Gestalt psychology and latter applied to cognitive linguistics by Talmy (1975). The role of bike in (2a) is viewed as "Figure" and that of house is viewed as "Ground".

### 2.2 Frames of reference

Talmy (1983) proposes that one conceptualizes space by characterizing a Figure's site, path, or orientation (i.e. the spatial disposition) on basis of not only a single reference object but also of two reference objects. Among the two reference objects, a "PRIMARY ReFERENCE OBJECT" (PRO) can be further discriminated from a "SECONDARY Reference object" (SRO). Therefore, at least two types of conceptualization of the spatial structure operate through a Figure's asymmetric relations to different reference objects. One type is the simplest one involving only a single reference object, making appeal to the geometric properties of the Ground object alone. The other is a more complex one that partitions off two reference objects in a spatial scene. Talmy (1983) therefore proposes that the simplest type of reference frames is termed as the Ground-based Reference Frame, as illustrated in (3).
(3) The bike is in the church.

In (3) the bike's site is characterized by the preposition in with respect to the church's location and geometric properties (e.g. its interior). The Figure object (i.e. the bike) is characterized by means of the single Ground object (i.e. the church) rather than in terms of more than one Ground object. This type of spatial reference frames illustrated in (3) is therefore called as Ground-based Reference Frame.

The second type of spatial reference frames can further be partitioned into some subparts, involving a primary Reference object and a secondary Reference object and a focal object, namely a Figure object. The focal object is to "encompass" a primary Reference object and a secondary Reference object, as illustrated in (4).
(4) The bike is on the east side of the church.

In (4) the Figure object, i.e. the bike is localized in a region that is adjacent to the primary Reference object, the church. This region bears a certain spatial direction to the church. This directional relation is characterized in terms of a secondary Reference object, that is, the earth. The example (4) given above is field/earth-based and therefore this subtype is termed as Field-based Reference Frame.

The third type involves a secondary Reference object wholly outside the primary Reference object, to which the secondary Reference object bears non-asymmetric relations. The secondary Reference object functions like a geometric point to mark out the portion/region nearest to or further from the Primary Reference object. It is illustrated in (5).
(5) The bike is on this side of the church toward the cemetery.

In (5) the cemetery (i.e. the SRO) serves as a guide-pointing Ground object and the church (i.e. the PRO) functions as a Ground object. The bike (i.e. the Figure) is located in the region that is singled out as a neighborhood of the church. Moreover, the region is further identified as one that is in the direction of the cemetery (i.e. a geometric point-like Ground object). The SRO here functions like a point-like Ground objects. This subtype therefore is termed as Guidepost-based Reference Frame since the SRO functions like a geometric point.

The final type involves a special case of the external secondary Reference object. Unlike the Guidepost-based Reference Frame, this type of spatial reference frame holds a projective SRO extending an asymmetric relation over the PRO. It is illustrated in (6).
(6) The bike is to the left of the silo.

In (6) the speaker projects (i.e. SRO) his intrinsic right-left axis onto the silo (i.e. PRO) and thus the bike is localized in a place or region with respect to the lateral axis of the silo. This subtype therefore is termed as Projector-based Reference Frame. To summarize, one conceptualizes space via localizing the Figure object on the basis of the above types of the Reference Objects. Now the summary is given in the following Table 1.

Table 1: Types of spatial reference frames

|  |  |  |  |  |  |  |  | Primary Reference object (PRO) | Ground-based <br> Reference Frame |
| :--- | :--- | :--- | :--- | :--- | :---: | :---: | :---: | :---: | :---: |
| Frames of <br> Reference | Secondary Reference <br> object (SRO) | Encompassive | Field-based <br> Reference Frame |  |  |  |  |  |  |
|  |  | External | Non-projective | Guidepost-based <br> Reference Frame |  |  |  |  |  |
|  |  |  | Projective | Projector-based <br> Reference Frame |  |  |  |  |  |

Finally, it is worthwhile to point out that Talmy (2000) argues that there exits a Figure-encountering path, which is used to localize a Figure by means of a Secondary Reference object. This axis is equivalent to the 'fictive access path' (Talmy 1996) or to the 'subjective axis' (Langacker 1986, 1987). Let us consider the fictive paths in the Field-based Reference Frame and the Projector-based Reference Frame, as illustrated in (7) and (8).
(7) The bike is on the east side of the church.
(8) The bakery is this way from the church.

Talmy (2000) argues that the example (7) describes the location of the Figure object, (i.e. the bike) by means of a fictive path from the Secondary Reference object, namely the East, encountering the Figure object, finally arriving at the Primary Reference object, the church. Similarly, the example (8) delineates the location of the bakery in characteristic of a fictive path that begins from the church and goes through the bakery and finally ends with the conceptualizer. It is clear that the bike in (7) and the bakery in (8) are not movable objects and that they do not move through physical space. However, they are described in terms of fictive paths that may move in the conceptualizer's mental space, as illustrated in Figure 1 and Figure 2. The fictive movement, that is, the conceptualizer's attention shift in the mind is viewed as FICTIVE MOTION (Talmy 1996, 2000) or ABSTRACT MOTION (Langacker 1986, 1987, 1991).

Figure 1


$$
\mathrm{PRO}_{(=\text {church })} \quad \text { FIG }_{(=\text {bike })} \quad \mathrm{SRO}_{(=\text {earth })}
$$

Figure 2


## 3. Frames of reference in Paiwan

### 3.1 Ground-based Reference Frame in Paiwan

### 3.1.1 Inside vs. outside

Unlike Indo-European languages, Paiwan distinguishes the inner three-dimensional bulk of a house/building from that of a container. For example, the English preposition into expresses both the inner volume of a container and of a building, as illustrated in (9).
(9) a. John put the money into the box.
b. John ran into the house.

As shown in (9a), the preposition into indicates the enclosed space of the container (i.e. the box). The preposition into in (9b) is also used to refer to the inner enclosed space of the building (i.e. the house). However, in Paiwan the spatial term tjuma' 'inside' is only used for the inner space of a house or building. It is illustrated in (10). In (10a) and (10b) the spatial noun tjuma' 'inside' is associated with the object uma' ‘house’ in Paiwan.


As shown in (10) the spatial site of the Figure object is specified with respect to the Ground object's geometric property. In (10a) the location of the agent (i.e. timadju 'he') is sited in the inner three-dimensional space of a building (i.e. tjukay 'church'). In (10b), the Figure object telar 'light' moves into the enclosed space of a house (i.e.
uma' 'house'). It is observed that the inner three-dimensional space is deeply involved with the categories of the Ground object, i.e. a house-like building. Therefore the notion HOUSE could be an important conceptual content in Paiwan speakers' conceptual system.

Now let us consider the outer two-dimensional space of a house in Paiwan. The outer unbounded region (i.e. casaw 'outside') is characterized with respect to the inner bounded three-dimensional space of a house. Consider the following examples:

```
(11) a. 'utjal'-utjal-an a i-casaw tucu.
    rain-Red-AN Nom P-outside now
    'It is raining outside.'
b. lalje'el a i-casaw.
    cold(AF) Nom P-outside
    'It is cold outside.'
```

In (11a) the nominal predicate 'utja'utjalan 'the place where it is raining' denotes the outer planar region of a house (i.e. casaw 'outside'). In (11b) the predicate lalje'el 'be cold' describes the situation occurring outside the outer region of a house. According to our informant, the speakers in (11a-b) usually are sited inside the house to describe the situations occurring outside the house. The notion outside in Paiwan is opposite to the notion INSIDE THE HOUSE in Paiwan.

### 3.1.2 Interiority

Now we see another subtype of the Ground-based Reference Frame in Paiwan. This type of frame of reference describes the inner three-dimensional space of an enclosed entity except a house or building. Now consider the following examples:

| p-in-i-taljatj | tua kiljasi | a | hung. |
| :--- | :--- | :--- | :--- |
| Caus-PF-be.located-inside | Obl drawer | Nom | book |

'The book was put into the drawer.'

| b. pele-pel-en nimadju a | kava | (a) pa-sa-taljatj |  |
| :--- | :--- | :--- | :--- | :--- |
| stuff-Red-PF | 3S.Gen Nom | clothes | Lnk Caus-go.to-inside |
| tua tansu. |  |  |  |
| Obl wardrobe |  |  |  |
|  | 'He stuffed the clothes into the wardrobe.' |  |  |

As shown in (12a), the verbal predicate comprises a prefix p- 'causative', an infix -in'perfective', a locative predicate $i$ 'be located', and a locative nominal taljatj 'inside'.

The site of the Figure object (i.e. hung 'book') is specified by characteristics of the inherent geometric property (i.e. taljatj 'inside') of the Ground object (i.e. kiljasi 'drawer’). In (12b) the initial verb pelepelen 'stuff' specifies the causal event and the second verb pasataljatj 'cause to go into’ expresses the caused motion event. In (12b) the Figure object (i.e. kava 'clothes') undergoes an external force to move into the inner space (i.e. taljatj 'inside’) of a Ground object (i.e. tansu 'wardrobe'). Both of the Ground objects in (12a-b) are enclosed container; here the locative nominal taljatj 'inside rather than tjuma' 'inside (of the house)' is employed to delineate the inner three-dimensional space of a vessel. Moreover, the spatial image-schema the locative nominal taljatj 'inside’ expresses can also delineate other spatial inner region. Consider the examples in (13).

```
(13) a. le-taljatj timadju tua bua-buang.
    move.toward-inside 3S.Nom Obl hole-Red
    'He went into a cave.'
b. a za vutjulj p-in-a-sa-taljatj-anga
    Nom that meat Caus-PF-go.to-inside-COS
    i-kiyad.
    be.located-stomach
    'The meat was swallowed into the stomach.'
    c. tima-zua na-c-em-aca tua buni’ a pa-sa-taljatj
    who-that Perf-pour-AF Obl mud Lnk Caus-go.to-inside
    tua pana?
    Obl river
    'Who poured the mud into the river?'
```

As shown (13a) the motion verb is composed of a motion prefix le- 'move toward' and a locative root taljatj ‘inside'. In (13a) the Figure object (i.e. timadju 'he') is more movable and smaller while the Ground object (i.e. buabuang 'cave') is more permanently located and larger. The Figure object moves along an unspecified path and finally arrives at the inner region of the Ground object. Here it is worth noting that the inherent geometric properties of and the function of the Ground object is not exactly the same as those of a container. This difference can be further delineated in (13b) and (13c). In (13b) the Figure object (i.e. vutjulj 'meat') was affected to move into the Ground object (i.e. kiyad 'stomach'). Here the Ground object is obviously not a three-dimensional container, as illustrated in (12); rather it seems to be conceptualized as an enclosed space. In (13c) the Figure object (i.e. buni' 'mud') is specified by the inherent properties of the Ground object (i.e. pana 'river'). Here the
geometric property of the Ground object is not exactly enclosed and three-dimensional but rather more planar and surface. Therefore the locative nominal taljatj 'inside’ seems to extend to apply to more peripheral image-schemas.

Compared with the inherent geometric properties (i.e. inner vs. outer) of a house/building, the geometric property of a container does not inherit the outer geometric property. It can be illustrated in (14).
$\left.\begin{array}{llllllll}\text { (14) a. } & \text { su-alap-u } & \text { a } & \text { kuli } & \text { i } & \text { tua } & \text { kupu. } \\ & \text { remove-take-Imp } & \text { Nom } & \text { ice.cube } & \text { be.located } & \text { Obl cup }\end{array}\right)$

In (14a) the outside of the Figure object (i.e. kuli 'ice cube') is implied by the pragmatic inference in Paiwan while in (14b) the final destination of the Figure object is changed to the outside of the house indicated by the nominal casaw 'outside'. That is, the locative nominal casaw does not act as the exterior region of a container in Paiwan. Now the spatial geometric contrast between IN and ON with respect to different Ground objects is illustrated in Table 2.

Table 2: in/out contrast with respect to different Ground objects

|  | House | Container |
| :--- | :--- | :--- |
| IN | tjuma' 'inside the house' | taljatj 'interiority' |
| OUT | casaw 'outside the house' | $*$ |

### 3.2 Field-based Reference Frame in Paiwan

### 3.2.1 East vs. west

Now we will see the first subtype of the Field-based Reference Frame in Paiwan. This subtype is involved with the East and the West, as illustrated in (15).

| (15) a. | a | za i-hualien | i-pasa-ka-cedas |
| :--- | :--- | :--- | :--- |
|  | Nom that P-Hualien | be.located-go.toward- KA-sun.peep |  |

'Hualien lies in the east of Taiwan.'
b. nu i-vavaw-sun ta kisa
if be.located-the.top-2S.Nom Obl train
k-em-asi-takau patje-tayhuku, uri-pacun-sun tua
come.from-AF-Kaohsiung arrive-Taipei Irr-see-2S.Nom Obl
i-pasa-ka-cedas
gade-gade'-an sakamaya.
be.located-go.toward-KA-sun.peep mountain-Red-Loc emphasis
'If you leave Kaohsiung for Taipei by train, you will see the mountains in the east.'

As shown in (15a), the place Hualien (i.e. the Figure object) serves as part of Taiwan (i.e. the primary Reference object). Moreover, it is further specified through the horizontal East-West axis of the earth (i.e. the encompassive secondary Reference object). In (15b) the site of the Figure object (i.e. the hearer) is also delineated through the earth-based East-West axis with respect to the primary Reference object (i.e. gadegade'an 'mountains'). Here we argue that this earth-based East-West axis is based on the path of the sun. That the locative nominal kacedas 'the East' is derived from the verb cemedas 'the peeping of the sun' can prove this argument. It is illustrated in (16).
(16) a.

| c-em-eda-cedas | a | 'ataw | tucu. |
| :--- | :--- | :--- | :--- |
| peep-AF-Red | Nom | sun | now |
| 'The sun is peeping now.' |  |  |  |

b. ngua-ngua'-aravac a k-in-a-cedas-an nua 'ataw.
beautiful-Red-very Nom P-nmlz-peep-nmlz Gen sun
'The first ray of the (morning) sun is very beautiful.'

In (16a) the predicate cemedacedas 'peep' is used to describe the rise of the morning sun. In (16b) the result nominal kinacedasan 'the first ray' is composed of the verbal root cedas 'peep' and the nominalizing affixation kina-...-an, expressing the [+ vision] property of a result nominal (Tang 2002).

Now we turn to another case of the locative nominal kacedas 'the East'. Consider the example illustrated in (17).

```
(17) na-pasa-ka-cedas a paling na nia-uma'.
    Perf-go.toward-KA-sun.peep Nom door Gen 1S.Gen-house
    'The door of our house has faced the East.'
```

As shown in (17), the Figure object (i.e. paling 'door') is localized as part of the primary Reference object (i.e. uma' 'house') and further orientated through the East-West axis of the secondary Reference object (i.e. the sun). In (17) the orientation of the Figure objects, i.e. paling 'door', is toward the place where the sun peeps. It is worth noting that the orientation of the door is expressed by the fictive motion affix -pasa- 'go toward'. We will explain it in the latter section.

Now we will see another case of the first subtype of Field-based Reference Frame in Paiwan, that is, the West. We will first show the relevant verbal predicate and result nominal with respect to the locative nominal kaletjep 'the West'. They are illustrated in (18).
(18) a. l-em-etjep-aken tua zaljum.
dive-AF-1S.Nom Obl water
'I dive into the water.'
b. ngua-ngua'-aravac a
k-in-a-letjep-an nua 'ataw.
beautiful-Red-very Nom P-nmlz-dive-nmlz Gen sun
'The sunset is very beautiful.'

In (18a) the predicate lemetjep 'dive' is used to describe the diving into the water. In (18b) the result nominal kinaletjepan 'the sunset' is composed of the verbal root letjep 'dive and the nominalizing affixation kina-...-an, expressing the [+ vision] property of a result nominal. It is therefore obvious that the locative nominal kaletjep 'the West' is derived from the verbal stem letjep 'dive’, which is similar with the case of kacedas 'the East'.

One may wonder why the eastward direction is related with the activity of diving. As we point out above, the East-West axis is based on the path of the sun in Paiwan. Thus, the westward direction must be correlated with the setting of the sun. It would be reasonable if one gets the whole picture of the geographical distribution of the (Northern) Paiwan. The Paiwan aborigines dwell in the western part of Taiwan; therefore their eastward part faces the Central Mountain Range and their westward part faces Taiwan Strait. Thus, when the sun sets, it dives into the Taiwan Strait. No wonder the Paiwan speakers realize that the westward direction is involved with the diving of the sun.

Next we will exhibit some more examples of this subtype of reference frame, as illustrated in (19).

```
(19) a. nukatiatiaw ma-sule-sulem a pacun tua 'ataw
every.day AF-evening-Red Lnk see(AF) Obl sun
i-pasa-ka-letjep i tua ilanan.
be.located-go.toward-KA-dive be.located Obl village
'Every evening (someone) sees the sun on the east side of the village.'
b. a
(i)-pasa-ka-letjep i-untuziu
Nom (be.located)-go.toward-KA-dive be.located-schoolyard
turuvu a situ a na-ma-lingetjel.
many Nom student Lnk Perf-AF-stand
'Many students have stood in the east side of the school yard.'
```

In (19a) the site of the sun is characterized with respect to the village through the direction toward the West. In (19b) the students are localized by the westward direction with reference to the schoolyard. It is worth noting that in both cases the motion event pasa 'go toward' is used to describe the static locative scene. We will discuss it in the latter section.

Next we will discuss the spatial notions 'North' and 'South' in Paiwan. Here we show that the two notions are related with the Guidepost-based or Projector-based Reference Frames rather than the Field-based Reference Frame. First, the Northern Paiwan speakers point out that there exist no unmarked spatial terms for the two notions 'North' and 'South'. They point out that the primary strategy expressing the notions 'North' \& 'South' is to use the representative locality, such as the Taipei city and the Kaohsiung city, to refer to the North and the South, as illustrated in (20).

| (20) setjala-utjal | i-pasa-tayhuku; | setjala-ka-cengelaw |
| :--- | :--- | :--- |
| often-rain | be.located-go.toward-Taipei | often-KA-(the.sun).shine |

In (20) the two cities, i.e. Taipei and Kaohsiung are the representative localities for the northern and southern regions of Taiwan. Here the Figure objects (i.e. the northern and southern regions) are described as those encountering a fictive path from the external secondary Reference object (e.g. the speaker) toward the point-like primary Reference objects (i.e. tayhuku 'Taipei' and takau 'Kaohsiung').

Moreover, the other strategy the Northern Paiwan speakers adopt is to substitute the asymmetric notions 'left' and 'right' for the spatial notions 'North' and 'South'. It
is illustrated in (21).


It is shown that in (21a) the locative nominal viri 'left' is used to stand for the notion 'North' and in (21b) the locative nominal naval 'right' is used to substitute for the notion 'South'. The Paiwan speakers adopt the observer-centric viewpoint to conceptualize the so-called environment-centric spatial relation. Here a question may arise: is this substitution arbitrary or reasonable? We propose that this substitution of the observer-centric viewpoint for the environment-centric one is not arbitrary. Recall the geographical distribution of the Northern Paiwan aborigines. Their eastward region is to the Central Mountain Range, the region where the morning sun rises. If one turns his body to face the Central Mountain Range, his left-hand side will be toward the North while his right-hand side will be toward the South. The Paiwan speakers may adopt this perspective to conceptualize the notions 'North' and 'South'. Here we see again that the region where the sun raises even deeply influences the ego-centric conceptualization of the macro-environment.

### 3.2.2 Upside vs. downside

Now we turn to see the second subtype of the Field-based Reference Frame in Paiwan. This subtype is involved with the up-down axis of the earth. Some examples are illustrated in (22).

| (22) a. | p-in-i-vavaw | tua cukui | a | za |
| :--- | :--- | :--- | :--- | :--- |
|  | Caus-Perf(PF)-be.located-the.top Obl table | Nom | that |  |
|  | pu-hana-(a)n. |  |  |  |
|  | put-flower-Loc |  |  |  |
|  | 'That flower vase was put on (the top of) the table.' |  |  |  |



In (22a-b) the Figure objects (i.e. flower vase and Camak) are both localized by the up-down axial characteristics of the primary Reference objects (i.e. the table and canoe). Here the locative nominal vavaw 'the top' functions as the English preposition on and the Chinese localizer shang/shang-mian. They refer not only to the upward direction based on the earth but also to the primary Reference object's surface which the Figure object has contact with. For example, the Figure object in (22b), that is, Camak must not only lie on the top of the canoe but also have contact with it. Thus, the nominal vavaw here refers not only to the upward axis but also to the contacted surface.

A question may arise: how does Paiwan express the spatial isolating notions like 'on top of' or 'above'? A Paiwan speaker would use the comparative prefix tja- 'more' to express the isolating upward direction, as illustrated in (23).


In (23a) the site of the Figure object (i.e. tjinki '(electric) lamp') is delineated with respect to the primary Reference object (i.e. tjanuaken 'me') through the up-down axis radiated out the encompassive secondary Reference object (e.g. the earth). In (23b) the situation is the same. In both cases the more extended length of the up-down axis, which is realized as the comparative prefix tja-, indicates that the Figure object have to be isolated from the Reference object to some degree, rather than in contact with each other.

Next we turn to see another case (i.e. teku 'underneath') of the second subtype of the Field-based Reference Frame. Compared with the upward locative nominal vavaw in (23), the downward one teku does not express the roughly opposite notion 'bottom' but rather the notion 'the underneath/ground', as illustrated in (24). In Paiwan the notion that is roughly opposite to that notion 'on the top of' is expressed by the result nominal ka-taljatj-an ‘bottom' (Farrell 1982).

| s-in-ekam | a | i-teku | a. |
| :--- | :--- | :--- | :--- |
| cushion-Perf(PF) | Nom $\quad$ be.located-the.underneath | Lnk |  |
| p-en-uljat |  |  |  |
| spread.all.over-AF |  |  |  |
| 'The cushions spread all over the ground.' |  |  |  |

```

Now we go ahead to exhibit some examples about this second subtype of the Field-based Reference Frame. Consider the following examples:
(25) a.
i-zua-amen
\begin{tabular}{l} 
i-tja-i-teku \\
be.located-there-1Pl.Nom
\end{tabular} be.located-more-be.located-underneath
tua tjikeza a k-em-aljava tjanusun.
Obl bridge Lnk wait-AF \(\quad\) 2S.Obl
'We wait for you underneath the bridge.'
b. a za tja-i-teku tua tjeley

Nom that more-be.located-underneath Obl precipice mavan-anga ka-zatja-zatja-(a)n a ipu'-ipu'-an. just.so-COS KA-flat-Red-Loc Lnk mud-Red-Loc 'Where is underneath the precipice is the flat sandlot.'

In (25a) the speaker (i.e. the Figure object) is orientated by the site of the bridge (the primary Reference object) through the downward axis of the earth (the secondary Reference object). In (25b) the sandy place (i.e. the Figure object) is orientated with respect to the downward region (the secondary Reference object) of the precipice (the primary Reference object). In both examples the Figure objects keep a distance from the primary Reference objects; moreover, this isolating distance is measurable and polar and therefore represented by the comparative prefix tja- in Paiwan.

\subsection*{3.2.3 Uphill vs. downhill}

Now we turn to see the third subtype of the Field-based Reference Frame in Paiwan. This subtype is involved with the hill/mountain as the secondary Reference
object. The case involving with the upward direction is illustrated in (26).
\(\left.\begin{array}{rlllll}\text { (26) a. } & \begin{array}{l}\text { (pa-)le-zaya-zaya } \\
\text { (PA-)move.toward-uphill-Red }\end{array} \quad \text { ti } & \text { Nom } & \text { chaolin } & \text { tua gade. } \\
\text { Chaolin } & \text { Obl mountain }\end{array}\right]\)\begin{tabular}{lllll} 
'Chaolin is climbing the mountain.'
\end{tabular}

In (26a) the Figure object (i.e. Chaolin) is moving along a vertical up-down path within the primary Reference object (i.e. gade 'mountain'). In (26b) the Figure object (i.e. kina 'mother') is also moving along an up-down path; however, the primary Reference object is not realized but inferred. Moreover, it is observed that the two prefixes make some differences: the affixation of the prefix \(l e\) - refers just to the movement upward or downward but the affixation of the prefix lia- refers not only to the movement toward up/down direction but also to the expanded degree toward the up-down polarities. Furthermore, the morpheme pa- in both examples can be freely omitted.

Now we will exhibit another case of this subtype of frame of reference; that is, the case involving the downward direction, as illustrated in (27).


The examples in (27) exhibit the same situation as those in (26). The Figure object (e.g. Chaolin) is moving along a vertical axis with respect to the primary Reference object (e.g. gade 'mountain'). Moreover, the prefixes le- and lia- bring in some subtle differences and the morpheme pa-can be also freely omitted.

Next we will show the comparison of the upward/downward locative nominal vavaw/teku with the uphill/downhill locative nominal zaya/lauz. It is shown in (28).
\begin{tabular}{lllll} 
(28) a. & le-vavaw & ti & chaolin tua kasiv. \\
& move.toward-the.top \(\quad\) Nom & Chaolin Obl tree \\
& 'Chaolin climbs up the tree.'
\end{tabular}
\begin{tabular}{|c|c|c|c|c|}
\hline \multirow[t]{3}{*}{b.} & pa-le-vavaw & ti & chaolin tua & kasiv \\
\hline & Caus-move.toward-the.top & Nom & Chaolin Obl & wood \\
\hline & \multicolumn{4}{|l|}{'Chaolin gets the timber upward. '} \\
\hline \multirow[t]{3}{*}{} & (pa-)le-zaya-zaya & ti & chaolin & tua gade. \\
\hline & (PA-)move.toward-uphill-Red & Nom & Chaolin & Obl mountain \\
\hline & 'Chaolin is climbing the mou & tain.' & & \\
\hline
\end{tabular}

In (28a) the Figure object (i.e. Chaolin) is self-moving along the vertical axis with respect to the primary Reference object (i.e. kasiv 'tree'). It is worth noting that the (causative) prefix pa- is absent. In (28b) the object Chaolin becomes an agent while the object kasiv 'tree' becomes a Figure object. The example (28c) exhibits a similar situation to (34a). However, the morpheme pa- can be freely attached onto the verbal stem in (24c) while the causative prefix cannot in (28a). Moreover, the vertical up-down axis is not only based on the earth but also on the hill/mountain in (28c). The different secondary Reference objects will bring in subtle differences. It can be further proved in (29) and (30).
\begin{tabular}{lll} 
a. & le-teku-u \(\quad\) tua & kasiv. \\
& move.toward-underneath-ImpObl tree \\
& 'Climb down the tree!' & \\
b. & *le-lauz-u \(\quad\) tua & \\
& movesiv. \\
& 'Climb down the tree!' &
\end{tabular}
(30) a
\begin{tabular}{lll} 
lia-teku & a & icu a ka-tjunang-an. \\
move.toward-underneath & Nom \\
'This Lnk P-earth-nmlz
\end{tabular}
\begin{tabular}{lll} 
b. & lia-lauz & a \\
\\
\begin{tabular}{l} 
move.toward-downhill \\
'The ground slopes.'
\end{tabular} & \begin{tabular}{l} 
icu a ka-tjunang-an. \\
this Lnk P-earth-nmlz
\end{tabular} \\
&
\end{tabular}

It is obvious that the ungrammaticality of (29b) comes from the contradictory proposition, that is, the locative nominal lauz 'downhill' implicates a hill-based rather than general earth-based secondary Reference object. However, the basic proposition in (29) should be based on general earth-based Reference object. Thus, the contradictory condition results in the ungrammaticality of (29b). Moreover, the combination of the prefix lia- 'move in a comparative degree' with different locative nominals will result in the different interpretations in (30). In (30a) the general
earth-based vertical axis generates the roughly perpendicular sagging of the ground while in (30b) the hill-based vertical but slanting axis generates the slopping of the ground.

\subsection*{3.3 Projector-based Reference Frame in Paiwan}

\subsection*{3.3.1 Left vs. right}

Now we will show the Projector-based Reference Frame. Within this frame of reference the Figure is specified by the left-right (lateral) orientation projected from the secondary Reference object (e.g. a speaker) onto the Primary Reference object. Consider the lateral direction 'right' in Paiwan, illustrated in (31).


As shown in (31a) the Figure object (i.e. the hearer) moves to the Primary Reference object (i.e. the window) along a projected path from the lateral axis of the secondary Reference object (i.e. the speaker). As shown in (31b) the site of the Figure object (i.e. hung 'book') is localized in terms of the primary Reference object (i.e. cukui 'table') through two axes of the secondary Reference object. One is the up-down axis, expressed as the spatial term vavaw 'the above'. The other is left-right axis, represented as the spatial term naval 'the right'. The former is a vertical axis based on the encompassive secondary Reference object (i.e. the earth) while the latter horizontal is a projective path radiating from the external secondary Reference object (i.e. the speaker).

Next we will consider another lateral direction 'left', as illustrated in (32).
\begin{tabular}{llll} 
(32) a. & vecik-u & ta su-ngadan \(\quad\) p-i-viri-viri-an \\
write-Imp & Obl 2S.Gen-name Caus-be.located-the.left-Red-Loc
\end{tabular}
'Write down your name on the most left part of the paper.'
b. ka kacimari mavan tjay tjelu ta viri-viri-an
when line.up just.so Obl three Obl the.left-Red-Loc
ti uku.
Nom Uku
'Uku is the third one from the most left part of the line.'

In (32a) it is clear that the primary Reference object (i.e. suljat 'paper') has no intrinsic lateral right-left distinction. It is the speaker or hearer whose intrinsic right/left radiates out and defines a frame of reference by which the Figure object (i.e. ngadan 'name') is localized with respect to the primary Reference object. In (32b) the primary Reference object (e.g. a row) also has no inherent lateral right-left geometry. It is the speaker or hearer that radiates out his intrinsic lateral axis onto the primary Reference object and therefore defines a spatial frame of reference by which the Figure object is orientated.

\subsection*{3.4 Guidepost-based Reference Frame in Paiwan}

Now we will see the final type of frame of reference in Paiwan. Consider the following examples:
```

(33) a. 'ivu a za a aljak " kina, aku-tjen a
said Nom that Lnk child Mother why-1Pl.Nom Lnk
i-maza i-ceme-cemel"
be.located-here be.located-mountain-Red
"Mother, why are we in the mountain here?" said the child.' (Chuang
2002)
b. a za vatu ma-kelu a k-em-asi-maza
Nom that dog AF-fall Lnk come.from-AF-here
i-`ezung a s-em-a-teku
be.located-window Lnk go.to-AF-underneath
'The dog fell down from this side of the window.'

```

In (33) we can see that the Figure objects (e.g. vatu 'dog') are localized with respect to a particular region of the primary Reference objects (e.g. ‘ezung 'window’). The secondary Reference objects (e.g. the speaker) function like a guidepost to single out the particular portion of the primary Reference objects. This particular region is near to the secondary Reference object and therefore is expressed as maza 'here'. Moreover, this particular region can be far away from the secondary Reference object,
as illustrated in (34). This further region which is away from the primary Reference object is realized as zua 'there'.
\begin{tabular}{lllll} 
(34) a. & turuvu a cawcaw & i-zua & i-pana \\
& many \(\quad\) Nom person & be.located-there & be.located-river
\end{tabular}

\section*{4. Fictive motion in spatial reference frames}

In this section we will focus on the fictive motion event in Paiwan. We argue that its occurrence is not arbitrary but rather cognition-based. We find that they systematically occur in three types of spatial frames of reference in Paiwan: the Guidepost-based Reference Frame, the Projector-based Reference Frame, and the Field-based Reference Frame. Now we will first consider the Guidepost-based Reference Frame in Paiwan, as illustrated in (35).
(35) a icu a tjikeza k-em-asi-maza a pasa

Nom this Lnk bridge come.from-AF-here Lnk go.toward tja-i-zua-zua. \({ }^{1}\)
more-be.located-there-Red
'This bridge, (it) stretches across from here to there.'

It is clear that the bridge is a static location; however, in (35) it seems to behave like a movable object (i.e. the Figure object), moving across a Reference object (e.g. a river). Here the 'seeming' dynamic motion pasa is used to describe such a static scene. We

\footnotetext{
\({ }^{1}\) One may wonder why the gloss of the fictive motion pasa in (35) is different from that of the causative motion pasa in (12b). We argue that the fictive motion pasa is different from the causative motin pasa with respect to the PF construction. The following serves as an example:
}
\begin{tabular}{llllll} 
a. & pa-sa-pana \(\quad\) ti & kina & tjay & camak. \\
& Caus-go.to-river & Nom & Mother & Obl & Camak
\end{tabular}

As we can see, the examples (ia) and (ib) are thematically synonymous. The causative motion pasa in (i) can occur in the AF construction or the PF construction, as other two-argument or three-argument verbs do. However, the fictive motion pasa does not behave the same with the causative motion pasa, as illustrated in (ii).
(ii) a.
pasa-ka-letjep a za ‘ezung.
go.toward-KA-dive Nom that wndow
'The window faces toward the West.'
\#‘The window caused (someone/something) to the West.'
b. *p-in-asa-ka-letjep nua za 'ezung.
go.toward-Perf(PF)-KA-dive Gen that window
‘The window faces toward the West.'

In (iia) the fictive motion pasa can occur in the AF construction; however, it cannot occur in the PF construction, as shown in (iib). Now it is clear that only the causative pasa can occur in the PF constructio while the fictive pasa cannot. Thus, the PF diagnostic distinguishes the causative motion pasa from the fictive motion pasa in Paiwan.
argue that it is because that the conceptualizer moves his attention along a mental (fictive) path to arrive at the final focal object. In (35) the Paiwan speaker (i.e. the secondary Reference object) moves his attention along the fictive path from where is nearest to the speaker toward some place where is further away from the speaker. The fictive motion (i.e. the scanning of the frame of attention) plus the fictive path (i.e. the axis provided by the secondary Reference object) is incorporated into the fictive motion affix pasa-, as illustrated in (37). The fictive path can be depicted as the following dotted line in Figure 3.

Figure 3: The Guidepost-based spatial frame of reference in Paiwan
(the Figure object)


Next let us consider the Projector-based Reference Frame, as illustrated in (36).
(36) liaw a hung i-vavaw
many Nom book be.located-the.above \begin{tabular}{l} 
tua cukui \\
Obl table
\end{tabular}

The specific site of the Figure object (i.e. hung 'book') is orientated through two main axes which are projected from the secondary Reference objects: One is the vertical up-down axis, and the other is the horizontal right-left axis. Thus, the Paiwan speakers will describe the spatial site of the Figure object on the basis of the origin of the two axes. With respect to the up-down axis, the Figure object as well as the origin is located on the surface of the primary Reference object (i.e. the table), that is, there is not any distance between the Figure object and the origin with regard to the vertical direction. On the other hand, the site of the Figure object is left to the origin with
respect to the horizontal axis, that is, the Figure is at distance from the origin. This distance will be conceptualized as a fictive path in which the attention of the speaker may moves along from the origin toward the site of the Figure object. This fictive path is depicted as the following dotted arrow-headed line in Figure 4. The fictive path plus the fictive motion (i.e. the change of the cognitive attention) is realized as the motion affix pasa- '(nonveridically) go toward'. Thus, the static verb \(i\) can be combined with the fictive motion affix pasa- to refer to the static location of the Figure object in Paiwan.

Figure 4: The Projector-based Reference Frame in Paiwan


Finally, we will see the Field-based Reference Frame in Paiwan, as illustrated in (37).
za i-hualien i-pasa-ka-cedas

Nom that P-Hualien be.located-go.toward- KA-sun.peep
tjay i-taivan.
Obl P-Taiwan
'Hualien lies on the east of the Taiwan.'

As shown in (37), the secondary Reference object (i.e. the earth) encompasses the primary Reference object (i.e. Taiwan) and therefore provides an East-West axis outside the primary Reference object (i.e. Taiwan). The Figure object (i.e. Hualien) is delineated not only with respect to the primary Reference object but also through the East-West axis. Hualien serves as part of Taiwan and lies more near the eastward direction (i.e. the direction of the sunrise), as shown in Figure 4. The East-West axis
could provide the Paiwan speaker a fictive path (expressed as the dotted line in Figure 5) with regard to his conceptualization of the Figure object's approaching toward the sun. Thus, the fictive path plus the fictive movement (i.e. Hualien's being close to the sun) is lexicalized into the fictive motion affix pasa 'fictively go toward'.

Figure 5: The Field-based Reference Frame in Paiwan


\section*{5. Conclusion}

In this chapter according to Talmy's (1983) proposed reference frames, we explore the static spatial representations in Paiwan. We find that the Paiwan speakers show the spatial contrast: tjuma' 'inside (the house)' and casaw 'outside (the house)'. However, there exists no spatial notion 'exteriority' in Paiwan. Second, we find that the Paiwan speakers use the Projector-based Reference Frame to orientate their micro-oriented environment. For example, the spatial term viri stands for the left while naval stands for the right. Third, the Paiwan speakers also make use of three types of the Field-based Reference Frames to describe to their macro-oriented environment: (a) the East vs. the West, (b) upside vs. downside, and (c) uphill vs. downhill. However, Paiwan has no unmarked corresponding spatial terms to the notions 'North and South’ as some Indo-European languages do. The primary strategy the Paiwan speakers employ to present the notions 'North' and 'South' is the local strategy. The secondary strategy is to use the projector-based spatial frame 'left \& right' to substitute for the so-called field-based spatial terms 'North \& South'. Fourth, there exist two deictic locative terms maza 'here' and zua 'there' to express the Guidepost-based Reference Frame.

It should be worth pointing out that Paiwan employs the fictive motion event as a means of representing a spatial static situation. Morphologically, a static predicate can be decomposed into a locative verbal root (i.e. i ‘be at/in/on’) plus a motion affix (i.e.
pasa 'go toward'). We, following Talmy (1996), propose that the motion prefix pasa 'go toward' results from the fictive path which is the spatial relation the secondary reference object bears to the primary reference object. The fictivity in human's cognition accounts for why such a motion prefix pasa '(fictively) go toward' can express a static situation.

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    Abbreviations in the Paiwan examples are shown as follows: 1: first person, 2: second person, 3: third person, Ca: Ca-reduplication, Caus: Causative, AF: Actor focus, COS: Change of state, Gen: Genitive, Imp: Imperative, Irr: Irrealis, LF: Location focus, Lnk: Linker, Loc: Location, Nmlz: Nominalizer, Nom: Nominative, Obl: Oblique, P-: non-common noun prefix, Perf: Perfective, PF: Patient focus, Pl: Plural, Red: Reduplication, S: Singular.

